TRACY HILLS SPECIFIC PLAN
RECIRCULATED
DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
VOLUME III
OCTOBER 2015

APPENDIX F-2

REVISED WATER SUPPLY ASSESSMENT FOR TRACY HILLS SPECIFIC PLAN FINAL REPORT, DATED OCTOBER 2015







CITY OF TRACY

TRACY HILLS SPECIFIC PLAN

REVISED WATER SUPPLY ASSESSMENT

FINAL REPORT

Prepared for

City of Tracy

October 2015

WEST YOST ASSOCIATES
Consulting Engineers

404-02-13-99

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Elizabeth Drayer

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- Agreement for Additional Assignment of Entitlement of Central Valley Project Water between the City of Tracy and the West Side Irrigation District (December 2013)
- Agreement Between City of Tracy and Plain View Water District for Central Valley Project Supplies for Patterson Pass Business Park (September 1991)
- Agreement Between City of Tracy and South San Joaquin Irrigation District for Water Supply (October 1995)
- SSJID Lathrop-Tracy Purchase, Sale and Amendment Agreement (August 2013)
- Agreement Between City of Tracy and Semitropic Water Storage District and Its Improvement Districts for Participation in the Stored Water Recovery Unit of the Semitropic Water Banking and Exchange Program (November 2012)

- Wholesale Water Agreement between Byron Bethany Irrigation District and the City of Tracy for Water Supply for Tracy Hills (August 2013) (includes Agreement Between the Department of Water Resources of the State of California and the Byron-Bethany Irrigation District regarding the Diversion of Water from the Delta (May 2003) and the Long-term Contract between the United States and the Byron Bethany Irrigation District Providing for the Exchange of Non-Project Water for Project Water (April 2014))

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- City of Tracy Groundwater Management Policy Mitigated Negative Declaration (April 2001) (including 2001 Estimated Groundwater Yield Study)
- Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area (July 2011)
- Excerpts of Summary of Groundwater Conditions Report (November 2007 through November 2008)
- Excerpts of Tracy Regional Groundwater Management Plan (March 2007)
- Groundwater Assessment for Drought Emergency Conditions Requiring Groundwater to be used as the Sole Source of Potable Water Supply (August 2015)

Appendix D: City of Tracy Recycled Water Ordinance

- City of Tracy Municipal Code Chapter 11.30—Recycled and Non-Potable Water

List of Acronyms

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

EXECUTIVE SUMMARY

Purpose of Water Supply Assessment

The purpose of this Water Supply Assessment (WSA) is to perform the evaluation required by California Water Code sections 10910 through 10915, as established by Senate Bill 610 (SB 610), in connection with the City of Tracy's (City) proposed Tracy Hills Specific Plan (Proposed Project). This WSA evaluates the adequacy of the City's total projected water supplies, including existing water supplies and future planned water supplies, to meet the City's existing and projected future water demands, including those future water demands associated with the Proposed Project, under all hydrologic conditions (Normal Years, Single Dry Years, and Multiple Dry Years). Also, because the Proposed Project meets the definition of a residential subdivision, this WSA must also meet the requirements of California Government Code section 66473.7(a)(1), as established by SB 221 in 2001.

Also, in response to on-going drought conditions in California and the State of Emergency proclaimed by Governor Jerry Brown, first in January 2014 and most recently in April 2015, this WSA provides a discussion of the availability and reliability of the City's available water supplies to meet the City's water demands in the event that the City's surface water supplies are limited under emergency water supply conditions.

In December 2014, a WSA for the Proposed Project was prepared and included as an appendix to the December 2014 Draft Subsequent Environmental Impact Report (Draft SEIR) for the Proposed Project. This Revised WSA has been prepared to include updated information regarding the City's water supplies and will be included as an appendix to the Recirculated Draft SEIR for the Proposed Project.

Proposed Project Overview

The Proposed Project is one of the City's future service areas as defined in the City's General Plan and the developable portion of the Proposed Project is located within the existing City Limits. The Proposed Project consists of approximately 2,732 acres within the southern portion of the City surrounding the existing interchange at Corral Hollow Road and the proposed Lammers Road interchange on Interstate 580[1].

The Proposed Project meets the definition of a "Project" per California Water Code sections 10910 through 10915, as established by SB 610 in 2001, thus requiring the preparation of this 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

[1] Based on Draft Tracy Hills Specific Plan (Table 1-1 Land Use Plan Buildout Example), dated December 2014.

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 2016.

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.

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 inclusion of existing and planned future supplies is specifically allowed by the Water Code:

> *Water Code section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

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)
  - To serve portions of the Proposed Project located inside the BBID Raw Water Service Area 2 and inside the CVP CPOU (includes Phases 1a, 1b, portion of Phase 2 and Phase 3 north of the CVP CPOU boundary, Phase 4 and portion of Phase 5 south of Western Pacific Railroad and west of Lammers Road) (see Figure 2)
  - 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
  - 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
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and inside the BBID CVP Service Area (includes portion of Phase 5 north of the California Aqueduct, not including the portion west of Lammers Road) (see Figure 2)

  - 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
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and outside the BBID CVP Service Area (includes portion of Phase 5 south of the California Aqueduct and portion of Phase 5 north of Western Pacific Railroad and west of Lammers Road) (see Figure 2)

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 infrastructure may not be initially available to deliver recycled water 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).

Furthermore, in the event of a water supply emergency where surface water supplies may be limited or unavailable, this WSA shows that based upon current groundwater basin conditions, the City would be able to meet its water demands[2] using only groundwater supplies in any single year without causing any long-term impacts to the groundwater basin (see Section 6.1.3.9 for further discussion).

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 associated with buildout 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.

These additional water supply agreements would need to be place before development commences for Phase 5 of the Proposed Project (see further discussion in Section 2.4).

Recycled water infrastructure will also need to be constructed to deliver recycled water supplies to the Proposed Project. In 2012, the Citywide Water System Master Plan and Tracy Wastewater Master Plan were completed. Both plans included recommended capital improvement projects for the development of the City's recycled water system, including facilities to deliver recycled water to the Proposed Project. To date, the City has spent approximately $85 million on improvements to the City's Wastewater Treatment Plant to allow for the plant to produce tertiary-treated wastewater meeting Title 22 requirements for recycled water use for landscape irrigation and other non-potable uses. In December 2013, the City adopted Development Impact Fees to fund additional recycled water infrastructure improvements. In 2015, the City applied for Proposition 84 grant funding from DWR to fund construction of recycled water distribution facilities. 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.

[2] Assumes that, in response to the water supply emergency, the City's water demands are reduced by 50 percent in accordance with Stage V of the City's Water Shortage Contingency Plan.

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[3] 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.

[3] 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

In December 2014, West Yost Associates (West Yost) prepared a WSA for the Proposed Project, which was included as an appendix to the December 2014 Draft Subsequent Environmental Impact Report (Draft SEIR) for the Proposed Project. This Revised WSA has been prepared by West Yost to include updated information regarding the City's water supplies and will be included as an appendix to the Recirculated Draft SEIR 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.

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 consists of approximately 2,732 acres within the southern portion of the City. 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. Development of the Proposed Project is proposed to be constructed in several phases starting with Phase 1a in 2016.

The location of the Proposed Project in relation to the current City Limits and the City's General Plan Sphere of Influence (SOI) is shown on Figure 1. 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). 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. The Specific Plan consists of three areas defined by the physical characteristics of the Proposed Project site.

- The northern portion of the Specific Plan between the Delta-Mendota Canal and the California Aqueduct will include a mix of low and medium density residential areas adjacent to light industrial uses.
- The central portion of the Specific Plan, south of the California Aqueduct and north of I-580, is planned predominately for single-family homes, open space conservation easements, mixed use business park, and commercial retail areas. Additionally, an elementary school site is planned to serve the neighborhood residents of this area.
- The southern portion of the Specific Plan area, with rolling and steeper slopes on the southern side of I-580, will be primarily residential neighborhoods with parks and school sites. A mixed use business park area will be located southwest of the planned Lammers interchange and a commercial retail area will be located along the southeasterly project boundary at Corral Hollow Road. This area abuts approximately 3,500 acres of open space under a conservation easement.

Proposed land uses for the Proposed Project are summarized in Table 1.

Table 1. Proposed Land Uses for the Proposed Project[a]			
Proposed Land Use	Approximate Gross Acres	Approximate Adjusted Developable Acres[b]	Projected Dwelling Units
Residential Estate	95.6	81.3	122
Low Density Residential	1,216.0	876.3	3,238
Medium Density Residential	318.1	270.4	2,014
High Density Residential	9.2	7.8	125
Mixed Use Business Park	214.6	182.5	
General Highway Commercial	102.4	87.0	
Light Industrial	363.1	308.6	
Conservation Easements	119.8		
Subtotal	2,438.8	1,813.9	
Interstate-580 Interchange and Right-of-Way	137.5		
California Aqueduct Right-of-Way	143.1		
Union Pacific Railroad	12.2		
Total	2,731.6	1,813.9	5,499

[a] Land Use Plan Buildout Example as included in the Draft Tracy Hills Specific Plan, Table 1-1, December 2014.

[b] Adjusted developable acres (Residential, Mixed Use Business Park, General Highway Commercial, and Light Industrial acreages have been adjusted to show that an estimated 15% of the land area is used for infrastructure such as roads and utilities, and/or public facilities such as neighborhood parks/amenities, schools, and/or public facilities such as retention basins as noted in the General Plan. Actual numbers will vary depending on site specific characteristics.

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[4]. These are described below.

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.

[4] 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.

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[5], 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.

[5] 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

Land Use Designation	Adjusted Gross Acres[(a)]	Dwelling Units	Unit Water Demand Factor				Total Annual Demand	Potential Potable Water Demand	Potential Recycled Water Demand
	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)[(b)]	228.3	-	3,568	gpd/ac	4.00	af/ac/yr	912	-	912
Conservation Easements	119.8		-		-		-	-	-
Interstate-580 Right-of-Way	137.5		-		-		-	-	-
California Aqueduct Right-of-Way	143.1		-		-		-	-	-
Union Pacific Railroad	12.2		-		-		-	-	-
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)] For purposes of estimating water demands for the Proposed Project, Approximate Gross Acres shown in Table 1 for Residential, Commercial and Industrial land uses have been adjusted to separate out acres for parks, schools and landscaping.

[(b)] 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.

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. The inclusion of existing and planned future supplies is specifically allowed by the Water Code:

> *Water Code section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

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.

2.4.1 Potable Water Supply

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 potable water supplies 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 Consolidated Place of Use (CPOU)[6], 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.

- 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.

[6] The agreement between the 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 CPOU. "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).

2.4.2 Recycled Water Supply

Recycled water infrastructure will need to be constructed to deliver recycled water supplies to the Proposed Project. In 2012, the Citywide Water System Master Plan and Tracy Wastewater Master Plan were completed. Both plans included recommended capital improvement projects for the development of the City's recycled water system, including facilities to deliver recycled water to the Proposed Project. To date, the City has spent approximately $85 million on improvements to the City's Wastewater Treatment Plant to allow for the plant to produce tertiary-treated wastewater meeting Title 22 requirements for recycled water use for landscape irrigation and other non-potable uses. In December 2013, the City adopted Development Impact Fees to fund additional recycled water infrastructure improvements. In 2015, the City applied for Proposition 84 grant funding from DWR to fund construction of recycled water distribution facilities. 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 (the interim use of potable water 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).

It should be noted that if a golf course is to be developed in the future as part of the Proposed Project as part of the recreation open space area, it will not be developed until such a time that recycled water is available for irrigation of the golf course. Irrigation demands at the golf course will not be supplied with potable water, not even on an interim basis.

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 (water to be purchased annually 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 (Conservation Easements, 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		

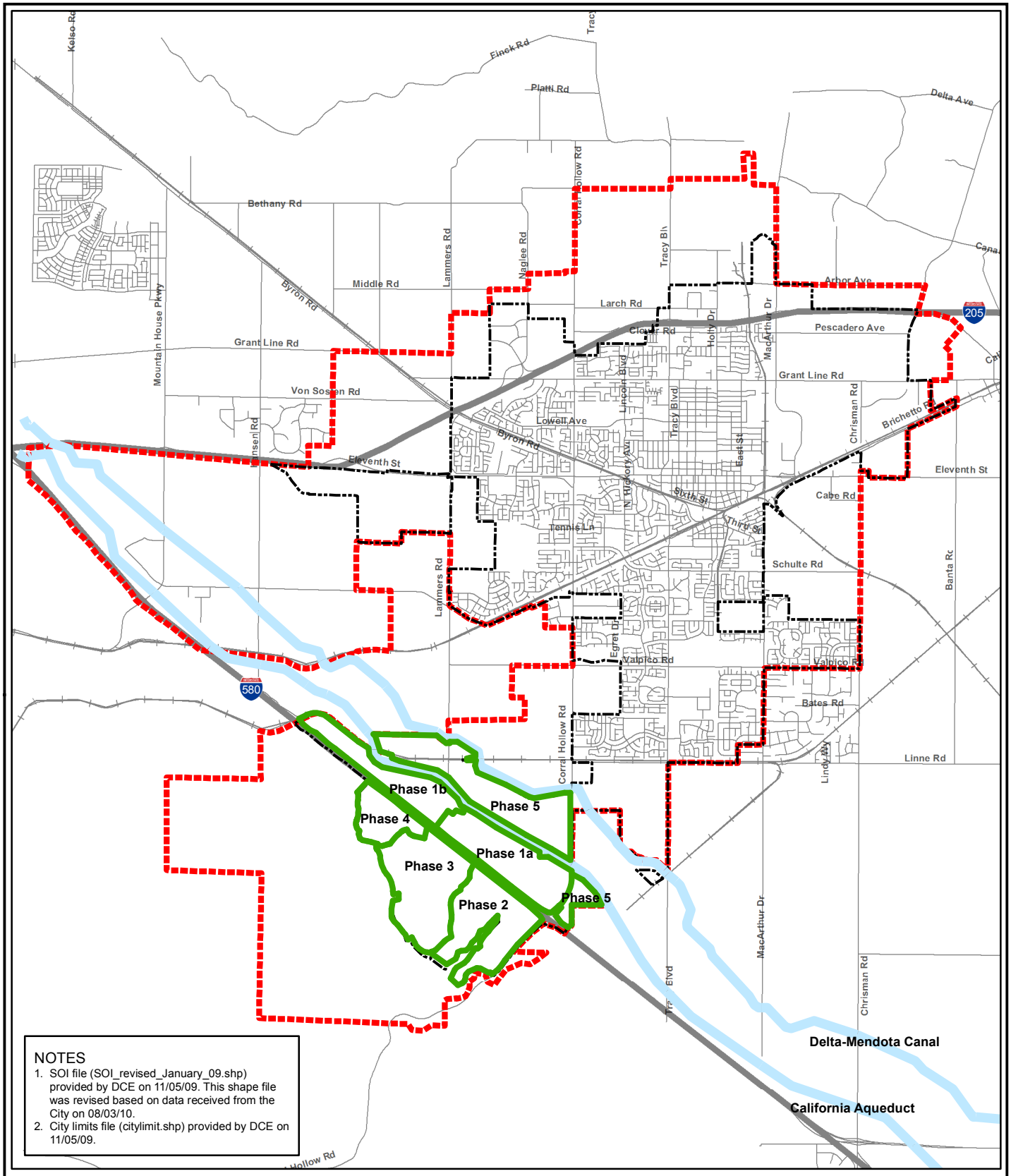
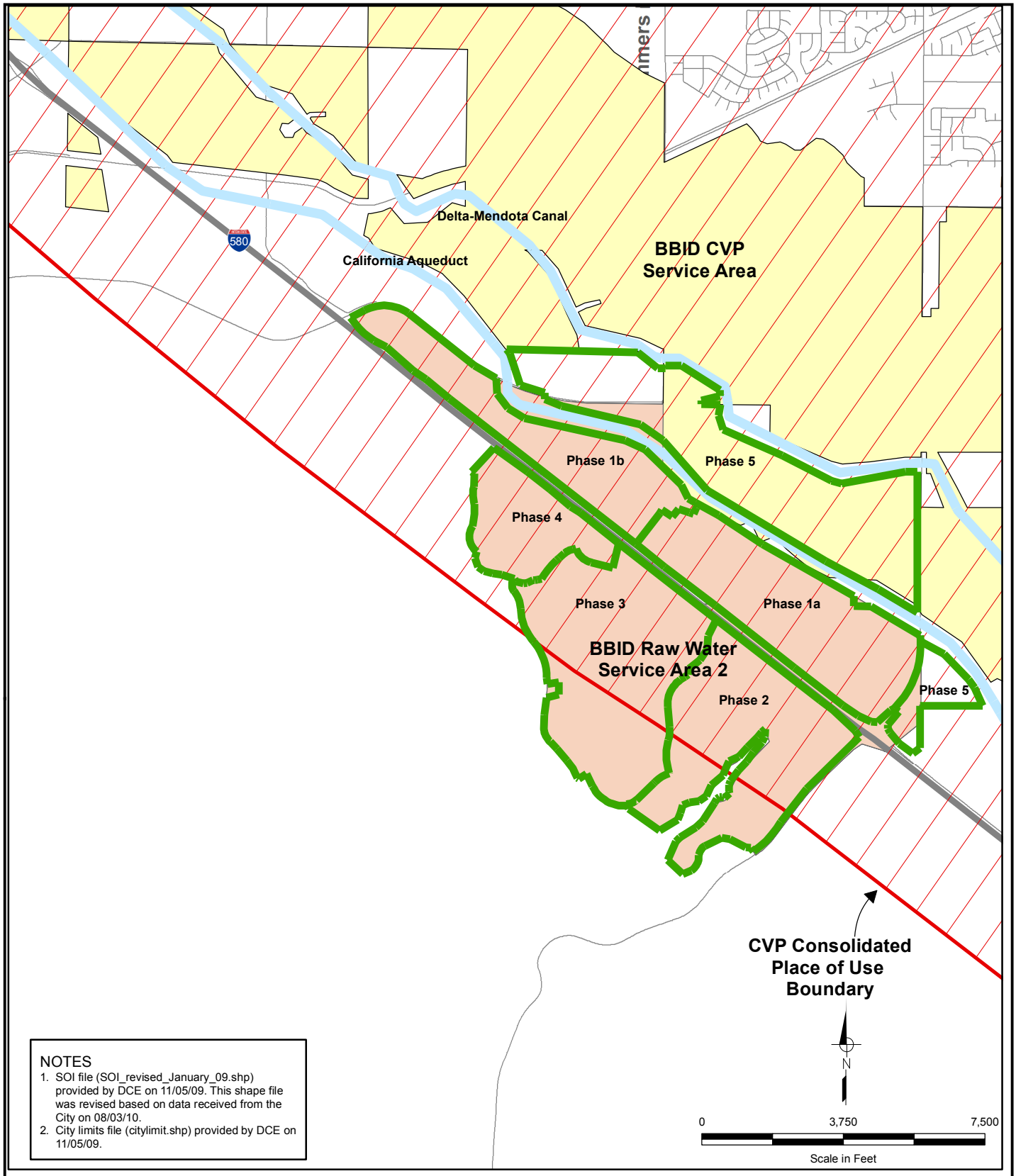


FIGURE 1

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

PROPOSED PROJECT LOCATION

WEST YOST ASSOCIATES
Consulting Engineers



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 Specific Plan
- Highway
- Existing Street
- BBID CVP Service Area
- BBID Raw Water Service Area 2
- CVP Consolidated Place of Use

FIGURE 2

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

IRRIGATION DISTRICT BOUNDARIES

WEST YOST ASSOCIATES
Consulting Engineers

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. The City's water system service area includes all areas within the City Limits and the General Plan SOI 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 due to changes in the Proposed Project land use. 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).

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 City's General Plan includes 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, 2015 was 85,296 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 General Plan 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-5 Population Estimates for Cities, Counties, and the State, January 1, 2011-2015, with 2010 Benchmark, revised May 1, 2015.

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 2014, the City's water demand was 16,434 af/yr. Figure 3 shows the City's historical annual water demand (based on water production) from 1986 through 2014. Table 8 shows the City's water demand (based on water production) for the past five years.

Table 8. Historical Potable Water Demand

	2010	2011	2012	2013	2014
Total UWMP Water Demand, af/yr[(a)]	16,603	16,868	17,592	18,587	16,213

[(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, 2013 and 2014 data from City water production data.

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 assuming normal year conditions. 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 in Normal Years					
	2015	2020	2025	2030	2035
Total Potable Water Demand, af/yr[a]	23,000	25,000	28,300	31,000	33,600
Total Recycled Water Demand, af/yr[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, water demands at buildout of the City's General Plan 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 as defined in the City's 2010 UWMP and 2012 Citywide Water System Master Plan (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 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 City's 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 7.5 percent unaccounted-for water[9]). 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.

[9] 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 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.

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. For purposes of this WSA, the additional water conservation which may occur in single dry or multiple dry years is not assumed to happen. This is a conservative assumption as additional water conservation may indeed occur as a result of the City's implementation of additional water conservation measures as outlined in the City's Water Shortage Contingency Plan[10] in response to multiple dry years or other water supply shortages. The City's Water Shortage Contingency Plan includes a five-stage plan describing specific actions to reduce water demand by up to 50 percent in the event of a water supply shortage or emergency.

As shown in Table 8, the City's 2014 demand was significantly lower than 2013 demand, and 2015 water demands have been reduced even further in response to the Governor's April 2015 Executive Order B-29-15 mandating 25 percent water conservation statewide. To reduce water use by 25 percent statewide, the SWRCB adopted a regulation which placed each urban water supplier into one of eight tiers which are assigned a conservation standard, ranging between 4 percent and 36 percent. Each month, the SWRCB will compare every urban water suppliers' water use with their use for the same month in 2013 to determine if they are on track for meeting their conservation standard. The City of Tracy was placed into Tier 7 with a water conservation standard of 28 percent as compared to 2013 use.

In response, in June 2015, City Council authorized the implementation and amendment of the City's Phase III and IV water restrictions (as defined in Chapter 11.28 of the Tracy Municipal Code) to meet SWRCB emergency drought regulations. The City's current 2015 water conservation efforts and results are an example of the City's ability to implement its Water Shortage Contingency Plan and reduce water demands in the event of an emergency water supply shortage. In May 2015, the City's water demand was 30 percent less than May 2013, and in June 2015, the City's water demand was 33 percent less than June 2013, indicating the responsiveness of the City's residents to the call for water conservation.

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

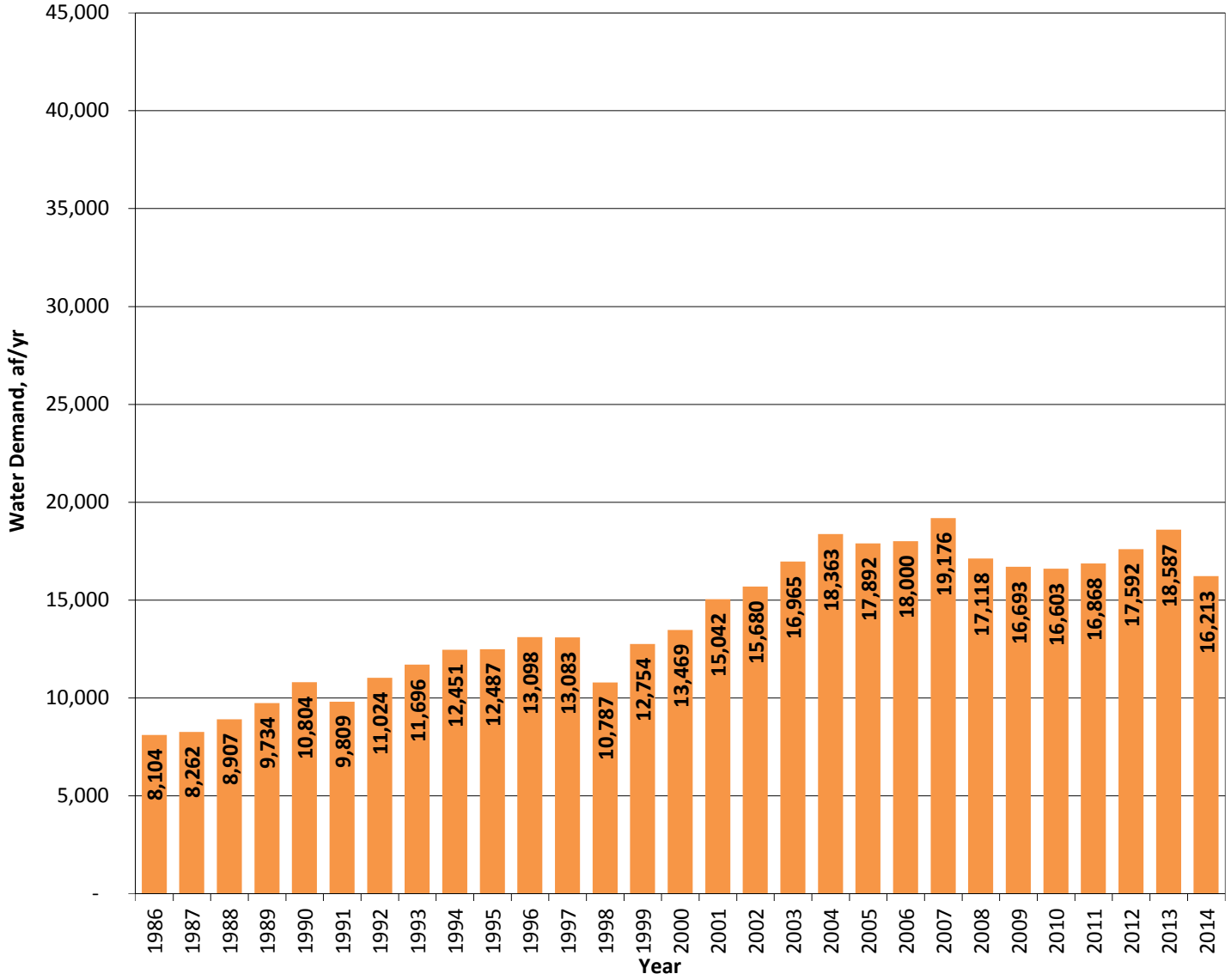
[10] The City's Water Shortage Contingency Plan is included as an appendix to the City's 2010 Urban Water Management Plan and is included in the Tracy Municipal Code Chapter 11.28.

Table 11. Projected Future Dry Year Potable Water Demand[a]

Hydrologic Condition	Demand Reduction[b]	2015	2020	2025	2030	2035
Single Dry Year, af/yr	0%	23,000	25,000	28,300	31,000	33,600
Multiple Dry Years, af/yr[c]	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] Conservatively assumes no demand reduction in dry years. Demands may be reduced in dry years as a result of the City's implementation of its Water Shortage Contingency Plan; however, such a demand reduction is not assumed or relied upon for the purposes of the Single Dry Year and Multiple Dry Year evaluations for this WSA.
[c] Represents demands for each year of the 3-year multiple dry year period.

Figure 3. City of Tracy Historical Potable Water Demand



Legend:

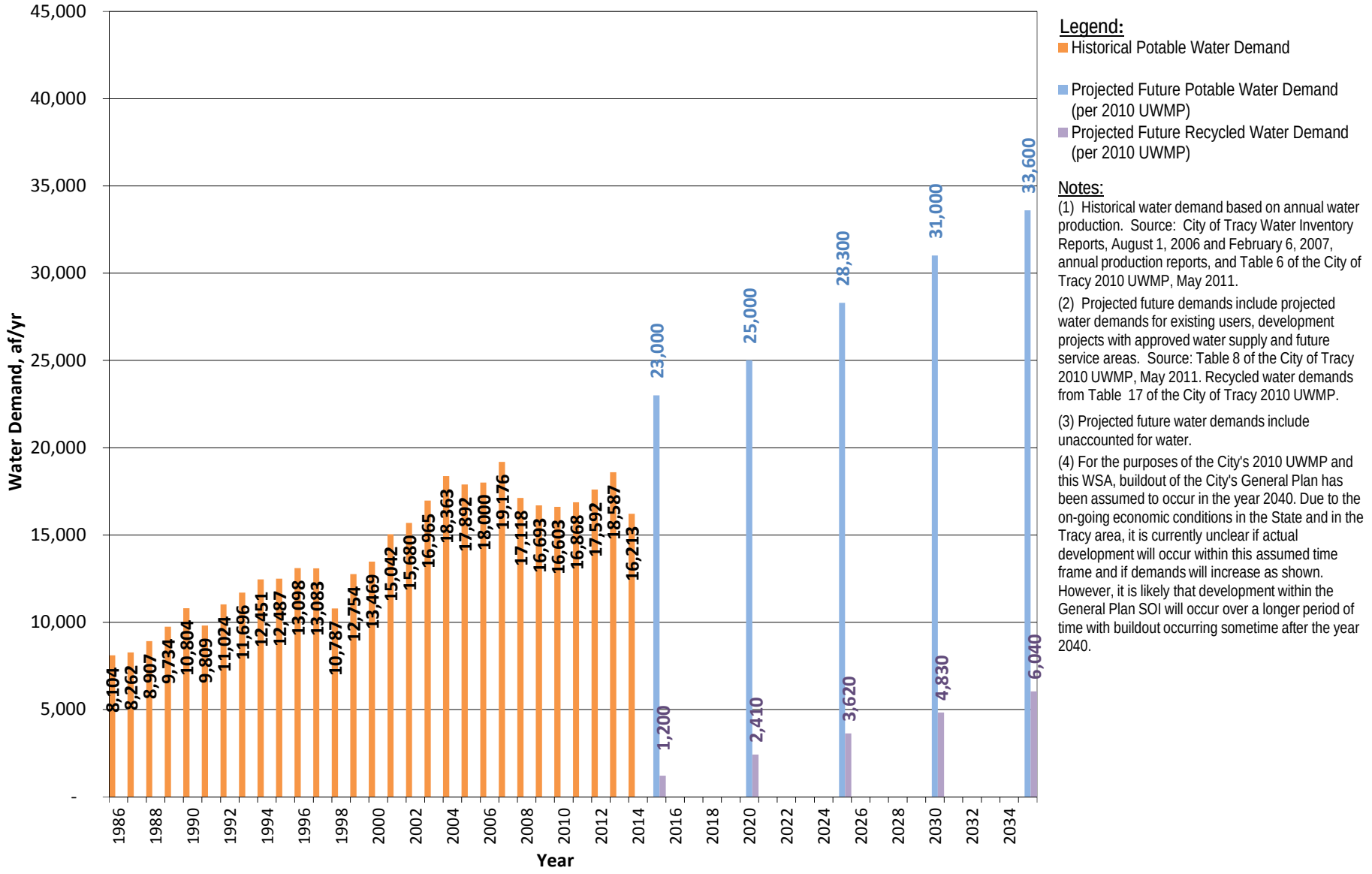
- Historical Potable Water Demand

Notes:

(1) Based on annual water production.

(2) 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.

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



Notes:

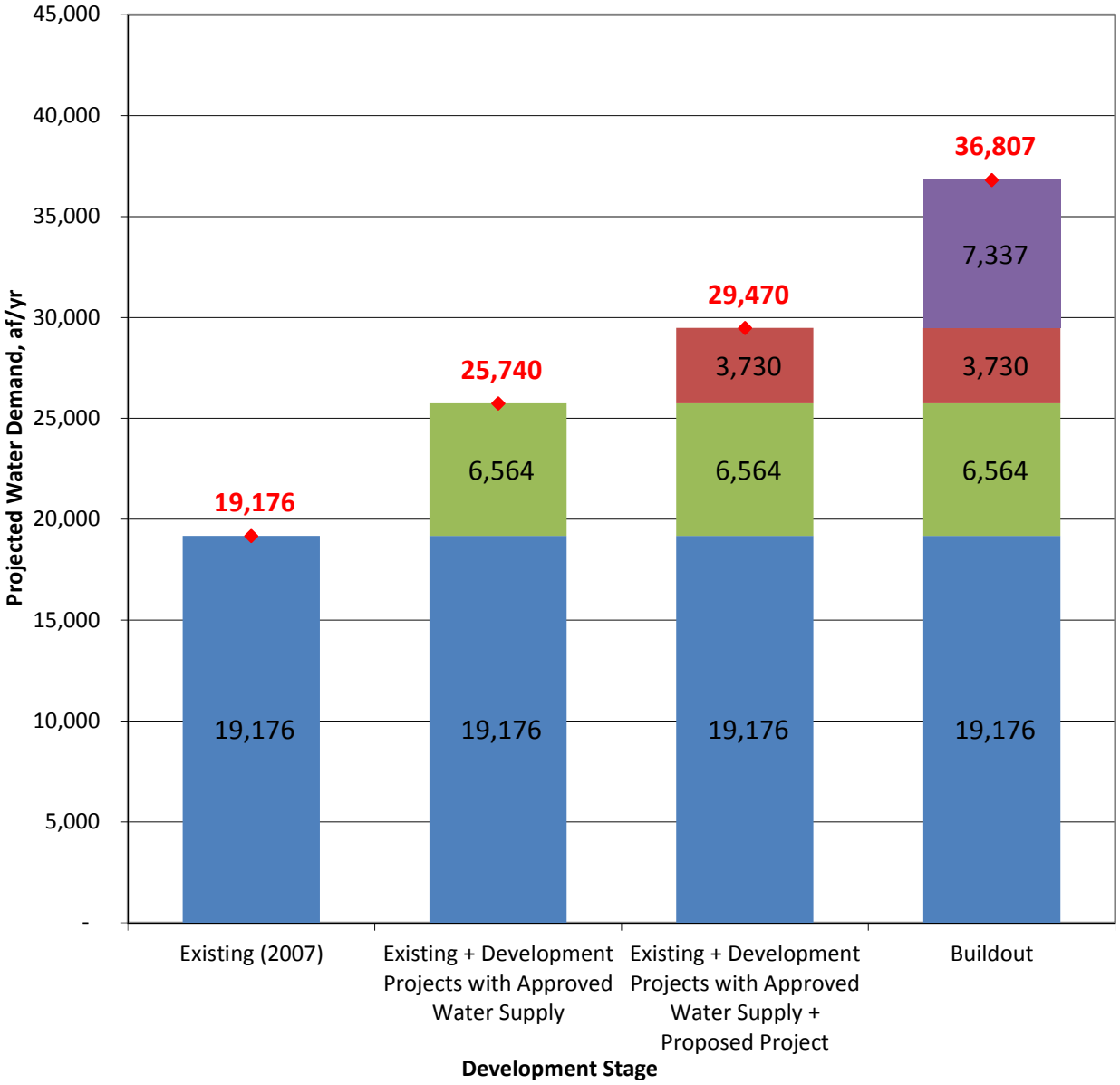
(1) Historical water demand based on annual water production. Source: City of Tracy Water Inventory Reports, August 1, 2006 and February 6, 2007, annual production reports, and Table 6 of the City of Tracy 2010 UWMP, May 2011.

(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.

(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.

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.

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 inclusion of existing and planned future supplies is specifically allowed by the Water Code:

> *Water Code section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

The water supply for the Proposed Project will have the same water supply reliability and water quality as the water supply available to the City's other existing and future water customers. Proponents of the 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 and has recently implemented an Aquifer Storage and Recovery (ASR) program to allow for injection of surface water supplies into the underlying groundwater basin for storage and later extraction.

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 planned future water supplies, and historical and anticipated future quantities, are provided following the discussion of the City's additional planned future 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 a two-year Interim Renewal Contract with the USBR providing for water service from the CVP. The Interim Renewal Contract, which expires February 29, 2016, 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. The City is currently in negotiations with the USBR for another two-year Interim Renewal Contract to provide water service until a long-term renewal contract is executed.

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 2015 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%	0%
2015	25% [a]	0% [a]

[a] Based on 2015 water supply allocation for Central Valley Project agricultural contractors and municipal and industrial contractors as updated by USBR on February 27, 2015.

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 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 2014, 590 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
- 2014: 590 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[11]. 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.

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)]
2014	10,837	18,839[(b)]

(a) 2005 through 2010 data from Table 4.4 of the SSJID 2010 Urban Water Management Plan, August 2011.
(b) 2011 through 2014 data provided by SSJID.

[11] 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*.

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). As shown in Table 13, total SCWSP deliveries to all project participants in 2014 were 18,839 af/yr. SSJID's 2010 UWMP[12], 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 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. The SCWSP is expected to continue to have high reliability as a result of its senior pre-1914 rights.

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.

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

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 6.1.6 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[13]. Similarly, DWR has not identified the Tracy Sub-basin as being in an overdrafted condition (per DWR Bulletin 118-80).

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 safe 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 safe 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.

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

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, the City used 6,700 af/yr as an estimated maximum 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 safe 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 on a continuous basis. 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 (for 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*).

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 a maximum annual usage of 7,800 af/yr in 2002. This pumping occurred with no negative impacts to the groundwater basin. Since the completion of the SCWSP in 2005, the City's groundwater extraction has decreased significantly. The City's groundwater production over the last five years is provided in Table 14.

Table 14. City of Tracy Historical Groundwater Production

	2010	2011	2012	2013	2014
Total Groundwater Production[(a)], af/yr	498	292	420	515	680

[(a)] Source: Table 11 Current and Historical Potable Water Supply, City of Tracy 2010 UWMP, May 2011 and 2011, 2012, 2013 and 2014 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 safe 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.

The City will continue to rely on groundwater for peaking, drought, and emergency supplies, and may pump up to 9,000 af/yr on a continuous basis, as needed, to meet demands when surface water supplies may be limited. Furthermore, per a 2015 evaluation by GEI Consultants, based upon current groundwater basin conditions, the City would be able to meet its water demands using only groundwater supplies in any single year without causing long-term impacts to the groundwater

basin[14]. Additional drawdown would occur in the confined aquifer with additional pumping, but groundwater levels would recover. Groundwater levels, as measured in the City's wells, are currently high due to reduced pumpage in recent years. Increased pumping from the confined aquifer for a one-year period is not expected to have a significant effect on water quality. Also, the effects of increased pumping from the confined aquifer are not expected to have any significant effect on the shallow unconfined aquifer. A copy of GEI's August 2015 evaluation is included in Appendix C.

The City's existing groundwater wells currently have the capability of pumping 16,000 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 on a continuous basis. 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.

[14] The August 2015 evaluation by GEI Consultants evaluated the effects of pumping 16,000 af/yr and 22,000 af/yr of groundwater in the event that the City needed to rely solely on groundwater as its source of water supply. If water supply conditions were such that no surface water supplies were available, the City would implement the most severe stage (Stage V) of its Water Shortage Contingency Plan with a corresponding reduction in water demand of 50 percent (prohibiting all water use except as required for public health and safety). Under these severe conditions, groundwater pumpage of 22,000 af/yr would be adequate to meet the City's projected 2035 water demands with demand reductions of 50 percent in accordance with Stage V of the City's Water Shortage Contingency Plan (33,600 af/yr – 50% demand reduction = 16,800 af/yr).

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 on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

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[15]. 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 on a continuous basis, the City's use of groundwater under normal hydrologic conditions 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 2,500 af/yr. This anticipated future groundwater pumpage is significantly below the City's maximum historical groundwater pumpage (see Figure 6) and the average annual operational yield of 9,000 af/yr.

[15] 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).

As noted above in Section 6.1.3.9, in the event of a water supply emergency where surface water supplies may be limited or unavailable, based upon current groundwater basin conditions, the City would be able to meet its water demands (assumed to be reduced as a result of implementation of the City's Water Shortage Contingency Plan) using only groundwater supplies in any single year without causing any long-term impacts to the groundwater basin.

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[16] (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[17]. 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

[16] The 2003 "Agreement between the Department of Water Resources of the State of California and the Byron Bethany Irrigation District regarding the Diversion of Water from the Delta" states that BBID may divert water during any month of the year for agricultural, municipal and industrial purposes (see page 7, paragraph 9). Furthermore, the April 2014 "Long Term Contract Between the United States and the Byron Bethany Irrigation District Providing for the Exchange of Non-Project Water for Project Water" provides for exchanged water to be "conveyed, stored and later made available to the Contractor during the then-current year" (see page 5 paragraph 3(g). Both of these agreements are included in Appendix A of this WSA.

[17] "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).

is also within the CVP CPOU[18]. Therefore, the maximum pre-1914 BBID supply to be delivered to the Proposed Project at buildout is 2,430 af/yr (see Table 4).

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. A Final Environmental Assessment and FONSI were prepared by USBR in accordance with NEPA in December 2013 (FONSI-09-149). The FONSI concluded that there would be no significant impacts to agriculture from the delivery of the BBID water to the Proposed Project. Copies of the Exchange Agreement between BBID and the USBR, the Wholesale Water Agreement between BBID and the City and the FONSI are provided in Appendix A.

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 2016.

In June 2015, the SWRCB sent BBID a "notice" ordering BBID to "immediately stop diverting" pursuant to its pre-1914 water rights and requiring that BBID complete an on-line "Curtailment Certification Form" certifying that BBID has ceased all diversions under its pre-1914 water right. Several other districts filed suit challenging similar so-called 'curtailment orders' (Districts' Litigation). Later in June, BBID filed suit in Sacramento Superior Court challenging the curtailment order directed to it on multiple grounds including asserted jurisdictional, due process, and water right violations. In early July 2015, the Court issued a temporary restraining order in the Districts' Litigation concluding that the curtailment orders did not comply with due process requirements. The SWRCB rescinded in part the curtailment orders, including the order directed to BBID. In mid-July 2015, the SWRCB initiated administrative proceedings against BBID to levy fines. BBID contests the administrative proceedings, asserting that there is sufficient water to divert under its senior water rights. The matter is pending in litigation.

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

[18] 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.

"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[19]:

- 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
- Stored Water Recovery Unit (650,000 acre-feet)[20]
  - 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

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

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

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.

The City's current balance of stored supplies in Semitropic is 6,100 acre-feet[21]; 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.

6.1.6 Aquifer Storage and Recovery

The City's ASR Program allows 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 installed two monitoring wells for use in the demonstration project monitoring and testing for the proposed ASR Program.

[21] 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 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[22]. 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 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. Potable water supplies are planned to be injected during the winter months when overall water demands are low and extracted as needed in the summer months when overall water demands are higher. Annual net injection/extractions from Well 8 in 2013 and 2014 are shown below:

- 2013: 415 af injected (net)
- 2014: 221 af extracted (net)

Continued 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. Based on supplies injected in the spring of 2014, up to 300 af/yr of ASR supply is available for extraction in 2015.

6.2 Additional Planned Future Potable Water Supplies

In addition to the City's existing potable water supplies described above, the City has a number of additional planned future potable water supplies to meet the City's existing and projected future water demands, including those associated with the Proposed Project. The inclusion of planned future supplies in this WSA is specifically allowed by the Water Code:

> *Water Code section 10631(b): Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

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

- BBID CVP supplies; and
- Additional SCWSP supplies.

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

These additional planned future water supplies are 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 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 2020 (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.

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[23]. Semitropic has permitted and is ready for construction of a second phase of the groundwater banking program and is currently looking for additional banking partners to share the benefits of the Stored Water Recovery Unit[24].

[23] 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.

[24] Semitropic Water Storage District website (www.semitropic.com), July 2015.

The agreements associated with the BBID CVP supplies and the Semitropic dry year supplies have precedent, as the City and BBID, and the City and Semitropic, have previously successfully negotiated water supply agreements that are currently in place (see *Section 6.1 Existing Potable Water Supplies*). The City will continue to work with BBID and Semitropic to secure these additional supplies.

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, including 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 by 2020.

The agreement associated with the additional SCWSP supplies has precedent, as the City and SSJID have previously successfully negotiated water supply agreements that are currently in place (see Section 6.1.2 Stanislaus River Water). The City will continue to work with SSJID to secure these additional supplies.

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)[25], the City's Holly Sugar property has historically (since at least 1912) been irrigated using untreated surface water diverted from Sugar Cut[26]. 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)[27]. 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 Park (Legacy Fields) would be for the interim only, until recycled water supplies become available.

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

[26] Sugar Cut is one of the Sacramento-San Joaquin Delta Waterways located just north of the City of Tracy.

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

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 2012, the Citywide Water System Master Plan and Tracy Wastewater Master Plan were completed. Both plans included recommended capital improvement projects for the development of the City's recycled water system, including facilities to deliver recycled water to the Proposed Project. To date, the City has spent approximately $85 million on improvements to the City's Wastewater Treatment Plant to allow for the plant to produce tertiary-treated wastewater meeting Title 22 requirements for recycled water use for landscape irrigation and other non-potable uses. In December 2013, the City adopted Development Impact Fees to fund recycled water infrastructure improvements. In 2015, the City applied for Proposition 84 grant funding from DWR to fund construction of recycled water distribution facilities.

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[28]. 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[29]. 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

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

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

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 infrastructure may not be initially available to deliver recycled water to meet the landscape irrigation demands associated with 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 should be noted that if a golf course is to be developed in the future as part of the Proposed Project as part of the recreation open space, it will not be developed until such a time that recycled water is available for irrigation of the golf course. Irrigation demands at the golf course will not be supplied with potable water.

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[30]. 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.

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 safe 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)[31]. 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[32].
- 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[33].
- Boron concentrations in the semi-confined aquifer range from 0.7 to 6.3 mg/L[34]. The lowest concentrations follow a similar pattern as the TDS, with low concentrations near the Coastal Range foothills (to the south).

[30] 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.

[31] 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.

[32] 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.

[33] 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.

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

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.

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
Aquifer Storage and Recovery[c]	3,000	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
Recycled Water[e]	23,600	No

(a) Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply

(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). Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

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)								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)						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
Aquifer Storage and Recovery[f]								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)[g]									1,500	4,500	5,500	5,500
Additional SCWSP Supplies (pre-1914)									1,880	1,880	1,880	1,880
Additional Semitropic Water Storage Bank[e]									0	0	0	0
Recycled Water (non-potable)[h]								12,400	14,900	17,500	19,900	22,500
Total Additional Planned Future Potable Supplies								**0**	**3,380**	**6,380**	**7,380**	**7,380**
Total Potable Supplies	**7,656**	**8,590**	**10,806**	**12,697**	**14,333**	**17,892**	**16,652**	**28,550**	**31,930**	**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 on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

(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) Reliability of this Ag Reliability supply in Normal Years is assumed to be 50% of entitlement,

(h) Table 15, City of Tracy 2010 Urban Water Management Plan, prepared by Erler & Kalinowski, Inc., May 2011. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

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.

Also, in response to on-going drought conditions and the State of Emergency proclaimed by Governor Brown, first in January 2014 and most recently in April 2015, this WSA provides a discussion of the availability and reliability of the City's available water supplies to meet the City's water demands in the event that the City's surface water supplies are limited under emergency water supply conditions.

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%
Aquifer Storage and Recovery[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%
Recycled Water[c]	100%	100%	100%

[a] Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

[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.

[c] Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

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 on a continuous basis. 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.
- 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)[35].
- 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.

[35] 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, 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.
- ASR and Semitropic 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 years is shown in Table 19. Figure 8 shows the City's projected future supply versus demand in normal years.

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
Aquifer Storage and Recovery[c]	--	0	0	0	0	0
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	50%	0	1,500	4,500	5,500	5,500
Additional SCWSP (pre-1914)	100%	0	1,880	1,880	1,880	1,880
Additional Semitropic Water Storage Bank[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		28,550	31,930	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] Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

[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. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

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

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.
- Pursuant to the Groundwater Management Policy, the City can extract up to 9,000 af/yr of local groundwater resources on a continuous basis. 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 operational 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)[36].

[36] 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 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.
- In 2015, 300 af/yr of banked water is 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[37].

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.

[37] 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
Aquifer Storage and Recovery	100%	300	1,000	2,000	3,000	3,000
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	15%	0	450	1,350	1,650	1,650
Additional SCWSP (pre-1914)	95%	0	1,786	1,786	1,786	1,786
Additional Semitropic Water Storage Bank	100%	0	0	500	500	500
Recycled Water (non-potable)[c]	100%	12,400	14,900	17,500	19,900	22,500
Total Projected Potable Water Supply		32,327	36,730	39,130	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] Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

[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. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

[d] Percent cutback from normal year for potable water supplies is zero due to availability of Semitropic and ASR 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 on a continuous basis. 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 operational 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)[38].
- 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.
- In 2015, 300 af/yr of banked water is 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[39].

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.

[38] 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.

[39] 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)	Projected Future Available Supply, af/yr				
	Multiple Dry Years	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
Aquifer Storage and Recovery	100%	300	1,000	2,000	3,000	3,000
Additional Planned Future Water Supplies						
USBR CVP (BBID contract)	10%	0	300	900	1,100	1,100
Additional SCWSP (pre-1914)	95%	0	1,786	1,786	1,786	1,786
Additional Semitropic Water Storage Bank	100%	0	0	500	500	500
Recycled Water (non-potable)[c]	100%	12,400	14,900	17,500	19,900	22,500
Total Projected Potable Water Supply		29,327	33,580	35,680	36,880	36,880
% 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] Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

[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. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

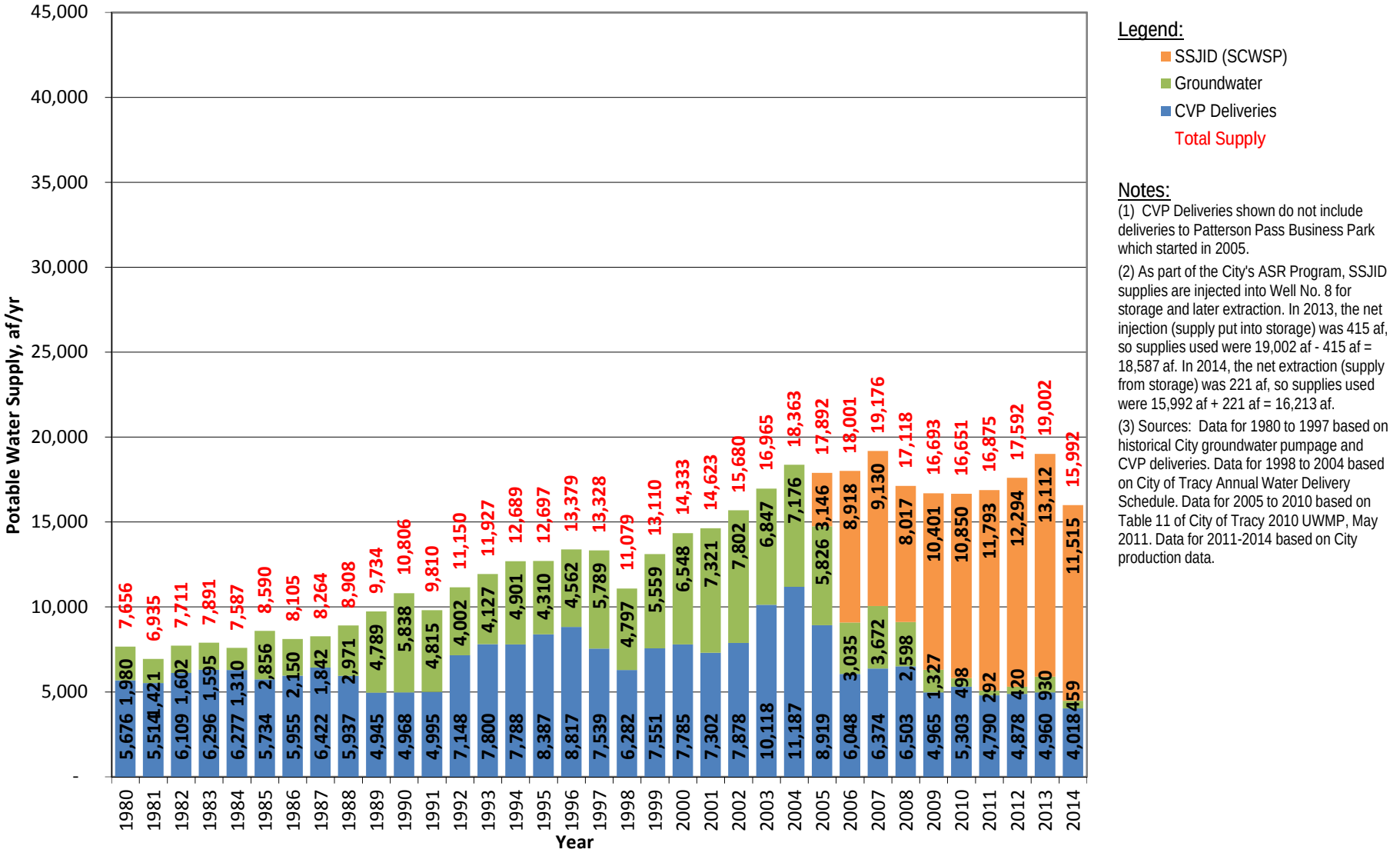
[d] Percent cutback from normal year for potable water supplies is zero due to availability of Semitropic and ASR in multiple dry years. No cutback is anticipated for recycled water supplies.

6.6.4 Emergency Water Supply Conditions

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 and even the availability of pre-1914 water rights has been challenged. 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 implemented their Water Shortage Contingency Plans, including 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 surface water supplies are reduced further, additional stages of the City's Water Shortage Contingency Plan will be enacted as needed. The City's Water Shortage Contingency Plan includes a five-stage plan describing specific actions to reduce water demand by up to 50 percent in the event of a water supply shortage or emergency. 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.

Furthermore, as described in Section 6.1.3.9, in the event of a water supply emergency where surface water supplies may be limited or unavailable, based upon current groundwater basin conditions, the City would be able to meet its water demands using only groundwater supplies in any single year without causing any long-term impacts to the groundwater basin. If water supply conditions were such that no surface water supplies were available, the City would implement the most severe stage (Stage V) of its Water Shortage Contingency Plan with a corresponding reduction in water demand of 50 percent (prohibiting all water use except as required for public health and safety). Under these severe conditions, groundwater pumpage of 22,000 af/yr would be adequate to meet the City's projected 2035 water demands with demand reductions of 50 percent in accordance with Stage V of the City's Water Shortage Contingency Plan (33,600 af/yr – 50% demand reduction = 16,800 af/yr).

Figure 6. City of Tracy Historical Potable Water Supplies

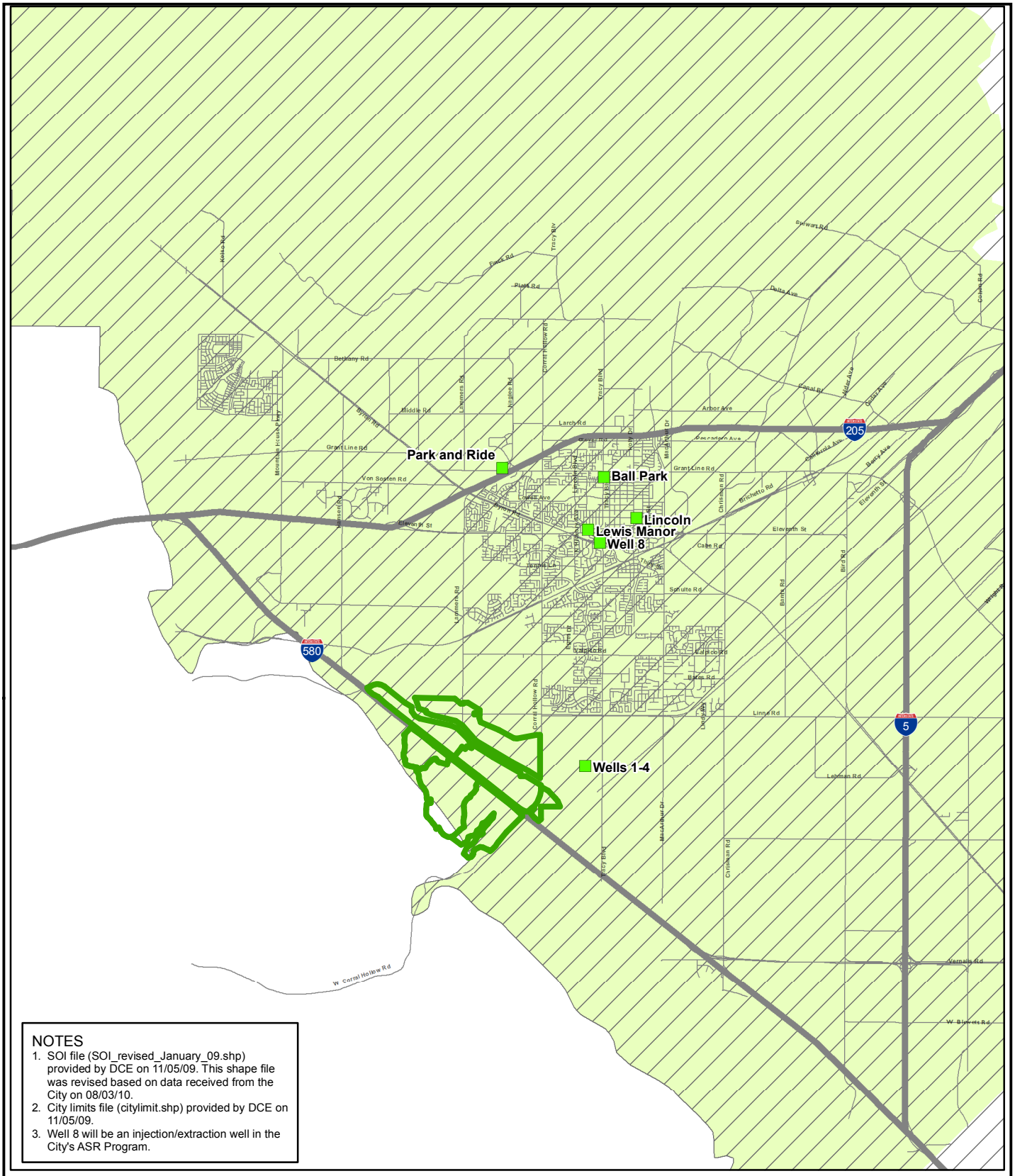


Notes:

(1) CVP Deliveries shown do not include deliveries to Patterson Pass Business Park which started in 2005.

(2) As part of the City's ASR Program, SSJID supplies are injected into Well No. 8 for storage and later extraction. In 2013, the net injection (supply put into storage) was 415 af, so supplies used were 19,002 af - 415 af = 18,587 af. In 2014, the net extraction (supply from storage) was 221 af, so supplies used were 15,992 af + 221 af = 16,213 af.

(3) 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 2011-2014 based on City production data.



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 Specific Plan
- Groundwater Well
- San Joaquin Valley Basin
- Tracy Sub-basin
- Highway

N

0 6,250 12,500
Scale in Feet

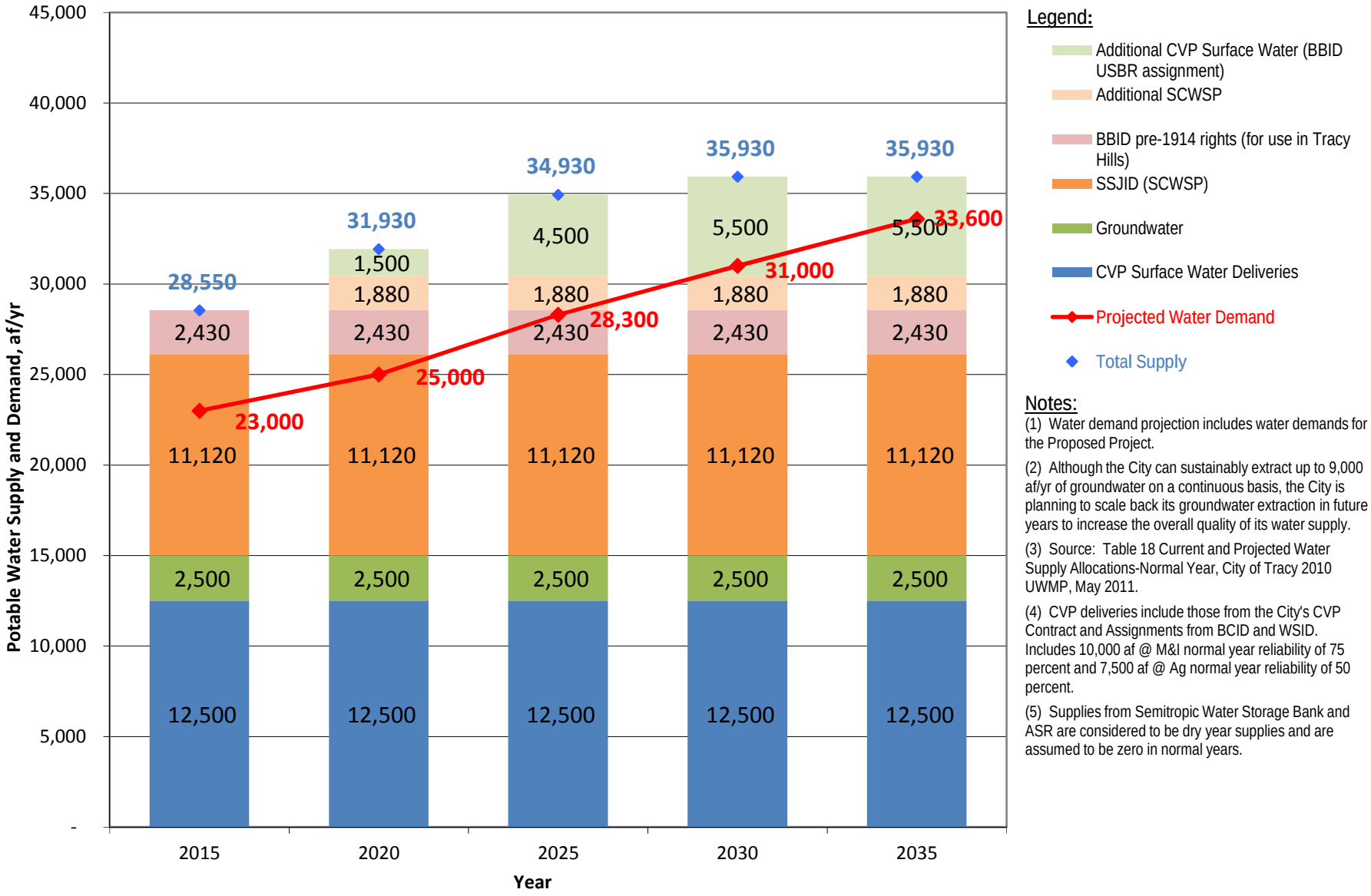
FIGURE 7

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

GROUNDWATER BASIN AND WELL LOCATIONS

WEST YOST ASSOCIATES
Consulting Engineers

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



Notes:

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

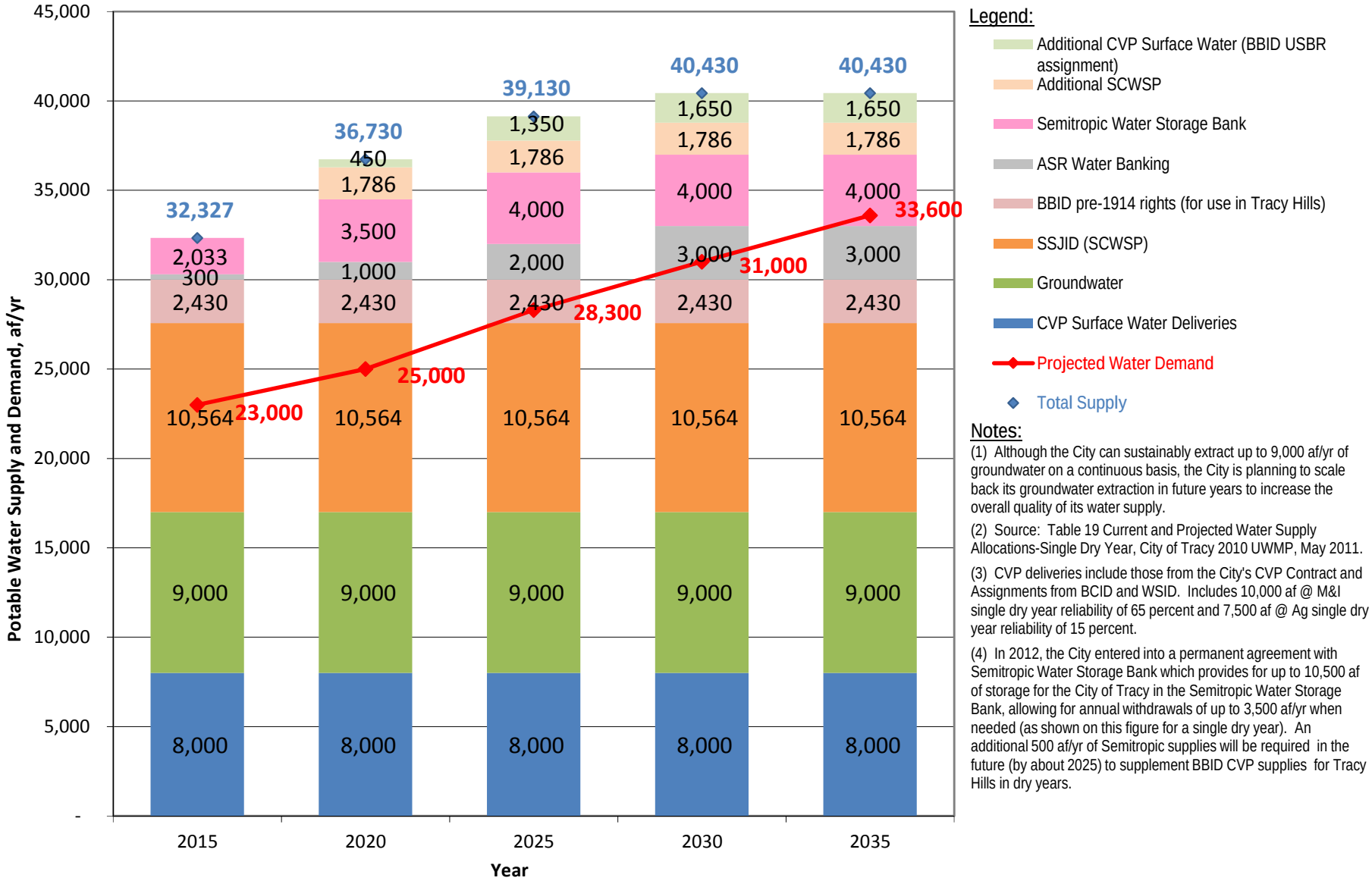
(2) Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

(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.

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



Notes:

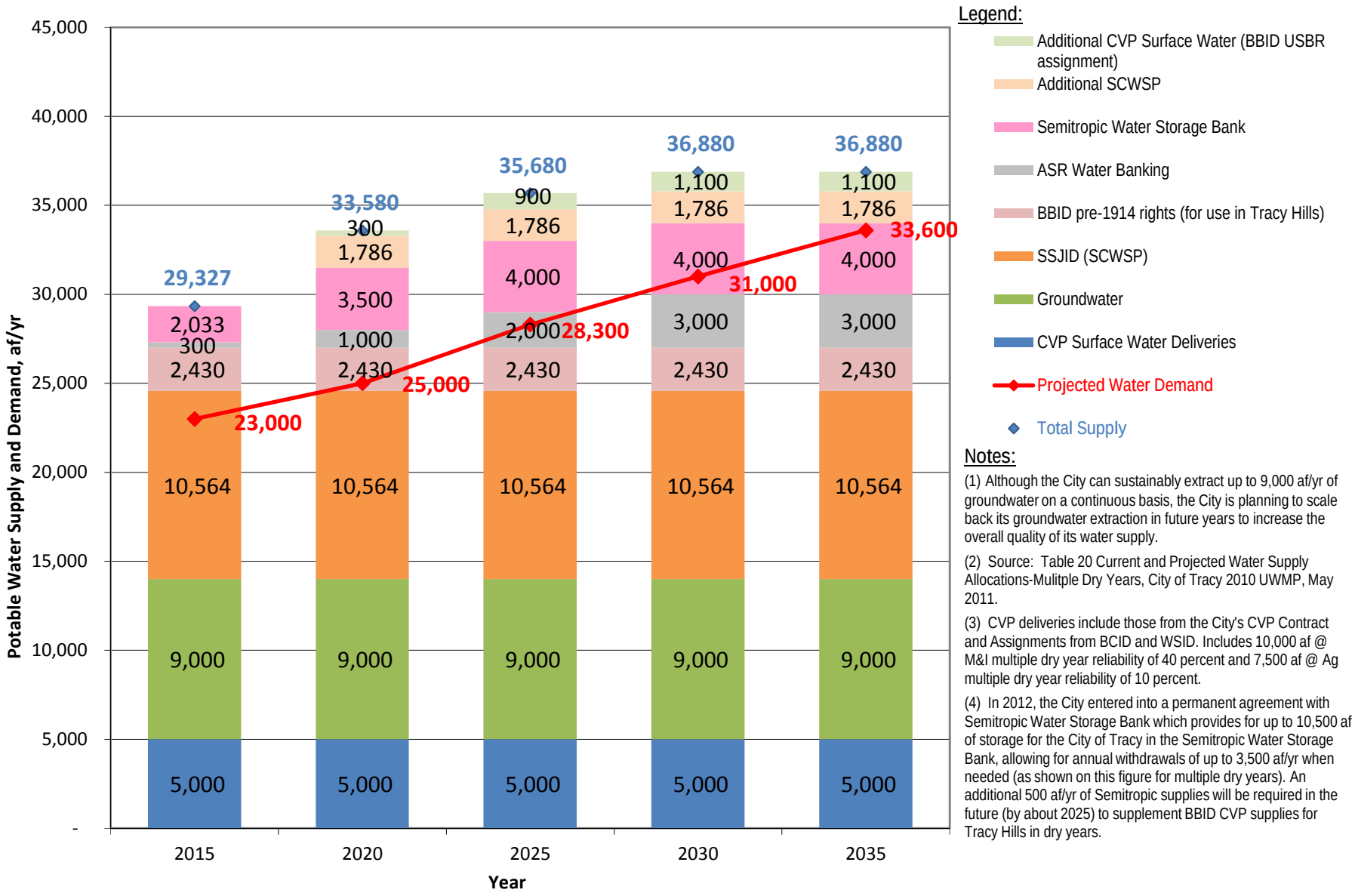
(1) Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

(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.

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



Legend:

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

Notes:

(1) Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

(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.

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 and planned future potable water supplies and 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
  - To serve portions of the Proposed Project located inside the BBID Raw Water Service Area 2 and inside the CVP CPOU (includes Phases 1a, 1b, portion of Phase 2 and Phase 3 north of the CVP CPOU boundary, Phase 4 and portion of Phase 5 south of Western Pacific Railroad and west of Lammers Road) (see Figure 2)
- 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)
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and inside the BBID CVP Service Area (includes portion of Phase 5 north of the California Aqueduct, not including the portion west of Lammers Road) (see Figure 2)

Table 22. Existing and Planned Future Water Supply vs. Projected Demand with Proposed Project (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
Aquifer Storage and Recovery[c]	--	300	300
Subtotal Existing Potable Water Supplies	*28,550*	*32,327*	*29,327*
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
Subtotal Additional Planned Future Potable Water Supplies	*4,930*	*3,201*	*2,896*
Total Potable Water Supply	**33,480**	**35,228**	**32,223**
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) Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

(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. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system. 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.

- 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
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and inside the BBID CVP Service Area (includes portion of Phase 5 north of the California Aqueduct, not including the portion west of Lammers Road) (see Figure 2)
- Groundwater:
  - 670 af/yr
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and outside the BBID CVP Service Area (includes portion of Phase 5 south of the California Aqueduct and portion of Phase 5 north of Western Pacific Railroad and west of Lammers Road) (see Figure 2)
- Recycled Water:
  - 1,970 af/yr
  - To serve all portions of the Proposed Project for landscape irrigation purposes when recycled water becomes available

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.
- In Single Dry Years, the City's 32,327 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 6,058 af/yr after meeting the projected total demand of 29,470 af/yr.
- In Multiple Dry Years, the City's 29,327 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 2,753 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 infrastructure may not be initially available to deliver recycled water 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 potable water supplies and the City's projected water demands in normal, single dry and multiple dry years based on projected water demands in 2035 (see also Figure 12). As shown, the City's existing and planned future potable water supplies are sufficient to meet projected 2035 water demand.

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.

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 infrastructure may not be initially available to deliver recycled water 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.

Furthermore, as described in Section 6.1.3.9, in the event of a water supply emergency where surface water supplies may be limited or unavailable, based upon current groundwater basin conditions, the City would be able to meet its water demands (assumed to be reduced as a result of implementation of the City's Water Shortage Contingency Plan) using only groundwater supplies in any single year without causing any long-term impacts to the groundwater basin.

Table 23. Existing and Planned Future 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
Aquifer Storage and Recovery[c]	--	3,000	3,000
Subtotal Existing Potable Water Supplies	*28,550*	*36,494*	*33,494*
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
Subtotal Additional Planned Future Potable Water Supplies	*7,380*	*3,936*	*3,386*
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] Although the City can sustainably extract up to 9,000 af/yr of groundwater on a continuous basis, the City is planning to scale back its groundwater extraction in future years to increase the overall quality of its water supply.

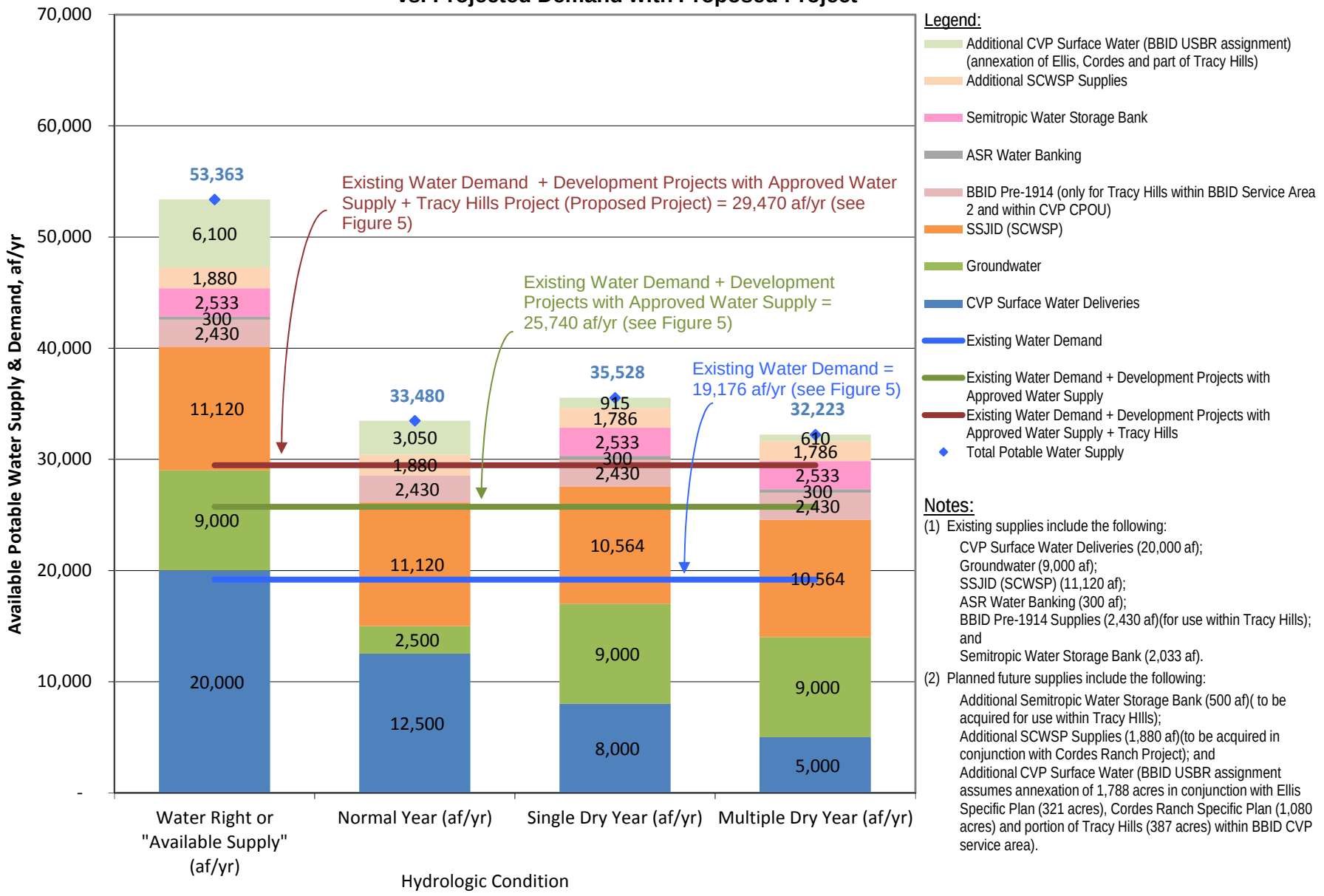
[b] The water supply available from BBID (pre-1914) is up to 4,500 af/yr; however, this supply can only be used with the BBID Raw Water Service Area 2 that is also within the CVP Consolidated Place of Use. Quantity shown is amount needed to meet potable water demands within the Proposed Project area 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. Although recycled water supplies are currently available from the City's WWTP, required recycled water pipelines and pump stations to convey and deliver the recycled water to the recycled water use areas has not yet been constructed. See Section 6.4.1 of this Revised WSA for additional information regarding the City's plan for implementation of its recycled water system.

Figure 11. City of Tracy Existing and Planned Future Potable Water Supplies vs. Projected Demand with Proposed Project

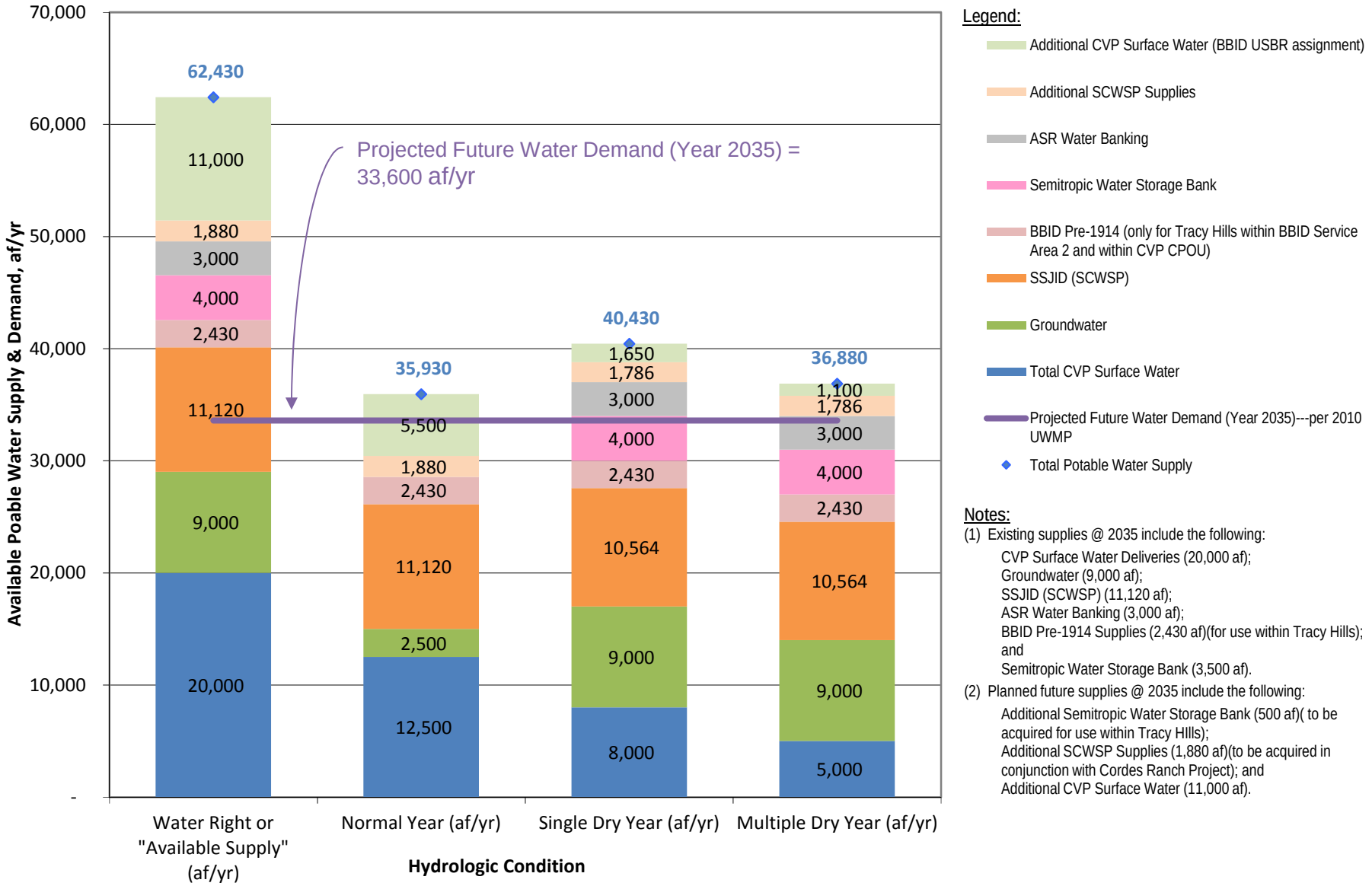


Notes:

(1) Existing supplies include the following:
CVP Surface Water Deliveries (20,000 af);
Groundwater (9,000 af);
SSJID (SCWSP) (11,120 af);
ASR Water Banking (300 af);
BBID Pre-1914 Supplies (2,430 af)(for use within Tracy Hills); and
Semitropic Water Storage Bank (2,033 af).

(2) Planned future supplies include the following:
Additional Semitropic Water Storage Bank (500 af)(to be acquired for use within Tracy HIlls);
Additional SCWSP Supplies (1,880 af)(to be acquired in conjunction with Cordes Ranch Project); and
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).

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



Notes:

(1) Existing supplies @ 2035 include the following:
CVP Surface Water Deliveries (20,000 af);
Groundwater (9,000 af);
SSJID (SCWSP) (11,120 af);
ASR Water Banking (3,000 af);
BBID Pre-1914 Supplies (2,430 af)(for use within Tracy Hills); and
Semitropic Water Storage Bank (3,500 af).

(2) Planned future supplies @ 2035 include the following:
Additional Semitropic Water Storage Bank (500 af)(to be acquired for use within Tracy HIlls);
Additional SCWSP Supplies (1,880 af)(to be acquired in conjunction with Cordes Ranch Project); and
Additional CVP Surface Water (11,000 af).

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. The City will continue to rely on groundwater for peaking, drought, and emergency supplies, and may pump up to 9,000 af/yr on a continuous basis, 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 Residential	9,468	13,600	13,500	14,800	15,400	16,000
Single Family Residential (Low Income)	936	347	693	1,040	1,390	1,730
Multi-Family Residential	--	1,450	1,580	1,710	1,840	1,970
Multi-Family Residential (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 Total[a]	17,900	23,000	25,000	28,300	31,000	33,600
Recycled Water, af/yr						
Recycled Water Total[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.

As described previously, in May 2015 the City's customers reduced water demands by 30 percent as compared to May 2013 water use, and in June 2015 the City's customers reduced water demands by 33 percent as compared to June 2013 water use. This has been in response to the Governor's April 2015 Executive Order B-29-15 mandating 25 percent water conservation statewide. To reduce water use by 25 percent statewide, the SWRCB adopted a regulation which placed each urban water supplier into one of eight tiers which are assigned a conservation standard, ranging between 4 percent and 36 percent. Each month, the SWRCB will compare every urban water suppliers' water use with their use for the same month in 2013 to determine if they are on track for meeting their conservation standard. The City of Tracy was placed into Tier 7 with a water conservation standard of 28 percent as compared to 2013 use. In June 2015, City Council authorized the implementation and amendment of the City's Phase III and IV water restrictions (as defined in Chapter 11.28 of the Tracy Municipal Code) in order to meet SWRCB emergency drought regulations.

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
  - To serve portions of the Proposed Project located inside the BBID Raw Water Service Area 2 and inside the CVP CPOU (includes Phases 1a, 1b, portion of Phase 2 and Phase 3 north of the CVP CPOU boundary, Phase 4 and portion of Phase 5 south of Western Pacific Railroad and west of Lammers Road) (see Figure 2)
- 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)
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and inside the BBID CVP Service Area (includes portion of Phase 5 north of the California Aqueduct, not including the portion west of Lammers Road) (see Figure 2)
- 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
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and inside the BBID CVP Service Area (includes portion of Phase 5 north of the California Aqueduct, not including the portion west of Lammers Road) (see Figure 2)

- Groundwater:
  - 670 af/yr
  - To serve portions of the Proposed Project located outside the BBID Raw Water Service Area 2 and outside the BBID CVP Service Area (includes portion of Phase 5 south of the California Aqueduct and portion of Phase 5 north of Western Pacific Railroad and west of Lammers Road) (see Figure 2)
- Recycled Water:
  - 1,970 af/yr
  - To serve all portions of the Proposed Project for landscape irrigation purposes when recycled water becomes available

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. There are no reasonably foreseeable impacts of the Proposed Project on the availability of water supplies for 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 at buildout 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.

These additional water supply agreements would need to be place before development of Phase 5 of the Proposed Project commences (see further discussion in Section 2.4).

Recycled water infrastructure will also need to be constructed to deliver recycled water supplies to the Proposed Project. In 2012, the Citywide Water System Master Plan and Tracy Wastewater Master Plan were completed. Both plans included recommended capital improvement projects for the development of the City's recycled water system, including facilities to deliver recycled water to the Proposed Project. To date, the City has spent approximately $85 million on improvements to the City's Wastewater Treatment Plant to allow for the plant to produce tertiary-treated wastewater meeting Title 22 requirements for recycled water use for landscape irrigation and other non-potable uses. In December 2013, the City adopted Development Impact Fees to fund recycled water infrastructure improvements. In 2015, the City applied for Proposition 84 grant funding from DWR to fund construction of recycled water distribution facilities.

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.

Furthermore, as described in Section 6.1.3.9, in the event of a water supply emergency where surface water supplies may be limited or unavailable, based upon current groundwater basin conditions, the City would be able to meet its water demands (assumed to be reduced as a result of implementation of the City's Water Shortage Contingency Plan) using only groundwater supplies in any single year without causing any long-term impacts to the groundwater basin.

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

10.0 REFERENCES

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APPENDIX A

Existing City of Tracy Water Supply Agreements

- Interim Renewal Contract No. 14-06-2000-7858A-IR1 between the United States and the City of Tracy Providing Project Water Service-Central Valley Project (December 2013)
- Agreement for Additional Assignment of Entitlement of CVP Water between the City of Tracy and the West Side Irrigation District (December 2013)
- Agreement Between City of Tracy and Plain View Water District (PVWD) for Central Valley Project (CVP) Supplies for Patterson Pass Business Park (September 1991)
- Agreement Between City of Tracy and South San Joaquin Irrigation District (SSJID) for Water Supply (October 1995)
- SSJID Lathrop-Tracy Purchase, Sale and Amendment Agreement (August 2013)
- Agreement Between City of Tracy and Semitropic Water Storage District and Its Improvement Districts for Participation in the Stored Water Recovery Unit of the Semitropic Water Banking and Exchange Program (November 2012)
- Wholesale Water Agreement between Byron Bethany Irrigation District and the City of Tracy for Water Supply for Tracy Hills (August 2013) (includes Agreement Between the Department of Water Resources of the State of California and the Byron-Bethany Irrigation District regarding the Diversion of Water from the Delta (May 2003) and the Long-term Contract between the United States and the Byron Bethany Irrigation District Providing for the Exchange of Non-Project Water for Project Water (April 2014))

Interim Renewal Contract No. 14-06-2000-7858A-IR1
Between the United States and the City of Tracy
Providing Project Water Service-Central Valley Project
(December 2013

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

DEC 31 2013

MP-440
WTR-4.00

Mr. Brent Ives
Mayor
City of Tracy
333 Civic Center Plaza
Tracy, CA 95378

Subject: Interim Renewal Contract No. 14-06-200-7858A-IR1 Between the United States and the City of Tracy Providing for Project Water Service – Central Valley Project, California

Dear Mr. Ives:

Enclosed is an executed original of the subject contract for your records. This contract is effective January 1, 2014, through and including February 29, 2016. The Bureau of Reclamation thanks the City of Tracy for the time and efforts expended in completing the steps necessary to execute this contract in a timely manner.

If you have any questions, please contact Ms. Barbara Hidleburg, Repayment Specialist, at 916-978-5193, or e-mail bhidleburg@usbr.gov.

Sincerely,

ACTING FOR PABLO ARROYAVE

David G. Murillo
Regional Director

Enclosure

bc: Assistant Solicitor, Water and Power Branch, Washington, DC
Director, Office of Policy and Adminstration, Denver, CO
Attention: 84-55000 (MKelly)
Regional Solicitor, Pacific Southwest Region, Sacramento, CA
Attention: 1150 (AAufdemberge)
MP-440, MP-3400, SCC-440 (EJones)
(w/copy of encl sent via e-mail to each)
MP-3600 (w/original contract)

WBR:BHidleburg:KHall:12/31/2013:916-978-5193
T:\PUB440\CONTRACTS\Water Service Contracts\Interim Renewal Contracts\Delta-Mendota Canal\2014\Letters\Executed Contract Letters\Executed contract trans Tracy7858A-IR12014 Dec31.doc
Surname: MP-440(2), MP-400, SOL-1150(AA), MP-103, MP110, MP-115, MP-105, MP-100

M&I Only
Contract No.14-06-200-7858A-IR1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

INTERIM RENEWAL CONTRACT BETWEEN THE UNITED STATES AND THE CITY OF TRACY PROVIDING FOR PROJECT WATER SERVICE FROM THE DELTA DIVISION

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Exhibit A – Map of Contractor's Service Area
Exhibit B – Rates and Charges

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

INTERIM RENEWAL CONTRACT BETWEEN THE UNITED STATES
AND
THE CITY OF TRACY
PROVIDING FOR PROJECT WATER SERVICE
FROM THE DELTA DIVISION

THIS CONTRACT, made this 31st day of December, 2013, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or supplementary thereto, including, but not limited to, the Acts of August 26, 1937 (50 Stat. 844), as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented, June 21, 1963 (77 Stat. 68), October 12, 1982 (96 Stat. 1263), October 27, 1986 (100 Stat. 3050), as amended, and Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706), all collectively hereinafter referred to as Federal Reclamation law, between the UNITED STATES OF AMERICA, hereinafter referred to as the United States, and the CITY OF TRACY, hereinafter referred to as the Contractor, a public agency of the State of California, duly organized, existing, and acting pursuant to the laws thereof, with its principal place of business in California;

WITNESSETH, That:

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project, California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other

beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the United States constructed the Delta-Mendota Canal and related facilities, hereinafter collectively referred to as the Delta Division Facilities, which will be used in part for the furnishing of water to the Contractor pursuant to the terms of this interim renewal contract; and

[3rd] WHEREAS, the rights to Project Water were acquired by the United States pursuant to California law for operation of the Project; and

[4th] WHEREAS, the Contractor and the United States entered into Contract No. 14-06-200-7858A dated July 22, 1974, which established the terms for the delivery to the Contractor of up to 10,000 acre-feet of Project Water from the Delta Mendota Canal through December 31, 2013; and

[5th] WHEREAS, the United States and the Contractor have, pursuant to subsection 3404(c)(3) of CVPIA, subsequently entered into a binding agreement identified as Binding Agreement No. 14-06-200-7858A-BA dated September 30, 1997, which sets out the terms pursuant to which the Contractor agreed to renew Contract No. 14-06-200-7858A before its expiration date after completion of a programmatic environmental impact statement and other appropriate environmental documentation and negotiation of a renewal contract, and which also sets out the consequences of a decision not to renew; and

[6th] WHEREAS, pursuant to a June 5, 2001 "Agreement for Assignment of Entitlement to CVP Water Between the City of Tracy and the Banta-Carbona Irrigation District," as amended on September 11, 2002, the Contractor was assigned 5,000 acre-feet of Banta-Carbona Irrigation District's entitlement to Project Water under Contract

No. 14-06-200-4305A-IR7, which assignment is reflected in the increased Contract Total under subdivision (a) of Article 3 of this Contract; and

[7th] WHEREAS, pursuant to an August 21, 2001 "Agreement for Assignment of Entitlement to CVP Water Between the City of Tracy and The West Side Irrigation District," as amended on September 11, 2002, the Contractor was assigned 2,500 acre-feet of The West Side Irrigation District's entitlement to Project Water under Contract No. 7-07-20-W0045-IR7, which assignment is reflected in the increased Contract Total under subdivision (a) of Article 3 of this Contract; and

[7.1] WHEREAS, pursuant to that same August 21, 2001 "Agreement for Assignment of Entitlement to CVP Water Between the City of Tracy and The West Side Irrigation District," as amended on September 11, 2002, the Contractor obtained an option to purchase an additional 2,500 acre-feet of The West Side Irrigation District's entitlement to Project Water under Contract No. 7-07-20-W0045-IR7 (hereinafter "Unexercised Option") and the Contractor expects to exercise that option during the term of this Contract; and

[8th] WHEREAS, the Contractor and the United States entered into two separate interim renewal contracts, Contract No. 14-06-200-4305A-IR13-B and Contract No. 7-07-20-W0045-IR13-B, which in the aggregate, established the terms for the delivery to the Contractor of up to 7,500 acre-feet of Project Water from the Delta-Mendota Canal through February 28, 2014; and

[9th] WHEREAS, Contract No. 14-06-200-7858A dated July 22, 1974, Contract No. 07-20-W0045-IR13-B dated February 29, 2012, and Contract No. 14-06-200-4305A-IR13-B dated February 29, 2012, in the aggregate, constitute and are hereinafter referred to as the "Existing Contract"; and

[10th] WHEREAS, the Contractor has requested renewal of the Existing Contract, pursuant to Subsection 3404(c)(1) of the CVPIA, which will provide for the continued delivery of up to 17,500 acre-feet of Project Water from the Delta Mendota Canal of the Central Valley Project; and

[11th] WHEREAS, Section 3404(c) of the CVPIA, precludes long-term renewal of water service contracts (including Contract No. 14-06-200-7858A dated July 22, 1974) until the completion of appropriate environmental documentation, including a programmatic environmental impact statement (hereinafter "PEIS") which is required by Section 3409 of the CVPIA, pursuant to the National Environmental Policy Act (NEPA) analyzing the direct and indirect impacts and benefits of implementing the CVPIA and the potential renewal of all existing contracts for Project Water; and

[12th] WHEREAS, in order to continue water service provided under Project water service contracts that expire prior to the completion of appropriate environmental documentation, including the PEIS, the United States intends to execute interim renewal contracts for a period not to exceed three Years in length, and for successive interim periods of not more than two Years in length, until appropriate environmental documentation, including the PEIS, is finally completed, at which time the Secretary shall, pursuant to Federal Reclamation law, upon request of the Contractor, enter into a long-term renewal contract for a period of 40 Years; and may thereafter renew such long-term renewal contracts for successive periods not to exceed 40 Years each; and

[13th] WHEREAS, the United States has completed the PEIS, but since the environmental documentation necessary to execute a long-term renewal contract has not been

completed, the Contractor has requested an interim renewal contract pursuant to Section 3404(c)(1) of the CVPIA; and

[14th] WHEREAS, the United States has determined that the Contractor has fulfilled all of its obligations under the Existing Contract; and

[15th] WHEREAS, the Contractor has demonstrated to the satisfaction of the Contracting Officer that the Contractor has utilized the Project Water supplies available to it for reasonable and beneficial use and expects to utilize fully for reasonable and beneficial use the quantity of Project Water to be made available to it pursuant to this interim renewal contract; and

[16th] WHEREAS, water obtained from the Central Valley Project has been relied upon by urban areas within California for more than 39 years, and is considered by the Contractor as an essential portion of its water supply; and

[17th] WHEREAS, the economies of regions within the Central Valley Project, including the Contractor's, depend upon the continued availability of water, including water service from the Central Valley Project; and

[18th] WHEREAS, the Secretary intends through coordination, cooperation, and partnerships to pursue measures to improve water supply, water quality, and reliability of the Project for all Project purposes; and

[19th] WHEREAS, the mutual goals of the United States and the Contractor include: to provide for reliable Central Valley Project Water supplies; to control costs of those supplies; to achieve repayment of the Central Valley Project as required by law; to guard reasonably against Central Valley Project Water shortages; to achieve a reasonable balance among competing demands for use of Central Valley Project Water; and to comply with all applicable

environmental statutes, all consistent with the legal obligations of the United States relative to the Central Valley Project; and

[19.1] WHEREAS, the parties intend by this Contract to develop a more cooperative relationship in order to achieve their mutual goals; and

[20th] WHEREAS, the Contractor has utilized or may utilize transfers, contract assignments, rescheduling and conveyance of Project Water and non-Project water under this Contract as tools to minimize the impacts of Conditions of Shortage and to maximize the beneficial uses of water; and

[20.1] WHEREAS, the parties desire and intend that this Contract not provide a disincentive to the Contractor in continuing to carry out the beneficial activities set out in the Explanatory Recital immediately above; and

[20.2] WHEREAS, the Secretary intends to assure uninterrupted water service and continuity of contract through the process set forth in Article 2 hereof; and

[21st] WHEREAS, the United States and the Contractor are willing to enter into this Contract pursuant to Federal Reclamation law on the terms and conditions set for below;

NOW, THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. When used herein unless otherwise distinctly expressed, or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

(a) "Assigned Water" shall mean all Project water supply acquired through assignment from the Banta Carbona Irrigation District, assignment agreement No. 14-06-200-4305A-B, dated February 27, 2004, and acquired through assignment from

The West Side Irrigation District, assignment agreement No. 7-07-20-W0045-B dated February 27, 2004. Prior to execution of this Contract, the Assigned Water has been delivered to the Contractor pursuant to the Existing Contract;

(b) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(c) "Charges" shall mean the payments required by Federal Reclamation law in addition to the Rates specified in this Contract as determined annually by the Contracting Officer pursuant to this Contract;

(d) "Condition of Shortage" shall mean a condition respecting the Project during any Year such that the Contracting Officer is unable to deliver sufficient water to meet the Contract Total;

(e) "Contracting Officer" shall mean the Secretary of the Interior's duly authorized representative acting pursuant to this Contract or applicable Federal Reclamation law or regulation;

(f) "Contract Total" shall mean the maximum amount of water to which the Contractor is entitled under subdivision (a) of Article 3 of this Contract;

(g) "Contractor's Service Area" shall mean the area to which the Contractor is permitted to provide Project Water under this Contract as described in Exhibit "A" attached hereto, which may be modified from time to time in accordance with Article 34 of this Contract without amendment of this Contract;

(h) "CVPIA" shall mean the Central Valley Project Improvement Act, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

(h.1) "Delta Division Facilities" shall mean those existing and future Project facilities in and south of the Sacramento-San Joaquin Rivers Delta, including, but not limited to, the Tracy Pumping Plant, the O'Neill Pumping/Generating Plant, and the San Luis Reservoir, used to divert, store and convey water to those Project Contractors entitled to receive water conveyed through the Delta-Mendota Canal;

(i-j) Omitted;

(k) "Full Cost Rate" shall mean an annual rate, as determined by the Contracting Officer that shall amortize the expenditures for construction properly allocable to the Project Irrigation or M&I functions, as appropriate, of facilities in service including all operation and maintenance deficits funded, less payments, over such periods as may be required under Federal Reclamation law, or applicable contract provisions. Interest will accrue on both the construction expenditures and funded Operations and Maintenance deficits from October 12, 1982, on costs outstanding at that date, or from the date incurred in the case of costs arising subsequent to October 12, 1982, and shall be calculated in accordance with subsections 202(3)(B) and (3)(C) of the Reclamation Reform Act. The Full-Cost Rate includes actual operation, maintenance, and replacement costs consistent with Section 426.2 of the Rules and Regulations for the RRA;

(l-m) Omitted;

(n) "Irrigation Water" shall mean water made available from the Project that is used primarily in the production of agricultural crops or livestock, including domestic use incidental thereto, and watering of livestock;

(o) Omitted;

(p) "Municipal and Industrial (M&I) Water" shall mean Project Water, other than Irrigation Water, made available to the Contractor. M&I Water shall include water used for human use and purposes such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to land holdings operated in units of less than five acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to any such landholding is a use described in subdivision (m) of this Article;

(q) "M&I Full Cost Water Rate" shall mean the Full Cost Rate applicable to the delivery of M&I Water;

(r) "Operation and Maintenance" or "O&M" shall mean normal and reasonable care, control, operation, repair, replacement (other than Capital replacement), and maintenance of Project facilities;

(s) "Operating Non-Federal Entity" shall mean the entity(ies), its (their) successors or assigns, which has (have) the obligation to operate and maintain all or a portion of the Delta Division Facilities pursuant to written agreement(s) with the United States. When this Contract was entered into, the Operating Non-Federal Entity was the San Luis Delta-Mendota Water Authority;

(t) "Project" shall mean the Central Valley Project owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(u) "Project Contractors" shall mean all parties who have water service contracts for Project Water from the Project with the United States pursuant to Federal Reclamation law;

(v) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Project and in accordance with the terms and conditions of water rights acquired pursuant to California law;

(w) "Rates" shall mean the payments determined annually by the Contracting Officer in accordance with the then-current applicable water ratesetting policies for the Project, as described in subdivision (a) of Article 7 of this Contract;

(x) "Recent Historic Average" shall mean the most recent five-year average of the final forecast of water made available to the Contractor pursuant to this Contract or its preceding contract(s);

(y) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior;

(z) "Water Delivered" or "Delivered Water" shall mean Project Water diverted for use by the Contractor at the point(s) of delivery approved by the Contracting Officer;

(aa) "Water Made Available" shall mean the estimated amount of Project Water that can be delivered to the Contractor for the upcoming year as declared by the Contracting Officer, pursuant to subdivision (a) of Article 4 of this Contract;

(bb) "Water Scheduled" shall mean Project Water Made Available to the Contractor for which times and quantities for delivery have been established by the Contractor and Contracting Officer, pursuant to subdivision (b) of Article 4 of this Contract; and

(cc) "Year" shall mean the period from and including March 1 of each Calendar Year through the last day of February of the following Calendar Year.

TERM OF CONTRACT

2. (a) This Contract shall renew the Existing Contract, and replace Contracts Nos. 14-06-200-4305A-IR13B and 7-07-20-W0045-IR13B and shall be effective January 1, 2014, through February 29, 2016, and thereafter will be renewed as described in this Article. Except as provided in subdivision (b) of this Article, until completion of all appropriate environmental review, and provided that the Contractor has complied with all the terms and conditions of the contract in effect for the period immediately preceding the requested successive interim renewal contract, this Contract will be renewed, upon request of the Contractor, for successive interim periods each of which shall be no more than two Years in length. Also, except as provided in subdivision (b) of this Article, in order to promote orderly and cost effect contract administration, the terms and conditions in subsequent interim renewal contracts shall be identical to the terms and conditions in the interim renewal contract immediately preceding the subsequent interim renewal: *Provided, however*, That each party preserves the right to propose modification(s) in any interim renewal contract other than those described in subdivision (b) of this Article, in which case the parties shall negotiate in good faith appropriate modification(s) to be included in any successive interim renewal contracts. Said modification(s) of each successive interim renewal contract shall be agreed upon within a reasonable time prior to expiration of the then-existing interim renewal contract. Nothing in this Article shall in any way alter the obligation that, upon final completion of necessary environmental documentation, the Secretary shall, pursuant to Federal Reclamation law, upon request of the Contractor, enter into a long-term renewal contract for a period of 40 Years and shall thereafter renew such long-term renewal contracts for successive periods not to exceed 40 Years each.

(b) The parties have engaged and if necessary will continue to engage in good faith negotiations intended to permit the execution of a 40 Year long-term renewal contract contemplated by Section 3404(c) of the CVPIA, hereinafter referred to as a "long-term renewal contract." The parties recognize the possibility that this schedule may not be met without further negotiations. Accordingly: in the event (i) the Contractor and the Contracting Officer have reached agreement on the terms of the Contractor's long-term renewal contract or (ii) the Contractor and Contracting Officer have not completed the negotiations on the Contractor's long-term renewal contract, believe that further negotiations on that contract would be beneficial, and mutually commit to continue to negotiate to seek to reach agreement, but (iii) all environmental documentation required to allow execution of the Contractor's long-term renewal contract have not been completed in time to allow execution by December 31, 2013, then (iv), the parties will expeditiously complete the environmental documentation required of each of them in order to execute the Contractor's long-term renewal contract at the earliest practicable date. In addition, the Contractor's then-current interim renewal contract will be renewed without change upon the request of either party through the agreed-upon effective date of the Contractor's long-term renewal contract, through or, in the absence of agreement on the terms of the Contractor's long-term renewal contract, through the next succeeding last day of February.

(c) The omission of language in this interim renewal contract providing for conversion of this interim renewal contract or any subsequent renewals thereof to a repayment contract, pursuant to subsection (c)(1) of Section 9 of the Reclamation Projects Act of 1939 (53 Stat. 1187), shall not prejudice the Contractor's right to assert a right to have such language included in subsequent renewals of this interim renewal contract or to exercise such conversion, all as provided by law, or to negotiate the language regarding such conversion to be included in subsequent renewal contracts.

WATER TO BE MADE AVAILABLE AND DELIVERED TO THE CONTRACTOR

3. (a) During each Year, consistent with all applicable State water rights, permits, and licenses, Federal law, and subject to the provisions set forth in Articles 11 and 12 of this Contract, the Contracting Officer shall make available for delivery to the Contractor up to 20,000 acre-feet of water for M&I purposes; *Provided*, That 2,500 acre-feet of this amount represents an "Unexercised Option" for which the Contractor must provide proof to the Contracting Officer that the option has been exercised prior to 2,500 acre-feet of Assigned Water being made available. Provided, however, during the two month period of January and February of year 2014, the Contracting Officer shall make available for delivery to the Contractor that portion of the 2013 allocation of Project Water unused by the Contractor under the Existing Contract. Water Delivered to the Contractor in accordance with this subdivision shall be scheduled and paid for pursuant to the provisions of Articles 4 and 7 of this Contract.

(b) Because the capacity of the Project to deliver Project Water has been constrained in recent years and may be constrained in the future due to many factors including hydrologic conditions and implementation of Federal and State laws, the likelihood of the Contractor actually receiving the amount of Project Water set out in subdivision (a) of this Article in any given Year is uncertain. The Contracting Officer's most recent modeling referenced in the PEIS projected that the Contract Total set forth in this Contract will not be available to the Contractor in many years. During the most recent five Years, the Recent Historic Average of Water Made Available to the Contractor was 8,107 acre-feet. Nothing in subdivision (b) of this Article shall affect the rights and obligations of the parties under any provision of this Contract.

(c) The Contractor shall utilize the Project Water in accordance with all applicable legal requirements.

(d) The Contractor shall make reasonable and beneficial use of all Project Water or other water furnished pursuant to this Contract. Groundwater recharge programs (direct, indirect, or in lieu), groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted within the Contractor's Service Area which are consistent with applicable State law and result in use consistent with Federal Reclamation law will be allowed; *Provided*, That any direct recharge program(s) is (are) described in the Contractor's water conservation plan submitted pursuant to Article 25 of this Contract; *Provided, further*, That such water conservation plan demonstrates sufficient lawful uses exist in the Contractor's Service Area so that using a long-term average, the quantity of Delivered Water is demonstrated to be reasonable for such uses and in compliance with Federal Reclamation law. Groundwater recharge programs, groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted outside the Contractor's Service Area may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, Project Water rights, and Project operational concerns. The Contracting Officer will address such concerns in regulations, policies, or guidelines.

(e) The Contractor shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973, as amended, which are within the Contractor's legal authority to implement. The Existing Contract,

which evidences in excess of 39 years of diversions for M&I purposes of the quantities of water provided in subdivision (a) of Article 3 of this Contract, will be considered in developing an appropriate baseline for the biological assessment prepared pursuant to the Endangered Species Act, and any other needed environmental review. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of competent jurisdiction with respect to any biological opinion or other environmental documentation referred to in this Article.

(f) Following the declaration of Water Made Available under Article 4 of this Contract, the Contracting Officer will make a determination whether Project Water, or other water available to the Project, can be made available to the Contractor in addition to the Contract Total under Article 3 of this Contract during the Year without adversely impacting other Project Contractors. At the request of the Contractor, the Contracting Officer will consult with the Contractor prior to making such a determination. If the Contracting Officer determines that Project Water, or other water available to the Project, can be made available to the Contractor, the Contracting Officer will announce the availability of such water and shall so notify the Contractor as soon as practical. The Contracting Officer will thereafter meet with the Contractor and other Project Contractors capable of taking such water to determine the most equitable and efficient allocation of such water. If the Contractor requests the delivery of any quantity of such water, the Contracting Officer shall make such water available to the Contractor in accordance with applicable statutes, regulations, guidelines, and policies.

(g) The Contractor may request permission to reschedule for use during the subsequent Year some or all of the Water Made Available to the Contractor during the current Year referred to as "rescheduled water." The Contractor may request permission to use during

the current Year, a quantity of Project Water which may be made available by the United States to the Contractor during the subsequent Year referred to as "preuse." The Contracting Officer's written approval may permit such uses in accordance with applicable statutes, regulations, guidelines, and policies.

(h) The Contractor's right pursuant to Federal Reclamation law and applicable State law to the reasonable and beneficial use of Water Delivered pursuant to this Contract during the term thereof and any subsequent renewal contracts, as described in Article 2 of this Contract, during the terms thereof shall not be disturbed so long as the Contractor shall fulfill all of its obligations under this Contract and any renewals thereof. Nothing in the preceding sentence shall affect the Contracting Officer's ability to impose shortages under Article 11 or subdivision (b) of Article 12 of this Contract or applicable provisions of any subsequent renewal contracts.

(i) Project Water furnished to the Contractor pursuant to this Contract may be delivered for purposes other than those described in subdivision (p) of Article 1 of this Contract upon written approval by the Contracting Officer in accordance with the terms and conditions of such approval.

(j) The Contracting Officer shall make reasonable efforts to protect the water rights necessary for the Project and to provide the water available under this Contract. The Contracting Officer shall not object to participation by the Contractor, in the capacity and to the extent permitted by law, in administrative proceedings related to the Project Water rights; *Provided*, That the Contracting Officer retains the right to object to the substance of the Contractor's position in such a proceeding; *Provided further*, That in such proceedings the

Contracting Officer shall recognize the Contractor has a legal right under the terms of this Contract to use Project Water.

TIME FOR DELIVERY OF WATER

4. (a) On or about February 20 of each Calendar Year, the Contracting Officer shall announce the Contracting Officer's expected declaration of the Water Made Available. Such declaration of Project operations will be expressed in terms of both Water Made Available and the Recent Historic Average and will be updated monthly, and more frequently if necessary, based on then-current operational and hydrologic conditions and a new declaration with changes, if any, to the Water Made Available will be made. The Contracting Officer shall provide forecasts of Project operations and the basis of the estimate, with relevant supporting information, upon the written request of the Contractor. Concurrently with the declaration of the Water Made Available, the Contracting Officer shall provide the Contractor with the updated Recent Historic Average.

(b) On or before each March 1 and at such other times as necessary, the Contractor shall submit to the Contracting Officer a written schedule, satisfactory to the Contracting Officer, showing the monthly quantities of Project Water to be delivered by the United States to the Contractor pursuant to this Contract for the Year commencing on such March 1. The Contracting Officer shall use all reasonable means to deliver Project Water according to the approved schedule for the Year commencing on such March 1.

(c) The Contractor shall not schedule Project Water in excess of the quantity of Project Water the Contractor intends to put to reasonable and beneficial use within the Contractor's Service Area or sell, transfer or exchange pursuant to Article 9 of this Contract during any Year.

(d) Subject to the conditions set forth in subdivision (a) of Article 3 of this Contract, the United States shall deliver Project Water to the Contractor in accordance with the initial schedule submitted by the Contractor pursuant to subdivision (b) of this Article, or any written revision(s), satisfactory to the Contracting Officer, thereto submitted within a reasonable time prior to the date(s) on which the requested change(s) is/are to be implemented.

POINT OF DIVERSION AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) Project Water scheduled pursuant to subdivision (b) of Article 4 of this Contract shall be delivered to the Contractor at a turnout from the Delta-Mendota Canal and at any additional point or points of delivery either on Project facilities or another location or locations mutually agreed to in writing by the Contracting Officer and the Contractor.

(b) The Contracting Officer, either directly or indirectly through its written agreement(s) with the Operating Non-Federal Entity(ies) shall make all reasonable efforts to maintain sufficient flows and levels of water in Project facilities to deliver Project Water to the Contractor at specific turnouts established pursuant to subdivision (a) of this Article.

(c) The Contractor shall not deliver Project Water to land outside the Contractor's Service Area unless approved in advance by the Contracting Officer.

(d) All Water Delivered to the Contractor pursuant to this Contract shall be measured and recorded with equipment furnished, installed, operated, and maintained by the United States, the Operating Non-Federal Entity or other appropriate entity at the point or points of delivery established pursuant to subdivision (a) of this Article. Upon the request of either party to this Contract, the Contracting Officer shall investigate, or cause to be investigated by the responsible Operating Non-Federal Entity, the accuracy of such measurements and shall take any necessary steps to adjust any errors appearing therein. For any period of time when accurate

measurements have not been made, the Contracting Officer shall consult with the Contractor and the responsible Operating Non-Federal Entity prior to making a final determination of the quantity delivered for that period of time.

(e) Absent a separate contrary written agreement with the Contractor, neither the Contracting Officer nor any Operating Non-Federal Entity(ies) shall be responsible for the control, carriage, handling, use, disposal, or distribution of Water Delivered to the Contractor pursuant to this Contract beyond the delivery points specified in subdivision (a) of this Article. The Contractor shall indemnify the United States, its officers, employees, agents, and assigns on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such Water Delivered beyond such delivery points, except for any damage or claim arising out of: (i) acts or omissions of the Contracting Officer or any of its officers, employees, agents, or assigns, including any responsible Operating Non-Federal Entity, with the intent of creating the situation resulting in any damage or claim; (ii) willful misconduct of the Contracting Officer or any of its officers, employees, agents, or assigns, including any responsible Operating Non-Federal Entity; (iii) negligence of the Contracting Officer or any of its officers, employees, agents, or assigns including any responsible Operating Non-Federal Entity; or (iv) damage or claims resulting from a malfunction of facilities owned and/or operated by the United States or responsible Operating Non-Federal Entity; *Provided*, That the Contractor is not the Operating Non-Federal Entity that owned or operated the malfunctioning facility(ies) from which the damage claim arose.

MEASUREMENT OF WATER WITHIN THE SERVICE AREA

6. (a) The Contractor has established a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water delivered for M&I purposes is measured at each M&I service connection. The water measuring devices or water measuring methods of comparable effectiveness must be acceptable to the Contracting Officer. The Contractor shall be responsible for installing, operating, and maintaining and repairing all such measuring devices and implementing all such water measuring methods at no cost to the United States. The Contractor shall use the information obtained from such water measuring devices or water measuring methods to ensure its proper management of the water, to bill water users for water delivered by the Contractor; and, if applicable, to record water delivered for M&I purposes by customer class as defined in the Contractor's water conservation plan provided for in Article 25 of this Contract. Nothing herein contained, however, shall preclude the Contractor from establishing and collecting any charges, assessments, or other revenues authorized by California law. The Contractor shall include a summary of all its annual surface water deliveries in the annual report described in subdivision (c) of Article 25.

(b) To the extent the information has not otherwise been provided, upon execution of this Contract, the Contractor shall provide to the Contracting Officer a written report describing the measurement devices or water measuring methods being used or to be used to implement subdivision (a) of this Article and identifying the M&I service connections or alternative measurement programs approved by the Contracting Officer, at which such measurement devices or water measuring methods are being used, and, if applicable, identifying the locations at which such devices and/or methods are not yet being used including a time schedule for implementation at such locations. The Contracting Officer shall advise the

Contractor in writing within 60 days as to the adequacy and necessary modifications, if any, of the measuring devices or water measuring methods identified in the Contractor's report and if the Contracting Officer does not respond in such time, they shall be deemed adequate. If the Contracting Officer notifies the Contractor that the measuring devices or methods are inadequate, the parties shall within 60 days following the Contracting Officer's response, negotiate in good faith the earliest practicable date by which the Contractor shall modify said measuring devices and/or measuring methods as required by the Contracting Officer to ensure compliance with subdivision (a) of this Article.

(c) All new surface water delivery systems installed within the Contractor's Service Area after the effective date of this Contract shall also comply with the measurement provisions described in subdivision (a) of this Article.

(d) The Contractor shall inform the Contracting Officer and the State of California in writing by April 30 of each Year of the monthly volume of surface water delivered within the Contractor's Service Area during the previous Year.

(e) The Contractor shall inform the Contracting Officer and the Operating Non-Federal Entity on or before the twentieth calendar day of each month of the quantity of M&I Water taken during the preceding month.

RATES AND METHOD OF PAYMENT FOR WATER

7. (a) The Contractor shall pay the United States as provided in this Article for all Delivered Water at Rates and Charges established in accordance with: (i) the Secretary's then-existing ratesetting policy for M&I Water. Such ratesetting policies shall be amended, modified, or superseded only through a public notice and comment procedure; (ii) applicable Federal Reclamation law and associated rules and regulations, or policies; and (iii) other

applicable provisions of this Contract. Payments shall be made by cash transaction, wire transfer, or any other mechanism as may be agreed to in writing by the Contractor and the Contracting Officer. The Rates and Charges applicable to the Contractor upon execution of this Contract are set forth in Exhibit "B", as may be revised annually.

(b) The Contracting Officer shall notify the Contractor of the Rates and Charges, as follows:

(1) Prior to July 1 of each Calendar Year, the Contracting Officer shall provide the Contractor an estimate of the Charges for Project Water that will be applied to the period October 1, of the current Calendar Year, through September 30, of the following Calendar Year, and the basis for such estimate. The Contractor shall be allowed not less than two months to review and comment on such estimates. On or before September 15 of each Calendar Year, the Contracting Officer shall notify the Contractor in writing of the Charges to be in effect during the period October 1 of the current Calendar Year, through September 30, of the following Calendar Year, and such notification shall revise Exhibit "B".

(2) Prior to October 1 of each Calendar Year, the Contracting Officer shall make available to the Contractor an estimate of the Rates for Project Water for the following Year and the computations and cost allocations upon which those Rates are based. The Contractor shall be allowed not less than two months to review and comment on such computations and cost allocations. By December 31 of each Calendar Year, the Contracting Officer shall provide the Contractor with the final Rates to be in effect for the upcoming Year, and such notification shall revise Exhibit "B".

(c) At the time the Contractor submits the initial schedule for the delivery of Project Water for each Year pursuant to subdivision (b) of Article 4 of this Contract, the Contractor shall make an advance payment to the United States equal to the total amount payable pursuant to the applicable Rate(s) set under subdivision (a) of this Article, for the Project Water scheduled to be delivered pursuant to this Contract during the first two calendar months of the Year. Before the end of the first month and before the end of each calendar month thereafter, the Contractor shall make an advance payment to the United States, at the Rate(s) set under subdivision (a) of this Article, for the Water Scheduled to be delivered pursuant to this Contract during the second month immediately following. Adjustments between advance payments for Water Scheduled and payments at Rates due for Water Delivered shall be made before the end of the following month; *Provided*, That any revised schedule submitted by the Contractor pursuant to Article 4 of this Contract which increases the amount of Water Delivered pursuant to this Contract during any month shall be accompanied with appropriate advance payment, at the Rates then in effect, to assure that Project Water is not delivered to the Contractor in advance of such payment. In any month in which the quantity of Water Delivered to the Contractor pursuant to this Contract equals the quantity of Water Scheduled and paid for by the Contractor, no additional Project Water shall be delivered to the Contractor unless and until an advance payment at the Rates then in effect for such additional Project Water is made. Final adjustment between the advance payments for the Water Scheduled and payments for the quantities of Water Delivered during each Year pursuant to this Contract shall be made as soon as practicable but no later than April 30th of the following Year, or 60 days after the delivery of Project Water carried over under subdivision (g) of Article 3 of this Contract if such water is not delivered by the last day of February.

(d) The Contractor shall also make a payment in addition to the Rate(s) in subdivision (c) of this Article to the United States for Water Delivered, at the Charges then in effect, before the end of the month of delivery. The payments shall be consistent with the quantities of M&I Water Delivered as shown in the water delivery report for the subject month prepared by the Operating Non-Federal Entity or, if there is no Operating Non-Federal Entity, by the Contracting Officer. The water delivery report shall be deemed a bill for the payment of Charges for Water Delivered. Adjustment for overpayment or underpayment of Charges shall be made through the adjustment of payments due to the United States for Charges for the next month. Any amount to be paid for past due payment of Charges shall be computed pursuant to Article 19 of this Contract.

(e) The Contractor shall pay for any Water Delivered under subdivision (d), (f), or (g) of Article 3 of this Contract as determined by the Contracting Officer pursuant to applicable statutes, associated regulations, any applicable provisions of guidelines or ratesetting policies; *Provided*, That the Rate for Water Delivered under subdivision (d) of Article 3 of this Contract shall be no more than the otherwise applicable Rate for M&I Water under subdivision (a) of this Article.

(f) Payments to be made by the Contractor to the United States under this Contract may be paid from any revenues available to the Contractor.

(g) All revenues received by the United States from the Contractor relating to the delivery of Project Water or the delivery of non-Project water through Project facilities shall be allocated and applied in accordance with Federal Reclamation law and the associated rules or regulations, and the then-current Project ratesetting policies for M&I Water.

(h) The Contracting Officer shall keep its accounts pertaining to the administration of the financial terms and conditions of its long-term contracts, in accordance with applicable Federal standards, so as to reflect the application of Project costs and revenues. The Contracting Officer shall, each Year upon request of the Contractor, provide to the Contractor a detailed accounting of all Project and Contractor expense allocations, the disposition of all Project and Contractor revenues, and a summary of all water delivery information. The Contracting Officer and the Contractor shall enter into good faith negotiations to resolve any discrepancies or disputes relating to accountings, reports, or information.

(i) The parties acknowledge and agree that the efficient administration of this Contract is their mutual goal. Recognizing that experience has demonstrated that mechanisms, policies, and procedures used for establishing Rates and Charges, and/or for making and allocating payments, other than those set forth in this Article may be in the mutual best interest of the parties, it is expressly agreed that the parties may enter into agreements to modify the mechanisms, policies, and procedures for any of those purposes while this Contract is in effect without amending this Contract.

(j) Omitted.

(k) For the term of this Contract, Rates under the respective ratesetting policies will be established to recover only reimbursable O&M (including any deficits) and capital costs of the Project, as those terms are used in the then-current Project ratesetting policies, and interest, where appropriate, except in instances where a minimum Rate is applicable in accordance with the relevant Project ratesetting policy. Changes of significance in practices which implement the Contracting Officer's ratesetting policies will not be implemented until the

Contracting Officer has provided the Contractor an opportunity to discuss the nature, need, and impact of the proposed change.

(l) Except as provided in subsections 3405(a)(1)(B) and 3405(f) of the CVPIA, the Rates for Project Water transferred by the Contractor shall be the Contractor's Rates adjusted upward or downward to reflect the changed costs of delivery (if any) of the transferred Project Water to the transferee's point of delivery in accordance with the then-applicable Central Valley Project Ratesetting Policy.

(m) Omitted.

(n) Omitted.

NON-INTEREST BEARING OPERATION AND MAINTENANCE DEFICITS

8. Omitted.

SALES, TRANSFERS, OR EXCHANGES OF WATER

9. (a) The right to receive Project Water provided for in this Contract may be sold, transferred, or exchanged to others for reasonable and beneficial uses within the State of California if such sale, transfer, or exchange is authorized by applicable Federal and State laws, and applicable guidelines or regulations then in effect. No sale, transfer, or exchange of Project Water under this Contract may take place without the prior written approval of the Contracting Officer, except as provided for in subdivision (b) of this Article, and no such sales, transfers, or exchanges shall be approved absent all appropriate environmental documentation, including but not limited to documents prepared pursuant to the National Environmental Policy Act and the Endangered Species Act. Such environmental documentation should include, as appropriate, an analysis of groundwater impacts and economic and social effects, including environmental justice, of the proposed water transfers on both the transferor and transferee.

(b) In order to facilitate efficient water management by means of water transfers of the type historically carried out among Project Contractors located within the same geographical area and to allow the Contractor to participate in an accelerated water transfer program during the term of this Contract, the Contracting Officer shall prepare, as appropriate, all necessary environmental documentation including, but not limited to documents prepared pursuant to the National Environmental Policy Act and the Endangered Species Act analyzing annual transfers within such geographical areas and the Contracting Officer shall determine whether such transfers comply with applicable law. Following the completion of the environmental documentation, such transfers addressed in such documentation shall be conducted with advance notice to the Contracting Officer, but shall not require prior written approval by the Contracting Officer. Such environmental documentation and the Contracting Officer's compliance determination shall be reviewed every five years and updated, as necessary, prior to the expiration of the then-existing five-year period. All subsequent environmental documentation shall include an alternative to evaluate not less than the quantity of Project Water historically transferred within the same geographical area.

(c) For a water transfer to qualify under subdivision (b) of this Article, such water transfer must: (i) be for irrigation purposes for lands irrigated within the previous three years, for M&I use, groundwater recharge, water banking, or fish and wildlife resources; not lead to land conversion; and be delivered to established cropland, wildlife refuges, groundwater basins or municipal and industrial use; (ii) occur within a single Year; (iii) occur between a willing seller and a willing buyer; (iv) convey water through existing facilities with no new construction or modifications to facilities and be between existing Project Contractors and/or the Contractor and the United States, Department of the Interior; and (v) comply with all applicable

Federal, State, and local or tribal laws and requirements imposed for protection of the environment and Indian Trust Assets, as defined under Federal law.

APPLICATION OF PAYMENTS AND ADJUSTMENTS

10. (a) The amount of any overpayment by the Contractor of the Contractor's O&M, Capital, and deficit (if any) obligations for the Year shall be applied first to any current liabilities of the Contractor arising out of this Contract then due and payable. Overpayments of more than $1,000 shall be refunded at the Contractor's request. In lieu of a refund, any amount of such overpayment at the option of the Contractor may be credited against amounts to become due to the United States by the Contractor. With respect to overpayment, such refund or adjustment shall constitute the sole remedy of the Contractor or anyone having or claiming to have the right to the use of any of the Project Water supply provided for herein. All credits and refunds of overpayments shall be made within 30 days of the Contracting Officer obtaining direction as to how to credit or refund such overpayment in response to the notice to the Contractor that it has finalized the accounts for the Year in which the overpayment was made.

(b) All advances for miscellaneous costs incurred for work requested by the Contractor pursuant to Article 24 of this Contract shall be adjusted to reflect the actual costs when the work has been completed. If the advances exceed the actual costs incurred, the difference will be refunded to the Contractor. If the actual costs exceed the Contractor's advances, the Contractor will be billed for the additional costs pursuant to Article 24 of this Contract.

TEMPORARY REDUCTIONS—RETURN FLOWS

11. (a) Subject to: (i) the authorized purposes and priorities of the Project and the requirements of Federal law and (ii) the obligations of the United States under existing contracts,

or renewals thereof, providing for water deliveries from the Project, the Contracting Officer shall make all reasonable efforts to optimize Project Water deliveries to the Contractor as provided in this Contract.

(b) The Contracting Officer or Operating Non-Federal Entity may temporarily discontinue or reduce the quantity of Water Delivered to the Contractor as herein provided for the purposes of investigation, inspection, maintenance, repair, or replacement of any of the Project facilities or any part thereof necessary for the delivery of Project Water to the Contractor, but so far as feasible the Contracting Officer or Operating Non-Federal Entity will give the Contractor due notice in advance of such temporary discontinuance or reduction, except in case of emergency, in which case no notice need be given; *Provided*, That the United States shall use its best efforts to avoid any discontinuance or reduction in such service. Upon resumption of service after such reduction or discontinuance, and if requested by the Contractor, the United States will, if possible, deliver the quantity of Project Water which would have been delivered hereunder in the absence of such discontinuance or reduction.

(c) The United States reserves the right to all seepage and return flow water derived from Water Delivered to the Contractor hereunder which escapes or is discharged beyond the Contractor's Service Area; *Provided*, That this shall not be construed as claiming for the United States any right as seepage or return flow being put to reasonable and beneficial use pursuant to this Contract within the Contractor's Service Area by the Contractor or those claiming by, through, or under the Contractor.

CONSTRAINTS ON THE AVAILABILITY OF WATER

12. (a) In its operation of the Project, the Contracting Officer will use all reasonable means to guard against a Condition of Shortage in the quantity of water to be made

available to the Contractor pursuant to this Contract. In the event the Contracting Officer determines that a Condition of Shortage appears probable, the Contracting Officer will notify the Contractor of said determination as soon as practicable.

(b) If there is a Condition of Shortage because of errors in physical operations of the Project, drought, other physical causes beyond the control of the Contracting Officer or actions taken by the Contracting Officer to meet current and future legal obligations, except as provided in Article 17 of this Contract, then no liability shall accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

(c) Omitted.

(d) Project Water furnished under this Contract will be allocated in accordance with the then-existing "Central Valley Project M&I Water Shortage Policy". Such policy shall be amended, modified, or superseded only through a public notice and comment procedure. The parties agree that as of the date of execution of this Contract, the Assigned Water will only be afforded Irrigation Water reliability under the existing "Central Valley Project M&I Water Shortage Policy".

(e) By entering into this Contract, the Contractor does not waive any legal rights or remedies it may have to file or participate in any administrative or judicial proceeding contesting (i) the sufficiency of the "Central Valley Project M&I Water Shortage Policy," (ii) the substance of such a policy; (iii) the applicability of such a policy; or (iv) the manner in which such policy is implemented in order to allocate Project Water between municipal and industrial and irrigation purposes; *Provided*, That the Contractor has commenced any such judicial challenge or any administrative procedures necessary to institute any judicial challenge within six months of the policy becoming final. By agreeing to the foregoing, the Contracting Officer

does not waive any legal defenses or remedies that it may then have to assert in such a proceeding. Nothing contained herein shall be interpreted to validate or invalidate the "Central Valley Project M&I Water Shortage Policy."

UNAVOIDABLE GROUNDWATER PERCOLATION

13. Omitted.

RULES, REGULATIONS, AND DETERMINATIONS

14. (a) The parties agree that the delivery of M&I Water or the use of Federal facilities pursuant to this Contract is subject to Federal Reclamation law, as amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Federal Reclamation law.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with its provisions, the laws of the United States and the State of California, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in consultation with the Contractor.

PROTECTION OF WATER AND AIR QUALITY

15. (a) Project facilities used to make available and deliver water to the Contractor shall be operated and maintained in the most practical manner to maintain the quality of the water at the highest level possible as determined by the Contracting Officer; *Provided*, That the United States does not warrant the quality of the water delivered to the Contractor and is under no obligation to furnish or construct water treatment facilities to maintain or improve the quality of water delivered to the Contractor.

(b) The Contractor shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California; and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities necessary for the delivery of water by the Contractor; and shall be responsible for compliance with all Federal, State, and local water quality standards applicable to surface and subsurface drainage and/or discharges generated through the use of Federal or Contractor facilities or Project water provided by the Contractor within the Contractor's Project Water Service Area.

(c) This article shall not affect or alter any legal obligations of the Secretary to provide drainage or other discharge services.

WATER ACQUIRED BY THE CONTRACTOR
OTHER THAN FROM THE UNITED STATES

16. (a) Omitted.

(b) Water or water rights now owned or hereafter acquired by the Contractor, other than from the United States, may be stored, conveyed and/or diverted through Project facilities, subject to the completion of appropriate environmental documentation, with the approval of the Contracting Officer and the execution of any contract determined by the Contracting Officer to be necessary, consistent with the following provisions:

(1) The Contractor may introduce non-Project water into Project facilities and deliver said water to lands within the Contractor's Service Area, subject to payment to the United States and/or to any applicable Operating Non-Federal Entity of an appropriate rate as determined by the applicable Central Valley Project Ratesetting Policy and the Reclamation Reform Act each as amended, modified or superseded from time to time. In addition, if electrical power is required to pump non-Project water through the facilities, the Contractor shall be responsible for obtaining the necessary power and paying the necessary charges therefore.

(2) Delivery of such non-Project water in and through Project facilities shall only be allowed to the extent such deliveries do not: (i) interfere with other Project purposes as determined by the Contracting Officer; (ii) reduce the quantity or quality of water available to other Project Contractors; (iii) interfere with the delivery of contractual water entitlements to any other Project Contractors; or (iv) interfere with the physical maintenance of the Project facilities.

(3) Neither the United States nor the Operating Non-Federal Entity shall be responsible for control, care or distribution of the non-Project water before it is introduced into or after it is delivered from the Project facilities. The Contractor hereby releases and agrees to defend and indemnify the United States and the Operating

Non-Federal Entity, and their respective officers, agents, and employees, from any claim for damage to persons or property, direct or indirect, resulting from the Contractor's or its officers', employees', agents' or assigns', act of (i) extracting or diverting non-Project water from any source, or (ii) diverting such non-Project water into Project facilities.

(4) Diversion of such non-Project water into Project facilities shall be consistent with all applicable laws, and if involving groundwater, consistent with any applicable groundwater management plan for the area from which it was extracted.

(5) After Project purposes are met, as determined by the Contracting Officer, the United States and the Contractor shall share priority to utilize the remaining capacity of the facilities declared to be available by the Contracting Officer for conveyance and transportation of non-Project water prior to any such remaining capacity being made available to non-Project contractors.

OPINIONS AND DETERMINATIONS

17. Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in Article 17 of this Contract is intended to or shall affect or alter the standard of judicial review applicable under Federal law to any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

COORDINATION AND COOPERATION

18. (a) In order to further their mutual goals and objectives, the Contracting Officer and the Contractor shall communicate, coordinate, and cooperate with each other, and with other affected Project contractors, in order to improve the operation and management of the Project. The communication, coordination, and cooperation regarding operations and management shall include, but not be limited to, any action which will or may materially affect the quantity or quality of Project Water supply, the allocation of Project Water supply, and Project financial matters including, but not limited to, budget issues. The communication, coordination, and cooperation provided for hereunder shall extend to all provisions of this Contract. Each party shall retain exclusive decision making authority for all actions, opinion, and determinations to be made by the respective party.

(b) Within 120 days following the effective date of this Contract, the Contractor, other affected Project contractors, and the Contracting Officer shall arrange to meet with interested Project contractors to develop a mutually agreeable, written Project-wide process, which may be amended as necessary separate and apart from this Contract. The goal of this process shall be to provide, to the extent practicable, the means of mutual communication and interaction regarding significant decisions concerning Project operation and management on a real-time basis.

(c) In light of the factors referred to in subdivision (b) of Article 3 of this Contract, it is the intent of the Secretary to improve water supply reliability. To carry out this intent:

(1) The Contracting Officer will, at the request of the Contractor, assist in the development of integrated resource management plans for the Contractor.

Further, the Contracting Officer will, as appropriate, seek authorizations for implementation of partnerships to improve water supply, water quality, and reliability.

(2) The Secretary will, as appropriate, pursue program and project implementation and authorization in coordination with Project contractors to improve the water supply, water quality, and reliability of the Project for all Project purposes.

(3) The Secretary will coordinate with Project contractors and the State of California to seek improved water resource management.

(4) The Secretary will coordinate actions of agencies within the Department of the Interior that may impact the availability of water for Project purposes.

(5) The Contracting Officer shall periodically, but not less than annually, hold division level meetings to discuss Project operations, division level water management activities, and other issues as appropriate.

(d) Without limiting the contractual obligations of the Contracting Officer under the other Articles of this Contract, nothing in this Article shall be construed to limit or constrain the Contracting Officer's ability to communicate, coordinate, and cooperate with the Contractor or other interested stakeholders or to make decisions in a timely fashion as needed to protect health, safety, physical integrity of structures or facilities.

CHARGES FOR DELINQUENT PAYMENTS

19. (a) The Contractor shall be subject to interest, administrative, and penalty charges on delinquent payments. If a payment is not received by the due date, the Contractor shall pay an interest charge on the delinquent payment for each day the payment is delinquent beyond the due date. If a payment becomes 60 days delinquent, the Contractor shall pay, in addition to the interest charge, an administrative charge to cover additional costs of billing and processing the delinquent payment. If a payment is delinquent 90 days or more, the Contractor shall pay, in addition to the interest and administrative charges, a penalty charge for each day the payment is delinquent beyond the due date, based on the remaining balance of the payment due

at the rate of 6 percent per year. The Contractor shall also pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest rate charged shall be the greater of either the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of 0.5 percent per month. The interest rate charged will be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied first to the penalty charges, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

EQUAL OPPORTUNITY

20. During the performance of this Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of payment or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting

Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however*, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

GENERAL OBLIGATION—BENEFITS CONDITIONED UPON PAYMENT

21. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due pursuant to this Contract is a condition precedent to receiving benefits under this Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor is in arrears in the advance payment of water rates, any operation and maintenance charges due the United States or is in arrears for more than 12 months in the payment of any construction charges due the United States. The Contractor shall not deliver water under the terms and conditions of this Contract for lands or parties which are in arrears in the advance payment of water rates or operation and maintenance charges as levied or established by the Contractor.

(c) With respect to subdivision (b) of this Article, the Contractor shall have no obligation to require advance payment for water rates which it levies.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

22. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352; 42 U.S.C. § 2000d), the Rehabilitation Act of 1973 (Pub. L. 93-112, Title V, as

amended; 29 U.S.C. § 791, et seq.), the Age Discrimination Act of 1975 (Pub. L. 94-135, Title III; 42 U.S.C. § 6101, et seq.), Title II of the Americans with Disabilities Act of 1990 (Pub. L. 101-336; 42 U.S.C. § 12131, et seq.), and any other applicable civil rights laws, and with the applicable implementing regulations and any guidelines imposed by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes prohibit any person in the United States from being excluded from participation in, being denied the benefits of, or being otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation on the grounds of race, color, national origin, disability, or age. By executing this Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this article and that the United States reserves the right to seek judicial enforcement thereof.

(d) Complaints of discrimination against the Contractor shall be investigated by the Contracting Officer's Office of Civil Rights.

PRIVACY ACT COMPLIANCE

23. Omitted.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

24. In addition to all other payments to be made by the Contractor pursuant to this Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Contract plus indirect costs in accordance with applicable Bureau of Reclamation policies and procedures. All such amounts referred to in this Article shall not exceed the amount agreed

to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

WATER CONSERVATION

25. (a) Prior to the delivery of water provided from or conveyed through Federally constructed or Federally financed facilities pursuant to this Contract, the Contractor shall be implementing an effective water conservation and efficiency program based on the Contractor's water conservation plan that has been determined by the Contracting Officer to meet the conservation and efficiency criteria for evaluating water conservation plans established under Federal law. The water conservation and efficiency program shall contain definite water conservation objectives, appropriate economically feasible water conservation measures, and time schedules for meeting those objectives. Continued Project Water delivery pursuant to this Contract shall be contingent upon the Contractor's continued implementation of such water conservation program. In the event the Contractor's water conservation plan or any revised water conservation plan completed pursuant to subdivision (d) of this Article have not yet been determined by the Contracting Officer to meet such criteria, due to circumstances which the Contracting Officer determines are beyond the control of the Contractor, water deliveries shall be made under this Contract so long as the Contractor diligently works with the Contracting Officer to obtain such determination at the earliest practicable date, and thereafter the Contractor immediately begins implementing its water conservation and efficiency program in accordance with the time schedules therein.

(b) Should the amount of M&I Water delivered pursuant to subdivision (a) of Article 3 of this Contract equal or exceed 2,000 acre-feet per Year, the Contractor shall implement the "Best Management Practices" identified by the time frames issued by the

California Urban Water Conservation Council for such M&I Water unless any such practice is determined by the Contracting Officer to be inappropriate for the Contractor.

(c) The Contractor shall submit to the Contracting Officer a report on the status of its implementation of the water conservation plan on the reporting dates specified in the then-existing conservation and efficiency criteria established under Federal law.

(d) At five-year intervals, the Contractor shall revise its water conservation plan to reflect the then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law and submit such revised water management plan to the Contracting Officer for review and evaluation. The Contracting Officer will then determine if the water conservation plan meets Reclamation's then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

(e) If the Contractor is engaged in direct groundwater recharge, such activity shall be described in the Contractor's water conservation plan.

EXISTING OR ACQUIRED WATER OR WATER RIGHTS

26. Except as specifically provided in Article 16 of this Contract, the provisions of this Contract shall not be applicable to or affect non-Project water or water rights now owned or hereafter acquired by the Contractor or any user of such water within the Contractor's Service Area. Any such water shall not be considered Project Water under this Contract. In addition, this Contract shall not be construed as limiting or curtailing any rights which the Contractor or any water user within the Contractor's Service Area acquires or has available under any other contract pursuant to Federal Reclamation law.

OPERATION AND MAINTENANCE BY THE OPERATING NON-FEDERAL ENTITY

27. (a) The O&M of a portion of the Project facilities which serve the Contractor, and responsibility for funding a portion of the costs of such O&M, have been transferred to the San Luis & Delta-Mendota Water Authority, an Operating Non-Federal Entity by separate agreement (8-07-20-X0354) between the United States and the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority. That separate agreement shall not interfere with or affect the rights or obligations of the Contractor or the United States hereunder.

(b) The Contracting Officer has previously notified the Contractor in writing that the O&M of a portion of the Project facilities which serve the Contractor has been transferred to the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority, and therefore, the Contractor shall pay directly to the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority, or to any successor approved by the Contracting Officer under the terms and conditions of the separate agreement between the United States and the Operating Non-Federal Entity San Luis & Delta Mendota Water Authority described in subdivision (a) of this Article, all Rates, Charges, or assessments of any kind, including any assessment for reserve funds, which the Operating Non-Federal Entity San Luis & Delta Mendota Water Authority or such successor determines, sets, or establishes for the O&M of the portion of the Project facilities operated and maintained by the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority or such successor. Such direct payments to the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority or such successor shall not relieve the Contractor of its obligation to pay directly to the United States the Contractor's share of the Project Rates and Charges except to the extent the Operating Non-Federal Entity San Luis

& Delta-Mendota Water Authority collects payments on behalf of the United States in accordance with the separate agreement identified in subdivision (a) of this Article.

(c) For so long as the O&M of any portion of the Project facilities serving the Contractor is performed by the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority, or any successor thereto, the Contracting Officer shall adjust those components of the Rates for Water Delivered under this Contract representing the cost associated with the activity being performed by the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority or its successor.

(d) In the event the O&M of the Project facilities operated and maintained by the Operating Non-Federal Entity San Luis & Delta-Mendota Water Authority is re-assumed by the United States during the term of this Contract, the Contracting Officer shall so notify the Contractor, in writing, and present to the Contractor a revised Exhibit "B" which shall include the portion of the Rates to be paid by the Contractor for Project Water under this Contract representing the O&M costs of the portion of such Project facilities which have been re-assumed. The Contractor shall, thereafter, in the absence of written notification from the Contracting Officer to the contrary, pay the Rates and Charges specified in the revised Exhibit "B" directly to the United States in compliance with Article 7 of this Contract.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

28. The expenditure or advance of any money or the performance of any obligation of the United States under this Contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this Contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

BOOKS, RECORDS, AND REPORTS

29. (a) The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Contract, including the

Contractor's financial transactions; water supply data; project operation, maintenance, and replacement logs; Project land and rights-of-way use agreements; the water users' land-use (crop census), land-ownership, land-leasing, and water-use data; and other matters that the Contracting Officer may require. Reports shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this Contract shall have the right during office hours to examine and make copies of the other party's books and records relating to matters covered by this Contract.

(b) Notwithstanding the provisions of subdivision (a) of this Article, no books, records, or other information shall be requested from the Contractor by the Contracting Officer unless such books, records, or information are reasonably related to the administration or performance of this Contract. Any such request shall allow the Contractor a reasonable period of time within which to provide the requested books, records, or information.

(c) At such time as the Contractor provides information to the Contracting Officer pursuant to subdivision (a) of this Article, a copy of such information shall be provided to the Operating Non-Federal Entity.

ASSIGNMENT LIMITED—SUCCESSORS AND ASSIGNS OBLIGATED

30. (a) The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein by either party shall be valid until approved in writing by the other party.

(b) The assignment of any right or interest in this Contract by either party shall not interfere with the rights or obligations of the other party to this Contract absent the written concurrence of said other party.

(c) The Contracting Officer shall not unreasonably condition or withhold approval of any proposed assignment.

SEVERABILITY

31. In the event that a person or entity who is neither (i) a party to a Project contract, nor (ii) a person or entity that receives Project Water from a party to a Project contract, nor

(iii) an association or other form of organization whose primary function is to represent parties to Project contracts, brings an action in a court of competent jurisdiction challenging the legality or enforceability of a provision included in this Contract and said person, entity, association, or organization obtains a final court decision holding that such provision is legally invalid or unenforceable and the Contractor has not intervened in that lawsuit in support of the plaintiff(s), the parties to this Contract shall use their best efforts to (i) within 30 days of the date of such final court decision identify by mutual agreement the provisions in this Contract which must be revised and (ii) within three months thereafter promptly agree on the appropriate revision(s). The time periods specified above may be extended by mutual agreement of the parties. Pending the completion of the actions designated above, to the extent it can do so without violating any applicable provisions of law, the United States shall continue to make the quantities of Project Water specified in this Contract available to the Contractor pursuant to the provisions of this Contract which were not found to be legally invalid or unenforceable in the final court decision.

RESOLUTION OF DISPUTES

32. Should any dispute arise concerning any provisions of this Contract, or the parties' rights and obligations thereunder, the parties shall meet and confer in an attempt to resolve the dispute. Prior to the Contractor commencing any legal action, or the Contracting Officer referring any matter to Department of Justice, the party shall provide to the other party 30 days' written notice of the intent to take such action; *Provided*, That such notice shall not be required where a delay in commencing an action would prejudice the interests of the party that intends to file suit. During the 30 day notice periods, the Contractor and the Contracting Officer shall meet and confer in an attempt to resolve the dispute. Except as specifically provided,

nothing herein is intended to waive or abridge any right or remedy that the Contractor or the United States may have.

OFFICIALS NOT TO BENEFIT

33. No Member of or Delegate to Congress, Resident Commissioner, or official of the Contractor shall benefit from this Contract other than as a water user or landowner in the same manner as other water users or landowners.

CHANGES IN CONTRACTOR'S SERVICE AREA

34. (a) While this Contract is in effect, no change may be made in the Contractor's Service Area, by inclusion or exclusion of lands, dissolution, consolidation, merger, or otherwise, except upon the Contracting Officer's written consent.

(b) Within 30 days of receipt of a request for such a change, the Contracting Officer will notify the Contractor of any additional information required by the Contracting Officer for processing said request, and both parties will meet to establish a mutually agreeable schedule for timely completion of the process. Such process will analyze whether the proposed change is likely to: (i) result in the use of Project Water contrary to the terms of this Contract; (ii) impair the ability of the Contractor to pay for Project Water furnished under this Contract or to pay for any Federally-constructed facilities for which the Contractor is responsible; and (iii) have an impact on any Project Water rights applications, permits, or licenses. In addition, the Contracting Officer shall comply with the National Environmental Policy Act and the Endangered Species Act. The Contractor will be responsible for all costs incurred by the Contracting Officer in this process, and such costs will be paid in accordance with Article 24 of this Contract.

FEDERAL LAWS

35. By entering into this Contract, the Contractor does not waive its rights to contest the validity or application in connection with the performance of the terms and conditions of this Contract of any Federal law or regulation; *Provided,* That the Contractor agrees to comply with the terms and conditions of this Contract unless and until relief from application of such Federal

law or regulation to the implementing provision of the Contract is granted by a court of competent jurisdiction.

NOTICES

36. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Area Manager, South-Central California Area Office, Mid-Pacific Region, Bureau of Reclamation, 1243 N Street, Fresno, CA 93721, and on behalf of the United States, when mailed, postage prepaid, or delivered to the City Manager, c/o Public Works Department, 520 Tracy Blvd., Tracy CA 95376. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this article for other notices.

CONFIRMATION OF CONTRACT

37. Promptly after the execution of this Contract, the Contractor shall provide evidence to the Contracting Officer that, pursuant to the laws of the State of California, the Contractor is a legally constituted entity and the contract is lawful, valid, and binding on the Contractor. This Contract shall not be binding on the United States until such evidence has been provided to the Contracting Officer's satisfaction.

CONTRACT DRAFTING CONSIDERATIONS

38. This Contract has been, negotiated and reviewed by the parties hereto, each of whom is sophisticated in the matters to which this Contract pertains. The double-spaced articles of this Contract have been drafted, negotiated, and reviewed by the parties, and no one party shall be considered to have drafted the stated articles.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

UNITED STATES OF AMERICA

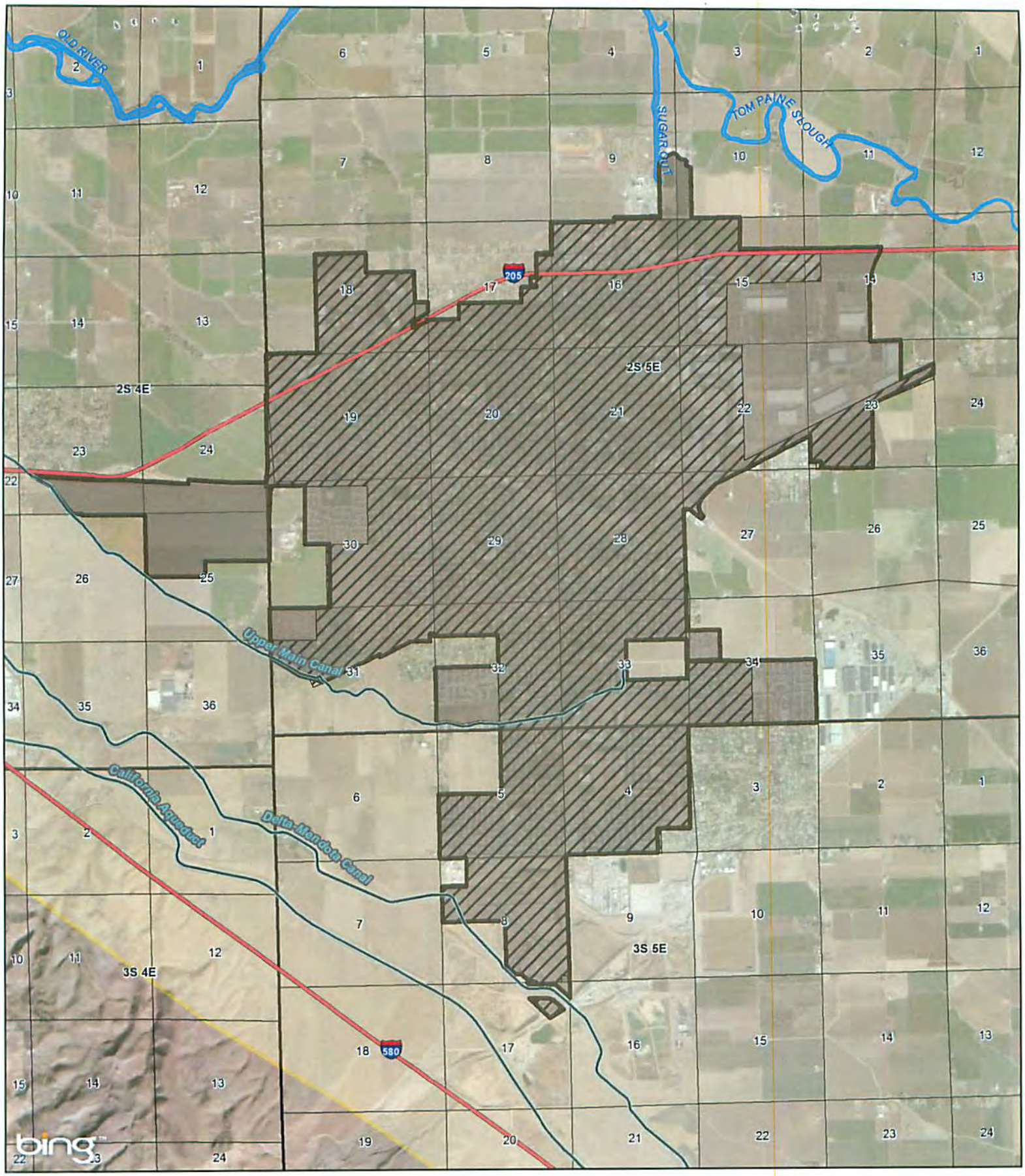
By: ACTING FOR
Regional Director, Mid-Pacific Region
Bureau of Reclamation

CITY OF TRACY

By:
City Manager

Attest:

By:
~~Secretary~~ City Clerk



Consolidated POU

Contractor's Service Area

Contractor's Boundary

City of Tracy

14-06-200-7858A-IR1

Exhibit A

Miles

0 0.5 1

N

RECLAMATION
Managing Water in the West

Date: December 9, 2013
File Name: N:\districts\contracts\city_of_tracy\City of Tracy Exhibit A for EA.mxd

214-202-133

M&I only
Contract No. 14-06-200-7858A-IR1

EXHIBIT B

City Of Tracy

2013 Rates and Charges
(Per Acre-Foot)

	M&I Water
COST-OF-SERVICE (COS) RATE	
Construction Cost	$22.00
O&M Cost	
Water Marketing	$4.69
Storage	$9.92
Conveyance	
Conveyance Pumping[1]	*
Conveyance Pumping - Extraordinary O&M	$0.37
American Recovery and Reinvestment Act	$0.04
Other Costs	$0.00
Deficit Cost Component	$0.00
TOTAL COS RATE	$37.02
CHARGES AND ASSESSMENTS *(Payments in addition to Rates)*	
P.L. 102-575 Surcharge	
Restoration Fund Payments [Section 3407(d)(2)(A)]	$19.98
P.L. 106-377 Assessment (Trinity Public Utilities District) [Appendix B, Section 203]	$0.05

EXPLANATORY NOTES

[1] Conveyance and Conveyance Pumping Operation and Maintenance Costs were removed for ratesetting purposes and are to be direct billed.

The recent historic average, as defined in the existing CVP M&I Water Shortage Policy (WSP), is 10,000 acre-feet. The City of Tracy is successor of two agriculture water service contract supplies from Banta Carbona Irrigation District 5,000 acre-feet, and The Westside Irrigation District up to 5,000 acre-feet. Water shortages for these quantities will be allocated consistent with the then-existing M&I WSP.

Additional detail of rate components is available on the Internet at
http://www.usbr.gov/mp/cvpwaterrates/ratebooks/index.html

RESOLUTION 2013-188

AUTHORIZING INTERIM RENEWAL CONTRACTS BETWEEN THE UNITED STATES BUREAU OF RECLAMATION AND THE CITY FOR PROVIDING CENTRAL VALLEY PROJECT WATER SERVICE AND AUTHORIZING THE CITY MANAGER TO EXECUTE THE AGREEMENTS

WHEREAS, In 1974, the City entered into a long-term contract with the Bureau for water service from the Delta-Mendota Canal. This contract is for delivery of 10,000 acre-feet per year and expires on December 31, 2013, and

WHEREAS, In 2004, the Bureau authorized contract assignments between the City and Banta Carbona Irrigation District (BCID), and the City and the West Side Irrigation District (WSID), and

WHEREAS, In 2007, 2008, 2010, and 2012, the City entered into Interim Renewal Contracts, the most recent of which expires on February 28, 2014, and

WHEREAS, The Bureau has prepared the Interim Renewal Contract for the long-term contract for execution by the City effective from January 1, 2014, through February 29, 2016, and

WHEREAS, A California Environmental Quality Act Categorical Exemption has been prepared as there are no impacts to the environment;

NOW, THEREFORE, BE IT RESOLVED, That the City Council authorizes Interim Renewal Contract No. 14-06-200-7858A-IR1 between the United States and the City of Tracy providing for Central Valley Project Water Service and authorizes the City Manager to execute the agreements.

* * * * * * * * * * * * *

The foregoing Resolution 2013-188 was passed and adopted by the Tracy City Council on the 3rd day of December, 2013, by the following vote:

AYES: COUNCIL MEMBERS: MACIEL, MANNE, RICKMAN, YOUNG, IVES

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

ABSTAIN: COUNCIL MEMBERS: NONE

Brent A. Ives
MAYOR

ATTEST:
Sandra Edwards
CITY CLERK

THE FOREGOING DOCUMENT IS CERTIFIED TO BE A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE.

CITY CLERK, CITY OF TRACY
BY: Sandra Edwards
DATE: 12-17-2013

Agreement for Additional Assignment of Entitlement of CVP Water between the City of Tracy and the West Side Irrigation District (December 2013)

AGREEMENT FOR ADDITIONAL ASSIGNMENT OF ENTITLEMENT TO CVP WATER BETWEEN THE CITY OF TRACY AND THE WEST SIDE IRRIGATION DISTRICT

This AGREEMENT FOR ADDITIONAL ASSIGNMENT OF ENTITLEMENT TO CVP WATER ("Agreement") is made this 3rd day of December, 2013 by and between the CITY OF TRACY ("Tracy"), a California municipal corporation, and THE WEST SIDE IRRIGATION DISTRICT ("WSID") an Irrigation District formed pursuant to Division 11 of the California Water Code.

RECITALS

WHEREAS, WSID is an irrigation district providing water for irrigation purposes to landowners within its service area; and

WHEREAS, WSID has an entitlement of 7,500 acre-feet of water pursuant to its water supply contract with the United States Bureau of Reclamation ("USBR") through an agreement entitled "Interim Renewal Contract between the United States and The West Side Irrigation District Providing for Project Water Service" dated February 28, 2001, Contract No. 7-07-20-W0045-IR5 ("WSID Contract"), less 2,500 acre-feet of water ("Initial Assignment" or "Initial Assignment Right") pursuant to an Agreement for Assignment of Entitlement of CVP Water Between Tracy and WSID dated ("Initial Assignment Agreement"); and

WHEREAS, Tracy provides municipal and industrial water to customers within its boundaries; and

WHEREAS, Tracy has an entitlement to 10,000 acre-feet of water pursuant to its water supply contract with the USBR through an agreement entitled "CONTRACT BETWEEN THE UNITED STATES AND CITY OF TRACY" dated July 22, 1974, Contract No. 14-06-200-7858A ("Tracy Contract"); and

WHEREAS, on January 9, 2014, Tracy tendered notice of exercise of the option granted in the Initial Assignment Agreement for the assignment of an additional 2,500 acre-feet of water under the WSID Contract to Tracy ("Additional Assignment" or "Additional Assignment Right").

NOW, THEREFORE, the Parties, on the terms and conditions herein set forth, agree as follows:

AGREEMENT

1. **EFFECTIVE DATE**

This Agreement shall become effective the date stated above immediately upon execution by all parties.

2. **ASSIGNMENT OF ENTITLEMENT**

A. Tracy hereby agrees to purchase from WSID, and WSID hereby agrees to assign and sell to Tracy, the permanent right to two thousand five hundred (2,500) acre-feet of the WSID Contract entitlement to water ("Additional Assignment Right" or "additional assignment") pursuant to the terms and conditions of this Agreement, and contingent upon the parties' compliance with applicable environmental laws, including the California Environmental Quality Act (CEQA).

B. Upon completion of Final Approval of the Additional Assignment Right, WSID's assignment of a portion (2,500 acre-feet) of its WSID Contract shall immediately become effective and WSID shall have no further interest in the Additional Assignment Right or water provided thereunder except as specifically provided in Section 17 hereof.

3. **ASSUMPTION OF RIGHTS AND OBLIGATIONS**

A. Upon Final Approval of the Additional Assignment, Tracy shall assume all of the rights and obligations associated with the Additional Assignment Right, including any adjustment of costs for water service pursuant to the Additional Assignment Right made by the USBR upon and after the date approvals set forth in Section 13 are complete, and any other costs the USBR may require to be paid as a condition of approval of the Additional Assignment, provided that excepting the capital repayment obligation, costs thus due are cumulatively less than a one time charge of Five Thousand Dollars ($5,000.00). WSID agrees that it will timely make all payments required pursuant to the WSID Contract excepting the capital repayment obligation to the extent it is not included in the applicable CVP water rates, until the date the Additional Assignment becomes effective or this Agreement terminates.

B. The parties understand and agree that the obligations to be assumed by Tracy pursuant to this Section 3 will be proportionate, on a per acre foot of entitlement basis, to the obligations of the WSID Contract (i.e., 33.3% of the obligation based upon assignment of 2,500 acre-feet of a 7,500 acre-feet contract). This Agreement shall at the option of Tracy terminate if the obligations it is required to assume exceed the foregoing, excepting the one-time charge of up to $5,000 set forth in subsection 3A above and any increase in the CVP cost of service rate per acre-foot of water due to the change in purpose of use from agricultural to municipal and industrial.

4. PAYMENT FOR ADDITIONAL ASSIGNMENT RIGHT

A. Consideration. Tracy shall pay WSID Two Million Five Hundred Thousand Dollars ($2,500,000), in the manner and as set forth in the terms and conditions of this Agreement, as full and complete payment for the Additional Assignment Right.

B. Method of Payment. Within five business days of Tracy's receipt of the approved documentation demonstrating Final Approval of the Additional Assignment Right, and upon execution by WSID of the appropriate assignment agreements, Tracy shall deliver to WSID cash or a cashier's check issued by a California bank in the amount of $2,500,000.

C. Reimbursement. In the event that the Additional Assignment is rendered invalid for any reason, including but not limited to resolution of any challenge in a manner adverse to the Additional Assignment or termination of the Agreement, Tracy's obligations to make payment pursuant to this Section shall be suspended pending the parties' diligent efforts to cure and reinstate or otherwise cause the Additional Assignment to become valid. In the event that the cure is not effected within a reasonable period as determined by Tracy after consultation with WSID, this Agreement shall terminate. In the event of termination of this Agreement, due to invalidity or otherwise, and after the foregoing cure period if any, WSID shall be obligated to promptly (within 30 days) refund Tracy in full for any and all Consideration paid by Tracy in consideration for the Additional Assignment Right.

D. Effect of Challenge on Payment Rights and Obligations. If a judicial or administrative challenge related to this Agreement or the Additional Assignment is filed, Tracy at its sole discretion shall have the right to suspend performance under Subsections 4A and 4B while the challenge is pending, provided that Tracy makes a good faith effort to put to beneficial use the water to which Tracy is entitled pursuant to the Additional Assignment. Tracy shall exercise its rights under this subsection 4D by giving notice to WSID of the pendancy of the challenge and of Tracy's exercise of its right under this subsection 4D. Once Tracy gives WSID notice pursuant to this subsection, Tracy's obligations to pay Consideration under Subsection 4B shall be suspended until two business days after resolution of the challenge in favor of the validity of the Agreement and the Additional Assignment

E. Injunctive Relief. If injunctive relief related to this Agreement or the Additional Assignment is obtained, which injunctive relief prevents Tracy from obtaining or from exercising the Additional Assignment Right, Tracy's obligation to pay Consideration under Subsections 4A and 4B shall be suspended until two business days after the injunction is dissolved, unless Tracy has previously notified WSID of Tracy's exercise of its right to suspend pursuant to Subsection 4D, in which case the provisions of Subsection 4D shall control.

5. PRIORITY OF ASSIGNMENT WATER

A. The parties acknowledge that the water provided pursuant to the Additional Assignment Right is currently considered by the USBR to be agricultural water, subject to agricultural priority. The USBR is in the process of finalizing its Draft Urban Water Supply

Reliability Policy (date), which will formalize a policy of priority to be granted to agricultural water that is converted to municipal and industrial ("M&I") use. The parties further acknowledge that the draft policy provides that such water will retain its agricultural priority, and the price for the Additional Assignment Right has been established upon that basis. WSID has represented that, without input from Tracy, WSID has been and may continue to seek approval of an M&I priority for the Additional Assignment Right, thereby increasing its reliability. If WSID is successful in obtaining the USBR's final approval in writing that a M&I priority will be afforded to the Additional Assignment Right on a permanent basis, the purchase price for the Additional Assignment Right will be increased by that percentage increase, if any, in reliability of the Additional Assignment Right as a result of the conversion to M&I priority, not to exceed twelve and one half per cent (12.5%). This Section 5A shall apply for ten (10) years following the Effective Date of this Agreement, whereupon Section 5A shall terminate and be of no further force or effect.

B. The parties agree that neither this agreement nor this Section B in any way represent or indicate Tracy's position with respect to the CVP M&I Water Shortage Policy and that Tracy expressly reserves the right to take any position or action with respect to that Policy, including without limitation opposition to WSID's position.

6. JOINT DEFENSE; SHARING OF REGULATORY AND LITIGATION COSTS

A. The parties mutually agree to vigorously defend any litigation or regulatory challenge to the Additional Assignment contemplated in this Agreement, including any Final Approval necessary thereto, except as provided herein. The parties agree to cooperate fully in the defense of such action in furtherance of Final Approval of the Additional Assignment. The parties agree to share the costs of such defense equally, unless the challenge is to the water entitlement under the WSID Contract, before or after the Additional Assignment becomes effective, in which case WSID shall be solely responsible for the defense. Except as provided herein, to the extent that the parties undertake joint defense, any attorney fees or costs recovered shall be equally shared between the parties.

B. Tracy shall have the right to reasonably approve the choice of defense counsel and participate equally in strategic and other decision-making. The parties shall attempt to coordinate their respective defense in response to such litigation upon terms mutually agreed upon, provided that Tracy's exercise of discretion with respect to such litigation shall not be restricted or impaired. WSID and Tracy shall communicate promptly to the other party any offers for the settlement of the litigation and each party shall secure the other's consent to any settlement, which consent shall not unreasonably be withheld or delayed. The parties agree that it is in their best interests to avoid unnecessary duplication of work with respect to maintaining the action, thereby reducing fees and expenses and promoting efficiency during pretrial and trial proceedings.

C. The parties agree that, in the event of a challenge to the Additional Assignment pursuant to this Agreement, they have interests in common and shall litigate common claims and have legal theories in common, and each party may benefit from open communication with one another about all matters relating to the litigation. The parties agree that such disclosures and

communications are wholly consistent with the purpose of the attorney work product privilege, which is to safeguard mental impressions, opinions, strategies, work product and trial preparation. The parties agree that, from time to time, the mutual interests of the parties can best be served by sharing documents, factual material, mental impressions, memoranda, interview reports, legal research, expert data and other information hereinafter referred to as "confidential materials." These confidential materials are privileged from disclosure to adverse parties or other third parties as a result of the attorney-client privilege, the attorney work product privilege, and other applicable privileges. All information, which is provided by a party to the other or to litigation counsel in furtherance of this Agreement, shall be considered confidential in nature and may not be used for any other purpose.

D. The parties recognize that much of the information required to be provided to assist in defense of any challenge may be provided by or under the supervision of a party's counsel. As such the information may be protected by the work product or the attorney-client privilege. When providing information to one of the other parties, or to special counsel, a party is intending to fulfill its obligations to cooperate in defense of challenges, and such communications are not intended to constitute a waiver of the applicable privileges. Similarly, information provided by, or to the other party, is not intended to waive any applicable privilege, but to further the common interests of the parties.

E. In addition to the foregoing, and not in derogation thereof, the parties are each entitled to defend their interests in any litigation or regulatory action challenging the validity of any aspect of the Additional Assignment, including but not limited to the USBR's actions, and environmental compliance at its own cost. The parties shall be separately responsible financially and otherwise to defend and/or advocate their interests with respect to matters related to the parties' respective underlying contract entitlements, which matters are not caused by and exist independent of the Additional Assignment.

7. RELATIONSHIP TO OTHER CONTRACTS

This Agreement shall be implemented in a manner consistent with the terms of the WSID Contract and the Tracy Contract and is not intended to be inconsistent with those contracts. This Agreement modifies the Initial Assignment Agreement as expressly provided herein, but is not intended to be inconsistent with the Initial Assignment Agreement. The parties anticipate that the assignment contemplated herein shall be effected through the execution and delivery of a new or amended contract(s) between the USBR and each party.

8. QUALITY OF WATER

WSID makes no warranty or representations as to the quality or fitness for use of the water delivered to Tracy by the USBR pursuant to the Additional Assignment Right. The parties acknowledge that Tracy is familiar with the quality of water received from the USBR, and that Tracy shall be responsible for all necessary measures at its own expense for any testing, treatment, and other steps required for the intended uses of water delivered to Tracy pursuant to the Additional Assignment Right.

9. **POINT OF DELIVERY**

Additional Assignment Right water shall be delivered by the USBR pursuant to the terms of any new or amended contract between each of the parties and the USBR. The parties acknowledge that Tracy anticipates the possibility of taking delivery of water by the USBR pursuant to the Additional Assignment Right from a new delivery point on the State Water Project California Aqueduct, and that this, among other things, may be a term of the new or amended contract between Tracy and the USBR, however, success in obtaining a new delivery point is not a condition precedent to assignment.

10. **USE WITHIN HISTORICAL BOUNDARIES OF WSID**

Tracy hereby agrees that the Initial Assignment water is intended primarily for use within the original historic boundaries of WSID, much of which is now within Tracy's city limits. Notwithstanding the foregoing, the parties agree that Tracy is acquiring all rights to the Initial Assignment Right now held by WSID, and can commingle, store, exchange, transfer, and otherwise use the Initial Assignment Right water in any manner and location allowed by law, and can require reasonable charges, terms and conditions, without limitation, in connection with all uses of such water.

11. **ENVIRONMENTAL REVIEW**

A. The parties acknowledge that they attempted to obtain all regulatory and environmental approvals at one time for the Initial and Additional Assignments (5,000 acre-feet of water) when approvals for the Initial Assignment were obtained. To the extent further approvals are required in connection with this Additional Assignment, the parties will use their best good faith efforts to prevent duplication of regulatory and environmental approvals obtained with respect to the Initial Assignment. WSID will be the lead agency for purposes of the California Environmental Quality Act ("CEQA") for any environmental documentation and other regulatory requirements needing to be completed to obtain final approval of the Additional Assignment. Tracy shall be a responsible agency for that portion of the CEQA environmental review completed for the water supply provided under this Agreement. The parties also acknowledge that the USBR may be required to comply with the requirements of the National Environmental Policy Act ("NEPA") in order to provide the approvals required by this Agreement if acceptable to the USBR. If so, the parties agree to coordinate the CEQA process and documentation with the NEPA process and documentation in order to facilitate completion of the approvals required by this Agreement.

B. The parties will jointly approve the choice of consultant(s), all work product and billings, including any draft CEQA documents before they are made public. WSID and Tracy will form a subcommittee to efficiently and cooperatively address such issues. The same procedures shall apply to NEPA and any other required environmental compliance to the extent possible.

12. PAYMENT OF COSTS

Any and all costs and expenses for all environmental review and documentation for which either WSID or Tracy would be responsible for purposes of obtaining Final Approval of the Additional Assignment shall be paid by Tracy. If the assignments contemplated by this Agreement fail to occur due to termination by WSID, failure of the USBR or any other governmental agency to provide any necessary approval, or order of any state or federal court, or any combination thereof, WSID shall reimburse Tracy for fifty percent (50%) of the costs of any additional environmental review and documentation required for this Additional Assignment, or Ten Thousand Dollars ($10,000.00), whichever is less. Costs shall not include costs associated with time spent by WSID or Tracy staff, or legal counsel, or elected officials.

13. APPROVAL OF THE BUREAU OF RECLAMATION

The parties acknowledge that the approval of the USBR, and other governmental approvals, will be required before the Additional Assignment contemplated by this Agreement can be completed. Consequently, the obligations of the parties under this Agreement are subject to the occurrence of all of the following conditions, which are for their joint benefit:

A. The approval by the USBR of the permanent assignment of the Additional Assignment Right to Tracy pursuant to this Agreement, and the due execution of the appropriate contracts, agreements or amendments with the USBR.

B. WSID's compliance with CEQA as lead agency and Tracy's compliance with CEQA as responsible agency.

C. "Final Approval" has been obtained, meaning that all governmental approvals, consents, and other requirements necessary to complete and finalize the Additional Assignment provided for herein have been obtained, including but not limited to (i) approval by the USBR, WSID and Tracy, and (ii) compliance with applicable environmental laws, including but not limited to NEPA, CEQA, and the ESA, has occurred, and (iii) Tracy is fully entitled to order and receive water from the USBR pursuant to this Additional Assignment. A validation action judgment pursuant to Section 33 shall not be required for Final Approval.

14. TERMINATION

The parties to this Agreement shall have the right of termination for cause as set forth in this Section:

A. Failure of Conditions. If any condition set forth in Section 13 above is not satisfied within three (3) years from the effective date of this Agreement, either party may terminate this Agreement; provided, however, that said three (3) year period shall be extended during the pendancy of any litigation filed in any way challenging or seeking to validate or invalidate the Additional Assignment, including but not limited to any approval, consent or other action necessary thereto.

B. Conditions Imposed. Should the USBR, or any other state or federal agency or any state or federal court, exercising jurisdiction over this Agreement and/or the operations of the parties or their water rights, impose any requirements, limitations, operations restrictions, fees, charges, costs, water rights restrictions or operating criteria (collectively "Requirements") upon either or both of the parties in whole or in part as a result of the assignment of entitlement under this Agreement, which Requirements (individually or collectively) actually and substantially reduce the value of this transaction for either party, then the party burdened by such Requirements or any of them may reasonably determine that compliance with such Requirements, or any of them, would be overly burdensome for that party, and terminate this Agreement.

C. Litigation. If the costs required to be paid by either party of litigation, regulatory review, compliance with regulatory conditions, including but not limited to CEQA or NEPA compliance and/or mitigation, or relief afforded to plaintiffs in an action brought in State or Federal court involving this Agreement exceeds $200,000 and, in the reasonable judgment of that party, are too costly for that party in relation to the benefits to be received, then that party may terminate this Agreement.

D. Notice. A party shall give thirty (30) days' advance written notice to the other party prior to terminating this Agreement pursuant to this Section. Prior to giving such notice, the party electing to terminate pursuant to this Section shall have met and conferred with representatives of the other party to discuss the concerns.

In the event of termination under this Section, the parties shall thereafter be under no further obligation or responsibility hereunder except as specified in this Agreement, including but not limited to Section 4C, and will release each other from further obligations under this Agreement, except for their respective share of costs incurred prior to the effective date of termination. Any costs required or liabilities incurred due to the termination itself shall be paid or otherwise borne by the party terminating the Agreement.

15. REPRESENTATIONS AND WARRANTIES

The parties represent and warrant, each to the other, that as of the Effective Date and as of the date of the Additional Assignment:

A. Each party is validly organized and existing under and by virtue of the laws of the State of California.

B. Each party has authority to execute and perform this Agreement, and has authorized the execution and performance of this Agreement.

C. Neither party's execution and performance of this Agreement will result in the breach of any other agreement to which that party is a party or to which that party is otherwise subject or bound.

16. USE OF WATER

Consistent with the provisions of Water Code Section 475 and 1244, the parties agree that neither the Additional Assignment nor this Agreement is evidence of the availability of surplus water beyond the terms of this Agreement or the lack of beneficial use of the water involved in this Agreement, and they shall not contend otherwise.

17. EMERGENCY WATER

The parties acknowledge that the water available under the WSID Contract has been available to be used as a primary water supply in the event that WSID's primary water supply source failed. Completion of the assignment contemplated by this Agreement will reduce the volume of water available to WSID pursuant to the WSID Contract for that purpose. In consideration of that:

A. Emergency Supply. Tracy hereby agrees to provide WSID with an emergency supply of water, subject to USBR approval and compliance with all applicable laws, in the event that two or more of WSID's pumps from Old River concurrently fail, which emergency supply will be available for a thirty (30) day period after failure of the second pump.

B. Limit. The emergency water provided pursuant to this Section shall not exceed five hundred (500) acre-feet or the amount provided from the USBR pursuant to the annual allocation pursuant to the Additional Assignment Right, whichever is less. The availability of emergency water expires ten (10) years from the effective date of the Initial Assignment Agreement.

C. Repayment. WSID shall use its best good faith efforts to reimburse Tracy with one acre foot of water for each acre foot of water used by WSID pursuant to this Section within the same water year in which it is provided by Tracy, unless Tracy requests otherwise. If WSID determines that such repayment cannot be paid, Tracy shall have the right to elect whether to be (1) repaid with water available to WSID in the next water year; or (2) reimbursed for the water at the contract rate that Tracy paid to the USBR for such water, plus administrative, carrying, and other costs reasonably and directly attributable to that water with payment made within 60 days of receipt of an invoice from Tracy. If the water can be obtained at lower cost due to its agricultural purpose of use, without any inconvenience, cost or other burden to Tracy, then the costs paid by WSID shall be appropriately reduced.

18. RECIPROCAL INDEMNIFICATION

A. Tracy shall hold harmless, indemnify, and defend WSID (with counsel of WSID's choice) and its members, directors, officers, employees, agents, and contractors (collectively "WSID's Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expenses, causes of actions, claims, demands, or judgments, including, without limitation, reasonable attorneys' fees, arising from or connected with this Agreement and caused by the negligence, gross negligence, or intentional misconduct of Tracy, except to the extent

caused by the negligence, gross negligence or intentional misconduct of any of WSID's Indemnified Parties.

B. WSID shall hold harmless, indemnify, and defend Tracy (with counsel of Tracy's choice) and its members, directors, officers, employees, agents, and contractors (collectively "Tracy's Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expenses, causes of actions, claims, demands, or judgments, including, without limitation, reasonable attorneys' fees, arising from or connected with this Agreement and caused by the negligence, gross negligence, or intentional misconduct of WSID, except to the extent caused by the negligence, gross negligence or intentional misconduct of any of Tracy's Indemnified Parties. WSID shall further hold harmless, indemnify and defend Tracy's Indemnified Parties (with counsel of Tracy's choice) from and against all liabilities, penalties, costs, losses, damages, expenses, causes of actions, claims, demands, or judgments, including without limitation, reasonable attorneys' fees, arising from or connected with WSID's acquisition and use of water pursuant to Section 17 hereof.

19. NO LIABILITY

The parties acknowledge that Tracy is familiar with the risks associated with delivery of CVP water due to its position as a CVP contractor. The parties further acknowledge that WSID is providing Tracy only with whatever rights it has pursuant to the portion of the WSID Contract to be assigned (the Additional Assignment Right), and that the right to receive water pursuant to the Additional Assignment right may be restricted or reduced by the United States in the future as allowed by law. Tracy shall hold WSID, its officers, agents, servants, employees, and consultants harmless from and against any and all losses, claims, liens, demands and causes of action of every kind and character and, without limitation by enumeration, all other claims or demands of every character occurring or in any way incident to, connected with, or arising directly or indirectly out of, the availability of water under that portion of the WSID Contract assigned to Tracy pursuant to this Agreement.

20. ATTORNEY'S FEES

If it shall be necessary for any party hereto to commence legal action or arbitration to enforce the terms and provisions of this Agreement, the prevailing party shall be entitled to reasonable attorneys fees, expenses and costs incurred. The expenses and costs incurred shall include, without limitation to other reasonable types of outlay directly caused by or reasonably required by the litigation or dispute, the costs of any experts employed in either the preparation or presentation of any evidence in such proceedings incurred in preparing for or participating in such litigation.

21. COOPERATION

To the extent reasonably required, each party to this Agreement shall, in good faith, execute such further agreements or documents and take such further actions as are needed to consummate this Additional Assignment. The parties agree to cooperate and assist each other in

good faith in meeting such requirements of regulatory agencies as may be applicable to performance of any terms of this Agreement.

22. NOTICES

All notices that are required, either expressly or by implication, to be given by any party to the other under this Agreement shall be delivered, sent by facsimile, or mailed, United States first-class postage prepaid, addressed as follows:

THE WEST SIDE IRRIGATION DISTRICT
Post Office Box 177
Tracy, California 95378-0177
Phone: (209) 835-0503
Fax: (209) 835-2702

CITY OF TRACY
Director of Public Works
520 Tracy Boulevard
Tracy, California 95376
Phone: (209) 831-6300
Fax: (209) 831-4472

Notice shall be deemed given (a) two (2) calendar days following mailing via regular or certified mail, return receipt requested, (b) one (1) business day after deposit with any one day delivery service assuring "next day" delivery, (c) upon actual receipt of notice, or (d) upon transmission, if by facsimile to the correct number, whichever is earlier. The parties shall promptly give written notice to each other of any change of address and mailing or shipment to the addresses stated herein shall be deemed sufficient unless written notification of a change of address has been received.

23. OTHER AGREEMENTS

Nothing contained herein restricts WSID from providing water services and sales to others as authorized by law, which do not interfere with WSID's obligations to Tracy or Tracy's rights pursuant to this Agreement.

24. SURVIVAL

Each of the provisions of and covenants contained in this Agreement, to the extent applicable, shall survive the performance of the executory provisions of this Agreement, and the transfer of entitlements.

25. ASSIGNABILITY

Until completion of the approvals set forth in Section 13 of this Agreement, neither party shall sell, assign, transfer, convey or encumber this Agreement or any right or interest herein or

thereunder, or suffer or permit any such assignment, transfer or encumbrance to occur by operation of law without the prior written consent of the other party, and such consent shall not be unreasonably withheld.

Subject to the provisions of this Section, this Agreement shall be binding upon the successors and assigns of the parties hereto.

26. NO BENEFIT TO THIRD PARTIES

This Agreement is made for the sole benefit of the parties hereto and their respective successors and assigns and no other person or persons shall have any right of action hereon.

27. TIME

Time is of the essence in the performance of the parties' respective obligations contained in this Agreement.

28. ENTIRE AGREEMENT

This Agreement constitutes the entire Agreement between WSID and Tracy and supersedes any oral agreement, statement or promise between them relating to the subject matter of the Agreement, other than the Initial Assignment Agreement except as expressly set forth herein. Any amendment, including oral modification, must be reduced to writing and signed by both parties to be effective.

29. CONTROLLING LAW

The interpretation and performance of this Agreement shall be governed by the laws of the State of California.

30. CONSTRUCTION

Any general rule of construction to the contrary not withstanding, this Agreement shall be liberally construed in favor of the assignments contemplated herein, which is the purpose of this Agreement. If any provision in this instrument is found to be ambiguous, an interpretation consistent with that purpose that would render the provision valid shall be favored over any interpretation that would render it invalid.

The parties agree that this Agreement is the product of mutual full and fair negotiation, and that both parties were represented by counsel. This Agreement shall therefore be interpreted as drafted equally by both parties.

The captions contained in this Agreement are for convenience only and shall not be interpreted so as to change or affect the meaning of the provisions of this Agreement.

31. **SEVERABILITY**

If any provision of this Agreement, or the application thereof to any person or circumstance, is found to be invalid, the remainder of the provisions of this Agreement, or the application of such provision to persons or circumstances other than those as to which it is found to be invalid, as the case may be, shall not be affected thereby.

32. **COUNTERPARTS**

The parties may execute this Agreement in two counterparts, which shall, in the aggregate, be signed by both parties; each counterpart shall be deemed an original instrument as against any party who has signed it. In the event of any disparity between the counterparts produced, the recorded counterpart shall be controlling.

INTENTIONALLY LEFT BLANK

33. **VALIDATION ACTION**

Tracy shall have the right to conduct a validation action with respect to this Agreement, the Additional Assignment, revision to the Tracy Contract as a result of the Additional Assignment, or any new Contract between Tracy and the Bureau which results from the Additional Assignment, or any of them, pursuant to the provisions of California Code of Civil Procedure section 860 et seq., or other authority, at Tracy's own cost. WSID shall cooperate therewith.

THE WEST SIDE IRRIGATION DISTRICT, a political subdivision of the State of California

Date: 1-20-14

By _____
Jack Alvarez, President

ATTEST:

_____
Secretary

APPROVED AS TO FORM:

_____
Counsel for The West Side Irrigation District

Date: 1/21/14

CITY OF TRACY, a California municipal corporation

Date: 1/7/14

By _____
Brent H. Ives, Mayor

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney of the City of Tracy

Date: 12/30/13

RESOLUTION

AUTHORIZING EXECUTION OF AGREEMENT FOR ADDITIONAL ASSIGNMENT BETWEEN THE WEST SIDE IRRIGATION DISTRICT AND THE CITY OF TRACY FOR 2,500 ACRE-FEET OF CENTRAL VALLEY PROJECT WATER SUPPLY FOR $2.5 MILLION

WHEREAS, The West Side Irrigation District (WSID) and the City of Tracy (City) entered into an agreement in 2001, for the City to purchase the contract right to 5,000 acre-feet of WSID's Central Valley Project (CVP) water entitlement, and;

WHEREAS, an Agreement for Assignment of Portion of Water Service Contract was entered into with the City in 2004, providing immediate contract right of 2,500 acre-feet of WSID's CVP water entitlement while optioning the remaining 2,500 acre-feet until February 2014, and;

WHEREAS, the City authorized exercise of the option to purchase the additional contract right of 2,500 acre-feet on December 3, 2013, and;

WHEREAS, it is in the best interest of the District to execute the agreement to assign the contract right of 2,500 acre-feet of its CVP water entitlement to the City, and;

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors that Board President Jack Alvarez, and the Secretary of the Board of Directors are hereby authorized and directed to execute on behalf of the District the above mentioned Agreement for Additional Assignment of Entitlement to CVP Water between The City of Tracy and The West Side Irrigation District.

PASSED AND ADOPTED THIS 11th day of December 2013 by unanimous vote of the Board of Directors of The West Side Irrigation District.

Jack Alvarez

Jack Alvarez, President
The West Side Irrigation District

ATTEST:

Carol Petz

Carol Petz, Secretary
The West Side Irrigation District

RESOLUTION 2013-186

AUTHORIZING EXERCISE OF OPTION TO PURCHASE FROM THE WEST SIDE IRRIGATION DISTRICT THE CONTRACT RIGHT TO 2,500 ACRE-FEET OF CENTRAL VALLEY PROJECT WATER SUPPLY FOR $2.5 MILLION AND AUTHORIZING THE MAYOR TO EXECUTE THE ASSIGNMENT AGREEMENT

WHEREAS, The West Side Irrigation District (WSID) and the City entered into an agreement in 2001, for the City to purchase the contract right to 5,000 acre-feet of WSID's Central Valley Project (CVP) water entitlement, and

WHEREAS, It is appropriate to execute the option agreement at this time so that the option will not be lost, the water supply will be available to the City's US Bureau of Reclamation renewed contracts, and

WHEREAS, The City has planned for this variability in annual water supply by banking water in the Semitropic Water Storage District and in the City's Aquifer Storage and Recovery program, and

WHEREAS, Acquisition of this water supply has been planned for and incorporated into the City's Urban Water Management Plan;

NOW, THEREFORE, BE IT RESOLVED, That the City Council, authorizes exercise of option to purchase from the West Side Irrigation District the contract right to 2,500 acre-feet of Central Valley Project Water Supply for $2.5 million and authorizes the Mayor to execute the Assignment Agreement.

* * * * * * * * * * * * * *

The foregoing Resolution 2013-186 was passed and adopted by the Tracy City Council on the 3rd day of December, 2013, by the following vote:

AYES: COUNCIL MEMBERS: MACIEL, MANNE, RICKMAN, YOUNG, IVES

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

ABSTAIN: COUNCIL MEMBERS: NONE

MAYOR

ATTEST:

CITY CLERK

Agreement Between City of Tracy and Plain View Water District (PVWD) for Central Valley Project (CVP) Supplies for Patterson Pass Business Park (September 1991)

WATER SUPPLY AND
SEWAGE SERVICES AGREEMENT

This Water Supply and Sewage Services Agreement (this "Agreement") is made and entered into effective as of the full execution of this Agreement (the "Effective Date"), as evidenced by the latest date set forth next to the signatures below, by and among King & Lyons - Tracy Industrial, a California limited partnership ("K&L") (on behalf of itself and as agent for its affiliates, Tracy Industrial Partners and Bay Cities Truck Stop), Safeway Inc., a Delaware corporation ("Safeway") and the City of Tracy (the "City").

RECITALS

This Agreement is entered into on the basis of the following facts and mutual understandings:

A. K&L and Safeway are the owners of, or hold the right to purchase, that certain unimproved parcel of real property (the "Property") comprised of approximately six (6) acres and located on West Valpico Road, Tracy, California, as more particularly described on Exhibit A attached hereto. The Property was a part of an approximately twenty (20) acre parcel (the "Parcel") which is improved with an industrial facility. Three hundred ninety thousand (390,000) gallons per day of sewage discharge rights were allocated to and reserved for the benefit of the owners of the Parcel. K&L and Safeway hold the Property for investment or development in accordance with the industrial zoning applicable to the Property. In connection with the acquisition of the Property, K&L and Safeway have acquired or shall acquire from the seller of the Property ownership of certain sewage discharge rights (the "Discharge Rights") which consist of the right to discharge three hundred nineteen thousand (319,000) gallons of wastewater per day into the City's municipal sewage treatment system with a maximum waste strength equal to three thousand sixty-seven (3,067) lbs./day of total suspended solids and three thousand one hundred eight (3,108) lbs./day of Biochemical Oxygen Demand$_5$. The Discharge Rights shall be allocated to and reserved for the benefit of the owners of the Property by recordation of the instrument described in Paragraph 1(a) below and shall be subject to the terms and conditions of this Agreement.

B. K&L and Safeway desire to use the Discharge Rights and to obtain from the City water treatment and delivery services for the Property and the Assignment Property (as defined in Paragraph 2(b) below). The City desires to provide such services on the terms and conditions set forth in this Agreement.

C. The City's wastewater treatment plant (the "Plant") currently has a full capacity of approximately nine million (9,000,000) gallons per day. All of such capacity is currently either utilized or allocated to and reserved for the benefit of various parties and properties in accordance with the City's applicable ordinances and procedures. The Discharge Rights purchased from a private party by K&L and Safeway and allocated to the Property as described above are a portion of such reserved capacity.

D. Despite the fact that the full capacity of the Plant is either utilized or allocated to approved projects or property within the City limits, the City intends to permit K&L and Safeway to reserve the use of the Discharge Rights in accordance with the terms of this Agreement. The City acknowledges such use may be for the benefit of the owners and users of the Assignment Property, which property is located outside of the current City limits. At the time of execution of this Agreement, the parties contemplate that the City may annex the Assignment Property and have, accordingly, entered into that certain Agreement to Annex to the City of Tracy (the "Annexation Agreement") on or about the Effective Date of this Agreement. In connection with the transfer of ownership and control of the Discharge Rights from a private third party to K&L and Safeway, the City has determined to permit the reservation and use of the Discharge Rights for the benefit of the owners and users of the Property and the Assignment Property, despite the limitations upon the capacity of the Plant and possible detriment to residents of the City, because the City has found the development projects proposed by K&L and Safeway for such properties: (1) shall be in the best interests of the City and its residents, (2) promote the growth and diversity of the City's economy, (3) create employment opportunities for the residents of the City, (4) assist in addressing the jobs/housing imbalance existing in the City and its environs, and (5) assist in attaining air quality goals by developing employment opportunities in close proximity to residential areas of the City.

AGREEMENT

NOW, THEREFORE, K&L, Safeway and the City hereby agree as follows:

1. Consent to Transfer; Confirmation of Capacity; Required Payments.

(a) Consent; Acquisition and Transfer Procedures. The City hereby consents to the allocation of the Discharge Rights by Navarra Properties, a California general partnership, to the Property in accordance with the terms of an agreement by and among Navarra Properties, K&L and Safeway. K&L and Safeway represent to the City that the terms of such agreement are not

inconsistent or in conflict with the terms of this Agreement. In connection with K&L and Safeway's acquisition from Navarra Properties of the Discharge Rights and the Property, the City, K&L and Safeway agree that: (i) a minor subdivision or lot split must be effected in accordance with the City's applicable ordinances and procedures to create the Property as a separate legal parcel; (ii) an instrument in a form reasonably satisfactory to the City shall be recorded against the title to the Property and the retained portion of the Parcel in connection with such subdivision or lot split which sets forth: (A) a specific description of the amount and characteristics of sewage discharge rights retained by Navarra Properties for the benefit of the owners and users of that portion of the Parcel reserved by Navarra Properties, (B) a specific description of the Discharge Rights allocated to and reserved for the benefit of the owners and users of the Property and subject to the assignment provisions hereof, (C) provisions by which the holder of any mortgage or deed of trust encumbering the Parcel consents to the partition of the Parcel and the allocation of discharge rights set forth in such instrument, (D) provisions by which the owners of the retained portion of the Parcel and the Property (and their successors in interest) defend, release and hold the City and its elected officials, officers, agents and employees harmless from any liability or damage arising from or related to the allocation of the discharge rights between the retained portion of the Parcel and the Property which may be asserted by any future owner of the retained portion of the Parcel or the Property, and (E) the allocation of the discharge rights capital charge due the City from the owners of the Property and the retained portion of the Parcel; and (iii) the Discharge Rights' characteristics of waste strength (total suspended solids and Biochemical Oxygen Demand$_5$) shall not be separately assigned or transferred by K&L or Safeway except on a pro rata basis in connection with an assignment or transfer in accordance with the provisions of this Agreement of all or a portion the right to discharge up to three hundred nineteen thousand (319,000) gallons of wastewater per day into the City's municipal sewage treatment system. Notwithstanding the above, K&L and Safeway (or their successors and assigns of the Property or the Assignment Property) may separately transfer and assign disproportionate characteristics of waste strength (i.e., the right to discharge a higher volume of total suspended solids or place a greater maximum Biochemical Oxygen Demand$_5$ per gallon of wastewater on an average basis) only to an owner or user of all or a portion of the Property or the Assignment Property.

(b) Confirmation; Payment. The City acknowledges and confirms that the Discharge Rights are of the quantity and include the characteristics of waste strength described in Recital A above. K&L shall pay a capital charge equal to One Thousand Seven Hundred Ninety-Eight Dollars ($1,798) per month and Safeway shall pay a capital charge equal to Six Hundred

Ninety Dollars ($690) per month in order for each party to reserve its right to use the Discharge Rights in accordance with this Agreement, and any default by K&L or Safeway in the payment of monthly fees and charges after performance of the construction and capital improvement funding obligations set forth herein shall not affect the rights of the other under this Agreement. Upon such payment and the performance by K&L and Safeway of their obligations hereunder, the City shall reserve use of the Discharge Rights for the benefit of K&L and Safeway as provided herein.

2. Provision of Sewage Services.

(a) Service. The City shall accept wastewater and provide treatment and disposal services (the "Sewage Services"), up to the full amount and strength of the Discharge Rights, to K&L and Safeway, and their assignees and successors in interest to the Property and the Assignment Property. Notwithstanding the above, nothing in this Agreement shall require the City to accept wastewater prior to K&L and Safeway's performance of their construction and capital improvement funding obligations set forth in this Agreement or to accept wastewater with characteristics or qualities which do not meet wastewater standards of general application established by any local, regional, state or federal agency with jurisdiction. The Sewage Services for the Assignment Property shall be provided by the City via the Corral Hollow Line (as defined in Paragraph 3 below), subject to the limitations imposed by the capacity of such line as constructed by K&L and Safeway or the amount of Discharge Rights held by K&L and Safeway, whichever is less. In the event that: (i) the City constructs and operates the Hansen Line (as defined in Paragraph 4 below), the Sewage Services for the Assignment Property shall be provided via the Hansen Line, or (ii) the City does not construct the Hansen Line, and the capacity of the main sewer trunk line to which the Corral Hollow Line shall be connected is required by the owners or users of properties for which such main sewer trunk line was originally designed and installed, then the City shall provide the Sewage Services for the Assignment Property via an alternative means (the "Alternative Means"), the location and specifications of which have not been finalized as of the Effective Date. The City, K&L and Safeway agree that the following conditions shall apply in the event the City provides Sewage Services via the Alternative Means: (A) the City shall design and construct the Alternative Means, (B) there shall be no interruption in the provision of Sewage Services by the City as a result of the transition to the Alternative Means, and (C) K&L and Safeway shall contribute all of the costs to design and construct the Alternative Means, provided that such contribution shall in no event exceed Four Million Dollars ($4,000,000) less the Credit (as such term is defined in Paragraph 4(c) below). In the event the Alternative Means become necessary at such time as the

letters of credit delivered by K&L and Safeway pursuant to Paragraph 4(d) below are still held by the City, the City shall draw against such letters of credit to fund construction of the Alternative Means and such draws shall be made in accordance with the provisions of Paragraph 4(d). The City acknowledges and agrees that the maximum contribution required of K&L and Safeway with respect to the design and construction of the Alternative Means and/or the Hansen Line (whether drawn from the letters of credit or paid by K&L or Safeway) shall be an aggregate amount equal to Four Million Dollars ($4,000,000) less the Credit.

(b) Assignment and Assignment Property. The parties acknowledge and agree that K&L owns seventy-two and twenty-six hundredths percent (72.26%) (the "K&L Percentage") of the Discharge Rights and that Safeway owns twenty-seven and seventy-four hundredths percent (27.74%) (the "Safeway Percentage") of the Discharge Rights, and that the Discharge Rights are held by K&L and Safeway in connection with the contemplated development of the Property. Subject to retention for the benefit of the Property of a minimum wastewater disposal capacity as required by the applicable City ordinance in effect at the time of assignment, which the parties acknowledge and agree is currently an amount equal to one thousand three hundred seventy-five (1,375) gallons per day per acre, either K&L or Safeway may assign all or a portion of its interest in the Discharge Rights to the owners or users of (or the successors in interest of either K&L or Safeway to) the Property or the Assignment Property. Such assignment shall be completed by delivery of written notice to the City by the current holder of a portion of the Discharge Rights identifying the transferee of the interest (who shall be an owner or user of the Property or the Assignment Property) and setting forth: (i) the exact number of gallons per day of wastewater disposal capacity and related characteristics of waste strength so assigned, (ii) the portion of the obligation to pay the Discharge Rights capital charge delegated to such assignee, and (iii) the written assumption by such assignee of its obligations to pay its pro rata share of capital charges, connection fees, sewage use fees and similar charges of general application. In the event such assignment is to a purchaser of a fee interest in a portion of the Property or the Assignment Property, such instrument shall be in recordable form and shall be recorded upon transfer of title to such assignee. No assignment by a party which is in default of its obligation under this Agreement shall be permitted. The Assignment Property consists of approximately three hundred seventy-eight (378) acres and is owned by K&L (or its affiliates) and Safeway, and is more particularly described on Exhibit B attached hereto.

(c) Payment of Costs. K&L and Safeway (or their successors or assigns) shall each pay for the Sewage Services provided to such parties by the City in accordance with the

City's standard charges and procedures applicable to properties of similar use then in effect.

3. Corral Hollow Line.

(a) Construction. The Sewage Services shall be provided by the City to the Assignment Property via the sewer line (the "Corral Hollow Line") to be constructed by K&L and Safeway at their cost in the location set forth on Exhibit C attached hereto. K&L and Safeway shall construct the Corral Hollow Line in accordance with plans and specifications therefor approved by the City, which are set forth on Exhibit D attached hereto. K&L and Safeway shall be responsible for obtaining all necessary permits and approvals required to construct the Corral Hollow Line. K&L and Safeway shall pay all fees and charges related to the construction of such line as though it was located within the City. The City shall cooperate with K&L and Safeway in order to permit such parties to complete construction of the Corral Hollow Line on or before December 31, 1991.

(b) Ownership and Operation. Upon completion satisfactory to the City of the Corral Hollow Line, K&L and Safeway shall dedicate the Corral Hollow Line to the City, and the City shall accept and thereafter fully own, operate and maintain the Corral Hollow Line, provided, however, that prior to such acceptance the City shall receive an easement, license agreement or similar interest from the County of San Joaquin, on terms reasonably acceptable to the City, evidencing the City's ownership of the Corral Hollow Line, and its right to maintain, repair and reconstruct the same, notwithstanding that such line is installed in the County's right of way. Delivery of such documentation shall be deemed a construction obligation of K&L and Safeway for the purposes of this Agreement.

(c) City Processing. The City shall promptly process all City approvals and permits which are required in connection with the construction of the Corral Hollow Line, including, but not limited to, processing required to comply with the California Environmental Quality Act ("CEQA"). K&L and Safeway shall pay all fees and costs required in connection with the City's processing under CEQA and required under the City's ordinances and procedures of general application as the same are applicable to CEQA processing.

4. Hansen Line.

(a) Construction. The parties acknowledge that the City intends, but shall not be obligated, to construct an alternative sewer line (the "Hansen Line") to provide Sewage Services to the Assignment Property and certain other properties to be designated by the City. The Hansen Line shall be constructed, if at all, approximately in the location set forth

on Exhibit C attached hereto. In the event that the City constructs and operates the Hansen Line, the City shall thereafter provide Sewage Services to the Assignment Property via the Hansen Line, without interruption of Sewage Services in connection with such transition. The Hansen Line shall be constructed by the City, subject to the funding obligations of K&L and Safeway set forth below. Upon completion satisfactory to the City of the Corral Hollow Line, but prior to acceptance thereof, K&L and Safeway shall deliver to the City an easement, license agreement or similar interest from the County of San Joaquin, on terms reasonably acceptable to the City, which shall permit construction of the Hansen Line as described herein and acknowledge and agree to the subsequent ownership, control, maintenance and repair of the Hansen Line by the City, notwithstanding that the Hansen Line shall be installed in the County's right of way.

(b) Costs, Allocation. The actual cost to construct the Hansen Line and those portions of such cost which are properly allocable to: (i) the owners of the properties subject to the I-205 Corridor Specific Plan dated February, 1991, which are located to the west of Corral Hollow Road (the "I-205 Project"), (ii) K&L, and (iii) Safeway, shall be reasonably determined upon completion of the Hansen Line by the City's Director of Public Works after consultation with the parties hereto.

(c) K&L and Safeway Contribution. K&L shall contribute the K&L Percentage and Safeway shall contribute the Safeway Percentage of the K&L/Safeway Share (as defined below) of the fees, charges and costs to construct the Hansen Line. City fees and charges will be paid as though the Hansen Line was located within the City. K&L and Safeway's contribution shall be effected by delivery of letters of credit as described in and in accordance with the terms of Paragraph 4(d) below. The K&L/Safeway Share of all fees, charges and costs applicable to the Hansen Line shall be Four Million Dollars ($4,000,000) less a credit (the "Credit") in an amount equal to: (i) the actual costs incurred by K&L and Safeway to design and construct that portion of the Hansen Line to be located in Schulte Road, which portion shall be installed by K&L and Safeway, provided that the credit for such costs shall not exceed Nine Hundred Thousand Dollars ($900,000), plus (ii) Four Hundred Thousand Dollars ($400,000), which sum K&L and Safeway shall pay to the City within five (5) business days of the Effective Date to fund engineering and design work for the Hansen Line. The amount of the Credit for the portion of the Hansen Line to be installed in Schulte Road shall be reasonably determined by the City's Director of Public Works after completion thereof and in consultation with the parties. After the City has collected the necessary funds to construct the Hansen Line from K&L, Safeway and the owners of the I-205 Project, the City shall thereafter withdraw such funds to

perform such construction on a pro rata basis in proportion to each party's percentage contribution. If the Hansen Line is not built, K&L and Safeway shall not be entitled to any refund of the Four Hundred Thousand Dollars ($400,000) advanced to the City for design of the Hansen Line, except to the extent any balance of such amount is held by the City following completion of the Hansen Line or the Alternative Means, or abandonment of construction thereof.

(d) Security. In fulfillment of the obligation to contribute their respective percentages of the K&L/Safeway Share as set forth in Paragraph 4(c) above, K&L and Safeway shall each deliver a letter of credit substantially in the form attached hereto as Exhibit E for the benefit of the City to secure each such party's payment of its percentage of the K&L/Safeway Share less the Credit. Such letters of credit shall be in a form acceptable to the City and shall be delivered on or before the date (the "Delivery Date") that K&L or Safeway first receives Sewage Services through the Corral Hollow Line. Such letters of credit shall be maintained or renewed by K&L and Safeway for a period of seven (7) years from the Delivery Date. All draws against the letters of credit shall be made pro rata against both letters of credit in amounts corresponding to the K&L Percentage and the Safeway Percentage. The City shall draw upon the letters of credit only if: (i) K&L and/or Safeway have failed, within fifteen (15) days of the City's written request therefor, to deposit with the City funds in the amount of their respective percentages of the K&L/Safeway Share less the Credit, and (ii) the City intends to award the contract for construction of the Hansen Line (or the Alternative Means) within fifteen (15) days of such draw. In the event the contract for construction of the Hansen Line (or the Alternative Means) is not awarded within thirty (30) days of any draw on the letters of credit, all funds drawn against the letters of credit shall be refunded to K&L and Safeway at such time as the letters of credit are reinstated by K&L or Safeway, provided, however, that either K&L or Safeway shall at any time have the option to place its respective contribution in an account in the name of the City with interest accruing for the benefit of K&L or Safeway, as the case may be. The immediately preceding provisions shall not apply to a draw resulting from failure to renew or extend a letter of credit in accordance with the requirements of this Agreement, in which case the latest date which the City shall be entitled to hold any funds so drawn without commencing construction of the Hansen Line or the Alternative Means shall be the date (the "Outside Date") which is seven (7) years from delivery of the letters of credit. The City shall promptly refund to K&L and Safeway the remaining balance of the amounts drawn against the letters of credit or placed in the account(s) described above, if any, upon the earlier of the completion of the Hansen Line or the Outside Date (unless the City is constructing the Hansen Line or the Alternative Means on such date, in which case the City may retain

funds until completion of such construction and refund any remaining balance upon such completion).

(e) Reimbursement. Upon completion and acceptance of the Hansen Line and annexation of the Assignment Property, the City shall initiate and conclude appropriate proceedings for the formation of a benefit district in accordance with applicable law in order to reimburse K&L and Safeway for that portion of the K&L/Safeway Share which exceeds the share of such costs payable by K&L and Safeway based upon their pro rata use of the Hansen Line. The parties acknowledge and agree that, unless there is an increase in the Discharge Rights allocated to the Assignment Property above the amount contemplated at the Effective Date, the share of the costs of the Hansen Line which should be ultimately borne by K&L and Safeway based upon their use of the Hansen Line is set forth on Exhibit D attached hereto. The engineering estimate of the costs to construct the Hansen Line is also set forth on Exhibit D. No increase in the estimated or actual cost to construct the Hansen Line over such amount, however, shall have any effect upon the parties' rights and obligations set forth herein. In the event that the City determines to provide any Sewage Services through the Hansen Line or the Alternative Means to owners of property which is not located within the City limits, the City, in lieu of establishing a benefit district in order to effect reimbursement to K&L and Safeway, shall charge a sewer connection fee to such user and reimburse K&L and Safeway a portion of the K&L/Safeway Share based on the share of such user's projected use of Sewage Services via the Hansen Line or the Alternative Means in proportion to the capacity of the Hansen Line as set forth on Exhibit D or of the Alternative Means. All funds available for reimbursement in connection with the Hansen Line or the Alternative Means shall be paid to K&L and Safeway in amounts corresponding to the K&L Percentage and the Safeway Percentage, respectively, at such time as the City receives such funds.

5. Water Supply Services.

(a) Provision of Services. Subject to supply limitations of the Central Valley Water Project, K&L and Safeway may be entitled to receive from the Plain View Water District (the "District") a water supply allocation for the benefit of the Assignment Property. K&L and Safeway must apply to the District for delivery of all or a portion of each party's maximum allocation by March 1 and July 1 of each fiscal year of the District. K&L and Safeway (and their successors and assigns) shall: (i) advise the City of the amount of water (collectively, the "Developer's Water") which such parties have requested and are entitled to receive from the District promptly following application for such amount to the District, and (ii) provide the City with the District's verification of such amount in a form reasonably acceptable to the City. The City shall thereafter, to

the extent that the Developer's Water is available and is delivered to the City's turnout on the Delta-Mendota Canal, or such other point of diversion which may be agreed to by the parties hereto, treat such water at its water treatment plant and deliver such water to the Assignment Property via the water service line (the "Water Service Line") up to a maximum daily average of one million five hundred twenty thousand two hundred fifty-nine (1,520,259) gallons per day, provided that the Water Service Line constructed by K&L and Safeway has the capacity to serve such flow. The City, K&L and Safeway shall cooperate in good faith to establish mutually agreeable accounting and billing procedures with respect to the Developer's Water, which procedures shall be subject to the approval of the Bureau of Reclamation and the District. Subject only to the provisions of Paragraph 5(e) below and notwithstanding anything else in this Agreement to the contrary, the City shall be obligated to treat and deliver only that amount of water which K&L and Safeway (and their successors and assigns) receive from the District and deliver to the City's turnout up to the maximum daily average amount set forth above. The City shall not, however, restrict or limit the amount of said water treated and delivered to and for the benefit of the Assignment Property on any basis other than a supply restriction imposed by a third party other than the City. The Water Service Line shall be constructed by K&L and Safeway, at their cost, in the location set forth on Exhibit C attached hereto and in accordance with plans and specifications therefor approved by the City, which are set forth on Exhibit D attached hereto. K&L and Safeway shall be responsible for obtaining all necessary permits and approvals required to construct the Water Service Line and the City shall promptly process all City approvals and permits which are required in connection with such construction. K&L and Safeway shall reimburse the City for costs, fees and charges incurred in connection with the construction of the Water Service Line on the same basis and to the same extent set forth in Paragraphs 3(a) and 3(c) above for reimbursement to the City of such costs, fees and charges incurred in connection with City processing and construction of the Corral Hollow Line. The City shall cooperate with K&L and Safeway in order to permit such parties to complete construction of the Water Service Line on or before December 31, 1991. Upon completion satisfactory to the City of the Water Service Line, K&L and Safeway shall dedicate the Water Service Line to the City, and the City shall accept and thereafter fully own, operate and maintain the Water Service Line provided, however, that prior to such acceptance the City shall receive an interest from the County of San Joaquin evidencing the City's ownership of the Water Service Line on the terms and conditions applicable to the similar interest described in Paragraph 3(b) above in connection with the Corral Hollow Line.

(b) Restrictions on Use and Amount. The parties acknowledge that K&L and Safeway's respective contracts with the

District restrict delivery and use of the Developer's Water to locations within the boundaries of the District. Further, the amount of Developer's Water cannot exceed the maximum allocation to K&L and Safeway under each party's contract with the District. The City covenants and agrees that no action by the City shall violate such restrictions.

(c) Reimbursement. Upon completion and acceptance of the Water Service Line and annexation of the Assignment Property, the City shall initiate and conclude proceedings in accordance with applicable law to form a benefit district for the purpose of reimbursing K&L and Safeway for the share of the costs of constructing the Water Service Line borne by such parties in excess of the share of such costs determined by such parties' collective use of the Water Service Line. The parties agree that the share of the costs of constructing the Water Service Line which shall ultimately be borne by K&L, Safeway and the owners of the I-205 Project shall be reasonably determined by the City's Director of Public Works after consultation with the parties, and that K&L and Safeway's use of the Water Service Line shall include the capacity reserved in the Water Service Line to meet K&L and Safeway's required fire fighting flow and pressure capacity. Notwithstanding anything to the contrary set forth herein, the City shall reimburse K&L and Safeway for the share of the costs of designing and constructing the Water Service Line allocated to the I-205 Project, which shall be determined by the City's Director of Public Works as set forth above, from the proceeds of the assessment bonds issued to pay such costs by or on behalf of the I-205 Project as soon as such funds are available to the City. In the event that the City determines to provide water treatment and supply services through the Water Service Line to owners of property which is not located within the City limits, the City, in lieu of establishing a benefit district to effect reimbursement to K&L and Safeway, shall charge a water service connection fee to such user and reimburse K&L and Safeway a portion of the costs of designing and constructing the Water Service Line based on the proportionate share of such new user's projected use of water treatment and supply services via the Water Service Line in proportion to the capacity of the Water Service Line set forth on Exhibit D attached hereto. All funds available for reimbursement in connection with the Water Service Line shall be paid forty-one and twenty-nine hundredths percent (41.29%) to K&L and fifty-eight and seventy-one hundredths percent (58.71%) to Safeway at such time as the City receives such funds.

(d) No Detachment. The City shall not, except upon an application of K&L or Safeway (or their successors and assigns) for such action which is approved by the City, take or support any action to detach any portion of the Assignment Property from the Plain View Water District or any successor thereto.

(e) Emergency Supply. In the event of any scheduled or unscheduled maintenance of the Delta-Mendota Canal, or any natural disaster, vandalism or other action or event which causes a complete interruption in water supply delivery services through the Delta-Mendota Canal (collectively an "Emergency"), the City shall, subject to the conditions set forth below, provide a water supply to and for the benefit of the owners and users of the Assignment Property from the City's alternative sources of water supply. The City's agreement to provide a water supply to the Assignment Property in the event of an Emergency shall be subject to the following conditions: (i) such supply shall be furnished to the Assignment Property for a maximum period of ninety (90) days, (ii) following such Emergency and resumption of water supply deliveries through the Delta Mendota Canal, K&L and Safeway (or their successors and assigns) shall promptly deliver to the City the amount of water supplied to the Assignment Property during the interruption of services resulting from the Emergency, (iii) water supply restrictions and mandatory rationing provisions shall not be in effect in the City at the time of the Emergency which cause the City to reasonably determine that delivery of a water supply to the Assignment Property would be detrimental to the health, safety and welfare of the citizens of the City, and, (iv) K&L and Safeway (and their successors and assigns) shall pay all costs incurred by the City in connection with delivery of the emergency water supply described above.

6. Specifications. The parties have agreed upon certain plans and specifications applicable to the construction of the Corral Hollow Line, the Schulte Road portion of the Hansen Line and the Water Service Line. Such plans and specifications are set forth on Exhibit D attached hereto.

7. Additional Developer Covenants.

(a) In-Lieu Fees. In consideration of the City's execution of this Agreement and the continuing supply of water and sewer services as provided herein, K&L shall annually pay an amount equal to Forty-One Thousand Two Hundred Ninety Dollars ($41,290) and Safeway shall annually pay an amount equal to Fifty-Eight Thousand Seven Hundred Ten Dollars ($58,710) to the City, as a payment in lieu of taxes for City services provided to the Assignment Property. Such amount shall be adjusted annually on the anniversary of the Effective Date of this Agreement to reflect the percentage change in the Consumer Price Index for All Urban Consumers, San Francisco-Oakland-San Jose (1982-84 = 100) published by the United States Department of Labor or the replacement thereof. Upon issuance of a building permit for a project located on that portion of the Assignment Property to the west of Patterson Pass Road, the K&L portion of such fee shall be increased by Twenty Five Thousand Dollars ($25,000), with such increased fee also subject to the annual adjustment set forth

above after the first year or portion thereof. Equal quarterly payments of such in-lieu fees shall commence upon the full execution of this Agreement and shall terminate upon the annexation of the Assignment Property to the City.

(b) Urban Management Plan Participation. K&L and Safeway shall participate in the City's urban growth management plan process. Within five (5) days of the Effective Date of this Agreement, K&L shall contribute an amount equal to Fifty-One Thousand Nine Hundred Eighty-One Dollars ($51,981) and Safeway shall contribute an amount equal to Seven Thousand Nine Hundred Thirty Dollars ($7,930) to such project.

8. Reservation of Future Capacity.

(a) Additional Discharge Rights. In the event K&L and/or Safeway acquire additional rights to discharge wastewater into the City's municipal sewage treatment system from any source, and capacity to serve such additional amount is available in any of the Corral Hollow Line, the Hansen Line or the Alternative Means, the City shall provide Sewage Services for such additional capacity on the same terms as are generally applicable to other similar users of the system. Provision of such services shall be limited to and for the benefit of the Property or the Assignment Property only and shall require K&L and/or Safeway (and/or their successors and assigns) to pay all connection fees, capital charges and perform other similar obligations of general application in effect at such time.

(b) General Application. Upon any expansion of the Plant by the City, K&L and/or Safeway shall be entitled to apply for additional rights to discharge wastewater from the Property or the Assignment Property into the City's municipal sewage treatment system on the same basis and on the same terms and conditions as are applicable to all other applicants for such additional discharge rights.

9. Obligations are Separate. After K&L and Safeway's performance of their construction and capital improvement funding obligations set forth in this Agreement, the City agrees that unless K&L or Safeway (or their successors and assigns) are in default of their respective obligations under this Agreement, each such party shall be entitled to all the rights and benefits set forth herein. Any default by either K&L or Safeway (or their successors and assigns) shall have no impact or effect upon the rights and benefits of the other parties, so long as such other parties fully perform their obligations under this Agreement.

10. Effect of Legal Challenge. In the event any legal action is brought or threatened by any third party in connection with the services or projects contemplated by this Agreement before the date (the "Initial Service Date") on which sewer and

water services are ready for use and available to the Assignment Property, the City, K&L and Safeway shall each have the right to terminate each such party's obligations under this Agreement upon written notice to the other parties of such termination, which notice shall be effective upon delivery. In the event the City exercises such right, such termination may be avoided by K&L or Safeway provided the party(ies) seeking to keep this Agreement in full force and effect shall indemnify, defend and hold the City harmless from any and all liabilities which may arise in connection with such legal challenge. In the event of a termination under this Paragraph 10, all funds or instruments delivered by the terminating party or parties which the City possesses at such time shall be promptly refunded or returned, and such terminating party or parties shall have no further rights or obligations hereunder. Unless the termination rights described in this Paragraph 10 have been exercised by a party prior to the Initial Service Date, the provisions of this Paragraph 10 shall automatically terminate and be of no further force or effect from and after the Initial Service Date.

11. Miscellaneous.

(a) Governing Law. This Agreement shall be interpreted and enforced in accordance with the laws of the State of California.

(b) Entire Agreement. This Agreement and the Annexation Agreement set forth the entire agreement of the parties with respect to the subject matter hereof, and supersede any prior or contemporaneous oral agreements or representations. This Agreement may not be amended except in a writing signed by the parties hereto. The terms and conditions of this Agreement and the Annexation Agreement are interdependent and the valid execution and delivery of each agreement is conditioned upon the execution and delivery of the other.

(c) Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one instrument binding upon the parties.

(d) Attorneys' Fees. In the event any action or proceeding is brought to interpret or enforce any of the provisions of this Agreement, the prevailing party in such action or proceeding shall be entitled to recover its costs incurred in connection therewith, including reasonable attorneys' and expert witness fees.

(e) Exhibits. All exhibits attached hereto are incorporated into this Agreement by this reference as if set forth herein in full.

(f) Further Assurances; Covenant to Sign Documents. Each party covenants, on behalf of itself and its successors, heirs and assigns, to take all actions and do all things, and to execute, with acknowledgement or affidavit if required, any and all documents and writings that may be necessary or proper to achieve the purposes and objectives of this Agreement.

(g) Severability. Invalidation of any of the provisions contained in this Agreement, or of the application thereof to any person, by judgment or court order shall in no way affect any of the other provisions hereof or the application thereof to any other person or circumstances and the same shall remain in full force and effect.

(h) Excuse. It is agreed that the time for City's performance of the terms of this Agreement may be delayed, without liability therefor, as a result of acts of God, other natural conditions which delay the performance, strikes, boycotts or similar obstructive action by employees or employee organizations, or other events beyond the reasonable control of the City. Notwithstanding the above, the periods during which K&L and Safeway must maintain the letters of credit or the City may retain the proceeds thereof set forth in Paragraph 4(d) above shall not be extended by the provisions of this Paragraph 11(h).

(i) Term. This Agreement shall terminate upon the earlier of: (A) the date of annexation of the Assignment

Property to the City, or (B) the expiration of the maximum term provided by law for agreements of this nature.

IN WITNESS WHEREOF, K&L, Safeway and the City have executed this Agreement to indicate their intent to be bound by the provisions set forth herein.

K&L

King & Lyons - Tracy Industrial, a California limited partnership

8/20/91
Date

By: _____
Irving F. Lyons, III
General Partner

Safeway

Safeway Inc., a Delaware corporation

9/5/91
Date

SAFEWAY INC CORPORATE SEAL 1986 DELAWARE

By: _____
Its: Assistant Vice President

By: _____
Its: Assistant Secretary

City

City of Tracy

September 19, 1991
Date

By: _____
Its: Mayor

WATER DELIVERY AND BILLING AGREEMENT

This Water Delivery and Billing Agreement (this "Agreement") is made and entered into effective as of the 19th day of November, 1991, by and among King & Lyons - Tracy Industrial, a California limited partnership (on behalf of itself and as agent for its affiliates, Tracy Industrial Partners and Bay Cities Truck Stop) (collectively "K&L"), Safeway Inc., a Delaware Corporation ("Safeway"), the City of Tracy (the "City") and the Plain View Water District, a California water district (the "District").

RECITALS

This Agreement is entered into on the basis of the following facts and mutual understandings:

A. K&L and Safeway have each entered into an Agreement Regarding Water Supply with the District dated December 12, 1989 (in the case of K&L) and January 9, 1990 (in the case of Safeway). Such agreements provide for a water supply allocation from the District for the benefit of K&L and Safeway on the terms and conditions set forth therein.

B. K&L, Safeway and the City have entered into that certain Water Supply and Sewage Services Agreement (the "Services Agreement") dated September 19, 1991, by which, among other things, the City agrees to provide water treatment and delivery services for the benefit of certain real property owned by K&L and Safeway located within the District.

C. The parties hereto intend to request that the United States Department of Interior, Bureau of Reclamation (the "Bureau") permit the City to divert the water supply allocation allocated by the District to K&L and Safeway at the City's existing turnout on the Delta-Mendota Canal. The parties further intend that, pursuant to the Services Agreement, the City shall thereafter treat such diverted water at its existing water treatment facility and deliver such water to certain property owned by K&L and Safeway located in the District.

D. The parties desire to set forth herein the terms and conditions on which the diversion, treatment and delivery of the water shall be accounted for and the procedures by which the charges applicable thereto shall be assessed.

NOW, THEREFORE, the parties agree as follows:

1. Condition Precedent - Consent of Bureau. The effectiveness of this Agreement shall be conditioned upon the written consent of the Bureau to the terms and conditions hereof, including, but not limited to, the Bureau's agreement: (a) that the City's existing turnout on the Delta-Mendota Canal may be an additional point of diversion for the District, and that the City may divert the K&L and Safeway water supply allocation on behalf of the District as provided herein, and (b) not to charge (or to credit) the City for the costs of the amount of the K&L and Safeway water allocation which is diverted by the City, treated and delivered to certain property owned by K&L and Safeway located in the District, the costs of which shall be paid by the District to the Bureau in accordance with the existing payment procedures established under Contract No. 14-06-200-785 between the District and the Bureau.

2. Ordering and Payment Procedures.

(a) Notice and Payment to District. By March 1 and July 1 of each year, or at such other dates as may hereafter be established by the District, K&L and Safeway shall advise the District of the anticipated amount of water which such parties shall require for the applicable period (not to exceed applicable limitations) and shall pay the District for the costs of such water allocation at the then applicable municipal and industrial rates charged by the District for the anticipated amount of required water and the then applicable agricultural rate charged by the District for the balance of the full water allocation. K&L and Safeway shall each advise the designated official of the City of the amount of water each such party anticipates it will divert during the applicable period. The District shall independently confirm such amount to the designated official of the City.

(b) City Delivery and Charges. The City, to the extent that such water is available and is delivered to the City's turnout on the Delta-Mendota Canal, or such other point of diversion which may be agreed to by the parties hereto and consented to by the Bureau, shall, pursuant to the Services Agreement, treat such water at the City's water treatment plant and, subject to any loss in the treatment process, deliver such water to certain property owned by K&L and Safeway located within the District. The amount of water delivered by the City to certain property owned by K&L and Safeway in the District (the "Measured Amount") shall be measured by meters installed at the expense of K&L or Safeway. K&L and Safeway shall install at least one (1) meter for each parcel which is under separate

ownership. The City shall charge its water service fees and rates of general application in effect from time to time with respect to the Measured Amount of water. The City shall deliver separate water bills to each separate owner. Not less than twice each calendar year, the City shall reimburse (or credit) K&L and Safeway for that portion of the City's water service charges which is applicable to the water supply (i.e., no reimbursement or credit shall be required for treatment or delivery services, but only for that portion of the charge applicable to the water supply allocation).

(c) District Charges and Reimbursements. The District shall charge K&L and Safeway the costs established by the District for municipal and industrial water for the Measured Amount of water. The difference between the full water supply allocation available to K&L or Safeway and the Measured Amount of water shall be available to the District for assignment and sale to other water users in the District in accordance with the District's existing policies and procedures. In the event any such excess water is purchased by another water user in the District, K&L and/or Safeway, as the case may be, shall be reimbursed in accordance with the rules of the District regarding such reimbursement, as amended and in effect from time to time.

3. No Representations Regarding Quality or Fitness. K&L, Safeway and the City acknowledge that the District has made no representations or warranties of any kind with regard to the quality or fitness for any particular use of the water to be supplied by the District to the City's turnout on the Delta-Mendota Canal.

4. Restrictions on Use and Amount. The City acknowledges and agrees that the City: (a) has no claim or right to receive any water supply from the District beyond that which K&L and Safeway are entitled to receive under their respective agreements with the District, and (b) shall not deliver or permit the use of any water supply by the District under this Agreement outside the boundaries of the District.

5. No Impact on Existing Agreements. K&L and Safeway acknowledge and agree that the execution and delivery of this Agreement by the parties hereto shall have no impact or effect upon the obligations of K&L and Safeway to: (a) the District under K&L and Safeway's respective agreements with the District, and (b) the City under the Services Agreement.

6. Successors and Assigns. Subject to the limitations and restrictions of the Services Agreement, the terms "K&L" and "Safeway", when used in this Agreement, shall refer to each such party's successors and assigns to the real property owned by such parties and located within the District. The terms of this

Agreement shall be separately implemented by the City and the District with respect to K&L, Safeway and their successors and assigns.

7. Miscellaneous Provisions.

(a) Governing Law. This Agreement shall be interpreted and enforced in accordance with the laws of the State of California.

(b) Amendment. This Agreement may not be amended except in a writing signed by the parties hereto.

(c) Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one instrument binding upon the parties.

(d) Further Assurances; Covenant to Sign Documents. Each party covenants, on behalf of itself and its successors, heirs and assigns, to take all actions and do all things, and to execute, with acknowledgement or affidavit if required, any and all documents and writings that may be necessary or proper to achieve the purposes and objectives of this Agreement.

IN WITNESS WHEREOF, K&L, Safeway, the City and the District have executed this Agreement to indicate their intent to be bound by the provisions set forth herein.

"K&L"

King & Lyons - Tracy Industrial, a California limited partnership

By: King & Lyons, a California general partnership, General Partner,

By: _____
Irving F. Lyons, III
General Partner

"Safeway"

Safeway Inc., a Delaware corporation

By: _____

Its: _____

Agreement shall be separately implemented by the City and the District with respect to K&L, Safeway and their successors and assigns.

7. Miscellaneous Provisions.

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(d) Further Assurances; Covenant to Sign Documents. Each party covenants, on behalf of itself and its successors, heirs and assigns, to take all actions and do all things, and to execute, with acknowledgement or affidavit if required, any and all documents and writings that may be necessary or proper to achieve the purposes and objectives of this Agreement.

IN WITNESS WHEREOF, K&L, Safeway, the City and the District have executed this Agreement to indicate their intent to be bound by the provisions set forth herein.

"K&L"

King & Lyons - Tracy Industrial, a California limited partnership

By: King & Lyons, a California general partnership, General Partner

By: _____
Irving F. Lyons, III
General Partner

"Safeway"

Safeway Inc., a Delaware corporation

By: Gary D. Scott
Its: Vice President

"City"

City of Tracy

By: _____
Its: _____

"District"

Plain View Water District, a California water district

By: _____
Its: DIRECTOR

By: _____
Its: SECRETARY

Agreement Between City of Tracy and
South San Joaquin Irrigation District (SSJID) for Water Supply
(October 1995)

SOUTH
SAN JOAQUIN
IRRIGATION DISTRICT

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CITY MANAGER
TRACY
CA

December 13, 1995

Steve Bayley

Mr. Fred Diaz
City Manager
City of Tracy
325 E. 10th Street
Tracy, California 95376

Dear Fred:

I am pleased to advise you that the Board of Directors, at its regular meeting held on December 12, 1995, approved execution of the Water Supply Development Agreement dated October 1, 1995 by and between the District and the City of Tracy. Enclosed are two copies of said agreement , one copy is to be retained for your files, please return the other copy executed by the City for the District's files.

Your prompt response will be appreciated.

Sincerely,

Rick Martin

Richard Martin
General Manager

Enclosures

11011 East Highway 120, Manteca, CA 95336-9750 • Phone 209/823-3101 • FAX 209/823-8406

EXECUTION COPY

WATER SUPPLY DEVELOPMENT AGREEMENT

Dated as of October 1, 1995

By and Between

SOUTH SAN JOAQUIN IRRIGATION DISTRICT

and

CITY OF TRACY

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WATER SUPPLY DEVELOPMENT AGREEMENT

This Agreement, dated as of October 1, 1995, by and between the South San Joaquin Irrigation District (the "District"), an irrigation district duly organized and existing pursuant to the Irrigation District Act (the "Irrigation District Act"), commencing with California Water Code, Section 20500 and the City of Tracy (the "City"), a municipal corporation created pursuant to the constitution and laws of the State of California.

WITNESSETH:

WHEREAS, the City and certain other water purveyors in San Joaquin County have expressed interest in purchasing treated water from the District (capitalized terms used herein and not otherwise defined shall have the meanings set forth below);

WHEREAS, in order for the City to receive treated water, certain facilities, including the Project, must be constructed;

WHEREAS, by entering into this Agreement, the City intends to preserve its ability to receive treated water from the Project in the future through subsequent construction of project facilities, in addition to those initially constructed, sufficient to serve the City.

WHEREAS, the District and the City now wish to enter into this Agreement to provide for the construction, operation and financing of the Project, for the sale by the District to the City of the City's Project Allotment and certain other matters;

NOW THEREFORE, the parties hereto do agree as follows:

Section 1. Definitions.

The following terms shall, for all purposes of this Agreement have the following meanings:

"Additional Project Participant" means any public district, agency or entity or private water company, other than those entities listed in Part I of Appendix A hereto, which executes a Water Supply Agreement in accordance with Section 18 hereof, together with their respective successors or assigns.

"Bonds" mean all bonds, notes or similar obligations (but not including Contracts) of the City authorized and issued by the City under and pursuant to applicable laws of the State of California after the date of execution of this Agreement, the principal of and interest on which are an operation and maintenance expense of the City Water System determined in accordance with generally accepted accounting principles and which are secured by a pledge or a lien on City Net Water System

Revenues and which are on a parity with the obligations of the City under this Agreement.

"Bond Resolution" means the resolution or resolutions providing for the issuance of District Bonds and the terms thereof.

"City" shall have the meaning assigned thereto in the preamble hereto.

"City Fiscal Year" means the twelve month period commencing on October 1 of each year and ending on the following June 30 or such other twelve month period which may be designated by the City as its fiscal year.

"City Net Water System Revenues" means, for any City Fiscal Year, the City Water System Revenues for such City Fiscal Year less the City Operation and Maintenance Expenses for such City Fiscal Year.

"City Operation and Maintenance Expenses" means the costs spent or incurred by the City for maintaining and operating the City Water System, calculated in accordance with generally accepted accounting principles, including (among other things) the expenses of management and repair and other expenses necessary to maintain and preserve the City Water System, in good repair and working order, and including administrative costs of the City, salaries and wages of employees, payments to the Public Employees Retirement System, overhead, insurance, taxes (if any), fees of auditors, accountants, attorneys or engineers and insurance premiums, and all other reasonable and necessary costs of the City, but excluding in all cases (i) depreciation, replacement and obsolescence charges or reserves therefor, (ii) amortization of intangibles or other bookkeeping entries of a similar nature, and (iii) charges for the payment of principal and interest on City Prior Debt, Bonds or Contracts.

"City Prior Debt" means notes, bonds or other obligations of the City existing prior to the date of execution hereof, which are identified in Exhibit D hereto and which are payable from City Water System Revenues.

"City Water System" means all properties and assets, real and personal, tangible and intangible, of the City now or hereafter existing, used or pertaining to the acquisition, treatment, reclamation, transmission, distribution and sale of water, including all additions, extensions, expansions, improvements and betterments thereto and equipment relating thereto; provided, however, that to the extent the City is not the sole owner of an asset or property or to the extent that an asset or property is used in part for the above described water purposes, only the City's ownership interest in such asset or property or only the part of the asset or property so used for

water purposes shall be considered to be part of the City Water System.

"City Water System Revenues" means all income, rents, rates, fees, charges, and other moneys derived by the City from the ownership or operation of City Water System including, without limiting the generality of the foregoing, (i) all income, rents, rates, fees, charges or other moneys derived from the sale, furnishing, and supplying of water and other services, facilities, and commodities sold, furnished, or supplied through the facilities of City Water System, including standby and availability charges, capital water facilities fees for design, construction and reconstruction expenses, development fees and other fees allocable to the City Water System, (ii) such taxes or assessments as may be imposed for payment of Fixed Project Costs, Variable O&M Costs or Fixed O&M Costs if the levy thereof and payment hereunder is permitted by law and (iii) the earnings on and income derived from amounts set forth in clauses (i) and (ii) above, and shall not include (y) customers' deposits or any other deposits subject to refund until such deposits have become the property of the City and (z) proceeds of any taxes or assessments except taxes or assessments described in clause (ii) above.

"Contract Payments" means the Fixed Project Costs payable by the City hereunder in any City Fiscal Year and provided that the term Contract Payments shall also include the sum of:

(1) the interest accruing during such City Fiscal Year on all outstanding Bonds, assuming that all outstanding serial Bonds are retired as scheduled and that all outstanding term Bonds are redeemed or paid from sinking fund payments as scheduled (except to the extent that such interest is to be paid from the proceeds of the sale of any Bonds);

(2) that portion of the principal amount of all outstanding serial Bonds maturing during such City Fiscal Year;

(3) that portion of the principal amount of all outstanding term Bonds required to be redeemed or paid during such City Fiscal Year; and

(4) that portion of payments under Contracts (other than under this Agreement) constituting principal and interest required to be made at the times provided in the Contracts.

"Contracts" means this Agreement and all contracts of the City authorized and executed by the City under and pursuant to the applicable laws of the State of California after the date of execution of this Agreement, the payments under which are an operation and maintenance expense of the City Water System

determined in accordance with generally accepted accounting principles and which are secured by a pledge of or lien on the City Net Water System Revenues and which are on a parity with the obligations of the City under this Agreement.

"Debt Service" means, as of the date of calculation and with respect to District Bonds, an amount equal to the sum of (i) interest payable during such District Fiscal Year on District Bonds, except to the extent that such interest is to be paid from capitalized interest and (ii) that portion of principal of District Bonds payable during such District Fiscal Year. Such interest and principal installments for such series shall be calculated on the assumption that no District Bonds outstanding at the date of calculation will cease to be outstanding except by reason of the payment of principal on the due date thereof;

provided further that, as to any such District Bonds bearing or comprising interest at other than a fixed rate, the rate of interest used to calculate Debt Service shall be one hundred ten percent (110%) of the greater of (a) the daily average interest rate on such District Bonds during the twelve (12) calendar months preceding the date of calculation (or the portion of the then current District Fiscal Year that such District Bonds have borne interest) or (b) the most recent effective interest rate on such District Bonds prior to the date of calculation; and

provided further that, as to any such District Bonds or portions thereof bearing no interest but which are sold at a discount and which discount accretes with respect to such District Bonds or portions thereof, such accreted discount shall be treated as interest in the calculation of Debt Service; and

provided further that the amount on deposit in a debt service reserve fund on any date of calculation of Debt Service shall be deducted from the amount of principal due at the final maturity of the District Bonds for which such debt service reserve fund was established and in each preceding District Fiscal Year until such amount is exhausted.

"District Bonds" means bonds, notes or other evidences of indebtedness of the District issued to finance or refinance the Project and includes additional District Bonds to complete the Project.

"District Fiscal Year" means the twelve month period commencing on January 1 of each Year and ending on the following December 31 or such other twelve month period which may be designated by the District as its fiscal year.

"Feasibility Certificate" means a certificate of a consulting engineer to the effect that, based on contracts awarded by the District for construction of the Project and the consulting engineer's estimates of the cost of the portions of

the Project for which contracts have not been awarded, the District has sufficient District Bond proceeds together with estimated proceeds to be derived from any authorized but unissued District Bonds and moneys on deposit with the District and legally available for the Project to complete the Project.

"Fixed O&M Costs" means operation, maintenance, power, replacement and other costs, including Project Operation and Maintenance Expenses and a reasonable reserve for contingencies, in each case incurred by the District with respect to the Project, irrespective of the amount of water delivered to the Project Participants.

"Fixed Project Costs" means capital costs, including Debt Service and reserves for the payment of Debt Service of the Project, incurred by the District in accordance with Sections 13 and 14 hereof.

"Independent Certified Public Accountant" means any firm of certified public accountants appointed by the City, or the District, as the case may be, and each of whom is independent pursuant to the Statement on Auditing Standards No. 1 of the American Institute of Certified Public Accountants.

"Operating Committee" means the Operating Committee created in accordance with Section 4 of the Water Supply Agreements.

"Project" means certain facilities necessary to deliver treated water to the Project Participants, including the following: (i) a raw water pipeline from the District's existing raw water system to the Treatment Plant, (ii) the Treatment Plant, and (iii) treated water pipelines from the Treatment Plant to the Project Participants. The District and the City acknowledge that the feasibility of the Project is currently being investigated by the District and that the definition of the Project shall be revised prior to commencement of construction as provided in Section 4 hereof without amendment to this Agreement and that the City may elect to cause certain Project facilities to be sized to include the City's Project Allotment and may elect to cause certain Project facilities to not be sized to include the City's Project Allotment.

"Project Allotment" means 10,000 acre-feet of water per year for Phase I as identified in Exhibit "A" and 53,009 acre-feet of water per year for Phase II unless such Project Allotment for Phase II is reduced in accordance with the Water Supply Agreement.

"Project Milestones" means the events described in Section 4(b) hereof.

"Project Operation and Maintenance Expenses" means the costs spent or incurred by the District for maintaining and operating

the Project, calculated in accordance with generally accepted accounting principles and Section 20 hereof, including (among other things) the expenses of management and repair and other expenses necessary to maintain and preserve the Project, in good repair and working order, and including administrative costs of the District, salaries and wages of employees, payments to the Public Employees Retirement System, overhead, insurance, taxes (if any), fees of auditors, accountants, attorneys or engineers and insurance premiums, and including all other reasonable and necessary costs of the District, or charges required to be paid by it to comply with the terms of the District Bonds or of this Agreement, but excluding in all cases (i) depreciation, replacement and obsolescence charges or reserves therefor, (ii) amortization of intangibles or other bookkeeping entries of a similar nature, (iii) costs of capital additions, replacements, betterments, extensions or improvements to the Project, which under generally accepted accounting principles are chargeable to a capital account or to a reserve for depreciation and (iv) charges for the payment or principal and interest on the District Bonds.

"Project Participant" mean the City and each entity listed in Part I of Appendix A hereto executing Water Supply Agreements with the District, and each Additional City.

"Reaches" means the segments of the Project from or through which Project Participants receive water which will be determined in accordance with Section 5(a) hereof.

"Request" means a written certificate of the City Manager of the City specifying the portion of the City's Project Allotment which the City requests be delivered by the District to the City in each month of a Year in accordance with Section 6 hereof.

"Treatment Plant" means water treatment facilities to be located at a site to be determined by the District after consultation with the Operating Committee and with capacity sufficient so as to treat the Project Allotments of all Project Participants, including all associated facilities, rights, properties, electrical facilities and improvements appurtenant thereto as provided and necessary therefor.

"Trustee" means the entity or entities designated by the District pursuant to any Bond Resolution to administer any funds or accounts required by such Bond Resolution or otherwise.

"Variable O & M Costs" means the operation, maintenance, power, replacement and other costs, including Project Operation and Maintenance Expenses and water supply costs at a cost per acre-foot established in accordance with this Agreement (which cost shall be lower for Project Participants located within the District and higher for those Project Participants located outside the District), incurred by the District in connection

with the Project in an amount which is dependent upon and varies with the amount of water delivered to the Project Participants.

"Water Supply Agreement" means this Agreement and each Water Supply Development Agreement by and between the District and a Project Participant, as the same may be amended or supplemented from time to time.

"Year" means the twelve-month period from January 1 through December 31, both dates inclusive.

Section 2. Purpose.

The purpose of this Agreement is for the District to sell Project Allotment to the City, to deliver Project Allotment to the City available from the Project, to provide the terms and conditions of such delivery and sale and to provide for the financing of the Project. The parties hereto confirm that this Agreement constitutes a contractual right to purchase treated water and that no water right is being transferred by the District to any Project Participant under this Agreement. Each Project Participant acknowledges that the District is entering into Agreements with cities located within the District and outside the District and upon execution hereof each Project Participant waives any claim such Project Participant may have to the Project Allotment of other Project Participants.

Section 3. Financing, Construction and Operation.

(a) District to Develop Project. Subject to compliance with all necessary federal and state laws, including but not limited to the California Environmental Quality Act ("CEQA"), the terms and conditions of the District's water rights, permits and licenses and all agreements relating thereto, the District will use its best efforts to cause or accomplish the construction, operation and financing of the Project, the obtaining of all necessary authority and rights, consents and approvals, and the performance of all things necessary and convenient therefor.

The parties acknowledge that the construction and operation of the Project constitutes a project subject to environmental review under CEQA. At the time of execution of this Agreement, the specific nature of the Project is still uncertain and only vaguely defined. As contemplated by this Agreement, the specific nature of the Project will be developed after further study in the next feasibility and preliminary design phase of the Project development, and through those phases City retains full discretion whether to proceed. Accordingly, the District and each City agree that CEQA review should be deferred to a subsequent phase of Project development after the Project is more specifically defined. The District shall conduct and complete appropriate CEQA environmental review no later than commencement of final Project engineering design. Such environmental review

may be tiered to enable the Cities to perform related but independent CEQA analysis.

(b) Project Milestones. The District may approve a Project Milestone only in the event the District has received a certified resolution of the Operating Committee and, in the event of the Commencement of Construction, the following conditions are met: (i) the District has received a report of a consulting engineer setting forth a description of the Project, which may include amendments to the definition of the Project, (ii) has received a Feasibility Certificate with respect to the Project, (iii) the District has approved any and all conditions imposed by any federal, state or local agency on Project approvals, and (iv) evidence that any approvals, permits, licenses or similar actions required by the State Water Resources Control Board necessary to permit the District to deliver treated water to the Project Participants shall have been received or progress satisfactory to the District and the City has been achieved.

(c) Termination of Participation or Reduction of Project Allotment. The City may terminate its participation in the Project or reduce its Project Allotment (i) on or prior to the issuance of any District Bonds, (ii) on or prior to the commencement of final design of the Project or (iii) on or prior to the commencement of construction determined in accordance with Section 3(b) hereof by delivery of a certified resolution of the City Council delivered to the District. In the event of a termination after the issuance of any District Bonds, the City shall have the option of (a) paying to the District all Fixed Project Costs allocable to the City in accordance with Section 14 hereof, in which case this Agreement shall terminate, or (b) to remain obligated to pay Fixed Project Costs allocable to the City in accordance with Section 14 hereof until paid in full, in which case this Agreement shall not terminate until such payment in full. On and after the date such resolution is delivered to the District, the City shall not be obligated to pay any Fixed Project Costs with respect to construction of the Project or any Fixed O&M Costs or Variable O&M Costs relating to delivery of treated water. Within ten days of notice to the District of a termination of participation or a reduction in the Project Allotment by any Project Participant, the District shall provide written notice thereof to the City. The District shall not issue any District Bonds within 30 days of such notice to the City without written approval thereof by the City.

(d) Obligation to Pay Construction Costs. The District shall not incur any Fixed Project Costs with respect to costs of construction prior to commencement of construction in accordance with Section 3(b) hereof and the City shall not be obligated to pay any Fixed Project Costs with respect to construction prior to such commencement of construction. In the event that the City elects to terminate its participation in the Project prior to commencement of construction in accordance with Section 3(c)

hereof, the City shall have no obligation to pay any Fixed Project Costs with respect to costs of construction.

Section 4. Operating Committee.

(a) General. The District shall establish an Operating Committee for the Project. The Operating Committee shall consist of the General Manager of the District and the City Manager of each Project Participant unless the District or a Project Participant designates another staff member or consultant to serve on the Operating Committee and shall be chaired by the General Manager of the District or his or her designee. The Operating Committee shall meet at least quarterly and at other times when a meeting is called by the chair of the Operating Committee or upon written request thereof by two Project Participants. The Operating Committee shall (i) have authority to approve Project Milestones, (ii) develop operating procedures and may recommend to the District that the District and the Project Participants enter into operating agreements to supplement this Agreement from time to time, and (iii) meet to review, evaluate and recommend to the District by majority vote items related to the acquisition, construction, financing, operation and maintenance of the Project and the status of any water rights issues relating to the District's ability to deliver treated water to the City, including but not limited to review of the construction budget, the annual operations and maintenance budget and other financial and operational matters relating to delivery of treated water to the Project Participants.

(b) The District shall give written notice to the Operating Committee 45 days prior to commencing any Project Milestone. The District may commence any Project Milestone on or after the 45th day following such written notice unless a Project Participant shall have disapproved commencement of such Project Milestone in writing on or before such 45th day. Such disapproval shall include the reason or reasons for the disapproval. In the event the District receives a written disapproval from a Project Participant the District shall work to address and resolve such Project Participant's concerns and then request the written authorization to proceed for the Project Milestone. In the event that the District and such Project Participant cannot resolve such disapproval within 60 days, either the District or the Project Participant may terminate this Agreement by giving written notice to the other party subject to such Project Participant's obligation to pay Fixed Project Costs Incurred prior to said date. The Project Milestones are:

(i) Commencement of Final Design. Prior to commencing with the final design phase under an engineering services contract, the District shall provide the City with the preliminary design plans and preliminary cost estimate. The District shall not

award a contract for final design work until Section 3(a) and (b) have been complied with.

(ii) Commencement of Construction. Prior to commencing construction, the District shall provide the City with the final design work, including construction-ready final plans and specifications and final cost estimate and a final pricing and delivery policy for raw water. The District shall not commence construction until Section 3(a) and (b) have been complied with.

(iii) Financing. Prior to issuing District Bonds to finance the Project, the District shall give written notice of the District's finance plan and proposed not-to-exceed terms which shall be binding upon the District. The District shall not issue any District Bonds until Section 3(a) and (b) have been complied with.

(c) Compliance with Agreements. No action by the Operating Committee pursuant to the Water Supply Agreements or otherwise shall in any way affect the ability of the District to act with respect to any Bond Resolution, any agreement entered into by the District for the construction or operation of the Project or any applicable licenses, permits or regulatory provisions and the District shall be responsible for executing contracts relating to construction and operation of the Project and fulfilling the obligations of the District thereunder.

Section 5. Construction of the Project.

(a) Determination of Capacities of Reaches and Treatment Plant. Unless otherwise determined by the District after consultation with the Operating Committee, the capacity of the Reaches of the Project will be determined by the Consulting Engineer based upon the Contract Project Allotment and Treatment Plant capacity, at one or more turnouts for the City as agreed to by the District and the City. Unless otherwise agreed by the District and the City in writing, and subject to Section 4 hereof, the Treatment Plant will have sufficient capacity to serve the City its full Project Allotment.

Subject to the rights of the City under subsection (b) of this Section and the other provisions of this Agreement, the District shall provide in each appropriate Reach of the Project and in the Treatment Plant capacity to serve the City with the daily amount requested by the City as agreed to by the City and the District in writing prior to the commencement of the construction of the Project.

(b) Criteria for Determining Capacity of Project. The District shall design and construct the Project with the Reaches

and Treatment Plant capacity determined as set forth in subsection (a) of this Section and necessary to enable delivery of daily delivery of water in each Year to the City and to other Project Participants and at the locations, times, maximum rates and minimum pressure agreed to by the District and the City.

(c) Inspection of Project Plans and Specifications; Preparation of Bid Materials; Award of Contracts. Unless otherwise determined by the District, the District shall prepare and put out to public bid a single set of bid materials (which may include multiple schedules) relating to construction and acquisition of each Reach and of the Treatment Plant. Prior to the award of any such contract or contracts, the District shall determine whether the total amount of such contract or contracts, together with contracts previously awarded with respect to the Project, together with the estimated costs for those portions of the Project for which contracts have not been awarded as determined by a consulting engineer, can be funded from the proceeds derived from District Bonds, estimated proceeds to be derived from any authorized but unissued District Bonds and other amounts then on deposit with the District and legally available therefor, including estimated investment earnings thereon. The District shall not award any contracts which would cause the District to be obligated for an amount which is in excess of the proceeds to be derived from District Bonds and other amounts on deposit with the District and legally available for the Project.

Section 6. Delivery of Water.

(a) Request by City. Pursuant to the terms of this Agreement, the District shall provide to the City, and the City shall take, or cause to be taken, in each Year an amount of water equal to the amount set forth in a Request of the City, but in no event shall the District be obligated to deliver an amount of water in excess of the City's Project Allotment. Subject to the Project Participant's payment obligations hereunder, the District agrees to use its best efforts to deliver water pursuant to this Agreement meeting all applicable local, state and federal water quality standards as such standards may be in effect from time to time.

(b) Maximum Project Allotment. The District is currently entitled to appropriate water from the Stanislaus River and the District shall make available to the City its Project Allotment from such appropriated water, subject to the availability of water and compliance with all local, state and federal laws, rules and regulations.

(c) Points of Delivery. The District will deliver or cause to be delivered to or for the account of the City the amount of water specified in each request at a point along the Project to be agreed upon by the District and the City. The District will remain available to make or cause to be made all necessary and

possible arrangements for transmission and delivery of such water in accordance with this Agreement.

(d) Procedure for Determining Water Delivery Schedule. The amounts, times and rates of delivery of water to the City during any Year shall be in accordance with a water delivery schedule for that Year, such schedule to be determined in the following manner:

(1) On or before October 15 of each year, the City shall submit in writing to the District a preliminary water delivery schedule indicating the amounts of water desired by the City during each month of the succeeding three Years or such lesser or greater period as the District shall determine.

(2) Upon receipt of a preliminary schedule the District shall review it and, after consultation with the City, shall make such modifications in it as are necessary to insure that the amounts, times, and rates of delivery to the City will be consistent with the District's overall delivery ability, considering the then current delivery schedules of all Project Participants and the District.

(3) A water delivery schedule may be amended by the District upon the City's written request. Proposed amendments shall be submitted by the City within a reasonable time before the desired change is to become effective, and shall be subject to review and modification by the District in like manner as the schedule itself.

(e) Limit on Peak Deliveries of Water. In no event shall the District contract to deliver to the City from the Project in any Year nor to deliver to the City from the Project in any one day a total amount of Project Allotment in any one day an amount of Project Allotment greater than that agreed to by the District and each Project Participant prior to the issuance of any District Bonds.

(f) Limit on Rate of Delivery to City. In no event shall the District be obligated to deliver water to the City through any delivery structure at a total combined instantaneous rate of flow exceeding the cubic feet per second and minimum pressure which will be determined upon the initial operation date, except as this rate of flow or pressure may be revised by mutual written agreement of the District and the City.

(g) Delivery of Water Not Delivered in Accordance with Schedule. If in any Year the District, as a result of causes beyond its control, is unable to deliver any portion of the City's Project Allotment for such Year as provided for in the delivery schedule established for that Year, the City may elect to receive the amount of water which otherwise would have been

delivered to it during such period at other times during the Year, to the extent that such water is then available and such election is consistent with the District's overall delivery ability, considering the then current delivery schedules of all Project Participants and the District.

Section 7. Curtailment of Delivery for Maintenance Purposes.

(a) District May Curtail Deliveries. The District may temporarily discontinue or reduce the delivery of water to the City hereunder for the purposes of necessary investigation, inspection, maintenance, repair, or replacement of any of the Project facilities necessary for the delivery of water to the City. The District shall notify the City as far in advance as possible of any such discontinuance or reduction, except in cases of emergency, in which case notice need not be given.

(b) City May Receive Later Delivery of Water Not Delivered. In the event of any discontinuance or reduction of delivery of water pursuant to subsection (a) of this Section, the City may elect to receive the amount of water which otherwise would have been delivered to it during such period under the water delivery schedule for that Year at other times during the Year to the extent that such water is then available and such election is consistent with the District's overall delivery ability, considering the then current delivery schedules of all Project Participants and the District.

Section 8. Shortage in Water Supply.

(a) Shortages. In any Year in which there may occur a shortage or interruption due to drought or other cause in the supply of water available for delivery to the Project Participants, including but not limited to shortages or interruptions caused by changes in laws, regulations or rulings relating to or affecting the District's water rights, permits and licenses, with the result that such supply is less than the total of the annual Project Allotments of all Project Participants for that Year, the District shall reduce the delivery of water to the City pro rata with deliveries to all Project Participants based upon the Project Allotment of the City and each Project Participant without preference or priority among the City and the Project Participants.

(b) Allocation of Shortages. The District shall allocate any shortage or interruption in the supply of water available for delivery by District hereunder between agricultural users and the Project Participants such that any percentage reduction in the delivery of water to the City is approximately equal to the percentage reduction in the delivery of water to the District's agricultural customers.

(c) Future Annexations of Land to District. The District shall not annex any land to the District other than land the acquisition of which has been approved by the Board of Directors prior to the effective date of this Agreement unless said annexation shall include an express condition that the lands so annexed shall have an entitlement to receive water from District that is subordinate in priority to the right of City to receive water from District pursuant to this Agreement. In any Year in which there may occur a shortage or interruption in the supply of water available hereunder with the result that such supply is less than the total of the annual Project Allotment of all Project Allotments of all Project Participants for the Year, the District shall reduce or suspend the delivery of water by District to lands annexed to District following the effective date of this Agreement.

(d) Future Transfers of Water by District. In the event that, following the effective date of this Agreement, District enters into any agreement for the sale or transfer of water to any retail or wholesale water provider for consumptive use outside District boundaries, the District shall ensure that such transfer agreement includes an express condition that the transferee shall have an entitlement to receive water from the District that is subordinate in priority to the right of City hereunder. In any Year in which there may occur a shortage or interruption in the supply of water with the result that said supply available to the Project Participants is less than the annual Project Allotment of all Project Participants for the year, District will reduce or suspend the delivery of water by the District to such transferee. The District represents and warrants that, as of the effective date of this Agreement, it has not entered into any agreement, other than this Agreement, for the sale or transfer of water for use outside the District's boundaries which is not subordinate in priority to the right of the City and the Project Participants hereunder.

(e) No Liability for Shortages. Neither the District nor any of its officers, agents, or employees shall be liable for any damage, direct or indirect, arising from the shortages in the amount of water to be made available for delivery to the City under this Agreement caused by drought or any other cause beyond its control; provided however that nothing in this clause (e) shall excuse the District from compliance with clauses (a), (b), (c) and (d) hereof.

Section 9. Measurement of Water Delivered.

The District shall measure, or cause to be measured, all water delivered to the City and shall keep and maintain accurate and complete records thereof. For this purpose and in accordance with Section 6 hereof, the District shall install, operate, and maintain, or cause to be installed, operated and maintained, at

all delivery structures for delivery of water to the City such measuring devices and equipment as are satisfactory and acceptable to both parties. Said devices and equipment shall be examined, tested, and serviced by the District regularly to insure their accuracy. At any time or times, the City may inspect such measuring devices and equipment, and the measurements and records taken therefrom.

Section 10. Responsibility for Delivery and Distribution of Water.

(a) Neither the District nor any of its officers, agents, or employees shall be liable for the control, carriage, handling, use, disposal, or distribution of water supplied to the City after such water has passed the delivery structures established in accordance with Sections 5(a) and 6(c) hereof; nor for claim of damage of any nature whatsoever, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, use, disposal or distribution of such water beyond said delivery structures and including attorneys fees and other costs of defense in connection therewith; the City shall indemnify and hold harmless the District and its officers, agents, and employees from any such damages or claims of damages.

(b) Neither the City nor any of its officers, agents, or employees shall be liable for the control, carriage, handling, use, disposal, or distribution of water to be supplied to the City until such water has reached the Project facilities, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, used, disposal or distribution of such water before it has reached said delivery structures and including attorneys fees and other costs of defense in connection therewith; the District shall indemnify and hold harmless the City and its officers, agents, and employees from any such damages or claims of damages.

Section 11. Sale or Other Disposition of Project Allotment By City.

(a) Sale or Other Disposition of Project Allotment Without Approval. The City may sell or otherwise dispose of all or any portion of its Project Allotment within its boundaries and within its sphere of influence as determined by the San Joaquin County Local Agency Formation Committee, or any successor entity thereto, or to another Project Participant without approval by the District.

(b) Sale or Other Disposition of Project Allotment Subject to Approval. The City may sell or dispose of all or any portion of its Project Allotment to retail water providers within San Joaquin County, with the approval of the District, provided however that such sale shall be subject to a right of first

refusal of all Project Participants and the District on a pro rata basis to take delivery of such Project Allotment on the same terms and conditions.

(c) No Other Sales or Other Disposition. The City may not sell or otherwise dispose of all or any portion of its Project Allotment or its rights or obligations with respect thereto except as set forth in subsections (a) and (b) of this Section or Section 17 hereof.

(d) No Reduction in City Obligation. In no event shall any sale or other disposition of all or any portion of the City's Project Allotment relieve the City of any of its obligations hereunder.

(e) Notice of Sale or Other Disposition. The City shall give ninety (90) days' advance written notice to the District of any proposed sale or other disposition pursuant to this Section.

Section 12. Rates and Charges.

(a) Establishment of Rates and Charges. The District shall fix charges to the City under this Agreement to produce revenues to the District from the Project equal to the amounts anticipated to be needed by the District to meet the following costs of the District to deliver the City's Project Allotment (including treatment plant capacity) through the Project: (i) Fixed Project Costs, (ii) Fixed O&M Costs, and (iii) Variable O&M Costs. The District shall fix charges to the City to produce revenues to the District from the Project to meet the costs described in (i) and (ii) above as set forth in Section 14 hereof and to meet the cost described in (iii) above based on Requests of the City for water and the amount of water received by the District.

(b) Insufficiency of Funds. Because costs determined in accordance with this Agreement are based on estimates if such funds are not sufficient for such purposes, the City shall pay to the District an amount equal to such City's share of the total cost to pay Fixed Project Costs in the proportions established in accordance with Section 14 hereof. The obligation of this Section is incurred by the City for the benefit of future owners of District Bonds, and shall commence and continue to exist and be honored by the City whether or not water is furnished to it from the Project at all times or at all (which provision may be characterized as an obligation to pay all costs on a take-or-pay basis whether or not water is delivered or provided and whether or not the Project is completed or is operable.)

(c) Source of Payments. The obligation of the City to make payments under this Agreement is not a general obligation of the City and the City shall make payments under this Agreement solely from City Water System Revenues as a City Operation and Maintenance Expense. The City shall make such payments prior to

any payment therefrom, other than City Prior Debt and on a parity with other City Operation and Maintenance Expenses. Nothing herein shall be construed as prohibiting (i) the City from using any other funds and revenues for purposes of satisfying any provisions of this Agreement or (ii) from incurring obligations payable on a parity with the obligations under this Agreement so long as the City complies with subsection (a) of Section 19(a) hereof.

(d) Obligation Is Not Subject To Reduction. The City shall make payments under this Agreement whether or not the Project is completed, operable, operated or retired and notwithstanding the suspension, interruption, interference, reduction or curtailment of operation of the Project or of water contracted for in whole or in part for any reason whatsoever. Such payments are not subject to any reduction, whether offset or otherwise, and are not conditioned upon performance by the District or any other Project Participant under this Agreement or any other agreement.

(e) Several Obligation. The City shall not be liable under this Agreement for the obligations of any other Project Participant. The City shall be solely responsible and liable for performance of its obligations under this Agreement. The obligation of the City to make payments under this Agreement is a several obligation and not a joint obligation with those of the other Project Participants.

Section 13. Annual Budget and Billing Statement.

The District will prepare a preliminary annual budget for the first year of Project operation at lest six months prior to the projected date of Operation. Thereafter, the District will prepare a preliminary annual budget for each applicable Year for credits, costs and expenses relating to the Project, including Fixed Project Costs, Variable O&M Costs and Fixed O&M Costs on or before September 1 of each Year. The District shall submit a draft of such budget to the Operating Committee on or prior to each September 15 for review and comment by the Operating Committee. District staff shall use its best efforts to resolve any questions or concerns caused by a Project Participant during such review. The Board of Directors of the District will adopt a final annual budget for the applicable Year on or before December 1 of each Year after at least one public hearing on the budget and shall allow any Project Participant which may object to any provision of the budget to present such objection during such hearing. The District shall supply a copy of said final annual budget to the City on or before December 15 of each Year. Any amendment to the budget shall be submitted to the Operating Committee for review and comment at least 30 days prior to action thereon by the District Board of Directors. Any such amendment shall be subject to the same hearing requirements applicable to the budget set forth above.

Section 14. Allocation of Costs and Expenses.

For the purpose of allocations of costs and expenses pursuant to this Agreement, the Project shall be allocated (i) to such Reaches as are determined by the District to be necessary for such allocations of costs and (ii) to the Treatment Plant. Except as permitted herein, the District shall not allocate costs and expenses in any way which discriminates among Project Participants which take delivery through the same Reaches except that the cost of raw water included in Variable O&M Costs may be varied between Project Participants within the boundaries of the District and those outside the boundaries of the District. After the execution of this Agreement and prior to commencement of construction of the Project, the District and the Project Participants shall develop a cost allocation method for District general fund and other general overhead and allocable raw water system costs to be allocated to the Project.

(a) Method of Computation of Fixed Project Costs. The Fixed Project Costs shall be sufficient to return to the District those capital costs of the District necessary to treat and deliver water to the City. The total amount of Fixed Project Costs of the Treatment Plant and each Reach of the Project utilized by the City shall be allocated to the City based upon the ratio of the Project Allotments (including treatment plant capacity) of the City to the Project Allotments (including treatment plant capacity) of all Project Participants utilizing the Treatment Plant and such Reach. The City and the District acknowledge that if the City has not elected to have all facilities which are a part of the Project sized to enable the City to take treated water, the City shall not be liable for any Fixed Project Costs for such unconstructed facilities.

(b) Method of Computation of Fixed O&M Costs. The Fixed O&M Costs shall return to the District those costs of the Project necessary to deliver water to the Project Participants which constitute Fixed O&M Costs. The total amount of Fixed O&M Costs of the Treatment Plant and each Reach of the Project for each Year shall be allocated among all Project Participants entitled to delivery of water from or through the Treatment Plant and each Reach based upon the ratio of the Project Allotment (including treatment plant capacity) of each Project Participant to which water is treated at the Treatment Plant or delivered through the Reach to the total Project Allotment (including treatment plant capacity) of all Project Participants for which water is treated at the Treatment Plant or delivered through the Reach, as the case may be. The City and the District acknowledge that if the City has not elected to have all facilities which are a part of the Project sized to enable the City to take treated water, the City shall not be liable for any Fixed O&M Costs for such unconstructed facilities.

(c) Method of Computation of Variable O&M Costs. The Variable O&M Costs shall return to the District those costs of the Project which constitute Variable O&M Costs. There shall be computed for the Treatment Plant and for each Reach of the Project a charge per acre-foot of water which will return to the District the total projected Variable O&M Costs of the Treatment Plant and each Reach for each Year, which computation will reflect the differing cost of raw water to Project Participants within the District and those outside the District. The amount of the Variable O&M Costs the Treatment Plant and for each Reach of the Project shall be the sum of the products obtained when the charges per acre-foot of water determined above for the Treatment Plant and for each Reach necessary to deliver water to the City are multiplied by the number of acre-feet of water treated by the Treatment Plant and water delivered to the City from or through that Reach during the Year, as the case may be. The City and the District acknowledge that if the City has not elected to have all facilities which are a part of the Project sized to enable the City to take treated water, the City shall not be liable for any Variable O&M Costs.

(d) Adjustments of Allocation. On or after the date the Project is in operation, the District shall update the values and amounts of Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs a quarterly basis, including year-to-date comparisons to the approved Project budget in order that the costs and expenses to the City may accurately reflect increases or decreases from Year to Year in projected costs, principal and interest payments on District Bonds, annual Project Allotments, estimated deliveries, and all other factors which are determinative of such charges. In addition, each such determination shall include an adjustment to be paid by the City for succeeding Years which shall account for the differences, if any, between projections of costs used by the District in determining the amounts of said costs and expenses for all preceding Years and actual costs incurred by the District during such Years.

Section 15. Time and Method of Payment.

(a) Fixed Project Costs. Payments by the City of the Fixed Project Costs shall commence on December 1, 1995. Thereafter, the City shall pay to the District, on or before January 1 of each Year, 100% of the charge to the City for the next succeeding District Fiscal Year of the Fixed Project Costs.

(b) Fixed O&M Costs. Payments by the City of the Fixed O&M Costs shall commence on December 1, 1995. Thereafter, the City shall pay to the District, on or before January 1 of each Year, the sum of the charges to the City for the Year for the Fixed O&M Costs.

(c) Variable O&M Costs. Payments by the City of the Variable O&M Costs shall commence on the January 1, April 1, July

1 or October 1 which is closest to, but is at least three months immediately preceding, the date on which initial water delivery is estimated to be made to the City. Thereafter, the City shall pay to the District the charges to the City for the Variable O&M Costs for the three-month period commencing on the next succeeding January 1, April 1, July 1 or October 1 so that the District receives quarterly payments of Variable O&M Costs three months in advance of the time when such Variable O&M Costs will begin to be incurred by the District.

(d) Statement of Charges. The District shall furnish the City with a written statement of the estimated Fixed Project Costs and Fixed O&M Costs of the City for the next succeeding District Fiscal Year, taking into account applicable credits received by the District and estimated investment earnings on moneys related to the Project held by the District. The District shall, on or before March 15, June 15, September 15 and December 15 of each Year, commencing with the District Fiscal Year in which the initial operation date is estimated to occur furnish the City with a statement of the charges to the City for the Variable O&M Costs for the three-month period commencing on the July 1, October 1, January 1 or April 1, commencing three and one-half months subsequent to such date.

(e) Contest of Accuracy of Charges. If a City questions or disputes the correctness of any billing statement by the District, it shall pay the District the amount claimed when due and shall within thirty (30) days of receipt of such billing statement request an explanation from the District. If the bill is determined to be incorrect, the District will adjust the bill to such City in the next District Fiscal Year. If the District and the City fail to agree on the correctness of a bill within thirty (30) days after the City has requested an explanation, the parties shall promptly submit the dispute to arbitration under Section 1280 et seq. of the Code of Civil Procedure.

Section 16. Obligation in the Event of Default.

(a) Written Demand Upon Failure to Make Payment. Upon failure of the City to make any payment in full when due under this Agreement or to perform any other obligation hereunder, the District shall make written demand upon the City, and if said failure is not remedied within thirty (30) days from the date of such demand or, if District Bonds are outstanding, for such additional time as is reasonably required, in the sole discretion of the Trustee, to correct the same, such failure shall constitute a default at the expiration of such period. Notice of such demand shall be provided to each other Project Participant by the District. Upon failure of the District to perform any obligation of the District hereunder, the City shall make written demand upon the District, and if said failure is not remedied within thirty (30) days from the date of such demand or, if District Bonds are outstanding, for such additional time as is

reasonably required, in the sole discretion of the Trustee, to correct the same, such failure shall constitute a default at the expiration of such period. Notice of such demand shall be provided to each Project Participant by the City making such written demand.

In addition to any default resulting from breach by the District or the City of any agreement, condition, covenant or term hereof, if the District or the City shall file any petition or institute any proceedings under any act or acts, state or federal, dealing with or relating to the subject of bankruptcy or insolvency or under any amendment of such act or acts, either as a bankrupt or as an insolvent or as a debtor or in any similar capacity, wherein or whereby the District or the City asks or seeks or prays to be adjudicated a bankrupt, or is to be discharged from any or all of its debts or obligations, or offers to its creditors to effect a composition or extension of time to pay its debts, or asks, seeks or prays for a reorganization or to effect a plan of reorganization or for a readjustment of its debts or for any other similar relief, or if the District or the City shall make a general or any assignment for the benefit of its creditors, then in each and every such case the District or the City, as the case may be, shall be deemed to be in default hereunder.

(b) Transfer for Defaulting City's Account. Upon the failure of the City to make any payment which failure constitutes a default under this Agreement, the District shall use its best efforts to transfer for the City's account all or a portion of the City's Project Allotment for all or a portion of the remainder of the term of this Agreement. Notwithstanding that all or any portion of the City's Project Allotment is so transferred, the City shall remain liable to the District to pay the full amount of its share of costs hereunder as if such sale or transfer has not been made, except that such liability shall be discharged to the extent that the District shall receive payment from the transferee thereof.

(c) Termination of Entitlement to Project Allotment; Continuing Obligations. Upon the failure of the City to make any payment which failure constitutes a default under this Agreement and causes the District to be in default under any Bond Resolution, the District may (in addition to the remedy provided by subsection (b) of this Section) give notice of termination of the provisions of this Agreement insofar as the same entitle the City to its Project Allotment which notice shall be effective within 30 days thereof unless such termination shall be enjoined, stayed or otherwise delayed by judicial action. Irrespective of such termination, the City shall remain liable to the District to pay the full amount of costs hereunder.

(d) Enforcement of Remedies. In addition to the remedies set forth in this Section, upon the occurrence of an Event of

Default as defined herein, the District or the City, as the case may be, shall be entitled to proceed to protect and enforce the rights vested in such party by this Agreement by such appropriate judicial proceeding as such party shall deem most effectual, either by suit in equity or by action at law, whether for the specific performance of any covenant or agreement contained herein or to enforce any other legal or equitable right vested in such party by this Agreement or by law. The provisions of this Agreement and the duties of each party hereof, their respective boards, officers or employees shall be enforceable by the other party hereto by mandamus or other appropriate suit, action or proceeding in any court of competent jurisdiction, with the losing party paying all costs and attorney fees. Without limiting the generality of the foregoing, the District or the City, as the case may be, shall have the right to bring the following actions:

(1) Accounting. By action or suit in equity to require an accounting by the District or the City, as the case may be, including its officers, employees and assigns.

(2) Injunction. By action or suit in equity to enjoin any acts or things which may be unlawful or in violation of the rights of the District or the City, as the case may be.

(3) Mandamus. By mandamus or other suit, action or proceeding at law or in equity to enforce its rights against the other party hereto (and its board, officers and employees) and to compel the other party hereto to perform and carry out its duties and obligations under the law and its covenants and agreements as provided herein.

(e) Waiver. The waiver by the District or the Trustee of any breach by the City of any agreement, condition, covenant or term hereof shall not operate as a waiver of any subsequent breach of the same or any other agreement, condition, covenant or term hereof.

(f) Trustee is Third Party Beneficiary. Any Trustee for District Bonds shall have the right, as a third party beneficiary, to initiate and maintain suit to enforce this Agreement to the extent provided in any Bond Resolution.

Section 17. Transfers, Sales and Assignments of Project Allotment or Water System.

(a) Transfer of Project Allotment. The City has rights to make transfers, sales, assignments and exchanges (collectively "transfers") of its Project Allotment or its rights or obligations with respect thereto only as expressly provided in Section 11 hereof or in clause (b) of this Section.

(b) Transfer of Ownership. Except as may be expressly required by law, the City shall not transfer ownership of all or any substantial portion of its Water System to another entity except in an annexation, consolidation, merger or reorganization with another governmental entity or a change in governmental form in accordance with the Cortese-Knox Local Government Reorganization Act of 1985, as amended (commencing with California Government Code Section 56000, et seq.) or any similar successor statute, in which the surviving entity or entities assume in the aggregate all obligations of the City under this Agreement, and in which the rights under this Agreement may be enforced as provided in Government Code Section 56121 is not deemed a transfer of ownership.

(1) The City shall not consent to such annexation, consolidation, merger or reorganization or change in governmental form unless the City shall have delivered to the District a certificate of an independent financial advisor certifying that, based upon the rates and charges of the surviving entity in effect on the date of such annexation, consolidation, merger or reorganization or change in governmental form, shall be in compliance with Section 19(a) hereof and the surviving entity agrees in writing on or prior to such date to assume all obligations of the City hereunder.

(2) The City shall give ninety (90) days advance written notice to the District of any proposed transfer pursuant to this subsection. Appendix A to this Agreement shall be amended as appropriate to reflect any transaction pursuant to this subsection.

Section 18. Additional Project Participants. The City acknowledges that the District may enter into Water Supply Agreements with Additional Project Participants subsequent to the execution of this Agreement to the extent the District determines that sufficient capacity exists to supply such Additional Project Participant's Project Allotment consistent with the District's overall delivery abilities. Prior to the execution of a Water Supply Agreement with an Additional Project Participant, the District shall promptly provide to the City a revised Exhibit A to this Agreement setting forth the revised list of Project Allotments of the Project Participants. No Water Supply Agreement with an Additional Project Participant shall be executed with an Additional Project Participant outside the boundaries of the District unless the District shall first offer such Project Allotment to each Project Participant on the same terms and conditions as offered to such Additional Project Participant. The Water Supply Agreement with such Additional Project Participant shall establish a price to be paid by the Additional Project Participant to the City an amount which reasonably compensates the City for Fixed Project Costs and Fixed O&M Costs previously paid by the City which are fairly allocable

to the Additional Project Participant, including but not limited to costs incurred by the City in connection with the Project prior to execution of this Agreement, and, if such Additional Project Participant is located outside of the boundaries of the District, is not less than the highest price paid by any Project Participant.

Section 19. Covenants of the City.

(a) Amount of Rates and Charges. The City will fix, prescribe and collect rates and charges for the City Water System which will be at least sufficient to yield during each City Fiscal Year City Net Water System Revenues (excluding Contract Payments) equal to one hundred twenty-five percent (125%) of the Contract Payments for such City Fiscal Year. The City may make adjustments from time to time in such rates and charges and may make such classification thereof as it deems necessary, but shall not reduce the rates and charges then in effect unless the City Net Water System Revenues from such reduced rates and charges will at all times be sufficient to meet the requirements of this section.

(b) Against Sale or Other Disposition of Property. The City will not sell, lease or otherwise dispose of the City Water System or any part thereof, except as provided in Section 17 hereof, unless the City determines that such sale, lease or other disposition will not materially adversely affect the City's ability to comply with subsection (a) of this Section. The City will not enter into any agreement or lease which impairs the operation of the City Water System or any part thereof necessary to secure adequate City Net Water System Revenues for the payment of the obligations imposed under this Agreement or which would otherwise impair the rights of the District with respect to the City Water System Revenues or the operation of the City Water System.

(c) Against Competitive Facilities. To the extent permitted by existing law and within the scope of its powers but only to the extent necessary to protect the rights of the owners of District Bond, the City will not acquire, construct, maintain or operate and will use its best efforts not to permit any other public or private agency, corporation, district or political subdivision or any person whomsoever to acquire, construct, maintain or operate within the boundaries of the City any water system competitive with the City Water System which might have the effect of materially adversely affecting the City's ability to pay Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs.

(d) Maintenance and Operation of the City Water System; Budgets. The City will maintain and preserve the City Water System in good repair and working order at all times and will operate the City Water System in an efficient and economical

manner and will pay all City Operation and Maintenance Expenses as they become due and payable. On or before the first day of each City Fiscal Year thereafter, the City will adopt and file with the District a budget approved by the legislative body of the City, including therein in the estimated City Operation and Maintenance Expenses for such City Fiscal Year the estimated Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs payable. Any budget may be amended at any time during any City Fiscal Year and such amended budget shall be filed by the City with the District. The District may enforce this clause (d) only to the extent necessary to protect the rights of the owners of District Bonds.

(e) Insurance. The City shall procure and maintain or cause to be procured and maintained insurance on the City Water System with responsible insurers so long as such insurance is available from reputable insurance companies, or, alternatively, shall establish a program of self-insurance, or participate in a joint powers agency providing insurance or other pooled insurance program, in such amounts and against such risks (including accident to or destruction of the City Water System) as are usually covered in connection with water systems similar to the City Water System.

(f) Accounting Records and Financial Statements.

(i) The City will keep appropriate accounting records in which complete and correct entries shall be made of all transactions relating to the City Water System, which records shall be available for inspection by the District and the Trustee at reasonable hours and under reasonable conditions.

(ii) The City will prepare and file with the District annually within one hundred eighty (180) days after the close of each City Fiscal Year (commencing with the City Fiscal Year ending June 30, 1995) financial statements of the City for the preceding City Fiscal Year prepared in accordance with generally accepted accounting principles, together with a report of an Independent Certified Public Accountant thereon. The City will promptly furnish a copy of such report to the District and to the Trustee.

(g) Protection of Security and Rights of the District. The City will preserve and protect the rights of the District and the Trustee to the obligations of the City hereunder and will warrant and defend such rights against all claims and demands of all persons.

(h) Payment of Taxes and Compliance with Governmental Regulations. The City will pay and discharge all taxes, assessments and other governmental charges which may hereafter be lawfully imposed upon the City Water System or any part thereof

or upon the City Water System Revenues when the same shall become due. The City will duly observe and conform with all valid regulations and requirements of any governmental authority relative to the operation of the City Water System or any part thereof, but the City shall not be required to comply with any regulations or requirements so long as the validity or application thereof shall be contested in good faith.

(i) Further Assurances. The City will adopt, deliver, execute and make any and all further assurances, instruments and resolutions as may be reasonably necessary or proper to effect the financing and refinancing of the Project, to assure the District of the City's intention to perform hereunder and for the better assuring and confirming unto the District and the Trustee of the rights and benefits provided to them herein.

(j) Maintenance of Tax-Exempt Status of District Bonds. Notwithstanding any other provision of this Agreement, the City shall not take any action or omit to take any action, directly or indirectly, in any manner, which would result in any of the District Bonds being treated as an obligation not described in Section 103(a) of the Internal Revenue Code of 1986, as amended, by reason of classification of such District Bond as a "private activity bond" within the meaning of Section 141 of said Code or for any other reason.

Section 20. Covenants of the District.

(a) Insurance. The District shall procure and maintain or cause to be procured and maintained insurance on the Project with responsible insurers so long as such insurance is available from reputable insurance companies, or, alternatively, shall establish a program of self-insurance, or participate in a joint powers agency providing insurance or other pooled insurance program, covering such risks, in such amounts and with such deductibles as shall be determined by the District. The District shall indemnify and hold harmless the City from any liability for personal injury or property damage resulting from any accident or occurrence arising out of or in any way related to the construction or operation of the Project.

(b) Accounting Records and Financial Statements.

(i) The District will keep appropriate accounting records in which complete and correct entries shall be made of all transactions relating to the Project, which records shall be available for inspection, copying and audit by the City and its accountants, attorneys and agents at reasonable hours and under reasonable conditions.

(ii) The District will prepare annually within one hundred eighty (180) days after the close of each District Fiscal Year (commencing with the District Fiscal Year ending

December 31, 1995) financial statements of the District for the preceding District Fiscal Year prepared in accordance with generally accepted accounting principles, together with a report of an Independent Certified Public Accountant thereof. The District will promptly furnish a copy of such report to the City and to the Trustee.

(c) Compliance with Law. The District shall comply with all local, state and federal laws applicable to the Project.

(d) Against Sale or Other Disposition of Project. The District will not sell, lease or otherwise dispose of the Project or any part thereof unless the Board of Directors of the District determines that such sale, lease or other disposition will not materially adversely affect the District's ability to comply with its obligations hereunder and such determination is approved by the Operating Committee.

(e) Maintenance and Operation of the Project. Subject to the payment obligations of the Project Participants hereunder, the District will maintain and preserve the Project in good repair and working order at all times and will operate the Project in an efficient and economical manner.

Section 21. Term.

(a) No provision of this Agreement shall take effect until it and Water Supply Agreements with all Project Participants (other than Additional Project Participants) have been duly executed and delivered to the District together with an opinion for each Project Participant of an attorney or firm of attorneys in substantially the form attached hereto as Exhibit B and an opinion for the District of Brown & Wood, Special Counsel to the District, in substantially the form attached hereto as Exhibit C.

(b) Notwithstanding the delay in effective date of this Agreement until all Project Participants have complied with subsection (a) of this Section, it is agreed by the City that in consideration for the District's signature hereto, and for its commitment to use its best efforts to obtain the commitment of all Project Participants, the City upon its execution and delivery of this Agreement to the District along with the required opinion and any required evidence of compliance as required by subsection (a) of this Section shall be immediately bound not to withdraw its respective offer herein made to enter into this Agreement as executed and/or supplemented or to decrease or terminate its Project Allotment before December 1, 1995.

(c) Unless terminated in accordance with Section 3(c), the term of this Agreement shall continue until the later of December 31, 2029 and the final maturity of District Bonds. The parties hereto agree to negotiate in good faith to amend this

Agreement on or prior to such date to extend the term hereof and to include terms and conditions as are mutually agreeable to the parties, provided that the price to be paid with respect to the Project Allotment in such amendment shall reflect the payment of capital costs to such date. In the event that the District and all Project Participants cannot agreed to amend the Agreement, the District agrees to cause ownership of the Project to be transferred to a joint powers agency or similar entity created by the Project Participants and to enter into a raw water sale agreement with such entity on terms and conditions consistent with the raw water pricing and delivery policy in effect under this Agreement at the time of such transfer.

In the event the ownership of the Project is transferred pursuant to this subparagraph (c), the quantity of raw water that will be made available to the entity created by the Project Participants shall not be reduced from the quantity of raw water being made available by the District to the Project Participants immediately prior to the expiration of the term of this Agreement. Should the ownership of the Project be transferred to a new entity, the price paid to the District for raw water shall be on the same terms as prior to the transfer, plus any costs incurred by the District for operation, maintenance or capital improvement reimbursements relating to facilities necessary to deliver raw water to the Project.

Section 22. Assignment.

The District may pledge and assign to any Trustee for District Bonds, all or any portion of the payments received under this Agreement from the City and the District's other rights and interests under this Agreement. Such pledge and assignment by the District shall be made effective for such time as the District shall determine and provide that the Trustee shall have the power to enforce this Agreement in the event of a default by the District under a Bond Resolution. The City may assign its rights or obligations under this Agreement only in accordance with Section 17 hereof.

Section 23. Amendments.

Except as otherwise provided in this Agreement, on and after the date District Bonds are issued and so long as any District Bonds are outstanding in accordance with the applicable Bond Resolution, Section 11(d), 12(a), (c) and (d), 14(a), 16, 17, 19 and 21 of this Agreement shall not be amended, modified or otherwise changed or rescinded by agreement of the parties without the consent of each Trustee for District Bonds whose consent is required under the applicable Bond Resolution. This Agreement may only be otherwise amended, modified, changed or rescinded in writing by each of the parties hereto.

Notwithstanding the foregoing, the sections of this Agreement set forth in the prior paragraph of this Section may be amended without the consent of each Trustee for District Bonds for any of the following purposes:

(a) to add to the agreements, conditions, covenants and terms contained herein required to be observed or performed by the District or the City other agreements, conditions, covenants and terms hereafter to be observed or performed by the District or the City, or to surrender any right reserved herein to or conferred herein on the District or the City, and which in either case shall not adversely affect the interests of the owners of any District Bonds;

(b) to make such provisions for the purpose of curing any ambiguity or of correcting, curing or supplementing any defective provision contained herein or in regard to questions arising hereunder which the District or the City may deem desirable or necessary and not inconsistent herewith, and which shall not materially adversely affect the interests of the owners of any District Bonds;

(c) to make any modifications or changes necessary or appropriate in the opinion of a firm of nationally recognized standing in the field of law relating to municipal bonds to preserve or protect the exclusion from gross income of interest on the District Bonds for federal income tax purposes;

(d) to make any modifications or changes to this Agreement in order to enable the execution and delivery of District Bonds on a parity with any District Bonds previously issued and to make any modifications or changes necessary or appropriate in connection with the execution and delivery of District Bonds;

(e) to make any other modification or change to the provisions of this Agreement which does not materially adversely affect the interests of the owners of any District Bonds;

(f) to make changes to the definition of "Project", including but not limited to changes resulting from the operation of Sections 3 and 4 hereof.

Section 24. Additional Water in Future

The District agrees that on or about January 1, 2005, to the extent the Board of Directors of the District determines that water surplus to the needs of agricultural water users within the District is then available and subject to compliance with federal and state laws, including CEQA, and to the District's water rights, permits and licenses, and to state laws applicable

thereto, the District shall commence proceedings to expand the Project to make additional treated water available to the Project Participants, but such expansion shall occur only on terms and conditions reasonably agreeable to the District and the Project Participants. In the event that the District and the Project Participants cannot agree upon terms and conditions for expansion of the Project and delivery of additional treated water, the District shall not be obligated to expand the Project or to make additional treated water available to the Project Participants. Nothing in this Agreement shall be construed to require the District to deliver treated water to the City in excess of the City's Project Allotment or to enter into any agreement to deliver treated water to the City in excess of the City's Project Allotment unless the District Board of Directors determines that water surplus to the needs of agricultural water users within the District is available to the District.

Section 25. Miscellaneous.

The headings of the sections hereof are inserted for convenience only and shall not be deemed a part of this Agreement.

If any one or more of the covenants or agreements provided in this Agreement to be performed should be determined to be invalid or contrary to law, such covenant or agreement shall be deemed and construed to be severable from the remaining covenants and agreements herein contained and shall in no way affect the validity of the remaining provisions of this Agreement.

This Agreement may be executed in several counterparts, all or any of which shall be regarded for all purposes as one original and shall constitute and be but one and the same instrument.

This Agreement shall be governed by and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF the City has executed this Agreement with the approval of its governing body, and caused its official seal to be affixed and the District has executed this Agreement in accordance with the authorization of its Board of Directors, and caused its official seal to be affixed.

SOUTH SAN JOAQUIN
IRRIGATION DISTRICT

[SEAL]

Attest:

By _____
President

By _____
Secretary

CITY OF TRACY

[SEAL]

Attest:

By _____
Mayor

By: _____
City Clerk

Approved as to form

By: _____
City Attorney

EXHIBIT A

PHASE 1 - UP TO YEAR 2010

City	Project Allotment
1. City of Escalon	2,015
2. City of Lathrop	8,007
3. City of Manteca	12,700
4. City of Ripon	1,232
5. City of Tracy	10,000
	33,954

PHASE II - UP TO YEAR 2025
SCHEDULE OF PROJECT ALLOTMENTS

City	Project Allotment
1. City of Escalon	2,799
2. City of Lathrop	11,791
3. City of Manteca	24,500
4. City of Ripon	3,919
5. City of Tracy	10,000
	53,009

SSJID Lathrop-Tracy Purchase, Sale and Amendment Agreement
(August 2013)

August 6, 2013

AGENDA ITEM 1.E

REQUEST

RESCIND RESOLUTION 2013-076, APPROVE THE REVISED LATHROP-TRACY PURCHASE, SALE AND AMENDMENT AGREEMENT, AUTHORIZE THE MAYOR TO EXECUTE THE AGREEMENT, AUTHORIZE A SUPPLEMENTAL APPROPRIATION FROM THE WASTEWATER FUND AND ESTABLISH A LOAN TO THE WATER FUND IN THE AMOUNT OF $5 MILLION

EXECUTIVE SUMMARY

On June 4, 2013, Tracy City Council authorized the water purchase agreement (Resolution 2013-076). This agreement required approval by all five participating agencies. Unfortunately, the City of Manteca's staff did not move the item forward for Manteca City Council consideration. A revised three party agreement has been prepared to allow acquisition by Tracy of two million gallons per day surplus of treated water capacity and 1,120 acre-feet of surplus water supply in the South County Water Supply Project from the City of Lathrop. The City of Tracy has need for this additional capacity and water supply and the subject agreement provides for its acquisition by Tracy.

DISCUSSION

The South San Joaquin Irrigation District constructed, and now operates, the South County Water Supply Project (SCWSP). The project includes the Nick DeGroot Water Treatment Plant at Woodward Reservoir and 40 miles of pipeline delivering water to the cities of Manteca, Lathrop, Tracy, and in the future, Escalon. The project commenced delivering water in 2005. In recent years, this project has delivered approximately 70% of the water used in Tracy.

The City of Lathrop has updated its Water Master Plan and determined that because of changed urban growth land use projections, water conservation, water use efficiency, and future use of recycled water that it has more capacity and water supply in the SCWSP than needed for their current or projected needs. Therefore, the City of Lathrop is proposing to sell Tracy two million gallons per day of surplus capacity and 1,120 acre-feet of surplus water supply.

Tracy desires to increase its participation in the SCWSP in order to improve water quality to its customers, increase its water supply and decrease the salinity of its wastewater effluent. The purchase and use of this capacity and water supply will allow further reduction in the salinity level of the treated wastewater discharged into the Delta. No physical facilities need to be constructed for Tracy to utilize this capacity and water supply. The SCWSP has approved environmental documents and the proposed water use in Tracy in-lieu of Lathrop will not divert additional water from the Stanislaus River. The Purchase, Sale and Amendment Agreement is not a project as defined by CEQA. Tracy intends to put this additional capacity and water supply to immediate use.

Therefore, staff is recommending that the City Council rescind Resolution 2013-076 and approve the revised Lathrop-Tracy Purchase, Sale and Amendment Agreement.

STRATEGIC PLAN

This agenda item is a routine operational item and does not relate to the Council's four strategic plans.

FISCAL IMPACT

There is no fiscal impact to the General Fund. The purchase price for the capacity and allocation is $5 million. The original cost to Lathrop to construct this capacity in 2003 was $4.6 million. Lathrop has incurred considerable interest expense from the bonds issued for construction.

The operating cost associated with the increased capacity and allocation is approximately $250,000 per year. Tracy currently budgets $3.2 million per year for SSJID water supply and the purchase results in a minimal water rate impact.

To fund this purchase, staff recommends a supplemental appropriation and loan from the Wastewater Enterprise Fund. Payments will include interest at the rate of 2.5% annually. The term of the loan is anticipated to be approximately 2 years. During that time, it is anticipated, that adequate funds from development will be collected to retire the loan. The Lathrop-Tracy Purchase Agreement will not be effective until reimbursement agreements have been entered into to cover the City's costs and required security is provided to the City.

RECOMMENDATION

That the City Council, by resolution:

(1) Rescind Resolution 2013-076;

(2) Approve the revised Lathrop-Tracy Purchase, Sale and Amendment Agreement and authorize the Mayor to execute the agreement; and

(3) Authorize a supplemental appropriation from the Wastewater Fund, and establish a loan to the Water Fund in the amount of $5 million.

Prepared by: Steve Bayley, Project Specialist

Reviewed by: Rod Buchanan, Interim Director of Public Works

Approved by: R. Leon Churchill, Jr., City Manager

Attachment A: Lathrop – Tracy Purchase, Sale and Amendment Agreement

RESOLUTION 2013-110

RESCINDING RESOLUTION 2013-076; APPROVING THE REVISED LATHROP-TRACY PURCHASE, SALE AND AMENDMENT AGREEMENT, AUTHORIZING A SUPPLEMENTAL APPROPRIATION FROM THE WASTEWATER FUND AND ESTABLISHING A LOAN TO THE WATER FUND IN THE AMOUNT OF $5 MILLION AND AUTHORIZING THE MAYOR TO EXECUTE THE AGREEMENT

WHEREAS, On June 4, 2013, Tracy City Council authorized the water purchase agreement (Resolution 2013-076), and

WHEREAS, The agreement required approval by five agencies, and

WHEREAS, The City of Manteca staff did not move this item forward for consideration, and

WHEREAS, A revised three party agreement has been prepared to allow acquisition by Tracy of two million gallons per day surplus of treated water capacity and 1,120 acre-feet of surplus water supply in the South County Water Supply Project from the City of Lathrop, and

WHEREAS, The City of Lathrop will retain sufficient capacity and water supply for their community needs while proposing to sell Tracy two million gallons per day of surplus capacity and 1,120 acre-feet of surplus water supply, and

WHEREAS, The environmental documents for the South County Water Supply Project were previously approved and the proposed water use in Tracy in-lieu of Lathrop will not divert additional water from the Stanislaus River and no physical facilities are to be constructed, and

WHEREAS, The Lathrop – Tracy Purchase, Sale and Amendment Agreement is not a project as defined by CEQA, and

WHEREAS, The City of Tracy intends to put this additional capacity and water supply to immediate use, and

WHEREAS, The Lathrop-Tracy Purchase Agreement is not effective until reimbursement agreements have been entered into to cover the City's costs and required security has been provided to the City;

NOW, THEREFORE, BE IT RESOLVED that:

1. The City Council rescinds Resolution 2013-076;

2. The City Council authorizes a supplemental appropriation from the Wastewater Fund and establishes a two year loan to the Water Fund in the amount of $5 million with 2.5% interest;

3. The City Council approves the revised Lathrop-Tracy Purchase, Sale and Amendment Agreement, and authorizes the Mayor to execute the agreement; and

4. This Resolution shall be effective only at such time that reimbursement agreements have been entered into to cover the City's costs (and required security has been provided to the City) with all of the following parties: Prologis, L.P.; GBC Global Investments, Inc.; TWL Investors, LLC; R&B Delta, LLC.

* * * * * * * * * * * * * *

The foregoing Resolution 2013-110 was adopted by the Tracy City Council on the 6th day of August, 2013, by the following vote:

AYES: COUNCIL MEMBERS: MACIEL, MANNE, RICKMAN, YOUNG, IVES

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

ABSTAIN: COUNCIL MEMBERS: NONE

MAYOR

ATTEST:

CITY CLERK

SOUTH COUNTY WATER SUPPLY PROJECT

LATHROP-TRACY PURCHASE, SALE AND AMENDMENT AGREEMENT

This Purchase, Sale and Amendment Agreement ("Purchase and Amendment Agreement") is made this 6st day of August, 2013 by and between the City of Tracy ("Tracy") and the City of Lathrop ("Lathrop"), each a municipal corporation, and the South San Joaquin Irrigation District ("SSJID") a California irrigation district. Tracy, Lathrop and SSJID are each a Party to this Purchase and Amendment Agreement and collectively are the Parties hereto.

RECITALS

A. SSJID has constructed and now owns, operates and maintains the South County Water Supply Project ("Project"). The Project includes without limitation, water treatment and pumping facilities, storage facilities, raw water and treated water pipelines, pumps and turnout facilities, as needed for the purpose of supplying treated drinking water to Tracy and Lathrop, as well as the other Project Participants, Escalon and Manteca.

B. Tracy and Lathrop have each entered into a Water Supply Development Agreement (the "WSDA's") with SSJID, each dated as of October 1, 1995. The Lathrop WSDA was amended in 2000 by Amendment No. 1. There have not been any amendments to the Tracy WSDA. These WSDA's, as amended from time to time, are incorporated herein by reference and referred to herein individually as the Tracy WSDA and the Lathrop WSDA.

C. The Tracy WSDA and Lathrop WSDA provided for Lathrop and Tracy's participation in Project construction and financing. The WSDA's further provide Tracy and Lathrop with rights to purchase from SSJID, and have treated and delivered to them by SSJID, water up to the amounts specified in their respective WSDA's (their "Project Allotments".) Under the Tracy WSDA, Tracy has a Phase I Project Allotment of 10,000 acre-feet per year (AFY) and a Phase II Project Allotment of 10,000 AFY. Under the Lathrop WSDA, Lathrop has a Phase I Project Allotment of 8,007 AFY and a Phase II Project Allotment of 11,791 AFY. The Project Allotments are shown in Exhibit A to the Tracy WSDA and Exhibit E to the Lathrop, Escalon and Manteca WSDA's (see Section 2.G of Amendment No. 1).

D. The Project operates at varying rates of flow from time to time, expressed in million gallons per day (mgd) ("Flow Rate"). The water treatment plant's average flow rate represents the daily flow to each Project Participant if

that Project Participant's Project Allotment were to be delivered evenly over a period of 365 days per year. The Project's peak flow rate ("Peak Rate") is the maximum rate of flow at which the Project is designed to produce treated drinking water at any point in time, expressed in mgd, without consideration of scheduled maintenance. SSJID operates the Project for purposes of delivery of the Project Allotments to the Project Participants. SSJID has allocated a portion of the Peak Rate to each Project Participant for this purpose. These allocations of Peak Rate correlate to the volumes of the Project Allotments specified in the WSDA's and to the share of the Project's cost which was allocated among the Project Participants based primarily on plant capacity. This relationship is affirmed in, inter alia, Section 14 of the WSDA's.

E. Pursuant to the WSDA's, SSJID treats and delivers the respective Project Allotment to each Project Participant according to a daily delivery schedule determined by the Project Participant and SSJID. SSJID allocates the Flow Rate among the Project Participants as necessary to meet the delivery schedules of the Project Participants. SSJID may exceed a Project Participant's allocation of the Peak Rate, to the extent this does not impact another Project Participant. If, at any time, the Plant is incapable of meeting the scheduled deliveries of one or more Project Participants, SSJID would allocate the available Flow Rate on a pro rata basis according to the Project Participants' shares of the Peak Rate.

F. Lathrop has determined that, because of changed urban growth projections and water use demands in its service area, the allocations of water treatment capacity, conveyance capacity, and water supply in the Project pursuant to the Lathrop WSDA exceed its current and projected needs. Some of the changes include a lower peaking factor, recent and State mandated future water conservation and anticipated use of the City's recycled water supply. These changes have resulted in a reduced need for potable water. As a result, Lathrop has identified that it has a surplus of 1,120 AFY of its Phase 1 Project Allotment. Lathrop has determined that, after implementation of this Purchase and Amendment Agreement, Lathrop's remaining share of Project Allotment, and its share of SSJID's allocation of the Project's Peak Rate that remains after the reduction described below, are sufficient to accommodate its present and future community development.

G. Tracy desires to increase its participation in the Project in order to improve the quality of water delivered to its customers, to decrease the salinity of its wastewater effluent, and to increase its water supply. Tracy intends, with this Purchase and Amendment Agreement, to purchase from Lathrop its right to obtain from SSJID 1,120 acre feet of Project Allotment. In addition, this Purchase and Amendment Agreement provides that, subject to its obligations under the WSDA's, SSJID will, as between Tracy and Lathrop, increase the share of Peak Rate allocated to Tracy, which is presently 15 mgd, by 2.0 mgd, and SSJID will reduce Lathrop's share of Peak Rate by 2 mgd.

H. This transfer is consistent with the WSDA's, which in Section 11 provide for the transfer of Project Allotment and the rights and obligations with respect thereto by one Project Participant to another Project Participant. While SSJID's approval is not required for such a transfer pursuant to Section 11(a), Lathrop and Tracy have invited SSJID's review and agreement in light of its current allocation of the Peak Rate accompanying the transferred Project Allotment. The Peak Rate allocations are an existing attribute of how the Project is operated to deliver the Project Allotments. The Parties acknowledge that such changes and amendments does not affect the allocation of Project costs or the delivery of Project Allotment to Project Participants other than as between Tracy and Lathrop.

I. The purposes of this Purchase and Amendment Agreement are (1) to memorialize Lathrop's conveyance and sale, and Tracy's acquisition and purchase, of 1,120 acre-feet per year of Project Allotment, together with the Parties' agreement that SSJID, as between Tracy and Lathrop, reduce Lathrop's share of Peak Rate by 2 mgd and will increase Tracy's share of Peak Rate by 2 mgd; and (2) to effect amendments to the Tracy and Lathrop WSDA's to reflect this transaction.

Therefore, the Parties agree as follows:

AGREEMENT

1. Effective Date; Term.

a. This Purchase and Amendment Agreement shall become effective on the date stated above upon execution by all Parties ("Effective Date".)

b. Provided that this Purchase and Amendment Agreement takes effect, this Purchase and Amendment Agreement shall have the same term as the Lathrop and Tracy WSDA's.

2. Transferred Project Allotment. Lathrop hereby permanently conveys and sells to Tracy, and Tracy hereby acquires and purchases, Lathrop's rights pursuant to the Lathrop WSDA to purchase 1,120 AFY of Project Allotment from SSJID. In connection therewith, Lathrop and Tracy both agree, as between Tracy and Lathrop, to a reduction in Lathrop's share of SSJID's allocation of Peak Rate by, and to an increase in Tracy's share of SSJID's allocation of Peak Rate by, 2 mgd. By execution of this Purchase and Amendment Agreement SSJID hereby acknowledges this re-allocation of a portion of the Project's Peak Rate as between Tracy and Lathrop.

3. Transferred Project Allotment and Lathrop WSDA in Good Standing. Lathrop warrants and represents that up to the Effective Date, it has diligently maintained the Lathrop WSDA as amended, including the Project

Allotment transferred pursuant to this Purchase and Amendment Agreement, in good standing, and has duly made all required payments thereunder in a timely manner.

4. Principal Payment. Within fourteen calendar days after Lathrop provides written notice to Tracy of full execution of this Purchase and Amendment Agreement, including a fully executed copy thereof, Tracy shall pay to Lathrop the sum of five million dollars ($5,000,000), which shall be the full, final and complete payment by Tracy to Lathrop pursuant to this Purchase and Amendment Agreement.

5. Compliance with WSDA's.

a. This Purchase and Amendment Agreement is made pursuant to Section 11 (a) of the WSDA's.
b. Section 17 of the four WSDA's is inapplicable to this Purchase and Amendment Agreement.
c. This Purchase and Amendment Agreement is in full compliance with the WSDA's.

6. Amendments to the WSDA's. The Tracy and Lathrop WSDA's are hereby amended to conform to the following:

a. Lathrop's Project Allotment is 6,887 AFY in Phase I and, subject to all of the terms and conditions of Lathrop's WSDA, 10,671 AFY in Phase II. As between Tracy and Lathrop, SSJID will reduce Lathrop's allocation of Peak Rate by 2 mgd.
b. Tracy's Project Allotment is 11,120 AFY in Phase I and subject to all of the terms and conditions of Tracy's WSDA,11,120 AFY in Phase II. As between Tracy and Lathrop, SSJID will increase Tracy's share of Peak Rate by 2 mgd.

c. All terms and conditions of the Tracy and Lathrop WSDA's, including any previous amendments, which are not specifically modified by this Purchase and Amendment Agreement, shall remain in full force and effect.

7. Costs. Each Party and the Consenting Entity shall bear its own costs associated with this Purchase and Amendment Agreement, except as otherwise specifically provided herein.

8. Attorney Fees. If it shall be necessary for any Party hereto to commence legal action or any other proceeding to enforce the terms and provisions of this Purchase and Amendment Agreement, the non-prevailing Party shall reimburse the prevailing Party for all of the prevailing Party's actual and reasonable expenses and costs incurred in such action or proceeding, including

without limitation reasonable attorneys' fees and the reasonable fees of any experts employed by the prevailing Party in such action or proceeding.

9. SSJID Coordination. Upon and after the Effective Date, SSJID agrees to reflect the changes in the allocation of Peak Rate as between Tracy and Lathrop and Project Allotment, along with the resulting changes to the fixed and variable Project costs for which the Parties are responsible. SSJID further agrees to amend its Project operations, records, and other functions to conform to this Purchase and Amendment Agreement as of the Effective Date.

10. Reciprocal Indemnification.

a. Tracy shall hold harmless, indemnify and defend Lathrop (with counsel of Lathrop's choice) and its members, directors, officers, employees, agents and contractors (collectively "Lathrop's Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, or judgments, including, without limitation, reasonable and actual attorneys' fees, arising from or connected with this Purchase and Amendment Agreement and caused by the negligence, gross negligence or intentional misconduct of Tracy, except to the extent caused by the negligence, gross negligence or intentional misconduct of any of Lathrop's Indemnified Parties.

b. Lathrop shall hold harmless, indemnify and defend Tracy (with counsel of Tracy's choice) and its members, directors, officers, employees, agents and contractors (collectively "Tracy's Indemnified Parties") from and against all liabilities, penalties, costs, losses, damages, expenses, causes of action, claims, demands, or judgments, including, without limitation, reasonable and actual attorneys' fees, arising from or connected with this Purchase and Amendment Agreement and caused by the negligence, gross negligence or intentional misconduct of Lathrop, except to the extent caused by the negligence, gross negligence or intentional misconduct of any of Tracy's Indemnified Parties.

11. Notices. All notices that are required, either expressly or by implication, to be given by any Party or Consenting Entity to the other Party or Consenting Entities under this Agreement shall be delivered, sent by facsimile, or mailed, United States first-class postage prepaid, addressed as follows:

CITY OF TRACY
Director of Public Works
520 Tracy Boulevard
Tracy, California 95376
Phone: (209) 831-6300
Fax: (209) 831-4472

CITY OF LATHROP
Director of Public Works
390 Towne Centre Drive
Lathrop, California 95330
Phone: (209) 941-7430
Fax: (209) 941-7449

SOUTH SAN JOAQUIN IRRIGATION DISTRICT
P.O. Box 747
Ripon, California 95366
Phone: (209) 249-4600
Fax: (209) 249-4640

Notice shall be deemed given (a) two (2) calendar days following mailing via regular or certified mail, return receipt requested, (b) one (1) business day after deposit with any one day delivery service assuring "next day" delivery, (c) upon actual receipt of notice, or (d) upon transmission, if by facsimile to the correct number, whichever is earliest. The Parties and Consenting Entities shall promptly give written notice to each other of any change of address, telephone or fax number, and delivery to the addresses or transmission to the fax numbers stated herein shall be deemed sufficient unless written notification of a change of address or fax number has been received.

12. Successors and Assigns. This Purchase and Amendment Agreement shall be binding upon the successors and permitted assigns of the Parties.

13. No Benefit to Third Parties. There is no intended third party beneficiary of any right or obligation assumed by the Parties. This Purchase and Amendment Agreement is made for the sole benefit of the Parties, and their respective successors and assigns.

14. Entire Agreement. This Purchase and Amendment Agreement constitutes the entire agreement between the Parties, and supersedes any oral agreement, statement or promise relating to the subject matter hereof. Any amendment of this Purchase and Amendment Agreement must be reduced to writing and signed by the Parties to be valid.

15. Controlling Law. The interpretation and performance of this Purchase and Amendment Agreement shall be governed by the laws of the State of California.

16. Construction.

a. The Parties agree that this Purchase and Amendment Agreement is the product of mutual full and fair negotiation. This Purchase and Amendment Agreement shall therefore be interpreted as drafted equally by the Parties.

b. The captions contained in this Purchase and Amendment Agreement are for convenience only and shall not be interpreted so as to change or affect the meaning of the provisions of this Purchase and Amendment Agreement.

c. The Recitals are made a part of this Agreement.

17. Counterparts; Facsimiles. The Parties may execute this Purchase and Amendment Agreement in several counterparts, which shall, in the aggregate, be signed by both Parties. Each counterpart shall be deemed an original instrument as against any party who has signed it. Signatures may be given by facsimile, pdf or other electronic format, or by similar means with the same effect as originals.

18. Cooperation. To the extent reasonably required, each Party to this Purchase and Amendment Agreement shall, in good faith, assist the other in obtaining all necessary approvals as may be applicable to performance of any terms of this Purchase and Amendment Agreement.

IN WITNESS WHEREOF, the Parties have duly executed this Purchase and Amendment Agreement as of the Effective Date.

CITY OF LATHROP
a California municipal corporation

Date: 8/5/13

By _____
Mayor

ATTEST:

_____
City Clerk

Date: 8/5/13

APPROVED AS TO FORM:

_____
City Attorney, CITY OF LATHROP

CITY OF TRACY,
a California municipal corporation

Date: 8/15/13 By _____
Mayor

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

_____
City Attorney, CITY OF TRACY

Date: 8-16-13

SOUTH SAN JOAQUIN IRRIGATION DISTRICT
a California irrigation district

Date: 8/7/2013 By _____
President, Board of Directors

ATTEST:

Date: _____ By _____

RESOLUTION NO 13-3631

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LATHROP RESCINDING RESOLUTION NO 13-3589 AND APPROVING THE REVISED LATHROP-TRACY WATER AGREEMENT

WHEREAS, On June 3, 2013, The Lathrop City Council adopted Resolution 13-3589 authorizing a 5 party Purchase, Sale and Amendment Agreement ("Five-Party Water Sale Agreement") with the City of Tracy ("Tracy"); and

WHEREAS, the Water Sale Agreement required approval by all five participating agencies in the South County Water Supply Project ("SCWSP"), including the Cities of Lathrop, Tracy, Escalon, and Manteca plus the South San Joaquin Irrigation District ("SSJID"); and

WHEREAS, the City of Manteca's staff did not move the item forward for Manteca City Council consideration; and

WHEREAS, the Five-Party Water Sale Agreement included an expiration date of July 5th in the event it was not executed by all parties, and a letter dated July 5th from Lathrop to Tracy extended the deadline to July 19th in the hope that Manteca would approve the Water Sale Agreement; and

WHEREAS, the Five-Party Water Sale Agreement was not executed by Manteca by July 19th, and so was terminated by Lathrop in a letter to all five agencies dated July 30, 2013; and

WHEREAS, a revised Lathrop-Tracy Purchase, Sale and Amendment Agreement ("Three-Party Water Sale Agreement") between Lathrop, Tracy and SSJID has been prepared to allow sale by Lathrop to the City of Tracy of two million gallons per day (1,120 acre-feet per year) of water supply in the SCWSP that is surplus to Lathrop's current and near term needs; and

WHEREAS, the City of Lathrop will retain sufficient capacity and water supply for our community needs; and

WHEREAS, the environmental documents for the South County Water Supply Project were previously approved and the proposed water use in Tracy in lieu of Lathrop will not divert additional water from the Stanislaus River and no physical facilities are to be constructed; and

WHEREAS, the Three-Party Water Sale Agreement is not a project as defined by CEQA; and

WHEREAS, the City of Tracy intends to put this additional capacity and water supply to immediate use.

NOW, THEREFORE, BE IT RESOLVED, that the City Council hereby rescinds Resolution No. 13-3589.

BE IT FURTHER RESOLVED, that the City Council approves the attached Lathrop-Tracy Purchase, Sale and Amendment Agreement (Three–Party Water Sale Agreement), (Exhibit "A") and authorizes the Mayor to execute the agreement.

PASSED AND ADOPTED this 5th day of August, 2013, by the following vote:

AYES: Akinjo, Dresser, Ornelas, Salcedo and Dhaliwal.

NOES: None.

ABSENT: None.

ABSTAIN: None.

SONNY DHALIWAL, MAYOR

ATTEST:

Mitzi Ortiz, City Clerk

APPROVED AS TO FORM:

Salvador Navarrete, City Attorney

Agreement Between City of Tracy and Semitropic Water Storage District and Its Improvement Districts for Participation in the Stored Water Recovery Unit of the Semitropic Water Banking and Exchange Program (November 2012)

RESOLUTION 2012-094

AUTHORIZING AN AGREEMENT BETWEEN CITY OF TRACY AND US BUREAU OF RECLAMATION (USBR) FOR LONG-TERM WATER BANKING AT SEMITROPIC WATER STORAGE DISTRICT WATER BANKING PROJECT AND AUTHORIZING THE MAYOR TO EXECUTE THE AGREEMENT

WHEREAS, The USBR completed their environmental review in May 2011 and has prepared the subject Agreement for City Council consideration, and

WHEREAS, The Agreement defines roles, responsibilities and methods for placing water into storage and return of that water from storage, and has a term through 2035, and

WHEREAS, Water storage for dry years has been identified as a key component of water supply in the City's Urban Water Management Plan, and

WHEREAS, The City's participation in Semitropic WSD allows 3,500 acre-feet/year of water to be returned to Tracy for up to three years for a total storage capacity of 10,500 acre-feet, and

WHEREAS, Authorization of the USBR approval agreement completes the requirements contained in the City/Semitropic agreement;

NOW, THEREFORE, BE IT RESOLVED That the City Council hereby approves Approval Agreement No. 7858A-WB-2011-1 between the City and the US Bureau of Reclamation for Long-Term Central Valley Project Water Banking by the City of Tracy at Semitropic Water Storage District Bank and authorizes the Mayor to execute the agreement.

* * * * * * * * * * * * * *

The foregoing Resolution 2012-094 was passed and adopted by the Tracy City Council on the 5th day of June, 2012, by the following vote:

AYES: COUNCIL MEMBERS: ABERCROMBIE, ELLIOTT, MACIEL, RICKMAN, IVES
NOES: COUNCIL MEMBERS: NONE
ABSENT: COUNCIL MEMBERS: NONE
ABSTAIN: COUNCIL MEMBERS: NONE

MAYOR

ATTEST:

CITY CLERK

THE FOREGOING DOCUMENT IS CERTIFIED TO BE A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE.

CITY CLERK, CITY OF TRACY
BY: Carole Hirschmann (Asst.)
DATE: June 11, 2012

AGREEMENT BETWEEN
CITY OF TRACY AND SEMITROPIC WATER STORAGE DISTRICT
AND ITS IMPROVEMENT DISTRICTS FOR PARTICIPATION IN THE STORED WATER RECOVERY UNIT OF THE
SEMITROPIC WATER BANKING AND EXCHANGE PROGRAM

THIS AGREEMENT (this "**Agreement**"), dated as of November 16, 2010, is entered into by and between the **CITY OF TRACY** ("Participant") and the **SEMITROPIC WATER STORAGE DISTRICT** and **SEMITROPIC IMPROVEMENT DISTRICT, BUTTONWILLOW IMPROVEMENT DISTRICT** and **POND-POSO IMPROVEMENT DISTRICT of the SEMITROPIC WATER STORAGE DISTRICT** (collectively called "**Semitropic**") pursuant to City Resolution No. 2010-186. Participant and Semitropic may be referred to individually as Party or collectively as Parties.

RECITALS

A. Participant is a California municipal corporation.

B. Semitropic Water Storage District and its improvement districts are organized under the laws of the State of California under the Water Storage District Law at Division 14 of the California Water Code. As more particularly described below, Semitropic, among other things, supplies imported supplemental surface water to certain of its landowners and water users and has ongoing groundwater banking programs with other entities.

C. Semitropic obtains water from the SWP through its contracts with the Kern County Water Agency ("**Agency**") under the Agency's master contract with DWR, executed on November 15, 1963, and presently providing for a total contract entitlement of 998,730 acre-feet per year. Semitropic's contracts with the Agency were originally executed December 9, 1976 (Buttonwillow Improvement District), December 9, 1976 (Pond-Poso Improvement District), and January 9, 1969 (Semitropic Water Storage District) and provided for a combined contract

entitlement of 158,000 acre-feet per year. This later amount was reduced to 155,000 acre-feet by the contract amendments required to implement the Kern Water Bank exchange under the Monterey Agreement. Semitropic Improvement District was formed in 1991, and its boundaries are coterminous with the boundaries of Buttonwillow Improvement District and Pond Poso Improvement District and, among other things, it serves as agent for Buttonwillow Improvement District and Pond-Poso Improvement District. A total of approximately 136,370 acres of land within Semitropic are irrigated with a total annual demand of approximately 477,000 acre-feet based on current cropping patterns and irrigation practices. Semitropic has entered into contracts with individual landowners comprising 42,328 acres of land which is designated as the Surface Water Service Area ("**SWSA**"). Semitropic has commitments to deliver 145,240 acre-feet per year to the SWSA. Additional lands outside the SWSA, in the amount of approximately 24,500 acres, have also been connected to Semitropic's distribution system so such lands may receive surface water when available. These additional lands are designated as the Temporary Water Service Area ("**TWSA**"), and may sometimes be referred to as the Non-Contract Service Area. Total landowner demand within the SWSA and TWSA for surface water supplies is greater than water available under Semitropic's entitlement for Agency SWP water and other surface water supplies.

D. Consistent with the California Environmental Quality Act ("**CEQA**"), Semitropic, acting as lead agency completed an environmental impact report (the "**EIR**") concerning a water banking and exchange program (the "**Original Banking Program**"). Semitropic's Board of Directors, on July 13, 1994, certified the EIR as being in compliance with CEQA. Semitropic is also responsible for implementing and monitoring the mitigation measures defined in "Findings and Mitigation Monitoring Plan" dated July 1994, adopted as part of the EIR.

E. Semitropic also entered into a Memorandum of Understanding ("**MOU**") with neighboring districts, dated September 14, 1994, to implement in part said monitoring and mitigation measures, which this Agreement is subject to. The MOU is on file with Semitropic and has been provided to Participant.

F. The Original Banking Program has a defined total storage capacity of 1,000,000

acre-feet. As part of the Original Banking Program, Semitropic entered into water banking and exchange Agreements with certain parties (the "**Original Banking Partners**") as amended, under which, when and if fully vested, the Original Banking Partners shall have the amounts and percentages as follows:

Original Banking Partners	**Effective Date Of Agreement/Amendment**	**Amount of Storage (AF)**	**Percent of Program**
Metropolitan Water District of Southern California	December 12, 1994 May 6, 2003	350,000	35
Santa Clara Valley Water District	June 1, 1997 April 24, 2003	350,000	35
Alameda County Water District	July 1, 1997 Sept. 28, 2001 April 24, 2003	50,000 100,000	5 10
Zone 7 Water Agency	January 28, 1998 February 26, 2003 January 12, 2005	65,000	6.5
Vidler Water Co. Assignment Agrmts. Currently owned by San Diego County Water Authority	October 8, 1998; May 21, 2001; Sept. 28, 2001 February 26, 2003 July 1, 2005 July 1, 2008	30,000	3
The Newhall Land and Farming Company	May 21, 2001 February 26, 2003	55,000	5.5
TOTAL		**1,000,000**	**100**

G. After the implementation of the Original Banking Program, certain of the Original Banking Partners requested that Semitropic investigate the possibility of increasing the recovery or withdrawal capacity of the Original Banking Program. Following review of various alternatives, Semitropic concluded that the withdrawal capacity increase could best be accomplished in a reliable and efficient manner by providing for additional capacity to pump Stored Water (as defined below) directly from groundwater storage into the California Aqueduct. After considering various pumping locations, pipeline alignments, and the need to minimize pumping impacts on existing groundwater users, the area in the northwest part of Semitropic was

selected as a potential well field. The identified project, known as the Stored Water Recovery Unit ("**SWRU**") and described further below, is based on additional pumpback capacity of up to 200,000 acre-feet per year, 150,000 acre-feet of which is to be pumped from the Well Field (as defined below) **("150,000 AF SWRU Pumpback Capacity")** and 50,000 acre-feet from other parts of the Semitropic Improvement District **("50,000 AF SWRU Pumpback Capacity")**.

H. Semitropic prepared a Draft Supplemental Environmental Impact Report (DEIR) on the SWRU. The Final Supplemental EIR was certified on January 19, 2000. Semitropic also prepared Addenda to the Final Supplemental EIR, dated February, 2002, (clarifying the overall storage capacity of the Original Banking Program with the SWRU to be 1,650,000 acre-feet) July, 2004 (regarding the size and configuration of certain SWRU facilities) and March, 2005 (concerning the delivery point of water delivered for banking). Semitropic initially offered the additional recovery capacity of the 50,000 AF SWRU Pumpback Capacity to the Original Banking Partners, but they declined to participate, except for Zone 7 Water Agency and Vidler Water Company, which have entered amendments of their respective Original Banking Program Agreements to provide priority rights in a portion of the 50,000 AF SWRU Pumpback Capacity. As a result of Semitropic's proposal to undertake the SWRU, Semitropic and the Original Banking Partners did enter into an amendment to the Original Banking Partner agreements to confirm and clarify the rights of the Original Banking Partners established under the Original Banking Partner Agreements. The Original Banking Partner Agreements, as amended, among other provisions, generally provide Semitropic shall operate the SWRU in a manner designed so that its operation does not cause the Original Banking Program to be impaired in its ability to meet DWR water quality standards for return of Stored Water to the California Aqueduct *(First Amendment, Section 14.2.3);* provide that the Original Banking Partners shall have no responsibility and/or obligation to compensate or otherwise provide mitigation to Semitropic or SWRU participants as a result of any adverse impacts of the Original Banking Program for the SWRU, including but not limited to the "15 foot/3 year Rule" contained in the MOU referenced in Recital E above *(First Amendment, Section 14.3.1)* and also otherwise provide the Original Banking Partners specified rights in regard to the unused capacities of SWRU facilities. (First Amendment, Section 14.1.3). Additionally, by Agreement dated April 23, 2007, Poso Creek Water Company, LLC contracted for 20,000 acre-feet of the 50,000 AF SWRU Pumpback

Capacity and the Semitropic-Rosamond Water Banking Authority is entering an agreement to contract for 100,0000 acre-feet of the 150,000 AF SWRU Pumpback Capacity.

I. The facilities planned to be constructed for the SWRU ("**SWRU Facilities**"), with a total pumpback capacity of 200,000 acre-feet per year, consist of two components. First, the "150,000 AF SWRU Pumpback Capacity" will include a well field with approximately 65 wells with a planned capacity to pump 150,000 acre-feet per year ("**Well Field**"), a collection system for transporting Stored Water to a reservoir and pumping plant, a pipeline (estimated 108" diameter) and/or canal to a second reservoir that will be constructed adjacent to the Pond Poso Canal (with appropriate interconnections), a second pumping plant and 420 cfs of two-way conveyance capacity in a 120 inch diameter pipeline to the California Aqueduct, a dual-purpose, bi-directional, connection from the Well Field and the Semitropic distribution system to the California Aqueduct a new In-Lieu service area. Second, the "150,000 AF SWRU Pumpback Capacity" will include well connections and conveyance facility improvements to increase the existing Semitropic pumpback capacity to the Aqueduct by an additional 50,000 acre-feet per year. The SWRU will also require auxiliary features including power distribution lines and operation and maintenance roads. The parties recognize that water quality standards may result in a requirement that water from the SWRU, and in particular the Well Field, be treated before being returned to the California Aqueduct or other Point(s) of Delivery. The general location of projected SWRU Facilities is shown as Area B on Exhibit A hereto.

J. Semitropic as part of the Original Banking Program has constructed facilities to provide Program Delivery Capacity consisting of 23,000 acres of In-Lieu Service Area providing, in combination with delivering capabilities in the SWSA and TWSA, approximately 90,500 acre-feet per year of delivery capacity within a portion of Area A on Exhibit A. Since initiating, the Original Banking Program Semitropic has also increased its recharge capabilities beyond that required by the Original Banking Program through construction of additional In-Lieu Service areas, participation in the Kern Water Bank and additional direct recharge facilities within the District. These additional facilities including proposed future improvements are generally shown on Exhibit A. An additional In-Lieu Service Area as shown within Area B of Exhibit A (shown as "In-Lieu Recharge and Recovery Area") will also be constructed as part of

the SWRU Facilities. This additional In-Lieu Service Area and additional facilities within Area B will provide delivery capacity for SWRU Banking Partners participating in the 150,000 AF SWRU Pumpback Capacity, provide a portion of the recovery capacity for such SWRU Banking Partners, and may also be used to mitigate potential pumping impacts on landowners adjoining the Well Field.

K. Participant and Semitropic find that it will be mutually advantageous to enter into a groundwater banking and exchange program utilizing the SWRU whereby Semitropic will hold for Participant the water deposited by Participant hereunder. This Agreement will provide groundwater storage for Participant resulting in better utilization of its water supplies, and will provide improved reliability of supplies and overall higher groundwater levels for Semitropic.

L. This Agreement is consistent with the goal of making optimum use of water and facilities and is consistent with conservation objectives of Participant, Semitropic, Agency and DWR.

M. Pursuant to this Agreement Participant will store water from, among other sources, its entitlements to Central Valley Project (CVP) water as they may change from time to time ("Participant's CVP Water Contracts"). These include, without limitation, CVP project water contracts with the United States Bureau of Reclamation (Reclamation) now referred to as Nos. 14-06-200-7858A, 14-06-200-4305A-IR5, and 7-07-20-W0045-IR5 to which Participant is a party. Semitropic is within the State Water Resources Control Board authorized Place of Use for Participant's CVP Water. The Parties intend to accommodate the delivery and return of Participant's CVP water to and from storage in Semitropic, including return to Participant's service area north of Semitropic for ultimate beneficial use as a portion of Participant's municipal water supply portfolio.

ARTICLE 1.
DEFINITIONS

As used in this Agreement, each of the following terms shall have the respective meaning given to it in this Article 1 unless expressly stated to the contrary where such term is used. Further, each provision in this Article or in the Recitals which is stated in declarative form (for example, "will be adjusted") or is otherwise stated as an agreement between the Parties, rather than as a statement of their intent or purpose, shall be construed to be an operative part of this Agreement and shall be enforceable.

1.1 **"Agreement"** means, as of any particular time, this Agreement as amended or supplemented by the Parties through that time.

1.2 **"Banking Partner"** means, as of any particular time, Participant and any other entity, including an Original Banking Partner and on SWRU Banking Partner, which is then a party to a water banking and exchange agreement with Semitropic The term "Banking Partner" does not include a Lower Priority Banking Partner.

1.3 **"Effective Date"** means the date this Agreement takes effect, which shall be the later of the date first hereinabove written, and the date determined pursuant to Sections 9.2 and 9.3.

1.4 **"In-Lieu Service Area"** means lands which have at least a five year history of cultivation and continuous use of groundwater, the owners of which have executed surface water service contracts with Semitropic acknowledging and agreeing to cooperate with Semitropic in fulfilling its obligation to carry out the Program, that provide for the reasonable and beneficial use of water made available to Semitropic for banking and other purposes on that land in lieu of pumping groundwater, and whose on-farm systems have been connected to Semitropic's surface water distribution system to receive water delivered to Semitropic for storage purposes. These lands also have a contractual responsibility to use existing wells to recover Stored Water.

1.5 **"Lower Priority Banking Partner"** means an entity which enters into an agreement with Semitropic to utilize all or part of the capacity during such time period when not required to be available for use by Semitropic or Banking Partners.

1.6 **"Original Banking Partners"** means the parties to the Original Banking Program which are those listed in Recital F, and which may change from time to time in event of assignments in accordance with Section 13.1 of the Original Banking Partner Agreements 14.1 (Successors and Assigns).

1.7 **"Original Banking Program"** means the original one million acre-feet (MAF) banking program developed by Semitropic within the Semitropic Bank, referred to as "Program" in Section 1.8 of the Original Banking Program Agreements.

1.8 **"Original Banking Program Agreements"** means the agreement (or agreements) that each Original Banking Partner has entered into with Semitropic containing rights and obligations related to the Original Banking Program.

1.9 **"Original Banking Program Facilities"** means the water facilities, consisting of canals, pipelines, associated pumping plants and recovery wells all as required to recharge a minimum of 90,500 acre feet per year, to recover a minimum of 90,000 acre feet per year at a maximum instantaneous flow rate of 300 cfs (Program Pumpback Capacity), and to recover up to 133,000 acre-feet per year to return water under Program Entitlement Exchange Rights provisions, the locations and description of which are shown on Exhibit A within Area A.

1.10 "**Point(s) of Delivery**" shall have the meaning set forth in the Delivery Agreements referenced in Article 9.1.

1.11 **"Program" and "Semitropic Bank"** means the entire groundwater-banking program developed, operated, and maintained by Semitropic, including both the Original Banking Program and the SWRU.

1.12 **"Program Entitlement Exchange Rights"** means the rights of Banking Partners to exchange an amount of Stored Water through entitlement exchange for an equal amount of Semitropic's allocation of Agency's SWP Entitlement Water (also referred to as Table A Amounts) from the California Aqueduct pursuant to this Agreement or other similar agreements between Semitropic and other Banking Partners, which right shall be first available to the Original Banking Partners as provided further in Article 7. The total amount of Program Entitlement Exchange Rights available to Banking Partners each year will be equal to Semitropic's SWP Entitlement allocation less the first 22,000 acre-feet (was 25,000 acre-feet prior to the implementation of Monterey Amendments). If the nature or description of Semitropic's allocation of the Agency's SWP Entitlement Water is modified, such alternative supply from the SWP shall to such extent be substituted for Semitropic's allocation of Agency's SWP Entitlement Water. Alternative supplies shall include water purchases by the SWP or from sources generally available to State water contractors, as well as water from facilities in which participation is generally made available to State water contractors. Nothing in the preceding sentence shall obligate Semitropic to participate in such programs. The maximum Program Entitlement Exchange Rights of all the Banking Partners at any time will be 133,000 acre-feet per year (derived from 158,000 acre-feet minus 25,000 acre-feet or after implementation of the Monterey Amendments derived from 155,000 acre-feet minus 22,000 acre-feet)

1.13 **"Original Program Pumpback Capacity"** means the capacity, measured in acre-feet per year and CFS, to return Stored Water to the California Aqueduct via the 78" pumpback pipeline constructed for the Original Banking Program, which capacity is first available to the Original Banking Partners as provided further in Article 7.1. The minimum annual Original Program Pumpback Capacity shall be 90,000 acre-feet per year at a maximum instantaneous flow rate of 300 CFS.

1.14 **"Share of SWRU"** means the percentage of the annual SWRU assigned to a SWRU Banking Partner. Semitropic shall assign a Share of SWRU to each SWRU Banking Partner. Participant is acquiring 1,750 acre-feet of annual 150,000 AF SWRU Pumpback Capacity within Area B, and 1,750 acre-feet of annual 50,000 AF SWRU Pumpback Capacity within Area A, which cumulatively constitutes 3,500 shares

1.15 **"Storage Account Balance"** means, with respect to a particular Banking Partner, that Banking Partner's accumulated total Stored Water less the accumulated withdrawals of Stored Water by that Banking Partner. Records of these accounts shall be maintained by Semitropic and they shall be subject to audit, review and approval by the Banking Partners, at the expense of the auditing or reviewing Banking Partner, on an annual basis.

1.16 **"Stored Water"** means, with respect to any particular Banking Partner, water delivered for storage by that Banking Partner as measured at Semitropic's turnouts in Reach 10A of the California Aqueduct or at other locations approved by the Delivery Agreement referred to in Article 9, less losses deducted in accordance with Article 4, which losses shall be accounted for concurrently with the delivery of water to Semitropic for storage.

1.17 **"Stored Water Recovery Unit"** (or "SWRU") means the program within the Semitropic Bank, developed by Semitropic to create, in addition to the Original Banking Program, an additional 650,000 acre-feet of storage as further described at Recital I and elsewhere in this Agreement.

1.18 **"Stored Water Recovery Unit Facilities"** (or "SWRU Facilities") means the proposed facilities shown and described on Exhibit A within Area B including recovery facilities for up to 50,000 acre-feet per year within Area A (for the "50,000 AF SWRU Pumpback Capacity") and additional well connections and conveyance facility improvements not part of the Original Banking Program Facilities and for up to 150,000 acre-feet per year from the Well Field and In-Lieu Service Area of the SWRU (for the "150,000 AF SWRU Pumpback Capacity").

1.19 **"SWP Entitlement Water"** means entitlement water (also known as Table A Amounts) as provided for in the state water contracts, as well as the alternative supplies provided for in the definition of Program Entitlement Exchange Rights.

1.20 **"SWRU Banking Partners"** means, as of any particular time, Participant and any other entity which is party to a water banking and exchange agreement with Semitropic to participate in the Stored Water Recovery Unit.

1.21 **"SWRU Delivery Capacity"** means the capability to deliver water for storage made available as a result of the construction of SWRU Facilities. Specifically the proposed In-Lieu Service Area with delivery capacity estimated to be 50,000 acre-feet per year, based on current cropping patterns and irrigation efficiencies on an irrigation schedule, generally shown on Exhibit B, shall be available as a first priority basis to the SWRU Banking Partners participating in the 150,000 AF SWRU Pumpback Capacity. Additional Unused Semitropic Delivery Capacity may be available from time to time, consistent with Article 7 hereof.

1.22 **"SWRU Pumpback Capacity"** means the capacity, measured in acre-feet per year and CFS, to return Stored Water to the California Aqueduct under the SWRU element of the Program. Upon completion of all necessary SWRU Facilities, the annual SWRU Pumpback Capacity shall be 200,000 acre-feet per year, comprised of (i) 150,000 acre-feet per year at an instantaneous flow rate of approximately 250 CFS for a period of approximately 10 months from the Well Field and from within the additional in-lieu service area described in Recital J **("150,000 AF SWRU Pumpback Capacity")** and (ii) 50,000 acre-feet per year at an instantaneous flow rate of 170 CFS for a period of approximately 5 months during the off-peak irrigation season from recovery facilities within Area A shown on the attached Exhibit A and utilizing additional well connections and conveyance facility improvements not part of the Original Banking Program Facilities **("50,000 AF SWRU Pumpback Capacity")**. The 50,000 AF SWRU Pumpback Capacity is distinct from and over and above the 90,000 acre-feet of pumpback capacity allocated to the Original Banking Partners through the Original Banking Program.

1.23 **"SWRU Storage Capacity"** means the storage capability of the Program which have been allocated to the SWRU as first priority rights, totaling 450,000 acre-feet for the SWRU Banking Partners participating in the 150,000 AF SWRU Pumpback Capacity.

1.24 **"Technical Advisory Committee"** means the Committee established pursuant to Section 7.4 hereof.

1.25 **"Unused Program Entitlement Exchange Rights"** means those exchange rights referenced at Section 1.10 of this Agreement that are not used by the Original Banking Partners.

1.26 **"Unused Original Program Pumpback Capacity"** refers to that minimum pumpback capacity referenced at Section 1.12 that is not used by Semitropic or by the Original Banking Partners.

1.27 **"Unused Semitropic Delivery Capacity "** means in any year, Semitropic total in District delivery capability, currently about 400,000 acre-feet per year (which ultimately could be equal to its total irrigation demand of about 475,000 acre-feet per year) plus direct recharge capability, which is not used for (i) delivery of Semitropic's SWP Entitlement Water, Agency Pool Water, Shafter-Wasco Irrigation District deliveries pursuant to Section 5.8 or other water available to be used by Semitropic for non-banking purposes or (ii) delivery to the Original Banking Partners and other SWRU Banking Partners under their respective first priority delivery capabilities

ARTICLE 2.
ALLOCATION AMONG BANKING PARTNERS

2.1 Under terms and conditions of this Agreement, Participant shall have the first priority to 3,500 acre-feet of SWRU Delivery Capacity, 3,500 acre-feet of Pumpback Capacity per Section 1.14, 10,500 acre-feet of SWRU Storage Capacity and any available unused capacities as herein provided (herein collectively called "Participant's Rights"). SWRU Banking Partners, including Participant, in all cases shall also have the first priority to use any SWRU Delivery Capacity and SWRU Pumpback Capacity not used by other SWRU Banking Partners as provided in Sections 3.4 and 5.2.2.1. Semitropic shall notify each SWRU Banking Partner not using its respective share of said SWRU capability, capacity or right, when other entities including Banking Partners desire to utilize it and of any use made of it.

2.2 Semitropic shall not enter into any other water banking programs or other agreements which would interfere with the rights of Participant or the other SWRU Banking Partners.

2.3 Then existing SWRU Banking Partners will be given an opportunity to review the terms and conditions of proposed agreements with potential Banking Partners and Lower Priority Banking Partners and to review Semitropic's records regarding administration of the Program. Such Lower Priority Banking Partners' agreements and activities shall not adversely impact any Banking Partners' ability to utilize any benefits under their respective banking and exchange agreements with Semitropic. If Semitropic or one or more then existing SWRU Banking Partners believe that other potential Banking Partners' proposed agreements or potential Lower Priority Banking Partners' proposed agreements violate any of the provisions of this Agreement or other such Agreement, any Party may seek dispute resolution pursuant to Article 10 concerning such matter. In this event, Semitropic shall only enter into agreements in conformity with the result of the dispute resolution.

The foregoing Section 2.3 process has been fully and finally completed with respect to this Agreement, and no objections were raised.

ARTICLE 3.
DELIVERY OF WATER BY BANKING PARTNERS TO SEMITROPIC

3.1 Under the terms of the Delivery Agreement(s) referred to in Article 9, Participant, at its sole cost and expense, may deliver water to Semitropic at the location in the California Aqueduct or to other agreed upon locations specified in the applicable Delivery Agreement(s). Participant shall notify Semitropic of its intent as early in the year as possible, preferably no later than April 15. Such water will be scheduled and delivered to Semitropic at times and rates of delivery reasonably acceptable to Semitropic, the Agency and Participant, and shall not exceed the sum of (i) 2.33% of the SWRU Delivery Capacity and (ii) any Unused Semitropic Delivery Capacity available to Participant (to the extent available consistent with Article 7), nor shall it exceed the available capacity of Semitropic's distribution system. To the extent practical

Participant shall schedule such water at a time to coincide with Semitropic's in-lieu delivery demands.

3.2 Semitropic will take control and possession of water delivered to Semitropic by any Banking Partner for storage, at the locations specified in their respective Delivery Agreements and will credit the Storage Account Balance of that Banking Partner with Stored Water in an amount equal to the water so delivered less the deduction for losses provided for in Article 4 with respect to such water. At the time Semitropic takes control and possession of water delivered by Participant, legal title to Participant's water, together with the right to withdraw from the Semitropic Basin an amount sufficient to return to Participant the Stored Water, shall vest in Semitropic, for Participant. Upon taking control and possession of water delivered hereunder for storage by Participant, Semitropic, at its sole cost and expense, will do either of the following: (i) transport and store such water by direct percolation; or (ii) exchange that water for an interest in and right to withdraw from the Semitropic Basin an amount of water sufficient to return to Participant the Stored Water. In either case, Semitropic shall thereafter hold and return or otherwise dispose of the stored water as provided for in this Agreement. Upon crediting Participant's Storage Account Balance for the amount of any water exchanged as described in clause (ii) above, Semitropic may deliver the exchanged water to water users for surface water service in lieu of pumping groundwater. Semitropic shall retain the right to use its facilities to deliver water supplies made available to it by Banking Partners and acquired by Semitropic by exchange pursuant to clause (ii) above as it deems appropriate.

3.3 Participant acknowledges that Participant's Stored Water may be commingled with other water. At all times during the term of this Agreement, an amount of water available to Semitropic in the Semitropic Basin equal to the amount of the Participant's Storage Account Balance shall be deemed to be Participant's Stored Water. So long as water in the amount of Participant's Storage Account Balance remains in the Semitropic Basin, Semitropic shall be deemed to remove Participant's Stored Water from storage only as and when requested by Participant pursuant to the terms of this Agreement and any other removal of water by Semitropic from the Semitropic Basin shall be deemed to be the removal of water that is not Participant's Stored Water. If at any time the amount of water in the Semitropic Basin is less than the sum of the Storage Account Balances of the

Banking Partners (an event which the parties believe is extremely unlikely), any additional water subsequently available to Semitropic from the Semitropic Basin without interfering with the rights of landowners or other public agencies, shall be shared by the Banking Partners in proportion to their respective Storage Account Balances, until such time as the amount of water so available to Semitropic from the Semitropic Basin equals or exceeds the total of the Storage Account Balances of the Banking Partners.

3.4 Each SWRU Banking Partner shall have a right to any then existing SWRU Delivery Capacity not used by other SWRU Banking Partners. If requests by SWRU Banking Partners for unused SWRU Delivery Capacity exceed such Capacity, then the unused SWRU Delivery Capacity shall be allocated to each SWRU Banking Partner participating in the 150,000 AF SWRU Pumpback Capacity according to the ratio of its Share of SWRU, divided by the sum of the Share of SWRU of all SWRU Banking Partners wishing to use unused Capacity, times the amount of unused SWRU Delivery Capacity.

3.5 If, due to hydrologic conditions, changes in cropping patterns, or other reasons beyond Semitropic's control, Participant's share of the SWRU Delivery Capacity is reduced, Participant may request, and Semitropic shall provide, information accounting for such reduction. If such reduction is not due to temporary conditions, Semitropic shall take all actions necessary to comply with Exhibit B.

3.6 Unused Semitropic Delivery Capacity which may be available to SWRU Banking Partners consistent with Article 7 (including Section 7.1.4) shall be allocated among the SWRU Banking Partners requesting the use of such Unused Semitropic Delivery Capacity according to their Share of SWRU.

3.7 If, after reasonable efforts by Semitropic to accommodate the SWRU Banking Partners' storage scheduling requests, such requests nevertheless exceed the instantaneously available SWRU Delivery Capacity and Unused Semitropic Delivery Capacity available to the SWRU, Semitropic shall allocate available capacities in proportion to the total of each SWRU Banking Partner's Share of SWRU.

3.8. Participant shall have the responsibility to obtain water supplies that it elects to store pursuant to this Agreement and to deliver same to the Point(s) of Delivery identified pursuant to Delivery Agreements; provided, however, Semitropic shall use all reasonable good faith efforts to assist in securing such arrangements, and to accept delivery and return of such supplies in the manner(s) proposed by Participant It is the Parties' intent that such arrangements be fully accommodated, including in light of differences required due to Participant's use of CVP water as an important source of water for banking and the location of Participant's service area upstream of Semitropic. The Parties understand that the primary current mechanisms for delivery and return of Participant's CVP sources of supply are summarized in Exhibit E hereto, and that those mechanisms may change or be replaced from time to time.

ARTICLE 4.
LOSSES AND STORED WATER

Semitropic's distribution system, evaporative and aquifer losses, for purposes of this Agreement and similar agreements between Semitropic and other Banking Partners, are collectively assumed to be ten percent (10%) of the amount of water furnished by Banking Partners for storage as measured at Semitropic's turnouts in Reach 10 A of the California Aqueduct and at other Points of Delivery as provided in the Delivery Agreement(s) referred to in Article 9. However, this amount and the Storage Account Balance shall be modified in the future, if the results of studies to be conducted jointly by Participant, other Banking Partners and Semitropic under a mutually agreeable procedure establish the actual loss to be different than the assumed ten percent (10%) losses. The Storage Account Balance shall be adjusted accordingly and resulting adjustments in compensation payments shall be in accordance with Section 6.8.

ARTICLE 5.
RETURN OF WATER BY SEMITROPIC TO PARTICIPANT

5.1 In any year, upon request by Participant, Semitropic shall return Stored Water to Participant by the method set forth in Section 5.1.1 or the method set forth in Section 5.1.2 or both. If both methods are available to Semitropic without adversely affecting Semitropic or its water users, it shall utilize the method that results in the lowest cost to Participant.

5.1.1 To the extent there are Unused Program Entitlement Exchange Rights available, Semitropic may exchange an amount of Participant's Stored Water for an equal amount of Semitropic's SWP Entitlement Water. Participant hereby consents to such an exchange and Semitropic will be deemed to have effected such an exchange by delivering a portion of its SWP Entitlement Water to Participant in compliance with the Delivery Agreement(s). Upon completion of such an exchange, Participant's beneficial interest in the Stored Water that was the subject of the exchange and the right to withdraw such water shall be vested in Semitropic in its individual capacity, and Semitropic may thereafter deliver such water to its water users who would otherwise have received the portion of Semitropic's SWP Entitlement Water that was delivered to Participant as a result of the exchange.

5.1.2 Semitropic may return Participant's Stored Water to Participant by pumping water from the groundwater basin for delivery to Participant as specified in the Delivery Agreement(s) referenced in Article 9. Semitropic may in its discretion, in addition to utilizing pumpback pipelines within Semitropic, utilize capacity available to it in the Kern Water Bank and operational exchanges with third parties to return Participant's Stored Water. This Article should be read in a manner consistent with Section 3.8 of this Agreement.

5.2 The return of Stored Water by Semitropic to Participant shall be subject to the following terms and conditions:

5.2.1 Subject to the provisions of this Agreement, for each acre-foot of Stored Water held by Semitropic for Participant, Semitropic shall ultimately return one acre-foot of water to Participant.

5.2.2 Subject to the provisions of this Agreement, when Participant requests the return of Stored Water, Semitropic shall return at a minimum the quantities of water calculated in accordance with the following, using its reasonable efforts to accommodate Participant's delivery schedule:

5.2.2.1 3,500 acre-feet of the 150,000 AF SWRU Pumpback Capacity within Area B. In the unlikely event, for any reason, Semitropic is not able to provide the full 3,500 acre-feet to

Participant from the 150,000 AF SWRU Pumpback Capacity in any given year, it shall ensure that Participant is provided the full 3,500 acre feet at no additional cost using other resources, which Semitropic represents and warrants are and will be cumulatively sufficient to fulfill this commitment. Those resources include, but are not limited to wells in the in-lieu area of the SWRU, capacity in the 50,000 AF SWRU Pumpback Capacity, and Kern Water Bank. Participant shall also have a right to any other then existing SWRU Pumpback Capacity (the 150,000 AF and 50,000 AF SWRU Pumpback Capacities) not used by other SWRU Banking Partners if Participant elects to utilize same, subject to mitigation of impacts to other Banking Partners pursuant to Section 5.6 and if originating from the Well Field payment of additional water treatment costs paid by other SWRU Banking Partners for use of same. If requests by SWRU Banking Partners for unused SWRU Pumpback Capacity exceed such capacity, then the unused SWRU Pumpback Capacity shall be allocated to each SWRU Banking Partner according to the ratio of its Share of SWRU, divided by the sum of the Share of SWRU of all SWRU Banking Partners wishing to use the unused capacity times the amount of unused SWRU Pumpback Capacity.

5.2.2.2 Semitropic may also elect to return Stored Water which Participant requests return of through available Unused Original Program Pumpback Capacity, which shall be subject to first being available for use by the Original Banking Partners, as provided by Article 7.

5.2.2.3 Any available Unused Program Entitlement Exchange Rights shall be allocated to each SWRU Banking Partner according to its Share of SWRU. Each SWRU Banking Partner shall have a right to any Unused Program Entitlement Exchange Rights not required for use by other SWRU Banking Partners, subject to mitigation of impacts to other Banking Partners pursuant to Section 5.6. If requests by SWRU Banking Partners for Unused Program Entitlement Exchange Rights exceed such rights, then the Unused Program Entitlement Exchange Rights shall be allocated to each SWRU Banking Partner according to the ratio of its Share of SWRU divided by the sum of the combined Share of SWRU of all SWRU Banking Partners wishing to use the Unused Program Entitlement Exchange Rights times available Unused Program Entitlement Exchange Rights.

5.3 Participant shall notify Semitropic of its intent to take delivery of Stored Water as early in the year as possible, but no later than May 1 of the same year. If such notification is provided after May 1, Semitropic, at its sole discretion, may make reasonable efforts to comply with Participant's request. In the event of an emergency need for water by Participant, Semitropic shall endeavor to return Stored Water to Participant to the maximum extent feasible considering the capacity rights of other Banking Partners.

5.4 Semitropic will obtain approval from DWR to deliver Stored Water by pumpback to the California Aqueduct. In addition it shall be Semitropic's responsibility to notify the Agency, each Banking Partner, and DWR, as to the amount of Original Program Entitlement Exchange Rights and SWRU and Original Pumpback Capacities for that year. When Stored Water is returned by pumpback, it shall be returned to the best of Semitropic's ability, on a schedule acceptable to the respective SWRU Banking Partner, Agency and DWR and at varying rates of delivery. If Stored Water is returned by use of the 150,000 AF SWRU Pumpback Capacity, it will generally be returned over a 10 month period, and if returned by use of 50,000 AF SWRU Pumpback Capacity, it will generally be returned over a 5 month period during the off-peak irrigation season. SWRU Banking Partner shall be responsible for all necessary approvals and costs to transport such water once the Stored Water is returned to the Point of Delivery for Participant by either pumpback or entitlement exchange.

5.5 Notwithstanding any other provision of this Agreement, Semitropic will temporarily reduce or terminate groundwater pumping from Storage for the purpose of returning Stored Water to Banking Partners to the extent required pursuant to the MOU referenced above in Recital E. However, to the extent possible, Semitropic shall change the timing and location of pumping to avoid reduction or termination in the return of Stored Water pursuant to the MOU. Semitropic shall construct adequate facilities and/or secure agreements and/or operational arrangements to obtain the long term levels of service provided for in this Agreement. Such long term levels of service may only be reduced to the extent required by the MOU referenced above in Recital E.

5.6 Subject to Article 7, if the use by other Banking Partners, Lower Priority Banking Partners or Semitropic of Participant's Rights to 3,500 acre-feet annually of the Pumpback Capacity per Section 1.14 (when not being used by Participant), interferes with the recovery of Participant's Stored Water by causing a reduction or termination of pumping pursuant to the MOU, the Party or Parties responsible for the action(s) which impacts Participant shall reduce its withdrawal of Stored Water to make up Participant's loss and, to the extent reductions in the withdrawal of Stored Water are insufficient, shall provide, at the election of the Participant, an equivalent water supply in that year or cash in the amount of the replacement cost of such water, such water or cash to be for the benefit of and to be immediately distributed to the Participant. Semitropic shall adjust the Banking Partners', Lower Priority Banking Partners', or Semitropic's accounts to reflect any such water exchange.

Participant recognizes that it may also be required to reduce its withdrawal of Stored Water or furnish equivalent water or cash to another Banking Partner under circumstances similar to those described above, if its own use of another SWRU Banking Partner's share of SWRU Pumpback Capacity, Unused Program Pumpback Capacity or Unused Original Program Entitlement Exchange rights, interferes with other Banking Partner's recovery of Stored Water, all as described in Article 7. Semitropic shall ensure that each Banking Partner is subject to the restrictions similar to those set forth in this Section 5.6.

5.7 Wells within Semitropic can produce water that will meet DWR's water quality standards to return water to the California Aqueduct in effect December, 2005. DWR is currently establishing long-term criteria for introducing non-Project Water into the California Aqueduct and Semitropic will operate the pumpback facilities in accordance with such long term criteria. Semitropic shall take no direct action which would knowingly cause the quality of recovered Stored Water to not meet such water quality standards in effect. The preceding sentence shall not apply to delivery of water under non-banking programs or otherwise operating under this Program. In the event that future water quality standards change, or the quality of groundwater from Semitropic wells is such that Semitropic cannot meet acceptable DWR water quality requirements for pumping into the California Aqueduct, Stored Water shall be returned to SWRU Banking Partners by Program Entitlement Exchange or alternative methods satisfactory to the

affected SWRU Banking Partners. Such alternative methods may include, but are not necessarily limited to: purchases, exchanges with others, and/or by improving Stored Water quality to acceptable standards for direct pumpback, with the additional costs of any such methods being paid by SWRU Banking Partners accepting such alternative methods. Semitropic's operations and financial situation shall not be adversely impacted as a result of these alternative methods. Notwithstanding the foregoing, it is recognized that if Participant's Stored Water is returned to the California Aqueduct from the Well Field, treatment may be required and additional costs shall be applicable as provided at Section 6.5.3 for operation of same.

5.8 Participant also recognizes that Semitropic has entered into an "Agreement Between Shafter-Wasco Irrigation District and Semitropic Improvement District of Semitropic Water Storage District Providing for Construction and Operation of an Intertie Pipeline," dated December 6, 1993, which implements a water banking and exchange program. Semitropic has committed to return water to Shafter-Wasco by delivery of either surface water in excess of its needs from any available source or by pumping groundwater. The agreement with Shafter-Wasco is based on the use of Semitropic pre-Original Banking Program facilities for the delivery of water to storage and for the withdrawal or return of water. Shafter-Wasco, therefore, has priority over all Banking Partners in the use of existing facilities. Semitropic's obligation under said agreement does not require commitment of SWP entitlement nor the use of pumpback facilities required for the return of Banking Partners' Stored Water.

5.9 Semitropic shall have the responsibility to return water which has been stored pursuant to this Agreement to Participant at the Point(s) of Delivery in a manner consistent with the Delivery Agreement(s), and Participant shall have the responsibility to provide for the return of Stored Water from the Point(s) of Delivery to Participant; provided, however, Semitropic shall use reasonable good faith efforts to assist in securing such arrangements and cooperating with scheduling, Points of Delivery, and other considerations necessary or convenient to return water to Participant.

ARTICLE 6.
COMPENSATION

Participant shall make the payments set forth below to compensate Semitropic for (i) its services under this Agreement, (ii) costs and expenses incurred by Semitropic in connection with its obligations under this Agreement.

6.1 General. Semitropic commits to utilize Participant's payments and other Semitropic funds, and to maintain such adequate financial flexibility, as it reasonably determines to be necessary to construct facilities needed to provide Participant with capacities herein provided.

Participant shall pay the following for services provided by Semitropic for storage and withdrawal of water. Semitropic shall pay all other costs not specified herein, and Semitropic shall not create and impose any other charges or fees upon Participant.

6.2 Capital Payments.

6.2.1 Participant shall pay to Semitropic $5,038,163 for Participant's Rights for recharge, storage and recovery rights being acquired under this Agreement if paid prior to January 1, 2011, and if paid thereafter such amount shall be adjusted in accordance with Section 6.4.1. Participant shall deliver to Semitropic such capital payment upon or before the Effective Date of this Agreement.

6.2.3 All Capital Payments of SWRU Facilities will be adjusted (increased or decreased) based on the actual cost of construction plus 5%, less any grants secured. Semitropic will use reasonable efforts to obtain grants to cover a portion of the construction costs.

6.3 Annual Payments. Participants shall pay annually to Semitropic the following sums:

6.3.1 A Management Fee of $20,503 per year.

6.3.2 A Maintenance Fee of $33,131 per year.

6.4 Usage Fees. Participant shall pay (i) a one-time fee of $46.88 per acre-foot for each acre-foot of Stored Water credited to its Storage Account and (ii) a one-time fee of $46.88 per acre-foot for each acre-foot withdrawn from its Storage Account.

6.4.1 The amounts provided for in Sections 6.3.1 and 6.4 shall be adjusted at the beginning of each year, and the adjusted amount under Section 6.4 shall apply to all Stored Water credited to or withdrawn from Participant's Storage Account Balance for that year. The adjusted amount under Section 6.3.1 shall be paid each year. The adjusted amount for any particular calendar year shall be the amount equal to the amount provided in Section 6.3.1 or 6.4 ($20,503 per year or $46.88 per acre-foot) multiplied by a fraction, the numerator of which is the Consumer Price Index, All Urban Consumers, All Items Index, Western Cities with populations between 50,000 and 1,500,000 (the "CPI-U") for November of the calendar year immediately preceding the calendar year with respect to which the adjusted amount is being determined (that is, for November 2009 with respect to the adjusted amount for 2010; November 2010 for 2011; and so on), the numerator of which for November 2007, the parties agree, is 130.58 and the denominator of which shall be the CPI-U for November 2003, which, the Parties agree, is 114.9. If publication of this index herein referred ceases or if the basis for such index is substantially modified, the Parties shall negotiate and mutually agree on an alternative but equivalent index or, in the absence of agreement, the matter shall be resolved pursuant to Article 10.

6.4.2 The amount provided for in Section 6.3.2 shall be adjusted annually based upon a maintenance plan and budget developed by Semitropic in consultation with the SWRU Banking Partners, which plan and budget shall include a reasonable reserve for maintenance, repair and replacement of SWRU facilities. SWRU Facilities shall be maintained consistent with SWRU "Project Facilities Maintenance Guidelines" attached as Exhibit C.

6.5 Pumping and Treatment Costs

6.5.1 In addition to payment under Section 6.4, when water is returned, Participant shall pay the average unit power costs then actually incurred by Semitropic to pump such Stored Water from the groundwater basin for either direct delivery to the Point(s) of Delivery, or for entitlement exchange. In the case of direct delivery, Participant also shall pay the average unit power cost then actually incurred by Semitropic to convey the returned water through the distribution system and to pump such water to the Point(s) of Delivery. (In the event Stored Water is returned from the Kern Water Bank, the power costs shall be deemed to be same as pumping to Semitropic turnouts in Reach 10A.) Said power costs shall be computed based on the amount of energy consumed to withdraw and when applicable to convey to the Point(s) of Delivery Participant's Stored Water in a given month times Semitropic's average actual unit power cost for the same pumping period. For ease in billing, Semitropic shall establish an estimated power rate for each calendar year with respect to which Participant requests such information and shall provide Participant with such estimate, including back-up documentation to justify the rate, within fourteen (14) days of the request. Such estimated rate shall be used for billing purposes for the following year and then the billing will be adjusted to actual by March 1 of the year following the estimated rate year, or as soon as possible thereafter. Once the variance amount has been agreed to by the Parties, any amount due by either Party shall be billed immediately and paid in accordance with Section 6.7. Semitropic has its own power production and distribution facilities and the unit cost of power shall be based upon the cost of Semitropic's energy project including, but not limited to, debt service for the energy project, fuel, operation and maintenance for the energy project, replacements, reserve deposit for the energy project, utility billings, and the cost of production and distribution of such power. The Parties agree that the initial calculation shall be consistent with the calculation in Exhibit D.

6.5.2 Exhibit D may be revised from time to time by written consent of the Parties, which consent shall not be unreasonably withheld. The intent of Exhibit D is to provide Semitropic with sufficient revenue to recover the power costs incurred by Semitropic for Participant's withdrawal of Stored Water and to allow Semitropic flexibility to change the calculation based on experience and the changing electric utility industry.

6.5.3 When Stored Water from the Well Field must be treated to meet applicable DWR water quality requirements for pumping into the California Aqueduct there shall be an additional cost for operation and maintenance of such facility. Semitropic shall annually estimate such cost and bill the applicable SWRU Banking Partners such amount to the extent the withdrawal Stored Water and such treatment facility is utilized. The actual costs shall be computed after the end of each Year and the billings for treatment costs adjusted accordingly. Additionally, when Stored Water is pumped from the Well Field and "15-Foot-3 Year Rule" provided in the MOU referenced in Recital E and Section 5.5 is exceeded, Semitropic shall promptly notify Participant (including notice of the cost of mitigation), and at Participant's election, pumping shall continue provided that Participant reimburses Semitropic for mitigation costs associated with continuing pumping.

6.6 If Semitropic or other Banking Partners use SWRU Facilities, Participant may be entitled to payment based on Participant's Share of SWRU as more particularly described in Article 7.

If Participant uses an Original Banking Partner's Unused Program Delivery Capacity, Unused Original Program Pumpback Capacity or Unused Program Entitlement Exchange Rights, Participant shall pay the share of the other Banking Partner's O&M Fee as further provided at Section 7.1.5.

6.7 In addition to payments under Section 6.2, Semitropic may bill Participant no more than monthly for payments under Sections 6.4 and 6.5 hereof and annually for payments under Section 6.3, which payments shall be due Semitropic and shall become delinquent forty-five (45) days after Participant receives the invoice under the terms of this Agreement under Section 14.9. In addition to other remedies available, delinquent payments shall bear interest at the rate of one percent (1%) per month. Data supporting the amounts invoiced shall be provided upon the reasonable request of Participant. Semitropic shall correct any erroneous billing promptly upon discovery of the error. If Participant has been underbilled, payment of the underbilled amount shall be due and become delinquent forty-five (45) days after Participant

receives the corrective invoice and data justifying the change. Overpayments by Participant shall be refunded to Participant within forty-five days of discovery, together with interest thereon at the prime interest rate published by the Wall Street Journal as of the date of discovery.

6.8 In the event there is an adjustment in Participant's Storage Account Balance as provided at Article 4, applying the first-in-first-out method of accounting for water in the Storage Account Balance, previous payments shall be adjusted based on the payment charged in the year the quantity of water to be adjusted was delivered with no further adjustments using the applicable indexes cited in Section 6.4.1. In addition no interest shall be payable on the amount of money required for said adjustment. Financial obligations shall occur as follows:

6.8.1 To the extent the Storage Account Balance is reduced (i.e., losses are determined to exceed ten percent (10%)), Semitropic shall reimburse Participant for the charges paid under 6.4 within one year of such determination.

6.8.2 To the extent the Storage Account Balance is increased (i.e., losses are determined to be less than ten percent (10%)), Participant shall pay Semitropic for charges that would have been paid under 6.4 for such additional water determined to be in the Participant Storage Account Balance within one year of such determination.

6.9 It is recognized that changes in Semitropic's actual costs of operating the SWRU may occur on or after the date this Agreement is executed as a result of enactments, amendments, changes in implementation or interpretation, or repeal of any federal, state or local law, rule, regulation or ordinance (each, a "**Regulatory Change**"). If either Party determines that a Regulatory Change has occurred that would result in a material change (upward or downward) in Semitropic's costs for storing, recovering or transporting water pursuant to the terms of this Agreement, which change in Semitropic's costs is not reflected in the adjustments in the payments due from Participant to Semitropic pursuant to Article 6 or other provision of this Agreement (including, but not limited to, this Section 6.9), such Party shall promptly inform the other Party of the nature and extent of such alleged Regulatory Change and of the reason why

that party believes an adjustment pursuant to this Section 6.9 is warranted in the payments due from Participant to Semitropic. Promptly thereafter, Semitropic shall provide Participant with its calculation of the costs or cost savings associated with such Regulatory Change and the facts and assumptions underlying that calculation. Upon agreement by the parties hereto (i) that a charge or credit affecting any payment due from Participant to Semitropic should be made as a result of a Regulatory Change, (ii) of the amount of such charge or credit, (iii) as to whether such charge or credit is to affect the basic payment amount or is to be separately accounted for (and, if so, in what manner), and (iv) as to the period during which such charge or credit is to apply, such charge or credit shall be incorporated into an amendment to this Agreement setting forth the foregoing and other particulars necessary to implement that adjustment. If such agreement cannot be reached within forty-five (45) days after Semitropic has provided the required notice and information to Participant, the matter shall be resolved pursuant to Article 10, the qualified third party or arbitration panel being charged with determining (x) whether a Regulatory Change has occurred (if that is in dispute), (y) the amount of change, if any, in Semitropic's costs resulting from the Regulatory Change, and (z) the manner in which the payments due from Participant to Semitropic are to be adjusted to fairly and equitably reflect that change in Semitropic's costs (it being the intent of the parties that no windfall or unwarranted compensation or benefit should result to any party as a result of any adjustment made pursuant to this Section 6.9). Any adjustment to the payments due from Participant to Semitropic made pursuant to this Section 6.9 shall be effective as of the first day such Regulatory Change affects Semitropic's operations hereunder unless the parties otherwise agree and may be reconsidered thereafter at any time, at the request of any party, if the adjustment is unjustly under compensating or overcompensating any party.

ARTICLE 7.
INTERRELATIONSHIP OF ORIGINAL BANKING PROGRAM AND STORED WATER RECOVERY UNIT (SWRU)

7.1 General Provisions

7.1.1 Semitropic shall use, on a first priority basis, Original Banking Program Facilities and any additional capacity available in those facilities annually, to meet its obligations under the Original Banking Program Agreements to convey water to storage and to recover stored water on behalf of the Original Banking Partners. Any unused capacity in Original Banking Program Facilities shall be available to Participant and other SWRU Banking Partners as herein provided.

In addition, Semitropic shall make Program Entitlement Exchange Rights available first to the Original Banking Partners. The Original Banking Partners also have priority to SWP Entitlement Water or non-project water needed for exchange to accomplish the delivery of up to 90,000 acre-feet annually using the Original Program Pumpback Capacity. Semitropic shall not operate the SWRU pumpback facility in a manner that adversely impacts the return of Original Banking Partner's Stored Water using the Original Program Pumpback Capacity.

7.1.2 The SWRU Facilities are planned to recover, and convey to the California Aqueduct; up to 150,000 acre-feet per year of Stored Water from Area B as shown in Exhibit A. In addition, the SWRU may recover up to 50,000 acre-feet per year of Stored Water from Area A as shown in Exhibit A, which capability is being enhanced through the SWRU with additional well connections and conveyance facility improvements not part of the Original Banking Program Facility, and convey it to the California Aqueduct for the benefit of the SWRU. The Original Banking Partners will have access to such recovery Capacity in Area A on a first priority basis, to the extent required to satisfy the Program Pumpback Capacity and Program Entitlement Exchange Rights of the respective Original Banking Program Agreements. Whenever Original Program Pumpback Capacity is available from the Original Banking Program Facilities during Semitropic's off-peak irrigation season and other times Semitropic determines to be operationally feasible (as provided at Section 5.4), it shall be offered to the Original Banking Partners (on a first priority basis) and the SWRU (on a second priority basis). Semitropic shall be entitled in its discretion to allow Lower Priority Banking Partners use any Program capacity as long as such use (i) is at all times subordinate to the use thereof by Banking Partners and (ii) does not result in any expense to Original Banking Partners or SWRU Banking Partners.

7.1.3 Subject to Section 7.1.5, the Original Banking Partners shall have second priority use of SWRU facilities, provided that (i) the rights of Participant and other SWRU Banking Partners to use unused capacities within the SWRU have been met and (ii) such Original Banking Partner's use shall not reduce the SWRU's expected returns or cause water quality to be unacceptable for return to the California Aqueduct.

7.1.4 Subject to Sections 5.6 and 7.1.5, the SWRU will have second priority use of Original Banking Program Facilities provided that: (i) all rights of the Original Banking Partners to use unused capacity have been met, and (ii) such SWRU use shall not reduce the Original Banking Partners' expected returns or cause water quality to be unacceptable for return to the California Aqueduct.

7.1.5 If Semitropic utilizes the SWRU facilities in accordance with Section 7.1.3, on behalf of and with the consent of, an Original Banking Partner, then the Original Banking Partner shall pay a share of the fee determined pursuant to Section 4.1.5 of the Original Banking Partner's Agreement. If a SWRU Banking Partner utilizes Original Banking Program Facilities, the Operations and Maintenance fee shall be paid in accordance with Section 6.7.2 or 6.5.2 as applicable, of the Original Banking Program Agreements. The Original Banking Partners shall not be obligated to pay any additional fees for usage of the SWRU, nor shall SWRU Banking Partners be obligated to pay any additional fees for usage of Original Program Banking Facilities, other than as detailed in this section.

7.1.6 The Original Banking Partners' second priority rights specified in Sections 7.1.2 through 7.1.5 and Participant's right to use unused SWRU Pumpback Capacity to recovered Stored Water originating from the Well Field as specified in Section 5.2.2.1, shall not apply to water treatment facilities which may be constructed.

7.1.7 There shall be no increase in costs to the Original Banking Partners for modeling, monitoring, and any other activities resulting from the SWRU or any future expansion of the Semitropic Bank.

7.1.8 Nothing in this Agreement affects, acknowledges or establishes (i) rights as to use of any facilities other than the Original Banking Program Facilities and the Stored Water Recovery Unit Facilities, or (ii) rights as to the manner in which Stored Water, once recovered, is to be utilized.

7.2 Water Quality

7.2.1 Semitropic shall not operate the SWRU to cause Stored Water recovered for the benefit of the Original Banking Partners, which would otherwise meet applicable water quality standards for delivery into the California Aqueduct, to exceed such standards. Semitropic shall design and construct all Stored Water recovery components of the SWRU to allow the SWRU Well Field and operations of the Original Banking Program (including the facilities for recovery of 50,000 acre-feet annually from Area A as described in attached Exhibit A) to be operated in complete physical isolation from each other.

7.2.2 Inasmuch as the SWRU will also rely on Unused Program Entitlement Exchange Rights, the Original Banking Partners shall have a first priority to (i) exchange up to 133,000 acre-feet per year of Semitropic's Table A entitlement allocations from DWR (i.e., to exercise the Program Entitlement Exchange Rights), and (ii) to exercise other options that may be available as provided in Section 5.7 of their respective Original Banking Program Agreements. Such options may include, but are not necessarily limited to, blending or substituting water that Semitropic purchases, exchanges with others, and/or by treating and improving Stored Water quality to acceptable standards for direct pumpback.

7.2.3 Semitropic shall provide DWR and downstream users of the California Aqueduct which are Original Banking Partners and SWRU Banking Partners water quality information applicable to each Semitropic SWP turn-in facility, including but not limited to turn-in facilities utilized by the SWRU and Original Banking Program. Additionally, Semitropic shall provide the

Technical Advisory Committee ("**TAC**") information regarding the quantity and quality of water measured at locations sufficient to determine the water quality within each major Semitropic system.

7.2.4 The Original Banking Partners shall have no responsibility and/or obligation to compensate or otherwise provide mitigation to Semitropic or SWRU Banking Partners as a result of any adverse impacts of the Original Banking Program on water quality that affects the SWRU.

7.3 15-Foot/3 Year Rule

7.3.1 The Original Banking Partners shall have no responsibility and/or obligation to compensate or otherwise provide mitigation to Semitropic or SWRU Banking Partners as a result of any adverse impacts of the Original Banking Program on the SWRU, including but not limited to the "15 Foot/3 Year Rule" contained in the September 14, 1994 Memorandum of Understanding referred to in Section 5.5 ("MOU").

7.3.2 Semitropic shall endeavor to operate the SWRU to ensure that it has no adverse impacts to the Original Banking Program including, but not limited to, capability of the Original Banking Program to avoid reduction in or termination of Stored Water pumping, in current and future years.

In this regard, the Original Banking Program Agreements provide that if SWRU pumping directly or indirectly causes such an adverse impact, Semitropic shall assume all obligations to provide mitigation to the impacted Original Banking Partner(s), consisting of a like amount of water to be provided by Semitropic, which is of quality acceptable for delivery into the California Aqueduct, on a schedule acceptable to the affected Original Banking Partner(s) and in Reach 10 of the California Aqueduct, all as would have been available to the Original Banking Partner(s) absent the SWRU operations. In the event the SWRU causes a violation of the 15-foot/3-year rule, such that Stored Water cannot be returned to the California Aqueduct or other points of delivery used or useable by Participant, and, if resolution of impacts is delayed,

Semitropic shall provide mitigation. If resolution of impacts caused by SWRU operations is untimely, then mitigation shall be as selected by each affected Original Banking Partner, from the following:

(a) Semitropic shall, if directed by an Original Banking Partner, and at such Original Banking Partner's sole discretion, by whatever means and facilities are available at that time, credit an equivalent amount of water to the Original Banking Partner's Storage Account and shall not charge the Original Banking Partner the storage payment provided for by Section 6.2 (Storage Payments), with the result that the Original Banking Partner's Storage Account is credited with the amount of the "put"; without being debited the ten percent (10%) loss in Article 4; or

(b) Semitropic shall reimburse the affected Original Banking Partner(s) for all costs associated with acquiring an equivalent amount of water; or

(c) Other remedy mutually agreeable to the affected Banking Partner and Semitropic.

If Semitropic notifies Participant that this second paragraph of Section 7.3.2 may become operative, and the Participant notifies Semitropic that it nonetheless requests that Semitropic continue the return of Stored Water, Participant shall provide the mitigation on behalf of Semitropic which is herein required.

7.3.3 For purposes of determining whether reduction or termination of Stored Water pumping is required, Original Banking Program and SWRU groundwater level impacts, both for current conditions and forecasted conditions, shall be determined by Semitropic through groundwater modeling using the following methodology:

(a) Groundwater levels shall be estimated based on no Semitropic banking operations occurring (i.e. without Original Banking Program or SWRU);

(b) Groundwater levels shall be estimated based on only the Original Banking Program operations and without the SWRU operations; and

(c) Groundwater levels shall be estimated based on combined operations of the Original Banking Program and SWRU operations (i.e., actual conditions).

The groundwater level impacts due to the Original Banking Program at any given location as prescribed by the September 14, 1994 MOU shall be the difference between groundwater levels in Paragraphs (a) and (b) above. The groundwater level impacts due to the SWRU at any given location as prescribed by the MOU shall be the difference between groundwater levels in Paragraphs (b) and (c) above. Groundwater level impacts due to the difference between groundwater levels in Paragraphs (a) and (c) shall be determined consistent with the process prescribed by the MOU.

Semitropic shall periodically provide the Technical Advisory Committee information regarding the change in groundwater elevation measured at locations needed to identify any impacts of the SWRU on the 15-foot/3 year rule.

7.4 Technical Advisory Committee

A Technical Advisory Committee ("TAC") shall monitor implementation of Original Banking Program Agreements, as amended and the agreements governing the rights of SWRU Banking Partners. The Committee shall consist of one representative from each of the Original Banking Partners so long as each is a participant in the Program, one representative from the SWRU and one representative from Semitropic. The SWRU representative shall be annually selected by the SWRU Banking Partners based on their respective Shares. Semitropic shall chair such Committee and provide for periodic communication with Committee members. The TAC shall meet at least annually to discuss implementation and operation of the SWRU and any future programs. Any two members of the TAC may call a meeting of the TAC. Meetings of the TAC

shall be held at the District's headquarters, unless its members agree otherwise.

ARTICLE 8.
DIVISION OF RISK RESPONSIBILITIES

Semitropic and Participant agree to cooperate, and Semitropic shall require other Banking Partners to cooperate, in reducing, to the greatest extent practicable, the risk from claims arising against any of the Parties from implementation of this Agreement. In the event of claims by third parties relating to this Agreement, the responsibilities of Semitropic, acting in its individual capacity, Participant and the other Banking Partners shall be divided as follows:

8.1 Semitropic shall defend, indemnify and hold harmless Participant and the other Banking Partners, and their respective directors, officers, agents and employees against any and all losses, claims, demands, fines, penalties and causes of action (herein collectively referred to as "**claims**") and shall assume responsibility for payment of any settlements, judgments, costs and attorneys' fees arising from claims concerning the following:

(a) Control, carriage, handling, use, disposal, or distribution of water in Semitropic's facilities;

(b) Any claim, contest or dispute by any landowner, resident, water user or other person or entity within the service area of, or otherwise served by, Semitropic, which claim contest or dispute concerns the Program;

(c) Construction, repair, modification, or replacement of any Semitropic facilities;

(d) Semitropic's Program and facilities. and the actions of Semitropic, its officers, employees or agents; and

(e) Any other activities under Semitropic's exclusive control.

If Participant is named in any such action, it may submit its defense to Semitropic, which shall bear the full cost of defense, except to the extent that Participant utilizes its own counsel for such defense. Notwithstanding the foregoing, the responsibility for any claims challenging the validity, underlying authority or enforceability of the Program under this Agreement shall be as provided at Section 8.3.

8.2 Each Banking Partner (including Participant) shall defend, indemnify and hold harmless Semitropic and the other Banking Partners, and their respective directors, officers, agents and employees, against any and all claims and shall assume responsibility for payment of any settlements, judgments, costs or attorneys' fees arising from claims concerning the following:

(a) Control, carriage, handling, use, disposal or distribution of Stored Water in facilities of that Banking Partner or in SWP facilities, to the extent that the claim relates to use of SWP facilities to implement this Agreement with respect to that Banking Partner;

(b) Any claim by a landowner, resident, public agency or other entity within the service area of, or otherwise served by, that Banking Partner challenging the appropriateness of that Banking Partner entering into this Agreement;

(c) Construction, repair, modification or replacement of any of the facilities of that Banking Partner;

(d) Operation of the facilities owned by, or the actions of the officers, employees or agents (other than Semitropic) of, that Banking Partner; and

(e) Any other activities under the exclusive control of that Banking Partner.

If Semitropic is named in any such action, it may submit its defense to the Banking Partner involved, which Banking Partner shall bear the full cost of defense, except to the extent

Semitropic utilizes its own counsel for such defense. Notwithstanding the foregoing, the responsibility for any claims challenging the validity, underlying authority or enforceability of the Program under this Agreement shall be as provided at Section 8.3. Semitropic shall not be entitled to any indemnification from Participant except as set forth in this Section 8.

8.3 As for any claims by a third party with respect to the SWRU which are not otherwise provided for at Sections 8.1 or 8.2, including any claims challenging the underlying authority for or the validity or enforceability of the SWRU under this Agreement, each SWRU Banking Partner shall be responsible for payment of its allocable share of any settlements or judgments to which it is a party with respect to such claims. If Semitropic is named in any action with respect to such a claim, it may submit its defense to the SWRU Banking Partners which are parties to that action with respect to that claim and those SWRU Banking Partners shall bear the full cost of defense, except to the extent Semitropic utilizes its own counsel for such defense.

8.4 At the request of Participant and/or other SWRU Banking Partners, Semitropic shall join in the defense of any claim which is not adverse to Semitropic's water supply or financial interests in which case the requesting Party shall reimburse Semitropic for all of its costs of defense. However, and notwithstanding Section 8.3 with respect to claims in which one or more of the plaintiffs resides or does business in Kern County challenging the recovery of groundwater under this Agreement, and with respect to any third party claim challenging this Agreement or the right of Participant to the return of its Stored Water in accordance with the terms of this Agreement, Participant may demand that Semitropic join in the defense of claims. In such case, Semitropic must comply with any such demand, the Parties shall jointly manage the litigation, and Participant and other SWRU Banking Partners who are parties to such litigation shall pay one-half of Semitropic's defense costs, if one or more of the plaintiff resides or does business in Kern County; and in other such cases, shall reimburse Semitropic for all of its costs of defense.

8.5 In the event that payments are made in settlement of a claim, in satisfaction of a judgment or for defense costs where the claim arises from issues applying to both Semitropic and one or more SWRU Banking Partners, payments shall be divided in proportion to the relative liability of each arising from the common claim. If the Parties cannot agree on the proportion, then the share to be paid by each of Semitropic and the SWRU Banking Partners shall be submitted to binding arbitration as provided at Article 10 hereof.

8.6 This Agreement shall be interpreted in a manner consistent with (i) Participant's CVP Water Contracts, and (ii) the principle that Participant is responsible for the conveyance of its water into and out of Semitropic, as determined at the relevant Point of Delivery, and Semitropic is responsible for conveyance, storage, return, facilities, operations and other matters on the Semitropic side of the Point of Delivery. "Responsibility" shall include, without limitation, regulatory compliance.

8.7 Notwithstanding any other provision herein to the contrary, nothing in this Agreement shall be construed to impose any liability on Participant caused by or arising from the conduct of any of the Original Banking Partners, other SWRU Participants, or Semitropic.

ARTICLE 9.
CONDITIONS REQUIRED FOR IMPLEMENTATION

9.1 . Full implementation of this Agreement is contingent upon execution of appropriate Delivery Agreement(s) or other documentation allowing for water to be delivered to Semitropic for storage and return by Semitropic from storage to the California Aqueduct or other Point(s) of Delivery, all as provided in this Agreement between Participant and all affected parties , which agreements shall be acceptable to Semitropic, whose determination of acceptability shall not be unreasonably withheld.

9.2 This Agreement shall not go into effect until the following conditions have been satisfied:

(a) Participant's completion of compliance as lead agency with any applicable environmental review under the California Environmental Quality Act (CEQA) for Participant's participation in the banking program in accordance herewith, and Semitropic's completion of compliance with CEQA as a responsible agency. Semitropic shall remain fully responsible for regulatory compliance otherwise, including environmental review (see, e.g., Recitals D and H hereof); and

(b) The written consent or approval of Reclamation to the storage of CVP project water in Semitropic pursuant to this Agreement, in a form and content acceptable to Participant, has been finalized and provided to Participant, and Reclamation has completed compliance with any applicable environmental laws for such consent or approval;

(c) The expiration of the limitations periods for CEQA compliance for this Agreement and the associated activities without challenge, or, if a challenge is asserted, upon the date of Participant's written waiver of this condition precedent, signed by Participant and delivered to Semitropic;

Notwithstanding the foregoing, if at any time before the Effective Date hereof, either Party finds that any terms or conditions, or other regulatory requirement imposed on participation of Participant in the Semitropic Banking program as set forth in this Agreement, significantly diminishes the benefit of this Agreement on that Party, that Party may provide written notice to the other Party that the first party is exercising its right to prevent this Agreement from going into effect. The notice must be received by the second party before the Effective Date.

9.3 Notwithstanding Section 9.2 above, the Effective Date shall be no later than December 31, 2010, except as extended as follows. In the event of factors outside of the Parties' control, such as other agencies' approval or regulatory processes, extensions shall be

granted upon written request by either Party. Extensions beyond December 31, 2011 shall not be allowed absent the written agreement of both Parties.

9.4 The Parties will keep each other informed concerning the satisfaction of Article 9 Conditions.

ARTICLE 10.
DISPUTE RESOLUTION

10.1 In the event of a dispute regarding interpretation or implementation of this Agreement, or if the parties are unable to agree upon a matter as to which their agreement is provided for hereunder, the Parties will endeavor to resolve the dispute by using the service of a mutually acceptable consultant. The fees and expenses of the consultant shall be shared equally by the Parties.

10.2 If a consultant cannot be agreed upon, or if the consultant's recommendations are not acceptable to the Parties, and unless the Parties otherwise agree, the matter shall be resolved by arbitration as provided in this Article 10 and in the California Arbitration Act (Part 3 [commencing with § 1280], Tit. 9, Calif. Code Civ. Proc.), including Section 1283.05. The Parties agree to be bound by the majority decision of a three-member panel to be selected as follows:

(a) One member shall be selected by Participant (or if the dispute is between various Banking Partners and Semitropic, the Banking Partners involved shall collectively agree on the member).

(b) One member shall be selected by Semitropic; and

(c) The third member shall be selected by the other two (2) members.

If the two (2) members selected by the Banking Partner(s) and Semitropic are unable to agree on the selection of a third member or if Banking Partners are unable to agree on a member among themselves, either Party may petition a court to appoint such member pursuant to Code of Civil Procedure Section 1281.6. The fees and expenses of the panel members shall be paid as follows: Semitropic pays for its member, Participant pays for its member (or if the dispute involves more than one Banking Partner, the participating Banking Partners share the fees and expenses of the member according to the ratio of each participating Original Banking Partner's Permanent Storage Allocation and each participating SWRU Banking Partner's SWRU Storage Capacity divided by the sum of all participating Original Banking Partner's Permanent Storage Allocation and the sum of all participating SWRU Banking Partner's SWRU Storage Capacity), and the fees and expenses of the third member of the panel shall be shared fifty percent (50%) by Semitropic with the remainder to be shared among the other Banking Partners participating in the dispute resolution process according to the same formula immediately referenced above. Alternatively, if the dispute is between Banking Partners and Semitropic has no direct interest in the outcome, the total costs of arbitration shall be paid by the Banking Partners according to the ratio of each participating Original Banking Partner's Permanent Storage Allocation and each participating SWRU Banking Partner's SWRU Storage Capacity divided by the sum of all participating Original Banking Partner's Permanent Storage Allocation and the sum of all participating Original Banking Partner's SWRU Storage Capacity. (As an example if (i) all Banking Partners are involved in a dispute, (ii) a Participant has 20,000 Shares (thus having SWRU Storage Capacity of 60,000 AF), (iii) all Original Banking Partners have fully vested Permanent Storage Allocations and (iv) 100,000 SWRU Shares have been acquired (represents SWRU Storage Capacity of 300,000 AF) then the Participant's share of such costs allocated among the Banking Partners would be 60,000 / (1,000,000 + 300,000) = 4.62%.)

If a Party asserts that another Party has breached obligations under this Agreement, it may request that the arbitration panel order the other Party to comply with this Agreement. Upon the panel finding that a Party has in fact breached this Agreement, the panel shall order compliance. The panel may order any other equitable relief permitted by California law, including declaratory or injunctive relief, applicable to the matter before the panel for resolution.

If termination is sought by a party pursuant to the terms hereof, the panel may determine the issues of whether a default has occurred or other condition precedent to the termination alleged has been satisfied and, if so, may issue orders implementing that termination. The orders of the panel shall be judicially enforceable. The panel may order that the effective date of its order be the date of the breach, if appropriate.

ARTICLE 11.
TERM OF AGREEMENT

11.1 The initial term of this Agreement shall terminate on December 31, 2035, the date of termination of the Agency's Long-Term Water Supply Contract.

11.2 At the election of Participant, this Agreement may be renewed by Participant for an additional term of 10 years on the terms and conditions set forth herein by providing notice of renewal to Semitropic not later than six months prior to the expiration of the initial term of this Agreement; provided, that Semitropic may reject such notice of renewal and terminate this Agreement at the end of the initial term if, at the end of the initial term, Semitropic will no longer be engaged in water banking for any party other than water banking for the direct benefit of its landowners. Further, if Semitropic's water supply contract with the Agency governing Semitropic's State Water Project water supply is not renewed, or if it is renewed with terms materially different from Semitropic's water supply contract in effect as of the effective date of this Agreement and such different terms materially and adversely affect (i) the economic consequences of this Agreement to Semitropic or (ii) Semitropic's ability to perform under this Agreement, then after Participant delivers its notice of renewal the parties shall negotiate equitable amendments to this Agreement to mitigate those adverse effects

11.3 After that first renewal term, Participant shall have the right to renew this Agreement for sequential terms of 10 years each on the terms and conditions applicable during the first renewal period (provided Semitropic is continuing banking programs with third parties as provided in Section 11.2) by providing notice of renewal to Semitropic not later than six

months prior to the expiration of then current term of this Agreement; provided, that Semitropic may reject any such notice of renewal and terminate this Agreement at the end of the then current term. However, if Semitropic rejects such a notice and then offers water banking services to any other party utilizing the same capacities as provided under this Agreement, such services shall be offered first to Participant at the same level and on the same terms offered to such other party.

ARTICLE 12.
MISCELLANEOUS PROVISIONS

12.1 **Successors and Assigns**. This Agreement shall bind and inure to the benefit of the successors and assigns of the Parties; provided, however, neither Party shall assign any of their rights or obligations under this Agreement without the prior written consent of the other. Provided, further, that Participant may subcontract with other entities to receive benefits under this Agreement (i.e. Participant's Customers), provided that Participant shall remain responsible for performing all duties under this Agreement, notwithstanding such subcontracts. Nothing in this Agreement is intended to confer any right or remedy under this Agreement on any person other than the Parties to this Agreement and their respective successors and permitted assigns, or to relieve or discharge any obligation or liability of any person to any Party to this Agreement, or to give any person any right of subrogation or action over or against any Party to this Agreement.

12.2 **Allocation Among Semitropic Improvement Districts**. Semitropic shall allocate the rights and obligations under this Agreement between the water users and landowners of Semitropic Water Storage District, Semitropic Improvement District, Buttonwillow Improvement District and Pond-Poso Improvement District as it deems appropriate, so long as Participant's and the other Banking Partners right to obtain the return of Stored Water is not adversely impacted.

12.3 **No Modification of Existing Contracts**. This Agreement shall not be interpreted to modify the terms or conditions of any of (a) the water supply contracts between the DWR and the Agency or Participant (b) the water supply agreements between the Agency and Semitropic

(c) any agreements (and amendments thereto) with any of the Original Banking Partners as they exist as of the date of this Agreement and (d) Participant's CVP Water Contracts

12.4 **Waiver/Cure of Defaults**. The failure of any Party to enforce against the other a provision of this Agreement shall not constitute a waiver of that Party's right to enforce such a provision at a later time. No Party shall be deemed to be in default of any provision of this Agreement unless the other Party has given written notice specifically stating the alleged default and the Party in default fails to cure the default within thirty (30) days of receipt of such written notice.

12.5 **Construction of Agreement**. The language in all parts of this Agreement shall be in all cases construed simply according to its fair meaning and not strictly for or against any of the parties hereto and Section 1654 of the Civil Code has no application to interpretation of this Agreement. Headings at the beginning of Sections, paragraphs and subparagraphs of this Agreement are solely for the convenience of the parties, are not a part of this Agreement and shall not be used in construing it. The preamble, recitals and all exhibits and schedules to this Agreement are part of this Agreement and are incorporated herein by this reference. When required by the context: whenever the singular number is used in this Agreement, the same shall include the plural, and the plural shall include the singular; and the masculine gender shall include the feminine and neuter genders and vice versa. Unless otherwise required by the context (or otherwise provided herein): the words "**herein**," "**hereof**" and "**hereunder**" and similar words shall refer to the Agreement generally and not merely to the provision in which such term is used; the word "**person**" shall include individual, partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture, governmental authority and other entity of whatever nature; each of the words "**Participant** " and "**Semitropic**" shall include the respective representatives, successors and permitted assigns, if any, of such person; the words "**including**," "**include**" or "**includes**" shall be interpreted in a non-exclusive manner as though the words "but [is] not limited to" or "but without limiting the generality of the foregoing" immediately followed the same; the word "**month**" shall mean calendar month; and the term "**business day**" shall mean any day other than

a Saturday, Sunday or legal holiday. If the day on which performance of any act or the occurrence of any event hereunder is due is not a business day, the time when such performance or occurrence shall be due shall be the first business day occurring after the day on which performance or occurrence would otherwise be due hereunder. All times provided in this Agreement for the performance of any act will be strictly construed, time being of the essence of this Agreement. Unless otherwise required by Contract (or otherwise provided herein), references to capacity in acre-feet shall refer to annual capacities (except as to a Storage Account Balance or stored water, which shall be a cumulative value).

12.6 **Entire Agreement**. This Agreement and other documents expressly referenced herein constitute the entire agreement between the Parties pertaining to the matters provided for herein and, except as herein provided, supersedes all prior and/or contemporaneous agreements and understanding, whether written or oral pertaining between the Parties relating to the matters provided for herein.

12.7 **Severability**. In the event that a court of competent jurisdiction or a arbitration panel as provided at Article 9 determines that a provision included in this Agreement is legally invalid or unenforceable and such decision becomes final, the Parties to this Agreement shall use their best efforts to (i) within thirty (30) days of the date of such final decision identify by mutual agreement the provisions of this Agreement which must be revised, and (ii) within three (3) months thereafter promptly agree on the appropriate revision(s). The time periods specified above may be extended by mutual agreement of the Parties. Pending the completion of the actions designated above, to the extent it is reasonably practical and can be done without violating any applicable provisions of law, the provisions of this Agreement which were not found to be legally invalid or unenforceable in the final decision shall continue in effect.

12.8 **Force Majeure**. All obligations of the Parties other than monetary or payment obligations shall be suspended for so long as and to the extent the performance thereof is prevented, directly or indirectly, not to exceed one year, by earthquakes, fires, tornadoes, facility failures, floods, drownings, strikes, other casualties, acts of God, orders of court or governmental

agencies having competent jurisdiction, or other events or causes beyond the control of the Parties. In no event shall any liability accrue against a Party, to its officers, agents or employees, for any damage arising out of or connected with a suspension of performance pursuant to this Section 12.8.

12.9 **Notices.** All notices, requests and demands hereunder ("**Notices**") shall be in writing and shall be deemed to have been duly given when delivered (or, if mailed, postage prepaid, on the third business day after mailing, if that date is earlier than actual delivery). Notices shall be sent to a Party at the address of that Party set forth below or, if such Party has furnished notice of a change of that address as herein provided, to the address of that Party most recently so furnished. Notices for Semitropic shall be sent to the General Manager of Semitropic at Post Office Box Z, Wasco, California 93280, if mailed, and otherwise to the General Manager at 1101 Central Avenue, Wasco, California 93280. Notices for Participant shall be sent to Director of Public Works, The City of Tracy, 520 Tracy Blvd., Tracy, CA 95376. Each Party hereto (a "**Recipient**") who receives from another Party hereto (a "**Sender**") by electronic facsimile transmission (telecopy) any writing which appears to be signed by that Sender is authorized to rely and act upon that writing in the same manner as if the original signed writing was in the possession of the Recipient upon oral confirmation of that Sender to the Recipient that the writing was signed by that Sender and is intended by that Sender to be relied upon by the Recipient. Each Party transmitting any writing to any other Party by electronic facsimile transmission agrees to forward immediately to that Recipient, by expedited means (for next day delivery, if possible), or by first class mail if the Recipient so agrees, the signed hard copy of that writing, unless the Recipient expressly agrees to some other disposition of the original by the Sender.

12.10 **Further Assurances.** Each party hereto, upon the request of the other, agrees to perform such further acts and to execute and deliver such other documents as are reasonably necessary to carry out the provisions of this instrument.

12.11 **Counterparts**. This Agreement, and any document or instrument entered into, given or made pursuant to this Agreement or authorized hereby, and any amendment or supplement thereto may be executed in two or more counterparts, and by each party on a separate counterpart, each of which, when executed and delivered, shall be an original and all of which together shall constitute one instrument, with the same force and effect as though all signatures appeared on a single document, upon counterparts being executed by all of the parties. Any signature page of this Agreement or of such an amendment, supplement, document or instrument may be detached from any counterpart without impairing the legal effect of any signatures thereon, and may be attached to another counterpart identical in form thereto but having attached to it one or more additional signature pages. In proving this Agreement or any such amendment, supplement, document or instrument, it shall not be necessary to produce or account for more than one counterpart thereof signed by the party against whom enforcement is sought.

Executed the day and year first hereinabove written.

CITY OF TRACY

By: _____
Brent H. Ives, Mayor

By: _____
Sandra Edwards, City Clerk

Approved As To Form:

By: _____
Daniel Sodergren, City Attorney

SEMITROPIC WATER STORAGE DISTRICT

By:_____
Fredrick A. Wegis, President

By:_____
Wilmar L. Boschman, Assistant Secretary

SEMITROPIC IMPROVEMENT DISTRICT
OF SEMITROPIC WATER STORAGE DISTRICT

By:_____
Fredrick A. Wegis, President

By:_____
Wilmar L. Boschman, Assistant Secretary

BUTTONWILLOW IMPROVEMENT DISTRICT
OF SEMITROPIC WATER STORAGE DISTRICT

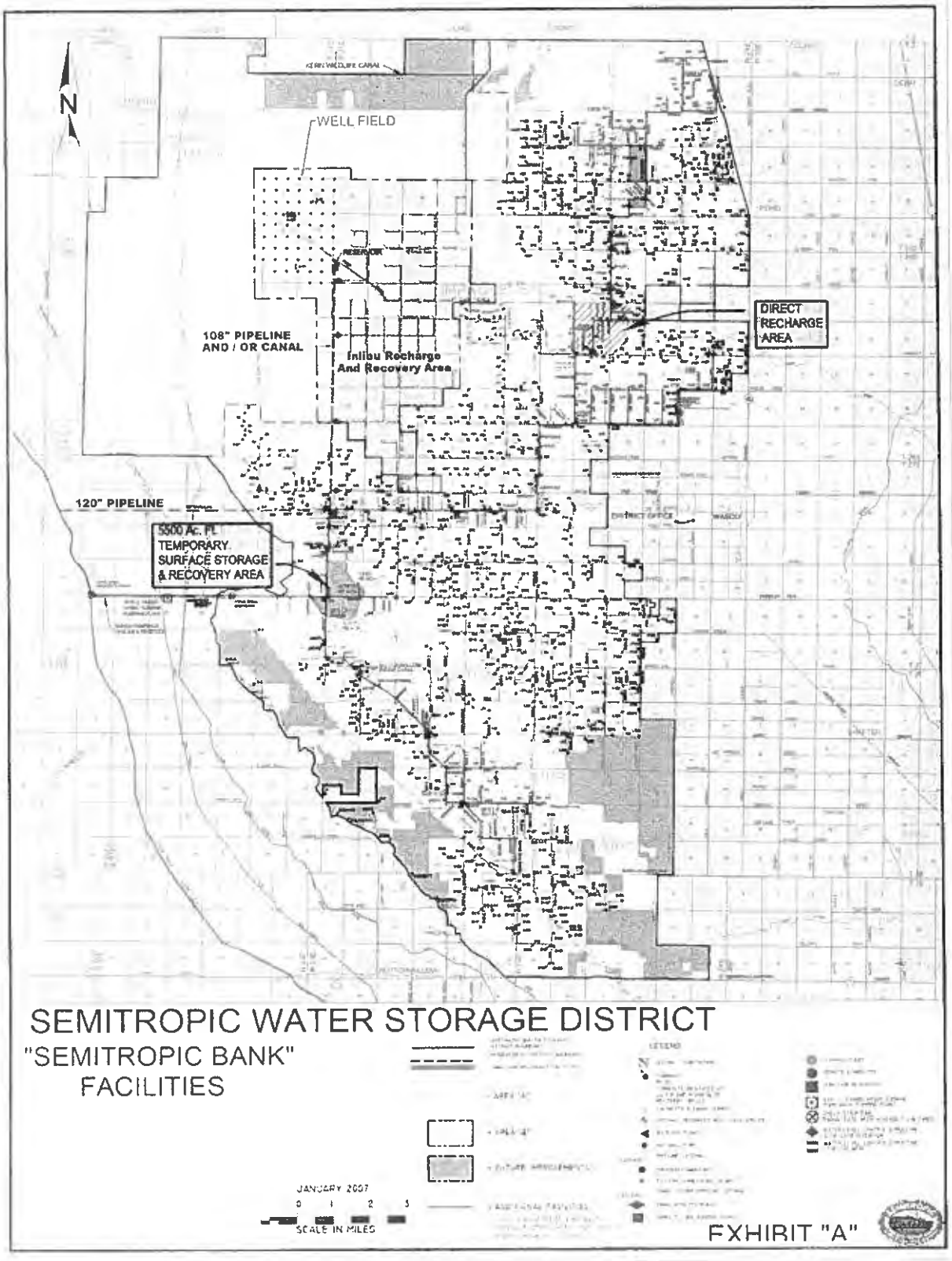
By:_____
Fredrick A. Wegis, President

By:_____
Wilmar L. Boschman, Assistant Secretary

POND-POSO IMPROVEMENT DISTRICT
OF SEMITROPIC WATER STORAGE DISTRICT

By: _____
Fredrick A. Wegis, President

By: _____
Wilmar L. Boschman, Assistant Secretary


N
WELL FIELD
108" PIPELINE
AND / OR CANAL
Inlieu Recharge
And Recovery Area
DIRECT
RECHARGE
AREA
120" PIPELINE
5500 Ac. Ft.
TEMPORARY
SURFACE STORAGE
& RECOVERY AREA
SEMITROPIC WATER STORAGE DISTRICT
"SEMITROPIC BANK"
FACILITIES
JANUARY 2007
SCALE IN MILES
EXHIBIT "A"

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

MAY 18 2012

MP-440
WTR-4.00

Mr. Leon Churchill
City Manager
City of Tracy
333 Civic Center Plaza
Tracy, CA 95376

Subject: Approval Agreement No. 7858A-WB-2011-1 (Approval Agreement) of Long-Term Central Valley Project Water Banking by the City of Tracy at the Semitropic Water Storage District Bank – Central Valley Project, California

Dear Mr. Churchill:

This letter (hereinafter referred to as the "Approval Agreement") provides the Bureau of Reclamation's approval to the City of Tracy (City), under certain terms and conditions, to bank up to 10,500 acre-feet (AF) of its Central Valley Project (Project) water in the Semitropic Water Storage District Bank (Semitropic Bank). The City's Project water would be made available for banking from one or a combination of three water service and/or assignment contracts (Contracts). This Approval Agreement covers depositing and withdrawing for return of Project water, and runs concurrent with the duration of the City's water service contracts (Contracts), as amended or renewed, but may not exceed the period analyzed in the environmental assessment (EA) prepared for this Approval Agreement.[1] Cost authority number (CAN) A1R-1752-9652-220-02-5-0, established by Reclamation's South-Central California Area Office in Tracy (SCCAO-TO), will remain in effect for the duration of this Approval Agreement to cover Reclamation's time in monitoring and administering activities associated with this Approval Agreement.

For purposes of this Agreement, the words "Banking" represents depositing, withdrawing, and returning Project water, while the term "bank" is used to identify each separate action.

Authority

Central Valley Project Improvement Act, Title 34 of Public Law 102-575 (CVPIA), Section 3408 (c), *Contracts for Additional Storage and Delivery of Water,* is the primary authority expressly authorizing the Secretary of the Interior through Reclamation to enter into contracts to, among other things, impound or store Project water in non-Project facilities for domestic,

[1] The period analyzed in the environmental document extends through Contract Year (CY) 2035 (March 2035 through February 2036); however, the City's Banking Agreement with the Semitropic Bank extends through calendar year December 31, 2035.

municipal, and industrial purposes. Reclamation is supportive of conjunctive-use programs, and the benefits that such programs provide for managing water supply reliability. Any program involving the banking of Project water outside a contractor's contract service area requires Reclamation's approval and a detailed accounting, monitoring, and reporting program. Reclamation is in the process of finalizing guidelines for Banking of Project water.

Background

The City has one water service Contract No. 14-06-200-7858A providing for up to 10,000 AF, and two assignment contracts. One assignment Contract, No.14-06-200-4305A-IR12-B with Banta-Carbona Irrigation District, is for up to 5,000 AF. The other assignment Contract, No. 7-07-20-W0045-IR12-B with the Westside Irrigation District, is for up to 2,500 AF.

By letter dated March 5, 2007, Reclamation approved the City's request to bank up to 1,000 AF of Project water with a return of 900 AF (accounts for 10 percent loss factor) of water under a pilot project through calendar year 2016 (2007 Approval). Between 2008 and 2009, the Semitropic Bank returned 200 AF of Project water to the City. At the time of this Approval Agreement, the City has 700 AF of Project water remaining in storage at the Semitropic Bank. Reclamation's 2007 Approval is a stand-alone transaction, and provides that: "*If for some reason the City does not receive . . . [the] remaining water prior to [December] 2016, the parties have agreed that the City will have the option to roll the [remaining balance] into a long-term account. If no long-term account has been established with Semitropic, then the original agreement would be extended for another 10 years.*" Effective November 16, 2010, the City and Semitropic Bank entered into a long-term Banking arrangement, titled "*Agreement between City of Tracy and Semitropic Water Storage District and its Improvement Districts for Participation in the Stored Water Recovery Unit of the Semitropic Water Banking and Exchange Program.*" Said agreement is hereinafter referred to as the "Banking Agreement." The duration of the Banking Agreement continues through December 31, 2035, with an option to renew for 10 years. Therefore, unless the remaining 700 AF of previously banked Project water under the 2007 Approval is returned to the City by December 31, 2016, that quantity of Project water still remaining shall become subject to this Approval Agreement.

Reclamation acknowledges the Department of Water Resources' (DWR) December 14, 2011, agreement, titled "*Multi-year Conveyance Agreement Among the Department of Water Resources of the State of California, Kern County Water Agency, and the City of Tracy for the Semitropic Water Banking Program (2011-2030) SWPAO #10031,*" containing the banking deposit period through December 31, 2029, and December 31, 2030, for extraction, and returning Project water. DWR's agreement allows that "*DWR may agree to extend this Agreement [DWR's approval] for an additional five years to December 31, 2035.*" (Para. 1, Term.) As such, any Banking of Project water after December 31, 2030, is contingent upon the City having necessary approval(s) in place to facilitate the Banking actions. The City shall extract and return all previously banked Project water from Semitropic Bank prior to expiration (December 31, 2030) or earlier termination of the agreement(s) needed in returning said water.

The City's Proposal

Reclamation has reviewed the City's proposal and other documentation submitted in support of two Federal discretionary actions (Proposal). The City is requesting Reclamation's approval to bank up to 1,750 AF (minus 10 percent for losses) of Project water in CY 2011, and to bank up to 10,500 AF (minus 10 percent for losses) each CY thereafter for municipal and industrial (M&I) use. Banking of the Project water will be by one or a combination of methods as provided in this Approval Agreement, and analyzed in the enclosed EA.

Semitropic Bank has taken direct delivery of the City's 1,750 AF CY 2011 Project water, and pursuant to the Banking Agreement agrees to take up to 10,500 AF annually (consistent with Reclamation's CY) thereafter no later than December 31, 2035. Under this Approval Agreement, the City will deposit more water than would be returned from Semitropic Bank due to the 10 percent adjustment for operational losses. Therefore, of the 1,750 AF of Project water banked in CY 2011, the City will have 1,575 AF of the previously banked Project water for future return. For return periods after CY 2011, the City will withdraw and exchange, for return in any year, 3,500 AF. For example, the City deposits up to 10,500 AF of Project water in Semitropic Bank. The 9,450 AF return quantity accounts for operational losses, and recognize that 3,500 AF is the maximum annual return quantity. Reclamation concurs for purposes of water accounting that the 10 percent operational losses under an exchange return mechanism will be treated as balanced exchanges. Costs, however, will be assessed on the gross quantity without adjustment for losses.

Environmental Documentation

In compliance with the National Environmental Policy Act and the Endangered Species Act, the environmental effects were analyzed for the City's Proposal, and a Final EA No. EA-09-164 and Finding of No Significant Impact (FONSI), dated May 26, 2011, titled, "*City of Tracy Long-term Central Valley Project Groundwater Banking with Semitropic Water Storage District*" was completed. The Final EA-09-164 incorporated, by reference, the February 23, 2007, EA-05-111 and Finding of No Significant Impact (FONSI) titled, "*Groundwater Banking Pilot Project of Central Valley Project from City of Tracy to Semitropic Water Storage District.*"

The Final EA No. 09-164 analyzed long-term Banking through CY 2035 (through February 2036) meaning Reclamation did not analyze either the City's option to renew the Banking Agreement for 10 years or Semitropic Bank's Stored Water Recovery Unit. Specifically, EA No. 09-164 provides that, *"This EA does not analyze the build out or use of the In-Lieu Recharge and Recovery Area of the Stored Water Recovery Unit (SWRU) within Semitropic as it is not a part of the Proposed Action. Any future use of this area [SWRU] would require additional environmental documentation as part of this banking project [Approval Agreement]" (p. 2).*

Conveying the City's Project water to the Semitropic Bank

Conveyance of Project water to Semitropic Bank from the City would probably occur as an operational exchange at O'Neill Forebay (Reach 3 of the California Aqueduct) and then direct delivery to Semitropic Bank turnouts in Kern County Water Agency (KCWA) at Reaches 10A, 12E, and 13B of the California Aqueduct. The City's Project water will be released from the

Federal share of San Luis Reservoir by Reclamation and made available to DWR's State Water Project (SWP) at O'Neill Forebay. DWR would deliver the City's Project water from O'Neill Forebay to KCWA water service area under KCWA Article 55 (Amendment No. 23 of the 1963 agreement between DWR and KCWA for transportation of non-Project water) for Banking within Semitropic Bank or within Semitropic Bank's share of the Kern Water Bank facilities (KWB). Other methods of conveying the City's Project Water to Semitropic Bank may be considered by Reclamation upon request of the City.

Consistent with the terms and conditions of this Approval Agreement, and other approval(s) as may be required, the City will make available to Semitropic Bank up to 10,500 AF of its allocated Project water supply for deposit each CY. The City must adhere to a written schedule approved by Reclamation, each CY in coordination with DWR and the City, and/or Semitropic Bank, KCWA, and the KWB, if and when applicable. Deliveries to Semitropic Bank and/or KCWA and KWB shall be measured by DWR at Reach 10A, 12E and 13B of the California Aqueduct.

Returning Water to the City

Consistent with terms and conditions of DWR's approval and other approval(s) as may be required, Semitropic Bank will make available, at the request of the City, up to 3,500 AF of water each CY for return. Return of previously banked water, from Semitropic Bank to the City, will occur using any one or a combination of methods described below and as analyzed in EA No. 09-164. Other methods returning the City's Project Water at Semitropic Bank may be considered by Reclamation upon request of the city.

1. The previously banked Project water will be withdrawn from Semitropic Bank and delivered into the California Aqueduct to meet downstream SWP demands. In exchange, a like amount of KCWA SWP water will be exchanged between DWR and Reclamation at O'Neill Forebay and return a like amount of water to the City.

2. The previously banked Project water will be withdrawn from Semitropic Bank and delivered into the California Aqueduct to meet downstream SWP demands. In exchange, a like amount of KCWA SWP water will be delivered to the City's turnout along the Delta-Mendota Canal (DMC) via the Jones Pumping Plant, as authorized under the State Water Resources Control Board (SWRCB) Joint Point of Diversion (D-1641). The delivery of the SWP water will not require a change in place of use (POU).

3. The previously banked Project water will be withdrawn from Semitropic Bank and delivered into the California Aqueduct to meet downstream SWP demands. In exchange, a like amount of KCWA SWP water will be delivered via SWP's Banks Pumping Plant, and diverted through the California Aqueduct-DMC Intertie (Intertie) to the City's turnout along the DMC. Delivery of the SWP water will not require change to POU.

Terms and Conditions Applicable to Approval

In addition to the methods outlined above, this Approval Agreement is subject to the following terms and conditions and the City's Banking Agreement. However, the City agrees that if there are

any inconsistencies between the terms of this Approval Agreement and the Banking Agreement, this Approval Agreement controls.

1. The term of this Approval Agreement, for Banking up to 10,500 AF of the City's allocated Project water supply each CY, is effective October 2011 through December 31, 2035, contingent upon the City having necessary approval(s) and Contracts in place. All previously banked Project water, under this Approval Agreement,[2] minus up to 10 percent for losses must be returned to the City for M&I use before expiration or early termination of this Approval Agreement. This Approval Agreement may be terminated sooner than December 31, 2035, provided that, all previously banked water is returned from Semitropic Bank to the satisfaction of Reclamation, or the Parties mutually agree to other conditions of termination.

2. No deposit of Project Water may occur beyond termination of this Approval Agreement. If terminated early, however, this Approval Agreement remains in effect for limited purposes, such as returning all Project water to the City, Reclamation reconciling final water accounting records, and receipt of the City's final payment as determined by Reclamation.

3. The City shall submit a request to Reclamation for banking Project water each CY for review and approval on a case-by-case basis (Request). The period environmentally analyzed under this Approval Agreement allows Reclamation to conduct streamlined review and approval of the City's Banking Request.

4. If previously banked Project water is withdrawn by the City and not used by Semitropic Bank, but is transferred elsewhere by the City, and any water not returned to the City upon termination of this Approval Agreement, shall be treated as a transfer of Project water to a non-Project contractor subject to: (1) Section 3405 (a) of CVPIA; (2) Reclamation's February 25, 1993, *Interim Guidelines for Implementation of the Water Transfer Provisions of the CVPIA;* (3) Reclamation's May 15, 2008, *Business Practice Guidelines Accounting for Project Water Transfers* (both as may be amended or revised); and (4) other applicable state and Federal laws, or requirements as determined by Reclamation including additional water rates and full cost pricing water rates including interest if applicable. Such transfer will require additional environmental analysis and the contracting officer's prior written approval.

5. In the event the City wishes to deposit more than 10,500 AF each CY or return water not previously analyzed in FONSI/EA No. 09-164, additional environmental analysis is required at the City's expense. Subject to the environmental documentation, Reclamation may consider amending this Approval Agreement to accommodate such change.

6. The City is responsible for paying costs of conveyance and conveyance agreements, costs associated with returning the previously banked Project water by exchange, and costs of any additional environmental documentation if applicable. Conveyance of exchange water from Semitropic Bank, which requires the use of Federal facilities, is subject to further approval by Reclamation at the City's expense.

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[2] For purposes of accounting, the 700 AF of Project water, or any portion thereof, remaining in Semitropic Bank after December 31, 2016, shall be incorporated in the City's water Banking account under the terms of this Approval Agreement. Therefore, Reclamation's 2007 Approval will be superseded by terms and conditions of this Approval Agreement.

7. The City shall submit a written Request to SCCAO-TO along with written schedule(s) in advance of delivering any Project water to Semitropic Bank. Such Request must state the monthly quantity of Project water for Banking. Project water deliveries to Semitropic Bank must be included in the City's written schedule, and paid for by the City in advance of delivery in accordance with the City's Contracts. The applicable restoration fund payments and assessments, including applicable operation and maintenance conveyance fees, owed to Reclamation's Operating Non-Federal Entity, namely, the San Luis and Delta-Mendota Water Authority, are due before the end of the month following the month of delivery or input. Interest and/or penalties, if any, will accrue from the date of delinquency as determined by the applicable provision(s) of the City's Contracts.

8. The City shall provide SCCAO-TO with a monthly report of the amount of Project water banked in Semitropic Bank, adjusted for losses, during those months when water is banked. Negative reporting is not required. Project water delivered to Semitropic Bank, if used by Semitropic Bank for in-lieu banking[3], must be used within the Project authorized water right POU. The City shall provide documentation satisfactory to Reclamation verifying that the Project water delivered to Semitropic Bank and used for in-lieu banking is used within the Project authorized water right POU. This report may be based on records maintained by Semitropic Bank, but will be the responsibility of the City to provide to Reclamation. Any adjustment(s) to the quantity of Project water for Banking with Semitropic Bank pursuant to this Approval Agreement, shall be made as soon as practicable, but no later than 60 days after Banking.

9. Project water for return to the City will be accomplished by one or a combination of measures identified above in the *Returning Water to the City* section of this Approval Agreement. The City is responsible for ensuring necessary agreements, approvals, and environmental documentation required for the return of the Project water be completed. The City's Request must be provided to SCCAO-TO in advance, when seeking to withdraw any previously banked Project water. The Request to SCCAO-TO shall include: A statement of the mechanism(s) by which the water will be returned and the source(s) of water being returned and copies of necessary agreements, approvals, and environmental documentation necessary to complete the return of the previously banked Project water. Reclamation will review the Request to ensure consistency with FONSI/EA-09-164, and the terms and conditions of this Approval Agreement.

10. DWR will account for the conveyance and conveyance pumping costs to move the Project water from the Federal share of the San Luis-Joint Use facilities to Semitropic Bank. Reclamation will account for the conveyance and conveyance pumping costs to move the SWP water from the Federal share of the San Luis –Joint Use facilities for return to the City. Any use of Federal facilities for conveyance of water provided in exchange for previously banked Project water, must be approved by the Contracting Officer in advance. The City shall pay Reclamation the appropriate rate for the use of Federal facilities, if applicable, for delivery of SWP or other non-Project water exchanged for previously banked Project water

[3] The word in-lieu banking is used as an operational action referring to Semitropic Bank using the City's Project water supply, which is intended to be Banked, and foregoing groundwater pumping to meet Semitropic Bank in-district water needs. Semitropic Bank then credits the City's Banking account for a like amount of the Project water supply which Semitropic Banking used instead of depositing for the City.

11. Reclamation will track all Banking occurring during the period of this Approval Agreement, including where the Project water is beneficially used, and the source(s) and mechanism(s) of any related exchanges. During the period of this Approval Agreement, the City shall provide Reclamation with a report, each CY, summarizing the quantities of Project water deposited in and withdrawn from Semitropic Bank (Report). The Report must identify the City's account balance with Semitropic Bank along with the source(s) and quantities of Project water returned to the City by exchange (i.e. groundwater, SWP water, Project water, etc.). The Report can be developed based on data from Semitropic Bank, but the City is responsible for providing the Report to SCCAO-TO.

12. This Approval Agreement shall be revised as necessary to comply with Reclamation's water Banking guidelines, criteria, regulations, or policies governing the Banking of CVP Water, or any lawful order of California's SWRCB regarding Banking or storage of CVP water, or any lawful order of a state or Federal court of competent jurisdiction. This Approval Agreement may be revised or amended upon mutual written agreement of the Parties.

13. By signing this Approval Agreement, the City agrees to the stated terms and conditions, including retaining CAN A1R-1752-9652-220-02-05-0 open for staff time in the continued administration and monitoring of this Approval Agreement. For Reclamation's tracking purposes, any future proposals and correspondence relating to this Approval Agreement, including monthly and annual reporting, must reference this assigned Approval Agreement No. 7858A-WB-2011-1.

Subject to the terms and conditions of this Approval Agreement, Reclamation hereby approves your Banking Proposal. If you need additional information, you may contact Ms. Barbara Hidleburg at 916-978-5193, or e-mail bhidleburg@usbr.gov. If you have questions relating to the administration of this Approval Agreement, you may contact SCCAO-TO as provided below.

Please sign, date, and return one original of this Approval Agreement to Reclamation at the heading address, Attention: MP-440 (Ms. Karen Hall), along with a certified original resolution authorizing your concurrence. In addition, return one original of this Agreement to SCCAO-TO, Attention: Ms. Cathy James, 16650 Kelso Road, Byron, CA 94514-9614.

Sincerely,

Donald R. Glaser
Regional Director

ACTING FOR

Enclosures - 2

In Triplicate

City of Tracy, through the undersigned, concurs with the foregoing Approval Agreement No. 7858A-WB-2011-1

By: _____ 6/8/12
Brent H. Ives, Mayor Date

Attest:

By: _____
Sandra Edwards, City Clerk

Approved As To Form:

By: _____
Daniel G. Sodergren, City Attorney

cc: Mr. Ronald D. Jacobsma
General Manager
Friant Water Authority
854 North Harvard Avenue
Lindsay, CA 93247-1715

Mr. Dan Nelson
Executive Director
San Luis Delta Mendota Water Authority
P.O. Box 2157
Los Banos, CA 93635

Mr. William Boschman
General Manager
Semitropic Water Storage District
P.O. Box 8043
Wasco, CA 93280-0877

Ms. Gwen Knittweis
Supervising Engineer
Department of Water Resources
State Water Project Analysis Office
P.O. Box 942836
Sacramento, CA 94236

Mr. James Beck
General Manager
Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302-0058

Mr. Jonathan Parker
General Manager
Kern Water Bank Authority
1620 Mill Rock Way, Suite 500
Bakersfield, CA 93311

(w/o enclosures to each)

Wholesale Water Agreement between Byron Bethany Irrigation District and the City of Tracy for Water Supply for Tracy Hills (August 2013)

(includes Agreement Between the Department of Water Resources of the State of California and the Byron-Bethany Irrigation District regarding the Diversion of Water from the Delta (May 2003) and the Long-term Contract between the United States and the Byron Bethany Irrigation District Providing for the Exchange of Non-Project Water for Project Water (April 2014))

RESOLUTION 2013-118

APPROVING A WHOLESALE WATER AGREEMENT BETWEEN BYRON BETHANY IRRIGATION DISTRICT AND THE CITY OF TRACY FOR WATER SUPPLY FOR TRACY HILLS, FINDING THE CEQA NEGATIVE DECLARATION ADEQUATE FOR THE CITY'S USE, AND AUTHORIZING THE MAYOR TO EXECUTE THE AGREEMENT

WHEREAS, Byron-Bethany Irrigation District ("BBID") is a local public agency formed pursuant to Division 11 of the California Water Code, and

WHEREAS, BBID proposes to enter into a Wholesale Water Agreement (the "Agreement") with the City of Tracy which, in conjunction with a long-term exchange contract with the United States Bureau of Reclamation, will provide for the delivery, treatment and distribution of up to 4,500 acre-feet of water per year to BBID's Raw Water Service Area 2 (collectively, the "Project"), and

WHEREAS, The City of Tracy is a "responsible agency" for the Project under the California Environmental Quality Act ("CEQA") because it has approval authority over the Agreement, and

WHEREAS, BBID, as "lead agency" for the Project and pursuant to CEQA, consulted with the City regarding the Project, and subsequently prepared and circulated a draft Negative Declaration and Initial Study for a 30-day public review, and

WHEREAS, On November 26, 2012, after the close of the public review period, BBID adopted and certified the Negative Declaration for the Project, and

WHEREAS, Title 14, Section 15096(f) of the California Code of Regulations requires a responsible agency to consider a lead agency's negative declaration and determine whether it is adequate for use by the responsible agency prior to reaching a decision on a project, and

WHEREAS, The City Council has reviewed and considered BBID's Negative Declaration, Initial Study, and other associated CEQA documents, and

WHEREAS, The Agreement provides water supply for the portion of the Tracy Hills Specific Plan area, and

WHEREAS, BBID will construct the necessary pump station and pipeline between their facilities and the Delta-Mendota Canal ("DMC"), and

WHEREAS, Delivery of the water is to be scheduled through the USBR and is subject to conveyance capacity being available in the DMC, and

WHEREAS, The agreement has a term through February 28, 2053.

NOW, THEREFORE, BE IT RESOLVED That the City Council:

1) Approves the Wholesale Water Agreement between Byron Bethany Irrigation District and the City of Tracy and authorizes the Mayor to execute the agreement; and

2) Finds that Byron-Bethany Irrigation District's Negative Declaration and associated documents are adequate for the City of Tracy's use in its consideration and approval of the Wholesale Water Agreement, and directs staff to file a Notice of Determination pursuant to Title 14, Section 15096, subdivision (i) of the California Code of Regulations.

* * * * * * * * * * * * * * *

The foregoing Resolution 2013-118 was adopted by the Tracy City Council on the 6th day of August, 2013, by the following vote:

AYES: COUNCIL MEMBERS: MACIEL, MANNE, RICKMAN, YOUNG, IVES

NOES: COUNCIL MEMBERS: NONE

ABSENT: COUNCIL MEMBERS: NONE

ABSTAIN: COUNCIL MEMBERS: NONE

MAYOR

ATTEST:

CITY CLERK

WHOLESALE WATER AGREEMENT BETWEEN BYRON BETHANY IRRIGATION DISTRICT AND THE CITY OF TRACY

This Agreement is entered into on August 6, 2013, by and between BYRON BETHANY IRRIGATION DISTRICT ("BBID"), a political subdivision of the State of California, and the CITY OF TRACY ("CITY"), a municipal corporation, collectively referred to as the "Parties" and each singularly as a "Party."

RECITALS

A. BBID is an irrigation district organized and operating under and by virtue of Division 11 of the California Water Code. BBID was formed in 1919 for the purpose of providing irrigation water service to lands within the district. It currently provides irrigation water service to approximately 20,000 acres of land within its district boundaries;

B. BBID has the authority to deliver water for domestic, municipal, and industrial purposes pursuant to Water Code sections 22075 and 22076;

C. The primary source of water supply for BBID's Byron Service Area is from a pre-1914 water right originating in Italian Slough as set forth in a Notice of Appropriation of Water dated May 18, 1914.

D. The 6,000-acre Tracy Hills Property was annexed by the CITY in 1998. The Tracy Hills Property is located within the southwestern portion of the CITY. Approximately 2,006 acres of the Tracy Hills Property, hereinafter referred to as the Raw Water Service Area 2 ("RWSA2"), was annexed into the Byron Service Area of BBID on December 10, 1999. A map of the Tracy Hills Property, specifically depicting RWSA2, is attached hereto as Exhibit A and incorporated herein.

E. The United States Bureau of Reclamation ("Reclamation") and BBID have negotiated a Long-Term Contract Providing for Exchange of Water Between the United States and Byron Bethany Irrigation District – Delta Division and San Luis Unit, Contract No. 11-WC-20-0149 ("Exchange Contract"), which is attached hereto as Exhibit B and incorporated herein. BBID's Board of Directors has authorized the execution of the Exchange Contract, which will be undertaken following the execution of this Agreement.

F. BBID and CITY desire to enter into this Agreement for the purpose of specifying the terms and conditions under which BBID will provide a wholesale water supply to CITY for municipal and industrial use within RWSA2.

NOW THEREFORE, the Parties understand and agree as follows:

AGREEMENT

1. RECITALS. The recitals contained herein are an integral part of this Agreement and are true and correct.

2. TERM.

2.1 Initial Term. This Agreement shall be effective upon execution and shall remain in effect through February 28, 2053.

2.2 Agreement to Extend. The term of this Agreement shall be extended at the request of the CITY and subject to terms mutually agreeable to the Parties. A request for an extension of this Agreement shall be made in writing to BBID no later than January 1, 2051.

2.3 To the extent BBID has a statutory obligation to provide water service under provisions of law governing Irrigation Districts to lands within its boundaries, termination of this Agreement shall not be interpreted as affecting any such obligation of BBID to provide water to RWSA2.

3. CONDITION PRECEDENT. It is the intent of the Parties that the obligations of CITY under this Agreement shall not become binding and enforceable against CITY unless and until (i) a development plan for the Tracy Hills Property has been finally approved by CITY, (ii) construction of the Tracy Hills development project has commenced, and (iii) Reclamation executes the Exchange Contract, which events shall constitute conditions precedent to the obligations of CITY to perform under this Agreement.

4. WATER SUPPLY.

4.1 BBID shall deliver to CITY, on a wholesale basis, untreated Non-Central Valley Project Water (hereinafter "Exchange Water") in the amount of up to 4,500 acre-feet per Year. For purposes of this Agreement "Year," "Annual" or "Annually" shall mean the period from and including March 1 of each calendar year through the last day of February of the following calendar year. The Parties acknowledge and agree that the Exchange Water will be provided pursuant to, and subject to the terms and conditions of, the Exchange Contract.

4.2 BBID shall also be responsible for providing no more than 225 acre-feet of Exchange Water annually for conveyance losses in the Delta Mendota Canal. CITY will bear a 5 percent conveyance loss for all deliveries under this Agreement.

4.3 Exchange Water will be delivered to the CITY by Reclamation at the turnout on the Delta Mendota Canal for the John Jones Water Treatment Plant at MP 15.88L. The CITY shall be responsible for treatment and for the control, carriage, handling, distribution and disposal of the Exchange Water beyond the point of delivery specified herein.

5. PLACE OF USE. Exchange Water delivered to the CITY pursuant to this Agreement shall be used only within RWSA2.

6. SCHEDULE OF DELIVERY OF EXCHANGE WATER.

6.1 The amount, timing, and rate of delivery of Exchange Water by BBID to the CITY during any Year shall be governed by this Section 6.

6.2 On or before December 1 of each Calendar Year, the CITY shall submit in writing to BBID a preliminary Delivery Schedule, indicating the monthly amount, timing and rate of delivery of Exchange Water during the following Year.

6.3 Upon receipt of the preliminary Delivery Schedule described in Section 4.2, BBID shall review the preliminary Delivery Schedule and seek approval from Reclamation pursuant to the Exchange Contract. BBID will consult with the CITY regarding any revisions to the preliminary Delivery Schedule that may be required by Reclamation. BBID and the CITY will meet in good faith to develop a mutually acceptable final Delivery Schedule that reasonably satisfies the CITY's water supply requirements within the limits of BBID's delivery capacity. A final Delivery schedule will be in place no later than March 1 of any Calendar Year.

6.4 Any revisions to the final Delivery Schedule by the CITY shall be submitted to BBID and approved by Reclamation in accordance with the Exchange Contract.

7. PAYMENT FOR EXCHANGE WATER.

7.1 CITY shall pay BBID for Exchange Water requested by and delivered to CITY in accordance with this Section 7.

7.2 On January 1st of each Calendar Year, BBID will provide to the CITY the estimated cost ("Exchange Water Charge") for the supply and delivery of Exchange Water to the CITY. The Exchange Water Charge will be based upon a rate study conducted by BBID or upon the previous Year's cost and the CITY's projected Annual water deliveries. The Exchange Water Charge will include, but is not limited to, management services, pumping costs (electric, labor, minor maintenance), conveyance, conveyance losses and storage costs. The management services cost portion of the Exchange Water Charge will be equal to the total BBID Administrative Budget divided by the quantity of water (i) delivered by BBID to all customers during the previous Year, and (ii) transferred by BBID to third parties during the previous Year. For purposes of this Agreement, "BBID Administrative Budget" means that portion of the BBID annual budget attributable to general administrative costs such as, but not limited to, salaries, wages, benefits, legal and accounting services and office expenses, but shall not include any operation or maintenance expenses.

7.3 On February 1st of each Calendar Year, the CITY will submit the Exchange Water Charge to BBID. BBID will establish a separate account ("Exchange Water Charge Account") from which BBID will deduct the actual costs for providing the Exchange Water to the CITY's turnout on the DMC at MP 15.88L. BBID will provide the CITY a monthly statement of actual costs and the remaining balance in the Exchange Water Charge Account. If actual costs exceed the estimated Exchange Water Charge, the CITY will make an additional payment to cover the estimated Exchange Water Charge for the remainder of the Year. If actual costs are less than the estimated Exchange Water Charge, the remaining balance in the Exchange Water Charge Account will be carried over into the following Year and credited to CITY.

8. PAYMENT OF MAJOR MAINTENANCE AND REPLACEMENT COSTS.

8.1 BBID will establish a separate interest-bearing Major Maintenance and Replacement Account, and all interest paid thereon will inure to the benefit of CITY. Funds in this account will be used to replace equipment such as pumps, SCADA and electrical controls as well as other major maintenance and replacement that may be required. BBID will provide the CITY with an annual statement of the Major Maintenance and Replacement Account.

8.2 BBID will determine an annual Major Maintenance and Replacement Charge based upon a rate study to be undertaken by BBID in accordance with generally accepted principles and procedures for similar rate studies. The rate study will take into account the projected major maintenance and replacement costs over the projected useful life of the equipment and facilities to be utilized by BBID to provide water to CITY under this Agreement. In December of each Calendar Year, BBID will meet and confer with CITY regarding (i) major maintenance and replacement activities which BBID anticipates will be performed in future years; and (ii) BBID's estimate of the projected cost of such major maintenance and replacement activities to be performed in future years. On February 1st of each Calendar Year, the CITY shall submit an annual payment for deposit by BBID into the Major Maintenance and Replacement Account. BBID will deduct actual costs for major repairs and equipment from the Major Maintenance and Replacement Account when such costs are incurred.

8.3 BBID will have no authority whatsoever to impose standby charges or other similar charges, fees or assessments on CITY or residential, commercial or industrial property owners within CITY, except as provided in the Second Amendment to the Petition and Agreement for Annexation of Territory to the Byron Bethany Irrigation District and Expansion of the District's Sphere of Influence, and as that agreement may be subsequently amended.

9. CHARGES TO REFLECT ACTUAL COST. It is the intent of the Parties that the Exchange Water Charge and the Major Maintenance and Replacement Charge will each reflect the actual cost to BBID of providing wholesale water service to CITY pursuant to this Agreement.

10. SHORTAGES.

10.1 CITY understands that BBID's ability to provide water may be diminished, should BBID become subject to: (1) administrative or regulatory orders from the State Water Resources Control Board or other state or federal regulatory agencies; (2) other adverse conditions beyond BBID's control including but not limited to drought; (3) judicial orders or decrees; or (4) state or federal legislation affecting the availability of water to BBID. BBID will use its best efforts to prevent any reduction or interruption of water service to CITY. Any shortage of water will be ratably apportioned among landowners within BBID, including RWSA2 in accordance with applicable law.

10.2 Pursuant to the Exchange Contract, BBID may only introduce Non-Project Water when there is excess capacity available in the Central Valley Project. BBID and the CITY agree to cooperate in revising the Delivery Schedule to avoid any reduction or

interruption of water service resulting from the lack of excess capacity in the Central Valley Project. In the event of a temporary reduction or interruption in water service, the CITY agrees to provide water service to RWSA2 from other existing sources of water within the CITY on a temporary basis until water service pursuant to the Exchange Contract resumes. At the request of the CITY, BBID and the CITY will work together to modify the Delivery Schedule to subsequently replace CITY water used during temporary reductions or interruptions in water service, provided there is sufficient available capacity.

10.3 If there is a reduction or interruption of water service as a result of causes beyond the control of BBID or because of action taken by BBID to meet the aforementioned legal obligations, no liability shall accrue against BBID or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom. Nothing in this Agreement shall relieve BBID from liability in the event of a reduction or interruption of wholesale water service to CITY resulting from the willful misconduct or gross negligence of BBID or its directors, officers, employees or agents.

11. MEASUREMENT OF EXCHANGE WATER.

11.1 CITY shall, at its sole expense, measure and record all Exchange Water delivered at the point of delivery described in Section 2.2. CITY shall maintain accurate records of the quantity of Exchange Water, expressed in acre-feet delivered, and shall provide such records to BBID upon request.

11.2 Following prior written notice to the CITY, BBID may investigate the accuracy of all measurements of Exchange Water. If the investigation discloses errors in the recorded measurements, such errors shall be promptly corrected. If the investigation discloses that the measurement devices are defective or inoperative, CITY shall make the appropriate repairs or replacements to the measurement devices at CITY's sole expense. In the event the CITY fails to make such repairs or replacements to the measurement devices within a reasonable time, BBID may cause such repairs or replacements to be made and CITY shall bear all costs associated with repair or replacement.

11.3 For any period of time during which accurate measurements of the Exchange Water have not been made, BBID and CITY, in consultation with Reclamation, shall jointly make a determination of the quantity of Exchange Water delivered for that period of time. Such determination shall be final and binding.

12. WATER QUALITY. The Parties acknowledge and agree that the Exchange Water to be supplied to pursuant to this Agreement is non-potable. CITY assumes all responsibility for producing a water supply of sufficient quality for municipal, industrial, and domestic use in compliance with all local, state, and federal requirements for the provision of potable water. BBID does not guarantee in any respect or assume responsibility for the chemical, bacterial, or other quality of the Exchange Water made available to the CITY or its compatibility for water treatment.

13. NO WATER RIGHT CONFERRED. Nothing in this Agreement shall confer upon CITY (i) any water right held by BBID including, without limitation, any pre-1914 appropriative right, post-1914 appropriative right or riparian right; (ii) any right in any water purchased by BBID from any other source. This Agreement shall be the sole source of the CITY's contractual right to receive wholesale water service from BBID.

14. RELATIONSHIP OF PARTIES. Nothing set forth in this Agreement shall be deemed or construed to create any relationship of principal and agent, a partnership, joint venture, or any other association between the Parties.

15. INDEMNIFICATION. Except for damage or loss resulting from willful misconduct or gross negligence, or breach of fiduciary obligation in connection with this Agreement, no Party to this Agreement, their members, directors, officers, agents, or employees shall be liable to any other Party for any loss or damage in connection with this Agreement. Each Party shall be responsible for the consequences of its own willful misconduct, gross negligence, and/or breach of fiduciary obligation in connection with this Agreement, and in connection with any work undertaken in accordance with this Agreement, and shall indemnify, defend, and hold harmless the other Parties, their members, directors, officers, agents, and employees from the consequences thereof to the extent allowed by law.

16. ASSIGNMENT. The Parties shall not assign, sell, or otherwise transfer interests under this Agreement without first receiving the prior written consent of the other Parties, which consent shall not be unreasonably withheld.

17. SEVERABILITY. If any term, provision, covenant, or condition of this Agreement is held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired, or invalidated.

18. ENTIRE AGREEMENT. This Agreement is the full and entire understanding of the Parties, and may not be altered except by a writing executed by the Parties hereto. The Parties agree that there are no warranties, either expressed or implied, no covenants or promises or expectations other than those contained and set forth in writing in this Agreement.

19. AMENDMENT. This Agreement may be amended only by a written instrument duly executed by the Parties.

20. WAIVER. The waiver or failure to declare a breach of this Agreement as a result of violation of any term or provision set forth in this Agreement shall not constitute a waiver of that term or condition and shall not provide the basis for a claim of estoppel.

21. NOTICES. All notices shall be in writing and shall be sent as follows:

BBID:
General Manager
Byron-Bethany Irrigation District
P.O. Box 160
Byron, CA 94514

CITY:
Public Works Director
City of Tracy Public Works
520 Tracy Boulevard
Tracy, CA 95376

IN WITNESS WHEREOF, the Parties to this Agreement have duly executed this Agreement on the date set forth opposite their signatures.

Authorized and approved for signature on:

10/18, 2013

BYRON-BETHANY IRRIGATION DISTRICT

By: _____
Rick Gilmore, General Manager

ATTEST:

By: _____

Title: General Manager/Secretary

Authorized and approved for signature on:

9/25, 2013

CITY OF TRACY

By: _____
Brent H. Ives, Mayor

ATTEST:

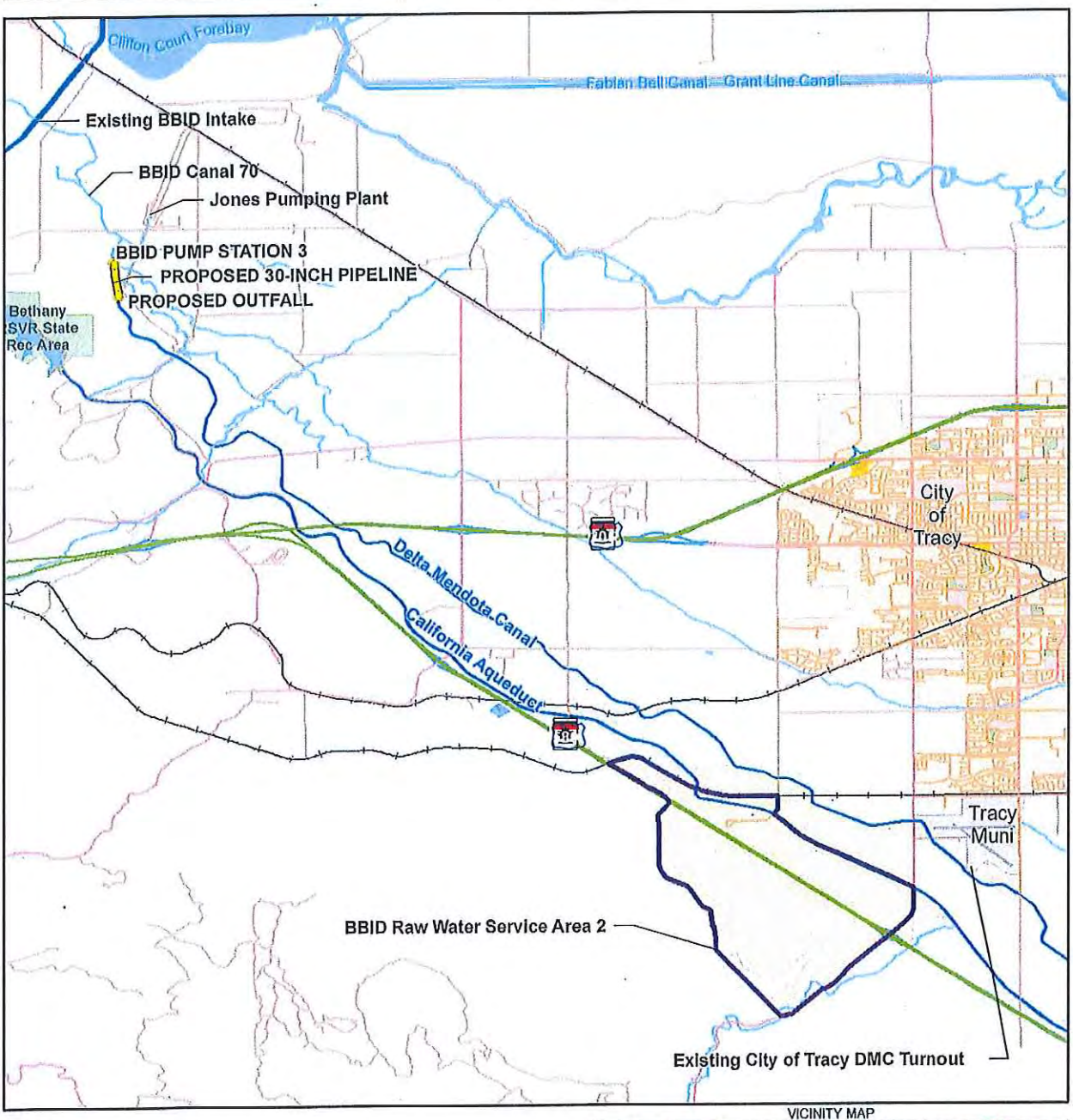
By: _____
City Clerk

Authorized and approved for signature on:

_____, 2013

Approved as to form:

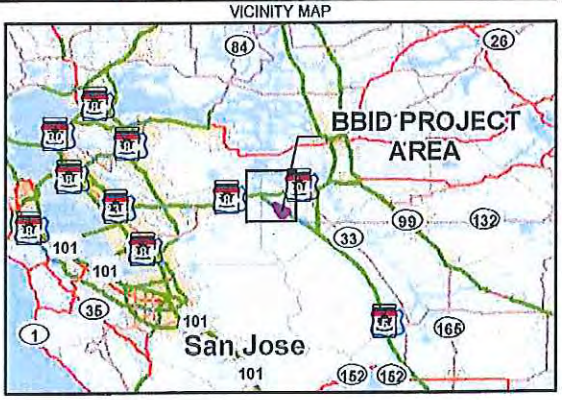
EXHIBIT A



LEGEND

- INTERSTATE
- PRIMARY US & STATE HIGHWAY
- SECONDARY US & STATE HIGHWAY
- ROAD
- RAILROAD
- BBID RAW WATER SERVICE AREA 2
- CITY AREA

VICINITY MAP



N

0 5,000 10,000
Feet

FIGURE 1
PROJECT AREA
BBID TRACY HILLS WATER SUPPLY PROJECT
TRACY, CALIFORNIA

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United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

IN REPLY REFER TO:

APR 25 2014

MP-440
WTR-4.00

Mr. Rick Gilmore
General Manager
Byron Bethany Irrigation District
7995 Bruns Road
Byron, CA 94514-1625

Subject: Long-Term Exchange Contract No. 11-WC-20-0149 Between the United States and Byron Bethany Irrigation District Providing for Exchange of Water - Central Valley Project, California

Dear Mr. Gilmore:

Enclosed is an executed original of the subject 40-year exchange contract for your records. The Bureau of Reclamation appreciates the effort expended by Byron Bethany Irrigation District and its representatives relative to this contract.

If you have any questions, please contact Ms. Barbara Hidleburg, Repayment Specialist, Water Contracts & Policy Branch, at 916-978-5193, or e-mail bhidleburg@usbr.gov.

Sincerely,

PABLO R. ARROYAVE

FOR

David G. Murillo
Regional Director

Enclosure

cc: Board of Directors
San Luis & Delta-Mendota Water Authority
P.O. Box 2157
Los Banos, California 93635
(w/copy of encl)

Mr. Chauncey Lee
San Luis & Delta-Mendota Water Authority
15990 Kelso Road
Byron, California 94514-9614
(w/copy of encl)

M&I Only
Contract No. 11-WC-20-0149

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM CONTRACT PROVIDING FOR EXCHANGE OF WATER BETWEEN THE UNITED STATES AND BYRON BETHANY IRRIGATION DISTRICT – DELTA DIVISION AND SAN LUIS UNIT

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Exhibit A – Contractor's Exchange Water Service Area and the Tracy Hills Development Raw Water Service Area 2 Map
Exhibit B – Annual Exchange Rates
Exhibit C – Source(s) of Contractor's Non-Project Water
Exhibit D – Water Quality Monitoring Plan – Delta-Mendota Canal
Exhibit E – Letter of Agreement

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM CONTRACT PROVIDING FOR EXCHANGE OF WATER
BETWEEN THE UNITED STATES
AND
BYRON BETHANY IRRIGATION DISTRICT –
DELTA DIVISION AND SAN LUIS UNIT

THIS CONTRACT, executed this 25th day of April, 2014, pursuant to the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, including the Act of February 21, 1911 (36 Stat. 925), Section 14 of the Reclamation Project Act of August 4, 1939, (53 Stat. 1187), and Section 305 of the Reclamation States Emergency Drought Relief Act of 1991, enacted March 5, 1992 (106 Stat. 59) as amended, all collectively hereinafter referred to as the Federal Reclamation laws, between the UNITED STATES OF AMERICA, hereinafter referred to as the United States, represented by the officer executing this Contract, hereinafter referred to as the Contracting Officer, and BYRON BETHANY IRRIGATION DISTRICT, hereinafter referred to as the Contractor;

WITNESSETH, That:

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project, California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the Contractor asserts an entitlement to pre-1914 water rights water for irrigation and municipal purposes; and

[3rd] WHEREAS, the Contractor has requested the Contracting Officer approve the use of Excess Capacity in the Delta-Mendota Canal and associated facilities of the Delta Division and San Luis Unit, Central Valley Project for the introduction of Non-Project Water, and the conveyance, storage, and/or delivery of Exchanged Water to the Contractor's Raw Water Service Area 2 for Municipal and Industrial purposes; and

[4th] WHEREAS, pursuant to the terms and conditions of this Contract and in accordance with Section 14 of the Reclamation Project Act of 1939, the United States is willing to make available an equivalent amount of Project Water via an exchange of Non-Project Water less losses;

NOW, THEREFORE, in consideration of the covenants herein contained, the parties to this Contract agree as follows:

DEFINITIONS

1. When used herein unless otherwise distinctly expressed, or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

(a) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(b) "Contracting Officer" shall mean the Secretary of the Interior's duly authorized representative acting pursuant to this Contract or applicable Reclamation law or regulation;

(c) "Excess Capacity" shall mean capacity in the Project Facilities in excess of that needed to meet the Project's authorized purposes, as determined exclusively by the

Contracting Officer, which may be made available for the introduction of Non-Project Water and conveyance, storage, and/or delivery of Exchanged Water;

(d) "Exchange Water" or "Exchanged Water" shall mean that Project Water made available to the Contractor by the Contracting Officer from Project Facilities for a like amount of the Contractor's introduced Non-Project Water less losses;

(e) "Irrigation Water" shall mean Project Water that is used primarily in the commercial production of agricultural crops or livestock, including domestic use incidental thereto. Irrigation Water shall not include water used for purposes such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to landholdings operated in units of less than five acres, unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to such landholding is a use described in this subdivision of this Article;

(f) "Municipal and Industrial (M&I) Water" shall mean Project Water, other than Irrigation Water, made available to the Contractor. M&I Water shall include water used for human use and purposes such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment or water delivered to land holdings operated in units of less than five acres unless the Contractor establishes to the satisfaction of the Contracting Officer that the use of water delivered to any such landholding is a use described in subdivision (e) of this Article;

(g) "Non-Project Water" shall mean water acquired by or available to the Contractor from the source(s) identified in Exhibit "C" that has not been appropriated by the United States;

(h) "Operating Non-Federal Entity(ies)" shall mean the non-Federal entity that has the obligation pursuant to a separate agreement with the United States to operate and maintain all or a portion of the Project Facilities, and which may have funding obligations with respect thereto;

(i) "Project" or "CVP" shall mean the Central Valley Project, owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(j) "Project Facilities" shall mean the Delta-Mendota Canal, O'Neill Forebay, San Luis Reservoir, and associated facilities, constructed as features of the Delta Division and San Luis Unit, Central Valley Project;

(k) "Project-Use Power" is that electrical energy, and its associated ancillary service components, required to provide the full electrical service needed to operate and maintain Project Facilities, and to provide electric service for Project purposes and loads in conformance with the Reclamation Project authorization;

(l) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Project and in accordance with the terms and conditions of water rights acquired pursuant to California law;

(m) "Rates" shall mean the amount to be paid to the United States by the Contractor, as set forth in Exhibit "B", for the use of Excess Capacity in the Project Facilities made available for Storage and Conveyance, pursuant to this Contract;

(n) "Raw Water Service Area 2" shall mean the geographic area located within the Contractor's boundary wherein the Contractor is authorized by this Contract to deliver Exchanged Water within the CVP permitted water rights place of use. The Contractor's Raw

Water Service Area 2 is described in Exhibit "A" and may be modified in accordance with Article 24 without amendment to this Contract;

(o) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior; and

(p) "Year", "Annual", or "Annually" shall mean the period from and including March 1 of each Calendar Year through the last day of February of the following Calendar Year.

TERM OF CONTRACT

2. (a) This Contract shall become effective March 1, 2014 and shall remain in effect through February 28, 2054. The Contractor may request a new contract in writing to the Contracting Officer no later than February 29, 2052.

(b) The Contracting Officer shall not seek to terminate this Contract by reason of an asserted material breach by the Contractor unless it has first provided the Contractor with at least 60 days' written notice of the asserted breach and the Contractor fails to cure such breach or fails to diligently commence curative actions satisfactory to the Contracting Officer for a breach that cannot be fully cured within 60 days of the Contractor's receipt of written notice.

(c) This Contract may be terminated at any time by mutual consent of the parties hereto.

INTRODUCTION, CONVEYANCE, STORAGE, EXCHANGE AND/OR DELIVERY OF WATER

3. (a) During the term of this Contract, the Contractor, in accordance with an approved schedule submitted by the Contractor pursuant to subdivision (g) of this Article, may introduce Annually up to 4,725 acre-feet of Non-Project Water during the months of March

through October from the source identified in Exhibit "C" into the Delta-Mendota Canal at milepost 3.32R. Prior to introducing any Non-Project Water, the Contracting Officer will determine the availability of Excess Capacity consistent with Article 9 of this Contract. At the time the Contractor introduces Non-Project Water into the Delta-Mendota Canal, the Contracting Officer will designate a like amount of Project Water less 5 percent for losses, up to 4,500 acre-feet, as Exchanged Water. The United States or the designated Operating Non-Federal Entity(ies) shall convey Exchanged Water through Excess Capacity in the Project Facilities, from said point of introduction to the Contractor for delivery at milepost 15.88L, or to storage, or to such other location(s) mutually agreed to in writing by the Contracting Officer and the Contractor.

(b) The quantity of Exchanged Water delivered to the Contractor from Project Facilities shall not exceed the quantity of Non-Project Water previously introduced into the Project Facilities by the Contractor, less 5 percent for losses.

(c) This Contract does not preclude any action deemed necessary by the Contracting Officer to recover from the Contractor, Project Water delivered in an amount that exceeds the quantity of Exchanged Water authorized pursuant to subdivision (a) of this Article, or any other remedy available to the Contracting Officer under existing law.

(d) If at any time the Contracting Officer determines that Project Facilities are operationally constrained or have insufficient capacity to allow Non-Project Water to be exchanged in accordance with an approved schedule submitted by the Contractor, the Contracting Officer shall so notify the Contractor as provided in subdivision (d) of Article 9. Within 24 hours of said notice, the Contractor shall revise its schedule accordingly.

(e) Exhibit "C" may be modified or replaced by mutual agreement of the Contractor and the Contracting Officer to reflect changes to the source of Non-Project Water without amendment of this Contract; *Provided,* That no such modification or replacement shall be approved by the Contracting Officer absent any appropriate environmental documentation, including but not limited to documents prepared pursuant to the National Environmental Policy Act of 1969 and the Endangered Species Act of 1973, as amended.

(f) All Exchanged Water delivered to the Contractor pursuant to this Contract shall be used for M&I purposes, only within that portion of Raw Water Service Area 2 that is within the CVP permitted water rights place of use.

(g) The Contractor shall not introduce Non-Project Water into the Project Facilities or take delivery of Exchanged Water unless and until a schedule or any revision(s) thereto have been approved by the Contracting Officer. At the beginning of each Year, the Contractor shall submit appropriate schedule(s) to the Contracting Officer and the designated Operating Non-Federal Entity(ies) showing the monthly estimated quantities of Non-Project Water to be introduced into the Project Facilities and the amount of Exchanged Water to be conveyed, stored, and later made available to the Contractor during the then-current Year. The initial schedule and any revision(s) thereof shall be in a form acceptable to the Contracting Officer and shall be submitted at such times and in such manner as determined by the Contracting Officer.

(h) Exchanged Water remaining in the Project Facilities on March 1 of each Year unless otherwise agreed to by the parties, shall incur a rescheduling fee or other appropriate fees, which shall be updated Annually. The Contracting Officer will notify the Contractor Annually of any changes to the rescheduling guidelines.

(i) Any Exchanged Water made available to the Contractor at its request for delivery which is not accepted by the Contractor or for which a revised schedule has not been submitted by the Contractor within 30 days after such water is made available shall be deemed to be unused water, available to the United States for other Project purposes.

(j) All Exchanged Water remaining in Project Facilities at Contract termination, shall be deemed to be unused water available to the United States for other Project purposes, unless the Contractor has a newly executed contract.

(k) In the event Excess Capacity becomes unavailable for Exchanged Water stored in Project Facilities, the Exchanged Water shall be deemed the first water spilled from Project Facilities; *Provided,* That the Contracting Officer will to the extent possible, within a reasonable time frame, inform the Contractor by written notice in addition to other means of notice of any impending spill from Project Facilities where Exchanged Water may be stored.

(l) Unless otherwise agreed to in writing by the Contracting Officer, the Non-Project Water shall be introduced, conveyed, exchanged, and/or delivered on behalf of the Contractor through existing Project Facilities in accordance with the Contractor's License No. 12-LC-20-0049, "License for the Installation, Operation & Maintenance of Facilities", dated February 12, 2014. If additional temporary inflow or delivery facilities are required to effectuate the introduction of Non-Project Water into the Project Facilities or the delivery of the Exchanged Water on behalf of the Contractor from the Project Facilities, the Contractor shall, at its own cost and expense, obtain all appropriate environmental documents necessary and land use authorization(s) issued by the United States for any such facilities located on certain lands for the right-of-way in connection with Project Facilities, including existing and any new construction of Project or non-Project facilities. The Contractor hereby grants to the Contracting Officer and

the Operating Non-Federal Entities access, for the purpose of this Contract, to all inflow and delivery facilities installed by the Contractor and in accordance with Contractor's License No. 12-LC-20-0049.

(m) Neither the introduction of Non-Project Water nor the delivery of Exchange Water pursuant to this Contract will be supported with Project-Use Power. Project-Use Power is not available to pump Non-Project Water, to operate pumps that were not built as Federal facilities as part of the Project, or to pump Project Water outside the authorized service area, or provide for other uses. If electrical power is required to introduce the Non-Project Water or pump the Exchanged Water at the point of delivery, the Contractor shall be responsible for the acquisition and payment of all electrical power and associated transmission service charges, and provide a copy of a power contract and copies of payment documents to the Contracting Officer as evidence that such electrical power has been contracted and paid for prior to the introduction or delivery of any Non-Project Water and Exchanged Water.

(n) The Contractor shall have no rights to any benefits from increased power generation that may result from the introduction of the Non-Project Water and or conveyance of Exchanged Water in or through Project Facilities authorized pursuant to this Contract.

(o) The introduction of Non-Project Water into the Project Facilities by the Contractor shall be conditioned upon compliance by the Contractor with the environmental measures described in the environmental documentation prepared in connection with the execution of this Contract as well as any amendments and/or supplements thereto and with the terms of the applicable operations practices approved by the Contracting Officer.

MEASUREMENT OF WATER

4. (a) All Non-Project Water shall be measured and recorded at the point(s) of introduction and point(s) of delivery and all Exchanged Water shall be measured and recorded at the point(s) of delivery established pursuant to Article 3 herein with measurement devices acceptable to the Contracting Officer and the methods used to make such measurements shall be in accordance with sound engineering practices.

(b) Unless otherwise agreed to in writing by the Contracting Officer, the Contractor, at its own cost and expense, shall be responsible for providing, installing, operating, maintaining, repairing, replacing, and removing all measurement devices required under this Contract in accordance with any right-of-use agreement(s) or other requisite authorization(s) issued by the United States. The Contractor shall be responsible for all costs associated with the issuance of such right-of-use agreement(s) and authorization(s).

(c) The Contractor shall maintain accurate records of the quantity of Non-Project Water and Exchanged Water, expressed in acre-feet, introduced into, conveyed, stored, exchanged and/or delivered from Project Facilities at said authorized point(s) of introduction and delivery and shall provide such records to the Contracting Officer and the Operating Non-Federal Entity(ies) at such times and in such manner as determined by the Contracting Officer.

(d) The Operating Non-Federal Entity, namely, the San Luis & Delta-Mendota Water Authority, hereinafter referred to as the SLDMWA, or its successor shall be responsible for the calibration, measurement, recording, and reporting of the flow measurements of Non-Project Water and Exchanged Water provided for under this Contract, and shall provide the Contracting Officer and the Contractor with monthly water delivery reports

demonstrating whether or not the Contractor has introduced Non-Project Water into the Project Facilities sufficient to offset the amount of Exchanged Water delivered for the Contractor from the Project Facilities and to account for any conveyance losses.

(e) Upon the request of the Contractor, the Contracting Officer shall investigate, or cause to be investigated by the Operating Non-Federal Entity, the accuracy of all measurements of Non-Project Water and/or Exchanged Water required by this Contract. If the investigation discloses errors in the recorded measurements, such errors shall be promptly corrected. If the investigation discloses that measurement devices are defective or inoperative, the Contracting Officer shall take any necessary actions to ensure that the responsible party makes the appropriate adjustments, repairs, or replacements to the measurement devices. In the event the Contractor, as the responsible party, neglects or fails to make such adjustments, repairs, or replacements to the measurement devices within a reasonable time and to the reasonable satisfaction of the Contracting Officer, the Contracting Officer may cause such adjustments, repairs, or replacements to be made and the costs thereof shall be charged to the Contractor and the Contractor shall pay said charges to the United States immediately upon receipt of a detailed billing. For any period of time during which accurate measurements of the Non-Project Water and/or Exchanged Water have not been made, the Contracting Officer shall consult with the Contractor and the Operating Non-Federal Entity prior to making a determination of the quantity of Non-Project Water and/or Exchanged Water introduced, conveyed and delivered for that period of time and such determination by the Contracting Officer shall be final and binding on the Contractor.

OPERATION AND MAINTENANCE BY OPERATING NON-FEDERAL ENTITIES

5. (a) The operation and maintenance of a portion of the Project Facilities to be used to introduce Non-Project Water, and convey, store, and/or deliver the Exchanged Water to the Contractor, and responsibility for funding a portion of the costs of such operation and maintenance, have been transferred from the United States to the designated Operating Non-Federal Entities, which are the SLDMWA, pursuant to a separate agreement identified as Contract No. 8-07-20-X0354, dated March 1, 1998, as amended, and the California Department of Water Resources, hereinafter referred to as DWR, pursuant to a separate agreement identified as Contract No. 14-06-200-9755, as amended. Such separate agreements shall not interfere with or affect the rights or obligations of the Contractor or the United States hereunder.

(b) The Contractor shall pay directly to the SLDMWA, or to any successor approved by the Contracting Officer under the terms and conditions of the separate agreement described in subdivision (a) of this Article 5, all rates, charges, or assessments of any kind, including any assessment for reserve funds, that the SLDMWA or such successor determines, sets, or establishes for the operation and maintenance of the portion of the Project Facilities operated and maintained by the SLDMWA or such successor used to convey and deliver the Non-Project Water and Exchanged Water to the Contractor.

(c) If the operation and maintenance of any portion of the Project Facilities used to convey, store, and/or deliver the Non-Project Water or Exchanged Water to the Contractor is performed by DWR, or any successor thereto, the Contractor shall pay directly to SLDMWA, or to any successor approved by the Contracting Officer under the terms and conditions of the separate agreement described in subdivision (a) of this Article 5, all rates, charges, or assessments of any kind, including any assessment for reserve funds, that SLDMWA

or such successor determines, sets, or establishes for the operation and maintenance of the portion of the Project Facilities operated and maintained by DWR or such successor used to convey and deliver the Non-Project Water and Exchanged Water to the Contractor. The Contracting Officer shall adjust those components of the Rates for the Non-Project Water and Exchanged Water conveyed under this Contract by deleting the costs associated with the activity being performed by DWR or its successor.

(d) In the event the United States reassumes operation and maintenance of any portion of the Project Facilities from the Operating Non-Federal Entities the Contracting Officer shall so notify the Contractor, in writing, and shall revise the Rates on Exhibit "B" to include the costs associated with the operation and maintenance activities reassumed by the United States. The Contractor shall, thereafter, in the absence of written notification from the Contracting Officer to the contrary, pay the Rates specified in the revised Exhibit "B" directly to the United States in compliance with Article 6 of this Contract.

PAYMENTS AND ADJUSTMENTS

6. (a) At the time the Contractor submits a schedule, or any revision(s) thereof pursuant to subdivision (i) of Article 3 of this Contract, the Contractor shall make an advance payment to the United States, 60 days in advance, at the Rate shown on Exhibit "B" for each acre-foot of Non-Project Water introduced into the Project Facilities; *Provided*, That where the Contractor's schedule provides for multiple introductions of Non-Project Water, advance payment may be made in increments corresponding to the amount of each scheduled introduction. Non-Project Water shall not be introduced into Project Facilities by the Contractor prior to such payment being received by the United States.

(b) The amount of any overpayment by the Contractor by reason of the quantity of Non-Project Water introduced into the Project Facilities and Exchanged Water conveyed, stored, and/or delivered pursuant to this Contract, as exclusively determined by the Contracting Officer, having been less than the quantity which the Contractor otherwise under the provisions of this Contract would have been required to pay for, shall be applied first to any accrued indebtedness arising out of this Contract then due and owing to the United States by the Contractor. Within 60 days after March 1 of each Year, unless otherwise agreed to by the parties, the Contractor may request a refund of any amount of such payment; *Provided*, that no refund shall be made by the United States to the Contractor for any quantity of Non-Project Water or Exchanged Water deemed to be unused water available to the United States for other Project purposes pursuant to subdivision (i) and (j) of Article 3 of this Contract.

(c) The payment of the Rates set forth in this Article for the use of Project Facilities are exclusive of operation and maintenance costs to be paid directly to the Operating Non-Federal Entities by the Contractor, and any additional charges that the Contractor may assess its water users.

(d) The Rates and costs, set forth in Exhibit "B", shall be updated Annually without amending this Contract.

OTHER PAYMENTS

7. In addition to the payments described in Article 6 above, the Contractor is required upon execution and for the duration of this Contract, to have an executed letter of agreement as provided for in Exhibit "E", with the Contracting Officer to among other things, allow for payment in advance of all costs incurred by Reclamation while administering this Contract. The letter of agreement is the instrument funded by the Contractor to cover

Reclamation's costs for ongoing administration and monitoring of this Contract or other actions applicable to this Contract that may occur until the expiration or termination of this Contract. The letter of agreement may be modified, revised, or amended without amending this Contract.

MEDIUM FOR TRANSMITTING PAYMENTS

8. (a) All payments from the Contractor to the United States under this Contract shall be by the medium requested by the United States on or before the date payment is due. The required method of payment may include checks, wire transfers, or other types of payment specified by the United States.

(b) Upon execution of the Contract, the Contractor shall furnish the Contracting Officer with the Contractor's taxpayer's identification number (TIN). The purpose for requiring the Contractor's TIN is for collecting and reporting any delinquent amounts arising out of the Contractor's relationship with the United States.

EXCESS CAPACITY

9. (a) The availability of Excess Capacity shall be determined exclusively by the Contracting Officer, which may involve consultation with SLDMWA and/or DWR or their respective successors. Nothing contained in this Contract shall limit or preclude the United States from utilizing available capacity in the Project Facilities for the storage and conveyance of Project Water pursuant to Federal law, Reclamation law or policy, and existing contract(s); or for using Excess Capacity in the Project Facilities for the introduction of Non-Project Water and the conveyance, storage, and/or delivery of Exchanged Water.

(b) The Contracting Officer will retain regulatory authority and operational control over exchanges to ensure: (i) that Project Water is positioned where it can continuously serve Project purposes; (ii) that storage space is maintained to allow for scheduled movement of Project Water; (iii) that conveyance capacity is maintained for scheduled movement of Project Water; and (iv) that the interest of the Project and its beneficiaries are protected.

(c) The Contracting Officer and the Operating Non-Federal Entities shall not be obligated to allow introduction of Non-Project Water, or to convey, store, and/or deliver Exchanged Water during periods of maintenance or for other operating requirements.

(d) If at any time the Contracting Officer determines that there will not be Excess Capacity in the Project Facilities sufficient to allow the Non-Project Water to be introduced, and/or Exchanged Water to be conveyed, stored and/or delivered in accordance with an approved schedule submitted by the Contractor, the Contracting Officer or the Operating Non-Federal Entities shall so notify the Contractor with as much advance notice as feasible with written or electronic notification to follow within a reasonable timeframe. Within 24 hours of said notice, the Contractor shall revise its schedule accordingly.

(e) No provision of this Contract shall be construed in any way as a basis for the Contractor to establish a priority to or a permanent right to the use of Excess Capacity in Project Facilities nor to set a precedent to obligate the United States to enter into contracts with any other entities or individuals.

RECEIPT AND DISTRIBUTION OF NON-PROJECT AND EXCHANGE WATER – SALE, TRANSFER, OR EXCHANGE OF NON-PROJECT WATER

10. (a) The Contractor shall comply with all applicable Federal, State, and local laws, rules and regulations, including but not limited to, State water law, applicable State and Federal court decisions, and/or decisions, or orders of any other entity of competent jurisdiction, in relation to the Non-Project Water. The Contractor shall provide written notice to the Contracting Officer at the time any action is commenced in State court, Federal court, or any other entity of competent jurisdiction, related to the Contractor's rights to the Non-Project Water. It is expressly understood by the parties that the United States does not claim any interest in the

acquisition or use of the Non-Project Water beyond the terms specifically set forth in this Contract.

(b) The Exchanged Water provided to the Contractor pursuant to this Contract shall be delivered only to Raw Water Service Area 2 lands that are within the CVP water rights permitted place of use as defined in subdivision (n) of Article 1 and identified in Exhibit "A" herein.

(c) The Contracting Officer makes no representations as to the accuracy of the description or of the validity of the Contractor's rights to the Non-Project Water described in Exhibit "C". The Contracting Officer does not guarantee, certify or warrant the right to Non-Project Water of the Contractor.

(d) No sale, transfer, or exchange of Exchanged Water conveyed under this Contract may, except as otherwise expressly provided herein, take place without the prior written approval of the Contracting Officer.

WATER CONSERVATION

11. (a) Prior to the delivery of water provided from or conveyed through federally constructed or federally financed facilities pursuant to this Contract, the Contractor shall develop a water conservation plan, as required by subsection 210(b) of the RRA and 43 C.F.R. 427.1.

(b) The Contractor may provide a water conservation plan developed by the City of Tracy that meets the requirements in subdivision (a) of this Article.

UNITED STATES NOT LIABLE

12. (a) The United States, its officers, agents and employees, including the Operating Non-Federal Entities, shall not be responsible for the control, care, or distribution of the Non-Project Water before it is introduced into Project Facilities or Exchanged Water after it is delivered from the Project Facilities.

(b) The Contractor shall indemnify and hold harmless the United States, its officers, agents and employees, and the Operating Non-Federal Entities, from any loss or damage and from any liability on account of personal injury, death, or property damage, or claims for personal injury, death, or property damage, of any nature whatsoever arising out of any actions or omissions of the Contractor, its directors, officers, agents, contractors, and employees, under this Contract, including the determination of the quantity of Excess Capacity available and the manner or method or quantity in which the Non-Project Water and Exchanged Water is introduced, conveyed, stored, exchanged, and/or delivered to/from the Project Facilities, excepting only such personal injury, death or property damage caused solely by the willful misconduct of the United States, its officers, agents and employees or the willful misconduct of the Operating Non-Federal Entities. Nothing contained in this Article shall be construed as an assumption of liability by the Contractor with respect to such matters.

OPINIONS AND DETERMINATIONS

13. (a) Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in subdivision (a) of this Article 13 is intended to or shall affect or alter the standard of judicial review applicable under Federal law to any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the provisions of this Contract, the laws of the United States and the State of California, and the rules and regulations promulgated by the Secretary. Such determinations shall be made in consultation with the Contractor to the extent reasonably practicable.

PROTECTION OF WATER AND AIR QUALITY

14. (a) Project Facilities used to make available, convey, store, and deliver Exchanged Water to the Contractor shall be operated and maintained in the most practical manner to maintain the quality of the Exchanged Water at the highest level possible as determined by the Contracting Officer: *Provided*, That the United States does not warrant the quality of the Exchanged Water delivered to the Contractor and is under no obligation to furnish or construct water treatment facilities to maintain or improve the quality of the Exchanged Water delivered to the Contractor.

(b) The Contractor shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California; and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities necessary for the introduction of water by the Contractor; and shall be responsible for compliance with all Federal, State, and local water quality standards applicable to surface and subsurface drainage and/or discharges generated through the use of Project Facilities or Contractor facilities or water provided by the Contractor within the Contractor's boundaries.

(c) This Article shall not affect or alter any legal obligations of the Secretary to provide drainage or other discharge services.

(d) The Non-Project Water introduced into the Project Facilities shall be of such quality, as determined exclusively by the Contracting Officer, as to not significantly degrade the quality of the Project Water. If it is determined by the Contracting Officer that the quality of the Non-Project Water from any source identified in Exhibit "C" will significantly degrade the quality of Project Water in or introduced into the Project Facilities, the Contractor shall, upon receipt of a written notice, or otherwise from the Contracting Officer, arrange for the immediate termination of the introduction of Non-Project Water from such source into the Project Facilities, and Exhibit "C" shall be modified to delete such source of Non-Project Water.

(e) Exhibit "D" identifies the Quality Assurance Project Plan and includes the minimum water quality standards for monitoring the quality of Non-Project Water introduced by the Contractor into Project Facilities and the laboratories approved by the Contracting Officer that are to be used for conducting water quality analyses. The Contractor is responsible for sampling and analytical costs associated with evaluating quality of the Non-Project Water. Non-Project Water introduced into Project Facilities for purposes of water quality testing is considered Project water.

(f) At all times during the term of this Contract, the Contractor shall be in compliance with the requirements of the then-current Quality Assurance Project Plan approved by the Contracting Officer. The Quality Assurance Project Plan describes the sample collection procedures, water testing methods, and data review process, including quality control/quality assurance protocols, to verify analytical results.

(g) The Contracting Officer reserves the right to require additional analyses to ensure the Non-Project Water meets the Bureau of Reclamation's water quality acceptance criteria.

CHARGES FOR DELINQUENT PAYMENTS

15. (a) The Contractor shall be subject to interest, administrative, and penalty charges on delinquent payments. If a payment is not received by the due date, the Contractor shall pay an interest charge on the delinquent payment for each day the payment is delinquent beyond the due date. If a payment becomes 60 days delinquent, in addition to the interest charge, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. If a payment is delinquent 90 days or more, in addition to the interest and administrative charges, the Contractor shall pay a penalty charge for each day the

payment is delinquent beyond the due date, based on the remaining balance of the payment due at the rate of 6 percent per year. The Contractor shall also pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of either the rate prescribed quarterly in the *Federal Register* by the Department of the Treasury for application to overdue payments or the interest rate of 0.5 percent per month. The interest charge rate will be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied first to the penalty charges, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

EQUAL EMPLOYMENT OPPORTUNITY

16. During the performance of this Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, disability, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, disability, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, disability, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965 (EO 11246), and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of EO 11246, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by EO 11246, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Contracting Agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in EO 11246, and such other sanctions may be imposed and remedies invoked as provided in EO 11246 or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of EO 11246, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however*, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

CERTIFICATION OF NONSEGREGATED FACILITIES

17. The Contractor hereby certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not permit its employees to perform their services at any location under its control where segregated facilities are maintained. It certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments and that it will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, disability, or otherwise. The Contractor further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Employment Opportunity clause; that it will retain such certifications in its files; and that it will forward the

following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually). Note: The penalty for making false statements in offers is prescribed in 18 U.S.C.1001.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

18. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (Pub. L. 88-352; 42 U.S.C. § 2000d), the Rehabilitation Act of 1973 (Pub. L. 93-112, Title V, as amended; 29 U.S.C. § 791, et seq.), the Age Discrimination Act of 1975 (Pub. L. 94-135, Title III; 42 U.S.C. § 6101, et seq.), Title II of the Americans with Disabilities Act of 1990 (Pub. L. 101-336; 42 U.S.C. § 12131, et seq.), and any other applicable civil rights laws, and with the applicable implementing regulations and any guidelines imposed by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes prohibit any person in the United States from being excluded from participation in, being denied the benefits of, or being otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation on the grounds of race, color, national origin, disability, or age. By executing this contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article and that the United States reserves the right to seek judicial enforcement thereof.

(d) Complaints of discrimination against the Contractor shall be investigated by the Contracting Officer's Office of Civil Rights.

GENERAL OBLIGATION – BENEFITS CONDITIONED UPON PAYMENT

19. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the

obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligation to the Contractor.

(b) The payment of charges becoming due pursuant to this Contract is a condition precedent to receiving benefits under this Contract. The United States shall not allow the introduction of Non-Project Water and make Exchanged Water available to the Contractor through Project Facilities during any period in which the Contractor is in arrears in the advance payment of Rates and charges due the United States. The Contractor shall not introduce Non-Project Water and deliver Exchanged Water under the terms and conditions of this Contract for lands or parties that are in arrears in the advance payment of rates and charges as levied or established by the Contractor.

BOOKS, RECORDS, AND REPORTS

20. The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this contract, including the Contractor's financial transactions; water supply data; project operation, maintenance, and replacement logs; project land and rights-of-way use agreements; the water users' land-use (crop census), land-ownership, land-leasing, and water-use data; and other matters that the Contracting Officer may require. Reports shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this contract shall have the right during office hours to examine and make copies of the other party's books and records relating to matters covered by this contract.

CONTINGENT UPON APPROPRIATION OR ALLOTMENT OF FUNDS

21. The expenditure or advance of any money or the performance of any obligation of the United States under this contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

ASSIGNMENT LIMITED – SUCCESSORS AND ASSIGNS OBLIGATED

22. The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein by either party shall be valid until approved in writing by the other party.

OFFICIALS NOT TO BENEFIT

23. No Member of or Delegate to the Congress, Resident Commissioner, or official of the Contractor shall benefit from this Contract other than as a water user or landowner in the same manner as other water users or landowners.

CHANGES IN CONTRACTOR'S ORGANIZATION

24. While this Contract is in effect, no change may be made in the Contractor's Raw Water Service Area 2, by inclusion or exclusion of lands or by any other changes which may affect the respective rights, obligations, privileges, and duties of either the United States or the Contractor under this Contract including, but not limited to, dissolution, consolidation, or merger, except upon the Contracting Officer's written consent.

NOTICES

25. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Bureau of Reclamation, Area Manager, South-Central California Area Office, 1243 "N" Street, Fresno, California 93721, and on behalf of the United States, when mailed, postage prepaid, or delivered to the Board of Directors of the Byron Bethany Irrigation District, 7995 Bruns Road, Byron, California 94514-1625. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

INCORPORATION OF EXHIBITS

26. Exhibits "A" through "E" are attached hereto and incorporated herein by reference and may be updated without amending this Contract.

CONTRACT DRAFTING CONSIDERATIONS

27. This Contract has been negotiated and reviewed by the parties hereto, each of whom is sophisticated in the matters to which this Contract pertains. The double-spaced articles of this Contract have been drafted, negotiated, and reviewed by the parties, and no one party shall be considered to have drafted the stated articles.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

UNITED STATES OF AMERICA

APPROVED AS TO LEGAL FORM AND SUFFICIENCY
OFFICE OF REGIONAL SOLICITOR
DEPARTMENT OF THE INTERIOR

By: _____
ACTING FOR
Regional Director, Mid-Pacific Region
Bureau of Reclamation

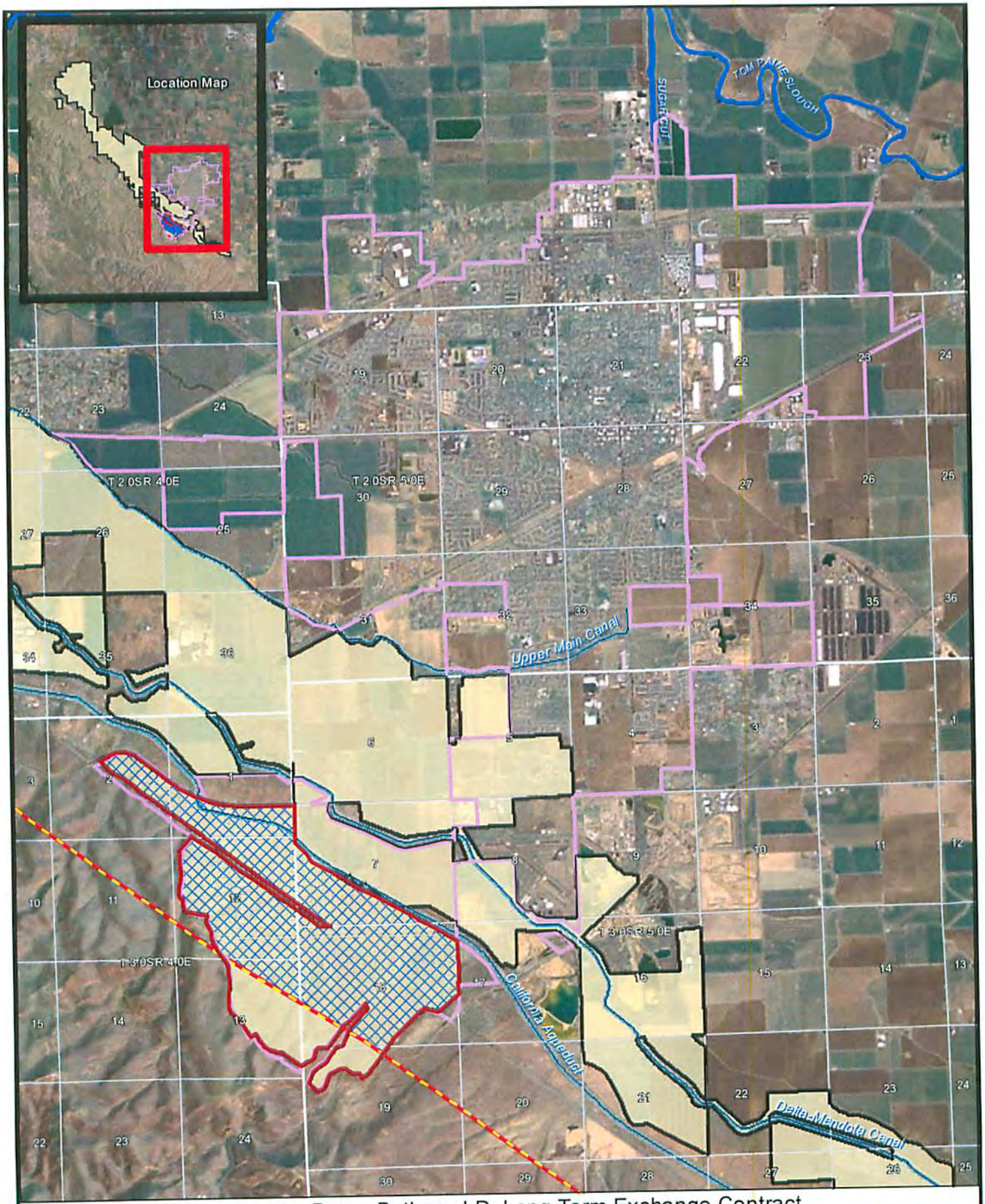
BYRON BETHANY IRRIGATION DISTRICT

(SEAL)

By: _____
President of the Board of Directors

Attest:

_____
Secretary of the Board of Directors



Byron-Bethany I.D. Long-Term Exchange Contract

Exchange Contract No. 11-WC-20-0149

Exhibit A

214-202-97

Date: May 29, 2012, Revised 7/19/12, 7/30/12, 8/10/12, 11/14/12
Name: n:/district/contracts/byron_bethany/TracyHills.mxd

EXHIBIT B

BYRON BETHANY IRRIGATION DISTRICT
YEAR 2014 ANNUAL RATES
(Per Acre-Foot)

Cost of Service (COS) Rate[1]	M&I Water
Cost Component	
Water Marketing	
Construction	$0.00
O&M	$4.83
Storage	
Construction	$0.42
O&M	$10.85
Conveyance	
Construction	$0.39
O&M[2]	$0.00
Conveyance Pumping	
O'Neill Pumping Plant	$0.11
Other Cost	$0.31
Facilities Use Charge[3, 4]	$0.00
Total COS (O&M +Capital)[5]	**$16.91**

EXPLANATORY NOTES

1. 2014 Special – Section 4 – Warren Act Contract, Schedule W-1.
2. Conveyance and conveyance pumping O&M costs were removed for ratesetting purposes and are to be billed directly by the Operating Non-Federal Entities.
3. Cost of Exchanged Water awaiting return (benefits for use of facilities).
4. Cost of Returning Water to Raw Water Service Area 2 (Facilities usage and pumping required for the return of water).
5. All costs components identified in the Cost of Service Rate of this rate exhibit are required to be paid for each acre-foot of Non-Project water introduced, conveyed, stored, exchanged, and/or delivered.

Additional details of the rate components are available on the Internet at www.usbr.gov/mp/cvpwaterrates/ratebooks/special

EXHIBIT C
SOURCE(S) OF CONTRACTOR'S NON-PROJECT WATER
BYRON BETHANY IRRIGATION DISTRICT

Source of Non-Project Water: The source of Non-Project Water is the Contractor's asserted entitlement to pre-1914 Water Rights with a priority date of May 18, 1914 for 40,000 miners inches (equivalent to 700,000 acre-feet annually) measured under four-inch pressure from Italian Slough, a tributary to Old River. Pursuant to "Agreement Between Byron Bethany Irrigation District and the State of California Department of Water Resources," executed May 4, 1964, the Department of Water Resources (DWR) was allowed to cross and destroy a portion of the District's lateral. In exchange, the Contractor was granted permanent and perpetual use, as its point of diversion, the DWR's State Water Project Intake Channel.

For the purposes of this Contract, the Contractor is requesting to divert up to 4,725 acre-feet of this source of Non-Project Water through a newly constructed pipeline under Contractor's License No. 12-LC-20-0171 ("Long-Term License for the Erection, Operation, Maintenance, and Storage of Temporary Structures") from the District's Pump Station 3 off Canal 70 for the conveyance and introduction into the Delta-Mendota Canal during the months of March through October on an annual basis.

Point of Introduction: Based on the availability of Excess Capacity and with Contracting Officer approval, the Contractor may introduce the Non-Project Water from their pipeline into the Delta-Mendota Canal at milepost 3.32R in accordance with an approved schedule.

Point of Delivery: Reclamation will convey the Contractor's Exchanged Water either to storage in Project facilities for later delivery or convey it directly to milepost 15.88L of the Delta-Mendota Canal or to such other location(s) mutually agreed to in writing by the Contracting Officer and the Contractor.

Long-Term Exchange Contract – Year **2014** - Year **2054**
M&I Only
Contract No. 11-WC-20-0149

EXHIBIT D

DELTA-MENDOTA CANAL (SURFACE WATER PUMP-IN PROGRAM) QUALITY ASSURANCE PLAN

(Referenced in Article 11)

RECLAMATION

Managing Water in the West

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
2014 Water Quality Monitoring Plan



DMC Milepost 42.54L Patterson ID Pump-in Structure

U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region, South-Central California Area Office

Revised: 24 Jan 2014

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

List of Abbreviations and Acronyms

Authority	San Luis and Delta-Mendota Water Authority
°C	degrees Celsius
DMC	Delta-Mendota Canal
DMC Headworks	DMC Milepost 2.5, Jones Pumping Plant
DMC Check 13	DMC Milepost 70, O'Neill Forebay
DMC Check 20	DMC Milepost 111, near Firebaugh
DMC Check 21	DMC Milepost 116, terminus at Mendota Pool
COC	chain of custody
CVP	Central Valley Project
DFG	California Department of Fish and Game
EC	electrical conductivity, µS/cm
Exchange Contractors	San Joaquin River Exchange Contractors Water Authority
°F	degrees Fahrenheit
mg/L	milligrams per liter, equivalent to parts per million
QA	Quality Assurance
QC	Quality Control
QCO	Quality Control Officer
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Regional Board	California EPA, Central Valley Regional Water Quality Board
TDS	Total dissolved solids, mg/L
USGS	U.S. Geological Survey
µg/L	micrograms per liter, equivalent to parts per billion
µS/cm	microSiemens per cm, salinity in water

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
2014 Water Quality Monitoring Plan

Introduction

The overall supply of Central Valley Project (CVP) water has been reduced by drought and restrictions on pumping from the Sacramento-San Joaquin Delta. Under the Warren Act of 1911, Reclamation may execute temporary contracts to convey non-project water in excess capacity in federal irrigation canals.

Water Year 2013 was the driest year of record, and forecast for 2014 indicate that the drought will continue.

In Contract Water Year[1] 2014, Reclamation proposes to execute temporary contracts with water districts to convey up to up to 35,000 acre-feet of non-project surface water in the Delta-Mendota Canal (DMC) subject to the monitoring and reporting requirements outlined in this document. The following districts could participate in this program:

Table 1. Non-Project Surface Water Pump-in Locations (Water Year 2014)

DMC Milepost	District	Total Acre-feet
3.32R	Byron-Bethany ID	5,000
20.42L	Banta-Carbona ID	10,000
31.31L	West Stanislaus ID	10,000
42.54L	Patterson ID	10,000

This document describes the plan for measuring the changes in the quality of water in the DMC caused by the conveyance of this non-project surface water during Water Year 2014. Various agencies will use these data to assess water quality in the upper portion of the DMC, and assess any impacts on the quality of water delivered to wetlands water supply channels, and the State Water Project through the O'Neill Forebay.

This document has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), in cooperation with the San Luis & Delta-Mendota Water Authority (Authority). This monitoring plan will be conducted by staff of Reclamation and the Authority, and the data will complement independent monitoring by other Federal, State, and private agencies.

Several sampling techniques will be used to collect samples of water, including real-time, grab, and composite. The techniques used at each location are summarized in Section 3.

[1] Contract Water Year 2014 = 01 March 2014 – 28 February 2015

Continuous measurement of specific conductance (salinity) will be recorded at two stations in the canal using sondes connected to digital data loggers. The data will be averaged every 15 minutes, sent via satellite to the California Data Exchange Center where it will be posted in the Internet as preliminary data:

http://cdec.water.ca.gov/queryDaily.html

Central Valley Operations Office will post the daily average salinity measurements on its website:

http://www.usbr.gov/mp/cvo/wqrpt.html

The real-time data will be collected by Reclamation and used in a mass balance to calculate and predict water quality conditions along the DMC. The calculated results will be reported to the Authority and other interested agencies.

Based on available funding, Reclamation will continue to operate autosamplers at two places along the DMC that will collect daily composite samples for measurement of selenium and salinity.

Reclamation will continue to collect monthly grab samples at McCabe Road to measure many other parameters including trace metals and pesticides.

Reclamation will use these data to assess changes in water quality caused by the conveyance of non-project surface water and groundwater in Water Year 2014, and will implement the terms and conditions of the Warren Act Contracts and exchange agreements.

Background

The Delta Division facilities of the federal Central Valley Project (CVP) delivers water to almost a million acres of farmland and wetlands in the San Joaquin Valley of California. This is the sole source of clean water for the Cities of Tracy and Dos Palos, and for state and federal wildlife refuges and many private wetlands in Fresno, Merced, San Joaquin, and Stanislaus Counties.

The source of water for the Division is the northern Sierra mountains, passing through the delta of the Sacramento and San Joaquin Rivers. This water is typically suitable in quality for irrigation and wetlands. California is regularly affected by droughts that reduce the supply of water. Environmental regulations also restrict the operation of the Jones Pumping Plant to divert water from the Delta. The salinity of water in the Delta is highly variable due to the influence of tides and outflow of river water.

The Delta-Mendota Canal carries CVP water to farms, communities, and wetlands between Tracy and Mendota. The 116 mile canal is operated and maintained by the San Luis and Delta-Mendota Water Authority (Authority) under contract with Reclamation.

Inflows of tailwater and subsurface water add contaminants to the canal. The conveyance of non-project water may further degrade the quality of water in the canal.

The districts and refuges in the Delta Division use non-project water to supplement their contractual supply from the CVP. The term "Non-Project Water" applies to supplies of water that have not been appropriated by the United States for the purposes of the CVP.

The Warren Act of 1911[2] authorizes Reclamation to execute temporary contracts to impound, store, and carry non-project water in federal irrigation canals when excess capacity is available. Such contracts will be negotiated by Reclamation with Delta Division water districts to allow the introduction of non-project water into the Delta-Mendota Canal to supplement the supply of CVP water to help farmers deliver enough water to irrigate and sustain valuable permanent crops like grapes, citrus, and deciduous fruit, and to sustain the local multi-billion dollar farming economy.

The quality of non-project water is variable and must be measured to confirm that there will be no harm to downstream water users when this water is pumped into the canal. Reclamation has developed a set of standards for the acceptance of non-project water in the canal based on the requirements of downstream water users.

In Water Year 2014, environmental regulations and climate change continue to reduce the supply of surface water for the Central Valley Project. Water managers now must depend on non-project water to supplement a diminished supply of CVP water.

Reclamation will require information about each source of non-project water and more monitoring of the water in the canal to measure changes and to determine the feasibility of continuing this program in the future. Staff from the Authority will take regular measurements of each source of non-project surface water and of water in the canal downstream of each pump-in.

This monitoring plan will ensure that data will measure any changes in the quality of CVP water in the Delta-Mendota Canal and Mendota Pool. The data will be used by the Authority and Reclamation to regulate the pump-in program and evaluate future programs.

Monitoring Mission and Goals

The mission of this monitoring plan is to produce physical measurements that will determine the changes in the quality of the water in canal caused by the conveyance of non-project surface water during Water Year 2014. The data will be used to implement the terms of the 2014 Warren Act Contracts and exchange agreements, and to ensure that the quality of CVP water is commensurate with the needs of all water users.

[2] Act of February 21, 1911, ch. 141, 36 Stat. 925

Program Goals

The general goals of monitoring are:

- Evaluate the quality of each source of non-project surface water, and

- Confirm that the blend of CVP water and non-project surface water is suitable for domestic, agricultural, and wetlands uses.

- Provide reliable data for managers to regulate the overall non-project water pump-in program to prevent contamination problems

Study Area

The Study Area for this program encompasses the Delta-Mendota Canal from Tracy to Santa Nella, plus the O'Neill Forebay and the connection to the State Water Project.

Water Quality Standards

The quality of water in each source of non-project water will be compared with the standards listed in Table 5. The list has been developed by Reclamation to measure constituents of concern that would affect downstream water users. In particular, the concentration of selenium in any pump-in water shall not exceed 2 µg/L, the limit for the Grasslands wetlands water supply channels specified in the 1998 Basin Plan.[3] The other constituents are mainly agricultural chemicals listed in the California Drinking Water Standards (Title 22)[4].

Water Quality Monitoring Plan

In-stream Monitoring

The quality of water in the DMC will be measured at the locations listed in Tables 1, 2, and 3.

Reclamation will operate and maintain the real-time stations listed in Table 1. Based on available funding, Reclamation will continue to collect water samples at the sites listed in Table 2 under the DMC Water Quality Monitoring Program. Reclamation will be responsible for the costs of sampling and analysis of water sampled from the DMC under this monitoring program.

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[3] California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

[4] California Code of regulations, Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010 4037), and Administrative Code (Sections 64401 et seq.), as amended. http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-06-24-2010.pdf

Table 3 is a list of places along the canal where non-project surface water could be pumped into the canal under this program. If the real-time monitoring is not sufficient to identify in-stream changes in quality caused by the addition of the non-project water, Reclamation may require weekly measurements at the checks listed in Table 3 to determine local effects from each group of wells. Furthermore, if flow of CVP water in the canal is limited, Reclamation will require detailed monitoring to identify the individual and cumulative changes in water quality caused by the addition of non-project water.

Non-Project Water Monitoring Plan

Initial Analysis

All districts participating in the 2014 DMC Surface Water Pump-in Program must provide the following information about each source of non-project water to Reclamation prior to pumping that water into the DMC:

- the current license to erect and maintain the pump-in structure within the DMC right-of-way

- the current Warren Act Contract that allows the non-project water to be conveyed in the DMC

- the schedule and pump-in rate of each source;

- and complete report of water quality analysis (Table 5).

The Districts must provide access to each pump-in facility for Reclamation and Authority staff.

All water samples must be sampled and preserved according to established protocols in correct containers. Reclamation will assist with the collection of these samples.

Analyses should be conducted by laboratories that have been approved by Reclamation, listed in Tables 6a and 6b. Each sample of non-project surface water must be sampled and analyzed at the expense of the Warren Act Contract district.

Compliance Monitoring

Daily Salinity

Mean daily salinity of water in the San Joaquin River, DMC, and California Aqueduct will be measured with sensors along the canal that report real-time data to CDEC, listed in Table 2. Reclamation will monitor daily changes in salinity while the non-project surface water is being pumped into the canal.

Weekly Monitoring

Reclamation may require weekly measurements of salinity along the DMC if the real-time sensors are not sufficient to identify changes. If necessary, Reclamation will direct the Authority to measure the EC of water in the canal at the check structures listed in Table 3. These sites are located upstream and downstream from each pump-in structure. In addition, Reclamation may also direct Authority staff to measure the EC of the water in each active pump-in.

The monthly volume of water pumped into the DMC from each pump-in structure will be measured by the Authority and sent to Reclamation at the beginning of each month.

Selenium Monitoring

Based on available funds, Reclamation will continue to measure selenium in the canal with autosamplers at the DMC headworks and Check 13. Reclamation may collect random samples of water from the active pump-ins and at other places in the DMC; the cost of these selenium tests will be borne by Reclamation.

Data Compilation and Review

All monitoring data collected by the Authority (i.e., volume of water pumped into the DMC, weekly salinity in the DMC) will be presented each week to Reclamation via e-mail. Reclamation will review the data to identify changes in the quality of water in the canal. Reclamation will use a mass-balance to assess the effects of the pump-ins on salinity in the DMC.

Water Quality Monitoring Parameters and Data Management

The following sections describe the parameters for real-time and laboratory measurement of water quality, as well as methods for quality control, data management, and data reporting.

Real-Time Water Quality Monitoring Parameters

The Central Valley Operations Office (CVO) operates four sensors along the DMC that measure salinity and temperature of water. These continuous measurements are posted on the Internet in real-time. The Department of Water Resources operates similar sensors along the San Joaquin River and California Aqueduct. Preliminary data from these sensors are reported by the California Data Exchange Center.

Salinity

Salinity is a measure of dissolved solids in water. It is the sum weight of many different elements within a given volume of water, reported in milligrams per liter (mg/L) or parts per million (ppm). Salinity is an ecological factor of considerable importance, influencing the types of organisms that live in a body of water. Also, salinity influences the kinds of

plants and fish that will grow in a water body. Salinity can be estimated by measuring the electrical conductivity (EC) of the water.

Sampling For Laboratory Analyses of Water Quality
The following sections describe constituents for laboratory analyses of water quality, as well as methods for water quality sampling and chain of custody documentation.

Constituents
Table 5 lists of constituents to be measured at in each well that will pump into the DMC during Water Year 2014. Parameters include selenium, mercury, boron, nutrients, and other compounds that cannot be measured with field sensors. Table 7 is a list of laboratories whose sampling and analytical practices have been approved by Reclamation.

Sampling methods
Grab samples will be collected in a bucket or bottle from the point of discharge into the canal. Samples of canal water should be collected mid-stream from a bridge or check structure. Grab samples should be poured directly into sample bottles appropriate to the analyses. This technique is for samples collected weekly or less frequently. The analytical laboratory will specify the sample volume, type of bottle, need for preservative, and special handling requirements. Reclamation may train field staff on proper sample collection and handling.

Time composite samples will be collected from the DMC by Reclamation using an autosampler. Daily composite samples will consist of up to eight subsamples taken per day and mixed into one sample.

Chain of Custody documentation
Chain of custody (COC) forms will be used to document sample collection, shipping, storage, preservation, and analysis. All individuals transferring and receiving samples will sign, date, and record the time on the COC that the samples are transferred.

Laboratory COC procedures are described in each laboratory's Quality Assurance Program Manual. Laboratories must receive the COC documentation submitted with each batch of samples and sign, date, and record the time the samples are transferred. Laboratories will also note any sample discrepancies (e.g., labeling, breakage). After generating the laboratory data report for the client, samples will be stored for a minimum of 30 days in a secured area prior to disposal.

Chain of Custody documentation
Chain of custody (COC) forms will be used to document sample collection, shipping, Quality control (QC) is the overall system of technical activities that measure the attributes and performance of a process, item, or service against defined standards to verify that stated requirements are met.

Quality assurance (QA) is an integrated system of management activities involving, planning, implementation, documentation, assessment, reporting, and quality

improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

QA objectives will be used to validate the data for this project. The data will be accepted, rejected, or qualified based on how sample results compare to established acceptance criteria.

The precision, accuracy, and contamination criteria will be used by the QCO to validate the data for this project. The criteria will be applied to the blind external duplicate/split, blank, reference, or spiked samples submitted with the production samples to the analytical laboratories by the participating agencies to provide an independent assessment of precision, accuracy, and contamination.

Laboratories analyze their own QC samples with the client's samples. Laboratory QC samples, including laboratory fortified blanks, matrix spikes, duplicates, and method blanks, assess precision, accuracy, and contamination. Laboratory QC criteria are stated in the analytical methods or determined by each laboratory. Since internal control ranges are often updated in laboratories based on instrumentation, personnel, or other influences, it is the responsibility of the QCO to verify that these limits are well documented and appropriately updated during system audits. The preferred method of reporting the QC results is for the laboratory to provide a QC summary report with acceptance criteria for each QC parameter of interest.

For water samples, the QCO will use a statistical program to determine if current concentrations for parameters at given sites are consistent with the historical data at these sites. A result is determined to be a historical outlier if it is greater than 3 standard deviations from the average value for the site. The presence of an outlier could indicate an error in the analytical process or a significant change in the environment.

Samples must be prepared, extracted, and analyzed within the recommended holding time for the parameter. Data may be qualified if the sample was analyzed after the holding time expires.

Completeness refers to the percentage of project data that must be successfully collected, validated, and reported to proceed with its intended use in making decisions.

Constraints with regard to time, money, safety, and personnel were some of the factors in choosing the most representative sites for this project. Monitoring sites have been selected by considering the physical, chemical, and biological boundaries that define the system under study.

Sites also were selected to be as representative of the system as possible. However, Reclamation will continue to evaluate the choice of the sites with respect to their representativeness and will make appropriate recommendations to the Contracting Officer given a belief or finding of inadequacy.

Comparability between each agency's data is enhanced through the use of Standard Operating Procedures that detail methods of collection and analysis. Each agency has

chosen the best available protocol for the sampling and analyses for which it is responsible based on the agency's own expertise. Audits performed by the QCO will reinforce the methods and practices currently in place and serve to standardize techniques used by the agencies.

Chain of Custody documentation
Chain of custody (COC) forms will be used to document sample collection, shipping, Real-Time Data – Raw data from field sensors, must be identified as preliminary, subject to change.

Provisional Data - Data that have been reviewed by the collecting agency but may be changed pending re-analyses or statistical review.

Laboratory Data – Data produced by the laboratory following laboratory QA/QC protocols.

Chain of Custody documentation
Chain of custody (COC) forms will be used to document sample collection, shipping, In-stream data will be collected by Reclamation. Routine measurements of flow and EC in each pump-in will be collected by the Authority and sent to Reclamation each month.

Reclamation will compile these data in a water balance model to predict the change in salinity in the canal with the addition of non-project surface water and groundwater.

Real-time data will be used to monitor day-to-day patterns and assess actual conditions. The real-time data will be posted in regular e-mail messages to the districts and Authority. Reclamation will compile all flow and water quality data into a quarterly reports.

Chain of Custody documentation
Chain of custody (COC) forms will be used to document sample collection, shipping, and handling.

Water Quality Requirements

Each week, Reclamation staff will use the real-time salinity measurements (Table 2) and optional weekly in-stream measurements (Table 3) to monitor and determine the changes in salinity in the DMC, and determine if the pump-ins have caused these changes. Reclamation staff will compile other water quality data collected for this program and by others do evaluate changes in the canal.

Reclamation and the Authority will allow non-project surface water and groundwater to be pumped into the DMC if such water does not cause the concentration of important constituents in the canal to exceed certain thresholds listed in Table 8.

Reclamation will direct the Authority contact the Districts to stop pumping non-project water into the upper DMC if the concentration of any of these constituents in the canal exceed the maximum allowable concentrations listed in Table 4a.

Reclamation reserves the right to modify this monitoring program at any time to change.

Table 1. Non-Project Surface Water Pump-in Locations (Water Year 2014)
Table 2. Real-time Water Quality Monitoring Stations
Table 3. Water Quality Monitoring Stations
Table 4. Monitoring Schedule
Table 5. Water Quality Standards
Table 6. Water Year Totals (Acre-feet)
Table 7a. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch
Table 7b. Approved Laboratory Matrix for the Mid-Pacific Region Environmental Monitoring Branch (MP-157)
Table 8. Parameters for Accepting Non-Project Surface Water in the Upper DMC*

Revised: 13 Mar 2014 SCC-107

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
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Table 1. Non-Project Surface Water Pump-in Locations (Water Year 2014)

DMC Milepost	District	Total acre-feet
3.32R	Byron-Bethany ID	5,000
20.42L	Banta-Carbona ID	10,000
31.31L	West Stanislaus ID	10,000
42.54L	Patterson ID	10,000

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Table 2. Real-time Water Quality Monitoring Stations

DMC Milepost	Location	Operating Agency	Parameters	CDEC
3.46	Jones Pumping Plant	CVO	EC	DMC
20.42L	San Joaquin River, Mossdale Bridge	DWR	EC	MSD
31.31L	San Joaquin River, Maze Road Bridge	DWR	EC	MRB
42.54L	San Joaquin River at Patterson	DWR	EC	SJP
70.01	DMC Check 13	CVO	EC	ONI
	California Aqueduct Check 13 at O'Neill Forebay	DWR	EC	C12

Key:
CDEC: California Data Exchange Center
CVO: Central Valley Operations Office
DWR: California Department of Water Resources
EC: Electrical conductivity

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Table 3. Water Quality Monitoring Stations

DMC Milepost	Location	Operating Agency	Parameters	Frequency/ method	CDEC
3.30L	Pump-in from State Water Project	Byron-Bethany ID	EC	Real-time	HRD
3.46	Top of siphon downstream of Jones Pumping Plant	CVO	EC	Real-time	DMC
		Reclamation	EC, selenium	Daily composite from autosampler	
16.19	DMC Check 2	SLDMWA	EC	Weekly grab*	
20.42L	pump-in from San Joaquin River	Banta-Carbona ID	Table 5	Annual	MSD
20.63	DMC Check 3	SLDMWA	EC	Weekly grab*	
31.31L	pump-in from San Joaquin River	West Stanislaus ID	Table 5	Annual	MRB
34.42	DMC Check 6	SLDMWA	EC	Weekly grab*	
38.68	DMC Check 7	SLDMWA	EC	Weekly grab*	
42.54L	pump-in from San Joaquin River	Patterson ID	Table 5	Annual	SJP
44.26	DMC Check 8	SLDMWA	EC	Weekly grab*	
68.03	DMC at McCabe Road	Reclamation	Various	Monthly grab	
70.01	DMC Check 13 O'Neill Forebay	CVO	EC	Real-time	ONI
		Reclamation	EC, selenium	Daily composite from autosampler	
	California Aqueduct at O'Neill Forebay	DWR	EC	Real-time	C12

Key:
CDEC: California Data Exchange Center
CVO: Central Valley Operations Office
DWR: California Department of Water Resources
EC: Electrical conductivity
Reclamation: MP-157 Environmental Monitoring Branch
SLDMWA: San Luis and Delta-Mendota Water Authority
* Optional instream sampling will be conducted as needed

Delta-Mendota Canal
Non-Project Surface Water Pump-in Program
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Table 4. Monitoring Schedule

Frequency	DMC Milepost	Locations	Parameters	Notes
Daily	3.46	DMC Headworks	EC	
	70.01	DMC Check 13	EC	
		San Luis Canal Check 13	EC	
Weekly	16.19	DMC Check 2	EC, turbidity	As needed
	20.42L	pump-in from San Joaquin River	EC, turbidity	As needed
	20.63	DMC Check 3	EC, turbidity	As needed
	31.31L	pump-in from San Joaquin River	EC, turbidity	As needed
	34.42	DMC Check 6	EC, turbidity	As needed
	38.68	DMC Check 7	EC, turbidity	As needed
	42.54L	pump-in from San Joaquin River	EC, turbidity	As needed
	44.26	DMC Check 8	EC, turbidity	As needed
Monthly	68.03	DMC at McCabe Road	Various	
Annual	3.30L	Pump-in from State Water Project	Table 5	
	20.42L	pump-in from San Joaquin River	Table 5	
	31.31L	pump-in from San Joaquin River	Table 5	
	42.54L	pump-in from San Joaquin River	Table 5	

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Table 5. Water Quality Standards

Constituent	Units	Maximum Contaminant Level		Detection Limit for Reporting		CAS Registry Number	Recommended Analytical Method
Primary							
Aluminum	mg/L	1	(1)	0.05	(2)	7429-90-5	EPA 200.7
Antimony	mg/L	0.006	(1)	0.006	(2)	7440-36-0	EPA 200.8
Arsenic	mg/L	0.01	(1)	0.002	(2)	7440-38-2	EPA 200.8
Barium	mg/L	1	(1)	0.1	(2)	7440-39-3	EPA 200.7
Beryllium	mg/L	0.004	(1)	0.001	(2)	7440-41-7	EPA 200.7
Boron	mg/L	0.7	(13)			7440-42-8	EPA 200.7
Cadmium	mg/L	0.005	(1)	0.001	(2)	7440-43-9	EPA 200.7
Chromium, total	mg/L	0.05	(1)	0.01	(2)	7440-47-3	EPA 200.7
Lead	mg/L	0.015	(9)	0.005	(8)	7439-92-1	EPA 200.8
Mercury	mg/L	0.002	(1)	0.001	(2)	7439-97-6	EPA 245.1
Nickel	mg/L	0.1	(1)	0.01	(2)	7440-02-0	EPA 200.7
Nitrate (as NO3)	mg/L	45	(1)	2	(2)	7727-37-9	EPA 300.1
Nitrate + Nitrite (sum as nitrogen)	mg/L	10	(1)				EPA 353.2
Nitrite (as nitrogen)	mg/L	1	(1)	0.4	(2)	14797-65-0	EPA 300.1
Selenium	mg/L	0.002	(10)	0.0004		7782-49-2	EPA 200.8
Thallium	mg/L	0.002	(1)	0.001	(2)	7440-28-0	EPA 200.8
Secondary							
Chloride	mg/L	250	(7)			16887-00-6	EPA 300.1
Copper	mg/L	1	(10)	0.05	(8)	7440-50-8	EPA 200.7
Iron	mg/L	0.3	(6)			7439-89-6	EPA 200.7
Manganese	mg/L	0.05	(6)			7439-96-5	EPA 200.7
Molybdenum	mg/L	0.01	(11)			7439-98-7	EPA 200.7
Silver	mg/L	0.1	(6)			7440-22-4	EPA 200.7
Sodium	mg/L	69	(12)			7440-23-5	EPA 200.7
Specific Conductance	µS/cm	2,200	(7)				SM 2510 B
Sulfate	mg/L	250	(7)			14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	1,500	(7)				SM 2540 C
Zinc	mg/L	5	(6)			7440-66-6	EPA 200.7
Radioactivity							
Gross Alpha	pCi/L	15	(3)	3	(3)		SM 7110C
Organic Chemicals							
Dibromochloropropane (DBCP)	µg/L	1	(4)	0.5	(5)	96-12-8	EPA 504.1
Ethylene Dibromide (EDB)	µg/L	18	(4)	2	(5)	206-93-4	EPA 504.1
Chlordane	µg/L	18	(4)	5	(5)	57-74-9	EPA 505
Endrin	µg/L	0.1	(4)	0.1	(5)	72-20-8	EPA 505
Heptachlor	µg/L	25	(4)	0	(5)	76-44-8	EPA 505
Heptachlor Epoxide	µg/L	70	(4)	10	(5)	1024-57-3	EPA 505
Lindane	µg/L	160	(4)	0	(5)	58-89-9	EPA 505
Methoxychlor	µg/L	0.2	(4)	0.01	(5)	72-43-5	EPA 505
Toxaphene	µg/L	2	(4)	0.1	(5)	8001-35-2	EPA 505
Diazinon	µg/L	0.16	(11)			333-41-5	EPA 507
Atrazine	µg/L	700	(4)	25	(5)	1912-24-9	EPA 508.1
Simazine	µg/L	0.01	(4)	0.01	(5)	122-34-9	EPA 508.1
Bentazon	µg/L	0.01	(4)	0.01	(5)	25057-89-0	EPA 515.1-4
2, 4, 5-TP (Silvex)	µg/L	30	(4)	10	(5)	93-72-1	EPA 515.1-4
2,4-D	µg/L	0.2	(4)	0.2	(5)	94-75-7	EPA 515.1-4

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Molinate	µg/L	20	(4)	2	(5)	2212-67-1	EPA 525.2
Thiobencarb	µg/L	50	(4)	1	(5)	28249-77-6	EPA 525.2
Carbofuran	µg/L	4	(4)	1	(5)	1563-66-2	EPA 531.1-2
Glyphosate	µg/L	70	(4)	1	(5)	1071-83-6	EPA 547
Chlorpyrifos	µg/L	0.025	(11)			2921-88-2	EPA 8141

Sources:

Sources:

Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

(1) Title 22. Table 64431-A Maximum Contaminant Levels, Inorganic Chemicals

(2) Title 22. Table 64432-A Detection Limits for Reporting (DLRs) for Regulated Inorganic Chemicals

(3) Title 22. Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting

(4) Title 22. Table 64444-A Maximum Contaminate Levels, Organic Chemicals

(5) Title 22. Table 64445.1-A Detection Limits for Purposes of reporting (DLRs) for Regulated Organic Chemicals

(6) Title 22. Table 64449-A Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Levels"

(7) Title 22. Table 64449-B Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Level Ranges"

(8) Title 22. Table 64678-A DLRs for Lead and Copper

(9) Title 22. Section 64678 (d) Lead Action level

2013 California Drinking Water Regulations: http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx

http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf

California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

(10) Basin Plan, Table III-1 (ug/L) (selenium in Grasslands water supply channels)

(11) Basin Plan, Table III-2A (ug/L) (chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis)

Sacramento & San Joaquin River Basin Plan 2009

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture* , Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

(12) Ayers, Table 1 (mg/L) (sodium)

(13) Ayers, Table 21 (mg/L) (boron)

Water Quality Standards for Agriculture 1985

http://www.fao.org/DOCREP/003/T0234E/T0234E00.HTM

revised: 06 Jan 2014

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Table 6. Water Year Totals (Acre-feet)

Milepost	District	WY 2009	WY 2010	WY 2011	WY 2012	WY 2013	WY 2014*
3.32R1	Byron-Bethany ID	782	1,440	0	2,588	102	0
3.32R2	Byron-Bethany ID	782	1,383	0	2,241	98	0
20.42L	Banta-Carbona ID	14,011	10,580	6,215	11,468	15,226	8,759
31.31L	West Stanislaus ID	0	0	0	0	2,505	1,269
31.31L	West Stanislaus ID	0	0	0	0	3,346	1,446
42.54L	Patterson ID	0	142	731	10,018	19,712	3,689
		15,575	13,545	6,946	26,315	40,989	15,163

Data from San Luis & Delta-Mendota Water Authority
Water Year = October - September
*October 2013 - February 2014 totals

RECLAMATION
Managing Water in the West

Table 7a. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch

APPL Laboratory	**Address**	908 North Temperance Avenue, Clovis, CA 93611
	Contact	Renee' Patterson, Project Manager
	P/F	(559) 275-2175 / (559) 275-4422
	Email	rpatterson@applinc.com; danderson@applinc.com;
	Methods	*Approved for inorganic and organic parameters in water and soil*
Basic Laboratory	**Address**	2218 Railroad Avenue Redding, CA 96001 USA
	Contact	Josh Kirkpatrick, Nathan Hawley, Melissa Hawley
	P/F	(530) 243-7234 / (530) 243-7494
	Email	jkirkpatrick@basiclab.com (QAO and PM); nhawley@basiclab.com, mhawley@basiclab.com (invoices); poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
	Methods	*Approved for inorganic/organic parameters*
California Laboratory Services	**Address**	3249 Fitzgerald Road Rancho Cordova, CA 95742
	Contact	Scott Furnas
	P/F	(916) 638-7301 / (916) 638-4510
	Email	janetm@californialab.com (QA); scottf@californialab.com (PM)
	Methods	*Approved for inorganic, organic, and microbiological parameters*
Calscience Environmental Laboratories	**Address**	7440 Lincoln Way; Garden Grove, CA 92841
	Contact	Don Burley
	P/F	714-895-5494 (ext. 203)/714-894-7501
	Email	DBurley@calscience.com
	Methods	*Approved for inorganic and organic parameters in water, sediment, and soil.*
Caltest Analytical Laboratory	**Address**	1885 N. Kelly Rd. Napa, CA 94558
	Contact	Mike Hamilton, Patrick Ingram (Lab Director)
	P/F	(707) 258-4000/(707) 226-1001
	Email	Mike_Hamilton@caltestlabs.com; Patrick_Ingram@caltestlabs.com info@caltestlabs.com
	Methods	*Approved for inorganic and microbiological parameters*
Dept. of Fish & Game - WPCL	**Address**	2005 Nimbus Road Rancho Cordova, CA 95670 USA
	Contact	David B. Crane - Laboratory Director, Patty Bucknell - Inorganic Chemist (916) 358-4398
		Gail Chow - QA Manager + re-analysis requests (916) 358-2840
	P/F	(916) 358-2858 / (916) 985-4301, Sample Receiving: (916) 358-0319 Scott or Mary
	Email	dcrane@ospr.dfg.ca.gov; pbucknell@ospr.dfg.ca.gov; gcho@ospr.dfg.ca.gov
	Methods	*Approved only for metals analysis in tissue, organics pending*

Table 7a. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch

Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	Address	750 Royal Oaks Drive Ste. 100 Monrovia, CA 91016 USA
	Contact	Linda Geddes (Project Manager), Rick Zimmer (quotes)
	P/F	(626) 386-1100, Linda - (626) 386-1163, Rick - (626) 386-1157
	Email	lindageddes@eurofinsus.com
	Methods	*Approved for all inorganic, organic, and radiochemistry parameters in water*
Fruit Growers Laboratory	Address	853 Corporation Street Santa Paula, CA 93060 USA
	Contact	David Terz, QA Director
	P/F	(805) 392-2024 / (805) 525-4172
	Email	davidt@fglinc.com
	Methods	*Approved for general physical analysis in soils and most inorganic and organic parameters in water and soil; not approved for mercury in water or silver in soil.*
Sierra Foothill Laboratory, Inc.	Address	255 Scottsville Blvd, Jackson, CA 95642
	Contact	Sandy Nurse (Owner) or Karen Lantz (Program Manager)
	P/F	(209) 223-2800 / (209) 223-2747
	Email	sandy@sierrafoothilllab.com, CC: dale@sierrafoothilllab.com
	Methods	*Approved for all inorganic parameters (except low level TKN), microbiological parameters, acute and chronic toxicity.*
South Dakota Agricultural Laboratories	Address	Brookings Biospace, 1006 32nd Avenue, Suites 103,105, Brookings, SD 57006-4728
	Contact	Regina Wixon, Jessie Davis, Steven Hauger (sample custodian)
	P/F	(605) 692-7325/(605) 692-7326
	Email	regina.wixon@sdaglabs.com, annie.mouw@sdaglabs.com, emily.weissenfluh@sdaglabs.com, darin.wixon@sdaglabs.com
	Methods	*Approved for selenium analysis*
TestAmerica	Address	880 Riverside Parkway West Sacramento, CA 95605 USA
	Contact	Linda Laver
	P/F	(916) 374-4362 / (916) 372-1059 fax
	Email	Linda.Laver@TestAmericaInc.com
	Methods	*Approved for all inorganic parameters and hazardous waste organics. Ag analysis in sediment, when known quantity is present, request 6010B*
Western Environmental Testing Laboratories	Address	475 East Greg Street # 119 Sparks, NV 89431 USA
	Contact	Kurt Clarkson/Logan Greenwood (Client Services), Andy Smith (Lab Dretr)
	P/F	(775) 355-0202 / (775) 355-0817
	Email	kurtc@wetlaboratory.com, logang@wetlaboratory.com, andy@wetlaboratory.com
	Methods	*Approved for inorganic parameters (metals, general chemistry) and coliforms.*

Revised: 09 Dec 2013

Table 7b. Approved Laboratory Matrix for the Mid-Pacific Region Environmental Monitoring Branch (MP-157)

Laboratory	Water					Sediment/Soil				Tissue/Vegetation	
	Inorganic	Organic	Micro-biological	Radio-chemistry	Toxicity	Inorganic	Organic	General physical	Toxicity	Inorganics	Organics
APPL Laboratory	X	X				X	X				
Basic Laboratory	X	X				X	X				
California Laboratory Service	X	X	X			X	X				
Calscience Environmental Laboratories	X	X				X	X				
Caltest Analytical Laboratory	X		X								
Dept. of Fish & Game - WPCL		pending				X	pending			X	pending
Eurofins Eaton Analytical, Inc. (formerly MWH	X	X		X							
Fruit Growers Laboratory	X (not for mercury)	X				X (not for silver)	X	X			
Sierra Foothill Laboratory, Inc.	X (not for TKN)		X		X				X		
South Dakota Agricultural Laboratories	selenium					selenium				selenium	
TestAmerica	X	X				X	X				
Western Environmental Testing Laboratories	X		X								

revised: 11 Dec 2013

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Table 8. Parameters for Accepting Non-Project Surface Water in the Upper DMC

Parameter	Monitoring Location	Values in the DMC
Minimum dilution flow*	Jones PP	More than 500 cfs
Increase in Specific conductance (EC)*	Check 13	Less than 1,000 µS/cm
Increase in Conductance*	Between Jones PP and Check 13	Less than 50 µS/cm
Increase in Turbidity*	Between Jones PP and Check 13	Less than 5 NTU
Increase in Selenium	Between Jones PP and Check 13	Less than 1 µg/L

* Duration of five consecutive days or more

EXHIBIT E

LETTER OF AGREEMENT NUMBER 9-07-20-W1610

(referenced in Article 7)

United States Department of the Interior

BUREAU OF RECLAMATION
South-Central California Area Office
Tracy Office
16650 Kelso Road
Byron CA 94514-1909

IN REPLY REFER TO:
TO-440
WTR-4.00

MAR 2 1 2014

Received
MAR 2 5 2014
Byron - Bethany Irrigation District

Letter of Agreement
No. 9-07-20-W1610

RECEIVED
2014 MAR 27 AM 9
BUREAU OF RECLAMATION
SCCAO, TRACY, CA

Board of Directors
Byron Bethany Irrigation District
7995 Bruns Road
Byron, California 94514

Subject: Amendment to Letter of Agreement No. 9-07-20-W1610 for the Long-Term Exchange Contract Between the Bureau of Reclamation and Byron Bethany Irrigation District (Tracy Hills Development Project) – Central Valley Project (CVP), California

Dear Board Members:

This Amended Letter of Agreement No. 9-07-20-W1610 (Agreement) is identified as Exhibit E to Exchange Contract No. 11-WC-20-0149 (Exchange Contract). Cost Authority Number RR175296522200401 XXXR0680R1 is assigned to this Agreement. Upon the effective date of the Exchange Contract, this Agreement is changing from environmental and negotiation processes to administration and monitoring of the Exchange Contract. This change allows for payment in advance of costs to be incurred by Reclamation while administering and monitoring the long-term Exchange Contract.

Authority

Consistent with the "Other Payments" in Article 7 of the Exchange Contract, this Agreement allows for payment in advance of all costs incurred by Reclamation while administering the Exchange Contract. This Agreement is the instrument funded by the Byron Bethany Irrigation District to cover Reclamation's costs for ongoing administration and monitoring of the Exchange Contract or other actions applicable to the Exchange Contract that may occur until the expiration or termination of the Exchange Contract. Consistent with Article 7 in the Exchange Contract, this Agreement may be modified, revised, or amended without amending the Exchange Contract.

Background

Effective March 1, 2014, Byron Bethany entered into the 40-year Exchange Contract for a term beginning March 1, 2014 through February 28, 2054. To meet the provision in Article 7 of the Exchange Contract, the terms and conditions of the original letter of agreement dated June 11, 1999 ($1,000), and subsequent amendments requesting additional funds dated September 23, 2011 ($35,000), February 29, 2012 ($50,000), and October 25, 2012 ($100,000), are replaced with this Agreement.

Continued on next page.

Previously, funds advanced covered the expenditures incurred by Reclamation's participation in negotiations, technical sessions, contract drafting/review, federal environmental analyses, water quality/water rights reviews, Central Valley Operations coordination, Regional/Denver Policy Oversight, Finance (Ratesetting), and Public Affairs.

By counter-signing on page 3 of this Amended Agreement, the District agrees to the following:

1. The reimbursable account balance shall be maintained at a minimum amount of not less than $25,000. As of March 19, 2014, the reimbursable account balance is $84,881.80.

2. The term of this Agreement is extended to August 30, 2054, to allow Reclamation:

    a. Up to six months after expiration or termination of the Exchange Contract to reconcile the reimbursable account; and

    b. Determine if either a refund to or additional funds from the District is/are due.

3. Within 15 working days of Reclamation's written request[1] the District shall advance additional funds to Reclamation for payment of costs to be incurred by Reclamation for administration and monitoring of the Exchange Contract. When submitting payments associated with this Agreement, please reference the Agreement number and Cost Authority number on all correspondence and checks, and send to the address below:

    United States Bureau of Reclamation
    South Central California Area Office (Tracy)
    16650 Kelso Road
    Byron, California 94514
    Attention: (TO-440)

4. Within 30 calendar days of the District's written request, Reclamation shall provide a summary of costs incurred in administering and monitoring the Exchange Contract.

[1] For purposes of this Agreement, written notice may occur through one or a number of methods such as, email, facsimile, U.S. mail, hand delivered, etc.

Continued on next page.

5. This Amended Agreement is effective on the same date as the Exchange Contract and shall remain in effect through August 30, 2054 or upon termination of the Exchange Contract by either party: *Provided that,*

    a. Upon notice, the District shall submit additional funds needed to pay for Reclamation's expenses up to and including the date of termination of the Exchange Contract and this Agreement.

    b. Uncommitted funds remaining in the reimbursable account, after the six months reconciliation period, shall be refunded to the District.

If the updated terms and conditions of this Agreement are satisfactory, please have the appropriate District official(s) sign all three originals of this letter. Please return two signed originals of this letter, a certified copy of your resolution authorizing the signature of the District official(s), to the heading address above Attention: TO-440.

If there are any questions concerning this Agreement, please contact me by electronic mail at enjones@usbr.gov or call 209-836-6271 (TDD 209-836-6282).

Sincerely,

Eileen N. Jones
Repayment Specialist

In Triplicate

BYRON BETHANY IRRIGATION DISTRICT

Rick Gilmore
Print Name

Signature of the General Manager

3/26/14
Date

Rick Gilmore
Print Name

Signature of the Secretary

3/26/14
Date

Continued on next page.

cc: Mr. Rick Gilmore
Byron Bethany Irrigation District
7995 Bruns Road
Byron, California 94514

RESOLUTION 2014-2
APPROVING EXECUTION OF A LONG-TERM CONTRACT PROVIDING FOR EXCHANGE OF WATER BETWEEN THE UNITED STATES AND
BYRON BETHANY IRRIGATION DISTRICT – DELTA DIVISION AND SAN LUIS UNIT AND
RELATED ITEMS THERETO

BE IT RESOLVED as follows:

1. The Contract is approved and the President and Secretary are authorized and directed to execute the Contract, subject to the Contract being approved as to form and sufficiency by General Counsel;
2. Said Contract is attached as "Attachment A" to this resolution.
3. Authorizes the President and General Manager to execute any additional items related to the subject agreement.

PASSED AND ADOPTED at a Regular Meeting of the Board of Directors of the Byron Bethany Irrigation District on 18 February, 2014 by the following vote:

Ayes: **BROWN, ENOS, KAGEHIRO, M.MAGGIORE, T.MAGGIORE, TUSO**
Noes:
Abstained:
Absent: **MUSCO**

Mr. Russell Kagehiro, President

Secretary's Certification

I, Rick Gilmore, Secretary of the Board of Directors of the Byron Bethany Irrigation District, do hereby certify that the foregoing Resolution is a true and correct copy entered into the Minutes of the Regular Meeting of 18 February, 2014 at which time a quorum was present, and no motion to amend or rescind the above resolution was made.

Rick Gilmore, Secretary

STATE OF CALIFORNIA – THE RESOURCES AGE
GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

JUN 10 2003

RECEIVED
JUN 11 2003

Mr. Rick Gilmore
General Manager
Byron Bethany Irrigation District
Post Office Box 160
Byron, California 94514-0160

Dear Mr. Gilmore:

Enclosed is the fully executed "Agreement Between the Department of Water Resources of the State of California and the Byron-Bethany Irrigation District regarding the Diversion of Water from the Delta." The Agreement was signed by the Director on May 28, 2003.

Article 3 of the Agreement provides that the District shall serve as lead agency and the Department as responsible agency under the California Environmental Quality Act, with respect to this Agreement. Prior to diverting water outside BBID's historic diversion season other than to serve Mountain House development, please submit to the Department any necessary environmental documents to address the changes provided for in this Agreement. We request BBID consult with the Department throughout the CEQA process, but consultation earlier in the process, during the development of the project description and determination of whether the project is exempt, is permitted and strongly encouraged.

If you have any questions or need additional information, please call me at (916) 653-4313.

Sincerely,

for Robert B. Cooke
Dan Flory, Chief
State Water Project Analysis Office

Enclosure

cc: Ms. Cheri Davis
California Energy Commission
1516 Ninth Street
Sacramento, California 95814-5512

Mr. John Coburn
General Manager
State Water Contractors
455 Capitol Mall, Suite 220
Sacramento, California 95814

Ms. Sandra Dunn
Somach, Simmons, and Dunn
813 Sixth Street, Third Floor
Sacramento, California 95814-2403

Mr. Cliff Schulz
Kronick, Moskovitz, Tiedemann
& Girard
400 Capitol Mall, 27th Floor
Sacramento, California 95814

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

AGREEMENT BETWEEN THE DEPARTMENT OF WATER RESOURCES OF THE STATE OF CALIFORNIA AND THE BYRON-BETHANY IRRIGATION DISTRICT REGARDING THE DIVERSION OF WATER FROM THE DELTA

THIS AGREEMENT is made MAY 28, 2003, between the DEPARTMENT OF WATER RESOURCES OF THE STATE OF CALIFORNIA (Department), and the BYRON-BETHANY IRRIGATION DISTRICT (District) a governmental agency acting under and by virtue of Division 11 of the California Water Code.

RECITALS

A. The District maintains a right to divert water for irrigation and domestic uses from the Delta at a point where the Italian Slough channel intersects Old River based on a pre-1914 appropriative right.

B. The Department holds certain appropriative rights from the State Water Resources Control Board pursuant to which water is conveyed and distributed by agreements through what is commonly referred to as the State Water Project, which permits include certain rights to divert and redivert water from the Delta.

C. Pursuant to "Agreement Between Byron-Bethany Irrigation District and the State of California Department of Water Resources," executed May 4, 1964, and which remains in effect, the Department was allowed to cross the District's S45 lateral, destroy a portion of the lateral, and pay the District a lump sum of money for the

District to construct two pumping plants on the Harvey O. Banks Delta Pumping Plant intake channel. The Department consented to the permanent and perpetual use by the District, without cost, of the Department's facilities and of that portion of its right of way required for the construction, operation and maintenance of the District's pumping facilities. The District, pursuant to Section 1706 of the Water Code of the State of California, changed its point of diversion from Italian Slough at Old River to the Intake Channel.

D. The District provides water for irrigation and municipal and industrial purposes in parts of Contra Costa, San Joaquin, and Alameda counties.

E. Pursuant to "Agreement Between the Department of Water Resources of the State of California and Byron-Bethany Irrigation District for an Exchange of Water," executed September 17, 1993, the terms for an annual exchange of up to a maximum of 4,000 acre-feet of water between the District and the Department were defined. The District was to make water available to the Department during the period April 1 through October 31 for a like amount of water made available to the District during the period November 1 through March 31. This exchange provided the District with a reliable year-round source of water for the approved Mountain House Community development.

F. The purpose of this Agreement is to describe the nature and extent of the District's rights as between the District and the Department for the diversion of water from the Delta for agricultural, municipal and industrial uses within the District.

AGREEMENT

The parties agree as follows:

1. DEFINITIONS.

a. "Delta" shall mean the Sacramento-San Joaquin Delta as defined in Section 12220 of the California Water Code as of the date of the execution of this Agreement.

b. "Department" shall mean the Department of Water Resources of the State of California.

c. "District" shall mean the Byron-Bethany Irrigation District and shall include all of the lands within the jurisdiction of the Byron-Bethany Irrigation District at the time the Agreement is executed, or are within the boundaries of the Mountain House Community, and those lands which may hereafter be annexed to the District with the approval of the Department, which are within the area shown on Attachment A.

d. "Intake Channel" shall mean the Harvey O. Banks Delta Pumping Plant intake channel.

e. "Mountain House Community" shall mean the development described in the Mountain House Community general plan amendment (GP-92-09 as approved by the San Joaquin County Board of Supervisors on February 25, 1993, by Resolution R-93-110, plus those incidental areas to be included within the Master Plan of the Mountain House Community, as shown on the map dated May 5, 1993 attached as Attachment B.

f. "SWP" shall mean the State Water Resources Development System as defined in Section 12931 of the Water Code of the State of California.

g. "Year" shall mean the period January 1 through December 31.

2. TERM OF AGREEMENT

This Agreement shall become effective upon the date stated in the first sentence of this Agreement, and shall remain in effect through December 31, 2035. Within a reasonable time prior to the expiration of this Agreement, the parties shall enter into good faith negotiations to renew this Agreement on terms and conditions agreeable to both parties. This Agreement may be amended or terminated at any time by mutual agreement of the parties. In the event this Agreement terminates, the parties' water rights, as between the Department and the District, shall exist as if this Agreement had not been executed.

3. ENVIRONMENTAL DOCUMENTATION

As may be necessary, the District shall serve as lead agency and the Department as responsible agency under the California Environmental Quality Act with respect to this Agreement. The District shall submit to the Department any environmental document that has been prepared and shall file a notice of determination under CEQA.

4. REGULATORY RESTRICTIONS

Restrictions imposed by state or federal regulatory agencies for environmental, drought, or other purposes that affect the ability of the Department to make water

diversions from the Delta for SWP deliveries, shall only be applied to the District if they are imposed directly upon the District by law.

5. INABILITY TO MAKE WATER AVAILABLE

If a structural emergency occurs such as a levee failure or a failure of a SWP facility due to but not limited to, earthquake or flood damage which prevents diversion of water from the Intake Channel and the Delta facilities for agricultural, municipal and industrial purposes, the Department shall not be in breach of this Agreement if it makes reasonable efforts to maintain operations of the SWP. Neither the Department nor any of its officers, agents, or employees shall be liable for any damage, direct or indirect, arising from shortages in the amount of water to be made available for diversion by the District as a result of emergencies, disasters, catastrophic conditions, or activities beyond the control of the Department.

6. AREA SERVED.

District water shall not be sold or otherwise disposed of by the District for use outside of the District as shown on Attachment A, without the prior written consent of the Department. Such consent shall not be arbitrarily or unreasonably withheld. All return flow water from water diverted by the District under this Agreement shall be returned to the Delta channels.

7. WATER QUALITY.

Neither the Department, nor its officers, agents, or employees shall be liable for the quality of the water diverted by the District, including but not limited to,

property damage, personal injury, or death arising out of or in connection with the quality of the water delivered beyond the District's diversion point.

8. RIGHT TO DIVERT WATER

The District maintains that water diverted by the District under this Agreement shall be deemed diverted under the District's present water rights. This Agreement neither enlarges nor restricts the District's present water rights. This Agreement shall constitute the full and sole agreement between the Department and the District to divert water from the Delta for agricultural, municipal and industrial use. The uses shall not be disturbed or challenged by the Department and the District shall not claim any right against the Department in conflict with provisions in this Agreement so long as this Agreement remains in full force and effect.

9. DIVERSION AMOUNT

The District may divert up to 50,000 acre-feet of water annually from the District's point of diversion in the Intake Channel, mile post 1.83, for beneficial use within historic District boundaries, as shown on Attachment A, at a rate not to exceed 300 cubic feet per second. The District may furnish water under the provisions of this Agreement to the Tracy Hills portion of the District, as shown on Attachment A, to the extent that such deliveries could have been made under the water rights of BBID in the absence of this Agreement. Total diversions by BBID for delivery within all portions of the District shall not exceed 50,000 acre-feet.

The District may divert water during any month of the year for agricultural, municipal, and industrial purposes.

10. MEASUREMENT OF WATER DIVERTED

The District shall measure the quantity of water diverted from the Delta and shall keep and maintain accurate and complete records thereof. The measuring devices and equipment shall be examined regularly, tested and serviced as needed to insure their accuracy by the District at its sole cost. At its discretion, the Department may inspect such measuring devices and equipment and the records relating to the diversion. The District shall continue to provide records of daily diversions to the Delta Field Division Area Control Center. The District shall take reasonable steps to ensure that 50,000 acre-feet maximum annual diversion in Paragraph 9 is not exceeded.

11. INDEMNITY

The District shall defend and hold harmless the Department and its officers, agents, or employees, from any action, liability, damages, claims of damages, judgement, or settlement, including, but not limited to those nor shall be liable for property damage, personal injury, and death (1) arising out of the control, carriage, handling, use, disposal, water quality, or distribution of water after it has been diverted by the District after such water has passed its diversion points, (2) involving the District's legal authority to divert water from the Delta, or (3) relating to the District's compliance with CEQA under Paragraph 3 of this Agreement.

12. RESERVATION WITH RESPECT TO STATE LAWS.

Nothing in this Agreement shall be construed as estopping or otherwise preventing either party, or any person, firm, association, corporation, or public body claiming by, through, or under either party, from contesting by litigation or other lawful means, the validity, constitutionality, construction or application of any law of the State of California.

13. OPINIONS AND DETERMINATIONS

Where the terms of this Agreement provide for the action to be based upon the opinion, judgement, approval, review, or determination of either party hereto, such terms are not intended to be and shall never be construed as permitting such opinion, judgement, approval, review, or determination to be arbitrary, capricious, or unreasonable.

14. ASSIGNMENT

No assignment of this Agreement in whole or in part shall be valid without the written approval of the Department. The Department may impose reasonable terms and conditions on any assignment which it approves.

15. WAIVER OF RIGHTS.

Any waiver at any time by either party of its rights with respect to a default, or any other matter arising in connection with this Agreement, shall not be deemed to be a waiver with respect to any other default or matter.

16. ASSURANCE RELATING TO VALIDITY OF AGREEMENT

After the execution and delivery of this Agreement, the District may file and pursue to a final decree, including any appeal therefrom to the highest court of the State of California, in a court of competent jurisdiction a special proceeding for the judicial examination, approval, and confirmation of the proceedings of the District's Board of Directors and of the District leading up to and including the making of this Agreement and the validity of the provisions thereof as a binding and enforceable obligation upon the Department and the District. If, in this proceeding or other proceeding before a court of competent jurisdiction, any portion of this Agreement should be determined to be constitutionally invalid, then the remaining portions of this Agreement shall remain in full force and effect.

17. NOTICES

All notices that are required either expressly or by implication to be given by one party to the other under this Agreement shall be deemed to have been given if delivered personally or if enclosed in a properly addressed envelope and deposited in the United States Post Office for delivery by registered of certified mail and sent by facsimile. Unless and until formally notified otherwise, all notices shall be addressed to the parties at their addresses as shown below:

The Department:

Chief, State Water Project Analysis Office
Department of Water Resources
Post Office Box 942836
1416 Ninth Street
Sacramento, California 94236-0001
Facsimile: (916) 653-9628

The District:

General Manager
Byron-Bethany Irrigation District
Post Office Box 160
3944 Main Street
Byron, California 94514-0160
Facsimile: (925) 516-1239

18. TERMINATION OF 1993 AGREEMENT

The "Agreement Between the Department of Water Resources of the State of California and Byron-Bethany Irrigation District for an Exchange of Water," executed September 17, 1993, shall terminate on the effective date of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date first above written.

Approved as to legal form
and sufficiency:

Chief Counsel
Department of Water Resources

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Director

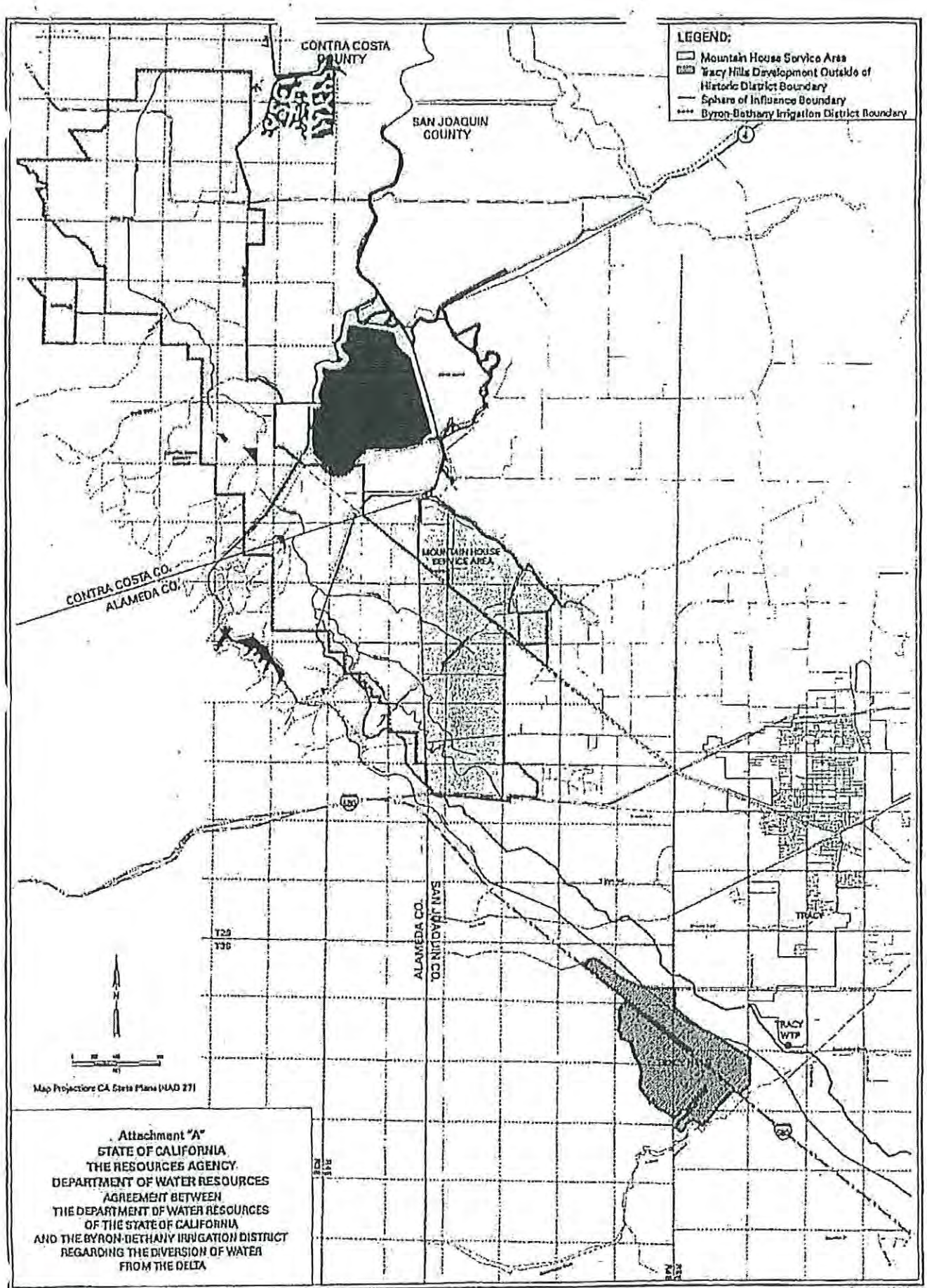
Approved as to legal form
and sufficiency:

Special Counsel
Byron-Bethany Irrigation District

BYRON-BETHANY IRRIGATION
DISTRICT

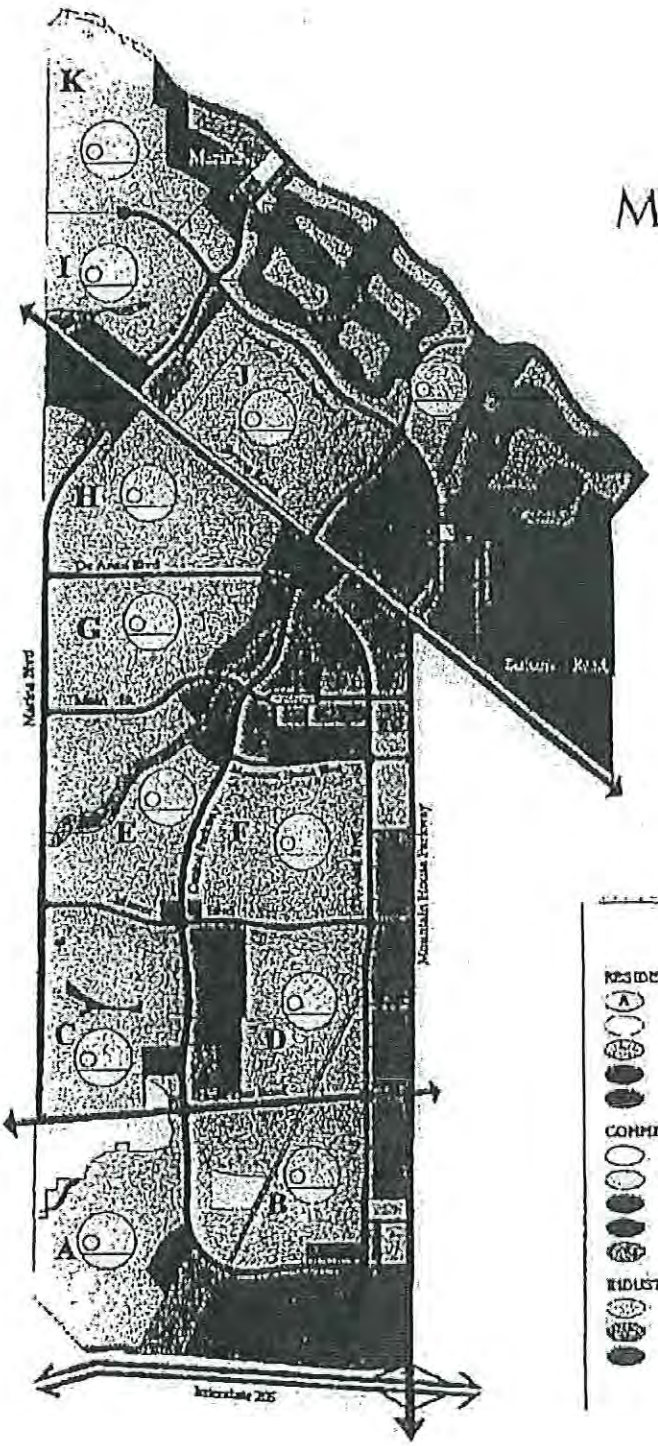
Signature

Attest:
Secretary



Attachment "A"
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
AGREEMENT BETWEEN
THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF CALIFORNIA
AND THE BYRON-BETHANY IRRIGATION DISTRICT
REGARDING THE DIVERSION OF WATER
FROM THE DELTA

CH2MHILL



MH

MOUNTAIN HOUSE
MASTER PLAN

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1:36,000

3,000 1,500 0 3,000 Feet

MASTER PLAN LEGEND

RESIDENTIAL
- (A) Residential Neighborhood Letter
- Very Low Density
- Low/Medium Density
- Medium/High Density
- High Density

COMMERCIAL
- Neighborhood Commercial
- Community Commercial
- General Commercial
- Freeway Service Commercial
- Mixed Use

INDUSTRIAL
- Professional Office
- Business Park
- Industry

PARKS
- Neighborhood Park
- Community Park
- Regional Park

OPEN SPACE
- Open Space (Golf)
- Resource Conservation
- Marina

SCHOOLS
- K-8 School
- High School

PUBLIC FACILITIES
- Public Facility
- Neighborhood Center

- ROADWAY
- RAILROAD

ATTACHMENT "B"

RESOLUTION 2003-15

Authorize General Manager to Execute Agreement with Department of Water Resources

WHEREAS, Byron-Bethany Irrigation District is a special district acting under and by virtue of Division 11 of the California Water Code;

WHEREAS, the Board of Directors is authorized to enter into any agreement necessary to carry out its purpose of ensuring sufficient water for beneficial use within the District;

WHEREAS, the Board of Directors has determined that the Agreement Between the Department of Water Resources and the Byron-Bethany Irrigation District ("Agreement") will clarify the respective water rights of the parties and will facilitate the planning and operations of the District;

WHEREAS, the Board of Directors has determined that the Agreement does not constitute a project under the California Environmental Quality Act;

NOW, THEREFORE, BE IT RESOLVED, that the General Manager is authorized to sign on behalf of Byron-Bethany Irrigation District the Agreement Between the Department of Water Resources and the Byron-Bethany Irrigation District Regarding the Diversion of Water from the Delta, which is attached hereto as Exhibit "A", provided the Agreement has been approved as to form by the District's legal counsel.

PASSED AND ADOPTED at a Regular Meeting of the Board of Directors of the Byron-Bethany Irrigation District this 28th day of May, 2003, by the following vote:

Ayes: Gilbert, Tennant, Maggiore, Franco, Spatafore Jr.
Noes:
Abstained:
Absent:

Mr. Charles Spatafore, Jr.
President of the Board of Directors
Byron-Bethany Irrigation District

Attest:

Betty Walker
Secretary of the Board of Directors of
Byron-Bethany Irrigation District

Secretary's Certification
I, Betty Walker, Secretary of the Board of Directors of the Byron Bethany Irrigation District, do hereby certify that the foregoing Resolution is a true and correct copy entered into the Minutes of the Regular Board Meeting of May 28th, 2003, at which time a quorum was present, and no motion to amend or rescind the above resolution was made.

Betty Walker
Secretary of the Board of Directors of
Byron Bethany Irrigation District

5/28/03
Date

RECLAMATION
Managing Water in the West

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

Recommended by: _____ Date: 12/16/2013
Rain L. Emerson
Natural Resources Specialist
South-Central California Area Office

Concurred by: See Appendix I of EA-09-149 Date: See Appendix I
Archaeologist/Architectural Historian
Mid-Pacific Regional Office

Concurred by: See Appendix J of EA-09-149 Date: See Appendix J
Native American Affairs Specialist
Mid-Pacific Regional Office

Concurred by: _____ Date: 12·16·2013
Jennifer L. Lewis
Wildlife Biologist
South-Central California Area Office

Concurred by: _____ Date: 12/18/13
Chuck Siek
Supervisory Natural Resources Specialist
South-Central California Area Office

Concurred by: _____ Date: 12/23/13
Randy English
Chief, Resources Management Division
South-Central California Area Office

Approved by: _____ Date: 2/7/2014
Michael Jackson
Area Manager
South-Central California Area Office

Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the South-Central California Area Office of the Bureau of Reclamation (Reclamation), has determined that an Environmental Impact Statement (EIS) is not required to approve the execution of a long-term (up to 40-year) exchange contract and a long-term (up to 40-year) license with Byron-Bethany Irrigation District (BBID). This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA)-09-149 *Long-term Contract for the Exchange of Water between the Bureau of Reclamation and Byron-Bethany Irrigation District – Delta Division and San Luis Unit*, and is hereby incorporated by reference.

Reclamation provided the public with an opportunity to comment on the Draft FONSI and Draft EA between October 1, 2012 and October 31, 2012. No comment letters were received. Changes from the draft EA that are not minor editorial changes are indicated by vertical lines in the left margin of the EA.

Background

BBID is a multicounty special district, established under state law primarily to provide water to lands in Alameda, Contra Costa, and San Joaquin Counties. BBID has two water service areas: a Central Valley Project (CVP) water service area (approximately 5,800 acres) that receives CVP water and the Bryon Service area (approximately 16,300 acres) which is served by non-CVP water. BBID is located in the vicinity of the City of Tracy (City) and portions of the district overlap with the current City boundaries as well as the City's sphere of influence. Although BBID is primarily an agricultural district, urban development has increased conversion of land use from agriculture to municipal and industrial (M&I). Since the 1990s, approximately 6,000 acres of land in BBID have been converted to M&I use. Under agreements with the City, BBID provides raw water for treatment and retail delivery to a portion of BBID's M&I customers located within the area of overlapping City and BBID boundaries.

The approximately 6,000 acre Tracy Hills Development (Tracy Hills) has been proposed for construction in the southwest portion of the City. The development will include up to 5,499 dwelling units, ranging from estate lots to apartments (Tracy Hills Specific Plan Environmental Impact Report 1997). In 1998, the City annexed Tracy Hills and in 1999, 2,006 acres of Tracy Hills was annexed into BBID's Raw Water Service Area 2 (RWSA2). As RWSA2 is located within BBID's Byron Service area, BBID intends to use a portion of their pre-1914 water right entitlement to meet the water needs of the development. Buildout of Tracy Hills is expected to occur over a period of 30 years, beginning in 2014.

The 1999 BBID annexation agreement identified a potential need in RWSA2 for up to 6,000 acre-feet (AF) per year (AFY) of water. However, the annexation agreement was amended in 2003 in order to clarify the financial terms and water delivery options for Tracy Hills. Included among the changes to the annexation agreement was a reduction in the Tracy Hills water demand and, thus, a reduction in the maximum BBID allocation of water needed in

RWSA2. In accordance with the 2003 amended BBID annexation agreement, a maximum of 4,500 AFY of raw water is required to meet M&I purposes within RWSA2.

On May 28, 2003, BBID and the California Department of Water Resources (DWR) executed an agreement addressing their respective operations, including an acknowledgement by DWR of BBID's right to divert up to 50,000 AFY of water from the San Joaquin-Sacramento River Delta [Delta] (BBID and DWR 2003). The 2003 agreement reaffirms BBID's current point of diversion in the Intake Channel (Milepost [MP] 1.83) to the Harvey O. Banks Pumping Plant. The 2003 agreement acknowledges that BBID may "furnish water…to the Tracy Hills portion of the District" (BBID and DWR 2003). Pursuant to the 2003 agreement with DWR, delivery of water under BBID's pre-1914 water right to Tracy Hills is limited to months during the historic irrigation season (March through October). In order to deliver water to the development over a 12-month period, BBID has requested that Reclamation enter into a long-term exchange contract for introduction of up to 4,500 AF of their pre-1914 water right water (non-CVP water), plus up to an additional 225 AFY to cover conveyance losses, at MP 3.32R on the Delta-Mendota Canal (DMC). BBID has also requested a long-term license for placement, maintenance, and operation of a pipeline within Reclamation's rights-of way (ROW).

Proposed Action

Reclamation proposes to execute a long-term (up to 40-year) exchange contract and a long-term (up to 40-year) license with BBID for introduction of up to 4,500 AFY, plus up to an additional 225 AFY to cover conveyance losses, of its non-CVP water at MP 3.32R between March and October to meet Tracy Hills demand. All introduced water will be exchanged with Reclamation at the point of introduction. Exchanged water will either be delivered to MP 15.88L for treatment at the City's water treatment plant prior to delivery to Tracy Hills or will be stored within San Luis Reservoir for later delivery. Exchanged water may only be used within the Consolidated Place of Use as shown in Appendix A of EA-09-149. As the exchanged water stored in San Luis Reservoir cannot be pumped upstream for delivery to MP 15.88L when called upon, the stored exchanged water will be used by Reclamation to meet CVP demands and a like amount of CVP water will be delivered to MP 15.88L.

Introduction of BBID's non-CVP water and storage of exchanged water will be scheduled annually with Reclamation and will be subject to excess capacity, operational constraints, and environmental requirements, as applicable. No Project Use Power will be used for the Proposed Action.

The license will allow BBID to access federal land to install an aboveground pipeline at the DMC as well as maintain and operate the structure on Reclamation's ROW. No construction or modifications to the DMC are required for the Proposed Action; however, improvements to existing BBID facilities as well as a new underground pipeline will be required for introduction of BBID's non-CVP water to the DMC as described in EA-09-149.

Environmental Commitments

BBID shall implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 1).

Environmental consequences for resource areas assume the measures specified will be fully implemented. Copies of all reports and monitoring shall be submitted to Reclamation.

Table 1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Water Resources	Prior to construction, a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer would prepare a SWPPP and a Qualified SWPPP Practitioner would implement the SWPPP in order to minimize the amount of pollutants discharged in storm water from the site.
Water Resources	BBID must comply with Reclamation's then current water quality standards (see Appendix C of EA-09-149 for Reclamation's most recent standards).
Biological Resources	At least 30 calendar days prior to ground disturbance, BBID shall (a) purchase 8.49 acres compensation land for the loss of habitat, place a U.S. Fish and Wildlife Service (Service) approved conservation easement on that land, and arrange for Service approved management and endowment, or (b) purchase and endow compensation land with a Service approved conservation bank.
Biological Resources	At least 15 days prior to any ground disturbing activities; the applicant will submit to the Service, for review, the qualifications of the proposed biological monitor(s). Upon Service approval, the biologist(s) will be given the authority to stop any work that may result in the take of listed species. If the on-site biologist(s) exercises this authority, the Service and Reclamation will be notified by telephone and electronic mail within 1 working day. The on-site biologist(s) will be the contact for any employee or contractor who might inadvertently kill or injure a California red-legged frog, San Joaquin kit fox or California tiger salamander, or anyone who finds a dead, injured, or entrapped individual of these species. The on-site biologist(s) will possess a working cellular telephone whose number will be provided to the Service. Should take occur of a California red-legged frog, San Joaquin kit fox or California tiger salamander individual, the Service-approved biologist(s) will contact Reclamation, the Service, and the California Department of Fish and Wildlife (CDFW) within 24 hours of the discovered occurrence.
Biological Resources	Preconstruction surveys for the California red-legged frog, San Joaquin kit fox, and the California tiger salamander will be performed immediately prior to groundbreaking activities. A Service-approved biologist will conduct the surveys and results will be provided to Reclamation for review. If, at any point, activities associated with the project cease for more than 15 consecutive days, additional preconstruction surveys will be conducted prior to the resumption of these actions.
Biological Resources	Preconstruction surveys for San Joaquin kit fox dens will be conducted within a minimum of 200 feet of the project area. Results will be provided to Reclamation for review. Any natal dens encountered will be avoided, in consultation with the Service, by a minimum of 100 feet for known dens and a minimum of 50 feet for potential dens. Non-natal dens will be monitored for a minimum of 3 days to determine their current use. If no San Joaquin kit fox activity is observed during this period, the den will be destroyed to prevent future use by San Joaquin kit fox. If San Joaquin kit fox activity is observed at the den during this period, the den will be monitored for at least 5 consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den will be discouraged during this period by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied will it be excavated under the direction of a Service-approved biologist. If the animal is still present after 5 or more consecutive days of plugging and monitoring, the den will be excavated when, as determined by a Service-approved biologist, it is temporarily vacant (for example, during the San Joaquin kit fox's normal foraging activity). Potential dens will be temporarily marked for avoidance by a minimum of 50 feet and further studied by a Service-approved biologist. Destruction of potential dens will occur only after a Service-approved biologist determines that no San Joaquin kit fox are inside. To determine the presence of San Joaquin kit fox, the potential den will be fully excavated to the end by either hand or machinery. Once determined empty, the den will be filled with dirt and compacted to ensure that San Joaquin kit fox cannot enter or use the den during the construction period. If any potential den is determined to be currently or previously used by San Joaquin kit fox, the measures described above for natal and

Resource	Protection Measure
	non-natal dens (as applicable) will be followed.
Biological Resources	A Service approved biologist will monitor any California tiger salamanders or California red-legged frogs observed during preconstruction surveys and submit a report to Reclamation for review. Any California tiger salamander or California red-legged frog would be allowed to passively leave the site or, if determined necessary by a Service-approved biologist, removed from the work area(s) and relocated to an appropriate location.
Biological Resources	Prior to the start of groundbreaking activities, all construction personnel will receive worker education training on listed species and their habitats by a Service-approved biologist or a video recording of said biologist. The importance of these species and their habitat will be described to all employees as well as the minimization and avoidance measures that are to be implemented as part of the project. An educational brochure containing color photographs of all listed species in the work area(s) will be distributed to all employees working within the project site(s). Workers will also be informed of appropriate measures to take should a toxic materials spill occur. A list of employees who attend the training sessions will be maintained by the applicant to be made available for review by the Service and the CDFW upon request. Contractor training will be incorporated into construction contracts and will be a component of weekly project meetings.
Biological Resources	Wildlife exclusion fencing will be established around the perimeter of the 0.8-acre pump facility, 2-acre laydown area, 0.5-acre access road, and 3.73-acre pipeline corridor. All fencing will be, at minimum, buried 6 inches into the ground and extend 36 inches above ground level to discourage listed animals from entering the site. Exclusion fencing will remain around the specified work areas for the duration of ground disturbing activities.
Biological Resources	A Service-approved biologist will be onsite at all times during initial ground-breaking activities until wildlife exclusion fencing is installed around the pump facility, access road, laydown area, and pipeline corridor. Upon completion of these activities, a Service-approved biologist will inspect all wildlife and wetland exclusion fencing as well as construction zone fencing or flagging associated with the specified areas each week, at minimum, for the duration of construction to ensure fencing integrity. A Service-approved biologist will also survey wildlife exclusion and construction perimeter fencing on a daily basis to look for tears and to ensure no California tiger salamander or California red-legged frog have become trapped along the fence line. BBID will maintain and/or replace these barriers immediately if necessary.
Biological Resources	All work areas and designated temporary travel corridors will be clearly delineated via flagging, signage, or other similar methods to minimize construction disturbances beyond the work area. Vehicles will only enter temporary travel corridors when dry soil conditions exist to avoid the creation of tire ruts or other impacts to the ground surface.
Biological Resources	If vehicles must access temporary travel corridors during wet soil conditions during winter months, then BBID would implement stabilization measures (i.e. construction mats) to prevent rutting in the temporary travel corridors.
Biological Resources	A Service-approved biologist and the construction manager will be notified immediately if a California tiger salamander, California red-legged frog, or San Joaquin kit fox are observed anywhere within the property. If the observed animal is a California tiger salamander or California red-legged frog, a Service-approved biologist will monitor these animals and determine if they are in danger of take from construction activities, predators, or entrapment. If they are, all construction in the immediate area will cease until the animal is allowed to passively leave the site. If this is not possible, a Service-approved biologist will remove the California tiger salamander or California red-legged frog from the property in a cool, moist container and relocate these individuals to an appropriate location. Upon release of these animals, a Service-approved biologist will monitor the individual until it is determined that it is in no imminent danger. If a San Joaquin kit fox is observed on the site, construction activities that will directly affect the individual will cease until the animal passively leaves the site. Field survey forms will be completed for all California tiger salamander, California red-legged frog, or San Joaquin kit fox observations. These forms will be submitted to Reclamation and to the California Natural Diversity Data Base (CNDDB) prior to completion of construction activities.
Biological Resources	To the maximum extent practicable, fossorial mammal burrows that may provide

Resource	Protection Measure
	refugia habitat for California tiger salamander and California red-legged frog will be avoided during the construction and long-term operation of the pipeline. Exclusion fence and/or plywood will be placed around areas with high concentrations of burrows during the course of construction activities to avoid the destruction of these features.
Biological Resources	All potentially occupied small mammal burrows and other refugia suitable for California tiger salamander estivation habitat (e.g., underground holes, cracks, or niches) within fenced construction areas will be excavated in order to salvage and relocate California tiger salamander that would otherwise be harmed. A mini-excavator and hand tools will be used to excavate these burrows, under the supervision of a Service-approved biologist.
Biological Resources	A protocol-level field survey (Appendix F of EA-09-149) for burrowing owls would be completed prior to ground disturbance. Measures for avoiding "take" of burrowing owl as described in Appendix F would be implemented during construction. Specific attention should be provided to project schedule and seasonal constraints associated with clearance of burrows (i.e., passive relocation) that may be occupied by nesting burrowing owls.
Biological Resources	Topsoil removed from the temporary laydown area, access road, pump facility, and pipeline trenching locations will be stockpiled and reserved for the duration of construction activities. Upon completion of these actions, temporarily disturbed areas will be graded and restored with reserved topsoil to facilitate the re-establishment of fossoral mammal populations and upland listed species habitats. Any surplus topsoil will be hauled off site and disposed of at an appropriate facility.
Biological Resources	Potential effects to water quality from contaminated runoff-or airborne dust will be avoided by the implementation of standard erosion and/or sedimentation control devices, fugitive dust management, avoidance, and other best management practices (BMPs) prescribed by BBID's approved SWPPP and Fugitive Dust Mitigation Plan. As-needed dust control measures (e.g., wetting dry ground) will minimize airborne transmission of soil particles into aquatic habitats. Equipment fueling, maintenance, and repairs as well as storage of hazardous materials such as fuels and lubricants will be limited to areas 250 feet or greater from any wetlands or drainage areas. Other hazardous material BMPs, including but not limited to secondary containment and not topping off fuel tanks will be enforced to prevent soil contamination. Prior to the start of construction activities, an emergency spill plan will be developed as part of SWPPP requirements and will be readily available to all employees throughout the duration of work activities. This plan will include appropriate prevention and cleanup measures for both upland and aquatic areas.
Biological Resources	Plastic monofilament netting or similar material will not be used for erosion control matting at the project site to avoid the entanglement or entrapment of California tiger salamander or California red-legged frog individuals.
Biological Resources	To prevent the accidental entrapment of listed species during construction, all excavated holes or trenches deeper than 6 inches will be covered at the end of each workday with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of the workday to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for listed species by a Service-approved biologist. In the event of a trapped animal is observed, construction will cease until the individual has been relocated to an appropriate location and Reclamation notified.
Biological Resources	All construction pipes, culverts, or similar structures greater than 4 inches in diameter that are stored at the laydown area overnight will be securely capped before storage or will be thoroughly inspected for San Joaquin kit fox and other sensitive species prior to pipe installation or capping to avoid entrapment or injury of this animal. If a San Joaquin kit fox or other sensitive species is discovered inside a pipe, that section of pipe will not be moved until Reclamation, the Service, and CDFW have been contacted by a Service-approved biologist to determine the appropriate course of action.
Biological Resources	No discharge of pollutants from vehicle and equipment cleaning, maintenance, or repair will be allowed into storm drains, wetlands, or watercourses. No discharge of sediment-laden water from project-related activities will be allowed into storm drains, wetlands, or watercourses.

Resource	Protection Measure
Biological Resources	All trash and debris within the work area will be placed in containers with secure lids before the end of each work day in order reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all rubbish will be disposed of at an appropriate off-site location.
Biological Resources	To the maximum extent practicable, construction will only occur between 7 a.m. and 7 p.m. to limit the need for night lighting, which could attract California tiger salamanders or California red-legged frogs into the construction area and/or provide additional light for nighttime predators, increasing mortality of these animals.
Biological Resources	All vehicles entering the work area(s) will be confined to existing roads or approved temporary routes. Speed limits within the work area(s) will be limited to 15 miles per hour. Trash dumping, firearms, and pets will be prohibited in the project area(s).
Biological Resources	Upon completion of construction activities, all debris and materials associated with construction will be removed and areas not needed for the long-term operation of the site will be re-contoured to match adjoining grades. Post construction BMPs (as prescribed in the SWPPP) will be implemented, including reseeding all areas as necessary to facilitate timely vegetative restoration.
Cultural Resources	If cultural resources or materials are discovered during ground-disturbing activities, the work near the discovery would cease. Reclamation's archaeologist would be contacted and the area would be protected until the find is evaluated by a qualified archaeologist.
Cultural Resources	If human remains are encountered, the County Coroner would be notified of the find immediately. If the remains are determined to be Native American, the County Coroner would notify the Native American Heritage Commission, which would determine and notify a most likely descendant. The most likely descendant would complete an inspection within 48 hours of notification by the Native American Heritage Commission. The most likely descendant may recommend scientific removal and analysis of human remains and items associated with Native American burials.
Paleontological Resources	If fossil remains are discovered during ground-disturbing activities, the work near the discovery would cease and the area would be protected until the find is evaluated by a qualified paleontologist. The paleontologist would be responsible for sampling and data recovery, if needed; museum storage coordination for specimens and data recovered; and reporting.
Air Quality and Global Climate	The following measures would be implemented to reduce fugitive dust emissions: • Idling times would be minimized by either shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California Code of Regulations). • Clear signage would be provided for construction workers at all access points. • Exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) would be watered two times per day. • Haul trucks transporting soil, sand, or other loose material offsite would be covered. • Visible mud or dirt track-out onto adjacent public roads would be removed using wet power vacuum street sweepers at least once per day. Dry power sweeping would be prohibited. • Construction equipment would be maintained and properly tuned in accordance with manufacturer's specifications. Equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Vehicle speeds on unpaved roads would be limited to 15 mph.
Hazards and Hazardous Materials	Prior to construction, a Qualified SWPPP developer would prepare a SWPPP that would include best management practices for managing and handling hazardous materials. The SWPPP would define protocol for emergency procedures, handling, and disposal of hazardous materials if an accidental spill occurs during construction.

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following findings:

Findings

Water Resources

Under the Proposed Action, Reclamation will execute the proposed long-term contract and license with BBID which will allow BBID to construct an aboveground pipeline within Reclamation ROW in order to introduce up to 4,500 AF, plus up to an additional 225 AFY for conveyance losses, of their non-CVP water to the DMC at MP 3.32R. Introduced water, less conveyance losses, will be exchanged with Reclamation at the point of introduction. Exchanged water will either be delivered to MP 15.88L or stored within San Luis Reservoir for later delivery. As the stored water cannot be pumped upstream in the DMC for delivery to MP 15.88L when called upon, stored exchanged water will be used by Reclamation to meet CVP demands and an equivalent amount of CVP water will be delivered to MP 15.88L via the DMC. No additional CVP water will be pumped in order for this to occur as the stored water will be used to meet CVP demands in lieu of CVP water which will then be delivered to MP 15.88L. Introduction and storage of the exchanged water is dependent on available capacity and operational constraints; therefore, the Proposed Action will not interfere with the normal operations of federal facilities nor will it impede any CVP obligations to deliver water to other contractors or to local fish and wildlife habitat nor will the Proposed Action interfere in the quantity or timing of diversions by the CVP from the Delta.

Water Quality

All waters introduced into the DMC must meet Reclamation water quality standards as described in Appendix C of EA-09-149 (currently Title 22 of the California Code of Regulations). If BBID's non-CVP water fails to meet Reclamation's then current criteria for discharging non-CVP water into federal facilities, introductions will cease until BBID's non-CVP water meets this criteria. Surface water quality at the ephemeral water feature and stock pond located east and downslope of the proposed pipeline could be affected as a result of construction related to the Proposed Action due to potential erosion of stockpiles and spoil piles. As described in Section 2.2.2 of EA-09-149 and included in Table 1, a Storm Water Pollution Prevention Plan (SWPPP) will be prepared by a Qualified SWPPP Developer and implemented during construction to minimize these potential impacts. Therefore, there will be no significant impacts to water quality as a result of the Proposed Action.

BBID Operations

The amount of water diverted by BBID for the contract is part of their existing water rights entitlement and will not require any new diversions. This water is only a small percentage of their total entitlement (approximately 9 percent) and will not impact BBID's ability to service other agricultural or M&I users. In addition, construction activities for the Proposed Action that could impact BBID's deliveries will be timed in order to prevent impacts to their existing water users. Therefore, there will be no impacts to water resources within BBID.

City of Tracy Operations

BBID is currently pursuing a wholesale water agreement with the City for treatment and delivery of the exchanged water to Tracy Hills. Exchanged water to be delivered at MP 15.88L for treatment by the City will be coordinated with the City prior to delivery in order to prevent any impacts to the City's water resources and infrastructure. Alternative supplies from existing City supplies will be available for use within the Tracy Hills Development on a temporary basis should the introduction of BBID's non-CVP water and/or the exchanged water be subject to excess capacity or operational constraints; therefore, there will be no significant impacts to the City's water resources.

Groundwater

No groundwater will be pumped under the Proposed Action. The use of surface water within Tracy Hills is not expected to impact groundwater levels as it will be used to meet M&I demands. The proposed improvements at or near Pump Station 3 will not disturb soil below the water level in the intake channel; however, should any groundwater be encountered, portable sump pumps will be used in accordance with best management practices identified in the SWPPP developed for the Proposed Action. In addition, dewatering of trenches along the pipeline route or near the DMC is not anticipated; however, if needed, trenches will also be dewatered using portable sump pumps in accordance with the SWPPP. Therefore, there will be no significant impacts to groundwater resources as a result of the Proposed Action.

Land Use

The existing trend of land use conversion within the San Joaquin Valley from farmland to urban land uses will continue as it has in the past with or without the Proposed Action. The Proposed Action will not conflict with existing zoning for agricultural use or promote the conversion of farmland to non-agricultural use within the Proposed Action area.

The construction of the project will result in the permanent loss of 0.73 acre and temporary loss of 6.3 acres for a total of 7.03 acres. The area of disturbance for the proposed improvements at BBID's Pump Station 3 (see Section 2.2.2 of EA-09-149) is approximately 0.8 acre, of that 0.5 acre will be permanently disturbed and 0.3 will be temporarily disturbed. The laydown and stockpiling area will result in the temporary disturbance of 2.0 acres. Installation of the pipeline requires a total of 3.73 acres, of which 3.5 will be temporarily and 0.23 acre will be permanently disturbed. The access road stabilization will result in the temporary disturbance of 0.5 acre. The Proposed Action will not conflict with existing zoning for agricultural use or promote the conversion of farmland to non-agricultural use because impacts either will be temporary or will occur in areas already containing irrigation facilities. Although a portion of this area is listed under Williamson Act contracts, the construction of irrigation facilities is considered to be a compatible agricultural use and will not change its land use designation. In addition, the majority of the area impacted by construction will be restored to its original use once construction was completed. Therefore, the Proposed Action will not result in significant impacts on land use.

Biological Resources

Many of special-status plants and animals described in Table 3-1 of EA-09-149 are unlikely to occur within the boundaries of the disturbed land areas. However, birds protected by the Migratory Bird Treaty Act and federally-listed species and critical habitat that occur or could

occur in the vicinity of the Proposed Action area include: burrowing owl, California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox.

Migratory Birds

There is potential nesting habitat for burrowing owl in the action area. Potential impacts to burrowing owls will be avoided and or minimized by implementing the environmental protection measures described in Table 1. Therefore, there will be no take of birds protected under the Migratory Bird Treaty Act.

Federally-listed Species

The construction of the project will result in the permanent loss of 0.73 acre and temporary loss of 6.3 acres of suitable upland habitat for a total of 7.03 acres. The area of disturbance for the proposed improvements at the pump station is approximately 0.8 acre, of that 0.5 acre will be permanently disturbed and 0.3 will be temporarily disturbed. The laydown and stockpiling area will result in the temporary disturbance of 2.0 acres. Installation of the pipeline requires a total of 3.73 acres, of which 3.5 will be temporarily and 0.23 acre will be permanently disturbed. The access road stabilization will result in the temporary disturbance of 0.5 acre. In order to minimize the effects of this disturbance and to comply with the Biological Opinion issued by the Service and the commitments required in Table 1, BBID will purchase 8.49 acres of credits at the Mountain House Conservation Bank. The credits were calculated using the Standard Ratios from the East Alameda County Conservation Strategy for permanent effects and the programmatic biological opinion for the temporary effects (ICF International 2010, Service 2012).

Activities associated with the construction may result in the entombment or crushing of any wildlife located in small mammal burrows within the pipeline construction corridor, construction area associated with BBID's Pump Station 3, and laydown and stockpiling area located adjacent to BBID's Pump Station 3 (see Section 2.2.2 of EA-09-149). Crushing of burrows could also reduce the number of prey species (e.g., California ground squirrel) in the area for San Joaquin kit fox. In addition, individuals that are exposed on the surface during excavation or grading may also be crushed and killed or injured by construction activities. Likewise, individuals that take refuge under equipment or materials at night when moving across the landscape may be harmed during the day when equipment or materials are moved.

California red-legged frog, California tiger salamander, and San Joaquin kit fox could fall into the trenches for the new turnout and pipeline and be killed (through desiccation, entombment, or predation) if those trenches are left open overnight. Even with the use of "amphibian-friendly" barrier fencing wildlife could become trapped.

Construction activities would result in a temporary increase in vehicle traffic on the improved and unimproved roadways that lead to the construction site. Although, the increase in traffic is likely to occur only on Bruns Road, Kelso Road, and the unimproved road into the site, an unknown number of dispersing California red-legged frog, California tiger salamander, or San Joaquin kit fox may experience roadway mortality during construction. These effects may occur during any season but would most likely occur to California red-legged frog and California tiger salamander when local, seasonal aquatic sites begin to dry down.

The proposed project is within California red-legged frog critical habitat Unit CCS-2B, but is not expected to appreciably diminish the value of the critical habitat for the California red-legged frog, or prevent the proposed critical habitat from sustaining its role in the conservation and recovery of this species.

Formal consultation was initiated with the U.S. Fish and Wildlife Service (Service) to resolve the potential for impacts to protected species. Reclamation received a non-jeopardy biological opinion from the Service on December 9, 2013, addressing impacts to the California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox (see Appendix H of EA-09-149). As the Proposed Action will incorporate the conditions imposed by the Biological Opinion (see Table 1 and Appendix H of EA-09-149), the potential for impacts to the species has been determined to not be significant.

Cultural Resources

The Proposed Action was determined to be the type of action that had the potential to cause effects to historic properties. Accordingly, Reclamation initiated the Section 106 process which included a review of existing records and literature, a field reconnaissance, and Native American consultation as documented in the report by CH2M Hill titled "Cultural Resources Assessment of a 5.9-acre Parcel for the Tracy Hills Water Supply Project, Byron Bethany Irrigation District, Alameda County, California" (August 2011). These efforts resulted in the identification of four built-environment historic cultural resources in the APE (DMC, Canal 70, Canal 120, and Canal 155), all of which are water conveyance features. Based on these efforts, Reclamation determined that there will be no significant effect to historic properties, made pursuant to 36 CFR Part 800.5(b), and initiated consultation with the State Historic Preservation Officer (SHPO) on September 7, 2011. No response to date has been received by SHPO. Due to the passage of more than 30 days for the SHPO review period, Reclamation has concluded the Section 106 process for this undertaking. See Appendix I of EA-09-149 for Reclamation's determination.

Environmental protection measures have been included in the Proposed Action (see Table 1) should cultural resources be uncovered during construction activities. These measures will minimize any potential impacts to cultural resources should they be discovered.

Indian Sacred Sites

The Proposed Action will not limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly affect the physical integrity of such sacred sites. There will be no impacts to Indian sacred sites as a result of the Proposed Action.

Indian Trust Assets

On February 8, 2010, Reclamation determined that the Proposed Action will not impact Indian trust assets as there are none in the Proposed Action area. The nearest Indian trust asset is Lytton Rancheria approximately 42 miles northwest of the Proposed Action area. See Appendix J of EA-09-149 for Reclamation's determination.

Environmental Justice

The Proposed Action does not propose any features that will result in significant human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the Proposed Action.

Socioeconomic Resources

The water associated with the Proposed Action will be used by Tracy Hills which has already been planned and approved for development by the City. Construction activities may provide temporary beneficial impacts through employment opportunities for local residents. Therefore, there may be a slight beneficial impact to socioeconomic resources as a result of the Proposed Action.

Air Quality

Operation of the pipeline will not contribute to criteria pollutants as delivery of water to the DMC will be done via electrical pumps. Air quality emissions from electrical power have been considered in environmental documentation for the generating power plant and are part of the existing baseline conditions. In addition, movement of water in the DMC between MP 3.32R and MP 15.88L will be done via gravity and will not result in air quality impacts. However, construction activities such as excavation, grading, and vehicle travel will cause an increase in inhalable particulate matter between 2.5 and 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) due to dust and exhaust emissions. In addition, exhaust emissions of nitrogen oxides and reactive organic gases from construction can contribute to ozone formation. Emissions of carbon monoxide and sulfur dioxide were also calculated for construction activities. Environmental protection measures have been incorporated into the Proposed Action in order to minimize emissions from construction activities (see Table 1). In addition, construction exhaust emissions and fugitive dust emissions were estimated using the URBEMIS Version 9.2.4 and were found to be less than the Bay Area Air Quality Management District's thresholds of significance; therefore, there will be no significant impacts to air quality as a result of the Proposed Action and a conformity analysis pursuant to the Clean Air Act is not required.

Global Climate

As described above, operation of the proposed pipeline is done via electrical pumps which are part of baseline conditions. However, construction under the Proposed Action would involve short-term impacts due to construction-related emissions. Construction emissions of carbon dioxide (CO_2) were estimated using the URBEMIS Version 9.2.4 as 139 metric tons (see Appendix G of EA-09-149). This amount has been converted to CO_{2e} using the EPA's GHG Equivalencies Calculator as 147 metric tons of CO_{2e}. Although, operation of BBID's Pump Station 3 is part of baseline conditions, estimated annual emissions for the maximum (8 month) pump-in schedule would be about 752 metric tons per year of CO_{2e} (Table 3-5 in EA-09-149), which is negligible compared to the EPA's 25,000 metric tons per year threshold for annually reporting GHG emissions. Accordingly, construction and operations under the Proposed Action will result in below *de minimis* impacts to global climate change.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action or No Action alternative when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action or the No Action alternative, the incremental effect of both alternatives were examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drives requests for water service actions. Water districts aim to provide water to their customers based on available water supplies and timing, all while attempting to minimize costs. A myriad of water service actions are approved and executed each year to facilitate water needs. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

Existing or foreseeable projects, in addition to the proposed long-term contract and license with BBID, which could affect or could be affected by the Proposed Action or No Action alternative, include the following:

Delta-Mendota Canal/California Aqueduct Intertie A 500 linear feet intertie has been constructed by Reclamation and DWR in an unincorporated area of the San Joaquin Valley in Alameda County, west of the city of Tracy. The intertie is a shared federal-state water system improvement that connects the DMC (federal facility) and the California Aqueduct (state facility) via two 108-inch-diameter pipes and pumping capacity of 467 cfs. The Intertie addresses DMC conveyance conditions that had restricted use of the Jones Pumping Plant to less than its design capacity, potentially restoring as much as 35,000 AF of average annual deliveries to the CVP. Reclamation and DWR prepared an EIS/EIR for the intertie and a Record of Decision (ROD) was completed December 28, 2009.

South-of-Delta Accelerated Water Transfer Program The Central Valley Project Improvement Act (CVPIA) was signed into law in 1992 to mandate changes in management of the CVP. In addition to protecting, restoring, and enhancing fish and wildlife, one of the other purposes of the CVPIA is to increase water-related benefits provided by the CVP to the State of California through expanded use of voluntary water transfers and improved water conservation. To assist California urban areas, agricultural water users, and others in meeting their future water needs, Section 3405(a) of the CVPIA authorizes all individuals or districts who receive CVP water under water service or repayment contracts, water rights settlement contracts or exchange contracts to transfer, subject to certain terms and conditions, all or a portion of the water subject to such contract to any other California water users or water agency, State or Federal agency, Indian Tribe, or private non-profit organization for project purposes or any purpose recognized as beneficial under applicable State law.

After enactment of the CVPIA, Reclamation has historically acknowledged water transfers and/or exchanges between CVP contractors geographically situated within the same region and

who are provided water service through the same CVP facilities under an Accelerated Water Transfer Program. In 2010, Reclamation approved the continuation of the South-of-Delta Accelerated Water Transfer Program through February 29, 2016. Reclamation prepared EA-10-051, *Accelerated Water Transfers and Exchanges, Central Valley Project, South of Delta Contractors 2011-2015* and a FONSI was signed on February 14, 2011.

Exchange Contractors 25-Year Water Transfer Program The San Joaquin River Exchange Contractors are currently transferring up to 130,000 AF of their substitute water to Reclamation under a 10-year (March 1, 2005, through February 28, 2014) water transfer program. Under the current program, the San Joaquin River Exchange Contractors develop sources of water to temporarily reduce the need for delivery of substitute water by Reclamation. The sources of water developed by the San Joaquin River Exchange Contractors include a maximum of 80,000 AF from conservation, tailwater recapture, and groundwater as well as a maximum of 50,000 AF from voluntary temporary land fallowing. For each AF of water developed by the San Joaquin River Exchange Contractors, an in-kind amount of water is considered acquired and left within the CVP for Reclamation to deliver to CVP contractors or wildlife areas. Reclamation and the San Joaquin River Exchange Contractors prepared an EIS/EIR for the 10 year program and a ROD was completed March 23, 2005. As the program will expire soon, Reclamation and the San Joaquin River Exchange Contractors have proposed extending the program for another 25 years. Reclamation prepared an EIS for the transfer program and a ROD was completed July 30, 2013.

Meyers Farms Groundwater Banking Program The Meyers Family Farm Trust pursued development of the Meyers Farm Water Bank to store water in above-normal and wet years for later use during below-normal, dry, and critically-dry years. Under the banking program, CVP and non-CVP water to be banked flows from the Mendota Pool into five recharge ponds. Banked water is later extracted and pumped into Mendota Pool for exchange with Reclamation. The original project was analyzed in EA-05-09 *Meyers Farm Water Banking Project – Mendota, California* and a FONSI signed May 9, 2005. Two supplemental EAs and FONSIs for the project were prepared to increase the annual extraction rate and to add Banta-Carbona Irrigation District's non-CVP surface water to the banking program. In addition, Reclamation has recently received a request to increase the rate of extraction from Meyers Bank from 6,316 AFY to 10,526 AFY, to amend the cumulative total amount of CVP water banked from 35,000 AF to 60,000 AF at any given time, to increase the amount of Banta Carbona Irrigation District's non-CVP water conveyed in the DMC for banking from 5,000 AFY to 10,000 AFY, to approve the annual transfer of up to 5,000 AFY of Banta Carbona Irrigation District's CVP water in-lieu of their non-CVP water for banking at Meyers Bank, and to deliver banked water via exchange to other areas within the service area of San Luis Water District. The requested changes to the exchange agreement were analyzed in EA-11-013 entitled *Amendment to the Meyers Groundwater Banking Exchange Agreement* and a FONSI was signed on September 16, 2013.

Groundwater Pump-in Programs for San Luis Unit and Delta Division Contractors Under this project, participating CVP contractors within the Delta Division and San Luis Unit of the CVP could pump up to 50,000 AF total of groundwater into the DMC between March 1, 2012 through February 28, 2014 (Contract Years 2012 and 2013). The project was analyzed in EA-12-005 *Two-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of*

Groundwater in the Delta-Mendota Canal – Contract Years 2012 through 2014 (March 1, 2012 – February 28, 2014) and a FONSI was completed on May 8, 2012. The action was previously conducted between March 1, 2010 through February 28, 2012 (Contract Years 2010 and 2011) and analyzed in EA-09-169. It is likely that these actions will be requested in the future.

Mercy Springs Water District and Fresno Slough Water District Multi-Year Transfers to Angiola Water District Reclamation has received a request from Mercy Springs and Fresno Slough to approve the annual transfer up to 1,300 AFY of Mercy Springs' CVP water and up to 4,000 AFY of Fresno Slough's CVP water over a nine-year period to Angiola Water District. The proposed transfers were analyzed in EA-12-021 entitled *Mercy Springs Water District and Fresno Slough Water District Multi-Year Transfers to Angiola Water District* and a FONSI was signed on August 23, 2012.

Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District Reclamation has executed five-year Warren Act contracts with Banta-Carbona Irrigation District, BBID, Patterson Irrigation District, and West Stanislaus Irrigation District for the conveyance and storage per contractor of up to 10,000 AFY of non-CVP surface water in the DMC through February 28, 2016. The project was analyzed in EA-09-156, *Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District* and a FONSI was signed on March 8, 2010. In April 2012, Reclamation received a request from BBID to approve delivery of up to 5,000 AFY of their non-CVP water to Westlands Water District via the San Luis Canal. The additional points of delivery were analyzed in supplemental EA-12-052 Additional *Point of Delivery for Byron Bethany Irrigation District's non-Central Valley Project Water to Westlands Water District* and a FONSI was signed on June 15, 2012.

Byron Bethany Irrigation District Long-term Water Transfer to Zone 7 BBID has entered into a long-term water transfer agreement with Zone 7 of the Alameda County Flood Control and Water Conservation District. Under the agreement, Zone 7 may purchase up to 5,000 AF of surplus water, with a minimum delivery of 2,000 AF from BBID for use within Zone 7. Surplus water is made available from BBID through temporary fallowing, permanent conversion of farmland, and water conservation. The Zone 7 water transfer was accounted for in a water supply study conducted by BBID prior to the 1999 annexation of 2,006 acres of Tracy Hills into BBID's RWSA2.

Reclamation's Proposed Action is the execution of a long-term contract and license with BBID for introduction of up to 4,500 AF, including up to 225 AFY to cover conveyance losses, of their non-CVP water to the DMC at MP 3.32R for exchange with Reclamation. Exchanged water will either be delivered to MP 15.88L or stored within San Luis Reservoir for later delivery as described previously. Introduction and storage of non-CVP water or exchanged water, including the Proposed Action, is subject to available capacity and operation constraints.

BBID's non-CVP water under the Proposed Action is approximately 9 percent of their pre-1914 water rights entitlement. Combined with the five year Warren Act contract described above, BBID has proposed to introduce for transfer or exchange up to 9,725 AFY of their pre-1914

entitlement into the DMC which is approximately 19 percent of their entitlement and will not impact BBID's ability to service other agricultural or urban water users; therefore, the Proposed Action will not cumulatively impact surface water resources within BBID.

Water service actions, like those described above, do not result in increases or decreases of water diverted from rivers or reservoirs. Each water service transaction involving CVP and non-CVP water undergoes environmental review prior to approval. The Proposed Action and No Action alternative and other similar projects will not interfere with the projects listed above, nor will they hinder the normal operations of the CVP and Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat. Neither alternative, when added to other water service actions, will result in cumulative effects to water resources beyond historical fluctuations and conditions.

In recent years, land use changes within the San Joaquin Valley have involved the urbanization of agricultural lands. These types of changes are typically driven by economic pressures and are as likely to occur with or without the Proposed Action. In addition, land use within the Proposed Action area will be returned to its current use once construction was complete. Accordingly, no cumulative significant impacts on land use are anticipated.

Numerous activities continue to eliminate habitat for listed and proposed threatened and endangered species in the San Joaquin Valley. Habitat loss and degradation affecting both animals and plants continue as a result of urbanization, oil and gas development, road and utility right-of-way management, flood control projects, climate change, grazing by livestock, and agricultural practices. Listed and proposed animal species are also affected by poisoning, shooting, increased predation associated with human development, and reduction of food sources. All of these nonfederal activities are expected to continue to affect listed and proposed species in the San Joaquin Valley. The Proposed Action will temporarily disturb 6.3 acres of California red-legged frog and California tiger salamander uplands dispersal habitat during construction activities. This habitat will be returned to its preexisting condition once construction is complete. However, the Proposed Action will eliminate 0.73 acres of non-native grassland habitat that is considered suitable habitat for San Joaquin kit fox and which could also be utilized by California red-legged frog and California tiger salamander. BBID will implement the appropriate avoidance and minimization measures, including compensatory habitat, to address impacts to habitat as needed to minimize potential cumulative impacts.

The only cultural resources identified within the APE are four water conveyance features (DMC, Canal 70, Canal 120, and Canal 155). As none of these will be impacted by the Proposed Action and environmental protection measures have been included in the Proposed Action to minimize impacts should any cultural resources be uncovered during construction, there will be no cumulative significant impacts to cultural resources.

The Proposed Action, when added to other existing and proposed actions, may have a slight beneficial contribution to socioeconomics as it will help support and maintain jobs; however, these will be within historical variations and will not contribute to cumulative impacts.

The Proposed Action, when added to other existing and proposed actions, will not contribute to cumulative impacts to air quality since construction activities are short-term and well below *de minimis* thresholds. In addition, BBID has incorporated control measures in order to reduce any potential cumulative air quality impacts associated with the Proposed Action.

GHG impacts are considered cumulative impacts. Estimated annual CO_{2e} emissions for operation of BBID's Pump Station 3 are 752 metric tons per year, which is well below the 25,000 metric tons per year threshold for reporting GHG emissions. As a result, the Proposed Action is not expected to contribute cumulative significant impacts to global climate change. CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change will be addressed within Reclamation's operation flexibility and therefore water resource changes due to climate change will be the same with or without the Proposed Action.

As there will be no indirect or direct impacts to Indian Sacred Sites, Indian Trust Assets, or minority or disadvantaged populations, there will be no cumulative impacts to these resources.

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Long-term Contract for the Exchange of Water between the Bureau of Reclamation and Byron-Bethany Irrigation District – Delta Division and San Luis Unit

EA-09-149

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

December 2013

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Section 1 Introduction

The Bureau of Reclamation (Reclamation) provided the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment (EA) between October 1, 2012 and October 31, 2012. No comment letters were received. Changes from the draft EA that are not minor editorial changes are indicated by vertical lines in the left margin of this document.

1.1 Background

Byron-Bethany Irrigation District (BBID) is a multicounty special district, established under state law primarily to provide water to lands in Alameda, Contra Costa, and San Joaquin Counties. BBID has two water service areas: a Central Valley Project (CVP) water service area (approximately 5,800 acres) that receives CVP water and the Bryon Service area (approximately 16,300 acres) which is served by non-CVP water (Figure 1-1). BBID is located in the vicinity of the City of Tracy (City) and portions of the district overlap with the current City boundaries as well as the City's sphere of influence (Figure 1-1). Although BBID is primarily an agricultural district, urban development has increased conversion of land use from agriculture to municipal and industrial (M&I). Since the 1990s, approximately 6,000 acres of land in BBID have been converted to M&I use. Under agreements with the City, BBID provides raw water for treatment and retail delivery to a portion of BBID's M&I customers located within the area of overlapping City and BBID boundaries.

The approximately 6,000 acre Tracy Hills Development (Tracy Hills) has been proposed for construction in the southwest portion of the City. The development would include up to 5,499 dwelling units, ranging from estate lots to apartments (Tracy Hills Specific Plan Environmental Impact Report 1997). In 1998, the City annexed Tracy Hills and in 1999, 2006 acres of Tracy Hills was annexed into BBID's Raw Water Service Area 2 (RWSA2). As RWSA2 is located within BBID's Byron Service area, BBID intends to use a portion of their pre-1914 water right entitlement to meet the water needs of the development (Figure 1-1). Buildout of Tracy Hills is expected to occur over a period of 30 years, beginning in 2014.

The 1999 BBID annexation agreement identified a potential need in RWSA2 for up to 6,000 acre-feet (AF) per year (AFY) of water. However, the annexation agreement was amended in 2003 in order to clarify the financial terms and water delivery options for Tracy Hills. Included among the changes to the annexation agreement was a reduction in the Tracy Hills water demand and, thus, a reduction in the maximum BBID allocation of water needed in RWSA2. In accordance with the 2003 amended BBID annexation agreement, a maximum of 4,500 AFY of raw water is required to meet M&I purposes within RWSA2.

On May 28, 2003, BBID and the California Department of Water Resources (DWR) executed an agreement addressing their respective operations, including an acknowledgement by DWR of BBID's right to divert up to 50,000 AFY of water from the San Joaquin-Sacramento River Delta (BBID and DWR 2003). The 2003 agreement reaffirms BBID's current point of diversion in the

Intake Channel (Milepost [MP] 1.83) to the Harvey O. Banks Pumping Plant. The 2003 agreement acknowledges that BBID may "furnish water…to the Tracy Hills portion of the District" (BBID and DWR 2003). Pursuant to the 2003 agreement with DWR, delivery of water under BBID's pre-1914 water right to Tracy Hills is limited to months during the historic irrigation season (March through October). In order to deliver water to the development over a 12-month period, BBID has requested that Reclamation enter into a long-term exchange contract for introduction of up to 4,500 AF of their pre-1914 water right water (non-CVP water), plus up to an additional 225 AFY to cover conveyance losses, at MP 3.32R on the Delta-Mendota Canal (DMC). BBID has also requested a long-term license for placement, maintenance, and operation of a pipeline within Reclamation's rights-of way (ROW).

1.2 Need for the Proposed Action

Diversion of that portion of BBID's non-CVP water needed to serve BBID's RWSA2 is limited by agreement to the historic irrigation season as described above; however, a reliable 12-month annual water supply is needed, and could be facilitated through implementation of the Proposed Action with Reclamation.

1.3 Scope

This EA was prepared to analyze the possible impacts of entering into a long-term (up to 40 year) exchange contract and long-term (up to 40 year) license with BBID for placement, maintenance, and operation of a pipeline within Reclamation's ROW associated with the introduction of BBID's non-CVP water to the DMC at MP 3.32R.

This EA does not analyze the impacts of the build-out of Tracy Hills because Reclamation does not have land use authority or jurisdiction over the development. The City, which has land use authority over the Tracy Hills Development Project, has approved the Tracy Hills Specific Plan. Impacts relating to the Tracy Hills Development were analyzed separately by the City under a Final Environmental Impact Report (EIR) and certified by the City January 1, 1998 (City of Tracy 1997).

1.4 Resources of Potential Concern

This EA will analyze the affected environment of the Proposed Action and No Action Alternative in order to determine the potential direct and indirect impacts and cumulative effects to the following resources: Water Resources, Land Use, Biological Resources, Cultural Resources, Indian Sacred Sites, Indian Trusts Assets, Socioeconomic Resources, Environmental Justice, Air Quality, and Global Climate.

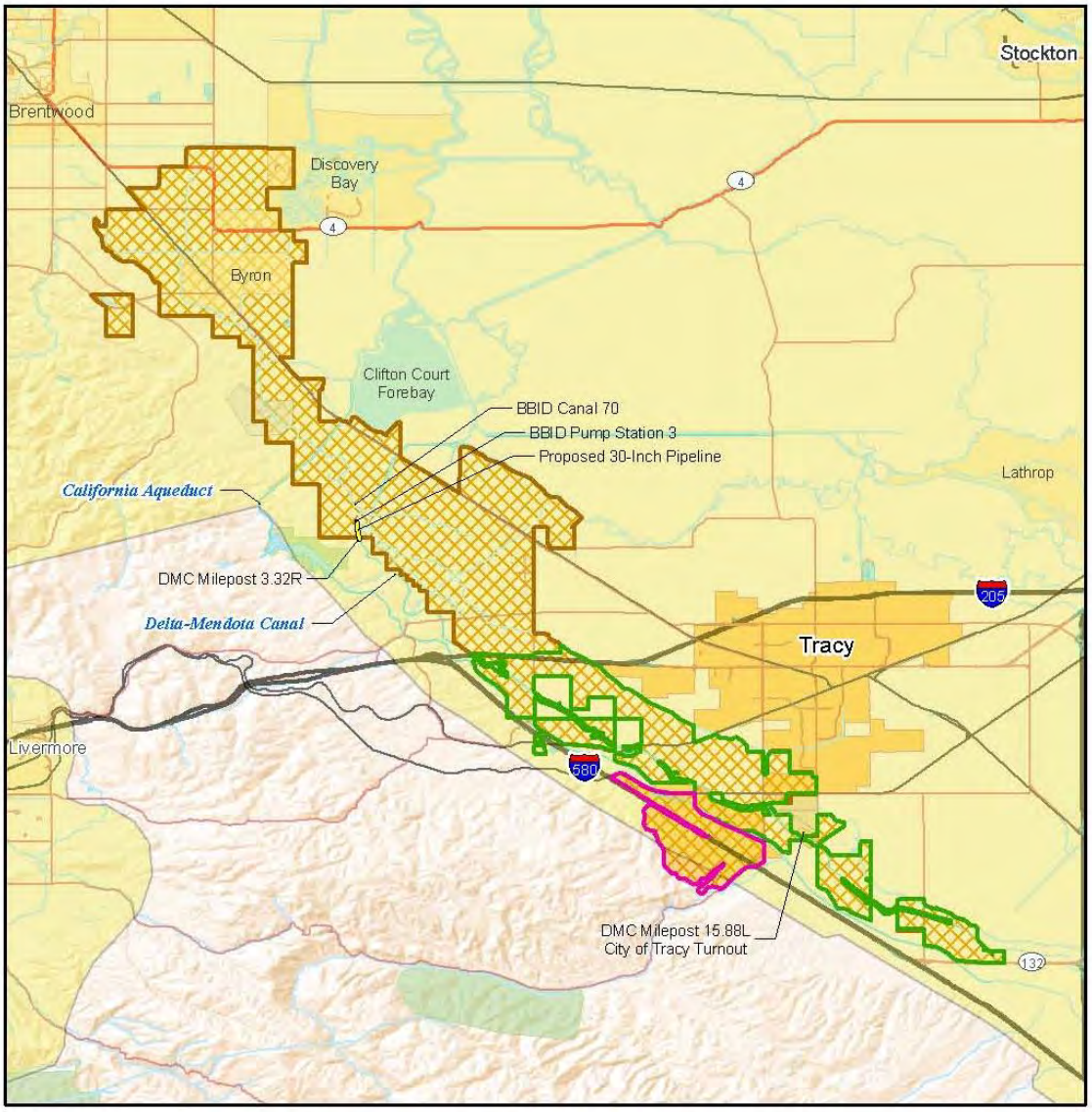


Figure 1-1 Proposed Action Area

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Section 2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Reclamation would not execute a long-term (up to 40 year) exchange contract with BBID for introduction of up to 4,500 AFY, plus up to an additional 225 AFY to cover conveyance losses, of their non-CVP water. In addition, Reclamation would not execute a long-term (up to 40-year) license for construction of BBID's new discharge pipeline within Reclamation ROW at MP 3.32R of the DMC.

Alternative water supplies were discussed in Section 4.3.4 of the *Tracy Hills Specific Plan* and Appendix B of the *Tracy Hills Specific Plan* Final Environmental Impact Report (City of Tracy 1997). It is likely that a water supply among those that were evaluated in the Final EIR would be developed to meet the needs of the proposed Tracy Hills development. All other conditions are assumed to remain the same as existing conditions.

2.2 Proposed Action

Reclamation proposes to execute a long-term (up to 40-year) exchange contract and a long-term (up to 40-year) license with BBID as described below.

2.2.1 Exchange Contract

BBID would introduce up to 4,500 AFY, plus up to an additional 225 AFY to cover conveyance losses, of its non-CVP water at MP 3.32R between March and October to meet Tracy Hills demand. All introduced water would be exchanged with Reclamation at the point of introduction. Exchanged water would either be delivered to MP 15.88L for treatment at the City's water treatment plant prior to delivery to Tracy Hills or would be stored within San Luis Reservoir for later delivery. Exchanged water may only be used within the Consolidated Place of Use as shown in Appendix A. As the exchanged water stored in San Luis Reservoir cannot be pumped upstream for delivery to MP 15.88L when called upon, the stored exchanged water would be used by Reclamation to meet CVP demands and a like amount of CVP water would be delivered to MP 15.88L.

Introduction of BBID's non-CVP water and storage of exchanged water would be scheduled annually with Reclamation and would be subject to excess capacity, operational constraints, and environmental requirements, as applicable. No Project Use Power would be used for the Proposed Action.

2.2.2 Long-term License

Reclamation proposes to execute a long-term (up to 40-year) license with BBID. The license would allow BBID to access federal land to install an aboveground pipeline at the DMC as well as maintain and operate the structure on Reclamation's ROW. No construction or modifications to the DMC are required for the Proposed Action; however, improvements to existing BBID facilities as well as a new underground pipeline would be required for introduction of BBID's non-CVP water to the DMC (Figure 2-1). Specific construction activities would include the following:

Pump Station

Proposed Pump Station 3 improvements include a new pump, motor, and associated facilities. The current Pump Station 3 site would need to be modified slightly by installing a retaining wall to improve access. The existing 16-cubic foot per second (cfs) pump and motor would be replaced with a larger 20-cfs pump and approximately 450-horsepower motor to accommodate increased pumping requirements. Structural modifications would include improvements to the existing wetwell structure and associated features to allow for installation of an automated trash rake and support required O&M activities. A new precast building would replace and be in the same location as the existing motor control center building. A new reinforced concrete pad and larger transformer would replace the existing pole-mounted transformers and would be located adjacent to the existing transformers. See Appendix B for preliminary designs.

Proposed Pipeline

The proposed 30-inch diameter pipeline would be approximately 0.4 mile long. A geotechnical investigation would be performed prior to construction. The investigation would consist of excavating up to three test pits equally spaced along the pipeline route at a depth of 6 to 7 feet and a top area of 6 by 10 feet. The pits would be backfilled after soil samples were obtained and a report would be prepared to summarize the results of the investigation.

Pipeline material would be High Density Polyethlene (HDPE). The pipeline would be aligned and buried in a general southern direction directly between Pump Station 3 and the DMC. A reinforced concrete flow meter vault would be constructed where the pipeline passes adjacent to Canal 155 within the temporary construction easement for the pipeline. A turnout would be provided to deliver water at the intersection with Canal 155 to supplement the existing Canal 155 pump (11 cfs) as needed. Canal 155 improvements would include approximately 200 linear feet of concrete lining to mitigate potential slope stability issues.

The proposed pipeline would transition from belowground to aboveground at the DMC and discharge near the headwall of the DMC. A concrete pad would likely be poured where the pipe leaves the ground. Pipe support would likely be installed to support the aboveground pipe as well. The discharge would consist of a 45 degree elbow, angled toward the DMC and would be approximately three feet above the high water level of the DMC to prevent siphoning. See Appendix B for preliminary designs.

An underground corrugated pipe currently connects Canal 155 to an existing stock pond located west of Canal 155. Water leaves Canal 155 through a manmade feature that supplies a short surface flow of water before it goes back into the underground corrugated pipe and resurfaces to continue surface flow into the stock pond. The underground pipe would be temporarily removed

during construction and replaced above the proposed pipeline after its installation. Water would be rerouted over the trench to the stock pond during construction. After construction, the entire length of the corrugated pipeline would be restored to its existing condition.

The need for dewatering trenches along the pipeline route or near the DMC is not anticipated; however, if needed, trenches would be dewatered using portable sump pumps in accordance with a Stormwater Pollution Prevention Plan (SWPPP) prepared for the proposed pipeline.

Access and Construction

Access to the construction site would be via an existing gravel access road connecting Kelso Road to the pumping plant and proposed laydown area. Approximately 250 yards of the existing access road directly north of Pump Station 3 would be stabilized with 30-foot-wide by 4-inch-thick layer of compacted aggregate base to allow for daily construction traffic (Figure 2-1).

The total area of disturbance required to complete the proposed improvements at Pump Station 3 is approximately 0.8 acre, of which 0.5 acre would be permanent disturbance. The proposed disturbance and laydown areas are shown on Figure 2-1. In addition, an approximately 2-acre laydown and stockpiling area would also be required adjacent to and west of Pump Station 3. The laydown area would be used to temporarily store contractor equipment, spoils, and other materials, including pipe. Installation of the pipeline would require a temporary 60-foot-wide disturbance area to accommodate the actual pipe trench, construction equipment, excavated materials, pipe laydown, and access. Access along the pipeline corridor would be provided within the proposed 60-foot temporary work space required to install the pipeline.

There is little vegetation that would require clearing. The use of pesticides is not anticipated. Topsoil (if evident) would be stripped for the trench surface area and stockpiled to be returned later to the trench surface.

The integrity (quantity and quality) of adjacent aquatic habitat would be maintained through the use of a bypass to temporarily divert water flowing to the adjacent stock pond through the existing corrugated metal pipe that crosses the proposed pipeline as described previously.

Staging the site would take approximately one month, which would include stabilizing 0.5 acres of the access road as well as demolition of the existing pump station facilities. Clearing and grubbing the pipeline corridor would take approximately two weeks. Work would begin on pipeline installation in early summer; Pump Station 3 improvements would begin in early winter (Figure 2-1).

Onsite construction equipment would include one excavator, one loader, one dump truck, one compactor, and one small crane. The approximate volume of earthwork required would be about 600 cubic yards of total cut, which would be spread out along the pipeline corridor upon completion. It is anticipated that no borrow material (from onsite sources) would be needed, but import material might be required for fill around the pipeline.



Figure 2-1 Construction Details

Construction of the Proposed Action facilities is anticipated to take approximately 7 to 9 months to complete and is scheduled to be initiated in early 2014. Pipeline installation is anticipated to take approximately 4 months, and work associated with the pump station improvements would likely take 3 to 4 months. Construction activities would be limited to weekdays during business hours, approximately between 7 a.m. to 7 p.m.

Operation and Maintenance

Operation and maintenance of the proposed pipeline by BBID is expected to be limited to repairing leaks, if any, as well as any requirements provided for under the long-term license for the portion of the pipeline within Reclamation's ROW. Existing roads (dirt and gravel) would be used for access when needed.

Power to operate and maintain BBID's facilities would be supplied by BBID. As described previously, no Project-Use Power would be used for the Proposed Action.

2.2.3 Environmental Commitments

BBID shall implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 2-1).

Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports and monitoring shall be submitted to Reclamation.

Table 2-1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Water Resources	Prior to construction, a Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer would prepare a SWPPP and a Qualified SWPPP Practitioner would implement the SWPPP in order to minimize the amount of pollutants discharged in storm water from the site.
Water Resources	BBID must comply with Reclamation's then current water quality standards (see Appendix C for Reclamation's most recent standards).
Biological Resources	At least 30 calendar days prior to ground disturbance, BBID shall (a) purchase 8.49 acres compensation land for the loss of habitat, place a U.S. Fish and Wildlife Service (Service) approved conservation easement on that land, and arrange for Service approved management and endowment, or (b) purchase and endow compensation land with a Service approved conservation bank.
Biological Resources	At least 15 days prior to any ground disturbing activities; the applicant will submit to the Service, for review, the qualifications of the proposed biological monitor(s). Upon Service approval, the biologist(s) will be given the authority to stop any work that may result in the take of listed species. If the on-site biologist(s) exercises this authority, the Service and Reclamation will be notified by telephone and electronic mail within 1 working day. The on-site biologist(s) will be the contact for any employee or contractor who might inadvertently kill or injure a California red-legged frog, San Joaquin kit fox or California tiger salamander, or anyone who finds a dead, injured, or entrapped individual of these species. The on-site biologist(s) will possess a working cellular telephone whose number will be provided to the Service. Should take occur of a California red-legged frog, San Joaquin kit fox or California tiger salamander individual, the Service-approved biologist(s) will contact Reclamation, the Service, and the California Department of Fish and Wildlife (CDFW) within 24 hours of the discovered occurrence.
Biological Resources	Preconstruction surveys for the California red-legged frog, San Joaquin kit fox, and the California tiger salamander will be performed immediately prior to groundbreaking activities. A Service-approved biologist will conduct the surveys and results will be provided to Reclamation for review. If, at any point, activities associated with the project cease for more than 15 consecutive days, additional preconstruction surveys will be conducted prior to the resumption of these actions.

Resource	Protection Measure
Biological Resources	Preconstruction surveys for San Joaquin kit fox dens will be conducted within a minimum of 200 feet of the project area. Results will be provided to Reclamation for review. Any natal dens encountered will be avoided, in consultation with the Service, by a minimum of 100 feet for known dens and a minimum of 50 feet for potential dens. Non-natal dens will be monitored for a minimum of 3 days to determine their current use. If no San Joaquin kit fox activity is observed during this period, the den will be destroyed to prevent future use by San Joaquin kit fox. If San Joaquin kit fox activity is observed at the den during this period, the den will be monitored for at least 5 consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den will be discouraged during this period by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied will it be excavated under the direction of a Service-approved biologist. If the animal is still present after 5 or more consecutive days of plugging and monitoring, the den will be excavated when, as determined by a Service-approved biologist, it is temporarily vacant (for example, during the San Joaquin kit fox's normal foraging activity). Potential dens will be temporarily marked for avoidance by a minimum of 50 feet and further studied by a Service-approved biologist. Destruction of potential dens will occur only after a Service-approved biologist determines that no San Joaquin kit fox are inside. To determine the presence of San Joaquin kit fox, the potential den will be fully excavated to the end by either hand or machinery. Once determined empty, the den will be filled with dirt and compacted to ensure that San Joaquin kit fox cannot enter or use the den during the construction period. If any potential den is determined to be currently or previously used by San Joaquin kit fox, the measures described above for natal and non-natal dens (as applicable) will be followed.
Biological Resources	A Service approved biologist will monitor any California tiger salamanders or California red-legged frogs observed during preconstruction surveys and submit a report to Reclamation for review. Any California tiger salamander or California red-legged frog would be allowed to passively leave the site or, if determined necessary by a Service-approved biologist, removed from the work area(s) and relocated to an appropriate location.
Biological Resources	Prior to the start of groundbreaking activities, all construction personnel will receive worker education training on listed species and their habitats by a Service-approved biologist or a video recording of said biologist. The importance of these species and their habitat will be described to all employees as well as the minimization and avoidance measures that are to be implemented as part of the project. An educational brochure containing color photographs of all listed species in the work area(s) will be distributed to all employees working within the project site(s). Workers will also be informed of appropriate measures to take should a toxic materials spill occur. A list of employees who attend the training sessions will be maintained by the applicant to be made available for review by the Service and the CDFW upon request. Contractor training will be incorporated into construction contracts and will be a component of weekly project meetings.
Biological Resources	Wildlife exclusion fencing will be established around the perimeter of the 0.8-acre pump facility, 2-acre laydown area, 0.5-acre access road, and 3.73-acre pipeline corridor. All fencing will be, at minimum, buried 6 inches into the ground and extend 36 inches above ground level to discourage listed animals from entering the site. Exclusion fencing will remain around the specified work areas for the duration of ground disturbing activities.
Biological Resources	A Service-approved biologist will be onsite at all times during initial ground-breaking activities until wildlife exclusion fencing is installed around the pump facility, access road, laydown area, and pipeline corridor. Upon completion of these activities, a Service-approved biologist will inspect all wildlife and wetland exclusion fencing as well as construction zone fencing or flagging associated with the specified areas each week, at minimum, for the duration of construction to ensure fencing integrity. A Service-approved biologist will also survey wildlife exclusion and construction perimeter fencing on a daily basis to look for tears and to ensure no California tiger salamander or California red-legged frog have become trapped along the fence line. BBID will maintain and/or replace these

Resource	Protection Measure
	barriers immediately if necessary.
Biological Resources	All work areas and designated temporary travel corridors will be clearly delineated via flagging, signage, or other similar methods to minimize construction disturbances beyond the work area. Vehicles will only enter temporary travel corridors when dry soil conditions exist to avoid the creation of tire ruts or other impacts to the ground surface.
Biological Resources	If vehicles must access temporary travel corridors during wet soil conditions during winter months, then BBID would implement stabilization measures (i.e. construction mats) to prevent rutting in the temporary travel corridors.
Biological Resources	A Service-approved biologist and the construction manager will be notified immediately if a California tiger salamander, California red-legged frog, or San Joaquin kit fox are observed anywhere within the property. If the observed animal is a California tiger salamander or California red-legged frog, a Service-approved biologist will monitor these animals and determine if they are in danger of take from construction activities, predators, or entrapment. If they are, all construction in the immediate area will cease until the animal is allowed to passively leave the site. If this is not possible, a Service-approved biologist will remove the California tiger salamander or California red-legged frog from the property in a cool, moist container and relocate these individuals to an appropriate location. Upon release of these animals, a Service-approved biologist will monitor the individual until it is determined that it is in no imminent danger. If a San Joaquin kit fox is observed on the site, construction activities that will directly affect the individual will cease until the animal passively leaves the site. Field survey forms will be completed for all California tiger salamander, California red-legged frog, or San Joaquin kit fox observations. These forms will be submitted to Reclamation and to the California Natural Diversity Data Base (CNDDB) prior to completion of construction activities.
Biological Resources	To the maximum extent practicable, fossorial mammal burrows that may provide refugia habitat for California tiger salamander and California red-legged frog will be avoided during the construction and long-term operation of the pipeline. Exclusion fence and/or plywood will be placed around areas with high concentrations of burrows during the course of construction activities to avoid the destruction of these features.
Biological Resources	All potentially occupied small mammal burrows and other refugia suitable for California tiger salamander estivation habitat (e.g., underground holes, cracks, or niches) within fenced construction areas will be excavated in order to salvage and relocate California tiger salamander that would otherwise be harmed. A mini-excavator and hand tools will be used to excavate these burrows, under the supervision of a Service-approved biologist.
Biological Resources	A protocol-level field survey (Appendix F) for burrowing owls would be completed prior to ground disturbance. Measures for avoiding “take” of burrowing owl as described in Appendix F would be implemented during construction. Specific attention should be provided to project schedule and seasonal constraints associated with clearance of burrows (i.e., passive relocation) that may be occupied by nesting burrowing owls.
Biological Resources	Topsoil removed from the temporary laydown area, access road, pump facility, and pipeline trenching locations will be stockpiled and reserved for the duration of construction activities. Upon completion of these actions, temporarily disturbed areas will be graded and restored with reserved topsoil to facilitate the re-establishment of fossoral mammal populations and upland listed species habitats. Any surplus topsoil will be hauled off site and disposed of at an appropriate facility.
Biological Resources	Potential effects to water quality from contaminated runoff-or airborne dust will be avoided by the implementation of standard erosion and/or sedimentation control devices, fugitive dust management, avoidance, and other best management practices (BMPs) prescribed by BBID's approved SWPPP and Fugitive Dust Mitigation Plan. As-needed dust control measures (e.g., wetting dry ground) will minimize airborne transmission of soil particles into aquatic habitats. Equipment fueling, maintenance, and repairs as well as storage of hazardous materials such as fuels and lubricants will be limited to areas 250 feet or greater from any wetlands or drainage areas. Other hazardous material BMPs, including but not limited to secondary containment and not topping off fuel tanks will be enforced to prevent soil contamination. Prior to the start of construction activities, an

Resource	Protection Measure
	emergency spill plan will be developed as part of SWPPP requirements and will be readily available to all employees throughout the duration of work activities. This plan will include appropriate prevention and cleanup measures for both upland and aquatic areas.
Biological Resources	Plastic monofilament netting or similar material will not be used for erosion control matting at the project site to avoid the entanglement or entrapment of California tiger salamander or California red-legged frog individuals.
Biological Resources	To prevent the accidental entrapment of listed species during construction, all excavated holes or trenches deeper than 6 inches will be covered at the end of each workday with plywood or similar materials. Foundation trenches or larger excavations that cannot easily be covered will be ramped at the end of the workday to allow trapped animals an escape method. Prior to the filling of such holes, these areas will be thoroughly inspected for listed species by a Service-approved biologist. In the event of a trapped animal is observed, construction will cease until the individual has been relocated to an appropriate location and Reclamation notified.
Biological Resources	All construction pipes, culverts, or similar structures greater than 4 inches in diameter that are stored at the laydown area overnight will be securely capped before storage or will be thoroughly inspected for San Joaquin kit fox and other sensitive species prior to pipe installation or capping to avoid entrapment or injury of this animal. If a San Joaquin kit fox or other sensitive species is discovered inside a pipe, that section of pipe will not be moved until Reclamation, the Service, and CDFW have been contacted by a Service-approved biologist to determine the appropriate course of action.
Biological Resources	No discharge of pollutants from vehicle and equipment cleaning, maintenance, or repair will be allowed into storm drains, wetlands, or watercourses. No discharge of sediment-laden water from project-related activities will be allowed into storm drains, wetlands, or watercourses.
Biological Resources	All trash and debris within the work area will be placed in containers with secure lids before the end of each work day in order reduce the likelihood of predators being attracted to the site by discarded food wrappers and other rubbish that may be left on-site. Containers will be emptied as necessary to prevent trash overflow onto the site and all rubbish will be disposed of at an appropriate off-site location.
Biological Resources	To the maximum extent practicable, construction will only occur between 7 a.m. and 7 p.m. to limit the need for night lighting, which could attract California tiger salamanders or California red-legged frogs into the construction area and/or provide additional light for nighttime predators, increasing mortality of these animals.
Biological Resources	All vehicles entering the work area(s) will be confined to existing roads or approved temporary routes. Speed limits within the work area(s) will be limited to 15 miles per hour. Trash dumping, firearms, and pets will be prohibited in the project area(s).
Biological Resources	Upon completion of construction activities, all debris and materials associated with construction will be removed and areas not needed for the long-term operation of the site will be re-contoured to match adjoining grades. Post construction BMPs (as prescribed in the SWPPP) will be implemented, including reseeding all areas as necessary to facilitate timely vegetative restoration.
Cultural Resources	If cultural resources or materials are discovered during ground-disturbing activities, the work near the discovery would cease. Reclamation's archaeologist would be contacted and the area would be protected until the find is evaluated by a qualified archaeologist.
Cultural Resources	If human remains are encountered, the County Coroner would be notified of the find immediately. If the remains are determined to be Native American, the County Coroner would notify the Native American Heritage Commission, which would determine and notify a most likely descendant. The most likely descendant would complete an inspection within 48 hours of notification by the Native American Heritage Commission. The most likely descendant may recommend scientific removal and analysis of human remains and items associated with Native American burials.

Resource	Protection Measure
Paleontological Resources	If fossil remains are discovered during ground-disturbing activities, the work near the discovery would cease and the area would be protected until the find is evaluated by a qualified paleontologist. The paleontologist would be responsible for sampling and data recovery, if needed; museum storage coordination for specimens and data recovered; and reporting.
Air Quality and Global Climate	The following measures would be implemented to reduce fugitive dust emissions: • Idling times would be minimized by either shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure Title 13, Section 2485 of California Code of Regulations). • Clear signage would be provided for construction workers at all access points. • Exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) would be watered two times per day. • Haul trucks transporting soil, sand, or other loose material offsite would be covered. • Visible mud or dirt track-out onto adjacent public roads would be removed using wet power vacuum street sweepers at least once per day. Dry power sweeping would be prohibited. • Construction equipment would be maintained and properly tuned in accordance with manufacturer's specifications. Equipment would be checked by a certified mechanic and determined to be running in proper condition prior to operation. • Vehicle speeds on unpaved roads would be limited to 15 mph.
Hazards and Hazardous Materials	Prior to construction, a Qualified SWPPP developer would prepare a SWPPP that would include best management practices for managing and handling hazardous materials. The SWPPP would define protocol for emergency procedures, handling, and disposal of hazardous materials if an accidental spill occurs during construction.

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Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Water Resources

3.1.1 Affected Environment

Central Valley Project

CVP water is used for the irrigation of agricultural areas, for M&I uses, for the restoration of fisheries and aquatic habitat in the waterways that have been affected by water development, for wildlife refuges, and for other purposes. The largest use of CVP water is for agricultural irrigation. The greatest demand for irrigation water occurs in mid- to late summer, as crops mature and crop water use increases. During the winter, farmers also use water for frost control and pre-irrigation of fields to saturate the upper soil.

The amount of CVP water available each year for contractors is based, among other considerations, on the storage of winter precipitation and the control of spring runoff in the Sacramento and San Joaquin River basins. Reclamation's delivery of CVP water diverted from these rivers is determined by state water right permits, judicial decisions, and state and federal obligations to maintain water quality, enhance environmental conditions, and prevent flooding.

Delta Division The Delta Division provides for the transport of water through the central portion of the Central Valley, including the Sacramento-San Joaquin Delta (Delta). The main features of the division are the Delta Cross Channel, Contra Costa Canal, Jones Pumping Plant, and the DMC, constructed and operated by Reclamation. This system provides full and supplemental water, as well as temporary water service, for a total of about 380,000 acres of farmland (Reclamation 2011a).

The Jones Pumping Plant consists of an inlet channel, pumping plant, and discharge pipes. Water in the Delta is lifted 197 feet into the DMC. Each of the six pumps at Tracy is powered by a 22,500 horsepower motor and is capable of pumping 767 cfs. Power to run the pumps are supplied by CVP power plants. The water is pumped through three 15-foot-diameter discharge pipes and carried about one mile up to the DMC. The intake canal includes the Tracy Fish Screen, which was built to intercept downstream fish so they may be returned to the main channel to resume their journey to the ocean (Reclamation 2011a).

The DMC carries water southeasterly from the Jones Pumping Plant along the west side of the San Joaquin Valley for irrigation supply, for use in the San Luis Unit, and to replace San Joaquin River water stored at Friant Dam and used in the Friant-Kern and Madera systems. The canal is about 117 miles long and terminates at the Mendota Pool, about 30 miles west of Fresno. The

initial diversion capacity is 4,600 cfs, which is gradually decreased to 3,211 cfs at the terminus (Reclamation 2011a).

Byron-Bethany Irrigation District

BBID is a Delta Division CVP contractor that receives its CVP supply from various turnouts on the DMC. As described previously, BBID is a multicounty special district with two water service areas: a CVP water service area (approximately 5,800 acres) that receives CVP water and the Bryon Service area (approximately 16,300 acres) which is served by non-CVP water. BBID's CVP water supply is used for irrigation and M&I purposes; however, only a portion of the district's CVP supply is subject to Reclamation's M&I water shortage policy. Under agreements with the City, BBID provides raw CVP water for treatment and retail delivery to a portion of their M&I customers located within the area of overlapping City and BBID boundaries.

BBID's point of diversion for their non-CVP water is at MP 1.83 of the intake channel to the Harvey O. Banks Pumping Plant. BBID's pre-1914 water rights were established by the Byron Bethany Irrigation Company. In 1921, BBID acquired the Company's irrigation facilities and water rights. BBID's diversion facilities were moved to the State Water Project (SWP) Banks Pumping Plant Intake Channel in 1964 when the SWP was constructed. BBID's diversion facility at Pump Station 1-S is downstream from the SWP Skinner Fish Facility, which protects Delta fish species of concern from entrainment at the SWP Banks Pumping Plant. Under its operational agreement with DWR, BBID has agreed to limit its diversions at the SWP Banks Pumping Plant Intake Channel to 50,000 AFY (BBID and DWR 2003).

BBID's distribution system is segregated into the Byron Division (north of the Banks Intake Channel) and the Bethany Division (south of the Banks Intake Channel). Open canals and pump stations are the primary distribution system infrastructure, but major portions of the system consist of pipelines to deliver water supplies to customers during the irrigation season.

BBID conducted a water supply study prior to the 1999 annexation of RWSA2 which found that BBID had an adequate supply of water to meet the projected need in RWSA2 due to water use efficiency and conversion of agricultural lands to urban areas.

Water Quality The quality of BBID's non-CVP water supply depends on the time of year and Delta hydrology and operations, but is sufficient for intended agricultural and M&I uses (CH2M Hill 2001). BBID's non-CVP water supply is of equivalent quality to the source water for the SWP (same source, common facilities) and of similar quality to CVP water pumped at Jones Pumping Plant into the DMC.

City of Tracy

The City is also a Delta Division CVP contractor that receives its CVP supply from a turnout on the DMC downstream from BBID (MP 15.88L). In addition to its' CVP supplies, the City has non-CVP water (surface water and groundwater) that are used to meet M&I demands. Because its' non-CVP and CVP water supplies are used for M&I purposes, they must be treated before delivery. The treatment process consists of chemical oxidation, coagulation, flocculation, filtration, and chlorination. In addition, chloramines (the combination of chlorine and a small amount of ammonia) are used as the residual disinfectant in the water distribution system.

CVP water from MP 15.88L on the DMC is transferred by pipeline to the water treatment plant and, after treatment, transferred by pipeline to M&I users. The City provides water service to all of its approximately 78,000 residents and to approximately 400 residents of the Larch-Clover County Services District. The City also provides retail water service to the unincorporated Patterson Business Park pursuant to its wholesale water agreement with BBID. The City currently delivers approximately 18,000 AFY within its service territory and expects that demand will grow to 27,000 AFY by the year 2020 (City of Tracy 2005).

Groundwater Resources

BBID, the City, and Tracy Hills are located within the Tracy subbasin of the San Joaquin Valley Groundwater Basin (DWR 2003). Groundwater within the subbasin occurs within the Upper and Lower Zones, which are separated by the Corcoran Clay (Reclamation 2010a). The Upper Zone contains both semi-confined and unconfined water in an upper section of the Tulare Formation, and younger deposits above the Corcoran Clay. Although semi-confined in some regions, the Upper Zone is commonly referred to as the unconfined aquifer. The Lower Zone contains confined water in a lower section of the Tulare Formation, below the Corcoran Clay. The cumulative thickness of the Tulare Formation deposits ranges from a few hundred feet near the Coast Range foothills to the west of the DMC to about 3,000 feet along the trough of the valley below the San Joaquin River (Reclamation 2010a).

Groundwater levels studied within this area were reported to be at their lowest levels in the late 1960s, before surface water was imported (Reclamation 2010b). After the CVP began delivery to the area in 1967, groundwater levels gradually increased, falling temporarily during the 1976-1977 droughts. Generally, the subbasin groundwater levels increased by approximately 2 feet from 1970 to 2000, and groundwater levels have fluctuated around this level since that time, with no clear trend.

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not execute the proposed long-term contract or license with BBID. Alternative water supplies were discussed in Section 4.3.4 of the *Tracy Hills Specific Plan* and Appendix B of the *Tracy Hills Specific Plan* Final EIR (City of Tracy 1997). It is likely that a water supply among those that were evaluated in the Final EIR would be developed to meet the needs of the proposed Tracy Hills development. If any of these supplies involve a federal action by Reclamation they would undergo separate environmental review. BBID would continue to deliver their CVP and non-CVP water to their customers as they have in the past. There would be no impact to the DMC or CVP deliveries as conditions would remain the same as existing conditions.

Proposed Action

CVP Operations Under the Proposed Action, Reclamation would execute the proposed long-term contract and license with BBID which would allow BBID to construct an aboveground pipeline within Reclamation ROW in order to introduce up to 4,500 AF, plus up to an additional 225 AFY for conveyance losses, of their non-CVP water to the DMC at MP 3.32R. Introduced water, less conveyance losses, would be exchanged with Reclamation at the point of

introduction. Exchanged water would either be delivered to MP 15.88L or stored within San Luis Reservoir for later delivery. As the stored water cannot be pumped upstream in the DMC for delivery to MP 15.88L when called upon, stored exchanged water would be used by Reclamation to meet CVP demands and an equivalent amount of CVP water would be delivered to MP 15.88L via the DMC. No additional CVP water would be pumped in order for this to occur as the stored water would be used to meet CVP demands in lieu of CVP water which would then be delivered to MP 15.88L. Introduction and storage of the exchanged water is dependent on available capacity and operational constraints; therefore, the Proposed Action would not interfere with the normal operations of federal facilities nor would it impede any CVP obligations to deliver water to other contractors or to local fish and wildlife habitat nor would the Proposed Action interfere in the quantity or timing of diversions by the CVP from the Delta.

Water Quality All waters introduced into the DMC must meet Reclamation water quality standards as described in Appendix C (currently Title 22 of the California Code of Regulations). If BBID's non-CVP water fails to meet Reclamation's then current criteria for discharging non-CVP water into federal facilities, introductions will cease until BBID's non-CVP water meets this criteria. Surface water quality at the ephemeral water feature and stock pond located east and downslope of the proposed pipeline could be affected as a result of construction related to the Proposed Action (see Section 2.2.2) due to potential erosion of stockpiles and spoil piles. As described in Section 2.2.2 and included in Table 2-1, a SWPPP would be prepared by a Qualified SWPPP Developer and implemented during construction to minimize these potential impacts. Therefore, there would be no adverse impacts to water quality as a result of the Proposed Action.

BBID Operations The amount of water diverted by BBID for the contract is part of their existing water rights entitlement and would not require any new diversions. This water is only a small percentage of their total entitlement (approximately 9 percent) and would not impact BBID's ability to service other agricultural or M&I users. In addition, construction activities for the Proposed Action that could impact BBID's deliveries would be timed in order to prevent impacts to their existing water users. Therefore, there would be no impacts to water resources within BBID.

City of Tracy Operations BBID is currently pursuing a wholesale water agreement with the City for treatment and delivery of the exchanged water to Tracy Hills. Exchanged water to be delivered at MP 15.88L for treatment by the City would be coordinated with the City prior to delivery in order to prevent any impacts to the City's water resources and infrastructure. Alternative supplies from existing City supplies would be available for use within the Tracy Hills Development on a temporary basis should the introduction of BBID's non-CVP water and/or the exchanged water be subject to excess capacity or operational constraints; therefore, there would be no adverse impacts to the City's water resources.

Groundwater No groundwater would be pumped under the Proposed Action. The use of surface water within Tracy Hills is not expected to impact groundwater levels as it would be used to meet M&I demands. The proposed improvements at or near Pump Station 3 would not disturb soil below the water level in the intake channel; however, should any groundwater be encountered, portable sump pumps would be used in accordance with best management practices identified in the SWPPP developed for the Proposed Action. In addition, dewatering of trenches

along the pipeline route or near the DMC is not anticipated; however, if needed, trenches would also be dewatered using portable sump pumps in accordance with the SWPPP. Therefore, there would be no adverse impacts to groundwater resources as a result of the Proposed Action.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action or No Action alternative when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. To determine whether cumulatively significant impacts are anticipated from the Proposed Action or the No Action alternative, the incremental effect of both alternatives were examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies which drives requests for water service actions. Water districts aim to provide water to their customers based on available water supplies and timing, all while attempting to minimize costs. A myriad of water service actions are approved and executed each year to facilitate water needs. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

Existing or foreseeable projects, in addition to the proposed long-term contract and license with BBID, which could affect or could be affected by the Proposed Action or No Action alternative, include the following:

Delta-Mendota Canal/California Aqueduct Intertie A 500 linear feet intertie has been constructed by Reclamation and DWR in an unincorporated area of the San Joaquin Valley in Alameda County, west of the city of Tracy. The intertie is a shared federal-state water system improvement that connects the DMC (federal facility) and the California Aqueduct (state facility) via two 108-inch-diameter pipes and pumping capacity of 467 cfs. The Intertie addresses DMC conveyance conditions that had restricted use of the Jones Pumping Plant to less than its design capacity, potentially restoring as much as 35,000 AF of average annual deliveries to the CVP. Reclamation and DWR prepared an Environmental Impact Statement (EIS)/EIR for the intertie and a Record of Decision (ROD) was completed December 28, 2009 (Reclamation 2012a).

South-of-Delta Accelerated Water Transfer Program The Central Valley Project Improvement Act (CVPIA) was signed into law in 1992 to mandate changes in management of the CVP. In addition to protecting, restoring, and enhancing fish and wildlife, one of the other purposes of the CVPIA is to increase water-related benefits provided by the CVP to the State of California through expanded use of voluntary water transfers and improved water conservation. To assist California urban areas, agricultural water users, and others in meeting their future water needs, Section 3405(a) of the CVPIA authorizes all individuals or districts who receive CVP water under water service or repayment contracts, water rights settlement contracts or exchange contracts to transfer, subject to certain terms and conditions, all or a portion of the water subject to such contract to any other California water users or water agency, State or Federal agency,

Indian Tribe, or private non-profit organization for project purposes or any purpose recognized as beneficial under applicable State law.

After enactment of the CVPIA, Reclamation has historically acknowledged water transfers and/or exchanges between CVP contractors geographically situated within the same region and who are provided water service through the same CVP facilities under an Accelerated Water Transfer Program. In 2010, Reclamation approved the continuation of the South-of-Delta Accelerated Water Transfer Program through February 29, 2016. Reclamation prepared EA-10-051, *Accelerated Water Transfers and Exchanges, Central Valley Project, South of Delta Contractors 2011-2015* and a Finding of No Significant Impact (FONSI) was signed on February 14, 2011 (Reclamation 2011b).

Exchange Contractors 25-Year Water Transfer Program The San Joaquin River Exchange Contractors are currently transferring up to 130,000 AF of their substitute water to Reclamation under a 10-year (March 1, 2005, through February 28, 2014) water transfer program. Under the current program, the San Joaquin River Exchange Contractors develop sources of water to temporarily reduce the need for delivery of substitute water by Reclamation. The sources of water developed by the San Joaquin River Exchange Contractors include a maximum of 80,000 AF from conservation, tailwater recapture, and groundwater as well as a maximum of 50,000 AF from voluntary temporary land fallowing. For each AF of water developed by the San Joaquin River Exchange Contractors, an in-kind amount of water is considered acquired and left within the CVP for Reclamation to deliver to CVP contractors or wildlife areas. Reclamation and the San Joaquin River Exchange Contractors prepared an EIS/EIR for the 10 year program and a ROD was completed March 23, 2005. As the program will expire soon, Reclamation and the San Joaquin River Exchange Contractors have proposed extending the program for another 25 years. Reclamation prepared an EIS for the transfer program and a ROD was completed July 30, 2013 (Reclamation 2012b).

Meyers Farms Groundwater Banking Program The Meyers Family Farm Trust pursued development of the Meyers Farm Water Bank to store water in above-normal and wet years for later use during below-normal, dry, and critically-dry years. Under the banking program, CVP and non-CVP water to be banked flows from the Mendota Pool into five recharge ponds. Banked water is later extracted and pumped into Mendota Pool for exchange with Reclamation. The original project was analyzed in EA-05-09 *Meyers Farm Water Banking Project – Mendota, California* and a FONSI signed May 9, 2005 (Reclamation 2005). Two supplemental EAs and FONSIs for the project were prepared to increase the annual extraction rate and to add Banta-Carbona Irrigation District's non-CVP surface water to the banking program. In addition, Reclamation has recently received a request to increase the rate of extraction from Meyers Bank from 6,316 AFY to 10,526 AFY, to amend the cumulative total amount of CVP water banked from 35,000 AF to 60,000 AF at any given time, to increase the amount of Banta Carbona Irrigation District's non-CVP water conveyed in the DMC for banking from 5,000 AFY to 10,000 AFY, to approve the annual transfer of up to 5,000 AFY of Banta Carbona Irrigation District's CVP water in-lieu of their non-CVP water for banking at Meyers Bank, and to deliver banked water via exchange to other areas within the service area of San Luis Water District. The requested changes to the exchange agreement were analyzed in EA-11-013 entitled *Amendment*

to the Meyers Groundwater Banking Exchange Agreement and a FONSI was signed on September 16, 2013 (Reclamation 2012c).

Groundwater Pump-in Programs for San Luis Unit and Delta Division Contractors Under this project, participating CVP contractors within the Delta Division and San Luis Unit of the CVP could pump up to 50,000 AF total of groundwater into the DMC between March 1, 2012 through February 28, 2014 (Contract Years 2012 and 2013). The project was analyzed in EA-12-005 *Two-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of Groundwater in the Delta-Mendota Canal – Contract Years 2012 through 2014 (March 1, 2012 – February 28, 2014)* and a FONSI was completed on May 8, 2012 (Reclamation 2012d). The action was previously conducted between March 1, 2010 through February 28, 2012 (Contract Years 2010 and 2011) and analyzed in EA-09-169. It is likely that these actions would be requested in the future.

Mercy Springs Water District and Fresno Slough Water District Multi-Year Transfers to Angiola Water District Reclamation has received a request from Mercy Springs and Fresno Slough to approve the annual transfer up to 1,300 AFY of Mercy Springs' CVP water and up to 4,000 AFY of Fresno Slough's CVP water over a nine-year period to Angiola Water District. The proposed transfers were analyzed in EA-12-021 entitled *Mercy Springs Water District and Fresno Slough Water District Multi-Year Transfers to Angiola Water District* and a FONSI was signed on August 23, 2012 (Reclamation 2012e).

Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District Reclamation has executed five-year Warren Act contracts with Banta-Carbona Irrigation District, BBID, Patterson Irrigation District, and West Stanislaus Irrigation District for the conveyance and storage per contractor of up to 10,000 AFY of non-CVP surface water in the DMC through February 28, 2016. The project was analyzed in EA-09-156, *Five-year Warren Act Contracts for Banta-Carbona Irrigation District, Byron Bethany Irrigation District, Patterson Irrigation District, and West Stanislaus Irrigation District* and a FONSI was signed on March 8, 2010 (Reclamation 2010c). In April 2012, Reclamation received a request from BBID to approve delivery of up to 5,000 AFY of their non-CVP water to Westlands Water District via the San Luis Canal. The additional points of delivery were analyzed in supplemental EA-12-052 Additional *Point of Delivery for Byron Bethany Irrigation District's non-Central Valley Project Water to Westlands Water District* and a FONSI was signed on June 15, 2012 (Reclamation 2012f).

Byron Bethany Irrigation District Long-term Water Transfer to Zone 7 BBID has entered into a long-term water transfer agreement with Zone 7 of the Alameda County Flood Control and Water Conservation District. Under the agreement, Zone 7 may purchase up to 5,000 AF of surplus water, with a minimum delivery of 2,000 AF from BBID for use within Zone 7. Surplus water is made available from BBID through temporary fallowing, permanent conversion of farmland, and water conservation. The Zone 7 water transfer was accounted for in a water supply study conducted by BBID prior to the 1999 annexation of 2,006 acres of Tracy Hills into BBID's RWSA2.

Reclamation's Proposed Action is the execution of a long-term contract and license with BBID for introduction of up to 4,500 AF, including up to 225 AFY to cover conveyance losses, of their non-CVP water to the DMC at MP 3.32R for exchange with Reclamation. Exchanged water would either be delivered to MP 15.88L or stored within San Luis Reservoir for later delivery as described previously. Introduction and storage of non-CVP water or exchanged water, including the Proposed Action, is subject to available capacity and operation constraints.

BBID's non-CVP water under the Proposed Action is approximately 9 percent of their pre-1914 water rights entitlement. Combined with the five year Warren Act contract described above, BBID has proposed to introduce for transfer or exchange up to 9,725 AFY of their pre-1914 entitlement into the DMC which is approximately 19 percent of their entitlement and would not impact BBID's ability to service other agricultural or urban water users; therefore, the Proposed Action would not cumulatively impact surface water resources within BBID.

Water service actions, like those described above, do not result in increases or decreases of water diverted from rivers or reservoirs. Each water service transaction involving CVP and non-CVP water undergoes environmental review prior to approval. The Proposed Action and No Action alternative and other similar projects would not interfere with the projects listed above, nor would they hinder the normal operations of the CVP and Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat. Neither alternative, when added to other water service actions, would result in cumulative effects to surface water resources beyond historical fluctuations and conditions.

3.2 Land Use

3.2.1 Affected Environment

Although BBID is primarily an agricultural district, portions of the District overlap with the City's current boundaries and are within the sphere of influence for the City. Because of recent urbanization and other factors, the amount of agricultural lands in production has been generally declining. In addition to the variation in cropping from year to year, a limited number of growers in the District occasionally fallow (not irrigate) portions of their land. Fallowing land can also be attributed to a number of factors, such as market conditions, desirability to rotate crops off a portion of property to improve productivity, and grower preference. Since 1990, approximately 6,000 acres of land in BBID have been converted from agriculture to M&I use.

The construction activities associated with the Proposed Action are located in an unincorporated part of Alameda County, mostly on private land approximately six miles southeast of Byron. The land is classified by the California Department of Conservation, Division of Land Resource Protection, as "Grazing Land," which is defined as "land on which the existing vegetation is suited to the grazing of livestock" (California Department of Conservation 2008). The area is currently zoned as agriculture, with a General Plan designation as large parcel agriculture by Alameda County (City of Tracy 2006). The primary use within this area is grazing. The affected parcels are also bound in Land Conservation Act of 1965 (Williamson Act) contracts.

3.2.2 Environmental Consequences

No Action
There would be no impact to land use as conditions would remain the same as existing conditions.

Proposed Action
The existing trend of land use conversion within the San Joaquin Valley from farmland to urban land uses would continue as it has in the past with or without the Proposed Action. The Proposed Action would not conflict with existing zoning for agricultural use or promote the conversion of farmland to non-agricultural use within the Proposed Action area.

The construction of the project will result in the permanent loss of 0.73 acre and temporary loss of 6.3 acres for a total of 7.03 acres. The area of disturbance for the proposed improvements at Pump Station 3 is approximately 0.8 acre, of that 0.5 acre will be permanently disturbed and 0.3 will be temporarily disturbed. The laydown and stockpiling area will result in the temporary disturbance of 2.0 acres. Installation of the pipeline requires a total of 3.73 acres, of which 3.5 will be temporarily and 0.23 acre will be permanently disturbed. The access road stabilization will result in the temporary disturbance of 0.5 acre. The Proposed Action would not conflict with existing zoning for agricultural use or promote the conversion of farmland to non-agricultural use because impacts either would be temporary or would occur in areas already containing irrigation facilities. Although a portion of this area is listed under Williamson Act contracts, the construction of irrigation facilities is considered to be a compatible agricultural use and would not change its land use designation. In addition, the majority of the area impacted by construction would be restored to its original use once construction was completed. Therefore, the Proposed Action would not result in adverse impacts on land use.

Cumulative Impacts
In recent years, land use changes within the San Joaquin Valley have involved the urbanization of agricultural lands. These types of changes are typically driven by economic pressures and are as likely to occur with or without the Proposed Action. In addition, land use within the Proposed Action area would be returned to its current use once construction was complete. Accordingly, no cumulative adverse impacts on land use are anticipated.

3.3 Biological Resources

3.3.1 Affected Environment
Reconnaissance-level biological field surveys were conducted on September 16, 2009 and on June 25, 2010 within the construction area associated with the Proposed Action (CH2M Hill 2009, Bumgardner Biological Consulting 2010). Information on the biological resources within this area, such as dominant vegetation type, habitat features, and overall site conditions, was noted during the surveys. These resources were further evaluated as to their potential to support special-status plant and wildlife species in the area.

3.3.2 Affected Environment

The construction area associated with the Proposed Action is dominated by California annual grassland, as classified by California Department of Fish and Game[1] (CDFG 2003) and Holland (1986). This is a naturalized community, although most of the species are nonnative. Dominant plant species observed in the area during the field surveys include yellow star-thistle (*Centaurea solstitialis*), rat-tail fescue (*Vulpia myuros*), gum plant (*Grindelia* sp.), and dove weed (*Croton setigerus*) (Bumgardner Biological Consulting 2010). While most of the grassland habitat in the action area is actively grazed, it continues to provide valuable habitat for plants and wildlife.

An existing stock pond is located on the western edge of the proposed pipeline alignment (Figure 2-1) with wetland vegetation found along the margins of the pond, including rabbits foot grass (*Polypogon monspeliensis*), rush (*Scirpus acutus*), mana grass (*Glyceria* sp.), and spike rush (*Eleocharis macrostachya*). The sources of water for the stock pond are surface flows and from an upslope pipe that exits from under Canal 155.

Wetland "seep" vegetation (e.g., *Juncus* sp.) occurs upslope of the stock pond along a narrow swath that runs parallel to Canal 155 and is apparently associated with leakage from the unlined canal. No water pools are associated with this "seep" vegetation given the slope of the embankment. The vegetation is maintained by saturated soils. The "seep" is not considered a jurisdictional water of the United States given that it is supported by water from a constructed water conveyance structure.

On March 19, 2013, Reclamation requested an official species list from the U.S. Fish and Wildlife Service (Service) via the Sacramento Field Office's website, http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm, (document number: 130319113902). The list is for the following U.S. Geological Survey 7½-minute topographic quadrangles: Tracy, Midway, Altamont, Holt, Union Island, Woodward Island, Brentwood, Byron Hot Springs, and Clifton Court Forebay (Service 2013). Reclamation further queried the California Department of Wildlife California Natural Diversity Database (CNDDB) for records of protected species within 10 miles of the construction area associated with the Proposed Action (CNDDB 2013). A summary table (Table 3-1) was created from the Service species list, CNDDB records, CH2M Hill findings, and additional information within Reclamation's files.

Table 3-1 Federal Protected Species List for the Proposed Action

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
AMPHIBIANS			
California red-legged frog (*Rana draytonii*)	T, X	MAA	**Present**. CNDDB[4]-recorded occurrences in Proposed Action area. Critical habitat present.
California tiger salamander, central population (*Ambystoma californiense*)	T	MAA	**Present**. CNDDB-recorded occurrences in Proposed Action area. Suitable habitat present.
FISH			
Central California coastal steelhead (*Oncorhynchus mykiss*)	T NMFS	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.

[1] Now California Department of Fish and Wildlife

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*)	T NMFS	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.
Central Valley steelhead (*Oncorhynchus mykiss*)	T, X NMFS	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.
Delta smelt (*Hypomesus transpacificus*)	T, X	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.
Green sturgeon (*Acipenser medirostris*)	T NMFS	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.
Winter-run chinook salmon, Sacramento River (*Oncorhynchus tshawytscha*)	E NMFS	NE	**Absent**. No natural waterways within the species' range would be affected by the Proposed Action.
INVERTEBRATES			
Conservancy fairy shrimp (*Branchinecta conservatio*)	E	NE	**Absent**. No individuals or vernal pools in area of effect.
Longhorn fairy shrimp (*Branchinecta longiantenna*)	E, X	NE	**Absent**. No individuals or vernal pools in area of effect. Proposed Action area not within designated critical habitat.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T	NE	**Absent.** No individuals or habitat in area of effect.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	T, X	NE	**Absent**. No individuals or vernal pools in area of effect. Proposed Action area not within designated critical habitat.
Vernal pool tadpole shrimp *Lepidurus packardi*)	E	NE	**Absent**. No individuals or vernal pools in area of effect.
MAMMALS			
Riparian brush rabbit (*Sylvilagus bachmani riparius*)	E	NE	**Absent**. No CNDDB-recorded occurrences in Proposed Action area.
San Joaquin kit fox (*Vulpes macrotis mutica*)	E	MAA	**Present**. Several CNDDB-recorded occurrences in vicinity of Proposed Action area. Suitable foraging habitat is present and small mammal burrows located onsite may provide denning opportunities for this species.
PLANTS			
Contra Costa goldfields (*Lasthenia conjugens*)	E, X	NE	**Absent**. No individuals or habitat in area of effect. Proposed Action area not within designated critical habitat.
Large-flowered fiddleneck (*Amsinckia grandiflora*)	E, X	NE	**Absent**. No individuals or habitat in area of effect. Proposed Action area not within designated critical habitat.
Palmate-bracted bird's-beak (*Cordylanthus palmatus*)	E	NE	**Absent**. No individuals or habitat in area of effect.
REPTILES			
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	T, X	NE	**Absent**. No individuals or habitat in area of effect. Proposed Action area not within designated critical habitat.
Giant garter snake (*Thamnophis gigas*)	T	NE	**Absent**. No individuals or habitat in area of effect.

[1]Status= Listing of Federally special status species
E: Listed as Endangered
T: Listed as Threatened
X: Critical Habitat designated for this species
NMFS: species under the jurisdiction of the National Marine Fisheries Service
[2]Effects = Effect determination
NE: No Effect
MAA: Proposed Action may affect this species and its critical habitat

Species	Status[1]	Effects[2]	Occurrence in the Study Area[3]
[3]Definition Of Occurrence Indicators Present: Species recorded in area and suitable habitat present Absent: Species not recorded in study area and/or habitat requirements not met [4]CNDDB = California Natural Diversity Database 2011			

Migratory Birds

The non-native grassland within the construction area associated with the Proposed Action may be used as foraging habitat by burrowing owl (*Athene cunicularia*), a bird species protected under the Migratory Bird Treaty Act. This small ground-dwelling owl is a yearlong-resident that prefers to return to previously used breeding areas and nesting burrows (Rich 1984, Lutz and Plumpton 1999). They live in ground squirrel and other mammal burrows that are appropriated and enlarged for their purposes (Martin 1973, CDFG 1995). Burrowing owls have been documented in the vicinity of the construction area (CNDDB 2013). Therefore, burrowing owls have the potential to occur in the Proposed Action area.

Federally-listed Species

Federal protected species with the potential for occurring in the action area include the following: California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox (Table 3-1).

The non-native grassland within the construction area supports a relatively large population of California ground squirrels (*Otospermophilus beecheyi*). Consequently, burrows are scattered throughout the action area (CH2M Hill 2009, Bumgardner Biological Consulting 2010). These burrows can be used by California red-legged frog, California tiger salamander, and may also be used by San Joaquin kit fox; all of which have been sited within the vicinity of the action area (CNDDB 2013). Habit loss and degradation due to agriculture and urbanization continue to be key factors in adversely affecting these special-status species.

Critical Habitat Approximately 4.67 acres of the project is located within subunit CCS-2B, California red-legged frog critical habitat, as designated March 17, 2010 (Service 2010). This unit of California red-legged frog critical habitat also overlaps the stock pond adjacent to the construction area and provides suitable aquatic breeding habitat for California red-legged frog and California tiger salamander (CH2M Hill 2009, Bumgardner Biological Consulting 2010).

3.3.3 Environmental Consequences

No Action

Under the No Action Alternative, no modifications to existing facilities or new construction would occur and existing conditions would not change. Therefore, biological resources would not be affected in the Proposed Action area.

Proposed Action

Many of special-status plants and animals described in Table 3-1 above are unlikely to occur within the boundaries of the disturbed land areas. However, birds protected by the Migratory Bird Treaty Act and federally-listed species and critical habitat that occur or could occur in the vicinity of the Proposed Action area include: burrowing owl, California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox.

Migratory Birds There is potential nesting habitat for burrowing owl in the action area. Potential impacts to burrowing owls would be avoided and or minimized by implementing the environmental protection measures described in Table 2-1. Therefore, there would be no take of birds protected under the Migratory Bird Treaty Act.

Federally-listed Species The construction of the project will result in the permanent loss of 0.73 acre and temporary loss of 6.3 acres of suitable upland habitat for a total of 7.03 acres. The area of disturbance for the proposed improvements at Pump Station 3 is approximately 0.8 acre, of that 0.5 acre will be permanently disturbed and 0.3 will be temporarily disturbed. The laydown and stockpiling area will result in the temporary disturbance of 2.0 acres. Installation of the pipeline requires a total of 3.73 acres, of which 3.5 will be temporarily and 0.23 acre will be permanently disturbed. The access road stabilization will result in the temporary disturbance of 0.5 acre. In order to minimize the effects of this disturbance and to comply with the Biological Opinion issued by the Service and the commitments required in Table 1, BBID will purchase 8.49 acres of credits at the Mountain House Conservation Bank. The credits were calculated using the Standard Ratios from the East Alameda County Conservation Strategy for permanent effects and the programmatic biological opinion for the temporary effects (ICF International 2010, Service 2012).

Activities associated with the construction may result in the entombment or crushing of any wildlife located in small mammal burrows within the pipeline construction corridor, construction area associated with Pump Station 3, and laydown and stockpiling area located adjacent to Pump Station 3. Crushing of burrows could also reduce the number of prey species (e.g., California ground squirrel) in the area for San Joaquin kit fox. In addition, individuals that are exposed on the surface during excavation or grading may also be crushed and killed or injured by construction activities. Likewise, individuals that take refuge under equipment or materials at night when moving across the landscape may be harmed during the day when equipment or materials are moved.

California red-legged frog, California tiger salamander, and San Joaquin kit fox could fall into the trenches for the new turnout and pipeline and be killed (through desiccation, entombment, or predation) if those trenches are left open overnight. Even with the use of "amphibian-friendly" barrier fencing wildlife could become trapped.

Construction activities would result in a temporary increase in vehicle traffic on the improved and unimproved roadways that lead to the construction site. Although, the increase in traffic is likely to occur only on Bruns Road, Kelso Road, and the unimproved road into the site, an unknown number of dispersing California red-legged frog, California tiger salamander, or San Joaquin kit fox may experience roadway mortality during construction. These effects may occur during any season but would most likely occur to California red-legged frog and California tiger salamander when local, seasonal aquatic sites begin to dry down.

The proposed project is within California red-legged frog critical habitat Unit CCS-2B, but is not expected to appreciably diminish the value of the critical habitat for the California red-legged frog, or prevent the proposed critical habitat from sustaining its role in the conservation and

recovery of this species.
Formal consultation was initiated with the Service to resolve the potential for impacts to protected species. Reclamation received a non-jeopardy biological opinion from the Service on December 9, 2013, addressing impacts to the California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox (see Appendix H). As the Proposed Action would incorporate the conditions imposed by the Biological Opinion (see Table 2-1 and Appendix H), the potential for impacts to the species has been determined to not be significant.

Cumulative Impacts

Numerous activities continue to eliminate habitat for listed and proposed threatened and endangered species in the San Joaquin Valley. Habitat loss and degradation affecting both animals and plants continue as a result of urbanization, oil and gas development, road and utility right-of-way management, flood control projects, climate change, grazing by livestock, and agricultural practices. Listed and proposed animal species are also affected by poisoning, shooting, increased predation associated with human development, and reduction of food sources. All of these nonfederal activities are expected to continue to adversely affect listed and proposed species in the San Joaquin Valley. The Proposed Action would temporarily disturb 6.3 acres of California red-legged frog and California tiger salamander uplands dispersal habitat during construction activities. This habitat would be returned to its preexisting condition once construction is complete. However, the Proposed Action would eliminate 0.73 acres of non-native grassland habitat that is considered suitable habitat for San Joaquin kit fox and which could also be utilized by California red-legged frog and California tiger salamander. BBID would implement the appropriate avoidance and minimization measures, including compensatory habitat, to address impacts to habitat as needed to minimize potential cumulative impacts.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 CFR Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking will have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or

cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

A systematic pedestrian cultural resource survey of the construction area associated with the Proposed Action was conducted from September 13 through September 16, 2010 (CH2M Hill 2010). Observed sediment is typical of agricultural fields in the area and consists of dark, fine-grained alluvial deposition. Surface visibility during the survey varied from excellent (100 percent) to fair (40 percent), depending on amount of surface vegetation. Disturbances within the area included road compaction and typical agricultural activities, including discing and earthmoving activities. Other disturbances are related to irrigation, such as grading for canals and ditches, as well as constructing small raised areas to control irrigation waters (CH2M Hill 2010).

The DMC, Canal 70, Canal 120, and Canal 155 were visited during the survey. Canals 120 and 155 were recorded on Department of Parks and Recreation forms. Canals 70, 120, and 155 are part of the historic BBID system and visible on the 1947 *Byron, California* 15-foot War Department topographic quadrangle map. The DMC is part of the historic CVP. BBID's Pump Station 3 was originally constructed in 1966 (Gilmore 2010). No other cultural resources were identified during the survey.

A literature search was requested from the California Historical Resources Information System Northwestern Information Center on September 2, 2010 which revealed 15 previous studies had been conducted within a 0.5-mile buffer zone around the APE (CH2M Hill 2010). Five of these studies were conducted within the APE. No previously recorded resources were identified within the APE. Six resources were identified in the 0.5-mile buffer area, including the Tracy Pumping Station, Canal 70, and the Tracy Substation. Review of historical maps showed the following historic features within the APE: the DMC, Canal 70, Canal 120, and Canal 155 (CH2M Hill 2010). The DMC is recorded elsewhere in Alameda County as Site P-01-10435 and in neighboring San Joaquin County as Site P-39-89. A segment of Canal 70, which is just north of the APE, is recorded as Site P-01-10445. No information was provided on the site record for Site P-01-10445 (CH2M Hill 2010).

3.4.2 Environmental Consequences

No Action

There would be no impact to cultural resources as conditions would remain the same as existing conditions.

Proposed Action

The Proposed Action was determined to be the type of action that had the potential to cause effects to historic properties. Accordingly, Reclamation initiated the Section 106 process which included a review of existing records and literature, a field reconnaissance, and Native American consultation as documented in the report by CH2M Hill titled "Cultural Resources Assessment of a 5.9-acre Parcel for the Tracy Hills Water Supply Project, Byron Bethany Irrigation District, Alameda County, California" (August 2011). These efforts resulted in the identification of four built-environment historic cultural resources in the APE (DMC, Canal 70, Canal 120, and Canal

155), all of which are water conveyance features. Based on these efforts, Reclamation determined that there would be no adverse effect to historic properties, made pursuant to 36 CFR Part 800.5(b), and initiated consultation with SHPO on September 7, 2011. No response to date has been received by SHPO. Due to the passage of more than 30 days for the SHPO review period, Reclamation has concluded the Section 106 process for this undertaking. See Appendix I for Reclamation's determination.

Environmental protection measures have been included in the Proposed Action (Table 2-1) should cultural resources be uncovered during construction activities. These measures would minimize any potential impacts to cultural resources should they be discovered.

Cumulative Impacts

Since the No Action alternative would not have direct or indirect impacts on cultural resources, there would be no cumulative impacts as a result of this alternative. The only cultural resources identified within the APE are four water conveyance features (DMC, Canal 70, Canal 120, and Canal 155). As none of these would be impacted by the Proposed Action and environmental protection measures have been included in the Proposed Action to minimize impacts should any cultural resources be uncovered during construction, there would be no cumulative adverse impacts to cultural resources.

3.5 Socioeconomic Resources

3.5.1 Affected Environment

The annual average unemployment rate for Alameda and San Joaquin counties 11.0 and 17.5 percent in 2011 which has since fallen to 7.0 and 11.6 in 2013 (Table 3-2). Alameda County's unemployment rate in 2011 and 2013 has remained slightly lower than the State; however, San Joaquin County was several percentage points higher than both Alameda County and the State in 2011 and 2013.

Table 3-2 2013 Preliminary Monthly Labor Force Data

	Labor Force in 2013	Number Employed in 2013	Per Capita Income[1] in 2011	Unemployment Rate in 2011	Unemployment Rate in 2013
Alameda County	770,400	716,400	$34,937	11.0%	7.0%
San Joaquin County	295,900	261,500	$22,857	17.5%	11.6%
California	18,574,100	17,026,400	$29,634	12.4%	8.3%

Source: EDD 2011 and 2013 and U.S. Census Bureau 2013
[1]Amounts are based on 2011 numbers as the most recent data available from the U.S. Census Bureau.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, the Tracy Hills development would be required to find alternative water supplies such as those discussed in Section 4.3.4 of the *Tracy Hills Specific Plan* and Appendix B of the *Tracy Hills Specific Plan* Final EIR (City of Tracy 1997). It is likely that a water supply among those that were evaluated in the Final EIR would be developed to meet the needs of the proposed Tracy Hills development. If any of these supplies involve a federal action by Reclamation they would undergo separate environmental review. BBID would continue to deliver their CVP and non-CVP water to their customers as they have in the past.

Therefore, there would be no impact to socioeconomic resources as conditions would remain the same as existing conditions.

Proposed Action

The water associated with the Proposed Action would be used by Tracy Hills which has already been planned and approved for development by the City. Construction activities may provide temporary beneficial impacts through employment opportunities for local residents. Therefore, there may be a slight beneficial impact to socioeconomic resources as a result of the Proposed Action.

Cumulative Impacts

The Proposed Action, when added to other existing and proposed actions, may have a slight beneficial contribution to socioeconomics as it would help support and maintain jobs; however, these would be within historical variations and would not contribute to cumulative impacts.

3.6 Air Quality

Section 176 (C) of the Clean Air Act (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 [a]) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the proposed action equal or exceed certain *de minimis* amounts thus requiring the federal agency to make a determination of general conformity.

3.6.1 Affected Environment

Construction activities associated with the Proposed Action occur within Alameda County. Alameda County is part of the San Francisco Bay Area Air Basin (SFBAAB) which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The pollutants of greatest concern in the Bay Area are carbon monoxide (CO), ozone (O_3), O_3 precursors such as reactive organic gases (ROG) and nitrogen oxides (NO_x), inhalable particulate matter between 2.5 and 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter [$PM_{2.5}$] (CARB 2011).

The SFBAAB has reached Federal and State attainment status for CO, nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) and Federal attainment status for PM_{10}. The SFBAAB is designated as

nonattainment for the Federal O_3 and $PM_{2.5}$ standards and nonattainment for the State O_3, PM_{10}, and $PM_{2.5}$ standards (Table 3-3).

Table 3-3 San Francisco Bay Area Air Basin Attainment Status

Pollutant	California Attainment Status	National Attainment Status
O_3	**Nonattainment**	**Nonattainment**
CO	Attainment	Attainment
NO_2	Attainment	Unclassified
SO_2	Attainment	Attainment
PM_{10}	**Nonattainment**	Unclassified
$PM_{2.5}$	**Nonattainment**	**Nonattainment**
Source: BAAQMD 2011		

3.6.2 Environmental Consequences

No Action

There would be no impact to air quality as conditions would remain the same as existing conditions.

Proposed Action

Operation of the pipeline, including Pump Station 3, would not contribute to criteria pollutants as delivery of water to the DMC would be done via electrical pumps. Air quality emissions from electrical power have been considered in environmental documentation for the generating power plant and are part of the existing baseline conditions. In addition, movement of water in the DMC between MP 3.32R and MP 15.88L would be done via gravity and would not result in air quality impacts. However, construction activities such as excavation, grading, and vehicle travel would cause an increase in PM_{10} and $PM_{2.5}$ due to dust and exhaust emissions. In addition, exhaust emissions of NO_x and ROG from construction can contribute to O_3 formation. Emissions of CO and SO_2 were also calculated for construction activities. Environmental protection measures have been incorporated into the Proposed Action in order to minimize emissions from construction activities (Table 2-1). In addition, construction exhaust emissions and fugitive dust emissions were estimated using the URBEMIS Version 9.2.4 (Appendix G). Construction emissions from the Proposed Action are compared to the BAAQMD daily average significance thresholds in Table 3-4.

Table 3-4 Construction Emissions Comparison to BAAQMD Daily Significance Thresholds

Emission Source	Emissions (lb/day)					
	ROG	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$
Total	3.8	15.9	32.4	0.0028	4.3	1.7
BAAQMD Thresholds[1]	54	NE	54	NE	82[2]	54
[1]Source: BAAQMD 2010 [2]Applies to exhaust emissions only NE = Threshold has not been established						

As shown in Table 3-4, construction emissions would be less than the BAAQMD's thresholds of significance; therefore, there would be no adverse impacts to air quality as a result of the Proposed Action and a conformity analysis pursuant to the Clean Air Act is not required.

Cumulative Impacts

The Proposed Action, when added to other existing and proposed actions, would not contribute to cumulative impacts to air quality since construction activities are short-term and well below *de*

minimis thresholds. In addition, BBID has incorporated control measures in order to reduce any potential cumulative air quality impacts associated with the Proposed Action.

3.7 Global Climate

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (EPA 2012a).

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (CO_2), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO_2, methane, nitrous oxide, and fluorinated gasses (EPA 2012a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO_2 and methane, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2012b).

Climate change has only recently been widely recognized as an imminent threat to the global climate, economy, and population. As a result, the national, state, and local climate change regulatory setting is complex and evolving.

In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020.

In addition, the EPA has issued regulatory actions under the Clean Air Act as well as other statutory authorities to address climate change issues (EPA 2012c). In 2009, the EPA issued a rule (40 CFR Part 98) for mandatory reporting of GHG by large source emitters and suppliers that emit 25,000 metric tons or more of GHG [as CO_2 equivalents (CO_{2e}) per year] (EPA 2009). The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change and has undergone and is still undergoing revisions (EPA 2012c).

3.7.1 Affected Environment

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006 (Intergovernmental Panel on Climate Change 2007). Models indicate that average temperature changes are likely to be greater in the northern hemisphere. Northern latitudes (above 24°North) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone (Intergovernmental Panel on Climate Change 2007). Without additional

meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHG are likely to accelerate the rate of climate change.

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.7.2 Environmental Consequences

No Action

There would be no impact to global climate change as conditions would remain the same as existing conditions.

Proposed Action

As described in Section 3.6.2, operation of the proposed pipeline is done via electrical pumps which are part of baseline conditions. However, construction under the Proposed Action would involve short-term impacts due to construction-related emissions. Construction emissions of CO_2 were estimated using the URBEMIS Version 9.2.4 as 139 metric tons (see Appendix G). This amount has been converted to CO_{2e} using the EPA's GHG Equivalencies Calculator as 147 metric tons of CO_{2e} (EPA 2012d). Although, operation of BBID's Pump Station 3 is part of baseline conditions, estimated annual emissions for the maximum (8 month) pump-in schedule would be about 752 metric tons per year of CO_{2e} (Table 3-5), which is negligible compared to the EPA's 25,000 metric tons per year threshold for annually reporting GHG emissions (EPA 2009). Accordingly, construction and operations under the Proposed Action would result in below *de minimis* impacts to global climate change.

Table 3-5 Estimated Annual CO_{2e} Emissions for the Proposed Action

Emission Source	Annual hours of operation	Annual CO_{2e} Emissions (metric tons)
BBID Pump Station 3	2,926	752
	Total	752
Source: EPA 2012d		

Cumulative Impacts

GHG impacts are considered cumulative impacts. Under the No Action alternative, there would be no cumulative impacts to GHG as conditions would remain the same as existing conditions. Estimated annual CO_{2e} emissions for operation of BBID's Pump Station 3 are 752 metric tons per year, which is well below the 25,000 metric tons per year threshold for reporting GHG emissions. As a result, the Proposed Action is not expected to contribute cumulative adverse impacts to global climate change.

CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's

operation flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

3.8 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment of the Proposed Action and No Action Alternative and has determined that there is no potential for direct, indirect, or cumulative effects to the following resources:

Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites.

No impact to Indian sacred sites would occur under the No Action Alternative as conditions would remain the same as existing conditions. The Proposed Action would not limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites. There would be no impacts to Indian sacred sites as a result of the Proposed Action.

Indian Trust Assets

Indian trust assets are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. Indian trust assets cannot be sold, leased or otherwise alienated without United States’ approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, Indian trust assets may be located off trust land. See Appendix J for Reclamation’s determination.

No impact to Indian trust assets would occur under the No Action Alternative as conditions would remain the same as existing conditions. On February 8, 2010, Reclamation determined that the Proposed Action would not impact Indian trust assets as there are none in the Proposed Action area. The nearest Indian trust asset is Lytton Rancheria approximately 42 miles northwest of the Proposed Action area.

Environmental Justice

The February 11, 1994, Executive Order 12898 requiring Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations went into effect. The Proposed Action does not propose any features that would result in adverse human health or environmental effects, have any physical effects on minority or low-income populations, and/or alter socioeconomic conditions of populations that reside or work in the vicinity of the Proposed Action.

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation provided the public with an opportunity to comment on the Draft FONSI and Draft EA between October 1, 2012 and October 30, 2012.

4.2 Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The Proposed Action does not involve federal water development projects; therefore, the FWCA does not apply.

4.3 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has determined that the Proposed Action may affect, but is not likely to jeopardize, the continued existence of California red-legged frog, California red-legged frog critical habitat, California tiger salamander, and San Joaquin kit fox. On December 9, 2013, Reclamation received a non-jeopardy biological opinion from the Service (File Number: 08ESMF00-2012-F-0159-2), concurring with Reclamation's determination (Appendix H).

4.4 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

Reclamation determined that there would be no adverse effect to historic properties, made pursuant to 36 CFR Part 800.5(b), and initiated consultation with SHPO on September 7, 2011. No response to date has been received by SHPO. Due to the passage of more than 30 days for

the SHPO review period, Reclamation has concluded the Section 106 process for this undertaking.

4.5 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 402

Section 402 of the Clean Water Act establishes the National Pollutant Discharge Elimination System to regulate point source discharges of pollutants into waters of the United States. A National Pollutant Discharge Elimination System permit sets specific discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. The State Water Resources Control Board is the permitting authority in California and has adopted a statewide General Permit for Stormwater Discharges Associated with Construction Activity (Water Quality Order No. 2009-0009-DWQ), which applies to projects resulting in 1 or more acres of soil disturbance.

As required in Section 2.2.3, a Qualified SWPPP Developer would prepare a SWPPP and a Qualified SWPPP Practitioner would implement the SWPPP in order to minimize the amount of pollutants discharged in stormwater from the site.

No pollutants would be discharged into any Waters of the United States under the Proposed Action, so no water quality certifications under Section 401 of the Clean Water Act are required.

No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with Clean Water Act section 404 are not required.

Section 5 Preparers and Reviewers

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Section 6 Acronyms and Abbreviations

AF	Acre-feet
AFY	Acre-feet per year
APE	Area of Potential Effect
BAAQMD	San Francisco Bay Area Air Quality Management District
BBID	Byron-Bethany Irrigation District
CARB	California Air Resources Board
CDFG	California Department of Fish and Game
cfs	Cubic feet per second
City	City of Tracy
CNDDB	California Natural Diversity Data Base
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalents
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
Delta	Sacramento-San Joaquin River Delta
DMC	Delta-Mendota Canal
DWR	California Department of Water Resources
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
GHG	greenhouse gases
M&I	Municipal and industrial
MP	Milepost
National Register	National Register of Historic Places
NHPA	National Historic Preservation Act
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
O_3	Ozone
PM_{10}	Particulate matter between 2.5 and 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
Project	Tracy Hills Water Supply Project
Reclamation	Bureau of Reclamation
ROD	Record of Decision
ROG	Reactive organic gases
ROW	Rights-of-way
RWSA2	Raw Water Service Area 2
Service	U.S. Fish and Wildlife Service
SFBAAB	San Francisco Bay Area Air Basin
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulfur dioxide

SWP	State Water Project
SWPPP	Stormwater Pollution Prevention Plan
Tracy Hills	Tracy Hills Development
Williamson Act	Land Conservation Act of 1965

Section 7 References

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APPENDIX B

City of Tracy Program Budget for Fiscal year 2014-2015 with
Capital Improvement Program Five-Year Plan for
FY 2014/15 to FY 2018/19

City of Tracy, California

PROPOSED PROGRAM BUDGET

FISCAL YEAR 2014-2015

Prepared by

Administrative Services Department

May 2014

City of Tracy, California

PROGRAM BUDGET
FISCAL YEAR 2014-2015

Prepared by

Administrative Services Department

May 2014

City Council

Brent Ives
Mayor

Michael Maciel
Mayor Pro Tem

Robert Rickman
Council Member

Nancy Young
Council Member

Charles Manne
Council Member

Other Elected Officials

Raymond McCray
City Treasurer

City of Tracy, California

PROGRAM BUDGET
FISCAL YEAR 2014-2015

Maria A. Hurtado
Interim City Manager

Gary Hampton
Interim Assistant City Manager

Dan Sodergren
City Attorney

Jenny Haruyama
Administrative Services Director

Other Department Heads

Gary Hampton
Police Chief

Alford Nero
Fire Chief

Andrew Malik
Development Services Director

David Ferguson
Public Works Director

Kul Sharma
Utilities Director

Other Finance Department Staff Members:

Allan Borwick, Budget Officer
Peggy Barnes, Accounting Technician
Anne Bell, Management Analyst II
Rocki Chaparro, Accounting Technician
Carol Gorrie, Accounting Technician
Robert Harmon, Senior Accountant
Donald Higgins, Sr. Accounting Assistant
Elizabeth Leal, Accounting Assistant
Rosemarie Marquez, Accounting Assistant
Meagan Mayer, Accounting Assistant
Linda Moniz, Payroll Coordinator
Veronica Nunez, Clerical Assistant
Grace Segura, Sr. Accounting Assistant
Eileen Solario, Sr. Accounting Assistant
Raquel Votaw, Sr. Accounting Assistant
Isabel Yamada, Accounting Assistant

Group 75 - Water Improvements

FY14-15 CIP Proposed

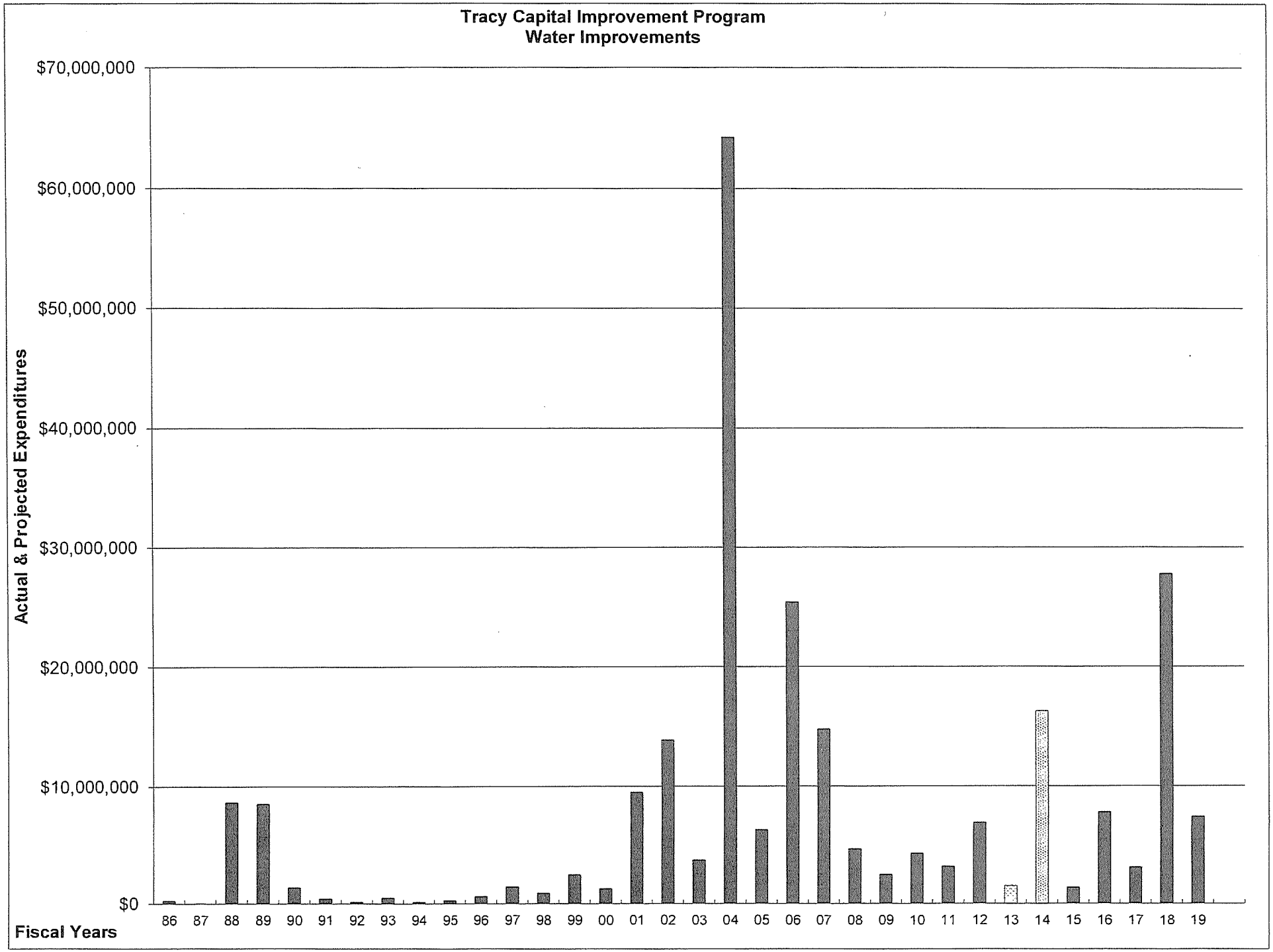
	by Project Type	Group $ Total	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19
					Proposed Capital Budget					
15	Current Projects	37,022,059	13,459,567	16,316,962	7,245,530	400,000	6,020,530	275,000	275,000	275,000
3	New Projects	1,020,000	0	0	1,020,000	1,020,000	0	0	0	0
13	Future Projects	39,371,700	0	0	39,371,700	0	1,812,400	2,880,000	27,520,200	7,159,100
31	Totals	77,413,759	13,459,567	16,316,962	47,637,230	1,420,000	7,832,930	3,155,000	27,795,200	7,434,100

Projects Requiring
7 New Funding
3 in FY14-15

by Funding Sources

F101-General	0	0	0	0	0	0	0	0	0
F511-Water Operating	2,317,072	667,072	275,000	1,375,000	275,000	275,000	275,000	275,000	275,000
F513-Water Capital	25,293,862	10,052,824	8,465,628	6,775,410	1,145,000	1,800,410	2,880,000	350,000	600,000
State Grant or Loan	0	0	0	0	0	0	0	0	0
F325-Utilities Plan"C"	527,784	228,558	983,086	-683,860	0	-683,860	0	0	0
F351-NE Indus Area #1	2,929,089	2,457,541	135,448	336,100	0	336,100	0	0	0
F352-So MacArthur PA	464,200	0	409,900	54,300	0	54,300	0	0	0
F353-I205 Area Spec Pl	0	0	0	0	0	0	0	0	0
F354-ISP South Area	766,550	0	0	766,550	0	766,550	0	0	0
F356-Tracy Gateway Ar	11,897,102	53,572	0	11,843,530	0	5,284,430	0	0	6,559,100
F357-NE Indus Area #2	0	0	0	0	0	0	0	0	0
F3xx-Ellis Prgm Area	22,770,200	0	0	22,770,200	0	0	0	22,770,200	0
F387-RSP Reserves	0	0	0	0	0	0	0	0	0
Assessments	0	0	0	0	0	0	0	0	0
Developers Contribution	1,497,900	0	1,497,900	0	0	0	0	0	0
Future Developments	8,950,000	0	4,550,000	4,400,000	0	0	0	4,400,000	0
	77,413,759	13,459,567	16,316,962	47,637,230	1,420,000	7,832,930	3,155,000	27,795,200	7,434,100

CIP Expenditures	in FY12-13 >>	1,554,515	9,016,000	New Appropriations
	in FY11-12 >>	6,955,445	723,062	Carryovers from FY13
	in FY10-11 >>	3,232,274	0	Deferrals
	in FY09-10 >>	4,395,398	6,577,900	Supplementals


Tracy Capital Improvement Program
Water Improvements
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
Actual & Projected Expenditures
86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19
Fiscal Years

Group 75 - Water Improvements

FY14-15 CIP Proposed

Project #	Project Title	Project $ Total	Funding Sources	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Anticipated Completion & Comments
	CURRENT PROJECTS						Proposed Capital Budget					
75046	Water Distribution System - NE Industrial Area	2,929,089	F351-NE Indus Area #1	2,457,541	135,448	336,100	0	336,100	0	0	0	Jun 16 Phase 1 Completed Phase 2 Deferred
75061	Water Supply Purchase from WSID & BCID	11,397,496	F513-Water Capital	8,897,496	2,500,000	0	0	0	0	0	0	Feb 14 75% Purchased Feb 04
75076	Well Rehabilitation - Lincoln Park & Production #1	634,900	F513-Water Capital	533,511	101,389	0	0	0	0	0	0	Apr 13 Work Completed
75078	Aquifier Storage & Recovery Program	1,000,000	F513-Water Capital	399,923	400,077	200,000	100,000	100,000	0	0	0	Jun 16
			State Grant	0	0	0	0	0	0	0	0	Work Underway
75085	Water Distribution Syste Tracy Gateway Area	5,338,002	F356-Tracy Gateway A	53,572	0	5,284,430	0	5,284,430	0	0	0	Jun 16 Developer to Build Design Underway
75108	Water Lines -MacArthur Drive, Linne to Valpico	1,562,600	F513-Water Capital	0	0	113,400	0	113,400	0	0	0	Dec 15
			F325-Utilities Plan"C"	171,724	980,976	-859,950	0	-859,950	0	0	0	Design Underway
			F352-So MacArthur PA	0	409,900	0	0	0	0	0	0	Also, See 73126
			F354-ISP South Area	0	0	746,550	0	746,550	0	0	0	
75113	WDS Capacity Maint Mgmt System-Data Acquisition	125,000	F513-Water Capital	51,692	23,308	50,000	25,000	25,000	0	0	0	Jun 16 Work Underway
75114	Water Lines Replaceme Program - FY13 Phase	320,000	F513-Water Capital	227,036	92,964	0	0	0	0	0	0	Jul 13 Work Completed
75115	Security Cameras for Water Treatment Plant	30,000	F513-Water Capital	0	30,000	0	0	0	0	0	0	Dec 13 Work Completed
75117	Water Lines Replaceme Program - FY14 Phase	320,000	F513-Water Capital	0	320,000	0	0	0	0	0	0	Jun 15 Design Underway
75118	Construct New Clearwel Water Treatment Plant	4,550,000	F513-Water Capital	0	0	0	0	0	0	0	0	Jun 15 Priority B1
			Future Developments	0	4,550,000	0	0	0	0	0	0	Replacement

(Continued)

Group 75 - Water Improvements

FY14-15 CIP Proposed

Project #	Project Title	Project $ Total	Funding Sources	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Anticipated Completion & Comments
CURRENT PROJECTS (Continued)							Proposed Capital Budget					
75119	Purchase of SSJID Wat	5,000,000	F513-Water Capital	0	5,000,000	-5,000,000	0	-5,000,000	0	0	0	Sep 13 Priority B2
	Supply from Lathrop		Future Developments	0	0	5,000,000	0	5,000,000	0	0	0	Purchase Completed
75991	Water Purchases for Storage with Semi-tropic WSD	2,317,072	F511-Water Operating	667,072	275,000	1,375,000	275,000	275,000	275,000	275,000	275,000	Annual Contingency
75120	Water Impmts -	1,180,000	F513-Water Capital	0	0	0	0	0	0	0	0	
	Tracy Hills Area		Developers Contributior	0	1,180,000	0	0	0	0	0	0	
75121	Booster Pump Station -	317,900	F513-Water Capital	0	0	0	0	0	0	0	0	
	Water Treatment Plant		Developers Contributior	0	317,900	0	0	0	0	0	0	
	Totals											
15	Current Projects	37,022,059		13,459,567	16,316,962	7,245,530	400,000	6,020,530	275,000	275,000	275,000	

Group 75 - Water Improvements

FY14-15 CIP Proposed

Project #	Project Title	Project $ Total	Funding Sources	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Anticipated Completion & Comments
	NEW PROJECTS						**Proposed Capital Budget**					
75122	Water Lines Replaceme Program - FY15 Phase	320,000	F513-Water Capital	0	0	320,000	320,000	0	0	0	0	Annual Contingency Replacement
75123	Water Meter Replaceme Program	600,000	F513-Water Capital	0	0	600,000	600,000	0	0	0	0	Jun 15 Priority B1 Replacement
75124	Process Controllers Replacement - Water Treatment Plant	100,000	F513-Water Capital	0	0	100,000	100,000	0	0	0	0	Jun 15 Priority B1 Replacement
	Totals											
3	New Projects	1,020,000		0	0	1,020,000	1,020,000	0	0	0	0	

Group 75 - Water Improvements

FY14-15 CIP Proposed

Project #	Project Title	Project $ Total	Funding Sources	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Anticipated Completion & Comments
	FUTURE PROJECTS						**Proposed Capital Budget**					
75PP- 001b	Water Lines Replaceme Program - Future Phases	1,370,000	F513-Water Capital	0	0	1,370,000	0	320,000	350,000	350,000	350,000	Annual Contingency Replacement
75PP- 067	Storage & Pumping Facilities	4,400,000	F513-Water Capital	0	0	0	0	0	0	0	0	Jun 18 Priority D1
			Future Developments	0	0	4,400,000	0	0	0	4,400,000	0	New Facilities
75PP- 077	Water Line Replacemen 20th to 23rd Streets, bw	2,280,000	F513-Water Capital	0	0	2,280,000	0	0	2,280,000	0	0	Jun 17 Priority C4 Replacement
		Holly & Bessie Avenues										
75PP- 081	Water Storage Reservio Tracy Gateway Area	2,268,000	F356-Tracy Gateway Ai	0	0	2,268,000	0	0	0	0	2,268,000	Jun 19 Priority D2 New Facilities
75PP- 082	Water Pump Stations - Tracy Gateway Area	1,620,000	F356-Tracy Gateway Ai	0	0	1,620,000	0	0	0	0	1,620,000	Jun 19 Priority D3 New Facilities
75PP- 083	Emergency Well for Tracy Gateway Area	2,671,100	F356-Tracy Gateway Ai	0	0	2,671,100	0	0	0	0	2,671,100	Jun 19 Priority D4 New Facilities
75PP- 086	Watershed Survey - 2014 Update	35,000	F513-Water Capital	0	0	35,000	0	35,000	0	0	0	Dec 15 Priority C2 Study
75PP- 087	Urban Water Mgmt Plan - 2014 Update	85,000	F513-Water Capital	0	0	85,000	0	85,000	0	0	0	Dec 15 Priority C1 Study
75PP- 094	Water Master Plan - Citywide Update	38,100	F513-Water Capital	0	0	14,000	0	14,000	0	0	0	Jun 16 Priority D5
			F356-Tracy Gateway Ai	0	0	24,100	0	24,100	0	0	0	Study
75PP- 097	Water Line Replacemen Bessie Ave - Lowell to Grant Line	1,180,000	F513-Water Capital	0	0	1,180,000	0	1,180,000	0	0	0	Jun 16 Priority C3 Replacement
75PP- 099	Conjunctive Groundwat Use Study	154,300	F513-Water Capital	0	0	80,000	0	80,000	0	0	0	Jun 16 Priority B3
			F352-So MacArthur PA	0	0	54,300	0	54,300	0	0	0	Study
			F354-ISP South Area	0	0	20,000	0	20,000	0	0	0	

(Continued)

Group 75 - Water Improvements

FY14-15 CIP Proposed

Project #	Project Title	Project $ Total	Funding Sources	Prior Years Expenditures	FY13-14 Appropriations	NEW APPROPRIATIONS REQUIRED Total	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	Anticipated Completion & Comments
FUTURE PROJECTS (Continued)							**Proposed Capital Budget**					
75PP- 105	Water Filter Replacemer Water Treatment Plant	500,000	F513-Water Capital	0	0	500,000	0	0	250,000	0	250,000	Jun 19 Priority B1 Replacement
75PP- 201	Water Impmts Ellis Prgm Area	22,770,200	F3xx-Ellis Prgm Area	0	0	22,770,200	0	0	0	22,770,200	0	
			Future Developments	0	0	0	0	0	0	0	0	
	Totals											
13	Future Projects	39,371,700		0	0	39,371,700	0	1,812,400	2,880,000	27,520,200	7,159,100	

APPENDIX C

Groundwater Documentation

DWR Bulletin 118 Description of San Joaquin Valley Groundwater Basin-Tracy Subbasin

San Joaquin Valley Groundwater Basin
Tracy Subbasin

- Groundwater Basin Number: 5-22.15
- County: San Joaquin, Contra Costa, Alameda
- Surface Area: 345,000 acres (539 square miles)

Basin Boundaries and Hydrology

The San Joaquin Valley comprises the southernmost portion of the Great Valley Geomorphic Province of California. The Great Valley is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The Tracy Subbasin is defined by the areal extent of unconsolidated to semiconsolidated 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. The Tracy Subbasin is located adjacent to the Eastern San Joaquin Subbasin on the east and the Delta-Mendota Subbasin on the south. All of the above mentioned subbasins are located within the larger San Joaquin Valley Groundwater Basin. The Tracy Subbasin also lies to the south of the Sacramento Valley Groundwater Basin, Solano Subbasin.

The Tracy Subbasin is drained by the San Joaquin River and one of its major westside tributaries; Corral Hollow Creek. The San Joaquin River flows northward into the Sacramento and San Joaquin Delta and discharges into the San Francisco Bay. Annual precipitation within the subbasin ranges from about 11 inches in the south to about 16 inches in the north.

Hydrogeologic Information

Water Bearing Formations

The Tracy Subbasin 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 basin. Information regarding the water bearing units and groundwater conditions was taken from (Hotchkiss and Balding 1971), (Bertoldi et al. 1991), and (Davis G.H. et al. 1964).

Tulare Formation. The Tulare is exposed in the Coast Range foothills along the western margin of the basin and dips eastward toward the axis of the valley. It 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 basin. The Tulare formation is moderately permeable, with most of the larger agricultural, municipal and industrial extractions coming from below the Corcoran clay. Wells completed in this zone produce up to 3,000 gallons per minute. Small domestic wells often obtain their supply from above the Corcoran clay. However, groundwater above the Corcoran clay is often of poor quality. The total thickness of the Tulare Formation is about 1,400 feet.

Specific yield values for water bearing deposits in the San Joaquin Valley and Delta area range from about 7 to 10 percent.

Older Alluvium. Older alluvium consists of loosely to moderately compacted sand, silt and gravel deposited in alluvial fans during the Pliocene and Pleistocene. The older alluvium is widely exposed between the Coast Range foothills and the Delta. The thickness of the older alluvium is about 150 feet. It is moderately to locally highly permeable.

Flood Basin Deposits. Flood basin deposits occur in the Delta portion of the subbasin, in the northern two-thirds of the basin. They are the distal equivalents of the Tulare Formation and older and younger alluvial units and consist primarily of silts and clays. Occasional interbeds of gravel occur 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 basin deposits, but they generally contain poor quality groundwater. The maximum thickness of the unit is about 1,400 feet.

Younger Alluvium. Younger alluvium includes those deposits that are accumulating or would be accumulating under natural conditions. It includes sediments deposited in the channels of active streams as well as overbank deposits and terraces of those streams. They are present along the channel of Corral Hollow Creek and consist of unconsolidated silt, fine- to medium-grained sand, and gravel. Sand and gravel zones in the younger alluvium are highly permeable and, where saturated, yield significant quantities of water to wells. The thickness of the younger alluvium in the Tracy Subbasin is less than 100 feet.

Groundwater Level Trends

Review of hydrographs for the Tracy Subbasin indicate that except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the last 10 years (DWR unpublished data; San Joaquin County Flood Control unpublished data).

Groundwater Storage

Groundwater Storage Capacity. There are no published groundwater storage values for the entire basin; however, (Hotchkiss and Balding 1971), estimated the groundwater storage capacity for the Tracy-Patterson Storage Unit at 4,040,000 af. This storage unit includes the southern portion of the currently defined Tracy Subbasin from approximately one-mile north of Tracy to the San Joaquin-Stanislaus County line. Since the Tracy Subbasin comprises roughly one third of the Tracy-Patterson Storage Unit, it can be inferred that the approximate storage capacity of the southern portion of the Tracy Subbasin is on the order of 1,300,00 af.

Groundwater in Storage. There are no published data available on the amount of groundwater in storage for this subbasin.

Groundwater Budget (Type C)

There is insufficient published data available to provide a groundwater budget for this subbasin.

Groundwater Quality

Characterization. In general, the northern part of the subbasin is characterized by a sodium water type and the southern part of the subbasin is characterized by calcium-sodium type water (Sorenson 1981). The northern part of the subbasin is also characterized by a wide range of anionic water types including: bicarbonate; chloride; and mixed bicarbonate-chloride types. Major anions in the southern part of the subbasin include sulfate-chloride and bicarbonate-chloride. Dissolved solids concentrations in well water sampled in San Joaquin and Contra Costa Counties ranged from 50 to 3,520 mg/L, with a mean of 463 and medium of 269 (Sorenson 1981). The highest TDS values were found in the central and western portion of the USGS study area which, in general, corresponds with the limits of the Tracy Subbasin. Based on analyses of 36 water supply wells in the subbasin, TDS ranges from 210 to 7,800 mg/L and averages about 1,190 mg/L.

Impairments. Areas of poor water quality exist throughout the subbasin. Areas of elevated chloride occur in several areas including: along the western side of the subbasin; in the vicinity of the City of Tracy; and along the San Joaquin River. Areas of elevated nitrate occur in the northwestern part of the subbasin and in the vicinity of the City of Tracy. Areas of elevated boron occur over a large portion of the subbasin from south of Tracy and extending to the northwest side of the subbasin.

Water Quality in Public Supply Wells

Constituent Group[1]	Number of wells sampled[2]	Number of wells with a concentration above an MCL[3]
Inorganics – Primary	34	4
Radiological	39	2
Nitrates	36	2
Pesticides	36	2
VOCs and SVOCs	37	0
Inorganics – Secondary	34	18

[1] A description of each member in the constituent groups and a generalized discussion of the relevance of these groups are included in *California's Groundwater – Bulletin 118* by DWR (2003).
[2] Represents distinct number of wells sampled as required under DHS Title 22 program from 1994 through 2000.
[3] Each well reported with a concentration above an MCL was confirmed with a second detection above an MCL. This information is intended as an indicator of the types of activities that cause contamination in a given basin. It represents the water quality at the sample location. It does not indicate the water quality delivered to the consumer. More detailed drinking water quality information can be obtained from the local water purveyor and its annual Consumer Confidence Report.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: 500 – 3,000 gpm with specific capacities of 10 to 100 gpm/ft (Davis G.H. et al. 1964)	
	Total depths (ft)	
Domestic	Range: 44 – 665	Average: 188 (Based on 888 well completion reports)
Municipal/Irrigation	Range: 60 – 1,020	Average: 352 (Based on 70 well completion reports)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR	Groundwater levels	3 semiannually
San Joaquin County Flood Control [and cooperators]	Groundwater levels	15 semiannually
DWR	Miscellaneous water quality	6 biennially
Department of Health Services and cooperators	Title 22 water quality	183 annually

Basin Management

Groundwater management:	San Luis and Delta-Mendota Water Authority North adopted an AB 3030 plan on December 5, 1997. The Water Authority is composed of the following agencies/companies: Banta-Carbona I.D.; City of Tracy, Del Puerto W.D.; Patterson W.D.; Plain View W.D.; San Joaquin County FC&WCD; West Side I.D.; and West Stanislaus I.D.
Water agencies	
Public/Private	Naglee Burk I.D., North Delta W.A., City of Tracy, Contra Costa W.D., Diablo W.D., East Contra Costa I.D., Alameda CFC&WCD, Banta-Carbona I.D., Byron Bethany I.D., Central Delta W.A., City of Antioch WSA, City of Brentwood WSA, Pescadero R.D. No. 2058, Plain View W.D., Reclamation District No. 2039. South Delta W.A., Stockton-East W.D., The West Side I.D., West Stanislaus I.D.

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Errata

Updated groundwater management information and added hotlinks to applicable websites. (1/20/06)

City of Tracy Groundwater Management Policy Mitigated Negative Declaration (including 2001 Estimated Groundwater Yield Study)

GROUNDWATER MANAGEMENT POLICY

MITIGATED NEGATIVE DECLARATION

PREPARED FOR:

CITY OF TRACY
520 TRACY BOULEVARD
TRACY, CA 95376

PREPARED BY:

PMC
PACIFIC MUNICIPAL CONSULTANTS

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APRIL 2001

MITIGATED NEGATIVE DECLARATION

FOR THE

GROUNDWATER MANAGEMENT POLICY

CITY OF TRACY

Prepared for:

CITY OF TRACY
Development and Engineering Department
520 Tracy Boulevard
Tracy, CA 95376

Prepared by:

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APRIL 2001

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INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This document is an initial study and Mitigated Negative Declaration (MND) prepared pursuant to the California Environmental Quality Act (CEQA), for the proposed project allowing the adoption of a Policy which involves a change in the operation of the City's existing well facilities by increasing groundwater production. This MND has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Sections 21000 *et seq.*, and the CEQA Guidelines.

An initial study is conducted by a lead agency to determine if a project may have a significant effect on the environment. In accordance with the CEQA Guidelines, Section 15064, an environmental impact report (EIR) must be prepared if the initial study indicates that the proposed project under review may have a potentially significant impact on the environment. A negative declaration may be prepared instead, if the lead agency prepares a written statement describing the reasons why a proposed project would not have a significant effect on the environment, and, therefore, why it does not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a negative declaration shall be prepared for a project subject to CEQA when either:

a) The initial study shows there is no substantial evidence, in light of the whole record before the agency, that the proposed project may have a significant effect on the environment, or

b) The initial study identified potentially significant effects, but:

(1) Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and

(2) There is no substantial evidence, in light of the whole record before the agency, that the proposed project as revised may have a significant effect on the environment.

If revisions are adopted into the proposed project in accordance with the CEQA Guidelines Section 15070(b), a mitigated negative declaration is prepared.

1.2 BACKGROUND AND PURPOSE

According to the City of Tracy's Water Master Plan, Final Report, adopted in June 1994, the City's groundwater resources primarily involve the lower zone of the Tulare Formation. This formulation represents a portion of a regional aquifer system in the San Joaquin sub-region of the Central Valley groundwater basin.

A groundwater yield study by Kennedy/Jenks/Chilton, was completed in 1990 for the City of Tracy and stated that the anticipated safe yield to the City is 6,700 acre-feet, but recommended

that the City use a more conservative operational yield of 6,000 acre-feet annually. Remaining below the defined "safe yield" of 6,700 acre-feet, the City has not seen a change in groundwater conditions in the last 10 years.

Data collected in the past ten years appears to indicate that a higher annual groundwater-pumping rate (i.e., safe yield) may be possible either on an interim basis or on a permanent basis. The proposed project (to adopt a City policy) would allow the City of Tracy to extract up to 9,000 acre-feet per year (AFY) from the lower aquifer zone. This is an additional 2,300 AFY above the current City cap of 6,700 AFY.

This Mitigated Negative Declaration reviews the environmental impacts of increasing the groundwater yield.

1.3 LEAD AGENCY

The lead agency is the public agency with primary responsibility over a proposed project. Where two or more public agencies will be involved with a project, CEQA Guidelines Section 15051 provides criteria for identifying the lead agency. In accordance with CEQA Guidelines Section 15051(b)(1), "the lead agency will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose." Based on these criteria, the City of Tracy will serve as lead agency for the proposed project.

1.4 PURPOSE AND DOCUMENT ORGANIZATION

The purpose of this Initial Study and Mitigated Negative Declaration is to evaluate the potential environmental impacts of the proposed project to adopt a City policy that would increase groundwater production above the current City cap.

This document is divided into the following sections:

- **1.0 Introduction** - Provides an introduction and describes the purpose and organization of this document;
- **2.0 Project Description** - Provides a detailed description of the proposed project;
- **3.0 Environmental Setting, Impacts and Mitigation Measures** - Describes the environmental setting for each of the environmental subject areas, evaluates a range of impacts classified as "no impact," "less than significant," "potentially significant unless mitigation incorporated," or "potentially significant" in response to the environmental checklist, and provides mitigation measures, where appropriate, to mitigate potentially significant impacts to a less than significant level;
- **4.0 Determination** - Provides the environmental determination for the project;
- **5.0 Report Preparation and References** - Identifies staff and consultants responsible for preparation of this document, persons and agencies consulted, and references.

PROJECT DESCRIPTION

2.1 PROJECT LOCATION

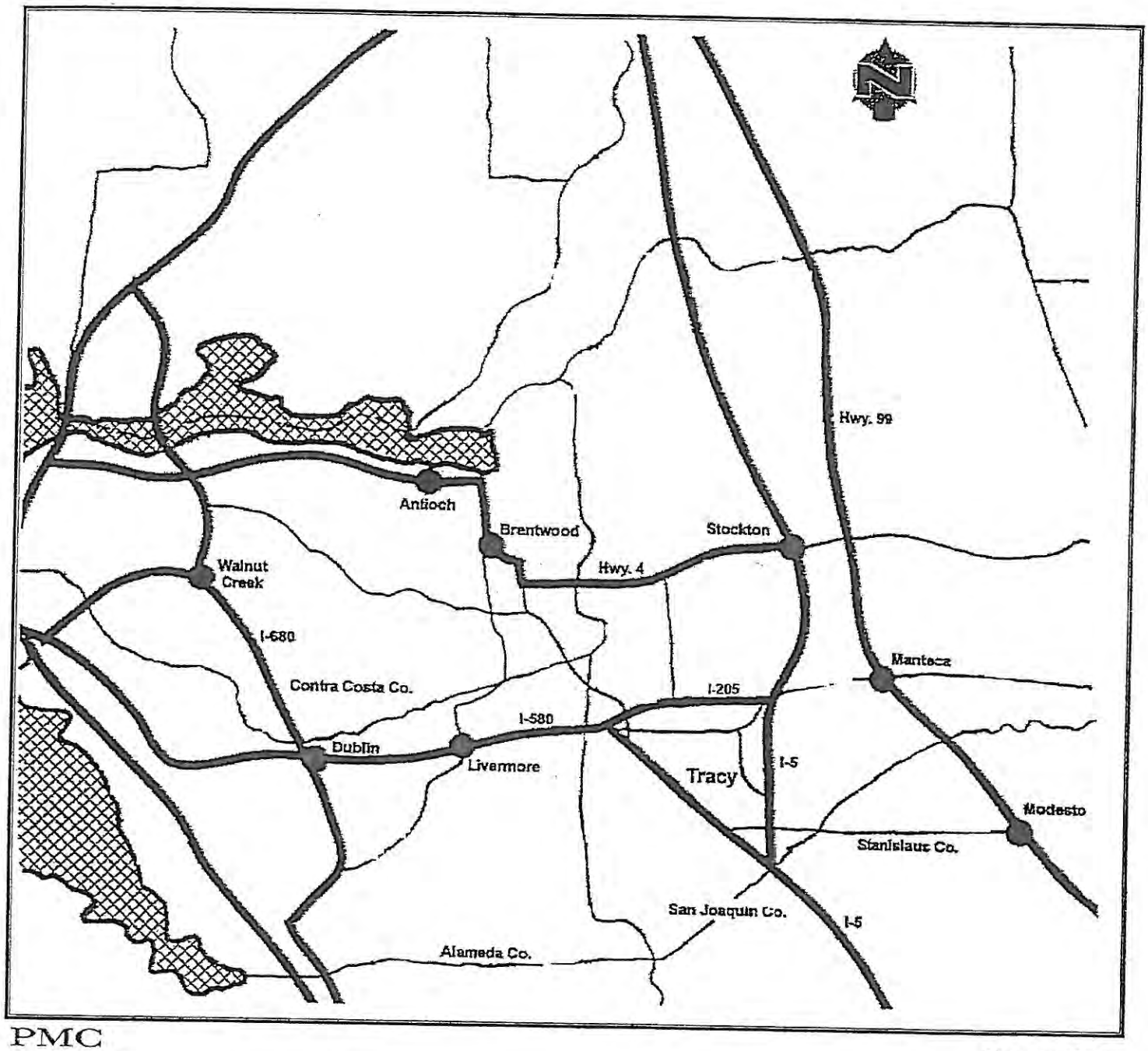
The Tracy Planning Area, as considered by the 1993 General Plan/Urban Management Plan (UMP), includes the City of Tracy, as well as approximately 63,000 acres of adjacent land located within San Joaquin County. The City of Tracy regional location is shown in **Figure 2-1.** The Tulare Formation, the City of Tracy's groundwater resource, consists of groundwater-bearing materials composed of poorly sorted gravelly material, including clay, sand, and silt underlying the Tracy Planning Area. These materials, which contain fresh groundwater, are referred to as the Tulare Formation of the Central Valley groundwater basin. Corcoran clay, laterally expansive clay up to 100 feet thick, separates the upper aquifer zone, which is up to 200 feet thick, from the lower aquifer zone, which is up to 650 feet thick.

2.2 BACKGROUND

The City of Tracy currently obtains water from both surface water and groundwater sources. The City, as a public purveyor of water, excises its appropriative right to utilize groundwater for beneficial use by the public. However, the UMP identified constraints to planned growth associated with water supply and the City's continued reliance on groundwater. The 1993 UMP EIR and the 1994 Water Master Plan suggested gradual phase out of groundwater as a regular water supply for the City after additional surface water supplies have been identified and acquired. Although additional surface water supplies have been identified and appear adequate to meet the City's need at projected UMP buildout, the final acquisition of these new surface water supplies would likely occur over the next two to five years.

The groundwater resources available in the Tracy Planning Area were analyzed in 1990. Based on a report prepared by Kennedy/Jenks/Chilton, the City recognized a "safe yield" from the Tulare Formation of 6,700 acre-feet a year (AFY), and adopted the report's recommendation that the City produce no more than 6,000 AFY in groundwater from the formation. The safe yield identified by Kennedy/Jenks/Chilton was based on the maximum historical withdrawal of 5,200 AFY, plus 1,500 AFY based on abandonment of a well by the West Side Irrigation District. Since 1974, total groundwater production from the Tulare Formation for use in the Tracy Planning Area has ranged from approximately 500 AFY to 5,800 AFY.

The City of Tracy adopted and certified the Urban Management Plan (UMP) and Environmental Impact Report (UMP EIR) in September 1993 (State Clearinghouse No. 19092060). The UMP directs growth in the Tracy Planning Area (TPA) to ensure well planned and managed growth for the benefit of current and projected future populations of the City at ultimate buildout. The UMP EIR noted that the City obtains surface water from the Delta-Mendota Canal and groundwater from City-owned wells. The UMP EIR included a series of mitigation measures intended to prevent overdraft conditions and phase out the use of and reliance upon groundwater for water supply as new surface water supplies were acquired. However, as noted in the UMP EIR, the Tulare Formation had not experienced overdraft conditions in the TPA.



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FIGURE 2-1
REGIONAL LOCATION MAP

The City's 1994 Water Master Plan recommended that the coordinated management and use of groundwater and surface water resources ("conjunctive use") continue until additional surface water supplies were acquired, with a gradual phase out of groundwater as a supply. The Water Master Plan noted that the biggest challenge to the City would be securing enough surface water supplies to meet the needs of projected growth.

A groundwater management plan for eight governmental entities, including the City of Tracy, was completed in April 1996. The Groundwater Management Plan (GMP) is titled, "Groundwater Management Plan for Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County" and prepared by Stoddard & Associates for the San Luis & Delta-Mendota Water Authority. The City adopted this plan under Ordinance No 511. The plan included a hydrologic inventory of the and was designed to assess impacts to the groundwater basin and optimize sustained use of groundwater resources. Various elements of the plan included; monitoring of groundwater levels and storage, facilitating conjunctive use operations, coordination with state and federal regulating agencies, regulation of contaminant migration into groundwater of the northern sub-basin, well construction, construction and operation of groundwater management facilities, mitigation of groundwater overdraft, etc.

Based on recommendations of the 1993 Urban Management Plan (UMP) and 1994 Water Master Plan, the City of Tracy typically requires that all new major developments to secure sufficient surface water supplies. Existing and projected surface water supplies have been identified and appear adequate to meet the City's needs on a long-term basis. However, the final acquisition of these new surface water supplies is anticipated to occur over the next two to five years.

2.3 PROPOSED PROJECT

Additional surface water supplies have been identified and appear adequate to meet the City's need. However, the final acquisition of these new surface water supplies is anticipated to occur over the next two to five years. The City is proposing as a policy to utilize additional groundwater above the City's current production rate in order to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available.

In order to determine if additional groundwater resources are available in the Tracy area, the City conducted a groundwater analysis. The Estimated Groundwater Yield Study, prepared by Bookman-Edmonston Engineering (see **Appendix A**) provides an evaluation of potential groundwater yield and determined that a 2,300 AFY increase of the average annual operational groundwater yield over the yield recommended in the 1990 Kennedy/Jenks/Chilton study can be provided within the estimated sustainable yield without adverse impact to groundwater resources or quality in the Tracy area over a fifty year timeframe. This expansion of groundwater usage to 9,000 AFY would be within the City's estimated share of the aquifer's sustainable yield of 22,000 AFY of the 28,000 AFY total (this includes groundwater usage by West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation

District) and would result in groundwater level drop of 10 feet, but would stabilize at this level (Bookman-Edmonston, 2001). The additional groundwater production would be an operational change and would not require the construction of additional wells or distribution facilities.

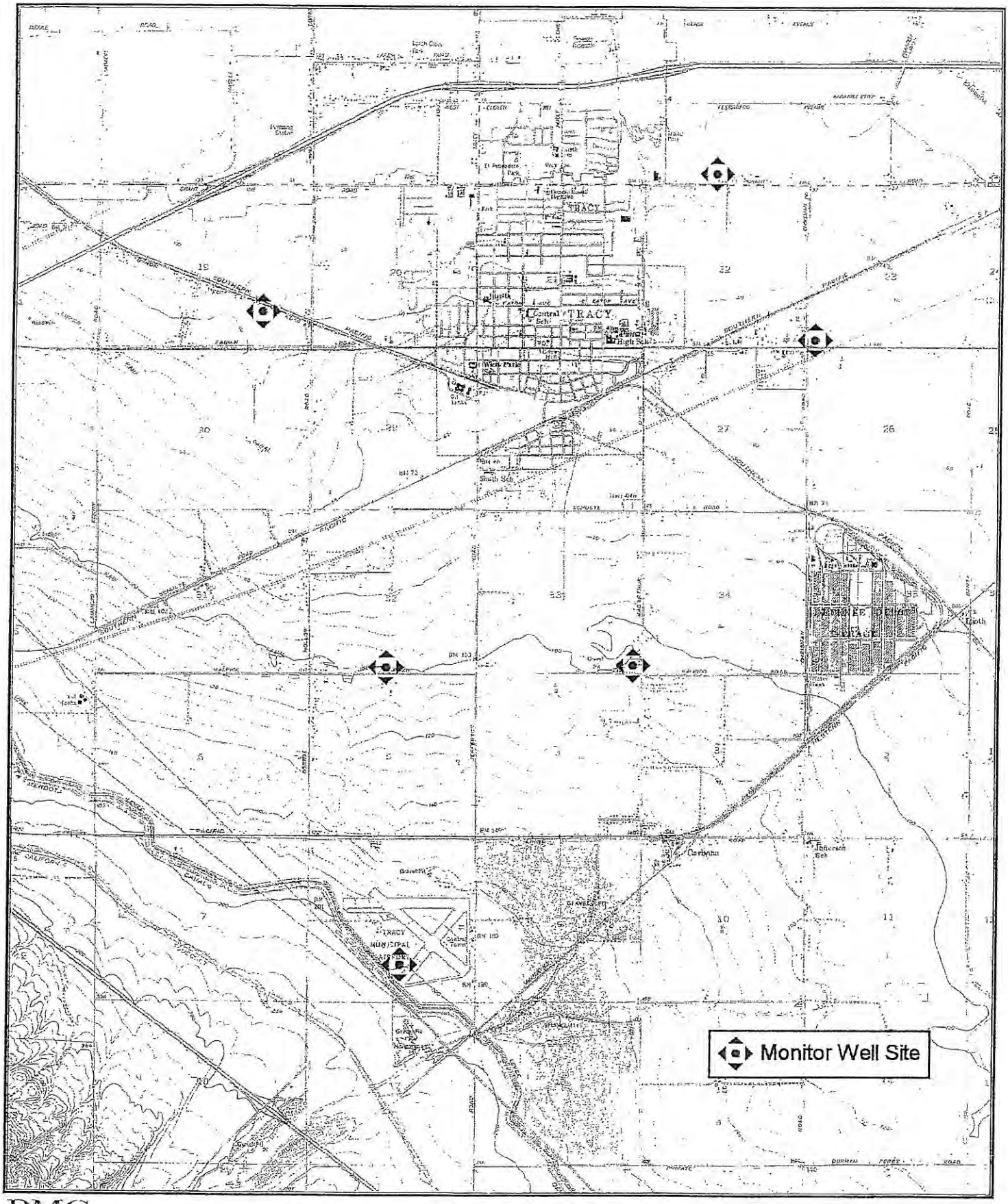
The Estimated Groundwater Yield Study was based on quantitative and qualitative analyses, historic rates of groundwater use and changes in groundwater conditions, as well as utilization of prior groundwater studies including the following:

- G.H. Davis et al., *Groundwater Conditions and Storage Capacity in the San Joaquin Valley, California,* USGS Water Supply Paper 1469, 1959.
- W.R. Hotchkiss and G.O. Balding, *Geology, Hydrology, and Water Quality of the Tracy-Dos Palos Area, San Joaquin Valley, California,* USGS Open File Report 72-169, August 6, 1971.
- U.S. Geology Survey, *Groundwater Flow in the Central Valley, California, Regional Aquifer System Analysis,* Professional Paper 1401-D.
- Kennedy/Jenks/Chilton, *Tracy Area Groundwater Yield Evaluation: Final Report,* November 1990.

The Estimated Groundwater Yield Study also considered cumulative groundwater usage in the study area by the City and adjacent irrigation districts (West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation District).

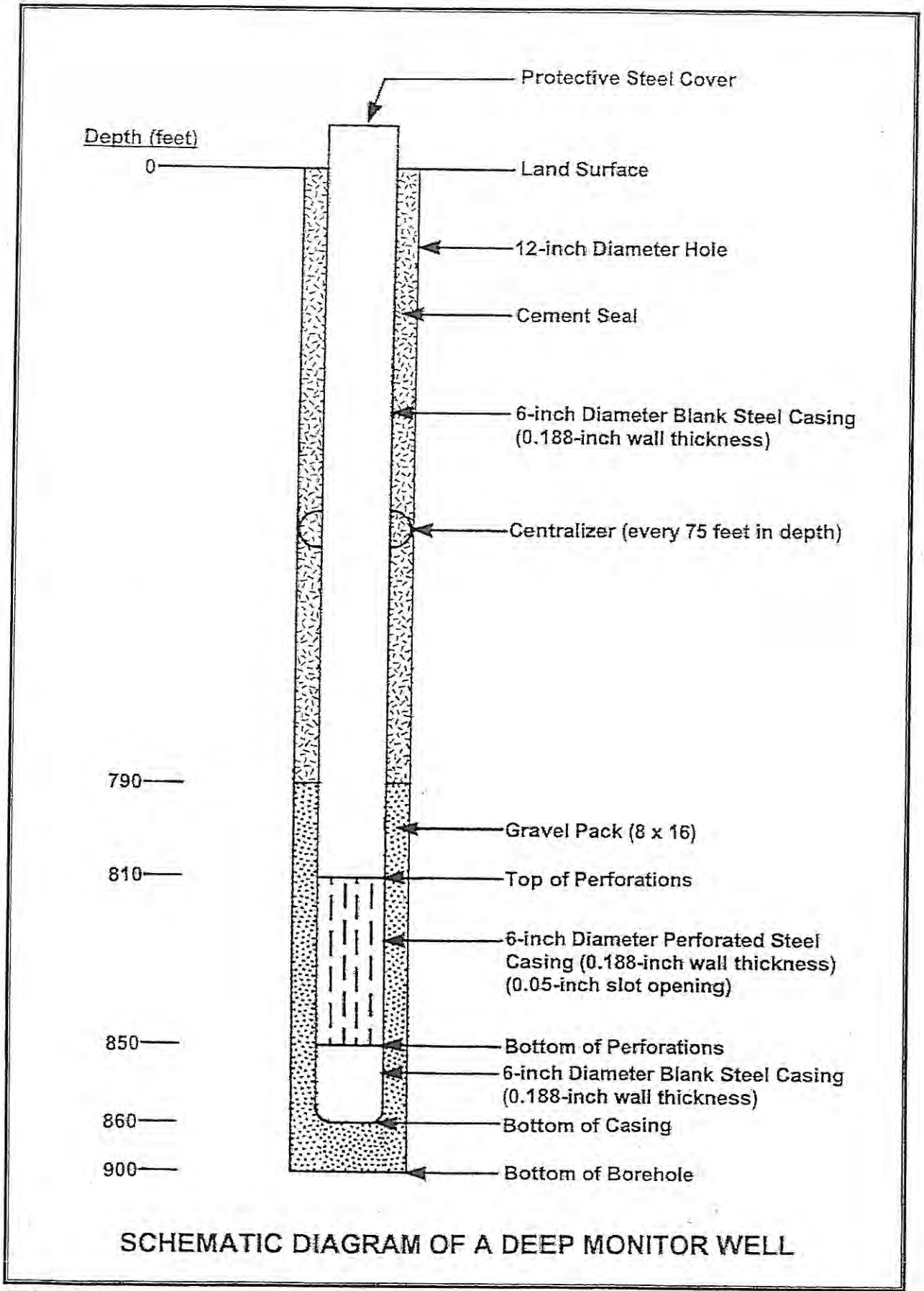
In addition to identification of increased groundwater production in the Tracy area, Bookman-Edmonston Engineering recommends the establishment of groundwater monitoring network for groundwater quality and subsidence, which is included in the proposed Policy. Specifically, up to six monitor well sites would be installed around the City as shown in **Figure 2-2**. A typical cross-section of the monitor well is shown in **Figure 2-3**. Each monitor well would be a multiple completion well and would consist of three separate 12-inch diameter holes with 6-inch casings and 2 by 2.5 foot above ground concrete caps installed within 50 feet of each other and would monitor three specific portions of the aquifer below the Corcoran Clay confining layer. These monitored portions of the aquifer would be shallow (380 to 480 feet in depth), intermediate (610 to 690 feet in depth) and deep (780 to 870 feet in depth). Five wells are located near roadways including; Grant Line Road, Byron Road, Valpicao Road, corner of Valpico and MacArthur, and the corner of East 11th Street and Chrisman Road. The sixth monitor well would be located at the Tracy Airport.

These wells would be constructed in two phases. The first phase would be the three well sites west of the City. The second phase would install the remaining well sites. Water level readings would be taken at each monitor well and water supply well each month, while water quality sampling would be taken quarterly from each monitor well and would sample for the following constituents:



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FIGURE 2-2
PROPOSED MONITOR WELL SITES



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FIGURE 2-3
TYPICAL CROSS-SECTION OF A MONITOR WELL

- Major cations
- Major anions
- Iron
- Manganese
- Arsenic
- Chromium
- Fluoride
- Alpha activity
- Boron
- PH
- Total dissolved solids
- Electrical conductivity

In addition to water quality monitoring, ground survey monitoring would be conducted to evaluate potential land subsidence from increased groundwater production. This would involve the installation of a benchmark at each monitor well and active production well. If significant subsidence is observed, a compaction well may be installed to further evaluate subsidence impacts.

Adoption of this proposed Policy would implement recommendations of the Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County, which identified the need for groundwater analysis and monitoring at the local level in the region.

2.4 PROJECT APPROVALS

Based on the results and recommendations of the Estimated Groundwater Yield Study, the Tracy City Council would adopt the following policy associated with increased groundwater production:

GROUNDWATER MANAGEMENT POLICY

> Based on the results of the Estimated Groundwater Yield Study prepared by Bookman-Edmonston Engineering, the City intends to increase groundwater production to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available. The City Council hereby adopts this Policy for the extraction and allocation of 9,000 AFY of groundwater. The proposed 9,000 AFY extraction rate represents an increase of 3,200 acre-feet above the current base extraction rate of 5,800 AFY of groundwater. Of this 9,000 AFY, 6,700 AFY has already been allocated through the actions of the City of Tracy

Capacity Allocation Review Board (CARB) established pursuant to Section 11.16.120 of the City of Tracy Municipal Code. Therefore, the extraction of up to 9,000 AFY represents a potential increased extraction of 2,300 AFY over the 6,700 acre-feet per year currently allocated by the CARB. This groundwater would be extracted from the lower confined aquifer and allocated to specific land uses approved by the City. Details of this Policy are presented below:

A. Process for the Extraction of Groundwater

Groundwater in the City of Tracy is currently extracted by eight existing production wells. Generally, these wells and structures occupy no more than one-quarter acre of land. All well pumping equipment is enclosed in single story physical structures. No new production wells are expected to be added to increase groundwater production. However, up to six monitor wells will be installed within and adjacent to the City to monitor changes in groundwater conditions as a result of increased groundwater production.

B. Process for the Monitoring of Groundwater Extraction

While the Estimated Groundwater Yield Study identifies that no significant adverse impacts to groundwater resources are expected, increasing the extraction of groundwater from the aquifer could impact groundwater water levels, ground subsidence, and groundwater quality. In terms of groundwater levels, increasing the extraction could result in declining groundwater storage to levels at a rate that could exceed the recharge capacity of the basin. Reducing the amount of groundwater in storage could also lead to the dewatering of fine-grained geological strata, thus resulting in land subsidence and a potential reduction in the storage capacity of the aquifer. Finally, increasing groundwater extraction could potentially decrease groundwater quality by increasing or changing the concentrations of organic and inorganic chemical substances, or constituents within the aquifer.

1. Groundwater Level and Subsidence Monitoring

   The following process is established to monitor for groundwater level changes and subsidence.

   a. Benchmarks shall be established at each monitor well and active production well and tied to an established local bench circuit to provide the appropriate datum points for elevation measurements.

   b. Groundwater levels shall be measured monthly at each monitor well and active production well and related to the benchmarks to determine changes in groundwater elevation.

c. On an annual basis the bench circuit, which includes the benchmark at each well site (both production and monitor wells), shall be surveyed to determine if there has been any differential settlement resulting from the increase in groundwater extraction.

d. A qualified hydrogeologist shall review the groundwater level and ground elevation measurements annually. Contour maps shall be prepared (for the base year and each subsequent year monitoring occurs) and compared to the prior year's maps for evidence of subsidence or adverse changes in groundwater levels or quality. Should adverse changes be noted, recommended operational changes at each production well shall be implemented (e.g., shut down of specific wells, reduction in groundwater extraction rates) if the monitoring results indicate adverse impacts in order to avoid groundwater overdraft and subsidence conditions.

e. All monitor wells installed in accordance with this Policy will follow all sampling frequencies and protocols outlined in this Policy.

2. Groundwater Quality Monitoring

The following protocols are established to monitor for potential groundwater quality changes due to increased extraction rates:

a. Groundwater shall be sampled and tested on a quarterly basis for the following constituents.

- Major Cations
- Major Anions
- Iron
- Manganese
- Arsenic
- Chromium
- Fluoride
- Alpha Activity
- Boron
- PH
- Total Dissolved Solids
- Electrical Conductivity

b. Monitoring for the constituents listed above shall be conducted to ensure that any changes in constituent levels do not exceed the established maximum contaminant

levels (MCL) or public health goals for each identified constituent. Should adverse water quality conditions be noted, recommended operational changes at each production well (e.g., installation of treatment facilities, shut down of specific wells) shall be implemented to protect public health.

c. Monitoring at all newly constructed monitor wells shall follow the process established above.

C. Allocation of the Groundwater to Development Projects

The City intends to allocate this water to various development projects within the City. A total of 2,300 additional AFY of water (to serve approximately 4,600 "equivalent consumer units") is available from this expanded extraction process, for allocation to approved development projects. In all cases, these projects will be consistent with the City's Urban Management Plan, approved Specific Plans, Development Agreements, Planned Unit Developments, Vesting Tentative Maps, etc., that have received all necessary approvals and are eligible for other findings as part of the CARB/RGMP process forth below. Certain criteria, which will guide the City's allocation of groundwater, are as follows:

1. The City may increase its groundwater production from its current "cap" of 6,700 AFY to 9,000 AFY. This increased production is to provide an interim water source until new surface water sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources. This additional water source may be utilized as a permanent source if adequate surface water sources never become available.

2. The allocation should further the goal to provide a balanced distribution of land uses between residential population, jobs, and ability to provide services. In this context, and yet recognizing current inventory of vested residential projects, approximately 70 percent of the extracted groundwater may be allocated to residential uses, and the remaining 30 percent may be allocated to non-residential uses. Infill projects, whether residential or non-residential, may receive allocations under the above approximate proportions.

3. A maximum of 1,200 equivalent consumer units ("ECUs") of water capacity may be allocated on an annual basis. Water capacity shall not be allocated unless the necessary wastewater capacity is available to the project. The actual number of ECUs may vary from year to year.

4. The project receiving an allocation of groundwater is consistent with the Urban Management Plan.

5. The allocation of groundwater to residential uses should be conducted in accordance with Chapter 10.12 of the Tracy Municipal Code ("Growth Management Ordinance", which establishes and defines RGAs) as amended by Measure A, Chapter 11.16 of the Tracy Municipal Code ("Wastewater Treatment Facilities Capacity Regulation and Allocation", which defines ECUs, and establishes the Capacity Allocation Review Board), as well as the City's Growth Management Guidelines.

6. The allocation of groundwater to non-residential uses should be conducted in accordance with Chapter 11.16 of the Tracy Municipal Code ("Wastewater Treatment Facilities Capacity Regulation and Allocation", which defines ECUs, and establishes the Capacity Allocation Review Board).

2.5 ALTERNATIVE WATER SUPPLY SOURCES

The City is pursuing several sources of additional water supply to meet the needs of planned growth. These sources of water could be expected to be available over varying timeframes and could provide adequate water sources for planned growth in the City without the use of groundwater. These water supply sources are summarized below:

- **Groundwater Banking** - This would involve use of the groundwater basin for water storage and could occur under two options. The first option would involve maximizing the use of surface water resources in lieu of groundwater pumping (i.e., In-Lieu Banking). The groundwater not used would then be available for subsequent use during years when surface water resources are completely utilized. The second option would be to inject surplus water into the groundwater basin for later consumption using the City's existing distribution and well system (i.e., Aquifer Storage and Recovery). The City is currently moving forward with a pilot project to test inject treated surface water into the groundwater basin. The City has received a CALFED grant to pursue groundwater banking.

- **Kern Water Bank (and other Kern County Suppliers)** - The Kern Water Bank (KWB) is located in Kern County, at the southern end of the San Joaquin River valley. The KWB has approximately 50,000 ac-ft of water available for sale on an annual basis for either long-term or short-term deal. The water is highly reliable in all water years. They also have the ability to bank water. They utilize water from the California Aqueduct, Friant-Kern Canal and the Kern River. Kern has an interest in selling water to the City of Tracy either on annual basis or for a long-term contract. Consecutive annual purchases or a long-term water contract would require the CEQA/NEPA process that would likely take two years. Single year water purchased would most likely not require any environmental review to be completed. The City would need to expand its water treatment plant for this water source. California Department of Health Services requirements on the water treatment plant expansion would require the City to construct an intake on the California Aqueduct. On an interim basis, potential water transferred to

the City would require a third party to become involved in the transfer, because of the City's current location of water intakes are on the Delta Mendota Canal and not on the California Aqueduct. The Santa Clara Valley Water District (SCVWD) has been used in discussion as the potential third party because they have rights to both the CA and the DMC and thus a transfer could be made through them. The City is also investigating the potential for the purchase of other long-term water supplies from suppliers in the Kern County area.

- **Purchase of Long-Term Water Contracts** – The City is negotiating with local irrigation districts (e.g., West Side Irrigation District and Banta Carbona Irrigation District) for the purchase of portions of their Bureau of Reclamation contracts. The combined total for the assigned contracts would provide the City with up to 10,000 acre-feet of water per year. This water has agricultural reliability, meaning that the quantity of water delivered would vary significantly year to year depending on hydrologic conditions and endangered species impacts (e.g., 0 to 100 percent reliability). Agreements have been drafted with the districts. Future work includes a CEQA/NEPA environmental document and Bureau approval. These items are anticipated to require two years to complete. This water supply has the potential to supplement City supplies on an annual basis, or to be utilized with a groundwater banking program.

- **BBID** - BBID has pre-1914 water rights. The water is also highly reliable in all water years. BBID takes water from the Sacramento-San Joaquin Delta (Delta) just up stream of the State Water Project (SWP) pumps on the California Aqueduct (CA). Use of BBID water by the City would require a water treatment plant expansion. BBID is currently taking the lead in the design and construction of a pipeline from BBID's intake to City WTP. The pipeline is likely to be completed in the next 2 to 3 years.

- **SSJID** – The City is currently participating in the South San Joaquin County Irrigation District (SSJID) South County Surface Water Supply Project. The City would receive up to 10,000 acre-feet annually of treated surface water by 2004 under best-case conditions. However, the EIR is currently under litigation, which will likely delay the project.

Even if the City ultimately utilizes one or more of the above sources, increased groundwater production is considered necessary to provide an interim water source until these sources are secured as well as provide the City with an emergency water supply source in the event of failure or contamination of the City's surface water supply sources.

ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

INTRODUCTION

This document is an Initial Study (IS) and Mitigated Negative Declaration (MND) and has been prepared to satisfy the requirements of the California Environmental Quality Act (CEQA)(Public Resources Code, Section 21000 *et seq.*) and the CEQA Guidelines (14 California Code of Regulations [CCR] Section 15000 *et seq.*). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before approving or implementing those projects.

This IS and MND are public documents to be used by the City of Tracy, as the lead agency for the proposed project, to determine whether the project may have a significant effect on the environment pursuant to CEQA. CEQA defines a significant impact as an impact that may have a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (CEQA Guidelines Section 15382).

If the lead agency finds substantial evidence that any aspect of the project, either individually or cumulatively, may have a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, the lead agency is required to prepare an environmental impact report (EIR), use a previously prepared EIR and supplement that EIR, or prepare a subsequent EIR to analyze the project at hand, unless the issue was adequately addressed in the previous EIR. If the lead agency finds no substantial evidence that the project or any of its aspects may cause a significant impact on the environment, a Negative Declaration shall be prepared. If, in the course of the analysis, it is recognized that the project may have a significant impact on the environment but that with specific mitigation measures these impacts shall be reduced to a less than significant level, a Mitigated Negative Declaration shall be prepared.

This section provides an evaluation of the potential environmental impacts of the proposed project, including the CEQA Mandatory Findings of Significance. There are 14 specific environmental issues evaluated in this chapter. Other CEQA considerations are evaluated in Chapter 4.0. The environmental issues evaluated in this chapter include:

- Land Use Planning, Population, and Housing
- Geophysical (Earth)
- Water
- Air Quality
- Transportation/Circulation
- Biological Resources
- Energy and Mineral Resources
- Hazards
- Noise
- Public Services
- Utilities and Services Systems
- Aesthetics
- Cultural Resources
- Recreation

For each issue area, one of five conclusions is made:

1. **Reviewed Under Previous Document:** Where the impact has been identified as potentially significant, this is checked if the impact has been adequately addressed in a previous environmental document, and further analysis is not required due to use of the tiering process (Section 21094 of Public Resources Code and Section 15152 of the

CEQA Guidelines). Discussion will include reference to the previous documents, and identification of mitigation measures incorporated from those previous documents.

2. **No Impact**: No project-related impact to the environment would occur with project development.

3. **Less than Significant Impact**: The proposed project would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.

4. **Potentially Significant Unless Mitigation Incorporated**: The proposed project would result in an environmental impact or effect that is potentially significant, but the incorporation of mitigation measure(s) would reduce the project-related impact to a less than significant level.

5. **Potentially Significant Impact**: The proposed project would result in an environmental impact or effect that is potentially significant, and no mitigation can be identified that would reduce the impact to a less than significant level.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.1 LAND USE PLANNING, POPULATION, AND HOUSING					
Will the proposal:					
a. Conflict with general plan designations?	☐	☐	☐	■	☐
b. Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project?	☐	☐	☐	■	☐
c. Affect agricultural resources or operations (e.g. impacts to soils or farmlands, or impacts from incompatible land uses)?	☐	☐	☐	■	☐
d. Disrupt or divide the physical arrangement of an established community?	☐	☐	☐	■	☐
e. Be incompatible with existing or planned land use in the vicinity?	☐	☐	☐	■	☐
f. Cumulatively exceed official regional or local population projections?	☐	☐	☐	■	■
g. Induce substantial growth in an area either directly or indirectly (e.g. through projects in an undeveloped area or extension of major infrastructure)?	☐	☐	☐	■	■
h. Displace existing housing, especially affordable housing?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

REGULATORY FRAMEWORK FOR LAND USE IN THE CITY

Land use and development in the City of Tracy is guided by the City of Tracy Urban Management Plan/General Plan (UMP). Adopted in 1993, the UMP sets forth a wide range of goals, policies and implementation measures intended to guide the type, character and intensity of growth within the City and the 72,570-acre Tracy Planning Area. The UMP also provides guidance regarding the provision of public services and the management of the City's

groundwater resources. Further implementation of the provisions of the UMP are provided in the City's zoning ordinance and various specific and master plans. The rate of development in the City is regulated under Chapter 10.12 of the Tracy Municipal Code (Growth Management Ordinance), which allocates residential growth allocations (RGAs) for approved development projects. This section of the Tracy Municipal Code was recently amended by the voter approval of Measure A. Measure A reduced the maximum number of equivalent consumer units (ECUs), which are used for RGA allocations, from 1,500 per year to 750 per year.

EXISTING LAND USES AT MONITOR WELL SITES

As described in Section 2.0 (Project Description), the project would involve the installation of up to six monitor well sites around the City. The following is a summary of existing land use conditions at each monitoring site.

Grantline Road Monitor Well Site: This well site is located within the Northeast Industrial Specific Plan and is currently zoned Planned Unit Development (PUD). The site is currently vacant and has been recently disked. Land uses in the area include agricultural land, rural residential uses and industrial uses.

Byron Road Monitor Well Site: This well site is located within an existing builtout residential area, which is zoned Low Density Residential (LDR). The well site would be located on vacant land within the right-of-way.

Valpico Road Monitor Well Site: This well site is located outside of City limits, but is surrounded by the Saddlebrook, Kagehiro and South Schulte Specific Plan project sites. Land uses in the area include agricultural land and rural residential uses.

Tracy Municipal Airport Monitor Well Site: This well site is within the airport adjacent to the Delta-Mendota Canal. Land uses in the area consist of public uses (airport and John Jones Water Treatment Plant) and light industrial uses.

Valpico/MacArthur Monitor Well Site: This well site is within an area zoned Community Shopping Center (CS). The site is currently vacant and is disturbed. Land uses in the area include agricultural land and urban residential.

Eleventh Street Monitor Well Site: This well site is zoned Agricultural and is adjacent to the planned Northeast Industrial Area Pump Station and Reservoir. The site has been recently disked. Land uses in the area include agricultural land, rural residential, commercial and industrial uses.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As described in the above checklist, the proposed project may result in significant impacts if it physically divides an established community, conflicts with existing off-site land uses, causes substantial adverse change in the types or intensity of existing or planned land use patterns, or

conflicts with any applicable City land use plan, policy or regulation. The project may result in significant impacts if it induces substantial growth, displaces a large number of people, or contributes to a job-housing imbalance.

CHECKLIST DISCUSSION

3.1a, c, d, e and h

No Impact. The proposed project involves a change in the operation of the City's existing well facilities by increasing groundwater production. The project does not include modification to existing wells or change to water distribution facilities. The proposed project would include the construction of up to six monitor well sites. As described in Section 2.0 (Project Description), the monitor well facilities would consist of 12-inch diameter caps above the ground surface with a majority of the well facilities below the ground surface. The wells would not conflict with any UMP land use designations, directly impact any farmland operations, physically divide an established community, result in any land use compatibility issues or result in the loss of existing housing. A Conditional Use Permit may be required for well if determined necessary by the City.

3.1b

No Impact. Applicable UMP provisions associated with the project include Policy PF 1.5 and Action PF 1.5.1. These UMP provisions consist of protecting the City's groundwater resources from overdraft. The proposed increase in groundwater production is not expected to adversely impact groundwater resources and the proposed Policy includes groundwater monitoring provisions to ensure that no impacts occur. Thus, no UMP policy conflicts are anticipated.

3.1 f and g

No Impact. The proposed project involves a change in the operation of the City's existing well facilities by increasing groundwater production and does not include modification to any existing well or changes in water distribution facilities. As identified in the proposed Policy, the project could provide water service for an additional 4,600 ECUs, which could support an additional 13,300 persons in the City. These ECUs would be allocated to approved development projects in the City that are consistent with the UMP and have been through environmental review pursuant to CEQA. The project would not result in any population increase that would exceed regional or local population projections or what has been planned for under the UMP and the impacts of such growth was evaluated in the UMP EIR (State Clearinghouse No. 9109260). The project would also not induce population growth as it does not include the creation of new water distribution facilities or the extension of existing water distribution facilities.

C. CONCLUSION REGARDING LAND USE, PLANNING, POPULATION, AND HOUSING

The proposed project would not result in any direct or cumulative land use, planning, population, and housing impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.2 GEOPHYSICAL (EARTH) *Will the proposal result in or expose people to potential impacts involving:*					
a. Seismicity (fault rupture, ground shaking, or liquefaction)?	☐	☐	☐	■	☐
b. Seiche, tsunami, or volcanic hazard?	☐	☐	☐	■	☐
c. Landslides or mudslides?	☐	☐	☐	■	☐
d. Subsidence of the land?	☐	■	☐	☐	☐
e. Expansive soils?	☐	☐	☐	■	☐
f. Erosion, changes in topography or unstable soil conditions from excavation, grading, or fill?	☐	☐	☐	■	☐
g. Destruction, covering, or modification of any unique geologic or physical features?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

GEOLOGIC CONDITIONS

The northwest side of the San Joaquin Valley near the City of Tracy is underlain by Pre-Tertiary and Tertiary sedimentary and crystalline rock. Overlying these undifferentiated basement rocks are the Pliocene-Pleistocene Tulare Formation, Pleistocene terrace deposits, and Pleistocene-Holocene alluvium and flood basin deposits.

Within the Tulare Formation is a Corcoran Clay Member, also known as E-clay. The unconsolidated deposits above the E-clay are called the upper section of the Tulare Formation (upper section), and the deposits below the E-Clay are called the lower section of the Tulare Formation (lower section). The depth of the E-Clay increases eastward, away from the Diablo Range. Beneath the Delta-Mendota Canal, the top of the E-Clay is about 200 feet below the surface. Beneath the northernmost tip of the quarry, the E-Clay is about 300 feet below the surface. The western most extent of the E-Clay is approximately parallel to Interstate 5 (I-5).

Within the Tracy area, the upper section is composed of inter-fingered deposits of gravel, sand and clay. These deposits were derived from both the Diablo Range and Sierra Nevada, and vary from oxidized to reduced. The oxidized deposits are usually derived from the Diablo Range, while the reduced deposits are derived from either the Diablo Range or the Sierra Nevada.
The lower section is locally similar to the upper section, with the exception that almost all of the deposited sediments are reduced, and were derived from the Diablo Range.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project may result in significant earth impacts if it causes substantial erosion or siltation; exposes people and structures to geologic hazards or risk from faults, landslides, unstable soil conditions, etc.; or substantially alters the natural topography or a unique geological or physical feature. Grading that disturbs large amounts of land or sensitive grading areas (e.g. slopes in excess of 20 percent, intermittent drainages) may cause substantial erosion or siltation.

CHECKLIST DISCUSSION

3.2a, c

No Impact. The proposed project involves a change in the operation of the City's existing well facilities by increasing groundwater production and does not include modification to existing wells or changes in water distribution facilities. The proposed project would include the construction of up to six monitor well sites. As described in Section 2.0 (Project Description), the monitor well facilities would consist of 12-inch diameter caps above the ground surface with a majority of the well facilities below the ground surface. The addition of new wells for the purpose of monitoring would not directly expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving seismicity (fault rupture, ground shaking, or liquefaction), landslides, mudslides, or subsidence.

3.2b

No Impact. The project area is not located near any ocean coast, volcanic disturbance areas or seiche hazard areas and would not involve the development of residential or other sensitive land uses. Therefore, the project would not expose people to potential impacts involving seiche, tsunami, or volcanic hazards.

3.2d

Potentially Significant Unless Mitigated. This issue is addressed in Section 3.3 (Water). Implementation of Mitigation Measure MM 3.3.1 would mitigate this impact a ***less than significant*** level.

3.2 e, f, and g

No Impact. The proposed project would not substantially alter the nature or intensity of the built environment. As described in Section 2.0 (Project Description), the monitor well facilities would consist of 12-inch diameter caps above the ground surface with a majority of the well facilities below the ground surface. Therefore, no soil erosion, loss of topsoil, or impact to any unique geological or physical features would be anticipated to occur as a result of the project. In addition, the project would not directly expose people to potential impacts involving expansive soils.

C. CONCLUSIONS RELATING TO GEOPHYSICAL (EARTH)

The proposed project would not result in any direct or cumulative geophysical impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.3 WATER					
Will the proposal result in:					
a. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	☐	☐	☐	■	☐
b. Exposure of people or property to water related hazards such as flooding?	☐	☐	☐	■	☐
c. Discharge into surface waters or other alteration of surface water quality (e.g. temperature, dissolved oxygen, or turbidity)?	☐	☐	☐	■	☐
d. Changes in the amount of surface water in any water body?	☐	☐	☐	■	☐
e. Changes in currents, or the course or direction of water movements?	☐	☐	☐	■	☐
f. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?	☐	■	☐	☐	☐
g. Altered direction or rate of flow of groundwater?	☐	■	☐	☐	☐
h. Impacts to groundwater quality?	☐	■	☐	☐	☐
i. Substantial reduction in the amount of groundwater otherwise available for public water supplies?	☐	■	☐	☐	☐

A. ENVIRONMENTAL SETTING

The City of Tracy Planning Area is generally located within the Old River watershed. Natural drainages and major man-made water facilities in the Tracy Planning Area (TPA) include the Old River, Tom Paine Slough, Corral Hollow Creek, California Aqueduct, Delta-Mendota Canal, and the West Side Irrigation District's Upper and Lower Main Canals.

The City of Tracy typically receives lower amounts of precipitation relative to other portions of the region, with average annual precipitation of 10 inches (West Yost & Associates, 1999). A majority of the rainfall occurs in the winter months. As identified in the 1994 City of Tracy Storm Drainage Master Plan, storm runoff in the TPA generally drains as surface sheets flow to the north towards the Old River. However, subsequent development of the TPA has altered historic drainage patterns.

The City of Tracy uses both Central Valley Project water, transported by the Delta Mendota Canal, and groundwater for its water demands. The City of Tracy overlies an extensive groundwater basin extending from Redding in the north to Kern County in the south and covering most of the central valley of California. Groundwater below Tracy occurs in the Tulare Formation, an upper unconfined to semiconfined aquifer zone which is separated from a lower confined zone by the Corcoran clay which thins to the west of the City. Confinement in the lower zone is indicated by the presence of flowing wells in the area prior to extensive groundwater development.

The upper aquifer zone includes the upper part of the Tulare Formation (approximately 200 feet) and overlying alluvium, terrace deposits, and flood-basing deposits. The lower zone includes deposits with a thickness of about 500 feet in the Tracy area. These deposits are comprised poorly to locally well-sorted lenticular deposits of clay, silt, sand, and gravel and include the lower portion of the Tulare Formation. The Estimated Groundwater Yield Study identifies that the regional extent of the aquifer that influences groundwater conditions in the Tracy area consists of approximately 69,000 acres and encompasses the City and the adjacent irrigation districts (West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation District). The Estimated Groundwater Yield Study estimates that this aquifer (lower zone) contains approximately 3.45 million acre-feet of water.

Groundwater pumping by the City has ranged from about 500 to 5,800 acre-feet per year since 1974. The City's current demand extraction rate of 5,800 acre-feet per year from the Tulare Formation is within its sustainable yield. As indicated in the Estimated Groundwater Yield Study, there are currently no signs of a trend toward groundwater lowering that would indicate overdraft.

In general, the City's groundwater quality exceeds the Environmental Protection Agency's (EPA) secondary maximum contaminant levels (MCL) as a result of elevated sulfate and total dissolved solids (TDS) levels. Secondary drinking water quality regulations pertain to those contaminants that affect taste, odor and color, but do not pose health risks. Groundwater quality of the upper zone of the Tulare formation is of poorer water quality than the lower zone and consists of generally higher levels of sulfate, TDS, nitrate, boron and selenium. The upper zone groundwater quality in the Tracy Planning area is impacted by infiltration of saline water from the north and agricultural recharge (City of Tracy, 1999). Groundwater quality in the Tracy area is also impacted by contamination from commercial and industrial land uses (e.g., Tracy Defense Depot). However, these contamination sources are restricted to the upper zone and in some cases are under remediation.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the checklist, the proposed project may result in significant impacts if it would substantially degrade surface water quality; substantially degrade or deplete groundwater resources; causes substantial flooding or exposes people or structures to flood hazards; generates substantial increases in surface runoff; or significantly alters the course, direction, or volume of surface water flows.

CHECKLIST DISCUSSION

3.3a, b, c, d and e

No Impact. The proposed project involves the extraction of additional groundwater from groundwater-bearing materials underlying the Tracy Planning Area. The project would not directly result in any change to surface waters and thus would not substantially alter the nature or intensity of the built environment, existing absorption patterns, drainage patterns, or the rate or amount of surface runoff in the project area. In addition, the project would not directly result in the exposure of people or property to water related hazards, alter the amount or quality of surface water in any water body, or result in changes to water movement in any water body.

3.3 f, g, h, and i

Impact 3.3.1 Implementation of the proposed Groundwater Management Policy could result in adverse effects to area groundwater resources. This would be ***potentially significant unless mitigated.***

The Estimated Groundwater Yield Report (**Appendix A**) evaluated the existing groundwater conditions in the Tracy area, based on consideration of geologic and hydrologic conditions in the Tracy area; review of previous groundwater studies, preparation of a hydrologic inventory analysis to estimate sustainable yield, estimation of groundwater yields based on existing groundwater models, consideration of urbanization of the City of Tracy, and consideration of historical groundwater data. Based on this evaluation, the sustainable yield (i.e., long-term average annual groundwater withdrawal that does not exceed the long-term average recharge of the aquifer) of the Tracy area was estimated at 28,000 acre-feet per year (AFY), which includes consideration of groundwater pumping by adjacent irrigation districts. The City's "share" of the sustainable yield was estimated at 22,000 AFY. The Estimated Groundwater Yield Report identifies that the proposed operational yield of 9,000 AFY would drop groundwater levels 10 feet, but would stabilize within the 50-year study period. Since groundwater levels are not expected to substantially diminish, no significant groundwater overdraft, subsidence or quality impacts are expected.

However, there are some uncertainties regarding the data and assumptions used in the Estimated Groundwater Yield Report which may directly and cumulatively impact groundwater resources in the Tracy area. In order to ensure that no significant groundwater resource impacts occur as a

result of increased production, the City has proposed the following provisions in the proposed Groundwater Management Policy:

A. Process for the Extraction of Groundwater

Groundwater in the City of Tracy is currently extracted by eight existing production wells. Generally, these wells and structures occupy no more than one-quarter acre of land. All well pumping equipment is enclosed in single story physical structures. No new production wells are expected to be added to increase groundwater production. However, up to six monitor wells will be installed within and adjacent to the City to monitor changes in groundwater conditions as a result of increased groundwater production.

B. Process for the Monitoring of Groundwater Extraction

While the Estimated Groundwater Yield Study identifies that no significant adverse impacts to groundwater resources are expected, increasing the extraction of groundwater from the aquifer could impact groundwater water levels, ground subsidence, and groundwater quality. In terms of groundwater levels, increasing the extraction could result in declining groundwater storage to levels at a rate that could exceed the recharge capacity of the basin. Reducing the amount of groundwater in storage could also lead to the dewatering of fine-grained geological strata, thus resulting in land subsidence and a potential reduction in the storage capacity of the aquifer. Finally, increasing groundwater extraction could potentially decrease groundwater quality, by increasing or changing the concentrations of organic and inorganic chemical substances, or constituents within the aquifer.

1. *Groundwater Level and Subsidence Monitoring*

   The following process is established to monitor for groundwater level changes and subsidence.

   a. *Benchmarks shall be established at each monitor well and active production well and tied to an established local bench circuit to provide the appropriate datum points for elevation measurements.*

   b. *Groundwater levels shall be measured monthly at each monitor well and active production well and related to the benchmarks to determine changes in groundwater elevation.*

   c. *On an annual basis the bench circuit, which includes the benchmark at each well site (both production and monitor wells), shall be surveyed to determine if there has been any differential settlement resulting from the increase in groundwater extraction.*

d. *A qualified hydrogeologist shall review the groundwater level and ground elevation measurements annually. Contour maps shall be prepared (for the base year and each subsequent year monitoring occurs) and compared to the prior year's maps for evidence of subsidence or adverse changes in groundwater levels or quality. Recommended operational changes at each production well shall be implemented (e.g., shut down of specific wells, reduction in groundwater extraction rates) if adverse changes are noted, or if the monitoring results indicate adverse impacts in order to avoid groundwater overdraft and subsidence conditions.*

e. *All monitor wells installed in accordance with this Policy will follow all sampling frequencies and protocols outlined in this Policy.*

2. *Groundwater Quality Monitoring*

The following protocols are established to monitor for potential groundwater quality changes due to increased extraction rates:

a. *Groundwater shall be sampled and tested on a quarterly basis for the following constituents.*

- *Major Cations*
- *Major Anions*
- *Iron*
- *Manganese*
- *Arsenic*
- *Chromium*
- *Fluoride*
- *Alpha Activity*
- *Boron*
- *PH*
- *Total Dissolved Solids*
- *Electrical Conductivity*

b. *Monitoring for the constituents listed above shall be conducted to ensure that any changes in constituent levels do not exceed the established maximum contaminant levels (MCL) or public health goals for each identified constituent. Should adverse water quality conditions be noted, recommended operational changes at each production well (e.g., installation of treatment facilities, shut down of specific wells) shall be implemented to protect public health.*

c. *Monitoring at all newly constructed monitor wells shall follow the process established above.*

The following mitigation measure is recommended to ensure monitoring provisions of the policy are implemented appropriately.

Mitigation Measure

MM 3.3.1 Prior to the implementation of the Groundwater Management Policy associated with increasing groundwater production, the City shall develop a detailed written monitoring program for the implementation and documentation of the monitoring processes set forth in the Policy. The monitoring program shall be developed by a qualified hydrologeologist and will specify tasks to be performed for monitoring as well as measures to protect and preserve groundwater resources and water quality (pursuant to state and federal drinking water standards) in the event additional groundwater extraction impacts groundwater conditions beyond what is anticipated in the City of Tracy Estimated Groundwater Yield Study. This may include altered or operation of wells, installation of treatment facilities or other measures deemed necessary by the hydrologeologist and City. The monitoring program will include utilization of groundwater data from adjacent irrigation districts (if available) and will generate annual records of groundwater measurements for the City Council and public for the life of the increased groundwater extraction.

Timing/Implementation: Prior to increasing groundwater production beyond 6,700 acre-feet per year and on-going.

Enforcement/Monitoring: City of Tracy Department of Development and Engineering Services and Public Works

Implementation of the above mitigation measure would ensure that monitoring provisions of the proposed Policy are properly implemented and would mitigate the impact to a ***less than significant*** level.

C. CONCLUSIONS RELATING TO WATER

Implementation of Mitigation Measure MM 3.3.1 would ensure that the project would not result in direct or cumulative impacts to groundwater resources in the Tracy area.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.4 AIR QUALITY *Will the proposal:*					
a. Violate any air quality standards or contribute to an existing or projected air quality violation?	☐	☐	☐	■	☐
b. Expose sensitive receptors to pollutants?	☐	☐	☐	■	☐
c. Alter air movement, moisture, or temperature, or cause any change in climate?	☐	☐	☐	■	☐
d. Create objectionable odors?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The City lies within the northern portion of the San Joaquin Valley Air Basin (SJVAB), which is located in San Joaquin County. In addition to San Joaquin County, the SJVAB includes Fresno, Kern, Kings, Madera, Merced, Stanislaus, and Tulare Counties, as designated by the California Air Resources Board (CARB).

The City and San Joaquin County are surrounded by the Sierra Nevada Mountain Range to the east and the Coastal Range toward the west. These mountain ranges direct air circulation and dispersion patterns. Temperature inversions can trap air within the Valley, thereby preventing the vertical dispersal of air pollutants. In addition to topographic conditions, the local climate can also contribute to air quality problems. Climate in San Joaquin County is classified as Mediterranean, with moist cool winters and dry warm summers.

Light winds and atmospheric stability provide frequent opportunities for pollutants to accumulate in the atmosphere. Wind speed and direction also play an important role in the dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. The prevailing winds during the summer are from the north and west. These winds, known as "up-valley winds," originate with coastal breezes that enter the Valley through breaks in the coastal ranges, particularly through the Carquinez Straits in the San Francisco Bay Area.

The San Joaquin Valley Unified Air Pollution Control District (District or SJVAPCD) is the agency empowered to regulate air pollutant emissions. The District regulates air quality through

its permit authority for most types of stationary emission sources and through its planning and review activities for other sources.

Federal and California ambient air quality standards have been established for the following five critical pollutants: nitrogen dioxide, sulfur dioxide, particulate, carbon monoxide, and ozone. Ozone pollution is the most conspicuous type of air pollution, and is often characterized by visibility-reducing haze, eye irritation, and high oxidant concentrations (i.e., "smog"). The City of Tracy is non-attainment for ozone and PM_{10}.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, a project would have a significant adverse impact on air quality if it: generates pollutants that violate air quality standards, contributes to an existing or projected air quality violation, generates pollutants which temporarily cause substantial degradation of air quality in the local area, or creates substantially objectionable odors that are offensive to off-site properties.

CHECKLIST DISCUSSION

3.4a, b, c and d

No Impact. The proposed project would increase groundwater production and would not directly result in substantial increases in emissions through the development of new facilities or modifications to existing facilities. This change would not violate any air quality standards, contribute to any existing or projected air quality violations, expose sensitive receptors to pollutants, or cause a change in atmospheric or climatic conditions. The project would not create any objectionable odors.

C. CONCLUSION REGARDING AIR QUALITY

The proposed project would not create any new or exacerbate existing air quality impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.5 TRANSPORTATION/CIRCULATION *Will the proposal result in:*					
a. Increased vehicle trips or traffic congestion?	☐	☐	☐	■	☐
b. Hazards to safety from design features (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	■	☐
c. Inadequate emergency access or access to nearby uses?	☐	☐	☐	■	☐
d. Insufficient parking capacity on-site or off-site?	☐	☐	☐	■	☐
e. Hazards or barrier for pedestrians or bicyclists?	☐	☐	☐	■	☐
f. Conflicts with adopted policies supporting alternative transportation (e.g. bus turnouts, bicycle racks)?	☐	☐	☐	■	☐
g. Rail, waterborne, or air traffic impacts?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

Interstates 5, 205 and 580 provide regional roadway access to the City. The City maintains a series of arterial and collector roadways that provide access throughout the City and connection to the interstates.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project may result in significant transportation/circulation impacts if: it causes an increase in traffic which is substantial in relation to the existing traffic loads and capacity of the road system, creates traffic conditions which expose people to traffic hazards, substantially interferes or prevents emergency access to the site or surrounding properties, does not provide sufficient parking for the project uses or affects existing or future parking for surrounding uses, or interferes with existing or planned bicycle or pedestrian facilities.

CHECKLIST DISCUSSION

3.5a, b, c, and e

No Impact. The proposed project, an increase in groundwater production at existing facilities, does not include any physical changes that would result in substantial changes in traffic conditions that would result in traffic or circulation impacts. The project would not cause a change in vehicle trips, result in traffic safety hazards, have inadequate emergency or nearby use access, include any hazards or barriers to pedestrians or bicyclists, or would not result in additional traffic impacts to the Tracy area.

3.5d

No Impact. The proposed project is an operational change to the City's groundwater extraction and would not result in any change in parking capacity or create any need for additional parking capacity.

3.5f

No Impact. The proposed project would have not have an effect on adopted policies supporting alternative transportation.

3.5g

No Impact. The proposed project is limited to the extraction of groundwater from groundwater-bearing materials underlying the Tracy Planning Area. The project would not result in changes to adopted policies supporting alternative transportation, or on rail, waterborne, or air traffic. In addition, the project would have no impact on air traffic patterns, nor would it encroach upon any safety zones established around the airport.

C. CONCLUSIONS RELATING TO TRANSPORTATION/CIRCULATION

The proposed project would not create any new or further severe transportation or circulation impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.6 BIOLOGICAL RESOURCES					
Will the proposal result in impacts to:					
a. Endangered, threatened, rare, or special status species or their habitats (including but not limited to plants, fish, insects, animals, and birds)?	☐	☐	☐	■	☐
b. Locally designated species (e.g. heritage trees)?	☐	☐	☐	■	☐
c. Natural communities or wildlife habitat (e.g. oak forest, coastal habitat, etc.)?	☐	☐	☐	■	☐
d. Wetland habitat (e.g. marsh, riparian, and vernal pool)?	☐	☐	☐	■	☐
e. Wildlife dispersal or migration corridors?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The City of Tracy consists of developed areas, cropland and California annual grasslands. Special-status species of concern in the Tracy area include the burrowing owl (*Athene cunicularia*), California horned lark (*Eremophila alpestris actia*), tricolored blackbird (*Agelaius tricolor*), San Joaquin pocket mouse (*Perognathus inornatus inornatus*), California horned lizard (*Phrynosoma coronatum frontale*), Swainson's hawk (*Buteo swainsoni*), San Joaquin whipsnake (*Masticophis flagellum ruddocki*), and the San Joaquin kit fox (*Vulpes macrotis mutica*).

B. IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

As identified in the above checklist, the project may result in significant biological impacts if it substantially affects a rare or endangered species of animal or plant or if it substantially affects the habitat of the species by reducing the number or restricting the range of the species; interfering substantially with the movement of any resident migratory fish or wildlife species; substantially diminishing or reducing habitat for fish wildlife, or plants; causes a fish or wildlife population to drop below self sustaining levels; threatens to eliminate a plant or animal community; or results in the loss of wetland habitat.

In addition, the project may result in significant biological impacts if it conflicts with local policies or ordinances protecting biological resources, or if it conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State habitat conservation plan.

CEQA Guidelines Section 15380 further provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future.

CHECKLIST DISCUSSION

3.6a

No Impact. The proposed project would increase groundwater production from the lower zone of the Tulare formation of the Central Valley groundwater basin. This would have no direct impact on wildlife or plant species in the Tracy area. Land disturbance would be restricted to the monitor well sites. As identified in Section 3.1 (Land Use Planning, Population and Housing), the monitor well site all occur in disturbed and/or developed areas. No special-status species or habitat was identified during field reviews. In addition, installation of monitor wells would disturb an area of approximately five square-feet per well site, for a total of 90 square feet for all wells. Thus, no major land or habitat disturbance would occur as a result of this project.

3.6b and c

No Impact. The proposed project would increase groundwater production from the Tulare Formation of the Central Valley groundwater basin; the project would not directly alter the nature or intensity of the built environment, change, obstruct or otherwise encroach upon locally designated species, wildlife habitat or other sensitive natural community. As identified in Section 3.1 (Land Use Planning, Population and Housing), the monitor well site all occur in disturbed and/or developed areas. No special-status species or habitat was identified during field reviews. In addition, installation of monitor wells would disturb an area of approximately five square-feet per well site, for a total of 90 square feet for all wells. Thus, no major land or habitat disturbance would occur as a result of this project.

3.6d

No Impact. The project area consists of groundwater bearing materials underlying the Tracy Planning Area. As identified in Section 3.1 (Land Use Planning, Population and Housing), the monitor well site all occur in disturbed and/or developed areas. No wetland features were identified during field reviews. The project would not create any new impacts to federally protected wetlands.

3.6e

No Impact. The project would not result in impacts to wildlife dispersal or migration corridors.

C. CONCLUSIONS RELATING TO BIOLOGICAL RESOURCES

The proposed project would not create any new impacts to biological resources.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.7 ENERGY AND MINERAL RESOURCES *Will the proposal:*					
a. Conflict with adopted energy conservation plans?	☐	☐	☐	■	☐
b. Use non-renewable resources in a wasteful and inefficient manner?	☐	☐	☐	■	☐
c. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The Tracy area mineral resources consist of sand and gravel. Mining of aggregates occurs in the southern portion of the Tracy area adjacent to the Tracy Municipal Airport.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project would create significant impacts if it conflicts with adopted energy conservation plans, uses non-renewable resources in a wasteful and inefficient manner, or results in the loss of availability of a known mineral resource with future value.

3.7a through c

No Impact. The proposed project, an increase in groundwater extraction of the lower zone of the Tulare Formation by the City of Tracy, would not use or extract any mineral or energy resources and would not restrict access to known mineral resource areas.

C. CONCLUSIONS RELATING TO ENERGY AND MINERAL RESOURCES

The proposed project would have no impact on mineral and energy resources.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
38. HAZARDS					
Will the proposal involve:					
a. A risk of accidental explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation)?	☐	☐	☐	■	☐
b. Possible interference with an emergency response plan or emergency evacuation plan?	☐	☐	☐	■	☐
c. The creation of any health hazard or potential health hazard?	☐	☐	☐	■	☐
d. Exposure of people to existing sources of potential health hazards?	☐	☐	☐	■	☐
e. Increased fire hazards in areas with flammable brush, grass, or trees?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The Tracy area and surrounding region include several sites that handle, store or are contaminated with hazardous materials. Major land uses in the Tracy area that have hazardous material issues include, but are not limited to, the Tracy Defense Depot and Lawrence Livermore Labs Site 300.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project may result in significant hazards if it creates potential public health hazards; involves the use, production, disposal, or upset (accidents) of materials which pose a hazard to people in the area; interferes with emergency response plans or emergency evacuation plans; or violates applicable laws intended to protect human health and safety or would expose employees to working situations that do not meet health standards.

CHECKLIST DISCUSSION

3.8a, through e

No Impact. The proposed project would extract additional water from groundwater bearing materials underlying the Tracy Planning Area and would not involve the use, transport, or disposal of hazardous materials. Potential water quality impacts associated with the project are addressed in Section 3.3 (Water). The project would not create any impacts.

C. CONCLUSIONS RELATING TO HAZARDS

As described above, the project is not anticipated to result in any direct significant impacts associated with hazardous materials and fire hazards.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.9 NOISE					
Will the proposal result in:					
a. Increases in existing noise levels?	☐	■	☐	☐	☐
b. Exposure of people to severe noise levels?	☐	■	☐	☐	☐

A. ENVIRONMENTAL SETTING

Noise sources in the Tracy area include transportation noise from the interstates and local roadways and operation of the airport, as well as stationary noise sources associated with a variety of land uses.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project may result in significant noise impacts if it substantially increases the ambient noise levels for adjoining areas, or would be inconsistent with maximum noise levels established in the City of Tracy Noise Control Ordinance.

CHECKLIST DISCUSSION

3.9a and b

Impact 3.9.1 Construction activities associated with the monitor wells could result in temporary excessive noise levels for adjacent noise-sensitive land uses. This would be ***potentially significant unless mitigated.***

Construction activities necessary for the installation of the monitor wells would create short-term noise increases in the immediate project vicinity. Activities involved in construction could generate noise levels ranging from 85 to 90 dB at a distance of 50 feet. Construction would be temporary in nature and is anticipated to occur during normal daytime working hours.

Mitigation Measure

MM 3.9.1 Construction specifications for the monitor wells will require that the following tasks be performed during construction:

- Limit construction activities to daylight hours (between 7:00 a.m. and 7:00 p.m.) in areas where sensitive receptors are located.
- Locate fixed construction equipment, such as compressors and generators, as far as feasibly possible from sensitive receptors. Construction equipment shall be fitted with heavy duty mufflers specially designed to reduce noise impacts.

Timing/Implementation: During construction activities.

Enforcement/Monitoring: City of Tracy Department of Development and Engineering Services.

Implementation of the above mitigation measure would mitigate temporary construction impacts to a ***less than significant*** level.

C. CONCLUSIONS RELATING TO NOISE

With the implementation of Mitigation Measure MM 3.9.1, the proposed project would have a less than significant noise impact.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.10 PUBLIC SERVICES					
Will the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:					
a. Fire protection?	☐	☐	☐	■	☐
b. Police protection?	☐	☐	☐	■	☐
c. Schools?	☐	☐	☐	■	☐
d. Maintenance of public facilities, including but not limited to roads?	☐	☐	☐	■	☐
e. Other governmental services?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

Public services (police, fire, roadway maintenance) in the City are provided solely by the City. Public school services are primarily provided by the Tracy Unified School District.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the above checklist, the project may result in significant public service impacts if it substantially and adversely alters the delivery or provision of fire protection, police protection, schools, facilities maintenance, and other governmental services.

CHECKLIST DISCUSSION

3.10a

No Impact. The proposed project would not result in impacts to City of Tracy Fire Department operations or the provision of fire services in the Tracy area.

3.10b

No Impact. The proposed project would not result in impacts to City of Tracy Police Department operations or the provision of law enforcement services in the Tracy area.

3.10c

No Impact. The proposed project would not result in impacts to the operation of Tracy public schools, nor result in the generation of additional students in the Tracy area.

3.10d

No Impact. The proposed project would not result in impacts to the maintenance of public facilities, including but not limited to roads.

3.10e

No Impact. The proposed project would not result in the need for any new public services or facilities or create an impact to existing services or facilities.

B. CONCLUSIONS RELATING TO PUBLIC SERVICES

The proposed project would not create any impacts to public services.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.11 UTILITIES AND SERVICE SYSTEMS					
Will the proposal result in the need for new systems or supplies or substantial alterations to the following utilities.					
a. Power or natural gas?	☐	☐	☐	■	☐
b. Communications systems?	☐	☐	☐	■	☐
c. Local or regional water treatment or distribution facilities?	☐	☐	☐	■	☐
d. Sewer or septic tanks?	☐	☐	☐	■	☐
e. Storm water drainage?	☐	☐	☐	■	☐
f. Solid waste disposal?	☐	☐	☐	■	☐
g. Local or regional water supplies?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

Water supply, wastewater and storm drainage services are provided by the City within the City limits. Electrical and natural gas services are currently provided by the Pacific Gas and Electric Company.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the checklist above, the project may result in significant impacts on utilities and service systems if it substantially and adversely alters the delivery of utilities or substantially increases the demand for utilities.

CHECKLIST DISCUSSION

3.11a, b, c, d, e, f, g

No Impact. The proposed project would supplement existing water supplies by pumping additional water of up to 9,000 AFY and would not result in the construction of new production wells or water distribution facilities. Impacts associated with the installation of the monitor wells and with groundwater resources are addressed in this Mitigated Negative Declaration.

C. CONCLUSIONS RELATING TO UTILITIES AND SERVICE SYSTEMS

The proposed project would not create impacts for utility or service systems.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.12 AESTHETICS *Will the proposal:*					
a. Affect a scenic vista or scenic highway?	☐	☐	☐	■	☐
b. Have a demonstrable negative aesthetic effect?	☐	☐	☐	■	☐
c. Create light or glare?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The landscape characteristics of the Tracy area consist of urban/rural features consisting of open agricultural fields, rural residential areas and urban land uses associated with the City.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

As identified in the checklist above, the project may result in significant aesthetic impacts if it substantially affects the view of a scenic corridor, vista, or view open to the public, causes substantial degradation of views from adjacent residences, or results in night lighting that shines into adjacent residences.

CHECKLIST DISCUSSION

3.12a through c

No Impact. The proposed project would involve only minor modifications to the visual landscape associated with the installation of monitor wells. Construction of these wells would blend with existing features of the Tracy area and would not result in any direct visual impacts.

C. CONCLUSIONS RELATING TO AESTHETICS

The proposed project would not result in aesthetic impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.13 CULTURAL RESOURCES *Will the proposal:*					
a. Disturb paleontological or archaeological resources?	☐	■	☐	☐	☐
b. Affect historical resources?	☐	■	☐	☐	☐
c. Have the potential to cause a physical change which would affect unique ethnic cultural values?	☐	☐	☐	■	☐
d. Restrict existing religious or sacred uses within the potential impact area?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

There are several known prehistoric sites in the Tracy area, which include Native American burial sites. Historic resources in the Tracy area include the West Side Bank, Bank of Tracy, Tracy Inn, Old Tracy Jail, Grand Theater, Lammersville School and the Bank of Italy.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

The project may have a significant impact on cultural resources if it causes substantial adverse changes in the significance of a historical or archaeological resource as set forth by the California Register of Historic Places and Section 106 of the National Historic Preservation Act; directly or indirectly destroys a unique paleontological resource or site or unique geologic feature; or disturbs any human remains, including those interred in formal cemeteries.

CHECKLIST DISCUSSION

3.13a and b

Impact 3.13.1 Construction activities associated with the monitor wells could disturb undiscovered cultural resources. This would be ***potentially significant unless mitigated.***

While there are no known cultural resources at the monitor well sites, the potential exists for the discovery of buried deposits or features of the area's archaeological and/or historical past. Northern Valley Yokuts occupied the Tracy vicinity. Discovery of any villages, camps or artifacts from the Northern Yokuts would have the potential to add new information about this ancient culture. Such sites are rare and would constitute a valuable heritage resource for San Joaquin County and the people of California. Disturbance of undiscovered archaeological and/or cultural resources is considered a potentially significant impact.

Mitigation Measures

MM 3.13.1a If any prehistoric or historic artifacts, or other indications of archaeological resources are found once the project is underway, all work in the immediate vicinity must stop and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, shall be consulted to evaluate the finds and recommend appropriate mitigation measures.

Timing/Implementation: Include in construction specifications, and implement during construction activities.
Enforcement/Monitoring: City of Tracy Department of Development and Engineering Services

MM 3.13.1b If human remains are discovered, all work must stop in the immediate vicinity of the find, and the County Coroner must be notified, according to Section 7050.5 of California's Health and Safety Code. If the remains are Native American, the coroner will notify the Native American Heritage Commission, which in turn will inform a most likely descendant. The descendant will then recommend to the landowner appropriate disposition of the remains and any grave goods.

Timing/Implementation: Include in construction specifications, and implement during construction activities.
Enforcement/Monitoring: City of Tracy Department of Development and Engineering Services

Implementation of the above mitigation measures would reduce the potential cultural resource impact to ***less than significant.***

3.13c and d

No Impact. The proposed project would not impact the significance of any archaeological resource within the Tracy Planning Area.

C. CONCLUSIONS RELATING TO CULTURAL RESOURCES

With the implementation of mitigation measures MM 3.13.1a and MM 3.13.1b, the project would mitigate potential cultural resource impacts.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Reviewed Under Previous Document
3.14 RECREATION *Will the proposal:*					
a. Increase the demand for neighborhood or regional parks or other recreational facilities?	☐	☐	☐	■	☐
b. Affect existing recreational opportunities?	☐	☐	☐	■	☐

A. ENVIRONMENTAL SETTING

The City of Tracy Parks and Community Services Department provides for the majority of the parks, buildings and programs and maintenance in the City. Maintenance of mini-parks is provided by Landscape and Lighting Districts.

B. IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

The project may create significant impacts if it creates demand for new expanded parks and recreation facilities, or substantially affects existing recreational opportunities.

CHECKLIST DISCUSSION

3.14a and b

No Impact. The proposed project would not create any new demand for any type of recreational facilities and no impacts to recreation resources would occur as a result of the project.

C. CONCLUSIONS RELATING TO RECREATION

The proposed project would not create impacts to recreation.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
3.15 MANDATORY FINDINGS OF SIGNIFICANCE				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	■	☐	☐
b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	■	☐	☐
c. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	■	☐	☐
d. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	■	☐	☐

3.15a

Potentially Significant Unless Mitigation is Incorporated. As identified in Section 3.13 (Cultural Resources), construction of the monitor wells could potentially impact undiscovered cultural resources. Implementation of mitigation measures MM 3.13.1a and b would mitigate cultural resource impacts to a ***less than significant*** level.

3.15b

Potentially Significant Unless Mitigation is Incorporated. As identified in Section 3.3 (Water), implementation of the Groundwater Management Policy could result in direct and cumulative

groundwater impacts in the Tracy area. Implementation of Mitigation Measure MM 3.3.1 would mitigate potential long-term water quality impacts to a ***less than significant*** level.

3.15c

Potentially Significant Unless Mitigation is Incorporated. As identified in Section 3.3 (Water), the regional (cumulative) extent of the aquifer that influences groundwater conditions in the Tracy area consists of approximately 69,000 acres and encompasses the City and the adjacent irrigation districts (West Side Irrigation District, Naglee-Burk Irrigation District, Plain View Water District and Banta-Carbona Irrigation District). Implementation of the Groundwater Management Policy could result in cumulative groundwater impacts in the Tracy area. Implementation of Mitigation Measure MM 3.3.1 would mitigate potential long-term water quality impacts to a ***less than significant*** level.

3.15d

Potentially Significant Unless Mitigation is Incorporated. As identified in Section 3.3 (Water) and Section 3.9 (Noise), the proposed project could result in water quality and noise impacts. Implementation of mitigation measures MM 3.3.1 and 3.9.1 would mitigate water quality and noise impacts to a ***less than significant*** level.

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

■ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in this Initial Study have been added to the Project. **A NEGATIVE DECLARATION** will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the proposed Project **MAY** have a significant effect(s) on the environment, but one or more of such significant effects 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, all potentially significant effects (a) have been analyzed and adequately addressed in an earlier EIR pursuant to applicable standards, or (b) have been avoided or mitigated pursuant to that earlier EIR or this Mitigated Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project.

Signature Brian K Smith Date: April 25, 2001

Printed name: Brian Smith, Planning Manager

REPORT PREPARATION AND REFERENCES

5.1 REPORT PREPARATION AND REFERENCES

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DRAFT
ESTIMATED GROUNDWATER YIELD FOR THE CITY OF TRACY

Section

INTRODUCTION

Recognizing that the City of Tracy's water demands are approaching the total upper limit of historic groundwater production and surface water allocations, the City of Tracy has been very aggressive in securing future surface water entitlements from other agencies within the general area. The total amount of these future entitlements will serve to fully supply the City of Tracy at projected buildout. While the environmental documentation necessary to facilitate the transfer of the allocations are in process, the City of Tracy estimates that it will be between two to five years before these allocations become a firm, deliverable supply.

In addition to the procurement of this additional surface water supply, the City of Tracy has established a policy that requires all new developments to secure and bring a sufficient surface water supply to make the development impact-neutral to the City of Tracy.

On a long-term basis, it appears that the City of Tracy's existing and projected surface water supplies would be more than adequate to meet these demands. Although all of the surface water supplies have not been completely firmed up, they are close to being firm. There is, however, a gap of several years before the surface water supplies become available. The City of Tracy has requested an evaluation of the availability of groundwater to fill this gap.

While groundwater would likely be an interim supply, ideally, the City of Tracy would like to have better knowledge of the sustainable yield. In the context of the environmental documentation, because the other supplies are not completely firm, it would be useful to identify a portion of the groundwater yield that would be sustainable.

The evaluation of the groundwater yield was a portion of Bookman-Edmonston Engineering's scope of work for the groundwater master plan. This report documents an evaluation of the potential groundwater yield.

The groundwater yield estimated in this report will be considered in the development of a groundwater master plan. However, it is recognized that even if the groundwater yield is expanded from the City of Tracy's present operations, there would still be a need to study the groundwater and recharge potential to identify appropriate operational strategies to best use the resource. With that in mind, it follows that a greater groundwater yield does not automatically lead to a reduced need for surface water supplies or treatment capacity. Further, it is noted that the report focuses on limitations in yield related to groundwater

levels or volumes and does not consider the potential subsidence or water quality impacts that could further limit the appropriate production capability.

This report has been organized into sections that discuss:

- Background information
- Groundwater yield concepts and terminology
- Geologic and hydrologic conditions
- Review of prior studies related to groundwater yield
- Estimation of City of Tracy operational yield

Section

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

The City of Tracy presently uses both Central Valley Project (CVP) water from the Delta-Mendota Canal and groundwater to meet water demands. The City of Tracy pumps groundwater primarily from the lower confined aquifer zone. While groundwater levels in the lower aquifer zone have varied over time, the levels generally remain within an identifiable range, and the groundwater has not appeared to be overdrafted. Since 1974, pumping by the City of Tracy has varied from about 500 to 5,800 acre-feet per year. As recommended by a prior analysis of groundwater conditions, the City of Tracy has operated within a 6,700 acre-foot per year "cap" on groundwater pumping. This study presents an updated analysis of the groundwater available to the City of Tracy. This section briefly summarizes some background information on the geologic and hydrologic conditions and then presents conclusions and recommendations.

The analysis that follows includes an attempt to quantify the sustainable groundwater yield within the City of Tracy area. *Sustainable yield* is defined as the long-term average annual groundwater withdrawal that does not exceed the long-term average recharge of the aquifer from which the water is being drawn. However, arriving at a definitive sustainable yield for the City of Tracy is difficult, owing to such factors as the complexities of the aquifer system and selecting the appropriate geographic area within the much larger groundwater basin in which to perform the analysis. Further, identifying the portion of the sustainable yield available to the City of Tracy depends on assumptions about pumping by others, and thus, the sustainable yield of the aquifer is not something the City of Tracy has the ability to completely control. As used herein, subsidence and water quality impacts have not been used in defining sustainable yield, although those factors could be limiting factors in defining an appropriate level of groundwater production.

Recognizing the difficulties with the sustainable yield, consideration is given to defining an appropriate "operational yield" for the City of Tracy. This operational yield, while considering the sustainable yield, also includes limits on the allowable lowering of groundwater levels. These limits reflect the potential consequences of lower groundwater levels with respect to subsidence and water quality impacts. The operational yield concept

also provides a means to reflect the significant uncertainties in the estimated sustainable yield and to build in some conservatism in the yield.

Geologic and Hydrologic Conditions

The City of Tracy's groundwater sub-basin is part of an extensive groundwater basin, which extends from Redding in the north to Kern County in the south. Groundwater beneath the City of Tracy occurs in an upper unconfined to semiconfined aquifer zone and in a lower confined aquifer zone. These zones are separated by the Corcoran clay. The Corcoran clay becomes thinner and coarser to the west of the city.

Under predevelopment conditions, groundwater flow was generally from the margins of the valley toward the center of the valley and exhibited downward flow in the recharge areas along the valley's margins and upward flow in discharge areas in the valley's more central portions. Under present conditions, groundwater levels are generally deeper in the lower aquifer zone, resulting in downward flow. While the current pattern of groundwater in the upper zone generally is similar to the predevelopment condition (flow from the west to east beneath Tracy), groundwater flow in the lower aquifer zone is now from east to west.

Groundwater levels in the upper aquifer zone tend to be relatively stable. These levels probably reflect the percolation of irrigation applications that exceed crop consumptive use requirements in the nearby Banta-Carbona, Plainview, West Side, and Nagle-Burke Irrigation Districts. Each of those districts has relatively plentiful surface water supplies, which also limits the groundwater pumping in this area.

Groundwater levels in the lower aquifer zone show a greater variability in level, both seasonally and over periods of several years. Those levels reflect at least in part pumping by the City of Tracy and the nearby irrigation districts. While there is some variability in groundwater levels, there does not presently appear to be a long-term trend of groundwater lowering that indicates overdraft. This observation is consistent with other sources (such as DWR Bulletin 118-80) that indicate this area is not in overdraft.

CONCLUSIONS

The key conclusions of the analysis are presented below. These include conclusions with regard to the hydrologic inventory, the historical trend analysis, and the possible consequences of overdraft.

Hydrologic Inventory

- A hydrologic inventory involves quantifying the various components of recharge to and discharge from an aquifer to identify the change in storage. The change in storage can then be used to estimate changes in groundwater levels.

- The hydrologic inventory analysis was used to evaluate pumping by the City of Tracy using the current groundwater production "cap" of 6,700 acre-feet and an additional 1,200 acre-feet per year of additional pumping for near term development within the City. Groundwater levels would be about 5-6 feet deeper with this additional pumping; however, the hydrologic inventory analysis indicates that it is still within the sustainable yield.

- The results of the hydrologic inventory depend on a number of assumptions, including demands in agricultural areas, surface water and groundwater supplies available to meet irrigation demands, the split in pumping between upper and lower aquifer system, and parameters governing estimated groundwater flows to adjacent areas like aquifer transmissivity, hydraulic gradient, and hydraulic conductivity value for the Corcoran clay. Some of these are physical factors that could be refined through further studies and the use of additional data obtained from monitoring. Others factors depend on actions by others and cannot be defined with certainty.

- Consideration was given to evaluating the sustainable yield using the existing the Central Valley Groundwater Surface Water Model numerical groundwater model. However, that model was developed for a much larger geographic area and did not provide an adequate representation of the aquifer system in the Tracy area for the purpose of this analysis.

Historical Trends Analysis

- An attempt was made to update the annual "historical trend analysis" performed by Kennedy/Jenks/Chilton, which resulted in the City of Tracy's present recommended groundwater yield of 6,700 acre-feet. It involves comparing groundwater level trends to groundwater pumping by the City of Tracy. Stable or rising groundwater levels at a given amount of pumping by the City of Tracy indicate that the sustainable yield is greater than that amount.

- Average groundwater pumping amounts since the Kennedy/Jenks/Chilton groundwater study (Kennedy/Jenks/Chilton 1990) (K/J/C Study) have not exceeded

amounts that had occurred during the period considered in the K/J/C Study. Rising groundwater levels have been observed in years in which the pumping by the City of Tracy has been as much as about 5,600 acre-feet.

- A limitation of the historical trend analysis is that it does not directly consider factors other than pumping by the City of Tracy. However, the results reflect the influence of those factors, such as probable pumping by others.

- The K/J/C Study included consideration of a 1,500 acre-foot per year reduction in pumping at a non-City of Tracy well as a factor in increasing the estimated groundwater yield for the City of Tracy. This analysis assumes that the additional potential yield associated with that well would remain available to the City of Tracy, boosting the maximum amount of groundwater available to 6,700 acre-feet per year. However, because pumping by the City of Tracy has not exceeded 6,700 acre-feet, the recent historical record does not provide a basis to confirm the 6,700 acre-foot groundwater yield previously identified by Kennedy/Jenks/Chilton.

Potential Overdraft Impacts

Both the hydrologic inventory analysis and the historical trend analysis indicate that an operational yield of about 9,000 acre-feet per year may be appropriate for the City of Tracy. This is an increase of 2,300 acre-feet from the yield recommended in the K/J/C Study. While the operational yield value is probably a conservative estimate, it is recognized that the analysis depends on a number of assumptions and limitations in the data. Therefore, consideration was given to the potential impact on groundwater if the increased pumping exceeds the sustainable yield.

To put the 2,300 acre-foot value in perspective, the volume of groundwater in storage in the Tracy area was estimated. Based on an aquifer thickness of 500 feet for the lower aquifer zone, an area of 69,000 acres as used in the hydrologic inventory analysis, and a specific yield of 10 percent, about 3.45 million acre-feet is in storage in the lower aquifer zone in the Tracy area. If the 2,300 acre-foot increase exceeds the sustainable yield, continuing that production for a 50-year period would equate to less than 4 percent of the total storage under the assumption that lower groundwater levels would result in some dewatering of the deeper aquifer. The limited potential level of overdraft in comparison to the total storage indicates that there would be ample time to develop alternatives to address that overdraft.

RECOMMENDATIONS

Based on this evaluation of the potential operating yield for the City of Tracy, several recommendations are made. It is noted that some of these recommendations can be addressed in upcoming work for the GMP.

- An average annual operational groundwater yield of 9,000 acre-feet per year is recommended for the City of Tracy. This operational yield is less than the estimated total sustainable groundwater yield available to the City of Tracy, considering such factors as:
  - Uncertainties in the data used in the analysis and in the analysis assumptions.
  - The desirability of limiting relatively large declines in groundwater levels that could contribute to subsidence impacts or adverse changes in groundwater quality.
  - The desirability of obtaining additional data and understanding of the groundwater system through operational experience and monitoring to fine-tune the analysis.
- Pumping of more than the average annual operational yield in some years is consistent with the operational yield, if there are other years in which less than the average annual operational yield is pumped, as long as the operational yield is not exceeded on a long-term average basis.
- Increased groundwater use should be accompanied by monitoring, with the objective of both confirming that the groundwater responds as expected to increased pumping and that the assumptions in the analysis with respect to groundwater conditions and activities of others remain valid.
- Monitoring should also be performed to ensure that lower groundwater levels do not result in unacceptable adverse impacts with respect to subsidence or water quality.
- Increases of up to operational yield should be made incrementally (small annual increases) and monitored with respect to declines in groundwater elevations.
- Further study is still required to determine how the use of the groundwater supplies can best be coordinated with available surface water supplies.

- Re-evaluation of the sustainable yield would be appropriate in the future, particularly using data obtained through a monitoring program, hydrologic studies, and a review of any future analyses of the hydrologic inventory and water yields or any groundwater modeling studies that include the Tracy area.

Section

GROUNDWATER YIELD CONCEPTS AND TERMINOLOGY

This section presents some yield definitions and concepts on groundwater yield considered in this report.

SAFE YIELD AND SUSTAINABLE YIELD

Safe yield can be defined in a number of ways. These range from definitions that simply consider the sustainable volume of groundwater that can be produced to definitions that include consideration of other issues, such as water quality or subsidence. For the purpose of this discussion, safe yield is considered to be the **sustainable yield** (i.e., the long-term average annual groundwater withdrawal that remains within the long-term average recharge). When the long-term average groundwater production exceeds the sustainable yield, the groundwater basin is in **overdraft**, and there is an associated decline in groundwater levels.

The definitions given above focus on long-term average groundwater withdrawals. Annual groundwater production can vary from year to year, such that groundwater production may exceed the average sustainable yield in some years, so long as there are other years in which groundwater production is less than the average sustainable yield. In fact, good water management typically uses the aquifer's storage capacity to support increased groundwater pumping in years with more limited surface water supplies.

The definitions also focus on volumes of water, rather than groundwater levels. However, because groundwater levels are related to groundwater storage (with higher groundwater levels indicating a larger volume of groundwater in storage), groundwater level trends reflect whether groundwater is in overdraft. Groundwater pumping within the sustainable yield should result in relatively stable groundwater levels. While levels will tend to be deeper during periods of greater groundwater pumping, the levels will remain within an operating range if the long-term average pumping is within the safe yield. In contrast, under overdraft conditions, groundwater discharge exceeds recharge on a long-term average basis, resulting in reduced groundwater storage and an associated long-term trend of declining groundwater levels.

Sustainable yield can be evaluated by developing a hydrologic inventory for the groundwater resources. A conceptual-level discussion of the hydrologic inventory is presented in a following subsection.

While the theoretical concept of sustainable yield is relatively simple, its practical application to the City of Tracy is complicated by a number of factors. These factors include:

- **Geographic Area.** The sustainable yield is most easily determined in a groundwater basin defined by clear hydrologic boundaries, so that the sustainable yield applies to the physical groundwater basin as a whole. The concept is more complicated for the City of Tracy; its physical groundwater basin runs from Redding in the Sacramento Valley to Kern County in the south. On a practical basis, an evaluation of the potential sustainable yield available to the City of Tracy needs to consider a more limited geographic area. While reasonable assumptions can be made to define that area, no single subarea of the San Joaquin Valley can be selected as the ideal area for all purposes.

- **Assignment of Sustainable Yield to Entities.** The sustainable yield applies to the groundwater body as a whole, rather than to specific overlying entities that pump groundwater. One of the complexities in defining a groundwater yield for the City of Tracy is that a number of other entities produce groundwater from the same aquifers. While assumptions can be made as to the groundwater uses by others as a means to estimate an appropriate level of pumping by the City to remain within the sustainable yield, the City does not control the pumping by other entities. Therefore, it is not possible to define an absolute theoretical level of groundwater pumping by the City, which will keep the basin within the sustainable yield under all possible future conditions.

- **Complexity of the Aquifer System.** One of the issues for the City of Tracy is that the underlying groundwater includes both an upper unconfined to semiconfined zone and a deeper confined zone. The City obtains its groundwater supplies from the deeper confined zone. Therefore, the sustainable yield specific to the deeper aquifer zone should be considered when evaluating groundwater supplies for the City of Tracy. However, while the Corcoran clay provides some hydraulic separation between the upper and lower aquifer zones, the sustainable yield in the deeper aquifer zone is influenced by conditions in the upper aquifer zone because of leakage through the clay.

HYDROLOGIC INVENTORY METHOD OF ANALYSIS

The hydrologic inventory method of analysis provides a means to estimate the sustainable yield. The hydrologic inventory quantifies the various components of supply to and disposal from the aquifer in the area considered by the inventory and sums those components to determine the change in groundwater storage. The sustainable yield is the amount of groundwater that can be pumped on a long-term average basis, such that the total groundwater disposal would equal the total groundwater supply.

Components of the inventory include:

- Supply
  - Percolation of irrigation return flows
  - Percolation of flows in stream channels, from ponds, etc.
  - Groundwater inflows from adjacent areas
- Disposal
  - Groundwater pumping
  - Groundwater outflow to adjacent areas
  - Discharge to streams and drains

A hydrologic inventory for the lower aquifer zone (from which the City of Tracy presently pumps) would restrict some components to the forebay area (i.e., recharge from percolation and discharge from streams). A hydrologic inventory for the lower zone would also consider flows between the upper and lower zones as an additional component.

As noted in the K/J/C Study, groundwater recharge can vary over time, including variations related to use. For example, as irrigation use increases, so may the incidental recharge associated with that use. The hydrologic inventory needs to reflect these variations.

While the hydrologic inventory provides an estimate of the sustainable yield, that estimate is relatively theoretical in the absence of data and experience of overdraft in the area. In essence, the sustainable yield is estimated by extrapolating future hydrologic conditions from past historical conditions. Because groundwater in the Tracy area does not appear to be in overdraft (see, for example, DWR Bulletin 118-80), the estimated sustainable yield for the aquifer underlying the Tracy area will be somewhat theoretical in nature.

OPERATIONAL YIELD

Because there are limitations in the application of the sustainable yield concept discussed above to the City of Tracy, consideration has also been given to the definition of an appropriate operational yield. This is not a formally defined term in hydrology; it is, however, used in this analysis to describe a practical basis for the City of Tracy's groundwater pumping that, while it may not be equal to the sustainable yield, provides an operating range that the City of Tracy can use for water policy decisions.

Considerations in defining an appropriate operational yield would include:

- **Estimated Sustainable Yield.** To the extent that sustainable yield can be estimated (and a portion of that yield assigned to the City of Tracy), those estimates would be used to help define the operational yield. In other words, while the operational yield will reflect uncertainties in the estimated sustainable yield, it will, in part, reflect those estimates.

- **Local Drawdown Impacts.** In addition to consideration of the potential changes in storage, the impacts of groundwater pumping on groundwater levels resulting from the dynamics of well operations will be considered. Those impacts occur regardless of whether or not pumping is within the sustainable yield. In the absence of a good estimate of sustainable yield, it provides at least a first cut at what an appropriate groundwater yield might be. Further, local drawdown effects could (at least theoretically) limit pumping to less than the sustainable yield.

- **Potential Impacts of Overdraft.** Because there are a number of uncertainties in estimating the sustainable yield, some of the potential magnitude of overdraft and the impacts of such overdraft is considered. One way to do this is compare groundwater pumping that exceeds the lower bound of sustainable yield to the total amount of groundwater in storage. This provides a way to understand the potential severity of consequences that result from exceeding the sustainable yield.

Again, the operational yield concept is not intended to replace the sustainable yield concept. Rather, it is intended to provide practical guidance for groundwater pumping by the City of Tracy in the context of uncertainties about the sustainable yield. Entities can and do operate beyond the sustainable yield; however, for the City of Tracy, this does not seem to be necessary, given the anticipated future surface water supplies. Also, the City of Tracy is participating in a groundwater management plan developed under AB 3030 that seeks to operate within the basin's safe yield.

In addition, the reliability of the estimated sustainable yield reflects the quality of the estimated components for the hydrologic inventory and estimated aquifer characteristics. Greater uncertainties in estimated components result in greater uncertainties in estimates of sustainable yield based on those components. The estimate of sustainable yield could be improved by using improved estimates of aquifer parameters and hydrologic inventory components. Ideally, aquifer parameter estimates would be based on aquifer test results. Similarly, hydrologic inventory components would be better estimated through a cooperative study with adjacent irrigation districts.

An understanding of the subsurface geology and groundwater hydrology is necessary to properly evaluate the hydrologic conditions of the aquifer underlying the Tracy area. The discussion presented in this section has been developed through a review of existing published references. Key references included:

- G. H. Davis et al., *Groundwater Conditions and Storage Capacity in the San Joaquin Valley, California*, USGS Water Supply Paper 1469, 1959 (USGS WSP).
- W. R. Hotchkiss and G. O. Balding, *Geology, Hydrology, and Water Quality of the Tracy-Dos Palos Area, San Joaquin Valley, California*, USGS Open File Report 72-169, August 6, 1971 (USGS OFR).
- U.S. Geologic Survey, *Groundwater Flow in the Central Valley, California, Regional Aquifer System Analysis*, Professional Paper 1401-D (USGS 1401-D)
- Kennedy/Jenks/Chilton, *Tracy Area Groundwater Yield Evaluation: Final Report*, November 1990 (K/J/C Study).

GEOLOGY

The groundwater-bearing materials underlying the Tracy area are composed primarily of poorly sorted gravelly material, which also includes clay, sand, and silt materials. Of primary interest are the uppermost materials containing fresh water. In the Tracy area, these materials are primarily in the Tulare Formation. Fresh groundwater also occurs in the overlying alluvium and terrace deposits. The Tulare Formation includes a "Corcoran clay" member, a relatively thick and laterally extensive layer of primarily fine-grained materials that separates the coarser parts of the Tulare Formation into upper and lower zones.

The unconsolidated deposits (which include the Tulare Formation) can be in excess of 2,200 feet thick in portions of the Tracy-Dos Palos area, with a lesser thickness towards the southwestern margin of the valley. While the total thickness of sedimentary rocks is large (more than 12,000 to 13,000 feet in most of the Tracy-Dos Palos area considered in the USGS OFR), the base of the Tulare Formation has been taken as the base of fresh water. USGS 1401-D indicates that the depth to the base of fresh water in the Tracy area ranges

from as much as about 2,000 feet along the western margin of the valley to less than 1,000 feet toward the San Joaquin River.

The following discussion describes the upper aquifer zone, the Corcoran clay (which separates the upper and lower aquifer zones), and the lower aquifer zone.

Upper Aquifer Zone

The upper aquifer zone includes the upper part of the Tulare Formation and the overlying alluvium, terrace deposits, and flood-basin deposits. Based on Table 1 of the USGS OFR, the upper portion of the Tulare formation has a maximum thickness of 200 feet and consists of poorly to locally well-sorted lenticular deposits of clay, silt, sand, and gravel. The overlying deposits have a similar composition. The deposit thins along the western margin of the valley and thickens towards the center of the valley.

Corcoran Clay

The Corcoran clay is a laterally extensive clay unit that occurs in much of the Central Valley. In the Tracy area, it typically occurs at elevations ranging from about 150 feet above sea level along the coast ranges to more than 150 feet below sea level toward the San Joaquin River. It is as much as about 100 feet thick. The clay typically becomes more silty toward the margins of the valley and is more difficult to identify. It eventually grades into coarser materials or wedges out. The depth to the Corcoran clay decreases toward the margin of the valley, which may maintain some hydraulic separation between the lower aquifer in the "forebay" area and the upper aquifer.

According to Table 1 of the USGS OFR, the Corcoran clay has a maximum thickness in the Tracy-Dos Palos area of 127 feet and is composed of sandy clay, silty clay, silt, and clay, interbedded with fine-grained sand. This unit is more sandy near the western margin of the deposit and is nearly sand-free towards the center of the valley. Contours of equal thickness of the clay presented on Figure 8 of the OFR show that the clay is relatively thick (as much as 100 feet) in the Tracy area.

Lower Aquifer Zone

The lower aquifer zone includes the lower portion of the Tulare Formation. Based on Table 1 of the USGS OFR, these deposits have a maximum thickness of 650 feet, and are composed of poorly to locally well-sorted lenticular deposits of clay, silt, sand, and gravel. In the Tracy area, the thickness is probably about 500 feet.

The K/J/C Study differs in the description of the lower zone in that it characterizes the deposits as being well-sorted.

GROUNDWATER HYDROLOGY

Groundwater Occurrence

In the Tracy area, groundwater occurs in the Tulare Formation and overlying deposits in both an upper and lower zone, separated by the Corcoran clay. The Corcoran clay is present throughout the Tracy area, except along the western edge of the valley.

Groundwater in the upper zone generally occurs under unconfined to semiconfined conditions in the Tracy area. The partial confinement is provided by relatively impermeable layers of limited lateral extent.

Groundwater in the lower zone occurs under confined conditions, with confinement provided by the Corcoran clay. The presence of flowing wells in the Tracy area prior to extensive groundwater development is a clear indication of the presence of confinement in the lower zone. Because the Corcoran clay approaches the land surface along the western edge of the valley, it may tend to keep the upper and lower zones relatively separate even at the valley margins.

Groundwater Movement

Both the lateral and vertical movements of groundwater in the Tracy area were considered. The lateral movement of groundwater can be assessed using groundwater level contour maps, with flow from areas higher groundwater levels towards areas with lower groundwater levels.

Figure 14B in USGS 1401-D presented groundwater level contours for the upper zone under predevelopment conditions. Those contours show flow in the Tracy area from the coast ranges towards the San Joaquin River and flow beneath the river that approximately parallels the river. Contours were also presented for the head difference between the upper and lower zones, which indicated a downward groundwater flow along the coast ranges and an upward flow toward the San Joaquin River. Groundwater levels in the deeper zone were higher than in the upper zone in most of the area, with this differential being generally less than 10 feet. This pattern of flow is consistent with recharge along the coast ranges and discharge to the San Joaquin River.

The pattern of groundwater flow has changed in response to groundwater development. Groundwater level maps showing the flow pattern under development conditions include:

- **1952.** This map, presented on Plate 15 of the USGS WSP, shows contours for both the upper and lower zones.

- **1961.** Conditions in spring 1961 for the upper zone are shown on Figure 31A and for the lower zone on Figure 31B of USGS 1401-D. Figure 31C shows the difference in head between the two zones, while Figures 32A and 32B show the change in groundwater levels from predevelopment conditions for the upper and lower zones, respectively.

- **1976.** Conditions in spring 1976 for the upper zone are shown on Figure 33A and for the lower zone on Figure 34A of USGS 1401-D. Figures 33B and 34B show the change in groundwater levels from 1961 to 1976 for the upper and lower zones, respectively.

Consideration was given to using maps prepared annually by DWR to provide more recent contours. However, those maps typically do not provide good coverage in the Tracy area.

The 1952 map of groundwater contours indicates that groundwater flowed toward the coast ranges in the west in the lower zone. In the upper zone, a groundwater mound developed between the coast ranges and the San Joaquin River, so that groundwater flowed away from the mound both toward the San Joaquin River and the coast ranges. At that time (prior to water deliveries from the Delta-Mendota Canal), groundwater was pumped to irrigate lands at higher elevations along the coast ranges, resulting in a lowering of groundwater levels in that area. The groundwater mound in the upper zone developed in response to percolation of irrigation return flows of surface water applications in those areas.

The 1961 and 1976 contour maps for the upper zone show the same general pattern of flow as under predevelopment conditions. This return to a flow pattern similar to predevelopment conditions probably resulted from delivery of water from the Delta-Mendota Canal to the higher elevation lands that had been irrigated with pumped groundwater in earlier years. However, the pattern of flow in the lower zone remains similar to the 1952 condition, with flow from beneath the San Joaquin River toward Tracy.

Under development conditions, groundwater levels in the lower zone throughout the Tracy area are generally deeper than those in the upper zone, resulting in downward flow from the upper zone to the lower zone. The head differential in 1961 was as much as about 40 feet in most of the Tracy area and more in the southwestern part of the area.

GROUNDWATER LEVEL CONDITIONS AND TRENDS

Groundwater level conditions and trends have been described in published studies and presented on groundwater elevation hydrographs and groundwater elevation maps. This section briefly summarizes key elements of those conditions.. Also, selected hydrographs are presented in a later section that evaluates historical groundwater trends.

Groundwater in the upper zone shows limited seasonal variation, and in many locations, groundwater levels have been relatively stable for a number of years. Groundwater levels in the upper zone show the influence of direct recharge, such as percolation of irrigation return flows derived from irrigation applications and recharge from the San Joaquin River. Figure 1 shows groundwater level hydrographs obtained from the DWR website for two wells perforated in the upper aquifer. Well 25/5E-18N shows very stable groundwater levels that are close to ground surface. Well 35/5E-6AZ has greater depth to groundwater and shows some variability over time, with rising levels over the 1961 to 1976 period. Figure 32A of USGS 1401-D shows contours of changes in groundwater levels in the upper zone from predevelopment conditions to 1961, while Figure 33B shows groundwater level change contours from 1961 to 1976. These contours show rising groundwater levels over these periods in the upper zone.

Figure 2 shows groundwater level hydrographs obrtained from the DWR website for two wells perforated (at least in part) in the lower aquifer. In comparison with the hydrographs for the upper aquifer, these wells show greater variability in groundwater levels, both seaonally and over periods of several years. A declining trend in groundwater levels is shown for the 1961 to 1976 period, particularly for 25/6E-19N. Based on groundwater level change contours for the deeper zone presented in USGS 1401-D (Figure 32B for the predevelopment to 1961 change and Figure 34B for the change from 1961 to 1976), groundwater levels in the lower zone have declined over this period. The contrary groundwater level trends, with rising levels in the upper zone and declining levels in the lower zone, reflects the hydraulic separation between the upper and lower zones by the Corcoran clay.

Aquifer Characteristics

Aquifer characteristics help to identify the capability of the aquifer to store and transmit groundwater. Some data to estimate these values were available in the published sources reviewed.

Specific yield indicates the storage characteristics of an unconfined aquifer. It essentially represents the percentage of the total aquifer volume that is available for storage. Values for

various depth zones by township are presented in USGS WSP. USGS 1401-D indicates a specific yield value of 10.3 percent was used in the Tracy area. This value is similar to average values presented in the USGS WSP. For the purpose of this analysis, a specific yield of 10 percent has been used.

For confined aquifers, the storage is defined by the *storage coefficient*, which represents the amount of groundwater yielded from a unit volume of aquifer for a unit decline in groundwater level. The storage coefficient is much smaller than the specific yield, typically being on the order of about 0.0001.

Aquifer transmissivity is related to how easily the aquifer transmits groundwater laterally, with higher transmissivities indicating a greater ability to transmit groundwater. Ideally, the aquifer transmissivity is determined from an aquifer test. Only limited results of aquifer tests were identified in the published studies. Aquifer transmissivities implied from documentation of model studies were also considered. However, limited reliance was placed on these estimates, because some of the characteristics of the aquifers in the Tracy area do not appear to be correctly represented in the models, which would tend to limit the validity of model-estimated values. Finally, aquifer transmissivity values can be estimated from specific capacities of wells (i.e., the production rate of the well in gallons per minute divided by the drawdown). For this study, average specific capacity values by township in the Tracy area presented in the USGS OFR were the primary basis for estimated aquifer transmissivity.

Another aquifer parameter influencing groundwater conditions is the hydraulic conductivity of the Corcoran clay, which represents how easily groundwater can move vertically through the clay between the upper and lower zones. For this study, a hydraulic conductivity of 0.0005 has been used. As presented in Table 3 of USGS 1401-D, this value is a typical value for clay, rather than a model-estimated value.

The values discussed above are considered reasonable for the evaluation presented in this report and are consistent with the level of effort envisioned for this study. However, aquifer testing would provide a means to improve these estimates.

Section

REVIEW OF PRIOR STUDIES RELATED TO GROUNDWATER YIELD

Prior studies with data relevant to estimating the groundwater yield were reviewed, as sources of yield estimates to compare with the results of this analysis and of data needed to perform the analysis. The following text discusses the studies reviewed.

GEOLOGY, HYDROLOGY, AND WATER QUALITY OF THE TRACY-DOS PALOS AREA

The USGS OFR considered the hydrologic inventory for the total Tracy-Dos Palos area addressed in that report and for four subareas. The Carbona subarea includes the City of Tracy and adjacent areas and is shown on Figure 13 of that report. Components of the hydrologic inventory considered include:

- **Effective Precipitation.** This component is defined in the USGS OFR as the amount of precipitation into or below the deep root zone of vegetation. (another common definition of effective precipitation is precipitation that is used to meet plan ET requirements, and does not include the direct percolation). However, the USGS OFR indicates that such percolation is likely small. Effective precipitation was reported to vary from 20 to 73 percent of the total annual precipitation.

- **Canals.** This value reflects the amount of surface water applied and was adjusted to reflect evaporative and seepage losses.

- **West Side Streams.** The USGS OFR estimated that 60 to 80 percent of flow in streams (except Del Puerto) infiltrates to groundwater. The 60 percent figure was used for the water balance evaluation. The remainder is evaporated or transpired.

- **Consumptive Use.** This component includes evaporation from land surfaces and evapotranspiration. The estimates were based on cropped acreage and consumptive use factors.

- **San Joaquin River.** This component included estimates of accretion or depletion in the San Joaquin River that were based on a review of river gaging station records. While this component can vary by year and location, there was an overall net gain to the river (i.e., the river acts as a drain, with groundwater flow to the river).

- **Change in Storage.** This component considered the change in storage in the upper zone, based on groundwater level maps provided by the Department of Water Resources and specific yield values from USGS WSP. In the Carbona area, storage increased an average of about 14,200 acre-feet per year.

- **Pumpage.** Power consumption records were used to estimate groundwater pumpage. For the Carbona area, which includes lands in West Side Water District, Naglee Burk Irrigation District, Plain View Water District, and Banta-Carbona Irrigation District, agricultural pumping averaged 46,000 acre-feet per year, while municipal pumping (for Tracy) averaged about 5,200 acre-feet per year. About 55 percent of the pumping was estimated to be from the upper zone.

Figure 13 of the USGS OFR presents the components of the inventory in graphical form for the subareas and for the entire Tracy-Dos Palos area. Table 1 summarizes the balance presented in the USGS OFR, both for the Carbona area and for the Tracy-Dos Palos area.

GROUNDWATER FLOW IN THE CENTRAL VALLEY, CALIFORNIA

USGS 1401-D discusses a numerical groundwater model of the entire Central Valley developed by the USGS. Components of the hydrologic inventory were developed as a part of this analysis.

- **Streamflow.** Recharge to and discharge from groundwater were estimated using a water budget analysis for reaches defined by bounding stream gages. Table 1 of that report summarizes the results. Of interest are the lowermost reaches of the San Joaquin River. The length of the last two reaches (from the Patterson Bridge gage to the Maze Road Bridge gage) is 25.8 miles. These reaches show a combined average gain (i.e., discharge from groundwater to the river) of about 91,000 acre-feet per year. The unit rate ranges from 2,100 to 9,200 acre-feet per year per mile of reach. The report indicates that during calibration, these rates were reduced by a factor of 5.

- **Precipitation.** The report includes both percolation of precipitation and percolation of surface runoff derived from the precipitation in this term. A regression formula was developed to estimate the recharge as a function of total precipitation. Later in the report, it is indicated that no recharge occurs until the annual precipitation reaches about 12 inches.

- **Irrigation.** Evaluation of irrigation included consideration of surface water supplies used for irrigation, evapotranspiration requirements, groundwater pumping volumes (including distribution between aquifer zones), and recharge by return flows.

- **Groundwater Pumping.** Figure 23 in USGS 1401-D shows average annual groundwater pumping for 1961 (a dry year), 1962 (a near-normal year), 1975 (a near-normal year), and 1977 (a very dry year). While there are some notable differences in pumping intensity in some areas, pumping in the Tracy area is relatively constant for all years, generally between 1 to 2 feet for the area (i.e., average application rate of 1 to 2 feet for the lands). While USGS 1401D does not explicitly state if the pumping is irrigation only or for both irrigation and urban use, the pumping was probably predominantly for irrigation in these years.

The developed model covers a very extensive area. However, the total model area was subdivided into smaller subareas. The City of Tracy was contained in the Tracy subarea, which is also designated in the Professional Paper as Subarea No. 24. That subarea encompasses about 325,000 acres and thus covers a much larger area than would be expected to immediately be impacted by operations in Tracy.

TRACY AREA GROUNDWATER YIELD EVALUATION

The K/J/C Study initially attempted to evaluate the groundwater yield by quantifying the hydrologic inventory. That inventory was to depend on the use of estimated inventory components that were available from other sources. However, Kennedy/Jenks/Chilton concluded that the available data would not support the development of a quantified inventory for the study area in that report, and thus the yield was estimated instead through review of historical water level data. The study focused on the lower zone, because it is the primary source of water for the City of Tracy.

While the K/J/C Study did not produce a quantified hydrologic inventory, the preliminary work was documented in Appendix A of that study. The Carbona area balance from the OFR was characterized as "qualitative" and was not used as the basis of the analysis (although, as discussed in the earlier section, the USGS OFR contains some significant quantification). The scale of the USGS modeling and, in particular, the "Tracy Sub-basin" was characterized as too broad for the K/J/C Study, since it encompasses an area roughly twice the size of the K/J/C Study area.

On a conceptual level, some components of recharge to the upper zone are discussed. With regard to recharge from surface water deliveries (addressed on pages 5 and 6 of Appendix A), the USGS method from USGS 1401-D for estimating recharge from applied

water was evaluated for 1989 conditions. Based on surface water deliveries and estimated crop evapotranspiration requirements, the K/J/C Study noted that surface deliveries far exceeded the applied water requirements and listed three possible reasons for the difference. The data developed by Kennedy/Jenks/Chilton appear to support the reasonableness of the USGS approach and simply implies that the irrigation efficiency is about 63 percent.

The K/C/J Study estimated flow between the upper and lower zones to be about 1,000 to 4,000 acre-feet based on a Darcy's law computation. The range in estimated flow reflects a range of hydraulic conductivity values for clay used in USGS 1401-D from 0.0001 to 0.00053. Those values were then used for a computation using Darcy's law, based on the irrigated area of three nearby irrigation districts and a hydraulic gradient across the clay based on two nearby wells perforated in the two zones. One observation made in the K/J/C Study is that the hydraulic conductivity was reduced by a factor of 4 during the model calibration. Based on review of the USGS study, it was not clear that the vertical conductivities were reduced by this factor. Specifically, text on page D80 of USGS 1401-D indicates that "all K values shown" in Table 7 in USGS 1401-D had been reduced by a factor of 4, but that table only shows horizontal hydraulic conductivities, not vertical conductivities. Also, based on review of the "leakance" factors used for model cells in the Tracy area and an attempt to "back out" the vertical conductivity from the leakance factors, it appears that, in fact, the conductivity used in the Tracy area may have been increased. These differences are a reflection, at least in part, that the Tracy area has not been the area of primary interest for many of the existing studies and that there is a substantial level of uncertainty in aquifer parameters.

The K/J/C Study used a "historical trend analysis" to assess groundwater production. That analysis involved comparing Tracy well production to groundwater levels in the lower zone. City of Tracy annual well production was estimated from 1974 to 1989, and groundwater levels were plotted for selected wells perforated either entirely in the lower zone or in both the lower and upper zone. The primary conclusion of the analysis was that the City of Tracy can pump about 5,200 acre-feet from the lower zone, based on the observation that maximum withdrawals of 5,600 acre-feet per year (of which 5,200 acre-feet were from the lower zone) did not adversely impact groundwater levels. This conclusion appears to reflect a comparison of groundwater levels with pumping, where reduced groundwater pumping results in a recovery of groundwater levels.

The K/J/C Study then noted that West Side Irrigation District had abandoned a well that had pumped about 1,500 acre-feet per year from the lower zone. It was then assumed that the associated reduction in pumping from this well would allow the City of Tracy to increase its pumping by 1,500 acre-feet. This would bring the potential yield for the City of Tracy up to

6,700 acre-feet per year (5,200 acre-feet of maximum historical withdrawal and 1,500 acre-feet of additional withdrawal due to offsetting reductions). Finally, the K/J/C Study recommended using 90 percent of that amount, or 6,000 acre-feet, as the maximum pumping.

Based on review of the K/J/C Study, the following observations are made:

- The basis of the 90 percent "safety factor" is not clear. In particular, it appears that because the K/J/C Study provides a very conservative analysis to begin with, it may not be appropriate to add in this safety factor.

- One limitation of the Kennedy/Jenks/Chilton historical trend analysis is that it depends on the assumption that pumping in adjacent areas will continue unchanged from that of the historical period evaluated.

- Based on the initial examination of the hydrographs, the water level trends do not seem to be indicative of overdraft. Rather, they appear to reflect the lowering of groundwater levels needed to induce flow to the well (i.e., they appear to be more related to the hydraulics of well operations than to a limitation in the hydrology). This again indicates that the Kennedy/Jenks/Chilton value is a conservative value.

GROUNDWATER MANAGEMENT PLAN FOR THE NORTHERN AGENCIES IN THE DELTA-MENDOTA CANAL SERVICE AREA AND A PORTION OF SAN JOAQUIN COUNTY

A groundwater management plan for a number of entities, including the City of Tracy, has been developed under AB 3030. The GMP is documented in the April 1996 report, *Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County*, prepared by Stoddard and Associates for the San Luis & Delta-Mendota Water Authority. The report included the development of a quantified hydrologic inventory for the study area, which included the Tracy area and a large area south of Tracy. Elements of the hydrologic inventory included:

- **Surface Water Supply.** Table 2 of the GMP documented surface water supplies from 1986 to 1994.

- **Effective Precipitation.** Effective precipitation was defined as rain either stored in soil or contributing to groundwater recharge and was estimated to be 60 percent of total annual rainfall. This was presented in Table 3 of the GMP.

- **Seepage Losses from Canals and Creeks.** Seepage losses for streams entering the Tracy area from the Coast Ranges were estimated to be 60 percent of the average flows. Estimated canal seepage from the Delta-Mendota Canal and California Aqueduct was also presented in the GMP. Table 4 of the GMP presents those estimates.

- **Subsurface Groundwater Flow.** This was assumed to be zero for the water balance analysis. The text notes that the regional flow pattern indicates flow to the San Joaquin River from the upper zone and possible inflow to the deeper zone.

- **Annual Crop Consumptive Use.** This component was estimated based on cropped acreage multiplied by the annual unit evapotranspiration for the crop. Crop water demands were shown in Table 5 of the GMP.

- **Urban Water Use.** Urban water use was estimated based on a questionnaire sent to cities in the study area, with the resulting values shown on Table 6 of the GMP.

- **Groundwater Pumping into the Delta-Mendota Canal.** Table 7 of the GMP gives the pumping (not clear if this is total or net).

- **Return Flow.** As used in this study, this value appears to be the surface flow component. Values are summarized in Table 8 of the GMP.

- **Subsurface Outflow.** Subsurface outflow appears to be on the order of 150,000 acre-feet per year, based on USGS studies. In the hydrologic inventory analysis, the subsurface outflow was computed as the residual value in the hydrologic inventory, as needed to match the observed change in groundwater storage.

- **Change in Groundwater Storage.** Unconfined groundwater levels were evaluated using data from the Department of Water Resources, the U.S. Bureau of Reclamation, and the San Joaquin County Flood Control and Water Conservation District. These levels were used to estimate changes in groundwater levels. The change in storage was then estimated based on the specific yield. Changes in storage were presented on Table 9 of the GMP.

Table 2 summarizes the hydrologic inventory presented in the GMP in a single table.

The GMP further interpreted the results of the hydrologic inventory with respect to evaluating groundwater pumping and the sustainable yield. It concluded on a preliminary

basis that increased pumping increased the sustainable yield during the relatively dry years in 1990 to 1992. This increase results from a reduction in the groundwater outflow.

The GMP drew some preliminary conclusions from the hydrologic inventory. Specifically, it stated:

> *The hydrologic balance suggests that lowering the groundwater levels increases sustainable yield, since subsurface outflow is reduced which counteracts the water extracted. More data and analysis is needed to confirm this finding and to determine the level of pumping that can be sustained without overdraft. As urban areas develop and there is a corresponding shift from surface water use to groundwater use, groundwater use increases and aquifer recharge decreases. Judging by the water resources balance, the GMA should be able to absorb the increased extraction to supply urban demand and maintain a balance notwithstanding large changes in surface water delivery, the potential for localized overdraft caused by concentrated pumping, and water quality limitations. It appears that the natural response of the aquifer to limited increases in pumping will provide for replenishment.*

Section

ESTIMATION OF CITY OF TRACY OPERATIONAL YIELD

Several different analyses were performed to help bracket an appropriate estimate of the operational yield available to the City of Tracy. The estimation of an operational yield rather than a sustainable yield reflects the substantial uncertainties in defining the sustainable yield. The sustainable yield available to the City of Tracy is a moving target, because the use of groundwater by other entities can affect the amount of available water that the City of Tracy can use while remaining within the sustainable yield.

Use of an operational yield provides an additional margin of safety considering those limitations. This includes considering the approximate magnitude of groundwater level impacts and the time available to adjust the operational yield in the future if conditions change. Also, limiting the magnitude of groundwater level impacts helps minimize potential adverse subsidence and water quality impacts.

Several possible approaches to analyzing the appropriate operational yield for the City of Tracy were considered, including some that help identify the sustainable yield by considering recharge and discharge amounts and some that help identify the potential magnitude of groundwater level impacts. Analyses considered and discussed in the following subsections include:

- Preparing a hydrologic inventory analysis for the area. This analysis has a number of uncertainties, because a number of the factors that need to be considered have not been fully defined. However, it can still provide insight into the potential sustainable yield. Further, sensitivity runs using the analysis can help identify a conservative value for sustainable yield. This approach can also be considered a fine-tuning of the hydrologic inventory analysis documented for a larger area in the recent GMP.
- Using existing groundwater models to analyze the potential yield.
- Updating the historical trend analysis of the K/J/C Study. This involves looking at the more recent groundwater production and groundwater level data to determine if production could be increased beyond 6,700 acre-feet per year previously identified by Kennedy/Jenks/Chilton.

- Evaluating groundwater level hydrographs prior to initial deliveries from the Delta-Mendota Canal. These hydrographs may show the impact of overdraft and could possibly be used to help fine-tune an estimate of the sustainable yield.

- Looking at the hydrologic impact of converting agricultural lands to urban uses. To the extent that these lands depended on groundwater to meet irrigation needs, reduced pumping for irrigation could increase the amount of groundwater available for production by the City of Tracy.

- Using the Theis equation to evaluate well hydraulics as a means to estimate the potential groundwater level impacts for various levels of groundwater pumping by the City of Tracy.

The estimates of groundwater yield presented in this section could be improved through additional studies to better define assumptions, such as aquifer characteristics.

HYDROLOGIC INVENTORY ANALYSIS

A rough hydrologic inventory analysis was prepared to estimate the potential sustainable yield and the possible groundwater levels in the lower aquifer zone associated with that yield. While the analysis includes a number of assumptions, it does provide some insight into the possible magnitude of the hydrologic inventory components, their interactions, and the resulting yields. Because the analysis is very general, it has been developed to help identify a conservative value for sustainable yield (i.e., it is intended to focus more on the lower possible bound on the sustainable yield). Also, use of a relatively conservative sustainable yield provides a greater "safety margin," in that if the safe yield is overestimated, the magnitude of the overdraft would be limited, reducing the consequences of that overdraft and allowing time to develop alternative supplies.

The analysis considered the hydrologic inventory for three elements of the aquifer system: the upper aquifer zone, the "forebay" area of the lower aquifer zone, and the confined area of the lower aquifer zone. These elements are illustrated conceptually on Figure 3. A hydrologic inventory for each of these elements was performed, and the interactions between the elements were accounted for by considering the potential groundwater underflows between the elements. Groundwater would occur in both the upper aquifer zone and the forebay area of the lower aquifer zone under unconfined conditions. The forebay is in lateral hydraulic continuity with the confined area of the lower aquifer zone. Groundwater levels in the confined area of the lower confined aquifer would reflect both the levels (or storage) in the forebay area and the intensity of the pumping in the confined area.

The area for the analysis is shown on Figure 4. In addition to the City of Tracy, the area also includes the lands in the adjacent irrigation districts. The northern boundary approximately corresponds to the Old River and Paine Slough, the eastern boundary approximately corresponds to the San Joaquin River, and the western boundary approximately corresponds to the edge of the aquifer along the Coast Range. The southern boundary represents the approximate limit of the irrigation districts. It is noted that this area is similar to the Carbona subarea considered in the USGS OFR.

Components of the Hydrologic Inventory

The various components of the hydrologic inventory for the upper zone, lower forebay zone, and lower confined zone are discussed below. The three elements of the groundwater system are "linked" in the hydrologic inventory analysis through the groundwater flows between these elements (i.e., flow through the Corcoran clay between the upper zone and the lower confined zone and flow between the lower forebay zone and the lower confined zone).

Upper Aquifer Zone

The components of the hydrologic inventory for the upper aquifer zone include the following:

Supply

- Percolation of irrigation return flows, estimated as irrigation applications that exceed crop consumptive use requirements. This component was estimated through consideration of irrigation applications and operations, discussed in a later section.

Disposal

- Groundwater pumping from the upper zone. This component was estimated through consideration of irrigation applications and operations, discussed in a later section.

- Groundwater outflow to adjacent areas. The groundwater outflow was estimated for 1986, 1989, and 1993, based on groundwater level maps for those years presented in the GMP. While there was some variation in the estimated underflow, the variations were relatively small, and the flow was on the order of about 6,000 acre-feet per year for each of these years.

- Groundwater flow across the Corcoran clay to the deeper confined zone. This was computed using Darcy's law based on the estimated head differential between the upper and lower zones and the thickness of the Corcoran clay, the hydraulic

conductivity of the Corcoran clay, and the area of the upper zone. For the purpose of this analysis, a hydraulic conductivity of 0.0005 foot per day was assumed (based on the value given in USGS 1401-D). The thickness of the Corcoran clay was assumed to be 100 feet, which, as shown on Figure 8 of the USGS OFR, is an approximate average of the thickness near the City of Tracy, where the clay is relatively thick. The area of the upper zone is about 69,000 acres.

- Drainage. This term could represent additional groundwater outflow or discharges to springs and streams that would occur as the upper zone becomes full and does not have additional storage capacity. In the analysis, it was assumed that the upper zone is full when the groundwater level is about 25 to 30 feet above sea level, and additional drainage, which prevents higher groundwater levels, was assumed to occur.

The hydrologic inventory was evaluated annually for the upper zone to identify the change in storage for the zone. The resulting change in the average groundwater level was then estimated by dividing the annual change in storage by the area of the upper zone and by the assumed storage coefficient. A storage coefficient of 10 percent was assumed, as discussed earlier in Section 4.

Lower Zone Forebay Area

The components of the hydrologic inventory for the lower aquifer zone forebay area (i.e., where the lower aquifer zone is unconfined) include the following:

Supply

- Percolation of water along the Coast Ranges. The predevelopment flow pattern in this area, with flow away from the Coast Ranges, indicated some recharge along the Coast Ranges; this recharge would likely still be occurring under development conditions. For the purpose of this analysis, it was assumed to be 1,000 acre-feet per year, which is consistent with the amount of downward flow along the Coast Ranges implied from data presented in the USGS 1401-D for this area.

Disposal

- Groundwater flow from the forebay area of the lower aquifer zone to the confined portion of the lower aquifer. That flow was estimated using Darcy's law. The aquifer transmissivity was assumed to be 50,000 gpd/ft, based on reported results of aquifer tests, specific capacity data, and values used in modeling studies. The

underflow perimeter width is about 14 miles. The gradient reflects the difference in groundwater levels between the forebay and confined zones and an assumed average distance of about 4 miles.

The hydrologic inventory was evaluated annually for the lower zone to identify the change in storage for the lower zone forebay area. The resulting change in the average groundwater level was then estimated by dividing the annual change in storage by the area of the upper zone and by the assumed storage coefficient. A storage coefficient of 10 percent was assumed. Based on Figure 8 of the USGS OFR, the edge of the Corcoran clay was assumed to correspond to Highway 580. The forebay was assumed to have a width of about one-half mile and a resulting area of about 4,500 acres.

Lower Confined Zone

The components of the hydrologic inventory for the lower aquifer zone forebay area include the following:

Supply

- Groundwater inflow from the upper zone by leakage across the Corcoran clay (parameters governing this flow were discussed in the earlier section on the balance for the upper zone).

- Groundwater inflow from the lower zone forebay area (parameters governing this flow were discussed in the earlier section on the balance for the lower zone forebay area).

- Groundwater inflow from the area south of the study area (based on an assumed transmissivity of 50,000 gpd/ft, an underflow perimeter width of about 8 miles, and a gradient estimated based on the estimated groundwater elevation located about 12 miles from the center of the lower confined zone).

- Groundwater inflow from the area east of the study area (based on an assumed transmissivity of 50,000 gpd/ft, an underflow perimeter width of about 14 miles, and a gradient estimated based on the estimated groundwater elevation located about 8 miles from the center of the lower confined zone).

- Groundwater inflow from the area north of the study area (based on an assumed transmissivity of 50,000 gpd/ft, an underflow perimeter width of about 8 miles, and a

gradient estimated based on the estimated groundwater elevation located about 12 miles from the center of the lower confined zone).

Disposal

- Groundwater pumping from the lower aquifer zone.

The groundwater flow terms have been shown above as elements of supply (i.e., groundwater inflow to the analysis area). However, depending on the groundwater levels used to estimate the groundwater flows, the analysis also recognizes that the groundwater flows along at least some of these boundaries could be outflows.

As with the upper zone and lower forebay zone, the hydrologic inventory was evaluated annually. However, the inventory for the lower confined zone differs significantly from the upper zone and lower zone forebay inventories with regard to storage. Storage in confined aquifers for a given change in groundwater elevation is much smaller than the storage for the same change in groundwater elevation in an unconfined aquifer. For the purpose of this analysis, it is reasonable to assume that there is essentially no storage in the lower confined zone. Therefore, groundwater pumping must be supplied by groundwater inflow from the adjacent and overlying areas. The groundwater level in the lower confined zone was estimated as the level needed to induce the offsetting groundwater inflow from the adjacent areas.

Irrigation Applications and Operations

Consideration of the irrigation applications and operations is a critical element in defining a number of components of the hydrologic inventory. Information was developed on the irrigated acres, unit applied water requirements, and surface water supplies in the April 1996 report prepared by Water Transfer Associates, *Evaluation of Water Supply Options*. Key information from that report is summarized in Table 3. For the purpose of this analysis, it was assumed that:

- The cropped acres and the unit applied water requirement would be the same in all years.

- The irrigation efficiency is 65 percent. Of the 35 percent of the water application not consumptively used, it was further assumed that about 20 percent would be surface runoff, while the remainder would recharge the upper zone.

- The present average annual availability of water from the Delta-Mendota Canal would be 60 percent of the contract amounts.

- Water from the San Joaquin and Old Rivers would be relatively reliable and available in all years. For the purpose of this analysis, it was generally assumed that the combined Central Valley Project, San Joaquin River, and Old River supplies would meet 90 percent of the applied water requirements.
- Applied water requirements in excess of the available surface water would be met by pumping groundwater.
- Consistent with the USGS OFR, it was assumed that 55 percent of the pumping is from the upper zone and 45 percent is from the lower zone.

Evaluation of Historical Conditions Using Hydrologic Inventory Analysis

While the available data may not support a rigorous "calibration" of the analysis, an attempt was made to look at historical conditions using the hydrologic inventory analysis. The analysis considered the period from 1926 to the present. Groundwater levels in adjacent areas used to evaluate groundwater underflows were estimated based on information presented in USGS 1401-D. Groundwater levels under predevelopment conditions as shown on Figure 14B of the USGS study were considered to apply through 1940. Figures 31A and 34A of the USGS study were used to estimate groundwater levels for 1961 and 1976, and groundwater levels between those years were estimated by interpolation.

With respect to the development of water demands, it was assumed that development would begin in 1940 and that the demand would build to present levels by 1945. Those demands would be met using surface water supplies in the same amount as presently used, except that Central Valley Project water was not available until 1952.

The assumed availability of Central Valley Project water as a percentage of the present contract amount was as follows:

- 1952 to 1976 — 80 percent of present contract amount
- 1977 — 25 percent of present contract amount
- 1978 to 1988 — 80 percent of present contract amount
- 1989, 1990, 1993, and 1994 — 50 percent of present contract amount
- 1991 to 1992 — 25 percent of present contract amount
- 1995 to present — 60 percent of present contract amount

The estimated groundwater levels for the historical period are shown on Figure 5. These levels appear to be reasonable on a qualitative basis. Under predevelopment conditions (prior to 1940), water levels in the lower confined zone are higher than in the upper zone by about 5 feet, which is similar to the head differential shown on Figure 15 of USGS 1401-D as estimated using the USGS's numerical groundwater model. With development, there is a relatively rapid drop in groundwater levels in the lower zone prior to the availability of Central Valley Project water from the Delta-Mendota Canal in 1952. With availability of this water, groundwater levels in the lower zone rise immediately after 1952. Groundwater levels then declined, primarily as a result of the changes in groundwater underflow caused by the lower groundwater levels in adjacent areas and variations in the assumed availability of Central Valley Project water. By the end of the period, average groundwater levels in the lower confined zone were about 40 feet below sea level and about 65 feet deeper than in the upper zone. These levels are similar to presently observed levels.

Estimation of Sustainable Yield

The hydrologic inventory analysis was used to help define a sustainable yield. Analyses were performed for a 50-year period, assuming various amounts of pumping by the City of Tracy in the lower confined zone (which is in addition to the assumed pumping for irrigation use). This analysis assumed constant groundwater levels in adjacent areas. For pumping within the sustainable yield, the groundwater level in the lower confined zone should drop rapidly during the early years and then stabilize and remain relatively constant. When pumping exceeds the safe yield, the groundwater level will not stabilize, but will show a progressive lowering of groundwater levels over the entire period considered.

Figure 6 shows the groundwater levels in the lower confined zone at the end of the 50-year analysis period versus various average rates of groundwater production for the City of Tracy. The slight slope-break for pumping of about 22,000 acre-feet per year or more indicates that this is the City of Tracy's "share" of the sustainable yield. The total sustainable yield from the lower zone is estimated to be about 28,000 acre-feet, which includes both the 22,000 acre-foot share for the City of Tracy and an assumed pumping of about 6,000 acre-feet for adjacent irrigated lands. This can also be seen in the hydrographs shown on Figure 7 from the analysis for pumping of 22,000 acre-feet per year (in which the pumping is within the sustainable yield and thus groundwater levels are stable in the later years) and on Figure 8 for pumping of 25,000 acre-feet per year (in which pumping exceeds the sustainable yield and thus groundwater levels continue to decline throughout the analysis period).

While groundwater production of 22,000 acre-feet by the City of Tracy would remain within the estimated sustainable yield, it is noted that this would result in lower groundwater levels.

Based on the hydrologic inventory analysis, groundwater levels in the lower confined zone were estimated to be about 95 feet below sea level. This is about 50 feet deeper than the level estimated with production of 6,700 acre-feet per year by the City of Tracy.

The specific amount of sustainable yield is dependent on a number of assumptions in the analysis. Key assumptions include:

- Recharge and pumping by the adjacent irrigation districts will remain constant over the 50-year analysis period.
- Groundwater levels in adjacent areas will remain constant over the 50-year analysis period.

While these are key assumptions, it is not possible to predict these factors for the future with a high degree of certainty. However, in the interest of making a conservative evaluation of the potential sustainable yield, alternative assumptions were made in the analysis. One alternative considered was to limit the estimated groundwater level to only 10 feet deeper than the level that would occur based on the City of Tracy's present groundwater pumping "cap" of 6,700 acre-feet per year. Under this criteria, the average groundwater operational yield would be about 9,000 acre-feet per year. Limiting the allowable drop in groundwater elevation helps to provide a more conservative estimate of operational yield and would tend to help limit potential adverse subsidence or water quality impacts associated with lower groundwater levels.

Another analysis was made, assuming that there would be no groundwater inflow to the lower confined zone from adjacent areas; the sustainable yield under this assumption would need to be developed from the 1,000 acre-feet of recharge to the lower zone forebay and from downward flow through the Corcoran clay from the upper zone. Under this analysis, the total sustainable yield was estimated to be about 18,000 acre-feet per year and the sustainable yield available to the City of Tracy was estimated to be about 12,000 acre-feet per year. This is illustrated in Figure 9, which shows groundwater levels at the end of the 50-year period for different amounts of average annual groundwater pumping by the City of Tracy; Figure 10, which shows groundwater levels over time for pumping of 12,000 acre-feet per year, within the sustainable yield; and Figure 11, which shows groundwater levels over time for pumping of 15,000 acre-feet per year, exceeding the sustainable yield.

For this more conservative analysis, production of 12,000 acre-feet per year by the City of Tracy results in the groundwater level in the lower confined zone of about 95 feet below sea level. This is about 40 feet deeper than with production of 6,700 acre-feet per year by the City of Tracy.

Given the rough nature of the analysis, the significant assumptions that need to be made in the analysis, and the fact that potential subsidence and water quality impacts have not been addressed, it is reasonable to be very conservative in increasing the City's operational yield under current conditions. Therefore, the recommended increase in sustainable yield should be 2,300 acre-feet per year (increasing the recovery to 9,000 acre-feet per year) and the impacts of such increased pumping should be carefully monitored.

It should be further noted that use of the conservative operational yield estimate also provides an additional safety factor when compared to the amount of groundwater in storage. The storage in the lower aquifer zone is estimated to be about 3.45 million acre-feet, based on a thickness of 500 feet, a specific yield of 10 percent, and the 69,000 acre area used for the hydrologic inventory. Even if all of the 2,300 acre-foot increase in the operational yield for a 50-year period came from aquifer storage, this would represent less than 4 percent of the water in storage. Based on this, there would be adequate time to develop alternative surface water supplies for the City that would decrease the need to rely upon groundwater to meet the City's demands.

It is also noted that the GMP concluded that urban entities could increase pumping to meet the foreseeable future urban needs within the sustainable yield because of changes in the groundwater underflows to adjacent areas. While that analysis considered a much larger area, that conclusion of the GMP is consistent with this analysis.

ESTIMATION OF YIELD USING EXISTING GROUNDWATER MODELS

Consideration was given to using existing numerical groundwater models to estimate the sustainable yield. Potential benefits of the approach include that these models have undergone a calibration process and peer review and that they can reflect a number of the complicating factors present in the Tracy area. However, using these models present some significant potential problems, perhaps most significantly that these model were developed for much larger areas than the Tracy area (often for the entire Central Valley) and that the results in the vicinity of Tracy were not of primary interest for those studies.

In particular, the potential use of the Central Valley Groundwater Surface Water Model was considered. This model covers the entire Central Valley, including the Tracy area, using a coarse grid with an average element size of 14 square miles. It has been used to analyze statewide water supply scenarios on the Central Valley groundwater basin, including the Central Valley Project Improvement Act Programmatic EIS and in CALFED. While it is an independent model, it is understood that data from the USGS model documented in USGS 1401-D was considered in the development of the model.

An initial review was made of the model and model parameters in the immediate vicinity of Tracy. While this model has been calibrated and subjected to public review, it has not been used to evaluate local conditions in the Tracy area. Based on this review, it appears that the model does not provide a reasonable representation of the aquifer in the immediate vicinity of Tracy, and thus it is not an appropriate tool to evaluate local conditions in Tracy. Of particular concern is the absence in the model of the Corcoran clay immediately beneath the City of Tracy, which would result in an optimistic estimate of the potential yield available from the lower aquifer zone. Specifically, the model would allow wells in the lower confined zone to be readily supplied by relatively plentiful recharge from percolation of irrigation return flows.

Brief consideration was given to the potential of modifying the model in the Tracy area to include the Corcoran clay. However, given the time and budget constraints, the refined model would not be calibrated, which would limit the reliance that could be placed on the results obtained from the modified model. Based on these limitations, use of the numerical model was not further pursued.

UPDATE OF HISTORICAL TREND ANALYSIS

An attempt was made to update the historical trend analysis performed in the K/J/C Study. The historical trend analysis compared historical trends in groundwater levels in wells to the annual amount of groundwater produced by the City of Tracy. Based on that comparison, conclusions were drawn as to the potential groundwater yield available to the City of Tracy. This analysis was the basis for the present estimated groundwater yield of about 6,700 acre-feet per year.

Figure 12 presents estimated annual pumping by City of Tracy from 1974 to 1999. Pumping amounts from 1974 to 1989 are based on the K/J/C Study. Later pumping rates are based on information provided by the City of Tracy. The value of 1997 was assumed to be the same as the approximate rate in 1996 and 1998 (i.e., 4,600 acre-feet per year). As shown on the figure, there were three general periods of groundwater production as follows:

- Relatively high pumping during the 1974 to 1979 period, averaging about 5,000 acre-feet per year.
- Relatively low pumping during the 1980 to 1987 period, averaging about 1,300 acre-feet per year.
- Relatively high pumping during the 1988 to 1999 period, averaging about 4,700 acre-feet per year.

Well hydrographs and well data were obtained from the Department of Water Resources' website for wells with data after the development of the K/J/C Study. The City of Tracy also provided data for its wells. Because groundwater levels in the upper aquifer zone tend to be very stable and because the City of Tracy pumps groundwater principally from the deeper zone, this analysis focuses on levels in the deeper zone. Hydrographs were prepared for selected wells, and judgment was used to eliminate measurements that appeared to be unreasonable.

Well data obtained from the City of Tracy generally provide spring and fall measurements of both static and pumping groundwater levels. Pumping levels are deeper than the static levels, reflecting the lowering of groundwater required for the wells to operate hydraulically. Spring groundwater levels also tend to be higher than fall groundwater levels, because levels in the fall tend to reflect the greater pumping stresses on the groundwater cause by summertime irrigation, while spring measurements tend to reflect some recovery in these levels. In evaluating the potential yield, the emphasis is on groundwater storage, rather than on variations in groundwater levels related to well hydraulics. All other things being equal, storage conditions would be most clearly reflected using spring static groundwater levels.

Locations of the wells for which hydrographs were prepared are shown on Figure 13. The hydrographs are presented in geographic groupings to help show similarities in the groundwater level trends in those wells.

Spring groundwater levels for the northern City of Tracy wells are presented on Figure 14, while fall groundwater levels for these wells are shown on Figure 15. Because the spring groundwater levels better reflect storage conditions and because more extensive data are available during the spring, the evaluation for these wells focused on the spring static measurements. The following observations can be made from these hydrographs:

- Groundwater levels at the Wainright well are significantly higher and show less variability than those at the other wells, indicating that these levels are probably more representative of conditions in the upper zone rather than the lower zone.

- Groundwater levels are generally relatively high in 1988, which is at the end of period of relatively low groundwater production.

- Groundwater levels have generally declined from 1990, which corresponds to the period of relatively high groundwater production. However, there are some significant rises during this period (for example, between 1997 and 1998).

For the southern City of Tracy wells, a hydrograph of spring groundwater levels is shown on Figure 16, while a hydrograph for fall groundwater levels is shown on Figure 17. These hydrographs also indicate relatively high groundwater levels immediately after the period of relatively low groundwater production. Groundwater levels drop during the early 1990s, and many of the wells have the lowest observed groundwater levels in 1994. Groundwater levels generally rose after 1994, but not to the levels observed in the 1988-1989 period. Some observations based on these hydrographs are:

- While the average annual groundwater production by the City of Tracy is similar before 1994 (about 4,600 acre-feet per year from 1989 to 1994) and after 1994 (about 4,700 acre-feet per year from 1989 to 1994), groundwater levels generally drop prior to 1994 and rise after 1994. This is an indication that the groundwater levels are significantly influenced by factors other than pumping by the City of Tracy.

- The rising groundwater levels after 1994 indicate the sustainable yield is greater than the average pumping of 4,700 acre-feet during that period. Further, groundwater levels rose in 1999, when the City of Tracy pumped about 5,600 acre-feet. However, it is not clear how to determine the City of Tracy's share of the sustainable yield.

An additional hydrograph (Figure 18) was prepared to develop a longer-term perspective on the southern City of Tracy wells. This hydrograph shows spring groundwater levels in the City of Tracy wells from 1989 to 2000 and in the nearby Well 3S/5E-17B1 from 1970 to 1985. The deepest groundwater level in Well 3S/5E-17B1 occurs in 1979, which corresponds to the end of a period with relatively high groundwater pumping, and groundwater levels generally rose during the period of relatively limited groundwater pumping.

Spring groundwater levels for selected wells east and southeast of Tracy are shown on Figure 197, while fall groundwater levels are shown on Figure 20. The groundwater levels tend to be relatively deep at the end of the 1974 to 1979 period of relatively high groundwater pumping (although some recovery is shown in 1979); they rise during the period of limited pumping by the City of Tracy from 1980 to 1987; and they decline during the period of relatively high groundwater pumping after 1988. However, as with the hydrographs for other areas, groundwater levels rise at the end of this period, even though there continues to be relatively high pumping by the City of Tracy.

Finally, Figure 219 shows both spring and fall groundwater levels for Well 2S/4E-36P1, located west of Tracy. That hydrograph shows rising groundwater levels during the period

of relatively low pumping by the City of Tracy through about 1987 and declining groundwater levels after 1987 during a period of relatively high groundwater pumping by the City of Tracy.

The hydrographs tend to show a pattern of deeper groundwater levels during period of relatively large pumping by the City of Tracy. An attempt was made to determine if the fall static groundwater levels reflect the hydraulic impacts of pumping or another factor. In that regard, plots were prepared of the City of Tracy wells showing average groundwater elevations versus fall static levels and a regression performed to relate those factors. In general, the regression shows the anticipated deeper levels related to annual groundwater production. However, that relationship was relatively weak, which may indicate that other factors strongly impact groundwater levels. A sample plot for the Tidewater well, which showed the strongest relationship between production and levels, is shown on Figure 22.

One limitation of the regressions performed for the individual wells is that the groundwater levels were compared to the total production by the City of Tracy. Variations in the production by well could be influencing those comparisons. Therefore, an additional plot was prepared that compares the average pumping to the average drawdown (computed as spring versus fall statics for those years with available data from all eight wells (Ballpark, Lewis Manor, Tidewater, Lincoln, and Production Wells 1 through 4) to estimate the average drawdown. Although it is based on only five data points, that plot shows a stronger relationship. Results are shown on Figure 23.

The preliminary conclusions drawn from the updated historical trend analysis are presented below:

- Groundwater production in the more recent years has not exceeded production considered in the K/J/C Study.

- The hydrographs appear to reflect a significant influence of factors other than pumping by the City of Tracy. For example, relatively high groundwater levels occur in 1999, even though the pumping by the City of Tracy is relatively high in that year.

- The groundwater level trends may in part reflect the influence of other groundwater pumping for irrigation. Such pumping would be expected in years with relatively limited surface water supplies, and it is noted that the rising trend on groundwater levels observed after 1994 (when the City of Tracy's pumping remained at relatively high levels) corresponds to the period when more plentiful Central Valley Project water would have become available from the Delta-Mendota Canal.

- Because other factors influence groundwater levels, it is difficult to draw highly quantified conclusions from an analysis of historical trends with regard to groundwater yield available to the City of Tracy.

- The City of Tracy has pumped less than 6,700 acre-feet of groundwater in all years. Based on that, identification of a higher potential yield for the City of Tracy will depend on the identification of reductions in groundwater utilization by others.

- The groundwater level trends do not appear to be consistent with overdraft conditions. Therefore, the historical trend analysis does not provide a good means to identify the sustainable yield; rather its use is limited to identifying a minimum sustainable yield based on remaining within historical use that has not caused overdraft.

EVALUATION OF HYDROGRAPHS FROM PRE-DELTA-MENDOTA CANAL DELIVERY PERIOD

Discussions presented in published reports indicate that pumping "holes" developed near Tracy prior to deliveries from the Delta-Mendota Canal, particularly beneath the higher elevation lands along the coast ranges. The development of those pumping holes may have indicated overdraft conditions. However, very limited groundwater level data was located for that period. Only six wells were identified from the Department of Water Resources' website with data during this period. Due to these limited data and the difficulty in estimating the pumping amounts that caused the depressions to develop, no attempt was made to use the hydrographs to quantify groundwater yield.

THEIS ANALYSIS

An analysis was performed to identify the potential groundwater level impacts resulting from the hydraulics of well operations. The Theis equation is used to estimate the drawdown over time due to pumping at a well. Key assumptions in the Theis equation include:

- The aquifer is isotropic and homogenous (i.e., the aquifer characteristics are the same in all directions and at all locations in the aquifer).

- Groundwater production is at a constant rate.

- The aquifer is of infinite lateral extent.

- The well fully penetrates the aquifer.

The drawdown resulting from the operation of several pumping wells can be estimated as the sum of the estimated impact of each well, using the "principle of superposition." That principle strictly applies to confined aquifers, but can also be used to evaluate unconfined aquifers if the lowering of groundwater levels is limited in relation to the total thickness of the aquifer.

The Theis analysis provides a means to estimate the hydraulic effects of well operations. It does not consider the components of the hydrologic inventory, and thus, it does not provide a means to estimate the sustainable groundwater yield. It has been included herein both to help interpret the historical trends analysis (by understanding the potential magnitude of groundwater level changes that relate to well hydraulics rather than sustainable yield) and to provide an estimate of the potential magnitude of groundwater level impacts under a worst-case assumption of essentially no recharge.

The results should be considered as only a very rough approximation of the impacts because:

- The actual aquifer is not of infinite extent, and in particular, the edge of the basin along the Coast Ranges would tend to cause groundwater levels estimated using the Theis analysis to be higher than actual levels. (This limitation could be addressed using "image" wells, but this was considered to be beyond the scope of this analysis, given schedule constraints)

- The Theis analysis assumes totally confined conditions, while there may be significant leakage through the Corcoran clay. While there are equations to estimate impacts in leaky aquifers, these equations are more cumbersome to implement and require several additional parameters and assumptions. This would tend to result in the Theis analysis estimating lower groundwater levels than would actually occur.

- The aquifer is not confined throughout, and the likely occurrence of unconfined conditions near the coast ranges is not reflected in the Theis analysis. This limitation would tend to result in levels estimated using the Theis analysis being deeper than the actual levels.

These concerns become more problematic as the distance from the pumping wells increases and the total area covered becomes larger.

The Theis equation was evaluated using an assumed a transmissivity of 80,000 gpd/ft. That value was based on specific capacity data for the Tracy area. The storage coefficient was assumed to be 0.0001.

Results of Theis Analysis for a Single Pumping Well

The first step in the analysis was to use the Theis equation to evaluate drawdowns for the pumping of a single well. For this analysis, a rate of 1,500 gallons per minute (similar to reported production rates for City of Tracy wells) was assumed. Figure 24 shows the drawdown over time at the pumping well. As shown on Figure 24, there is a relatively rapid drawdown when the well is first turned on, and the rate of drawdown slows over time.

As a check to identify if the Theis analysis results are reasonable, drawdowns at the City of Tracy's wells were estimated based on spring and fall groundwater level measurements under static and pumping conditions. Based on the available data, the average drawdown at these wells is about 37 feet, which is similar to the drawdown estimated using the Theis analysis for a pumping duration of one day (about 41 feet). Also, the implied specific capacity of the well is about 37 gallons per minute per foot of drawdown (production rate of 1,500 gallons per minute divided by a drawdown of 41 feet), which is similar to the average specific yield of 41.2 gallons per minute per foot of drawdown for wells completed in the lower zone, as shown in the USGS OFR.

Figure 25 shows the drawdown at various distances from the pumping well. At each point in time shown, the drawdown is greatest at the pumping well and decreases with increasing distance from the well.

Results of Theis Analysis for Combined Impact of City Wells

In order to estimate groundwater level impacts of operation of the City of Tracy's wells, it was assumed that for a given annual total pumping, equal amounts would be pumping at the City of Tracy's Tidewater well, Ballpark well, Lewis Manor well, Lincoln Park well, South Area well, and Production Wells 1 through 4. The impacts were evaluated based on the average production rate at each well. The total drawdown was estimated at three points, corresponding to the locations of the Tidewater well, South Area well, and Production Well 1, using the principal of superposition. Figure 26 summarizes the estimated drawdown at these three points for one year of total pumping by the City of Tracy of 1,400 acre-feet (equivalent of average pumping during the 1980 to 1987 period), 4,680 acre-feet (equivalent of average pumping during the 1989 to 1999 period), 6,700 acre-feet (estimated groundwater yield from the K/J/C Study), 7,900 acre-feet (yield from the K/J/C Study plus 1,200 acre-feet for development), and 9,000 acre-feet (higher value similar to conservative estimate of operational yield available to the City of Tracy using the hydrologic inventory analysis).

The drawdown estimated using the Theis equation for 4,680 acre-feet of production is about 25 to 30 feet greater than the drawdown estimated for production of about 1,400 acre-feet per year. This differential is similar to that observed on the water level hydrographs for wells (shown on Figures 12, 14, and 17). While not conclusive, this indicates that the water level trends observed in the lower zone in the Tracy area may be reflecting well hydraulics rather than changes in storage in unconfined areas in hydraulic continuity with the confined area.

Table 1 - Summary of Hydrologic Inventories for the Carbona Sub-area and the Tracy Dos Palos Area from USGS Open File Report 71-170

Carbona Sub-area	1962	1963	1964	1965	1966	Avg
Effective Precip	33000	21000	20000	18000	7000	19800
Canal Deliveries	160000	138000	179000	150000	175000	160400
Canal Seepage	32000	36000	31000	32000	31000	32400
Infiltration from streams	0	0	0	0	0	
Consumptive use	188000	186000	184000	183000	182000	184600
Accretions to SJ River	0	0	0	0	0	0
Increases in GW storage	14500	14500	14500	14500	14500	14500
Net (presented on Figure 13 of OFR)	25000	-3000	32000	1000	20000	15000
Net (computed from values above)	22500	-5500	31500	2500	16500	13500
Ag GW Pumping	46000	48000	44000	46000	46000	46000
M&I Pumping	4750	4860	5120	5380	5660	5154

Tracy-Dos Palos Area	1962	1963	1964	1965	1966	Average
Effective Precip	170000	120000	110000	110000	60000	114000
Canal Deliveries	870000	780000	975000	870000	985000	896000
Canal Seepage	180000	200000	170000	205000	175000	186000
Infiltration from streams	15000	10000	10000	10000	5000	10000
Consumptive use	920000	916000	912000	908000	904000	912000
Accretions to SJ River	150000	345000	125000	210000	185000	203000
Increases in GW storage	4700	4700	4700	4700	4700	4700
Net (reported)	168000	-158000	230000	67000	124000	86200
Net (computed)	160300	-155700	223300	72300	131300	86300
Ag GW Pumping	302000	287000	283000	296000	311000	295800
M&I Pumping	9590	10200	10900	11400	11800	10778

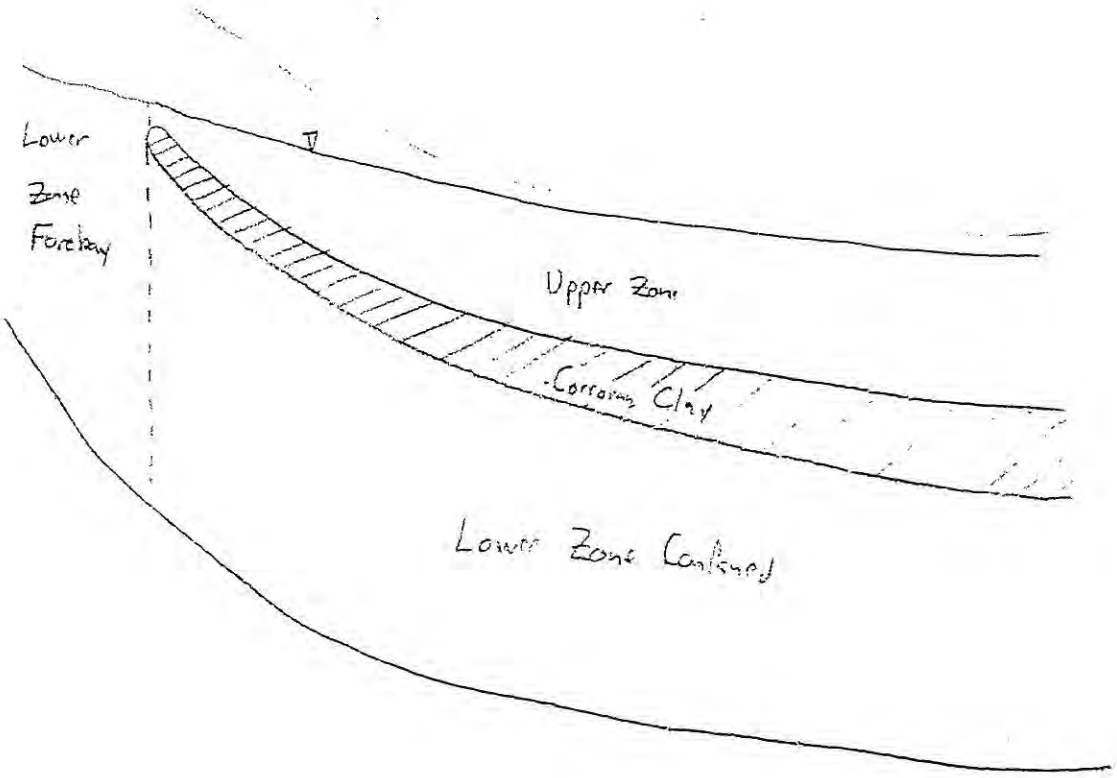
Carbona Subarea as Percent of Tracy-Dos Palos area	1962	1963	1964	1965	1966	Average
Effective Precip	19%	18%	18%	16%	12%	17%
Canal Deliveries	18%	18%	18%	17%	18%	18%
Canal Seepage	18%	18%	18%	16%	18%	17%
Infiltration from streams	0%	0%	0%	0%	0%	0%
Consumptive use	20%	20%	20%	20%	20%	20%
Accretions to SJ River	0%	0%	0%	0%	0%	0%
Increases in GW storage	309%	309%	309%	309%	309%	309%
Net (reported)	15%	2%	14%	1%	16%	17%
Net (computed)	14%	4%	14%	3%	13%	16%
Ag GW Pumping	15%	17%	16%	16%	15%	16%
M&I Pumping	50%	48%	47%	47%	48%	48%

Table 2 - Summary of Hydrologic Inventory for Groundwater Management Plan
(All values in units of AF)

Year	Inflow SW	Precipitatio	Seepage	Total Inflow	Outflow Crop Demand	Urban Demand	DMC Pumping	Return Flow	GW Outflow	Total Outflow	Change in Storage	Cum. Change in Storage
1986	535000	70000	12000	617000	400000	10000	0	40000	185000	635000	-18000	-18000
1987	535000	70000	12000	617000	400000	10000	0	40000	185000	635000	-18000	-36000
1988	535000	70000	12000	617000	400000	10000	0	40000	185000	635000	-18000	-54000
1989	535000	70000	12000	617000	400000	10000	0	40000	185000	635000	-18000	-72000
1990	440000	56000	10000	506000	400000	12000	8000	38000	73000	531000	-25000	-97000
1991	440000	56000	10000	506000	400000	12000	8000	38000	73000	531000	-25000	-122000
1992	440000	56000	10000	506000	400000	12000	8000	38000	73000	531000	-25000	-147000
1993	410000	105000	26000	541000	380000	14000	4000	36000	57000	491000	50000	-97000
1994	442000	80000	13000	535000	380000	15000	16000	38000		449000		

Figure 3

Conceptual Schematic for Hydrologic
Inventory Analysis



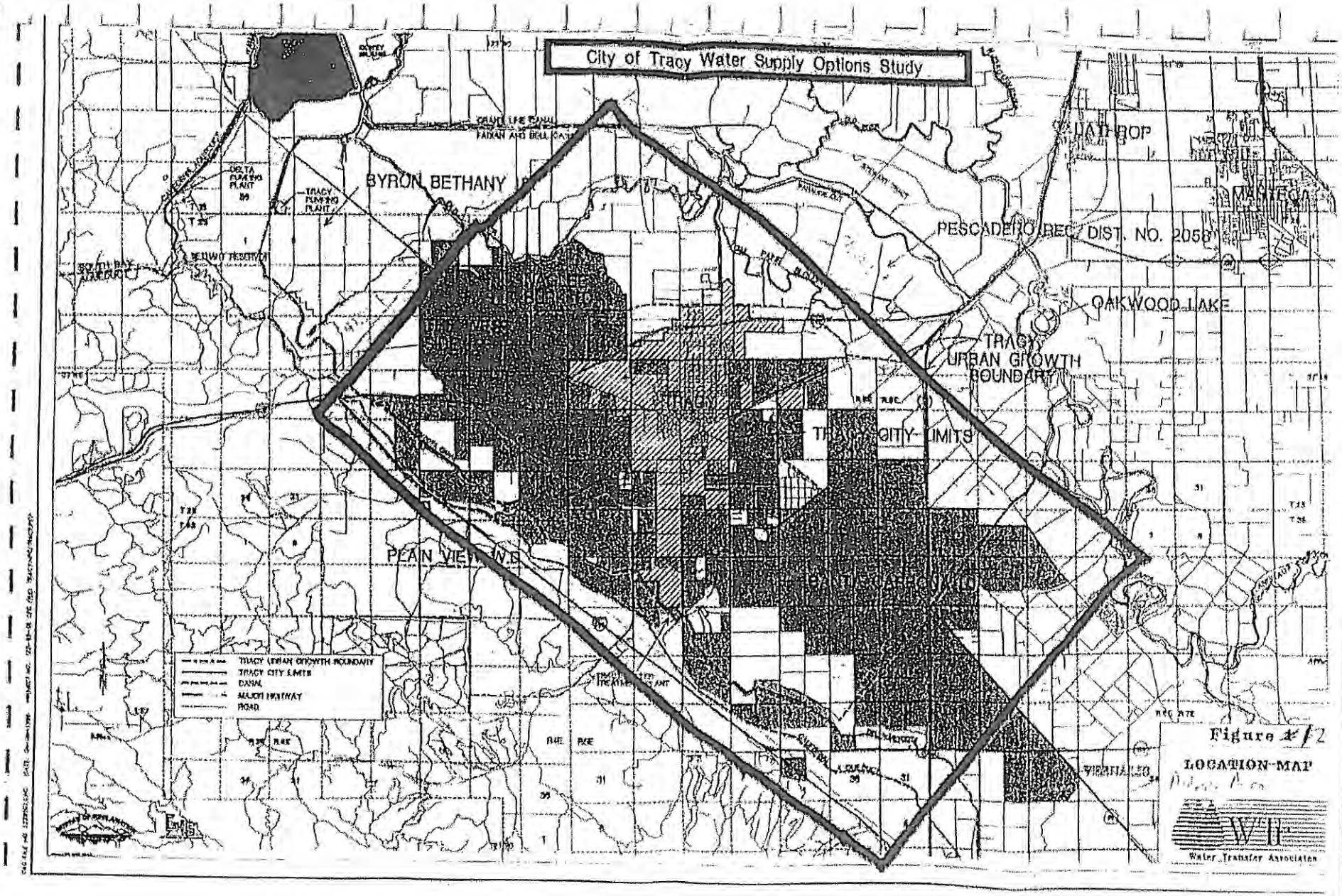

City of Tracy Water Supply Options Study
BYRON BETHANY
PESCADERO REC. DIST. NO. 2058
OAKWOOD LAKE
TRACY URBAN GROWTH BOUNDARY
TRACY CITY LIMITS
PLAIN VIEW N.D.
TRACY URBAN GROWTH BOUNDARY
TRACY CITY LIMITS
CANAL
MAJOR HIGHWAY
ROAD
Figure 1/2
LOCATION MAP
Water Transfer Association

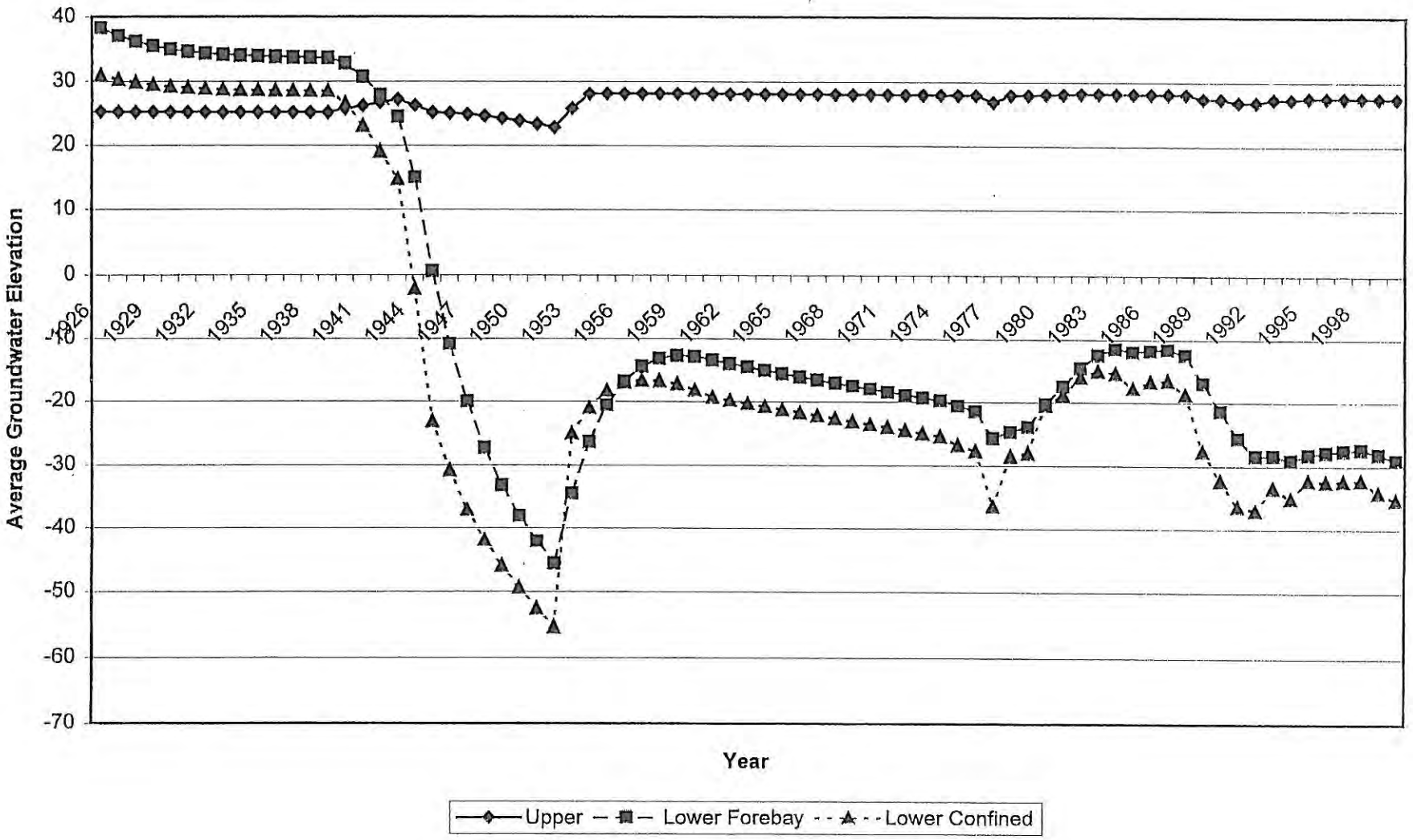
Figure 4

Table 3 - Water requirements and supplies for Irrigation Districts in Vicinity of City of Tracy

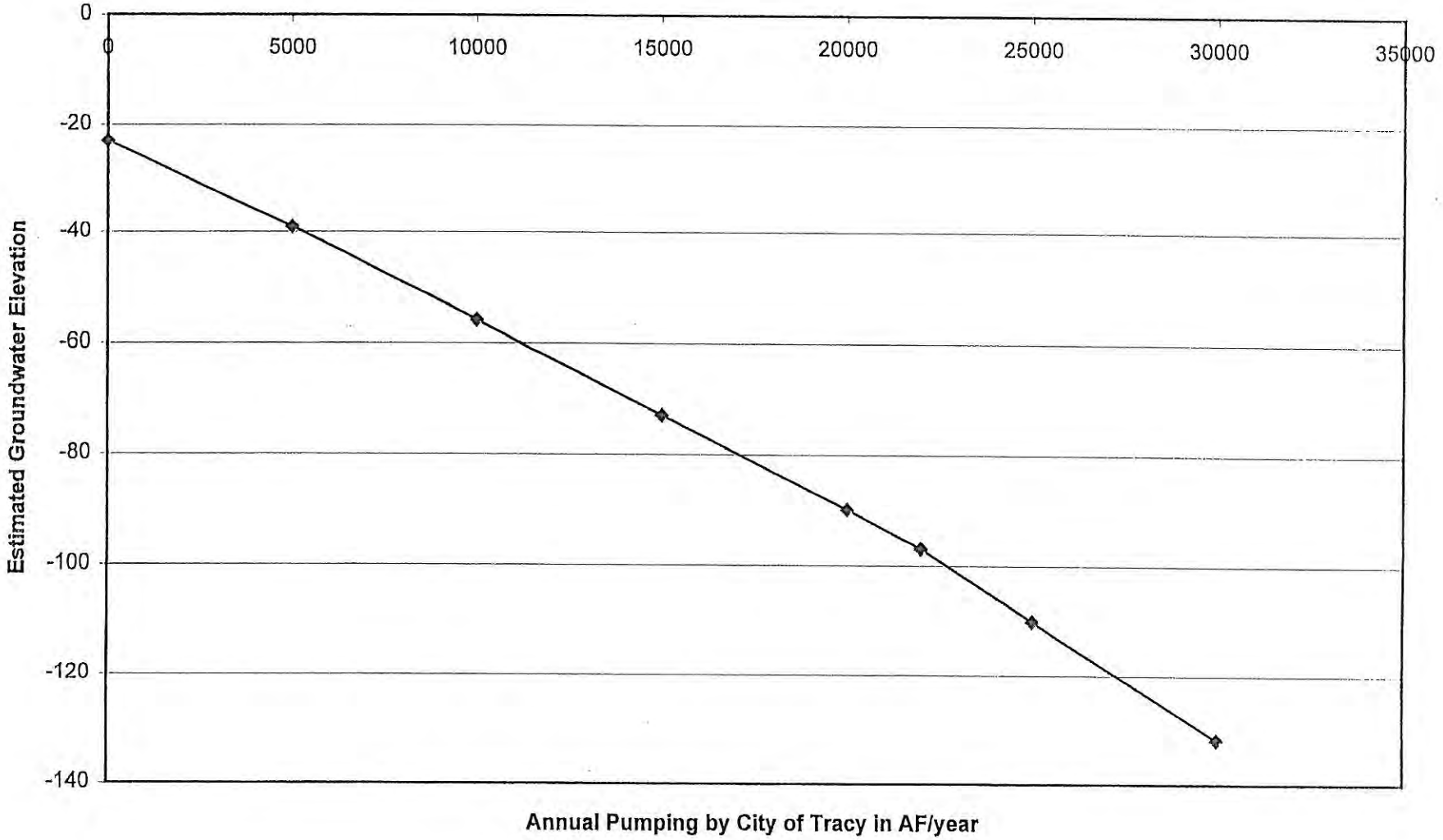
District	(1) Current Acreage	(2) Current Irrigated Acreage	(3) Unit Applied Water	(4) Total Applied Water	(5) CVP Allocation	(6) CVP Yield	(7) Old River	(8) Old River Yield	(9) San Joaquin River	(10) San Joaquin River Yield	(11) Surface Water Supply	(12) GW Pumping
West Side	8500	7500	4	30000	7500	4500	35018.18	22950	0	0	27450	2550
Naglee-Bu	2650	2252.5	3.5	7883.75	0	0		7095.375	0	0	7095.375	788.375
Plain View	6352	6100	3.4	20740	20600	12360	0	0	0	0	12360	8380
Banta-Carl	17500	14500	3.4	49300	25000	15000	0	0	122602.3	34300	49300	0
Total	35002	30352.5		107923.8								11718.38

(1) From "Evaluation of Water Supply Options" by Water Transfer Associates.
(2) From "Evaluation of Water Supply Options" by Water Transfer Associates,
except for Naglee-Burk Irrigation District, where current irrigated acreage is assumed to be 85 percent of current acreage.
(3) From "Evaluation of Water Supply Options" by Water Transfer Associates.
(4) Column (2) multiplied by column (3).
(5) From "Evaluation of Water Supply Options" by Water Transfer Associates.
(6) Assumed to be 60 percent of allocation shown in column (5)
(7) Maximum water available under diversion rights from Old River, based on information in Water Transfer Associates report.
Data is not available in that report to quantify maximum water from Old River available to the Naglee-Burk Irrigation District
(8) Assumed yield available from Old River diversion rights.
Assumed to be equal to 90 percent of the total applied water less the CVP yield.
(9) Maximum water available under diversion rights from the San Joaquin River, based on information in Water Transfer Associates report.
(10) San Joaquin River Yield for the Banta-Carbona Irrigation District is
assumed to be equal to total applied water requirements less the CVP yield.
(11) Total surface water supply is sum of CVP yield (columns (6)), Old River yield (column (8)), and San Joaquin River yield (column (10)).
(12) Estimated as total applied water requirement (column (4)) less the surface water supplies (column (11)).

Historical Average Groundwater Levels Estimated Using Hydrologic Inventory Analysis
Figure 5



Year 2050 Groundwater Elevations versus Pumping by City of Tracy
Figure 6



Historical Average Groundwater Levels Estimated Assuming 7,700 AF/yr pumping by Tracy and No Lateral Groundwater Inflow
Figure 7

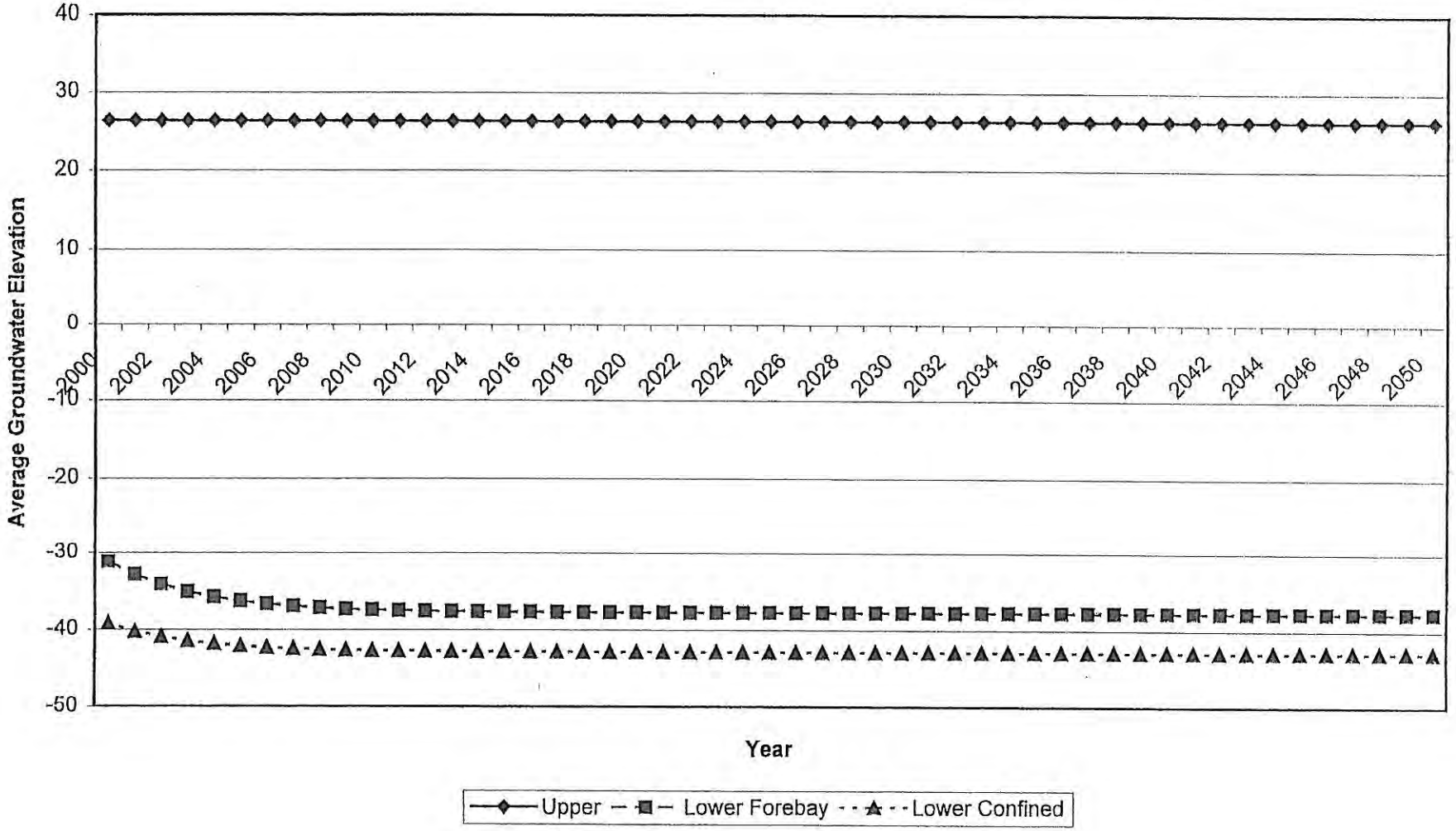


Figure 8

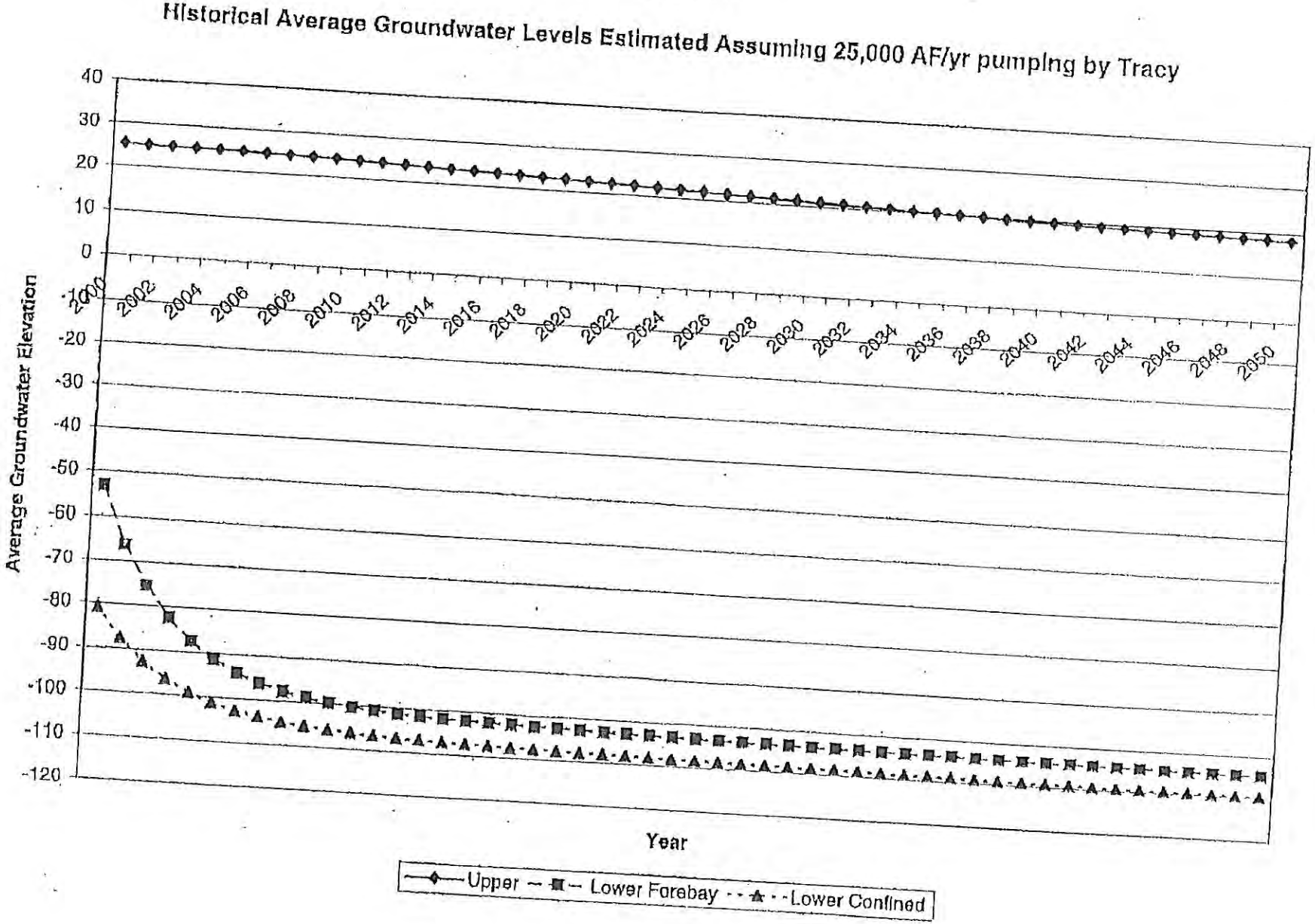
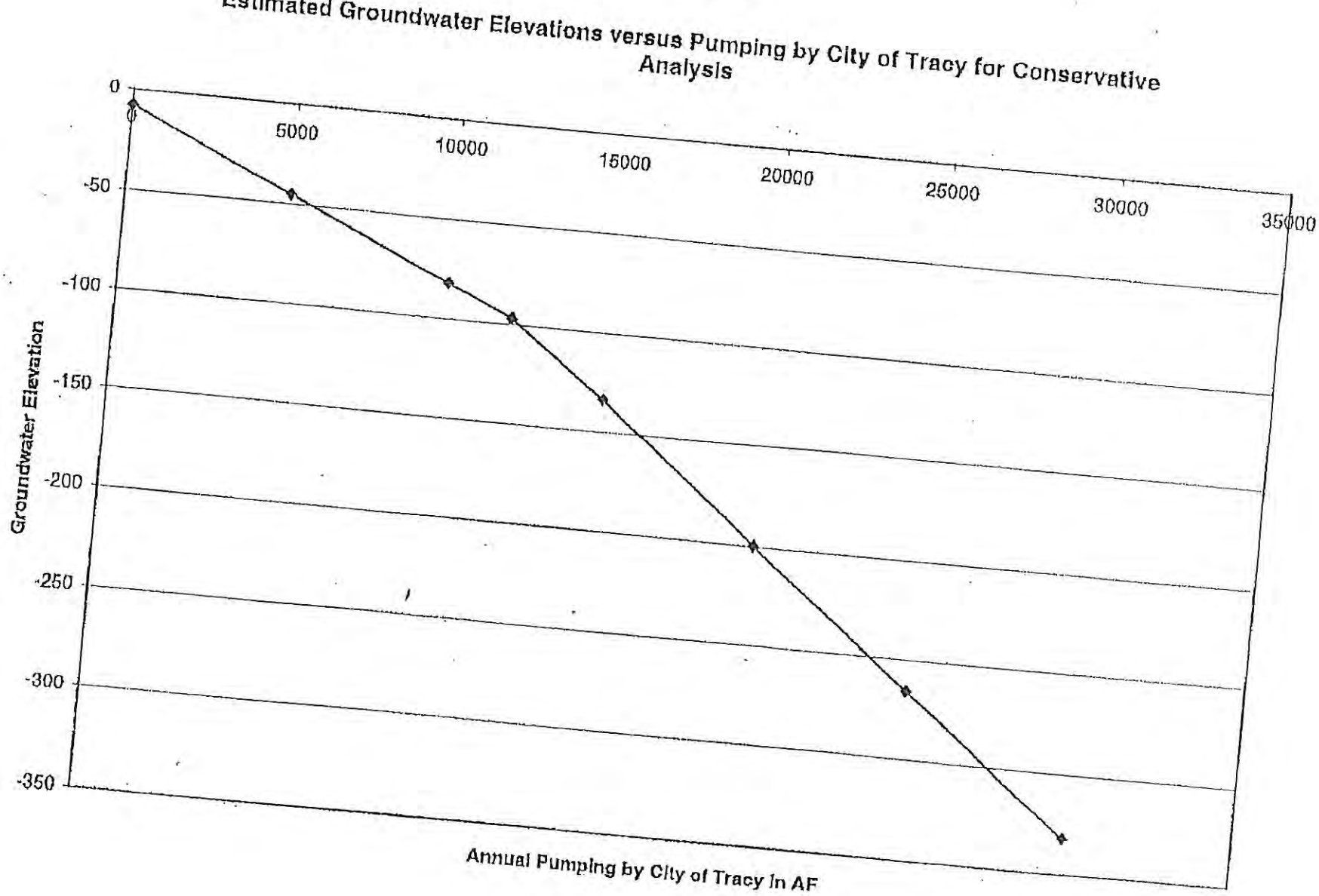

Historical Average Groundwater Levels Estimated Assuming 25,000 AF/yr pumping by Tracy
Average Groundwater Elevation
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046
2048
2050
Year
Upper
Lower Forebay
Lower Confined

Figure 9


Estimated Groundwater Elevations versus Pumping by City of Tracy for Conservative Analysis
0
-50
-100
-150
-200
-250
-300
-350
Groundwater Elevation
5000
10000
15000
20000
25000
30000
35000
Annual Pumping by City of Tracy in AF

Historical Average Groundwater Levels Estimated Assuming 12,000 AF/yr pumping by Tracy and No Lateral Groundwater Inflow
Figure 10

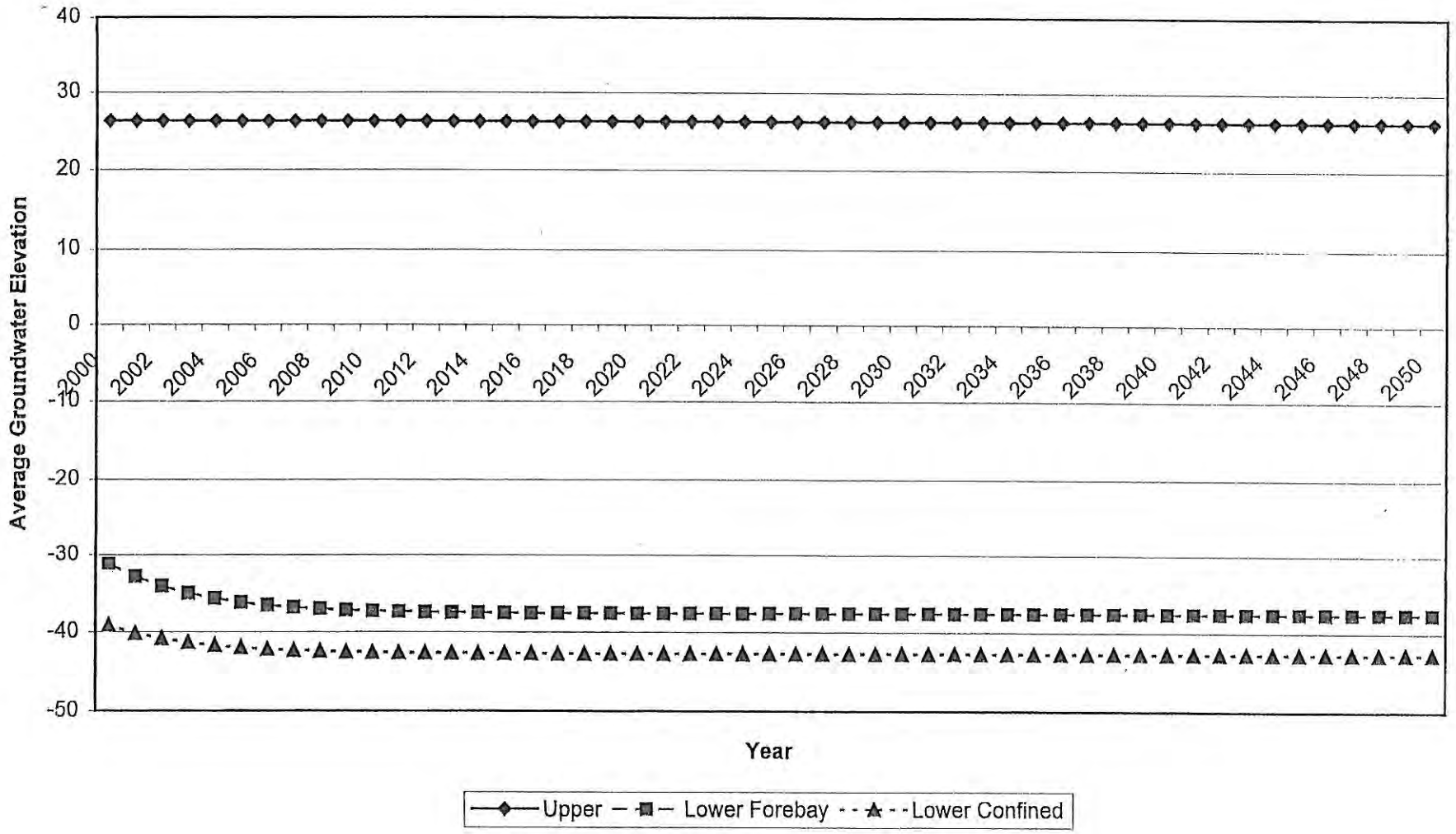
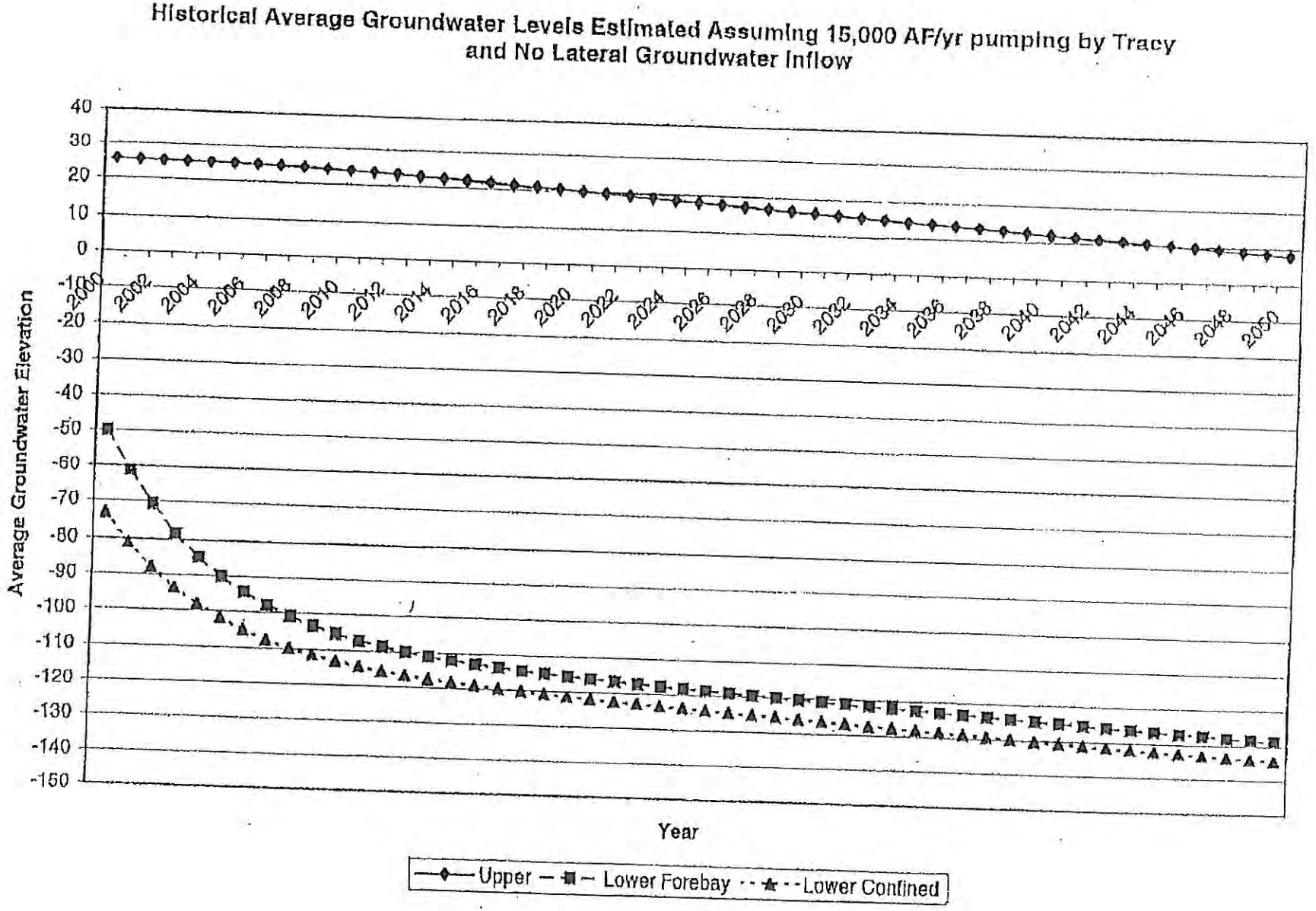


Figure 11


Historical Average Groundwater Levels Estimated Assuming 15,000 AF/yr pumping by Tracy and No Lateral Groundwater Inflow
Average Groundwater Elevation
40
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046
2048
2050
Year
Upper
Lower Forebay
Lower Confined

Estimated Groundwater Pumping by City of Tracy
Figure 12

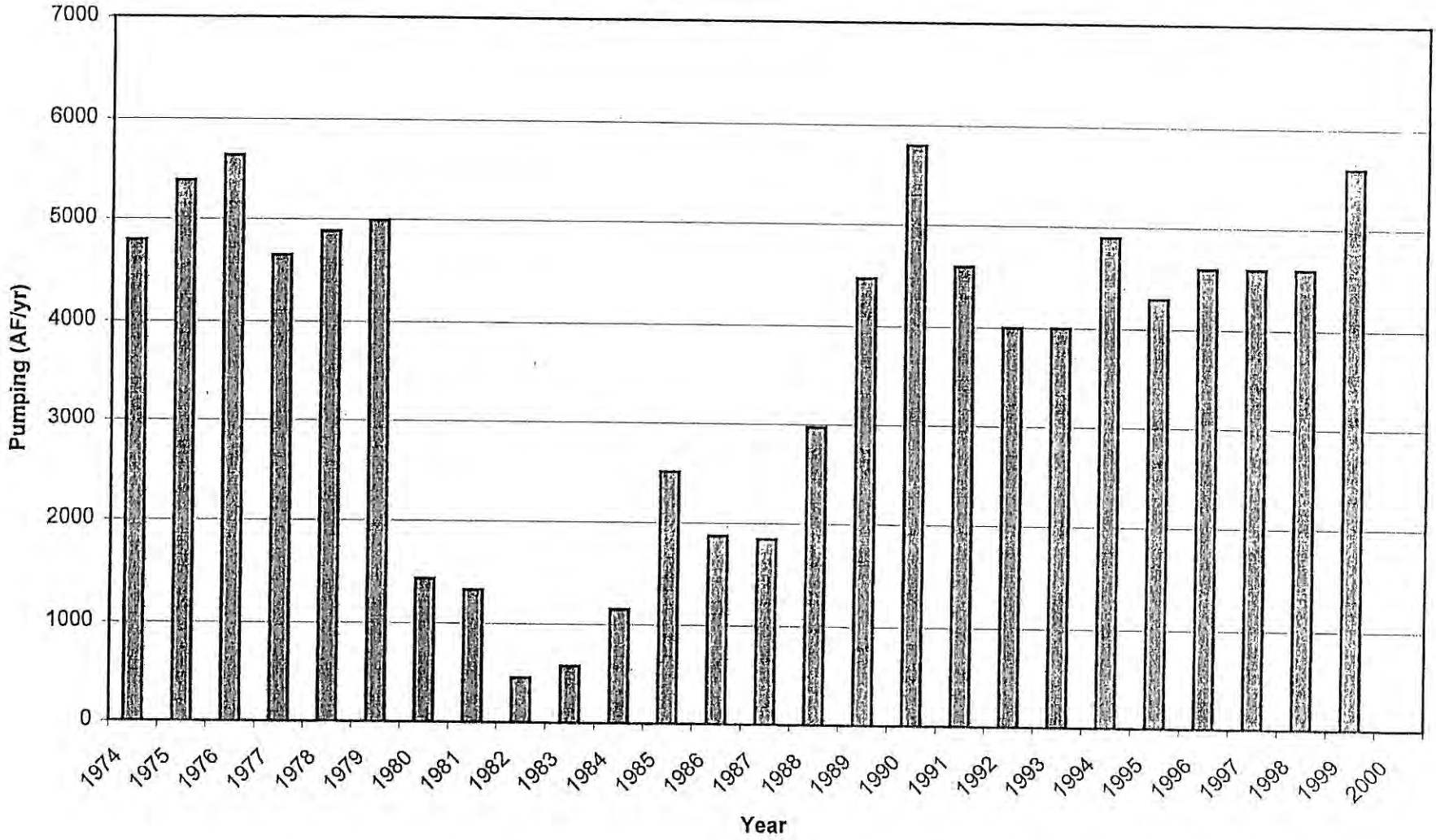
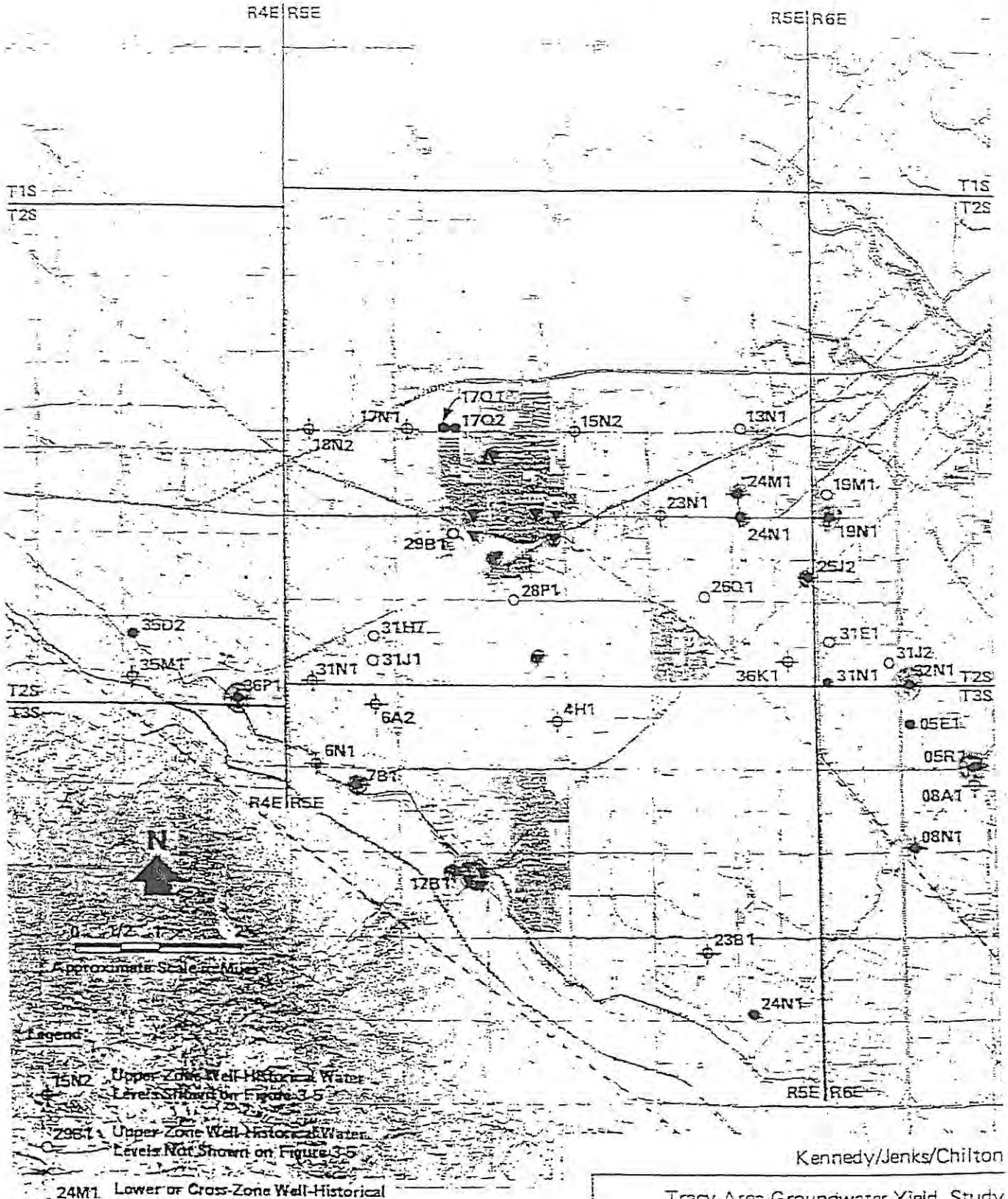


Figure 13



Kennedy/Jenks/Chilton

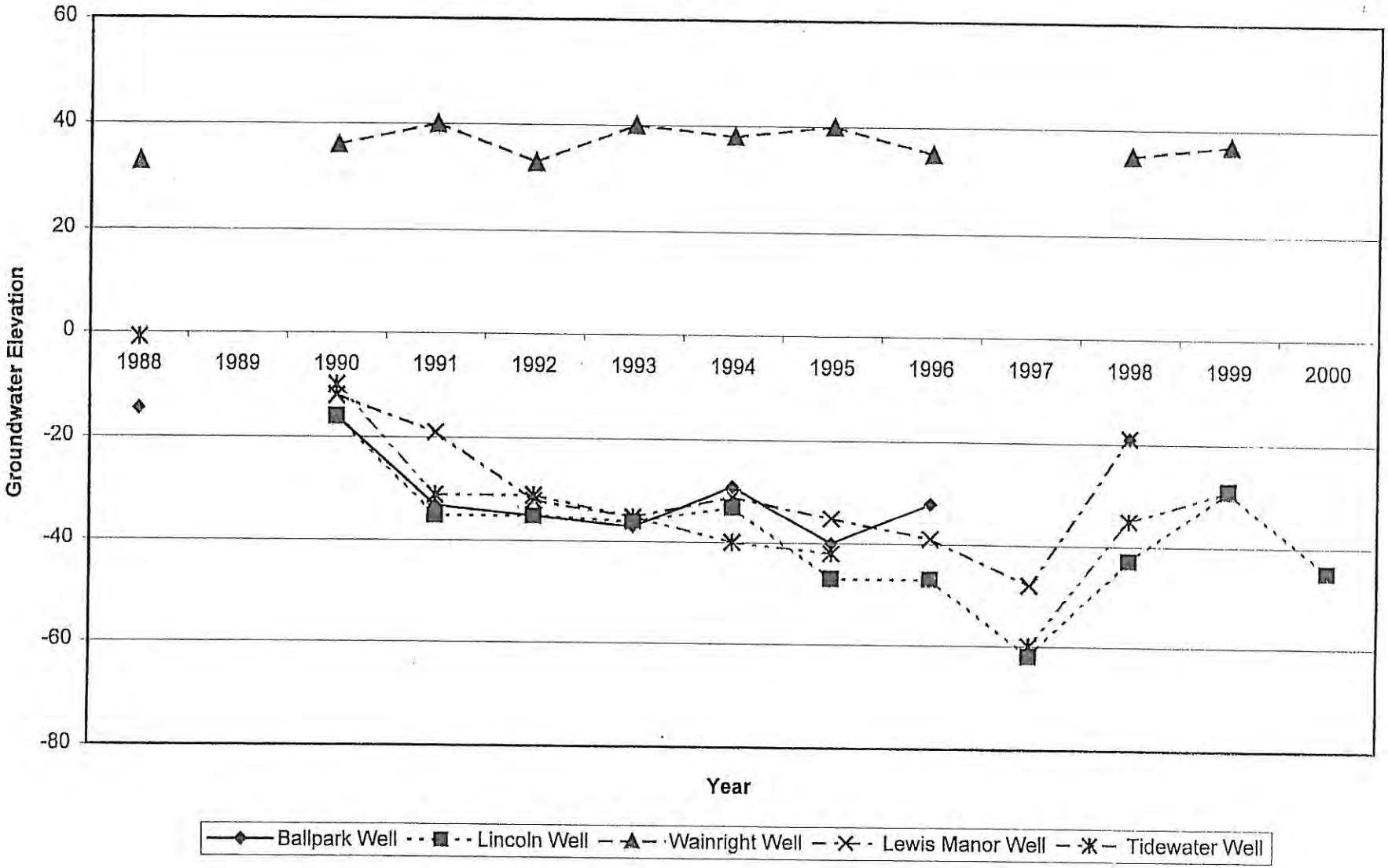
Tracy Area Groundwater Yield Study
City of Tracy, California

Locations of Wells Used for Historical Data Analysis

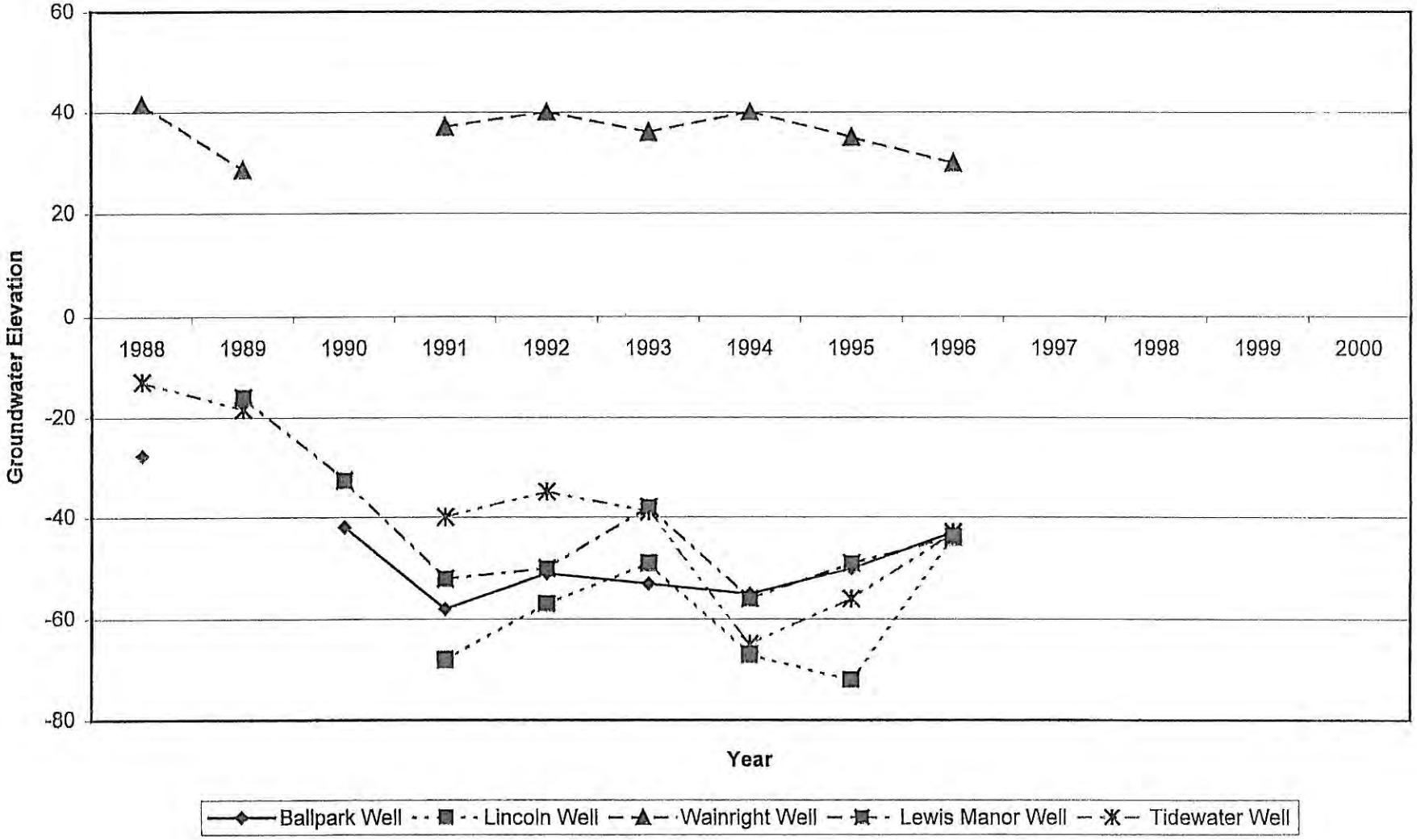
K/J/C 900021
November 1990

Figure 11

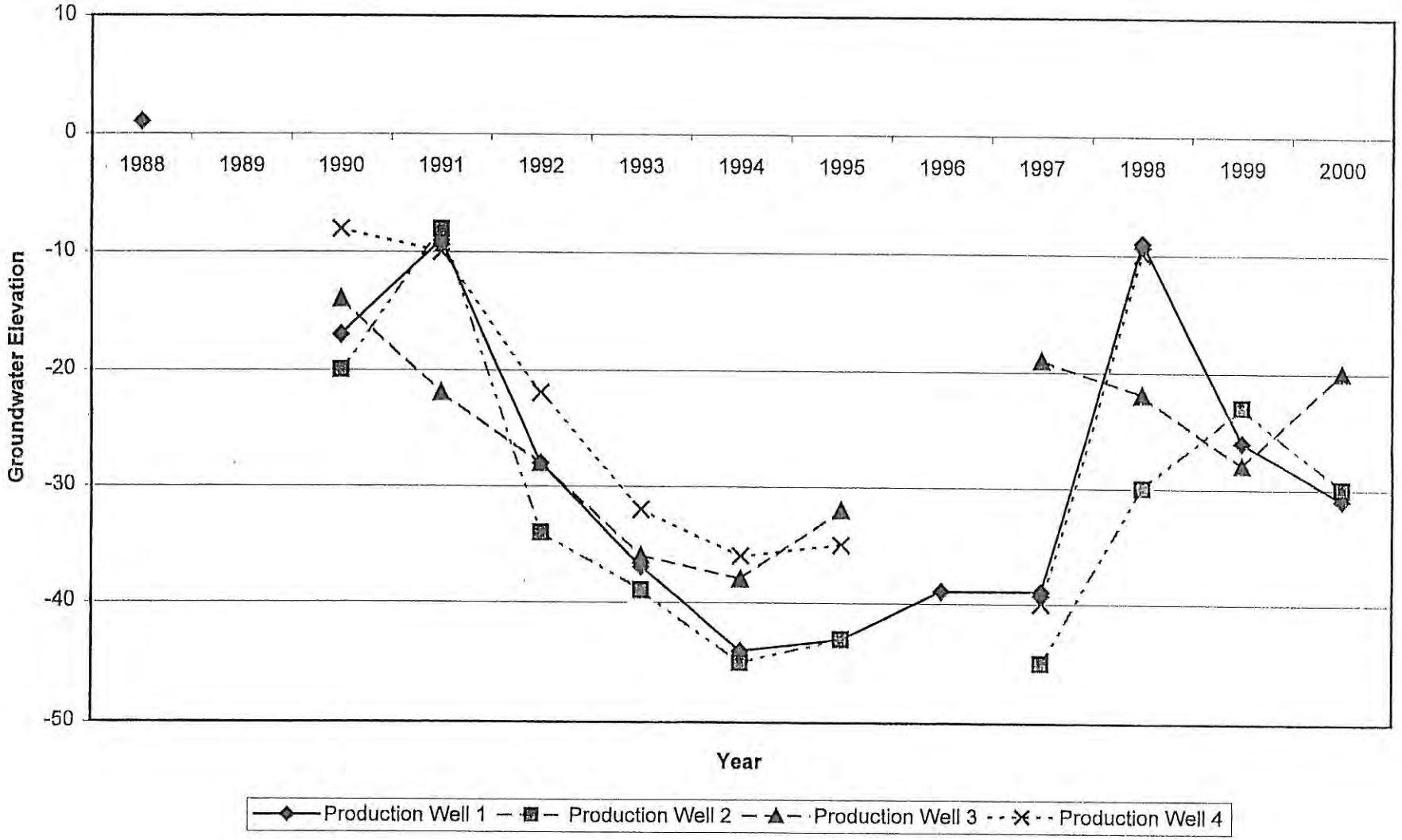
Spring Groundwater Levels in Northern Tracy Wells
Figure 14



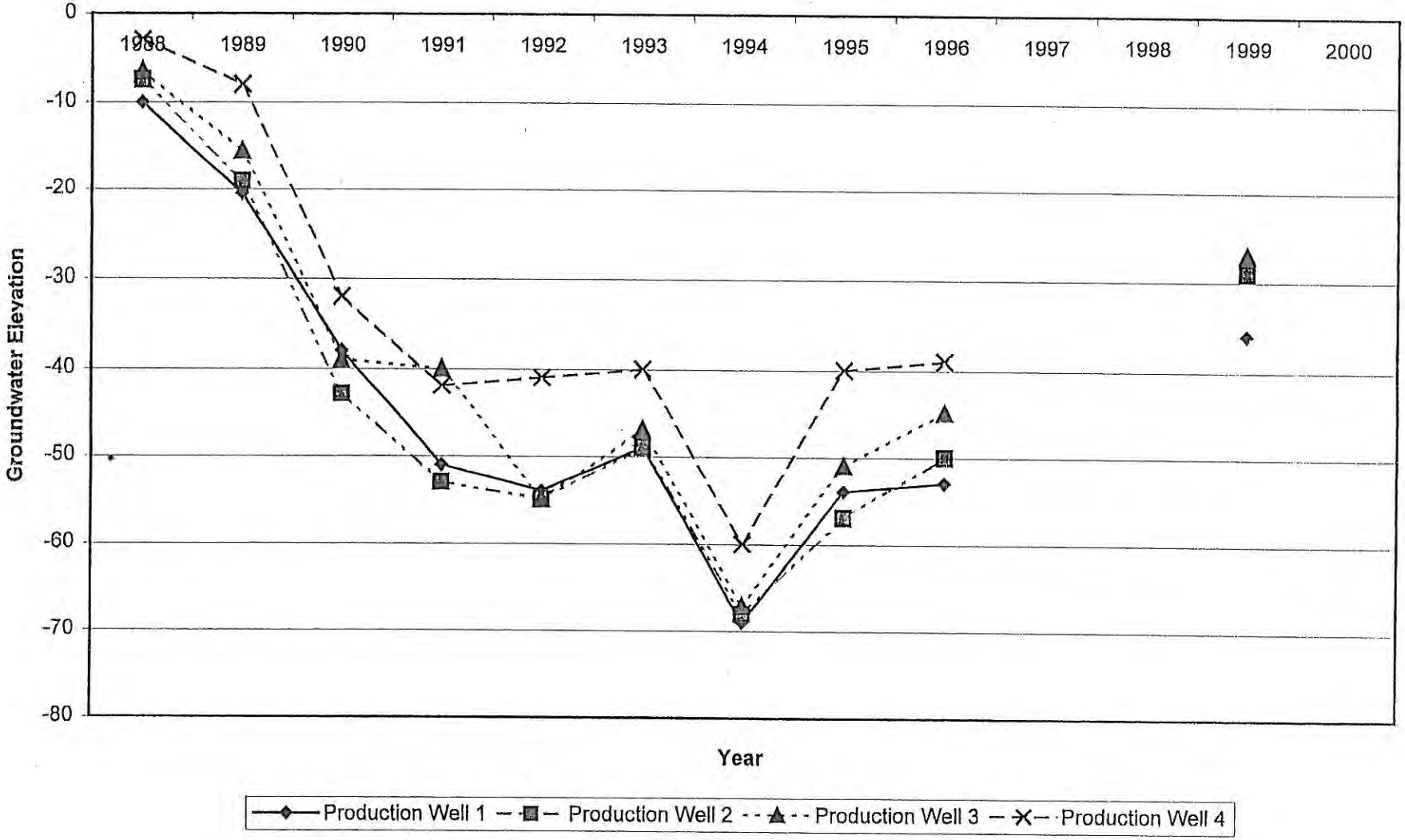
Fall Groundwater Levels for Northern City of Tracy Wells
Figure 15



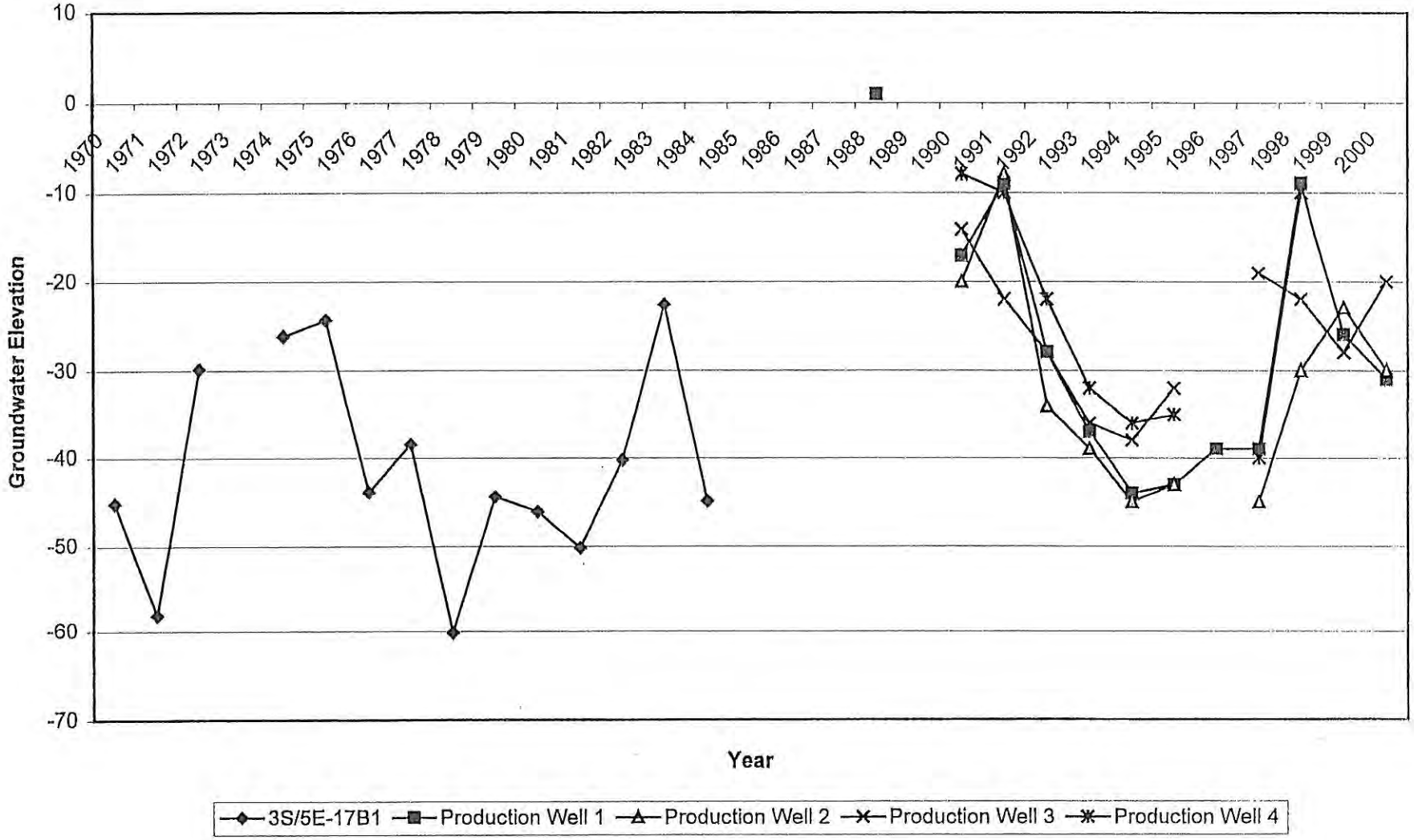
Spring Static Levels in Southern City of Tracy Wells
Figure 16



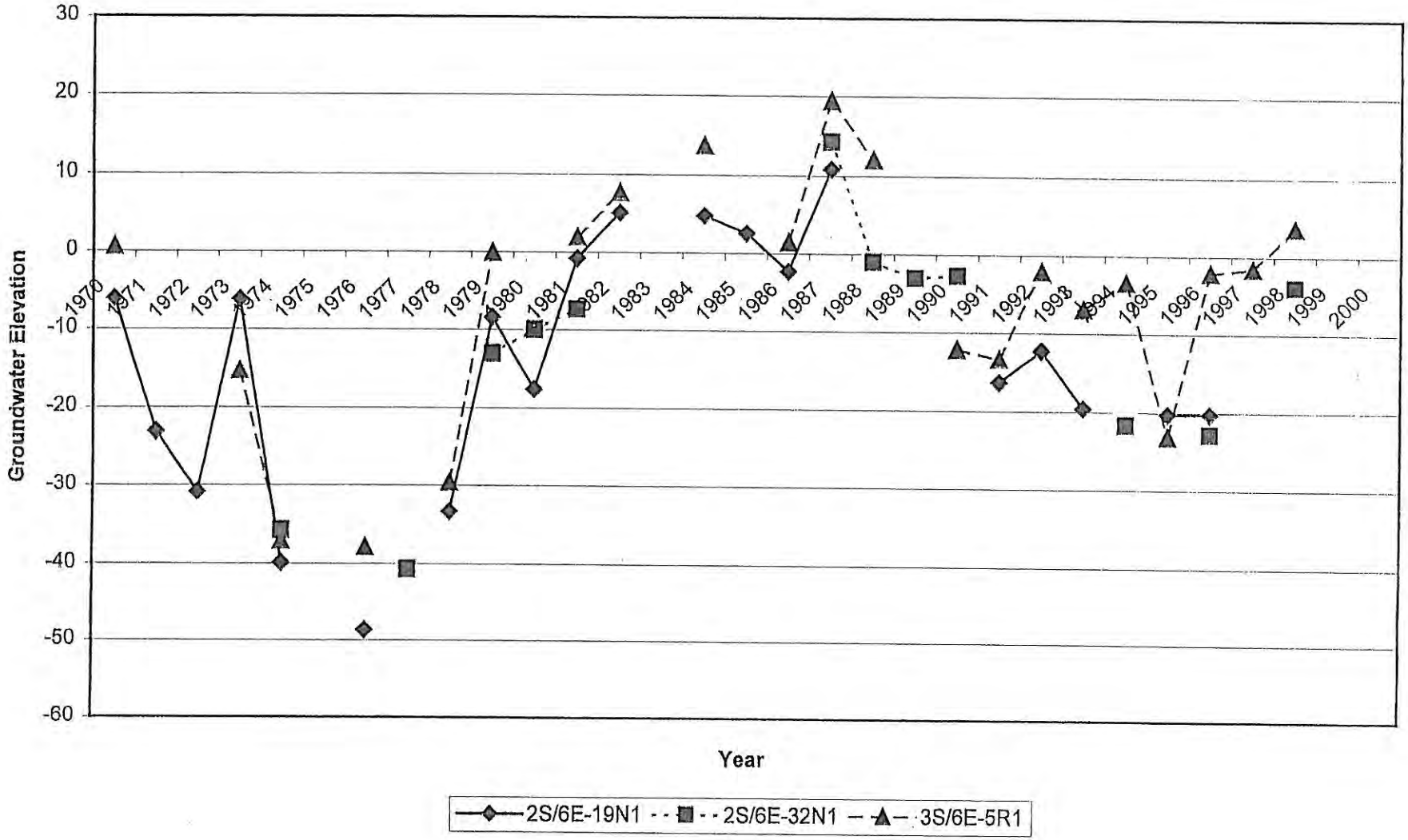
Fall Groundwater Levels for Southern City of Tracy Wells
Figure 17



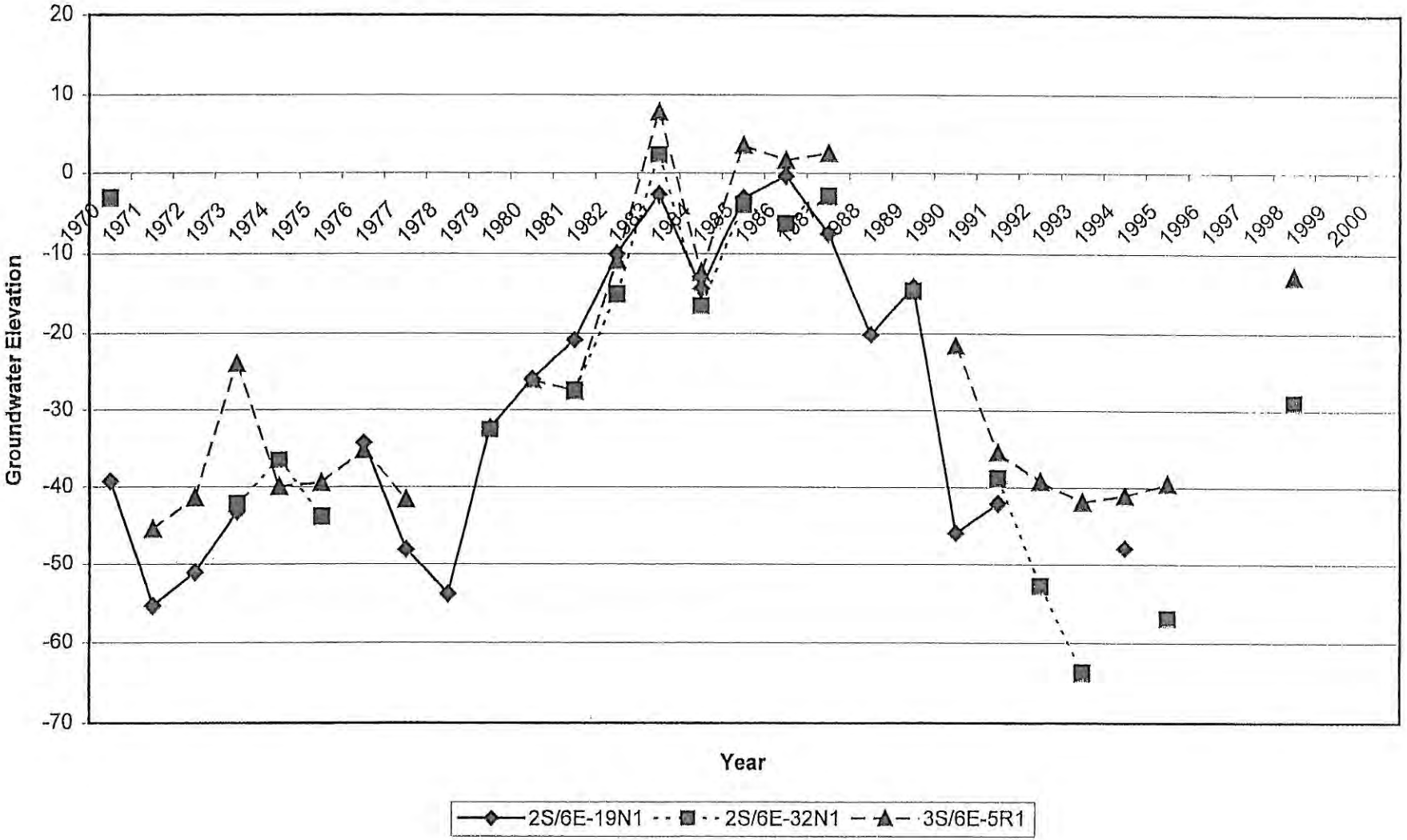
Hydrographs for Southern City of Tracy Wells
Figure 18



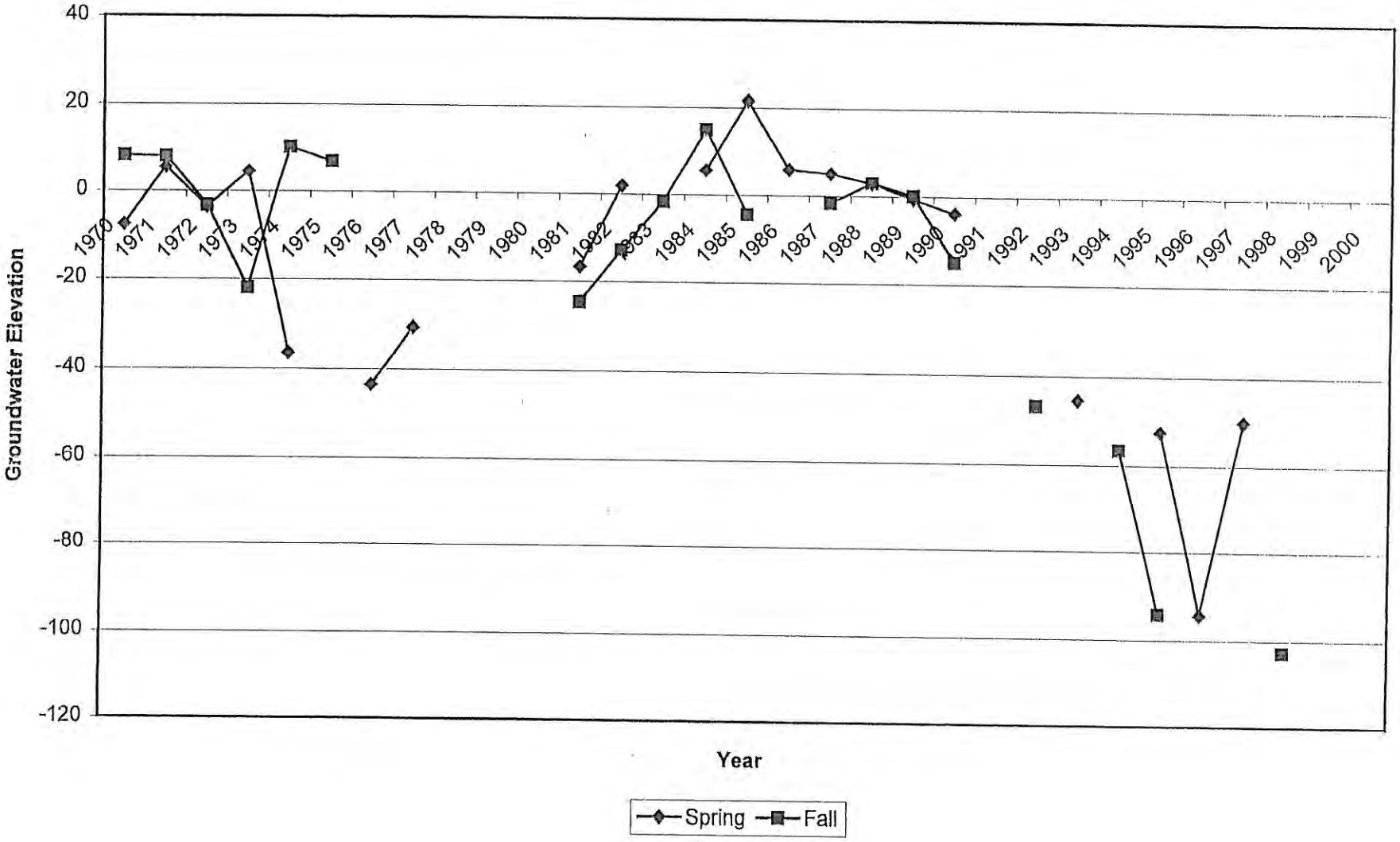
Spring Groundwater Levels in Selected Wells East and Southeast of Tracy
Figure 19



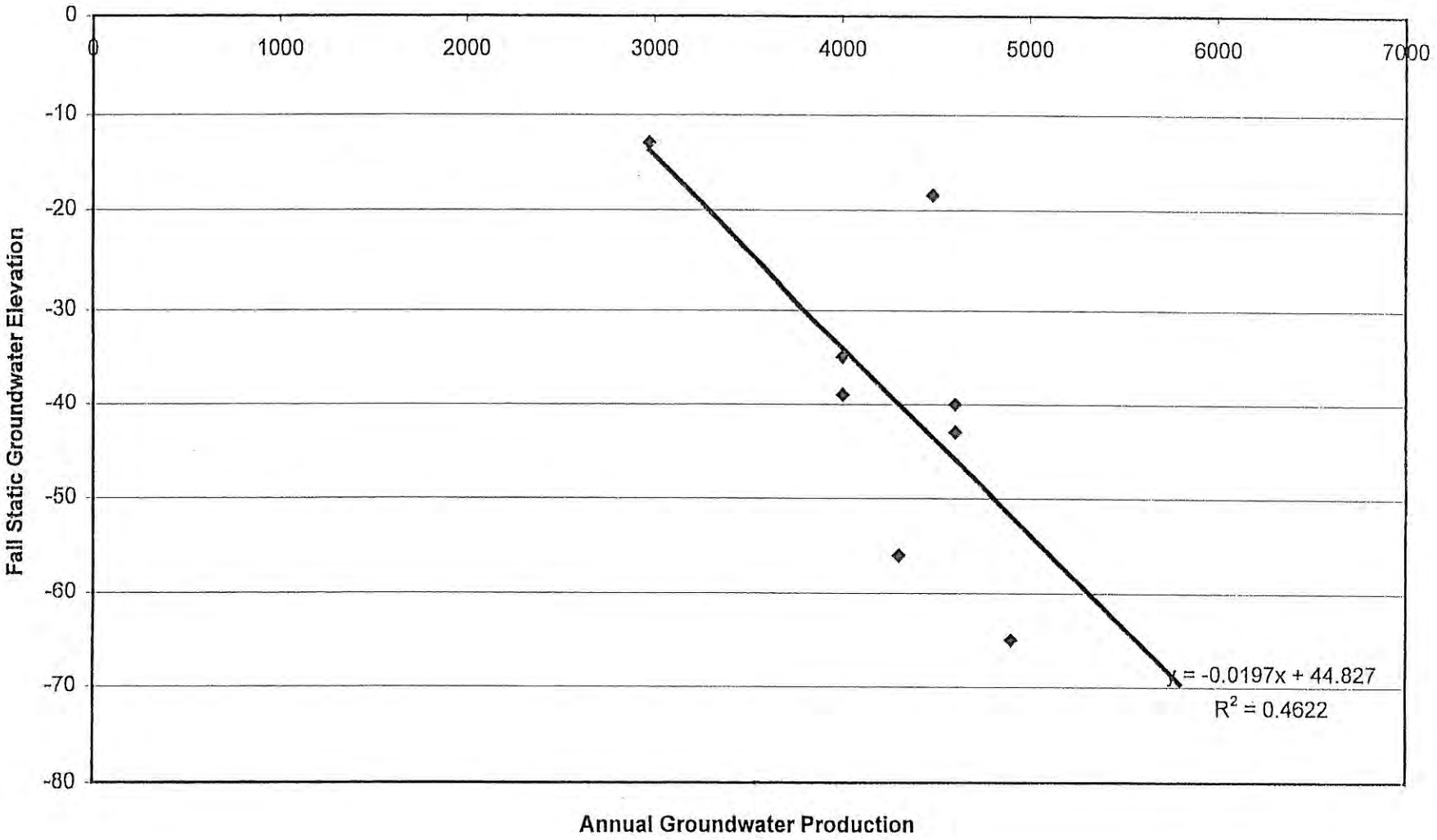
Fall Groundwater Levels in Selected Wells East and Southeast of Tracy
Figure 20



Spring and Fall Groundwater Levels in Well 2S/4E-36P1
Figure 21



Tidewater well
Figure 22



Average Drawdown versus Annual Production
Figure 23

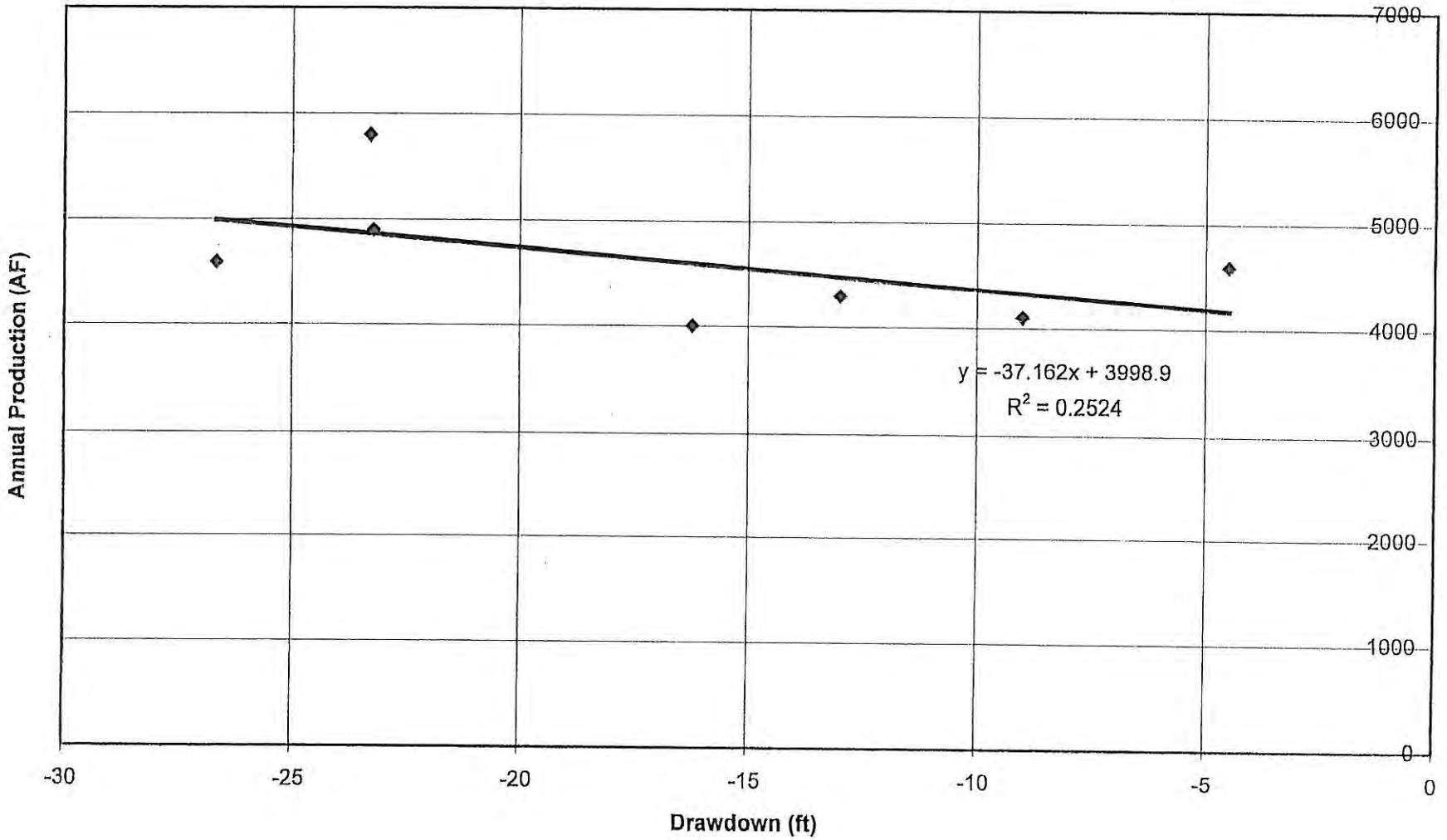


Figure 24
Drawdown at well pumping 1,500 gpm versus pumping duration

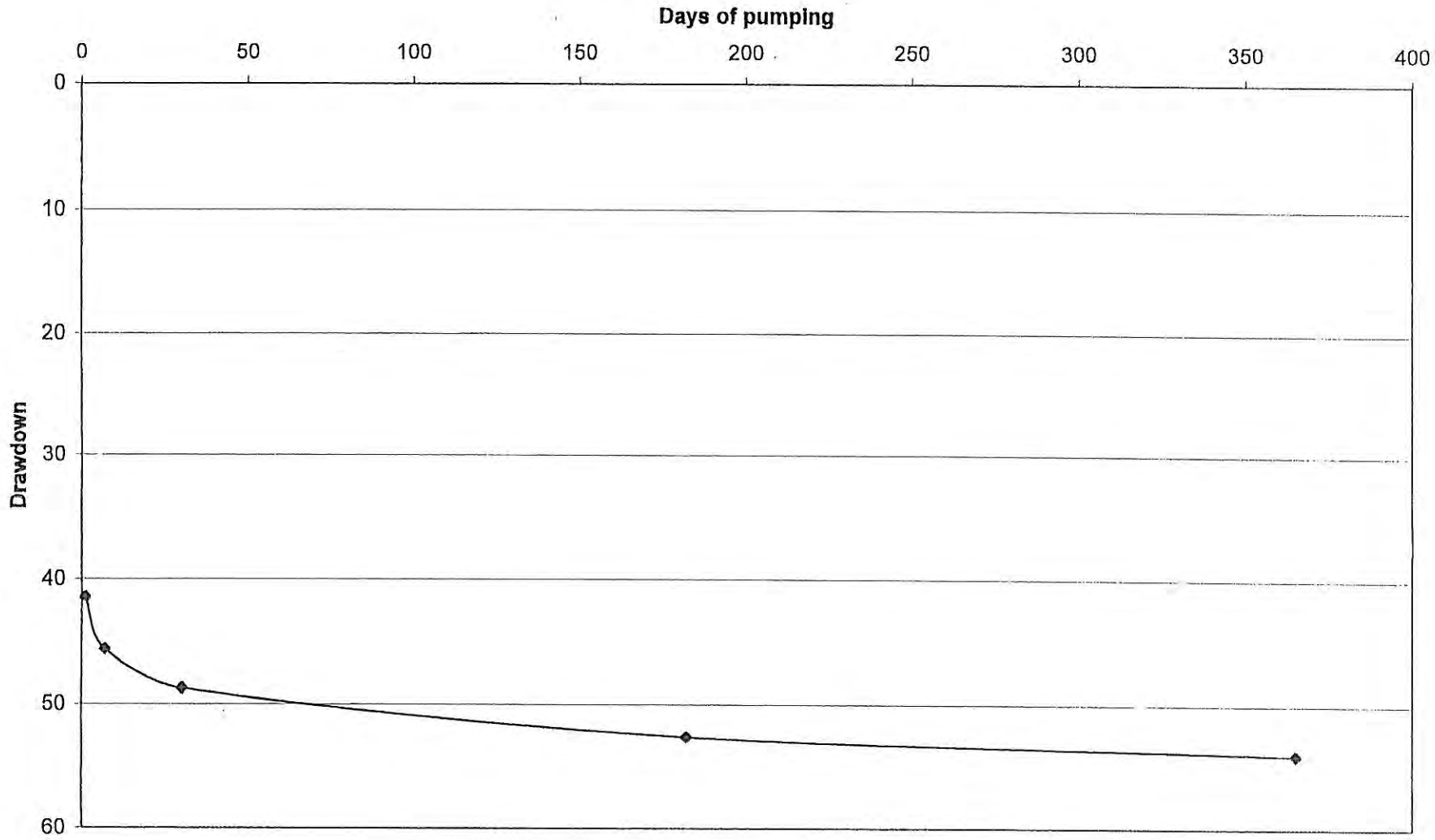
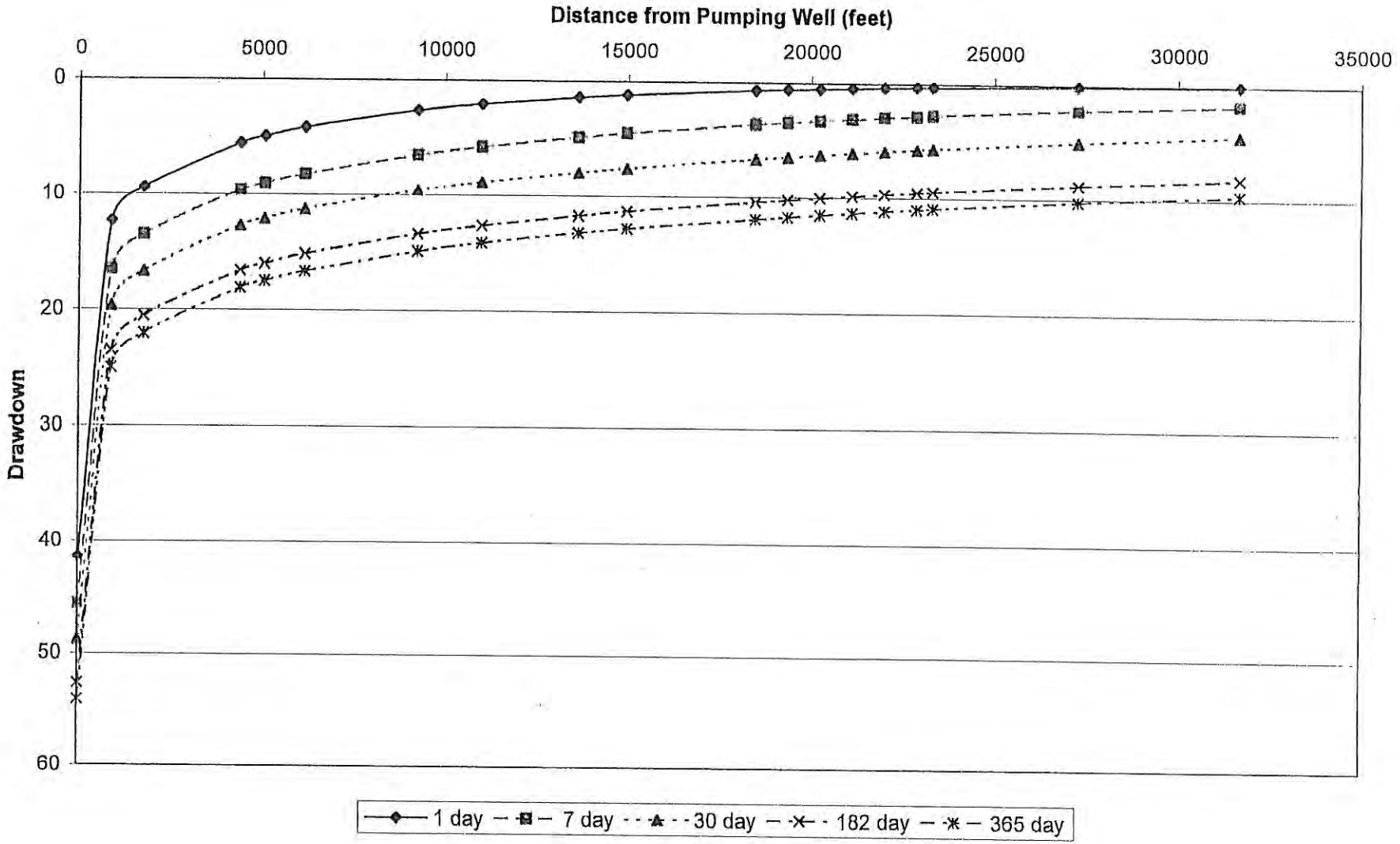
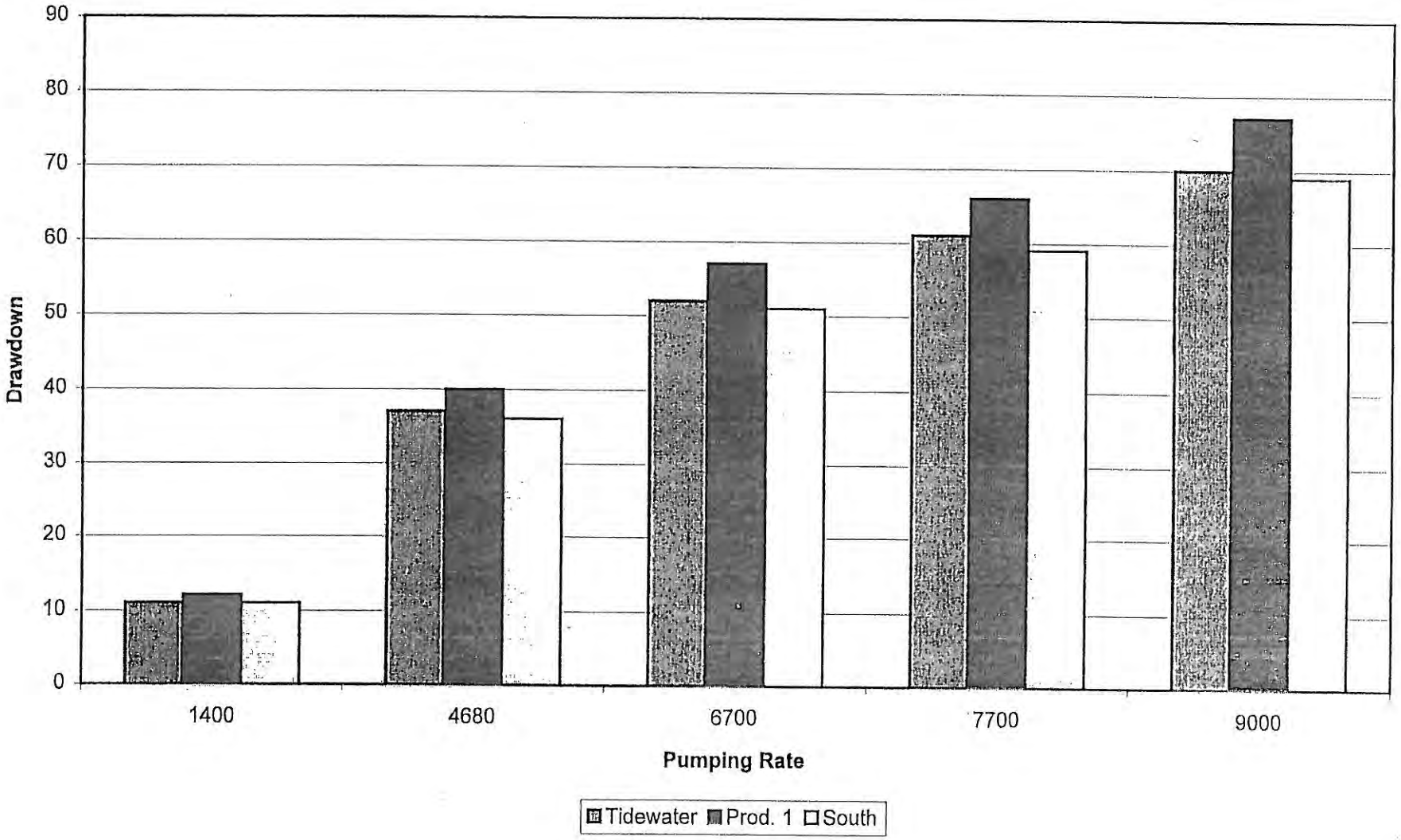


Figure 25
Drawdown versus Pumping Duration for Well Pumping 1,500 gpm



Theoretical Drawdown for 1 Year of Pumping at Given Rate
Figure 26



Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area

Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area

Groundwater Management Plan Update



San Luis & Delta-Mendota Water Authority

July 2011

Revised November 7, 2011

AECOM 1120 West "I" Street, Suite C Los Banos, CA 93635

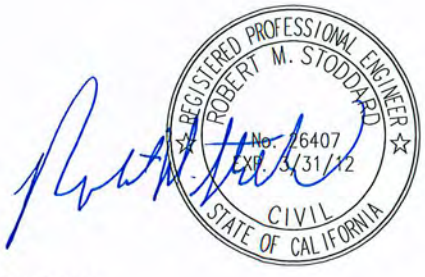
Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area

San Luis & Delta-Mendota Water Authority

Client Representative: Frances Mizuno

AECOM Technology Corporation

Project Engineer: Robert M. Stoddard, PE



60185608.0001

July 2011
Revised November 7, 2011

AECOM
1120 West "I" Street, Suite C Los Banos, CA 93635

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Appendix A

USBR GAMA Water Quality Data for Tracy Subbasin Area

Section 1
Introduction

In 1995, the San Luis & Delta-Mendota Water Authority (SLDMWA) entered into an activity agreement with its member agencies; City of Tracy, Plainview Water District, Del Puerto Water District, Banta-Carbona Irrigation District, West Stanislaus Irrigation District, Patterson Water District and the Westside Irrigation District to provide an umbrella organizational structure for managing groundwater resources. Those members adopted a Groundwater Management Plan for the NA-DMC service area (GMP-NA) based upon the requirements of AB 3030, which GMP-NA characterizes the groundwater basin; reviews factors of the water resources balance, including groundwater; estimates basin-wide groundwater pumping and sustainable yield; summarizes groundwater quality and reviews potential management elements to be considered by the individual participating agencies. Since that time, the SLDMWA has entered into memoranda of understanding with the City of Patterson and the San Joaquin County Flood Control and Water Conservation District, expanding the coordinated effort. The Plain View Water District has been merged with Byron-Bethany Irrigation District, which participates in the plan for the Plain View service area.

Groundwater management plans need to be living documents that evolve to address legislative and regulatory changes and changing conditions. The GMP-NA is being updated in the present document to reflect the understanding of current conditions in the GMA, summarize the existing groundwater management activities in the Groundwater Management Area (GMA), develop the relative elements of the GMP, identifies management objectives, and provides project recommendations for implementation. and incorporate the appropriate management goals and components necessary to address recent changes that have occurred in regulations, participating agencies' (PAs) policies, and groundwater conditions since the last update. It is intended to establish the framework for collecting the necessary groundwater monitoring data needed to assess the impacts of the various activities that affect the groundwater basin and manage the resource such that sustained use of groundwater can be optimized without adverse impacts to the water quality and yield. Under this plan the PAs, will assume a more active role managing regional groundwater resources within the basin. While PA's will continue to individually adopt the GMP-NA and to develop their own priorities, funding and projects, the Plan provides for additional mechanisms for coordination and cooperation on a regional basis under the umbrella of the SLDMWA. As part of this plan, the SLDMWA will assume the role as the entity responsible for the groundwater monitoring function within the GMA on behalf of the PAs. The groundwater monitoring function will be a cooperative effort of the PAs and the SLDMWA under the SLDMWA's administration.

The water resources utilized in the Northern Agencies (NA) in the Delta-Mendota Canal (DMC) service area of the San Luis & Delta Mendota Water Authority (SLDMWA) support a variety of uses, including industrial, municipal and agricultural application. To supply the various users'

demands, several water sources are utilized within the NA-DMC service area. Water supplies within the NA-DMC service area are obtained from three main sources:

1. Imported surface water diverted from the Sacramento River-San Joaquin River Delta (Delta) and conveyed through the DMC under the Central Valley Project (CVP), and the California Aqueduct (CA) under the State Water Project (SWP). The DMC and CA provide water for urban use in communities, such as the City of Tracy, and for agricultural production. Additionally, treated surface water is imported by the City of Tracy from the South San Joaquin Irrigation District located east of the San Joaquin River.
2. Local surface water supplies diverted from the San Joaquin River for agricultural use.
3. Groundwater for municipal and industrial purposes, rural domestic needs, and agricultural production where the surface water supplies are either not readily available or are insufficient to meet the demand.

Other sources of water supplies occur within the GMA, such as direct precipitation and local stream flows, but these meet a relatively small portion of agricultural water demand and a minor recharge source for groundwater.

As political and environmental conditions change, so does the availability of supplies from these various sources. During drought, the water supply available from the CVP can be limited, which then forces many users to pump groundwater to meet water demand. In addition, CVP water supplies delivered south of the Delta can be limited in an effort to protect endangered species that depend on adequate water conditions within the Delta. During periods when CVP surface water supplies are limited, many water users have had to increase groundwater pumping to augment their supplies to meet demands.

Communities that rely on groundwater have experienced water quality deterioration over time, while regulations governing domestic water quality have become stricter. This combination has made it increasingly difficult for these communities to find groundwater supplies meeting the domestic water quality standards (CCR Title 22, Div. 4, Ch. 15) and has raised serious concerns about the sustainability of groundwater resources to meet domestic demands without treatment. As an example, the City of Tracy uses treated surface water to blend with higher salinity groundwater to provide sufficient potable domestic water to meet the community's water needs.

The growing demand for cost-effective water resources in an ever-changing environment compels the responsible agencies resources to enhance management and to promote long-term stability of this water resource to meet the water needs of the users without depleting the resource. The proper management of groundwater resources requires knowledge of the storage, distribution, depletion, and replenishment of the resource as well as the various local and regional geologic and hydrologic factors. Without such knowledge, the effect of current and future activities on the groundwater resources cannot be adequately predicted.

1.1 Regulatory Basis

In 1992, Assembly Bill 3030 (AB 3030), the Groundwater Management Act, was enacted to amend the California (State) Water Code, Sections 10750 through 10756. It established provisions to allow local water agencies to develop and implement a groundwater management

plan (AB3030 GMP) in groundwater basins defined in the California Department of Water Resources (DWR) Bulletin 118. AB 3030 provided a systematic procedure for existing local agencies to develop AB3030 GMP. Twelve technical components are identified in the Water Code that may be included in an AB3030 GMP. The twelve components consist of the following:

1. The control of saline water intrusion;
2. Identification and management of wellhead protection areas and recharge areas;
3. Regulation of the migration of contaminated groundwater ;
4. The administration of a well abandonment and well destruction program;
5. Mitigation of conditions of overdraft;
6. Replenishment of groundwater extracted by water producers;
7. Monitoring of groundwater levels and storage;
8. Facilitating conjunctive use operations;
9. Identification of well construction policies;
10. The construction and operation by the local agency of groundwater contamination cleanup, recharge, storage, conservation, water recycling and extraction projects;
11. The development of relationships with state and federal regulatory agencies; and
12. The review of land use plans and coordination with land use planning agencies to assess activities which create a reasonable risk of groundwater contamination.

An AB3030 GMP can be developed only after a public hearing and adoption of a resolution of intention to adopt a groundwater management plan. The procedures for Adopting an AB 3030 GMP are clearly defined in the Water Code. Once adopted, rules and regulations must be enacted to implement the AB3030 GMP programs. Because there are no explicit provisions regarding amendment or updating GMP programs, it is assumed that updated or amended plans must undergo the same procedural process as the original adoption.

In 2002, Senate Bill SB 1938 was enacted to amend the Water Code Section 10750 *et. seq.* to require that AB 3030 GMPs contain specific elements in order to receive state funding for water projects (DWR, 2010a). This mandates the development of a AB3030 GMP with specific elements, and documented public review if local agencies desire to remain eligible for water grants or loans administered by the State (Water Funds). It also allows for additional elements to be considered in an AB3030 GMP. In order to remain eligible for Water Funds, an agency preparing the AB3030 GMP must include the following:

a. Documentation that a written statement was provided to the public: "describing the manner in which interested parties may participate in developing the groundwater management plan", Section 10753.4;

b. A plan to: "involve other agencies that enables the local agency to work cooperatively with other public entities whose service areas or boundaries overlies the groundwater basin";

c. A map showing the area of the groundwater basin, as defined by Bulletin 118, with the area of the local agency subject to the plan as well as the boundaries of the other local entities that overlie the basin in which the agency is developing the AB3030 GMP;

d. Management Objectives for the groundwater basin subject to the AB3030 GMP;

e. Components relating to the monitoring and management of the groundwater levels, groundwater quality, inelastic land surface subsidence, and changes in surface flow and surface water quality that directly affect groundwater levels or quality or are caused by groundwater pumping; and

f. Monitoring protocols for the components for those components described above (Water code 10753.7 (a)(4)).

In 2008, a draft updated GMP for the NA-DMC service area was prepared as part of the ongoing efforts by the SLDMWA and their PAs to assist in managing the limited water resources in conformance with SB1938 and AB3030. The 2008 draft GMP-NA provided a mechanism to bridge gaps and interface between local PAs' programs to support comprehensive regional water resources management in the GMA. The PA's and the City of Patterson used the SLDMWA umbrella to jointly fund the preparation of a coordinated regional plan. In addition to the NA, portions of San Joaquin County west of the San Joaquin River and outside the boundaries of a local water agency or municipality were included into the GMA. These western outlying portions of San Joaquin County are represented by the San Joaquin County Flood Control and Water Conservation District (SJCFCWCD), which entered into a memorandum of understanding with the SLDMWA such that the GMP-NA could cover this portion of the County. However, the draft plan has not been formally adopted.

Now recent amendments to the Water Code Section 10920 et seq., enacted in 2009 through the passage of Senate Bill SBx7-6, have established further requirements related to groundwater management that have led to this current update to the GMP-NA. SBx7-6 mandates that prescribed entities with authority to assume groundwater monitoring functions (entities) do so, coordinate monitoring efforts with DWR, and convey the information regularly to DWR if they seek to remain eligible for Water Funds (California, 2009). SBX7-6 mandates that (DWR, 2010b):

- Local entities may assume responsibility for monitoring and reporting groundwater elevations;
- DWR work cooperatively with local monitoring entities to achieve monitoring programs that demonstrate seasonal and long-term trends in groundwater elevations;

- DWR accept and review prospective monitoring entity submittals, then determine the designated monitoring entity, notify the monitoring entity and make that information available to the public;
- DWR perform groundwater elevation monitoring in basins where no local party has agreed to perform the monitoring functions; and
- If local entities do not volunteer to perform the groundwater monitoring functions, and DWR assumes those functions, then those entities become ineligible for water grants or loans from the state.

This current update of the GMP-NA addresses these new regulatory requirements set forth in SBx7-6. The GMP-NA designates the local entity that assumes responsibility for groundwater monitoring, and sets forth the framework that will form the basis for a groundwater monitoring program.

1.2 **Setting**

In general, this GMP-NA is meant to promote groundwater sustainability within the GMA. However, as the individual PAs may have different ambitions they may seek to attain through groundwater management, it would be very difficult to develop or implement highly-specific or locally-specialized groundwater management programs that suit all of the needs of the individual PAs. Rather, at this regional scale, it is more efficient and specific programs would be better focused if they were undertaken by each individual PA or group of PAs depending on their specific local needs. The GMP-NA has been prepared to facilitate coordinated regional management of groundwater resources within the GMA and may not address all of the more specialized or localized groundwater resources management needs that could occur. It is intended that the GMP-NA afford the PAs the operational flexibility to address their own individual or local group needs without being bound by specific programs that are irrelevant to their operations, counterproductive to the cost-effective implementation of local good groundwater management practices or not mandatory for the regional program. Thus, it is anticipated that in some cases the individual PAs may also seek to prepare their own local GMP to augment this regional plan and address specific local needs beyond the more general scope of the GMP-NA. (For example the City of Tracy prepared their own GMP in 2007 that expands on the GMP-NA for a management area encompassing their municipality.) The GMP-NA provides the regional framework for:

- Gathering the groundwater data needed to assess the regional impacts of activities that affect the groundwater resources within the GMA;
- Establishing standards amongst the PAs that promote consistency in management and monitoring practices that provide regional benefits throughout the GMA;
- Interaction of the PAs for regular, early collaborations to discuss and resolve concerns that may arise from groundwater monitoring assessments and projections; and
- Providing general guidance for programs to promote focused groundwater management practices and resource sustainability throughout the GMA for the benefit of the PAs.

Since this is a regional plan, each PA would need to independently adopt the whole plan or portions thereof. Through the appropriate execution of this GMP-NA and sincere efforts of the

PAs, it is anticipated that the sustained use of groundwater within the GMA will be better optimized without adverse impacts to the water quality and yield through the implementation of this GMP. Regional sustainability of the groundwater resources throughout the GMA is the basic goal of this program.

In the past, the PAs within the GMA have engaged in transfers of water supplies to qualified recipients. Under this plan, the PAs will continue to reserve their operational flexibility to engage in such water transfers. However, prior to undertaking any water transfer program, the PAs will evaluate any adverse economic or environmental impacts of the program. The evaluation may include, but is not be limited to, an assessment of management practices, groundwater storage capacity, and conjunctive use with surface water supplies. These programs may be undertaken to assist other areas in need of water, in addition to consumers within the PAs' service areas, and to benefit PAs and their consumers, as long as such programs do not:

- Exceed the safe annual yield of the aquifer;
- Result in conditions of overdraft or otherwise fail to comply with provisions of California Water Code Section 1745.10;
- Result in uncompensated adverse impacts upon landowners affected by the program.

Section 2
The Groundwater Management Area

The DWR divides California into 10 hydrologic regions (HRs), which generally correspond to the State's major drainage areas (DWR, 2003). The HR and the GMA are shown in Figure 1. The San Joaquin River HR was further divided into separate subbasins largely based on political considerations for groundwater management purposes (Figure 2). Figure 2 depicts the groundwater subbasins as described in the DWR Bulletin 118 Update 2003, and the relative location of the GMA boundaries within the subbasins. The GMA lies within the Tracy (5.22-15) and Delta-Mendota (5.22-07) Basins of the San Joaquin River HR, and covers western portions of Merced, Stanislaus and San Joaquin Counties. The GMA is generally bounded:

- on the North by Old River;
- on the west by the Coast Range Mountains, Alamedas County, and those portions of Byron Bethany Irrigation District that lie outside the CVP Service Area;
- on the south by San Luis Water District and Santa Nella Village; and
- on the east by the San Joaquin River and Central California Irrigation District.

The GMA encompasses 173,000 acres. Figure 3 shows the boundaries of the GMA.

The GMA encompasses the following agricultural water supply districts: Banta-Carbona Irrigation District, Westside Irrigation District, West Stanislaus Irrigation District, Patterson Irrigation District, Del Puerto Water District, and the Central Valley Project Service Area (CVPSA) within the Byron-Bethany Irrigation District. Del PuertoWater District includes the former Davis, Foothill, Mustang, Orestimba, Hospital, Kern Canon, Quinto, Romero, Salado, and Sunflower Water Districts. The CVPSA within the Byron-Bethany Irrigation District is the former Plainview Water District. In addition, the GMA encompasses: the City of Tracy (Tracy), the City of Patterson (Patterson), several unincorporated communities, and unincorporated and non-district lands within San Joaquin County represented by the SJFCWCD. A list of the current PAs involved in the GMP-NA is given in Table 1.

Table 1
List of Agencies Participating in the Groundwater Management Plan

- San Luis & Delta-Mendota Water Authority (SLDMWA)

Water or Irrigation District:

- Banta-Carbona Irrigation District (BCID)
- Byron-Bethany Irrigation District (only the CVPSA) (BBID)
- Del Puerto Water District (DPWD)
- Patterson Irrigation District (PID)
- West Stanislaus Irrigation District (WSID)
- Westside Irrigation District (WID)

Cities:

- City of Tracy (Tracy)
- City of Patterson (Patterson)

Non-District Lands:

- San Joaquin County Flood Control and Water Conservation District (SJFCWCD)

Section 3
Characteristics of the GMA

3.1 **Land Use and Groundwater Beneficial Use**

Most of the land in the San Joaquin Valley is utilized for agricultural crop production. Major agricultural activities include the operation of dairies, and the production of cotton, tomatoes, beans, alfalfa, corn, grapes, walnuts, almonds and oranges. A number of small rural communities, as well as some large municipalities exist within the San Joaquin Valley. The largest of these communities, Fresno, has a population of nearly a half of a million people. The majority of communities have populations of less than 100,000 people, and many have less than 10,000. Other notable large municipalities in the San Joaquin Valley include Stockton, Modesto, and Bakersfield. The southern end of the San Joaquin Valley also has a large oil production industry, and numerous oil/gas fields are located throughout the San Joaquin Valley.

Within the GMA, the majority of the current land use is agricultural, with irrigated crops, dairies and rangeland. There are two municipalities within the GMA, the cities of Tracy and Patterson, both of which are PAs. Tracy is a municipality with a population of about 80,000 people, and Patterson has a population of about 21,000 people. There are also some smaller unincorporated communities within the GMA.

The beneficial uses of groundwater in the GMA are predominantly for agriculture and related industry, domestic potable water, and other municipal uses. For agricultural applications within the GMA, groundwater is used conjunctively to supplement surface water supplies that support the water needs in the GMA. However, groundwater is the primary source of domestic and municipal water supplies within the GMA. In the case of Tracy, groundwater is supplemented by imported surface water.

3.2 **Topography and Structure**

The San Joaquin Valley is the southern portion of the Great Valley Geomorphic Province in central California. The San Joaquin Valley is a structural trough up to 200 miles long and 45 to 70 miles wide. It conjoins the northern portion of the Great Valley Geomorphic Province, the Sacramento Valley, at the confluence of the Sacramento and San Joaquin Rivers ("the Delta"). The Great Valley opens to the San Francisco Bay west of the Delta.

The San Joaquin Valley is bounded by the Sierra Nevada Mountains to the east, the Coast Range Mountains to the west, and the Tehachapi Mountains to the south. It is a broad, fault bounded, northwest trending, asymmetric topographic and structural trough, with axis of the valley offset nearer the western margin. The topographic slope along the axis declines gently, generally towards the north-northwest.

Within the GMA, the land surface generally slopes easterly to northeasterly from the base of the Coast Range Mountains, near the western boundary, towards the trough of the valley and the San Joaquin River, along the eastern boundary. Small ephemeral streams drain from the Coast Range

Mountains typically trending northeasterly toward the trough of the valley. The natural land surface is relatively flat to slightly undulating. However, agricultural practices have modified many topographic features to provide suitable conditions for crop production. The land surface elevation in the GMA ranges from about 60-feet above mean sea level in the southwest to about sea level in the north. Major man-made features include Interstate Highway 5, the California Aqueduct, the DMC, and a number of smaller canals used for water supply distribution and drainage.

3.3 **Climate**

The San Joaquin Valley has a more continental climate than much of the more populous coastal areas, with relatively warm summers and cooler winters. The mean annual high temperatures in the valley range from about 73° Fahrenheit (°F) to 79°F, and the mean annual lows range from about 48°F to 50°F.

Due to some rain shadow effects from the Coast Range Mountains and the lower elevations of the valley floor, the valley experiences relatively little rainfall, typically less than 12 inches. Some areas of the southern San Joaquin Valley experience desert conditions due to the very low seasonal precipitation. Rainfall occurs typically between late fall and early spring, with dry summers. Mean annual rainfall amounts range from 5 to 13 inches per year on the valley floor.

The range of typical climatic conditions experienced within the GMA can vary. Two representative weather stations, with long documented histories, have been chosen to demonstrate the range of climatic conditions within the GMA. The City of Los Banos (Los Banos) lies within 10 miles of the southern boundary of the GMA, and Tracy lies within the GMA near the northern boundary. The recent climatic history recorded for each location is presented below:

- Los Banos:

  Between 1906 and 2010, the average annual temperature was 62.2°F, the average monthly high temperature of 96.5°F was in July, and the average monthly low temperature of 36.3°F was in December (WRCC, 2010). Los Banos averages about 97 days per year above 90°F, and 29 days below 32°F. The hottest day on record was 116°F on July 30, 1931, and the coldest was 14°F occurring twice on January 11, 1949 and December 22, 1990.

  Between 1906 and 2010, the average annual rainfall was 9.21 inches. The highest annual rainfall was 21.08 inches in 1998, and the lowest annual rainfall was 4.61 inches in 1947. The maximum-recorded rainfall over a 24-hour period was 2.25 inches on September 30, 1983. Annually, Los Banos experiences, on average, about 46 days with precipitation greater than 0.01 inches, 25 days with precipitation greater than 0.10 inches, 5 days with precipitation greater than 0.50 inches, and 1 day with precipitation greater than 1.0 inch.

- Tracy:

  Between 1955 and 2010, the average annual temperature was 62.1°F, the average monthly high temperature of 92.7°F was in July, and the average monthly low temperature of 38.3°F was in January (WRCC, 2010). Tracy averages about 75 days per

year above 90°F, and 17 days below 32°F. The hottest day on record was 112°F on June 15, 1961, and the coldest was 17°F on December 26, 1990.

Between 1955 and 2010, the average annual rainfall was 12.07 inches. The highest annual rainfall was 27.48 inches in 1983, and the lowest annual rainfall was 5.44 inches in 1976. The maximum recorded rainfall over a 24-hour period was 2.80 inches on January 4, 1982. On average, annually, Tracy experiences about 55 days with precipitation greater than 0.01 inches, 31 days with precipitation greater than 0.10 inches, 7 days with precipitation greater than 0.50 inches, and 1 day with precipitation greater than 1.0 inch.

Table 2
Summary of Climatic Data for Los Banos and Tracy

		Los Banos	Tracy
Average Monthly High Temperature	°F	96.5	92.7
Average Monthly Low Temperature	°F	36.3	38.3
Hottest Recorded High Temperature	°F	116	112
Coldest Recorded Low Temperature	°F	14	17
Average Number of Days Above 90°F	Day	97	75
Average number of Days Below 32°F	Day	29	17
Average Annual Rainfall	Inch	9.21	12.07
Highest Annual Rainfall	Inch	21.08	27.48
Lowest Annual Rainfall	Inch	4.61	5.44
Maximum 24-hour Rainfall	Inch	2.25	2.80

Based on the climatic data, both Tracy and Los Banos lie within Semi-arid hot climate regimes. While the conditions in Los Banos lie in the middle of the Semi-arid climate regime, Tracy has milder conditions and greater rainfall approaching a more Mediterranean climate regime typical of the Delta. The northern end of the GMA receives on average about 30 percent more rainfall annually than the southern end.

3.4 **Geology**

The geologic materials that fill the San Joaquin Valley are comprised of mostly unconsolidated alluvial and lacustrine sediments, Holocene to Jurassic in age, derived from parent materials of the Coast Ranges and the Sierra Nevada Mountains. These sediments overlie older marine sediments. The Valley fill reaches a thickness of about 28,000 feet in the southwestern corner (Page, 1986). Continental deposits shed from the surrounding mountains form an alluvial wedge

that thickens from the valley margins toward the axis of the structural trough. This depositional axis is below to slightly west of the series of rivers, lakes, sloughs, and marshes, which mark the current and historic axis of surface drainage in the San Joaquin Valley (DWR, 2003). Major faults run parallel to the western boundary of the GMA, along the east side of the Coast Range Mountains. In particular, the Greenville and Ortigalita faults lie within about 10 to 20 kilometers of the western boundary.

The water bearing geologic formations within the GMA typically are comprised of continental deposits of Late Tertiary to Quaternary age. These deposits include the Tulare Formation, older alluvium, flood basin deposits, terrace deposits, and younger alluvium. The cumulative thickness of these deposits ranges from a few hundred feet near the Coast Range foothills west of the GMA to about 3,000 feet along the trough of the valley east of the GMA (DWR, 2003).

The Tulare Formation is composed of beds, lenses, and tongues of clay, sand, and gravel that have been alternately deposited in oxidizing and reducing environments (Hotchkiss, 1972). The Tulare Formation dips eastward from the Coast Ranges in the west towards the trough of the valley east of the GMA. The total thickness of the Tulare Formation is about 1,400 feet (DWR, 2006). The Corcoran Clay occurs near the top of the Tulare Formation and confines the underlying fresh water deposits.

3.4.1 Confined Aquifer

The confined aquifer zone underlying the Corcoran clay stratum extends downward from the base of the clay to the base of fresh water (Page, 1971). Sierran Sand and Coast Ranges alluvium interfinger in a similar fashion as those of the semi-confined zone above, except that Sierran sediments extend further to the west in the confined zone (Dubrovsky et al., 1991).

3.4.2 Corcoran Clay Layer

Much of the central and northern portions of the valley, which includes the GMA, is underlain by a continuous aquitard layer of Pleistocene age, known as the Corcoran Clay layer or E-clay. This layer is comprised of fine-grained lacustrine and marsh deposits that divide the aquifer system vertically into an upper semiconfined zone and a lower confined zone (Davis and DeWiest, 1966). Because of this, the underlying aquifer is typically designated the confined aquifer or zone in the regions where the Corcoran Clay occurs. The Corcoran Clay member of the formation underlies the basin at depths ranging from about 100 to 500 feet and acts as a confining bed (DWR 1981). The unconsolidated sediments of the valley floor taper toward the Coast Ranges, and the Corcoran Clay becomes discontinuous along the west margin of the valley, near the western limits of the GMA.

3.4.3 Semiconfined Aquifer

Overlying the Corcoran Clay is the semiconfined zone. It is comprised of sediments derived from the Coast Ranges on the west interfingered to the east with sediments derived from the Sierra Nevada. These sediments comprise the older alluvium, younger alluvium and terrace deposit layers. The Coast Range and Sierran sediments differ in their hydrogeologic characteristics. The Coast Range sediments consist of beds, lenses, and tongues of clay, sand,

and gravel, and form most of the sedimentary material deposited west of the San Joaquin River (Hotchkiss, 1972). Although there are no distinct continuous aquifers or aquitards within the Coast Range alluvium, the term "semiconfined" is used to emphasize the cumulative effect of the vertically distributed fine-grained materials. The Sierran sediment that interfingers with the Coast Range alluvium is well sorted, medium to coarse-grained micaceous sand derived from the Sierra Nevada. The uppermost expression of the interface between the Coast Ranges and Sierran deposits is close to the eastern boundary of the GMA.

Across much of the San Joaquin Basin, a layer of older alluvium consisting of loosely to moderately compacted sand, silt and gravel deposited in alluvial fans during the Pliocene and Pleistocene ages overlies the Tulare Formation. The older alluvium is widely exposed between the Coast Range foothills and the Delta. The thickness of the older alluvium is up to about 150 feet. It is moderately to locally highly permeable.

A layer of younger alluvium overlies the layer of older alluvium. This layer includes sediments deposited in the channels of active streams as well as overbank deposits and terraces of those streams. They consist of unconsolidated silt, fine to medium grained sand, and gravel. Sand and gravel zones in the younger alluvium are highly permeable and, where saturated, yield significant quantities of water to wells. The thickness of the younger alluvium near Tracy is less than 100 feet (DWR, 2006). Further south, terrace deposits of Pleistocene age are up to several feet higher than present streambeds. They are composed of yellow, tan, and light-to-dark brown silt, sand, and gravel with a matrix that varies from sand to clay (Hotchkiss 1971). The water table generally lies below the bottom of the terrace deposits.

In the northern portion of the GMA, flood basin deposits occur (DWR, 2006). They are the distal equivalents of the Tulare Formation and older and younger alluvial units and consist primarily of silts and clays. Occasional interbeds of gravel occur 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. The flood basin deposits are generally composed of light-to-dark brown and gray clay, silt, sand, and organic materials with locally high concentrations of salts and alkali. Occasional zones of fresh water are found in the basin deposits, but they generally contain poor quality groundwater. The maximum thickness of the flood basin deposits is about 1,400 feet.

3.5 **Hydrology**

The following sections discuss the surface and groundwater hydrology of the area. Hydrologically, the GMA has inflow from outside bringing water supplies into the area.

Sources of inflow into the GMA include:

- diversions into the GMA from the San Joaquin River,
- the streams and channels conveying storm runoff from the east side of the Coast Range Mountains,
- the network of canals conveying surface water south from the Delta,
- subsurface groundwater flowing in from the southwest,
- and precipitation.

Sources of outflow from the GMA include:

- surface runoff to the San Joaquin River,
- groundwater flow moving towards the trough of the valley and exiting the GMA,
- groundwater discharged to the San Joaquin River system, directly or through subsurface drainage systems in some areas,
- evaporation,
- Surface waters conveyed out of the GMA by canals and drainage ways,
- and crop and phreatophyte evapotranspiration.

3.5.1 Surface Hydrology

Streams that drain into the northern two-thirds of the San Joaquin Valley, flowing from the Sierra Nevada and Coast Range mountains, empty into the San Joaquin River and flow northward to join the Delta. Historically, the rivers and streams in the southern one-third of the San Joaquin Valley had no natural drainage connecting to the ocean, but rather drained into Tulare and Buena Vista Lakes. Seasonal flooding would occur along these rivers and streams in spring as rainfall and snowmelt from the mountains drained to the valley floor. A number of dams placed along the major watercourses, particularly in the Sierra Nevada Mountains, have alleviated the flooding. The majority of the runoff that drains into the San Joaquin River is derived from the rainfall and snowmelt from the western side of the Sierra Nevada Mountains. These rivers typically drain southwest to west out of the Sierra Nevada Mountains, turning north at the trough of the valley floor, where the San Joaquin River is located.

The ephemeral streams of the eastern side of the Coast Range Mountains typically drain east to northeast out of the mountains towards the trough of the valley floor. Many of these streams only flow during torrential winter storms and for very short periods following. In the past, many of these ephemeral streams would drain out onto the valley into wetlands and infiltrate before reaching the San Joaquin River. This infiltrated water would supply base flow for the San Joaquin River and recharge groundwater. Many of these ephemeral streams have been transected by canals and highways, their drainage courses diverted, and agriculture reclaimed and drained much of the wetlands and lakes. Much of the surface hydrology of the San Joaquin Valley is controlled by man-made structures and practices. Surface waters in the San Joaquin Valley are frequently conveyed into and out of the valley by a network of large canals that supply users' needs in areas far from the natural source. Large man-made reservoirs are used to retain and store runoff from the mountains and temporary surface water being conveyed to other locations.

Consistent with most of the San Joaquin Valley, within the GMA, much of the surface hydrology is governed by the man-made structures, agricultural practices, and urbanization. A notable few ephemeral streams convey water into the GMA from the east side of the Coast Range Mountains.

These streams include:

- Corral Hollow Creek,
- Lone Tree Creek,
- Hospital Creek,

- Ingram Creek,
- Del Puerto Creek,
- Crow Creek,
- Salado Creek,
- Orestimba Creek,
- and Garzas Creek.

North of Tracy, a network of sloughs and river channels, including the Old River and Middle River, intertwine as the San Joaquin River system and nearby streams forming a part of the Delta. Some areas within the GMA are relatively flat, and groundwater can be seasonally shallow. The San Joaquin River flows along the eastern boundary of the GMA and is a major source of water to the GMA.

Besides the natural water conveyance systems, major canals convey water from the Delta, to and through the GMA. These canals include the California Aqueduct and the DMC. Other smaller canals in the network convey surface water from the San Joaquin River and the CVP to the users, and drain runoff from areas within the GMA. The DMC is a major water supply source to the GMA.

3.5.2 Subsurface Hydrology

Groundwater in the region occurs in three water-bearing zones (DWR, 2006). These include the lower zone, which contains confined fresh water in the lower section of the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper section of the Tulare Formation and younger deposits, and a shallow zone which contains semi-confined and unconfined water to within about 25 feet of the land surface.

Agricultural irrigation in the GMA provides most of the recharge water of the upper semiconfined zone through seepage losses occurring in irrigation water conveyance channels and by deep percolation of applied water. Other sources of recharge include seepage from creeks and rainfall. Occasional recharge from the creeks that enter the GMA from the Coast Ranges to the west is relatively small compared to the other sources (KJC, 1990). Recharge to the lower confined zone occurs primarily by infiltration downward from the unconfined zone through the Corcoran Clay. Groundwater pumping from below the Corcoran Clay in the GMA is likely to increase percolation through the clay layer.

Historically, groundwater flow was northwestward parallel to the San Joaquin River (Hotchkiss and Balding, 1971). The groundwater flow direction towards the San Joaquin River typically causes subsurface outflow laterally along the eastern boundary of the GMA. The hydraulic gradients west of the San Joaquin River are generally steeper than gradients east of the river (Phillips, et al., 1991). Typically, notwithstanding local influences, the water table west of the San Joaquin River can be thought of as a subdued replica of the ground surface topography, sloping gently toward the river from the Coast Ranges. More recent data shows flow tending northeastward, toward the San Joaquin River (DWR 2003). Potentiometric surface maps, developed from DWR water surface elevation measurements for wells screened in the unconfined aquifer, for the Spring of 2004 and Spring of 2008 show the general subsurface flow direction and gradients throughout the GMA during these periods (Figure 4 and Figure 5). The

flow directions appear to continue to be generally consistent with the northeasterly trend towards the San Joaquin River, as noted above, with some localized variations for well pumping depressions and various minor physiographic features that effect drainage and recharge.

The previous GMP (Stoddard & Associates, 1996) indicated that the average groundwater levels from 1986 through 1993 have declined in the subbasins, but from 1993 through 1994, water levels rose throughout the study area, demonstrating recovery in the groundwater storage system. That report concluded that the study area was in a hydrologically balanced condition over the study period.

As a part of this planning effort, changes in groundwater levels in the upper zone were examined over the 1993 to 2008 period. From Spring 1993 through Spring 1998, the groundwater levels continued to rise throughout most of the GMA (Figure 6). This pattern reversed during the Spring 1998 to Spring 2004 period (Figure 7). From Spring 2004 through Spring 2008, the groundwater levels recovered slightly throughout most of the GMA, with localized areas where water levels continued to decline west of the City of Newman, and northeast of Tracy (Figure 8). Longer-term trends in the groundwater levels can be observed in the figures showing change in groundwater levels from 1993 through 2008, and 1998 through 2008 (Figure 9 and Figure 10). Over these longer time frames the groundwater levels appeared to be generally hydrologically balanced across much of the GMA throughout the study period, with local areas of consistent decline persisting west of Newman and in the area of Tracy. The change in groundwater levels in the northern part of the subbasin (Tracy to Westley) appears to show a consistent decline in groundwater levels. This decline could be indicative of a developing overdraft condition in that area.

The groundwater levels underlying the vicinity of Patterson appeared to have minimal net change and appeared generally hydrologically balanced through the study period. The DWR groundwater database utilized a number of different wells for groundwater level measurements between 1993 and 2008 for the central part of the GMA (West Stanislaus ID and Patterson ID). Data from close-by monitoring wells was used to calculate groundwater level elevation changes when there was no other information available. For this reason, some actual local elevation changes may differ slightly from those depicted on the groundwater elevation change maps. The minimal apparent net change in groundwater level elevation seems to indicate equilibrium within the GMA between recharge and use during the study period. The change in groundwater levels in the southern part of the subbasin (West of Newman) also appears to show a consistent decline in groundwater levels. This decline could also be indicative of a developing overdraft condition in that area. However, further south in the Merced County portions of the GMA (West of Ingomar), the long-term change in groundwater levels appears to indicate this area is generally hydrologically balanced.

3.6 **Groundwater Quality**

Between March and July 1985, the United States Geologic Society (USGS) analyzed water samples from 44 wells in the northern part of western San Joaquin Valley (Dubrovsky, et al., 1991). The objective was to assess the geochemical relations and distribution of major ions and selected trace element concentrations in groundwater of the area. Their results indicate a relatively better quality of water in the confined zone than in the semiconfined zone. These results were supportive of those of Hotchkiss and Balding (1971). Concentrations of selected

constituents reported by USGS (Dubrovsky, et al., 1991) in both zones are provided in Table 3. It was concluded that the areal and vertical distributions of groundwater of varying quality has been affected by different agricultural and natural sources of recharge, and the sources and geochemical nature of the sediments are products of a depositional environment.

Table 3
Chemical Analysis of Selected Constituents in Groundwater

State Well No.	Sampling Date	Sulfate	TDS	N	Boron	As	Se
			(mg/L)			(µg/L)	
Upper Zone							
2S/5E-13P1	3/28/85	320	1400	9.1	2.20	<1	4
3S/6E-07E1	3/11/85	230	1100	6.4	1.60	1	2
4S/7E-33B1	3/12/85	370	1400	0.1	0.90	3	10
5S/7E-01M2	5/01/85	120	750	18.0	0.58	<1	2
5S/8E-22C1	4/30/85	1200	2400	0.9	2.20	3	13
6S/8E-04P1	5/16/85	540	1300	15.0	0.51	<1	4
7S/8E-13N1	3/26/85	300	1900	11.0	0.64	<1	<1
8S/8E-01H1	3/27/85	120	750	11.0	0.48	<1	2
Lower Zone							
2S/5E-21D1	3/27/85	220	650	2.3	1.30	1	3
2S/6E-20L2	5/21/85	140	510	<0.1	0.57	5	<1
3S/5E-20A2	3/28/85	330	920	1.4	3.00	<1	2
3S/6E-26Q1	3/12/85	120	710	5.6	0.79	<1	1
4S/6E-09M1	3/13/85	44	340	9.1	0.43	<1	2
4S/7E-36Q3	3/13/85	120	690	8.3	0.59	<1	1
5S/7E-27B1	5/16/85	190	760	16.0	1.20	1	5
5S/8E-32K3	4/30/85	530	1000	4.0	0.67	1	11
6S/7E-01R1	5/16/85	630	1300	9.6	0.86	1	6
6S/8E-03R2	5/16/85	360	820	6.4	0.41	2	8
7S/8E-27Q1	5/13/85	56	650	10.0	0.47	<1	<1

More recently USGS, in cooperation with DWR, has undertaken a comprehensive study of the groundwater resources within California called the Groundwater Ambient Monitoring and Assessment (GAMA) Program. The GAMA program collects groundwater data for numerous chemical constituents of the water from numerous wells throughout the various groundwater basins within the State. Currently, within the GMA only the initial study of the Northern San Joaquin Study Unit has been published (Faunt, C.C., ed., 2009). This Study Unit consists of four subbasins defined in Bulletin 118 including the Tracy subbasin in western San Joaquin County. The results of that study are presented in the attached Appendix A. The remainder of the GMA lies within the Western San Joaquin Valley Study Unit, which consist of the Delta Mendota subbasin and the Westside subbasin. Publication of initial study of the Western San Joaquin Valley Study Unit is pending and should be available later in 2011.

3.6.1 Hydrochemical Facies

Chemical analyses of groundwater from the semiconfined zone show considerable variation in water type and concentration of dissolved solids (Hotchkiss and Balding, 1971). In general, the chemical character of the water in the upper water bearing zone (except near Patterson and Crows Landing) is a transitional type, i.e., groundwater in which no single anion or cation reacting value amounts to 50 percent or more of the total reacting values. The transitional type groundwater in the GMA occurs in many combinations.

Groundwater near Tracy is very hard. Northwest of Tracy, in the vicinity of the Jones Pumping Plant, groundwater is a chloride type. The sodium chloride type groundwater in the area northwest of Tracy is probably due to infiltration of water from Old River. Old River water varies from transitional chloride bicarbonate to sodium chloride type (Hotchkiss and Balding, 1971).

Sulfate type groundwater occurs in areas located west of Patterson and Crows Landing. Near Patterson, groundwater is sodium magnesium sulfate type to the west and sodium calcium sulfate type to the east. Waring (1915) mentioned some small sulfur springs on Crow and Orestimba Creeks, indicative of sulfate bearing deposits that are probably responsible for the sulfate groundwater type in the area near Patterson (Hotchkiss and Balding, 1971).

3.6.2 Dissolved Solids

Results of the USGS sampling study showed that in the semi-confined zone the total dissolved solids (TDS) concentration ranges from 750 to 2,400 mg/L. Areal distribution of the data shows a high TDS concentration (>1,500 mg/L) in groundwater in the semiconfined zone measured near Patterson and west of Newman, and low concentration (<1,000 mg/L) is reported near the community of Westley. The TDS concentration in water in the confined zone generally ranged between 500 and 1,000 mg/L. Although high TDS concentrations (>1,000 mg/L) in water in the confined zone have been reported southwest of Patterson by the USGS, Patterson has reported TDS concentrations between 600 and 1,000 mg/L (Patterson, 2004). The distribution of TDS in groundwater in the two zones shows little similarity, with the deeper zone showing relatively low TDS, and shallower zone showing almost consistently high TDS.

3.6.3 Sulfate

Sulfate concentrations vary greatly in both water-bearing zones, but areal distribution is similar in both zones. Highest sulfate concentration in groundwater (>500 mg/L) is measured in an area centered near Crows Landing and Patterson. A similar area of high sulfate concentration was also reported by Hotchkiss and Balding (1971) and is likely related to the Coast Range streams that recharge this area (Hotchkiss and Balding, 1971). Smaller sulfate concentrations were reported in 2004 by Patterson, which detected concentrations in a range between 190 and 380 mg/L (Patterson, 2004). In 2004, Tracy reported groundwater sulfate concentrations between 160 and 330 mg/L (Tracy, 2004). The lowest concentrations of sulfate in groundwater (<100 mg/L) were measured in an area south of Vernalis. The similarity of sulfate concentrations in the GMA could result from the presence of similar sulfate concentrations in the streams that were the major source of recharge under natural conditions over a long period of time.

3.6.4 Boron

Concentrations of boron in groundwater range from 0.48 to 2.2 mg/L in the semiconfined zone and from 0.41 to 3.0 mg/L in the confined zone. Areal distribution of boron in the semiconfined zone shows high concentrations (>0.75 mg/L) near Tracy and northeast of Crows Landing near Patterson. The areal distribution of boron in the confined zone shows high boron concentrations (>0.75 mg/L) near Tracy, Vernalis and west of Patterson. This agrees with the results presented by Tracy (Tracy, 2004). The U.S. Environmental Protection Agency (EPA) suggested criterion for boron concentration in water used for long-term irrigation of sensitive crops is 0.75 mg/L. This limit was exceeded in four samples in the semiconfined zone and five samples in the confined zone (Table 3).

3.6.5 Arsenic

Recently, the federal primary drinking water standard maximum contaminant level (MCL) for arsenic was lowered from 50 µg/L to 10 µg/L. This change became effective for all states as of January 23, 2006, and California's revised arsenic MCL of 0.010 mg/L (equivalent to 10 micrograms per liter, µg/L) became effective on November 28, 2008 (DPH, 2008). Currently, the California standard is consistent with the federal standard. Arsenic is typically derived by dissolution of igneous parent materials, and released from iron and manganese oxides when pH declines. Based on the USGS study, arsenic concentrations in the groundwater samples from the semi-confined aquifer in the GMA vicinity ranged between 1 and 38 µg/L, which at that time were below the MCL (Dubrovsky, et al, 1991). Based on the USGS study, arsenic concentrations in the groundwater samples from the confined aquifer in the region ranged between 1 and 18 µg/L. Within the GMA the highest reported arsenic concentrations were 3 µg/L and 5 µg/L, respectively. In both aquifers, arsenic concentrations were reported that exceeded the current MCL in the vicinity of the GMA, but none within the GMA. The arsenic distribution between the groundwater in the semi-confined and confined aquifers showed little difference. However, the areal distribution showed an increase in arsenic concentrations in the GMA toward the southeast. The concentrations increased in the Sierran sediments. The increase is probably related to the higher proportion of Sierra sediments in the profile towards the southeast. In their respective water quality reports, Tracy reported arsenic concentrations as high as 3 µg/L, and Patterson reported arsenic concentrations as high as 6 µg/L, which are below the current MCL (Tracy, 2004; Patterson, 2004).

3.6.6 Selenium

Selenium concentrations in the GMA groundwater range from a less than detectable limit of 1 µg/L to 13 µg/L (Table 3). The current MCL for selenium in drinking water is 50 µg/L. The selenium MCL concentration was equaled or exceeded in two samples from the unconfined zone and in one sample from the confined zone. The concentration and areal distribution of selenium were similar in both zones. Selenium concentrations are relatively high (10 µg/L) in a narrow area of both zones between Patterson and Crows Landing. Lower concentrations (between 3 and 8 µg/L) were reported in 2004 by Patterson (Patterson, 2004). However, higher concentrations (non-detect to 10 µg/l) were reported in 2009, consistent with the range shown in Table 3 (Patterson, 2009). In the Tracy and Vernalis area, the selenium concentrations range between 1

µg/L to 5 µg/L. The USGS (Dubrovsky, et al., 1991) study concluded that selenium was transported to the area under natural conditions by runoff from the Coast Range.

3.6.7 Nitrate

The MCL for nitrate in drinking water is 45 mg/L. The USGS (Dubrovsky, et al., 1991) sampling study indicated that no well water in the GMA exceeds the MCL for nitrate. This agrees with the results presented by Tracy (Tracy, 2009). However, Dubrovsky et al (1991) mentioned that there were reports of nitrate MCL exceedance in shallow domestic wells. In general, higher nitrate concentrations in groundwater exist along the west side of the GMA and in the Westley area. The areas along the San Joaquin River have lower nitrate concentrations (Hotchkiss and Balding, 1971).

Within both the Tracy and Patterson areas, the quality of the municipal potable water supply is routinely monitored as required by State law. Historical data provided by Patterson for municipal supply wells shows a possible long term trend of increasing nitrate concentrations in some wells, Wells 4, 6 and 8, (Patterson, 2010). These wells tend to be located in the western portion of the distribution network for the City. Well No. 4 had to be removed from operation recently, in 2007, due to continued exceedance of the primary MCL. Upon entering service, nitrate concentrations in Well No. 4 were near the MCL and had remained marginal with water quality frequently at or near the MCL and a few occurrences where sample results had exceeded the MCL during this period of operation. All other wells in operation in Patterson remain viable and show no signs of an increasing trend in nitrate concentrations.

3.6.8 Trace Elements

The Deverel et al. (1984) study (reported by Dubrovsky, et al., 1991) states that the shallow groundwater, near the top of the semiconfined zone and less than 30-feet below the land surface, generally has higher trace element concentrations than the deeper zones. This study indicates that the higher trace element concentrations in the shallow groundwater might correlate with the generally higher TDS concentrations in the shallow groundwater. The higher concentrations probably result from leaching of soil salts and evaporative concentration of shallow groundwater near the land surface.

Because of the high variability of groundwater quality in the GMA, focused groundwater supply investigations are necessary to determine if groundwater is suitable for an intended use. Additionally, management practices must be designed and implemented to maintain or improve groundwater quality to meet the differing needs of the users within the GMA.

Section 4
Management Objectives

As it was stated before, typically, this regional program will rely on the PAs to develop the specific program components to meet management objectives that address local groundwater concerns while considering regional interests.

There are general objectives that should be considered for management of groundwater resources within the GMA:

- Assure an affordable groundwater supply for the long term needs of the users.
- Prevent long-term depletion of groundwater resources and maintain adequate groundwater supplies for all users.
- Maintain groundwater quality to meet the long-term needs of users.
- Attempt to reduce or prevent inelastic land subsidence due to groundwater overdraft.
- Maintain general continuity between groundwater management practices and activities undertaken by the PAs.

Section 5
Program Components Relating to Management

5.1 Components Relating to Groundwater Level Management

Groundwater level management is becoming more critical to protect against future problems related to groundwater overdraft. Overdraft is the condition of a groundwater basin in which the amount of water withdrawn by pumping over the long term exceeds the amount of water that recharges the basin (DWR, 2003). Overdraft can lead to shortages in supplies, increased extraction costs, land subsidence, water quality degradation, and environmental impacts. With increasing demands for water supply, the ability to accurately quantify and manage groundwater resources is imperative to maintaining a sustainable resource.

5.1.1 Reduction of Groundwater Use by Development of New Surface Water Supplies

Agencies buy water from out-of-basin sellers to supplement their supplies.

Activities within the GMA: Tracy is participating with the cities of Manteca, Lathrop, Escalon and the South San Joaquin Irrigation District in the South County Surface Water Supply Project (SCSWSP), which brings high quality Sierra Nevada water from the Stanislaus River to cities for their urban use. The project reduces the reliance on groundwater while satisfying urban demands. A water treatment plant on the Stanislaus River uses water that the irrigation district has conserved from improvements in irrigation practices and water use efficiencies. Water from South San Joaquin Irrigation District is conveyed through Woodward Reservoir, treated to drinking standards, and conveyed to Tracy. Water deliveries commenced in July 2005, and Tracy has been importing approximately 10,000 acre-feet of water a year through this source. During those years where CVP allocations are significantly lower than normal, the PAs purchase surface water from water suppliers north of the Delta in addition to using more of the local groundwater resource.

5.1.2 Increase Use of Available Surface Water Supplies

There are some in-basin water transfers and purchases from agencies to others with limited surface water rights and groundwater resources.

Activities within the GMA: Surface water is purchased by Tracy from West Side Irrigation District and Banta Carbona Irrigation District. Tracy has developed agreements with Byron-Bethany Irrigation District to purchase additional water in the future from their CVP water supply for Tracy's municipal and industrial uses.

5.1.3 Development of Overdraft Mitigation Programs

According to the DWR definition, overdraft occurs when continuation of present water management practices would probably result in significant adverse overdraft related impact upon

environmental, social, or economic conditions at a local, regional, or state level. Long-term depletion of storage can cause several problems, including land subsidence, degradation of groundwater quality, and increased pumping costs.

Although overdraft of the entire basin is not occurring, conditions of localized overdraft could happen, since areas of extraction do not typically coincide with areas of recharge. One portion of the GMA can experience an increase in groundwater storage while another shows a continual decrease. Such localized overdraft can cause the same adverse impact as basin-wide overdraft, except on a smaller scale. Monitoring of groundwater levels and water quality is necessary to identify areas where localized overdraft is occurring, and to evaluate its effect. The monitoring will allow the overdraft to be quantified, which is needed to evaluate means to control or reverse the overdraft. Curtailing local overdraft usually requires increasing or redistribution of basin surface water supplies or reducing the amount of groundwater pumped.

The prerequisite to implementation of an overdraft mitigation program is to monitor groundwater levels. Once groundwater trends are known, a responsive overdraft investigation program should be developed around the following components:

- Identify areas of overdraft.
- Determine the potential for significant adverse impact due to the overdraft.
- Formulate a plan to mitigate the impact and a strategy for plan implementation.

Activities within the GMA:

a. Activities in the GMA to address overdraft mitigation programs include those programs described in 5.1.1 and 5.1.2 above.

b. Del Puerto Water District has implemented policies to restrict the pumping and transfer of groundwater outside the area where the pumping occurs, and to restrict pumping for transfer where such groundwater extraction may damage adjacent land owners or cause overdraft conditions to develop.

c. SLDMWA through USBR has contracted the USGS to modify the USGS Central Valley Hydrologic Model (CVHM) to provide a potential for increased resolution in the model within the GMA, as well as other areas serviced by SLDMWA. It is intended that this higher resolution CVHM will be accessible to PAs to employ in evaluating the potential for changing groundwater conditions under selected potential water management schemes.

d. Increased groundwater monitoring within the GMA

5.1.4 Development of Conjunctive Use Programs and Projects

Conjunctive use of groundwater and surface water typically occurs when the surface water supply varies from year to year and is insufficient at times to meet an area's demand. In some years, the surface water supply is greater than the water demand; and in other years, the surface water supply cannot meet the entire water demand. In the years when water is plentiful, water available above the demand is utilized to recharge the groundwater aquifer. Recharge can occur

either directly by operation of recharge facilities or injection wells, or indirectly, by applying surface water where available to areas to avoid the pumping and use of groundwater. In effect, the groundwater basin is utilized as a storage reservoir, and water is placed in the reservoir during wet periods and withdrawn from the reservoir during dry periods.

There are opportunities for conjunctive use in the study area that could increase overall water supply yield; however, each must be evaluated in terms of available water supply, basin geology, available storage capacity, pumping zones, and recharge potential to determine yield, costs, and potential adverse impacts. In the GMA, pumping takes place primarily from the confined zone, while unoccupied aquifer storage is currently available only in the unconfined zone. Based on the basin characteristics, water supply sources, and current groundwater usage, potential conjunctive use opportunities should focus on the following:

- Identifying areas of local overdraft and evaluating the viability of a recharge program using direct recharge.
- Evaluating the availability of additional surface water supplies, which could be utilized in conjunctive use programs either directly or via exchange of CVP supplies.
- Optimizing the overall groundwater yields during dry periods through sound basin management.

In recent history in the GMA, conjunctive use has been practiced in an unmanaged fashion. When full CVP water supplies are being received, relatively little pumping occurs and recharge occurs through seepage and deep percolation of surface water. During water short periods, water is withdrawn from the aquifer to make up for the deficits in surface water supply. Increased pumping due to chronic surface water shortages are causing more emphasis to be placed on locating water supplies for groundwater recharge.

Activities within the GMA: Patterson Irrigation District pumps groundwater on an as needed basis. The District has focused its efforts on improving surface water delivery and pumping efficiencies by recycling surface drainage as opposed to limiting canal seepage. Deep percolation of irrigation water and distribution system seepage losses, recharge the groundwater. The stored groundwater supply is available to the District and others during drought conditions. Such recharge is an important component to the District's water management strategy (Patterson ID, 2005).DWR has implemented, through its Conjunctive Water Management Program (CWMP), several integrated programs to improve the management of groundwater resources in California. The program emphasis is on forming partnerships with local agencies and stakeholders to share technical data and costs for planning and developing locally controlled and managed conjunctive water use projects. DWR and SJCFCWCD entered into a Memorandum of Understanding to cooperatively develop a CWMP, establish an advisory committee representative of all water stakeholders, and complete a basin management evaluation (DWR, 2006).

Tracy has acquired permits from the Central Valley Regional Water Quality Control Board (RWQCB) to proceed with an Aquifer Storage and Recovery (ASR) program. The ASR program will utilize the local groundwater aquifer for long term water storage of available surface water, as a way to increase the reliability of Tracy's water supply. They have received authorization to proceed with pilot testing and have proceeded through the 3rd cycle of a 4-cycle

pilot testing program. The proposed project would consist of injecting surface water treated to drinking water standards into the aquifer via deep wells during times of surplus water and recovery of the water from the aquifer to optimize delivered water quality and meet demands during droughts or when emergency or disaster scenarios preclude the use of imported water supplies. Tracy anticipates that the ASR program will be capable of storing approximately 9,000 af of high-quality surface water allowing for on average 3,000 af of stored water to be available in drought years, thereby increasing the reliability of Tracy's water supply and closing the potential future gap between supply and demand during drought or emergency conditions through 2025 (EKI, 2005).

Tracy is also studying the possibility of procuring surface water storage to increase water supply reliability. Tracy is evaluating the potential to buy water storage capacity in the Semitropic Water Banking Project (Semitropic) in Kern County. To store water in Semitropic, Tracy would transfer a portion of its CVP water from the DMC through the California Aqueduct for delivery to Semitropic. During a drought, Semitropic would pump the stored water into the California Aqueduct and a like amount of water would be made available to Tracy to pump from the DMC. Tracy negotiated with Semitropic to purchase up to 10,500 af of storage volume. If this storage were filled, it would provide Tracy with up to 3,500 af of water annually for three years during water short periods (EKI, 2005).

Patterson is in the process of updating its General Plan and has prepared a Final Environmental Impact Report (FEIR) on the update (Patterson, 2010). This FEIR includes new policies oriented towards implementing conjunctive use of recycled water and imported surface water supplies to augment the City's supplies through application to landscape irrigation and other non-potable municipal uses providing "in-lieu" groundwater recharge.

5.1.5 Development of Agricultural and Urban Incentive Based Conservation

Increasing water use efficiency, either urban or agricultural, should be an important component of the long-term planning and management of water resources. It makes prudent use of the available supplies, helps compensate chronic reductions in supply from competing demands and in some cases may reduce the need for developing new water supplies.

The experience of active urban water conservation programs in California is that the potential for water savings are initially about 10 to 20 percent of the volume of water used. Such programs typically include distribution system leak-reduction programs, household metering, tiered pricing to discourage inefficient use, education of the public on water savings measures and market-enforced transition to water-saving household plumbing devices.

The greatest potential for agricultural water conservation relies mainly on the use of more efficient irrigation technologies and irrigation scheduling based on crop water needs. Increasing irrigation efficiency decreases the amount of water that is lost to the system or leaves the site through surface water runoff or deep percolation to groundwater.

In November 2009, SBx7-7 was enacted. It requires all water suppliers to increase water use efficiency and utilize a single standardized water use reporting form, which would be used by both urban and agricultural water agencies. It sets a goal for urban water users of reducing per capita urban water use by 20% by December 31, 2020. Agricultural water suppliers must

prepare and adopt agricultural water management plans by December 31, 2012, updating those plans by December 31, 2015 and every 5 years thereafter. In addition, On or before July 31, 2012, agricultural water suppliers shall:

- Measure the volume of water delivered to customers. The Department of Water Resources shall adopt regulations that provide for a range of options that agricultural water suppliers may use to comply with the measurement requirement.
- Adopt a pricing structure for water customers based at least in part on quantity delivered.
- Implement additional efficient management practices.

CVP contractors that maintain and regularly update the water management plans required by federal law and regulations comply with these requirements. Agencies that fail to comply with SBx7-7 would be ineligible for State Water funds.

Activities within the GMA:

a. Tracy developed a Water Conservation Plan in 2000. This plan was subsequently updated in 2009 and is currently under review by the United States Bureau of Reclamation for approval. The conservation efforts include implementation of the California Urban Water Conservation Council's (CUWCC) 14 Best Management Practices (BMPs). The BMPs include residential water surveys, system water audits and leak detection, water pricing to encourage conservation, waste prohibitions, public information, landscape guidelines, etc.

An update of the Urban Water Management Plan (UWMP) for Tracy was prepared in 2005 to fulfill the UWMP Act requirements. This UWMP describes how Tracy intends to manage its current and future water resources and demands to continue to provide its customers with an adequate and reliable water supply. This updated UWMP reflects changes to the Tracy's water supply portfolio and water demands since 2000 (EKI, 2005). Currently, a new update of the UWMP is scheduled for 2011.

The PAs that utilize agricultural water supplies of CVP water have completed agricultural water management plans and periodically update the plans pursuant to the Reclamation Reform Act of 1982 and the Central Valley Project Improvement Act (CVPIA). In these plans, water conservation practices have been identified and instituted to maximize beneficial use of the water supply. Practices include better irrigation management, physical improvements, and institutional adjustments. Irrigation management practices include on-farm water management and district water accounting, use of efficient irrigation methods, and on-farm irrigation system evaluations. Physical improvements include lining of canals, replacement of unlined ditches with pipeline conveyance systems, and improvement of on-farm irrigation and drainage technology. Institutional adjustments include improvements in communication and cooperative work among districts, water users, and state and federal agencies, increased conjunctive use of groundwater and surface water, and facilitating the financing of on-farm capital improvements. Other practices that have been instituted include installation of flow measuring devices, modification of distribution facilities to increase the flexibility of water deliveries, and changes in the water fee structure to provide incentive for more efficient use of water. The water management plans have helped the districts identify and implement policies and projects for better irrigation water

utilization. Compliance with CVPIA water management plans will also be compliant with SBx7-7 requirements.

PAs with discharges from irrigation are also subject to the Irrigated Lands Regulatory Program. While the original Program focused on surface water supplies, and implementation of best management practices to address surface runoff may have positive or negative implications for groundwater quality. Also, the ILRP long-term program requirements will include monitoring and BMP's for discharges to groundwater as well.

5.1.6 Replenishment of Groundwater Extracted by Water Producers

The hydrologic balance included in the previous GMP, suggests that lowering the groundwater levels increases sustainable yield, since subsurface outflow is reduced which counteracts the water extracted. More data and analysis is needed to confirm this finding and to determine the level of pumping that can be sustained without overdraft. As urban areas develop and there is a corresponding shift from surface water use to groundwater use, groundwater use increases and aquifer recharge decreases. Judging by the water resources balance, the GMA should be able to absorb the increased extraction due to increasing urban demand and maintain a balance. However, localized overdraft conditions could develop due to changes in surface water delivery, concentrated groundwater pumping, and water quality changes. The natural response of the aquifer to limited increases in pumping can provide for some replenishment.

Activities within the GMA:

a. The Patterson General Plan update FEIR includes proposed policies to identify and locate opportunities for proposed groundwater recharge facilities in a joint effort with other local agencies, and to import or otherwise supply surface water to recharge local groundwater supplies.

b. The Tracy ASR program will be injecting surface water into the groundwater aquifer to replenish storage depleted during drought periods, as discussed above in section 5.1.4.

5.2 Components Relating to Groundwater Quality Management

Groundwater quality management is critical to protect against the degradation that could adversely impact beneficial uses of available groundwater resources. Municipal, agricultural, and industrial activities can all increase the risk of polluting groundwater resources. Pollutants from these activities can find their way into the local aquifers degrading the water quality such that it becomes unusable for some beneficial uses without substantial treatment and cost. Some sources of pollution are natural. Through disruption in the existing barriers these low quality resources can intrude into higher quality groundwater resources, degrading the groundwater quality. Other sources are derived from anthropogenic applications and byproducts of human activities and waste. Degradation of groundwater resources can lead to expensive water treatment or loss of beneficial uses. The beneficial uses of groundwater resources may be sustained through proper monitoring and management of the resources and potential sources of degradation.

5.2.1 Regulation of the Migration of Contaminated Groundwater

Contaminants addressed in this section are those that result from improper application, storage or disposal of petroleum products, solvents, pesticides, fertilizers and other chemicals used by industry, and are distinguished from salinity degradation.

Activities within the GMA:

a. The RWQCB has primary responsibility in enforcing water quality regulations, in the respective counties.

b. By acting as the regional monitoring coordinator the SLDMWA will help develop a better understanding of the regional hydrogeology of the GMA, the vertical and lateral groundwater flow directions, and groundwater quality based on the various groundwater monitoring activities supporting this program. By distributing information and through coordination sessions, the SLDMWA will be able to make the PAs aware of changes in groundwater quality, which may indicate that new sources of contamination or changes in existing plumes of contamination are occurring.

c. The San Joaquin County Environmental Health Department (SJCEHD) carries out different management programs. The purpose of the "Underground Injection Control" program is to protect public health and the environment from exposure to contaminants that may exist in shallow underground injection wells, such as dry wells, seepage pits, sumps, etc. These injection wells can transport contaminants to soil and groundwater. The primary focus is the protection of groundwater from contamination. Activities include identifying, mapping, inspecting and remediating potential or existing contaminant sources. The SJCEHD also permits and inspects well installation and destruction to minimize the potential for the wells to adversely impact groundwater.

The Underground Storage Tanks (UST) program was developed by SJCEHD to protect public health and the environment from exposure to hazardous materials stored in USTs. The primary focus is the protection of groundwater from contamination. Activities include inspection, permitting, monitoring, repair, installation and removal of USTs. UST sites with identified contamination are referred to the SJCEHD Site Mitigation Unit for cleanup oversight.

SJCEHD is also responsible for a Site Mitigation Database, which contains information about all the known hazardous material contamination sites within San Joaquin County. The database was established in 1993, although it includes information as far back as 1985. It is available to the public.

The Stanislaus County Department of Environmental Resources, Hazardous Material Division has an UST program. The goal of the program is to protect public health, the environment and groundwater. UST inspectors make certain that businesses and facilities with ongoing UST operations are properly permitted and meet the monitoring requirements applicable to their type of equipment. The UST Program and the Site Assessment and Mitigation Program oversee UST removal and soil clean-up activities. The primary function of the Site Assessment and Mitigation Program in UST removal activities is to provide regulatory oversight for the site assessment and mitigation of properties where unauthorized releases from UST systems have occurred.

The SWRCB developed a UST program which purpose is to protect public health and safety and the environment from releases of petroleum and other hazardous substances from tanks. By 2005, there were approximately 2,650 open UST cases in the Central Valley Region. There are four program elements: leak prevention program (requirements for tank installation, construction, testing, leak detection, spill containment and overfill protection), cleanup of leaking tanks, enforcement, and tank tester licensing. In addition, there is a database and geographic information system (GIS), Geo Tracker, which provides online access to environmental data (http://www.geotracker.waterboards.ca.gov/). It tracks regulatory data about underground fuel tanks and public drinking water wells, as well as other types of sites, such as above ground storage tanks and site cleanup cases (SWRCB, 2006).

Under the Pesticide Contamination Prevention act of 1985, the California Department of Pesticide Regulation (DPR) maintains a Ground Water Protection Program (DPR, 2011). Through the Ground Water Protection Program DPR evaluates risk and monitors for pesticide contamination in groundwater, identifies sensitive areas, and develops mitigation measures to prevent further contamination. DPR adopts regulations to protect groundwater as part of the Ground Water Protection Program.

The agricultural PA's are also subject to the RWQCB's Irrigated Lands Regulatory Program which is expected to require a groundwater monitoring program for specified constituents under general orders for waste discharge requirements. To the extent the PA's participate in the ILRP through a watershed coalition, the watershed coalition will be the primary venue for regional coordination, and PA's will need to coordinate their participation in both programs.

5.2.2 Development of Saline Water Intrusion Control Programs

Groundwater quality within an aquifer can be permanently degraded if saline groundwater migrates into the aquifer. Such degradation has the potential to render the groundwater unsuitable for some uses, particularly potable water use, if not treated. Desalination treatment systems are very expensive. In the GMA, saline water intrusion does not occur from an ocean or saltwater body.

5.2.3 Identification and Management of Wellhead Protection Areas and Recharge Areas

The Federal Wellhead Protection Program established by Section 1428 of the Safe Drinking Water Act (SDWA) Amendments of 1986 was designed to protect groundwater resources of public drinking water from contamination and to minimize the need for costly treatment to meet drinking water standards. A Wellhead Protection Area, as defined by the 1986 Amendments, is *"the surface and subsurface area surrounding a water well or well field supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water or well field."* In 1996, Congress reauthorized SDWA and amended it to require each state to develop and implement a Source Water Assessment Program.

In response to the 1996 re-authorization of the SDWA, Section 11672.60 amended to the California Health and Safety Code. Section 11672.60 requires the Department of Public Health Services (DHS, the precursor to DPH) to develop and implement a program to protect sources of drinking water, specifying that the program must include both a source water assessment

program and a wellhead protection program. In conformance with the legal mandate, the California's Drinking Water Source Assessment and Protection (DWSAP) Program was developed (DPH, 1999). The DWSAP Program addresses both groundwater and surface water sources.

In November 1999, the United States Environmental Protection Agency (USEPA) gave final approval of the DWSAP Program as California's Source Water Assessment and Protection program. The Department of Public Health (DPH) Division of Drinking Water and Environmental Management is the lead agency for development of the DWSAP Program and its implementation. California did not developed a separate Wellhead Protection program, thus the groundwater portion of the DWSAP serves as the State's Wellhead Protection program. In January 1999, USEPA approved the DWSAP as California's wellhead protection program.

According to the California Water Plan Update 2009 (DWR, 2009), recharge area protection includes keeping groundwater recharge areas from being paved over or otherwise developed and guarding the recharge areas so they do not become contaminated. Protection of recharge areas, whether natural or man-made, is necessary if the quantity and quality of groundwater in the aquifer are to be maintained. Existing and potential recharge areas must be protected so that they remain functional and they are not contaminated with chemical or microbial constituents. Zoning can play a major role in recharge area protection by regulating land-use practices so that existing recharge sites are retained as recharge areas.

In the GMA, an important source of groundwater recharge is derived from percolation of surface water as well as a small component of rainfall. In some cases pollutants associated with the percolating water can be transported from the surface into the underlying aquifer. The discharge of wastewater to land or surface water conveyance systems could, if improperly managed, pose a risk of polluting groundwater resources. The RWQCB has jurisdiction to regulate such discharges.

Activities within the GMA: Through programs administered by a variety of State agencies, the State of California regulates waste disposal. The PAs will rely on continued regulation by the State; however, currently, both Tracy and Patterson routinely monitor water quality from local groundwater productions wells that supply potable water. Furthermore, to the extent parties subject to such permits request information from the PA's, require permission from a PA or are otherwise called to the PA's attention, PA's may advise the dischargers of the importance of protecting the groundwater resource and/or request notice and participate in the public comment opportunities of the agency with permit jurisdiction.

5.2.4 Administration of Well Abandonment and Well Destruction Program

State regulations require that all unused wells be properly abandoned or destroyed so that they do not act as conduits for mixing of groundwater of differing quality. Non-pumped wells are a much greater threat than pumped wells, since pumping normally quickly removes contaminants that may have migrated during idle periods. In gravel packed wells, the gravel pack as well as the casing itself can act as a conduit for mixing and potential contamination.

Permits are required from the local responsible jurisdiction, county or city, for abandonment of wells within their jurisdiction.

Activities within the GMA: The cities within the GMA defer this responsibility within their jurisdiction to the county health departments for well abandonment and destruction permitting. For public water supply wells, additional requirements may be prescribed by the DPH. Permit fees are normally required. The agricultural PAs rely on continued administration of the well abandonment and destruction program by the permitting agencies. The PAs' role in well abandonment and destruction is to provide available groundwater data, assist in identifying locations of operating and abandoned wells, and advise well owners why proper well destruction is important for protection of water quality.

5.2.5 Well Construction

Improperly constructed wells can establish pathways for pollutants to enter from surface drainage and can cause mixing of water between aquifers of differing quality. Sections 13700 through 13806 of the California Water Code require proper construction of wells. The standards of well construction are specified in DWR Bulletins 74-81 and 74-90 (DWR, 1981 and DWR, 1991).

The local jurisdictions, counties and cities, within the GMA have the fiduciary responsibility to enforce well construction standards within their jurisdictions. Well construction permits are required to drill a new well or to modify an existing well. Well Driller's Reports must be filed with the DWR and the respective counties.

Typically, it is the responsibility of the respective environmental health divisions of San Joaquin, Stanislaus and Merced Counties to permit and enforce standards for construction and abandonment of wells within their respective jurisdictions. The counties maintain records on these permitted wells as well as DWR. These data are publicly available and should be collected to incorporate into regional studies and monitoring programs, and may be supplemented with data on water levels and groundwater quality collected by other agencies to identify locations susceptible to intermixing of aquifer zones of varying water quality.

A better understanding of the subsurface geology and water quality is needed to define the confining beds between aquifer zones of differing water quality. Site-specific hydrogeologic investigations should be conducted to support well designs and should be submitted with the proposed well designs to obtain the well drilling permit.

Activities within the GMA: The cities within the GMA defer this responsibility within their jurisdiction to the county health departments for well construction permitting. Merced and Stanislaus Counties have adopted the DWR California Well Standards. San Joaquin County has developed its own standards that are slightly more rigorous than the DWR standards. The authority over well construction remains with the respective counties. The PAs may obtain information from the counties, such as copies of well permits, logs, and studies to assist in their groundwater management activities

5.2.6 Review of Land Use Plans to Assess Risk of Groundwater Contamination

Land use planning is used by counties and cities for regulation of land uses within their boundary or sphere of influence to create a quality of life and to achieve compatibility between man's

activities and the environment. It is a very effective method to mitigate impacts of changes in land use on groundwater quantity and quality.

Policies set forth in county general plans, city general plans, and community specific plans that affect groundwater may include:

- Regulating growth in groundwater recharge areas to protect water quality;
- Regulating development to improve water quality from storm water runoff and improve groundwater recharge opportunities;
- Monitoring water quality and groundwater levels;
- Providing planning for proper disposal of solid waste, sanitary waste, storm runoff, and hazardous wastes generated by the community;
- Restrictions to projected growth based on water consumption relative to available water supplies; and
- Mitigating the impacts of reduction in surface water supply resulting from conversion of land from agricultural use to urban use.

To achieve the common goals between the various land use plans and this GMP, close coordination between agencies is needed. During periodic land use plan preparation and updates, cities or counties should consult with the appropriate PAs to avail themselves of the latest information on hydrogeologic conditions that may be affected by proposed activities, so that appropriate mitigation measures can be included in the plans to avoid significant adverse impacts to local water resources. Proposed land use plans and supporting environmental documentation should be reviewed and commented upon by the PAs.

Activities within the GMA: Currently, The City of Patterson has proposed Low Impact Development policies as part of their General Plan update that should be followed during the planning process of development.

5.2.7 Construction and Operation of Groundwater Management Facilities

Groundwater management plans can include projects that protect the quality of groundwater and assure that the quantity of groundwater in storage is managed to meet long-term demand. The facilities that can aid in efficient management of groundwater resources include groundwater contamination clean-up projects, groundwater recharge projects, water recycling projects, and groundwater extraction projects. As knowledge is gained through implementation of the GMP components, specific projects may be identified and evaluated. The individual PAs are responsible for the development and implementation of those projects.

Activities within the GMA:

a. Tracy developed a regional groundwater management plan to refine and address their specific needs and define projects to sustain the groundwater resources beyond those identified in this Basin-wide GMP.

b. SLDMWA is in the process of developing a basin-wide groundwater monitoring plan that will include a groundwater monitoring network that will be developed following approval by DWR. This monitoring will assist the PAs in identifying projects to manage the groundwater resources.

c. The City of Patterson has included programs in their water supply planning and policy documents to increase local groundwater recharge and protect groundwater quality.

5.3 Components Relating to Inelastic Land Surface Subsidence

Reducing the amount of groundwater in storage by pumping can cause the dewatering of fine-grained geological formations, potentially resulting in land subsidence and a reduction in the storage capacity of the aquifer.

The management of the land subsidence would include monitoring and prevention programs. Management of land surface subsidence should contain the following elements:

- Establish a subsidence monitoring program. Benchmarks should be established at well locations, so it would be possible to relate the subsidence to groundwater levels and extractions.
- Identify areas where monitoring suggests land subsidence.
- Identify groundwater management strategies that may be employed to minimize the subsidence.

Activities within the GMA: Tracy established a subsidence-monitoring program in 2003. Benchmarks were established near each of the City's monitoring wells. A benchmark level survey is performed in the spring periodically by using a Global Positioning System (GPS) initially calibrated with precise differential level surveys. The results of the Monitoring Program are presented in semiannual reports.

5.4 Components Relating to Surface Water Quality and Flow

SB 1938 requires the inclusion of components relating to the management of changes in surface flow and water quality that directly affect groundwater levels or quality or are caused by groundwater pumping. Specific actions may include:

- Use of surface water supplies when available in a recharge program or conjunctive use program that is sensitive to downstream users and the environment;
- Avoidance or mitigation of projects that detrimentally affect surface water quality and flow;
- Increase understanding of the interaction between surface water quality and groundwater quality through the GMA monitoring programs.

Activities within the GMA: The current and planned actions within the GMA related to recharge and conjunctive use are detailed in previous sections. Monitoring programs are being expanded through the SLDMWA basin-wide monitoring plan and network and also through the collection of information required under the ILRP.

Section 6
Groundwater Monitoring Programs and Plans

6.1 **Groundwater Monitoring Programs**

The purposes of a groundwater monitoring program are to identify areas of overdraft, provide information that will allow computation of changes in groundwater storage to evaluate net recharge or depletion, and identify the areas and extent of water quality degradation for potential mitigation. Groundwater level monitoring is essential to understand the impact on aquifer storage due to changes in water inflow and outflow components and in pumping activities. Mapping of groundwater levels depicts the direction of groundwater movement and the hydraulic gradient necessary for quantifying groundwater inflow and outflow to the GMA. Monitoring and mapping should be done independently in the unconfined and confined zones.

On behalf of the PAs, SLDMWA plans to take on the role as the groundwater Monitoring Entity within the GMA, in accordance with the requirements set forth in SBx7-6. As of January 2011, SLDMWA notified DWR that they are planning to assume the responsibility for the groundwater Monitoring Function within the GMA. Additionally, SLDMWA is preparing a groundwater monitoring plan, assuming this role as an Umbrella Monitoring Entity in a collaborative effort with USBR and the PAs. This plan will describe the proposed groundwater monitoring program in detail. It is anticipated that this plan will be submitted to DWR by the summer of 2011 for review and approval, and Monitoring Functions within the GMA undertaken by the PAs with SLDMWA as the lead entity on or before January 2012. The proposed monitoring program would rely on the collaboration with the PAs to perform any necessary measurements and collect groundwater elevation data for regular submittals to DWR, at a minimum annually. As an Umbrella Monitoring Entity, SLDMWA will collect and compile the water level data gathered by the PAs for submittal to DWR. The proposed groundwater monitoring plan will describe:

- A program for collaborating with and coordinating the efforts amongst the PAs to monitor groundwater levels within the GMA;
- Standard procedures and methods for the measurement and collection, quality assurance, and documentation of field data;
- A DWR approved monitoring network comprised of monitoring wells selected to be representative of the groundwater conditions throughout the GMA, including a map of the proposed monitoring locations;
- A monitoring schedule that is coordinated amongst the PAs and approved by DWR that facilitates evaluation of seasonal and long-term trends in groundwater levels;
- Standard protocols for the gathering and coordination of data from the PAs and other agencies, as applicable, like DWR, USGS, DPH, San Joaquin County, Stanislaus County, and Merced County;
- Standard procedures for reporting results and findings to the PAs for evaluation; and,
- Standard protocols for data transmittal from the SLDMWA to DWR.

As part of this groundwater monitoring plan, groundwater levels will be reviewed by the PAs. An annual report will be prepared that describes the groundwater monitoring results, and evaluates developing trends and the condition of the aquifer. Based on the information presented in the annual report, the PAs, through a steering committee, will determine if additional activities are warranted. Some details regarding the sources of groundwater data from within the GMA are identified below.

DWR

In the past, DWR measured groundwater levels in wells and maintained a database of the groundwater measurements statewide. Currently, DWR maintains publicly available statewide groundwater level data at the Department's Groundwater Level Database website (http://www.water.ca.gov/waterdatalibrary/). This site provides a graphical interface that allows selection of individual wells from a local area map. Data can also be retrieved by specifying the groundwater basin or township of interest. A selected well will return a groundwater level hydrograph and data table including the depth to water below reference point, elevation of water surface and depth to water below land surface. This site currently maintains groundwater level information for nearly 18,000 wells within the San Joaquin District boundary and about 60,000 wells statewide.

With the passage of SBx7-6, DWR will be relying on local entities to take on the responsibility of measuring groundwater levels within basins in conformance with a DWR approved monitoring plan and schedule, and submitting the data to DWR. The data will be uploaded to a DWR database in conformance with DWR protocols. Therefore, the number of groundwater monitoring locations, and continuity with previous locations may change as the monitoring responsibility transitions from DWR to local monitoring entities, and new monitoring networks and schedules are established. Information regarding the SBx7-6 requirements may be obtained through the DWR at the California Statewide Groundwater Elevation Monitoring (CASGEM) website (http://www.water.ca.gov/groundwater/casgem/).

USGS

USGS maintains the Ground-Water Data for the Nation database, which contains groundwater site inventory, groundwater level data, and water quality data (http://waterdata.usgs.gov/nwis/gw). The groundwater site inventory consists of more than 850,000 records of wells, springs, test holes, tunnels, drains, and excavations in the United States. Available site descriptive information includes well location information such as latitude and longitude, well depth, and aquifer. The USGS annually monitors groundwater levels in thousands of wells in the United States. Groundwater level data are collected and stored either as discrete groundwater level measurements or as continuous record. The data available for this GMA has not been updated.

USGS, in concert with other State and Federal agencies, developed and maintains a hydrologic model of the Central Valley of California. The CVHM is a MODFLOW model developed from a comprehensive geospatial database of numerous features of the heterogeneous Central Valley aquifer system. According to USGS, CVHM will be operated by USGS and made available for use by water managers and other agencies. It was designed to help resource agencies assess, understand and address the many issues affecting the use of surface water and groundwater supplies in the Central Valley. It is intended to aid water managers by simulating a number of

water-management scenarios and assess possible changes in both groundwater and surface water supplies on a regional scale. CVHM generally has a resolution of about 1 mile spacing between nodes. However, at the request of SLDMWA through USBR, CVHM resolution is being increased by USGS to approximately ¼ mile spacing between nodes within the areas serviced by SLDMWA, including the GMA. This improvement to the CVHM, within the SLDMWA Service Area, was requested to aid in modeling of potential subsidence from water withdrawal and to assist PAs with alternatives impact analyses for local project decision-making through groundwater modeling. The model can take into account a number of hydrologic factors including the conversion of farmland to urban use, groundwater recharge and extractions, and the effects of climate change. Limitations on the application of CVHM due to the scale used in calibration may be encountered in some smaller applications by water managers. Upon request, USGS can incorporate additional data into the CVHM to refine the input parameters and calibration, thus providing improved accuracy and precision, within a specified region. Information regarding the CHVM may be obtained through USGS (Contact: Claudia Faunt, Phone: 619-225-6142; ccfaunt@usgs.gov).

SWRCB – USGS – Lawrence Livermore National Laboratory (LLNL)

The SWRCB is collaborating with the USGS and the LLNL to implement the GAMA Program. The GAMA Program is a statewide comprehensive groundwater quality monitoring program, developed in response to the Groundwater Quality Monitoring Act of 2001 (Water Code sec.10780-10782.3). The goals are to improve statewide groundwater monitoring, and facilitate the availability of information about groundwater quality to the public. The data collected will provide an indication of potential water quality problems. It will also be used to identify the natural and human factors affecting groundwater quality. Prior to 2003, the GAMA Program conducted the California Aquifer Susceptibility (CAS) Assessment. The CAS Assessment addressed the relative susceptibility to contamination of public wells. This effort was the foundation for the GAMA Program. The GAMA Program also addresses the quality of private/domestic drinking water wells through the Voluntary Domestic Well Assessment Project.

As part of the GAMA Program, the groundwater basins in California were ranked in groups of sampling priority on the basis of the number of public wells, groundwater usage, and potential sources of groundwater contamination in each basin. Three types of water quality assessments were conducted for each unit:

1. The assessment of current groundwater quality.
2. The detection of changes in water quality.
3. The assessment of natural and human factors that affect groundwater quality.

To efficiently facilitate a statewide, comprehensive program most efficiently, uniform and consistent study-design and data-collection protocols were applied to the entire state.

There are four currently active components of the GAMA Project:

1. GeoTracker GAMA: GeoTracker GAMA is a program to develop and implement a user-friendly internet accessible to georeferenced groundwater database. Data are searchable by text or through an interactive map for groundwater constituents, location and other parameters. The database includes over 150,000 sampling locations. GeoTracker

GAMA provides tools to integrate, standardize, and analyze data from several datasets, including data from:

- California State Water Resources Control Board (SWRCB)
- California Regional Water Quality Control Boards (RWQCB)
- California Department of Public Health (DPH)
- California Department of Pesticide Regulation (DPR)
- California Department of Water Resources (DWR)
- United States Geological Survey (USGS)
- Lawrence Livermore National Laboratory (LLNL)

More information about this program is available through SWRCB (http://www.waterboards.ca.gov/gama/geotracker_gama.shtml#).

2. Priority Basin Project: The GAMA Priority Basin Project assesses groundwater quality in key groundwater basins in the State. Groundwater is monitored for hundreds of chemicals at low detection limits, including emerging contaminants such as pharmaceuticals and personal care products. The GAMA Priority Basins consist of 116 of the 472 DWR defined groundwater basins in the State. The GAMA Priority Basin Project is grouped into 36 groundwater basin groups called "study units". Each study unit is sampled for common contaminants regulated by the DPH, and also for unregulated chemicals. Some of the chemical constituents that are sampled by the GAMA Priority Basin Project include: volatile organic compounds (VOCs); pesticides; Stable isotopes of oxygen, hydrogen, and carbon; emerging contaminants; trace metals; radioactivity; general ions; nutrients; and bacteria. Monitoring and assessments for priority groundwater basins is on-going and will be completed every ten years, with trend monitoring every 3 years. Initial testing of and reporting on the groundwater quality is being conducted currently. More information about this program is available through SWRCB (http://www.waterboards.ca.gov/gama/priority_basin_projects.shtml).

3. Domestic Well Project: The GAMA Domestic Well Project collects and tests samples from private domestic water supply wells, whose owners have volunteered for the program, for commonly detected chemicals. Domestic well water is for private use and consumption. Its quality is not regulated by the State. The results of the testing for each well are shared with the well owner, and used to evaluate the quality of groundwater used by private well owners. The Domestic Well Project has sampled five County Focus Areas in California as of 2009: Yuba, El Dorado, Tehama, Tulare, and San Diego. None of which lie within the GMA. In general, the Domestic Well Project tests for constituents that are a common concern in potable water: bacteria, general minerals, general chemical parameters, inorganic chemicals and nutrients, and organic chemicals. The results are compared to CDPH drinking water standards. More information about this program is available through SWRCB (http://www.waterboards.ca.gov/gama/domestic_well.shtml).

4. Special Studies Project: The GAMA Special Studies Project consist of a number of studies undertaken by LLNL, to look at various relationships between land uses, management practices, and other activities and the effects these activities have on local groundwater resources. LLNL has conducted several groundwater special studies. Of which, Seven projects have been completed; five reports have been published with

numerous scientific papers and presentation. The studies completed consist of the following:

- The fate & transport of nitrate sources from dairies
- Nitrate management plan studies for the Llagas Basin (Gilroy), and Chico Basins
- The fate and transport of nitrate sources and occurrence, and its relation to land usage (fertilizer, wastewater, and/or agricultural)
- Nitrate sources and occurrence in Orange County
- Nitrate sources and occurrence in Livermore
- Wastewater indicator study
- A wastewater indicator study on how septic systems affect shallow groundwater
- A wastewater indicator study of areas irrigated by recycled water in Gilroy and Livermore.

The Special Studies still in progress address groundwater recharge, changes in chemistry of groundwater recharged by surface waters, and development of a field deployable apparatus for extraction and collection of dissolved gasses from groundwater samples. More information about this program is available through SWRCB (http://www.waterboards.ca.gov/gama/special_studies.shtml).

Findings from the initial studies conducted as part of the Priority Basin Project for the Northern San Joaquin Study Unit have been completed and published by USGS, and are available at the GAMA Program website (http://ca.water.usgs.gov/gama/SU/nsjv.htm). The northern portions of the GMA within San Joaquin County lie within the Tracy Subbasin, which in turn lies within the western portion of the Northern San Joaquin Study Area (Bennett, G.L., *et.al*., 2006). The remainder of the GMA lies within the Delta Mendota Subbasin, which lies within the Western San Joaquin Valley Study Unit. The initial sampling and testing of groundwater from wells located in the Western San Joaquin Valley Study Unit is currently being completed and the findings are scheduled to be published in early 2011 (Contact: jshelton@usgs.gov). More information about this program is available through SWRCB or USGS (http://www.waterboards.ca.gov/gama/ or http://ca.water.usgs.gov/gama/).

DPH - Division of Drinking Water and Environmental Management

Every public water system in the State has to have the analyzing laboratory enter the results of all chemical monitoring to the Drinking Water Program, a water quality monitoring database. A CD containing the database can be purchased from the Monitoring and Evaluation Unit (Contact: Steve Book, Phone: 916-449-5566; sbook@dhs.ca.gov). For security reasons, DPH does not provide the coordinates of each well included in the database. However, general location information is easy to deduce from names of the water systems.

SLDMWA

The PAs cooperatively developed a comprehensive groundwater level and quality monitoring plan for the GMA (Stoddard & Associates, 1999). Currently, only the groundwater levels are monitored twice a year at a portion of the wells identified in the plan. Other elements of the plan have not yet been implemented, though implementation of additional elements will occur in the

future as the groundwater monitoring plan is prepared and approved by DWR. (Contact: Joe Martin, Phone: 209-832-6241; joe.martin@sldmwa.org.)

San Joaquin County

The San Joaquin County Groundwater Data Center (GDC) is a countywide centralized groundwater information medium that provides access to groundwater data collected and shared by agencies throughout San Joaquin County. The county groundwater level monitoring program includes semi-annual measurements of over 550 wells, of which approximately 300 are measured by county staff. The data collected is stored electronically in a database for further analysis. Historic groundwater data are accessible through the internet at the GDC website (http://www.sjmap.org/groundwater/).

Stanislaus County

The County has groundwater quality information available from the Public Water System database. An appointment is necessary to gather that information. At this time, there is no groundwater level information available. (Contact: Tom Wolf, Phone: 209-525-6756)

City of Tracy

Tracy developed a Mitigation Monitoring Program in 2001. The monitoring network consists of eight active production wells, four nested monitoring wells, and 18 clustered monitoring wells. Because of the design of the monitoring wells, data from those wells are considered representative of individual aquifer conditions and are generally of higher quality than the data obtained from production wells. Groundwater levels are obtained monthly, and water quality is collected quarterly. This program also includes a subsidence survey. The annual benchmark survey is performed in the spring periodically. The results of the monitoring program are presented in semiannual reports (GEI Consultants, 2005). (Contact: Steve Bayley, Phone: 209-831-4420; steve.bayley@ci.tracy.ca.us.)

6.2 Monitoring Plans

SB 1938 requires the adoption of monitoring protocols designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater pumping in the basin. The monitoring protocols shall be designed to generate information that promotes efficient and effective groundwater management.

For this GMP, monitoring protocols will be defined based on goals of particular programs. As part of the requirements of SB 1938, the PAs must adopt monitoring protocols to measure changes in water levels and quality, subsidence where subsidence has been identified as a potential problem, and flow and quality of surface water directly influenced by groundwater.

Under the requirements of SBx7-6, the SLDMWA has notified DWR as the monitoring entity for the GMA on behalf of the PAs. As the Umbrella Monitoring Entity in the GMA, SLDMWA is responsible for coordinating the activities of the PAs with regard to groundwater monitoring, including development of schedules, approved monitoring network, and standardized collection

techniques for groundwater level monitoring, groundwater quality sample collection, preparation, documentation, laboratory procedures and methods, and data validation and transfer procedures. All of these elements are described in the recent Groundwater Monitoring Plan prepared by SLDMWA. The Groundwater Monitoring Plan should be adopted by the PAs, and then approved by DWR by the summer of 2011, and implemented before the end of 2011. SLDMWA, through consultation with the PAs, will describe in the Groundwater Monitoring Plan the framework for analysis of data and dissemination of the results in conformance with DWR data transfer protocols. There are currently 6 proposed elements, or plans, considered for the Groundwater Monitoring Program.

Data Collection

This proposed element will describe a data collection plan to ensure that data is collected in a consistent manner that produces meaningful data for reporting. To this end, this element will include procedures associated with the data collection process, such as the protocol for sampling and/or measuring point location, frequency of sampling/measuring, what entity performs the sampling/measuring, quality assurance, quality control, documentation requirements, well owner notification procedures and parameters to be monitored. This element will also include a description of procedures for obtaining access permission from well and/or land owners, for documenting special access requirements, for marking and identifying monitoring points, and for obtaining and documenting site conditions and survey information regarding the monitoring points.

Groundwater Elevation Monitoring

This proposed element will describe a groundwater elevation monitoring plan to provide accurate and dependable groundwater well depth-to-water field measurements that are the basis for evaluating the long-term trends in the change in groundwater levels and quantity within the GMA. This element will include procedures and schedules for conducting groundwater level measurements to determine groundwater elevations. A schedule for conducting measurements will be included and will be based on sampling periods most likely to be representative of long-term groundwater conditions, anticipated to likely occur in spring and fall of each year based on current understanding of regional conditions. In addition, groundwater level information will also be regularly collected from continuously monitoring instrumentation affixed to a number of groundwater monitoring points throughout the GMA. Groundwater level data will be incorporated into the SLDMWA database in accordance with data collection protocol and uploaded to the DWR web-based database at least once a year in accordance with DWR protocol.

Groundwater Quality Monitoring

This proposed element will describe a groundwater quality monitoring plan to track various groundwater constituents of concern that may demonstrate long-term trends in water quality that may adversely impact the beneficial uses of groundwater within the GMA and to allow early detection of potential trends as they develop so that timely remedial actions may be undertaken. Water quality testing will be conducted routinely on wells within the GMA discharging to the Delta Mendota Canal. Additionally, water quality testing will be conducted on some USGS wells. Groundwater quality data will be incorporated into the SLDMWA database in accordance

with data collection protocol and uploaded to the DWR web-based database at least once a year in accordance with DWR protocol.

Groundwater Extraction Monitoring

This proposed element will describe a plan for documenting the amount and location of groundwater extracted from within the GMA to aid in evaluating of groundwater conditions. Groundwater pumping will be measured at a number of wells within the GMA affixed with meters, many of which are currently measured for discharge to DMC under Warren Act Contract. Groundwater extraction data will be incorporated into the SLDMWA database in accordance with data collection protocol and may be uploaded to the DWR web-based database at least once a year in accordance with any applicable DWR protocol.

Land Subsidence Monitoring

This proposed element describes a plan to measure land subsidence and to predict the potential for further subsidence. Continuously operating subsidence monitoring stations have previously been installed within the GMA, which will be utilized to measure subsidence. Tentatively, it has been proposed that data will be collected monthly. Subsidence monitoring data will be incorporated into the SLDMWA database in accordance with data collection protocol and may be uploaded to the DWR web-based database at least once a year in accordance with any applicable DWR protocol.

Reporting

This proposed element describes a plan for reporting the results of the monitoring program. As the Umbrella Monitoring Entity representing the PAs, SLDMWA will take undertake the responsibility of coordinating the collection and compilation of all applicable groundwater well data within the GMA, and regularly submit the data, at a minimum annually, to the DWR in conformance with the CASGEM protocol. Additionally, it is anticipated that as part of the program, an annual Groundwater Monitoring Report will be prepared that summarizes the water quality, water level, water extraction and subsidence data collected throughout the year. It is anticipated that this report will provide summary information including maps, figures, charts, and tables to characterize water quality, water level and subsidence trends occurring within the GMA. Finally, in accordance with agreements with USGS, SLDMWA will submit data reports on a regular basis to USGS for incorporation into the USGS Central Valley Groundwater Study, and the groundwater flow and land-subsidence model that is currently being developed within the SLDMWA boundaries.

Section 7
Implementation of the Groundwater Management Plan

The GMP implementation involves development of programs through cooperative efforts of the PAs. Implementation of some aspects of the plan may require considerable expenditures and formulas must be developed to allocate costs amongst the PAs. Implementation of regional groundwater management plans is ultimately less costly than implementation of plans by individual agencies, but the implementation strategy is complicated since the PAs have varied reliance on the groundwater resource. The priorities for implementation of the various elements of the GMP will vary from PA to PA. The potential benefits of regional planning within a common groundwater basin or subbasin far outweigh the difficulties of plan implementation. The cooperation of agencies increases the opportunities for water resource management.

In the GMA, the PAs can be generally separated into four categories:

1. Urban water users that currently rely exclusively or primarily on groundwater.
2. Agricultural water users who rely solely on groundwater for water supply.
3. Agricultural water users that rely on surface water and use groundwater for supplemental supply.
4. Agricultural water users with sufficient surface water supply, with groundwater used only for incidental purposes.

Depending on the category, a PA will be willing to invest an appropriate amount of time, effort, and financial resources into groundwater management and make the investment in those management elements that affect it the most. It cannot be expected that all agencies will invest equally in all the elements of the GMP. Hence, an implementation strategy must provide flexibility in the level of agency participation in each element of the plan. For instance, urban agencies and agricultural agencies that rely solely on groundwater supplies may be much more prone to invest in controlling saline water intrusion and localized overdraft; whereas, urban agencies may be more interested in wellhead protection or controlling migration of contaminated groundwater. Participating in conjunctive use operations is obviously desirable for those PAs with water supply deficits, but may also be attractive to those with surplus surface supplies that can be used for recharge purposes.

With consideration given to the reliance upon groundwater by the PAs and the varying importance of the groundwater management elements, the recommended implementation strategy is as follows:

- After public review and consideration of comments received, the final plan should be adopted by each agency.
- The SLDMWA will facilitate coordinating plan implementation among the PAs.
- Groundwater monitoring data collected annually will be provided to a consultant with expertise in hydrogeology and local groundwater conditions for review and preparation

of an annual report that will include a summary of the groundwater data, discussion of developing trends and recommendations for groundwater management strategies.

- Under the SLDMWA Activity Agreement, the Steering Committee made up of representatives of the PAs will meet at least twice a year to:
  1) Review findings of the groundwater monitoring program and developing trends,
  2) Based on the annual findings, consider and recommend that the PA's adopt new regional groundwater policies as necessary,
  3) Review particular projects being implemented or proposed by the Pas and their potential impacts, and
  4) Assist the PA's to coordinate policies and projects under the regional GMP.
- With consideration given to the identified problem areas, the committee shall establish a recommended priority list for management actions.
- Management activity groups will be formed, as needed, of those participating agencies interested in implementing certain elements of the groundwater management plan to identify specific management actions, develop budgets, and apportion costs.
- Once a year, each PA will provide a summary of the status of their ongoing programs and any proposed programs to be implemented within the following year for consideration by the PAs and for coordination purposes.
- An annual summary would be prepared to report the current state of the basin and describe the management activity that has taken place for each plan element. It would be used to keep PAs and the SLDMWA abreast of the group's activities.
- At least once a year the PAs will meet to discuss budgets and cost allocations for SLDMWA activities in facilitating and coordinating the regional monitoring program and any other SLDMWA expenditures needed to facilitate and coordinate implementing agreed upon groundwater management programs within the GMA.

This GMP is a living document and as such is expected to adapt as more information becomes available through the various programs instituted within the GMA, as conditions change, and as the needs of the PAs evolve. Thus, this implementation strategy is expected to be refined as necessary by the management committee.

Section 8
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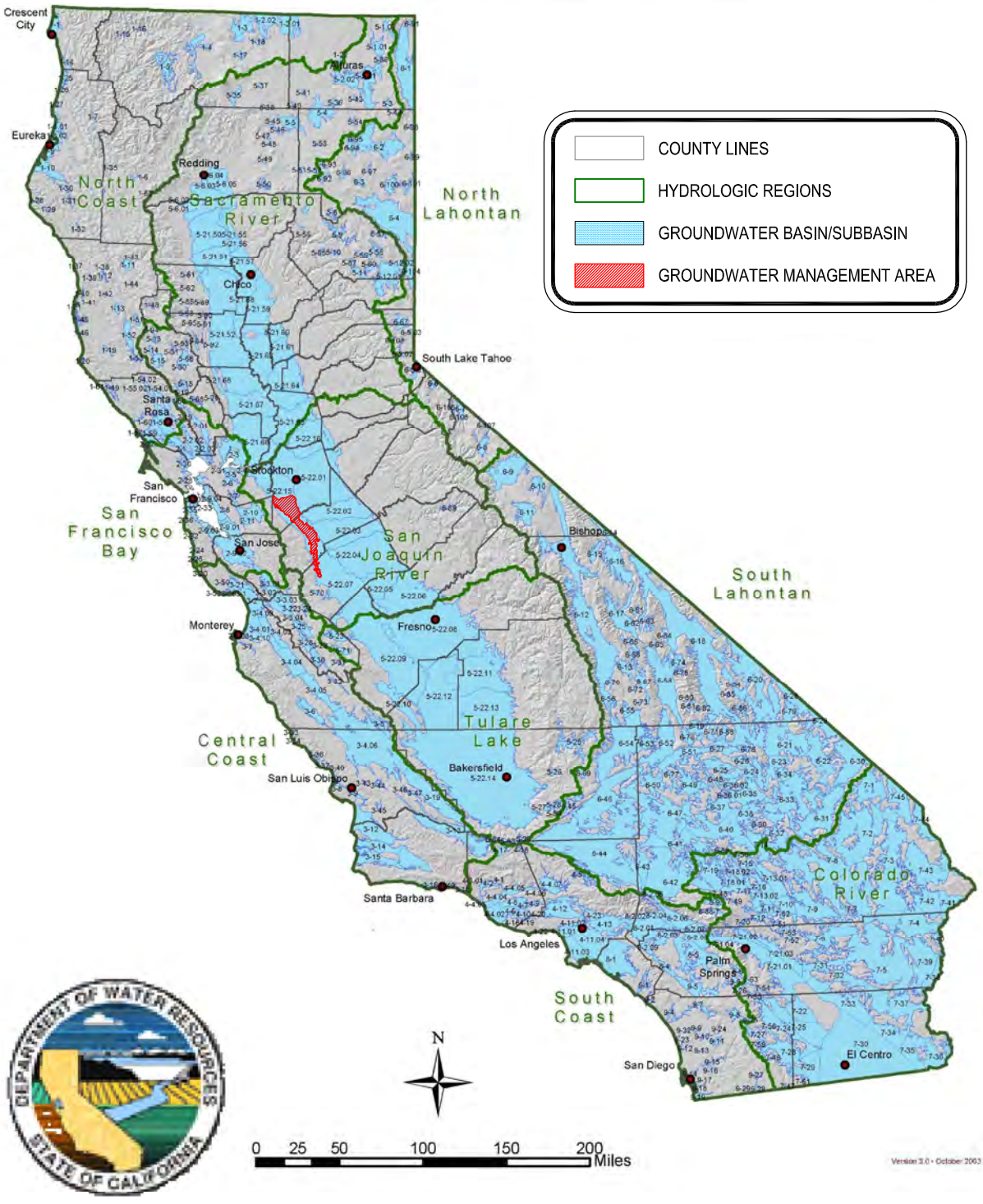
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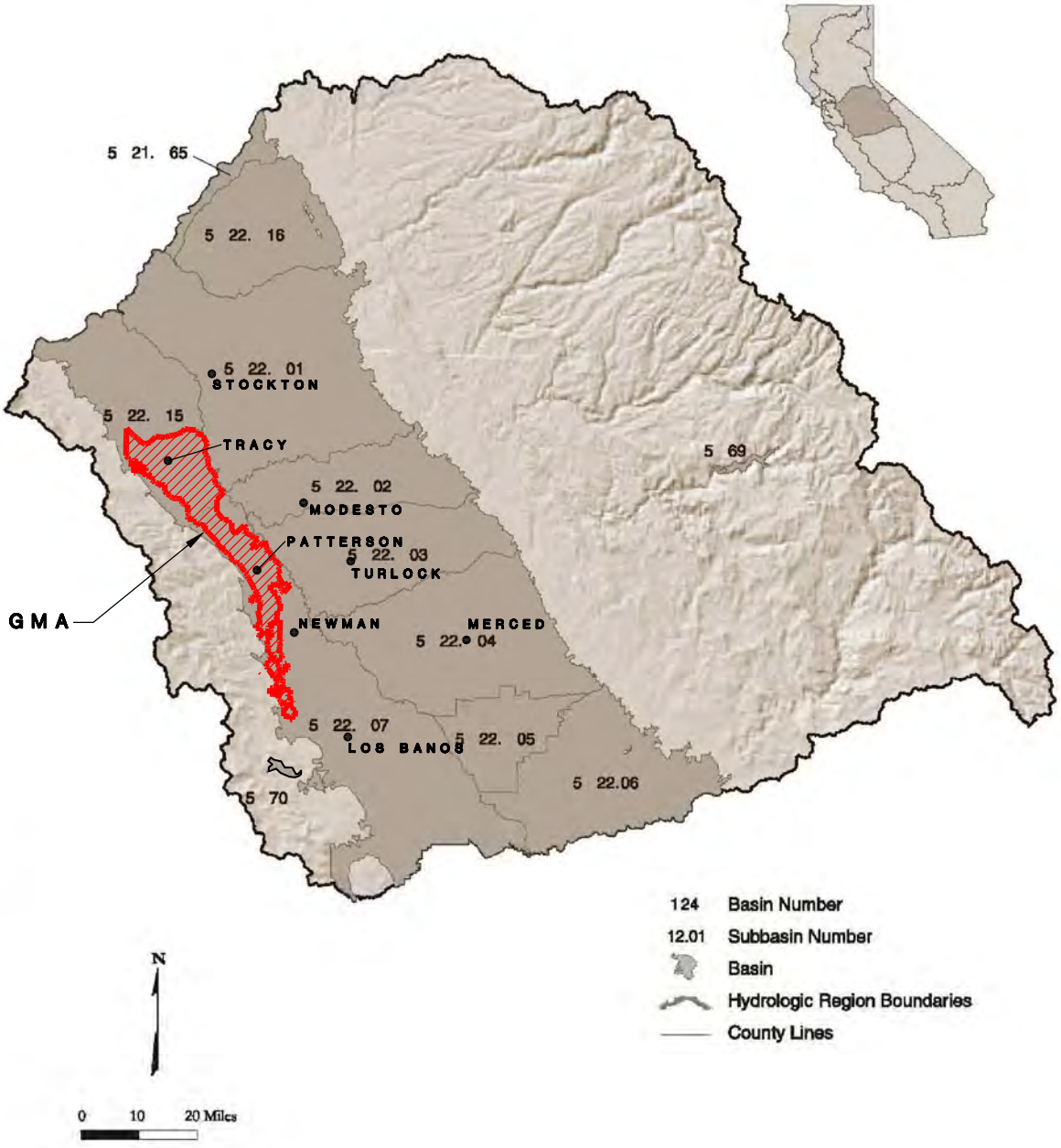
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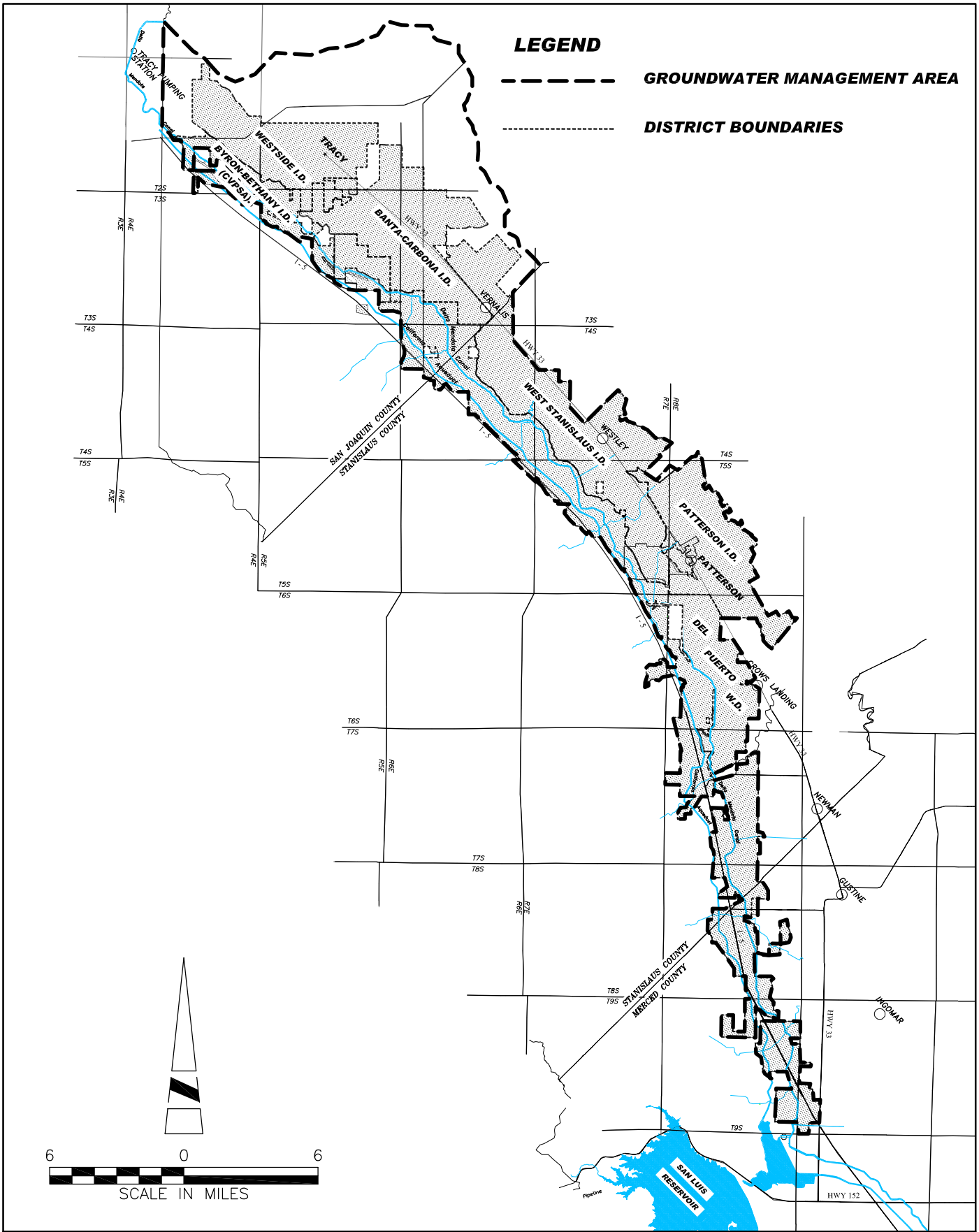
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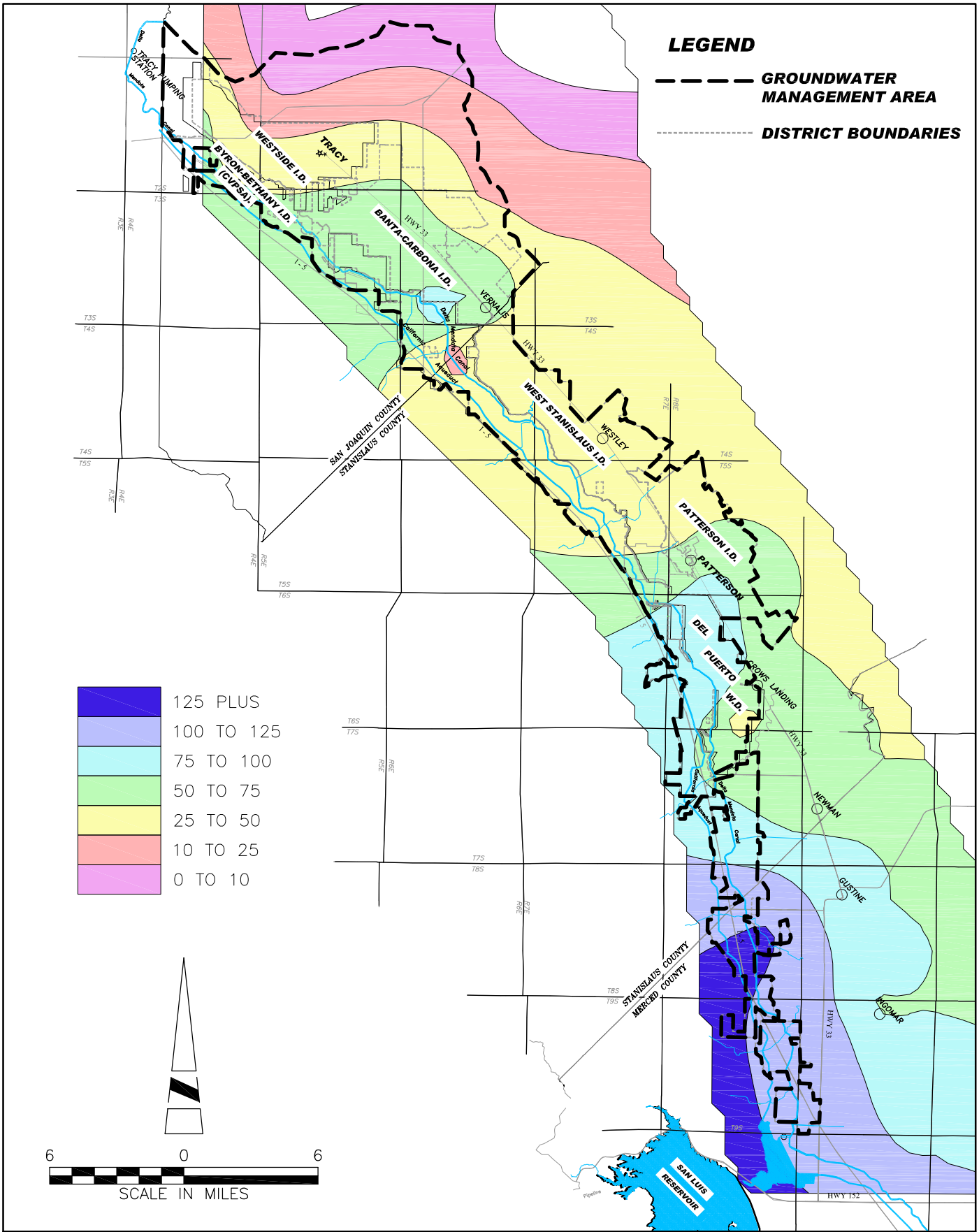
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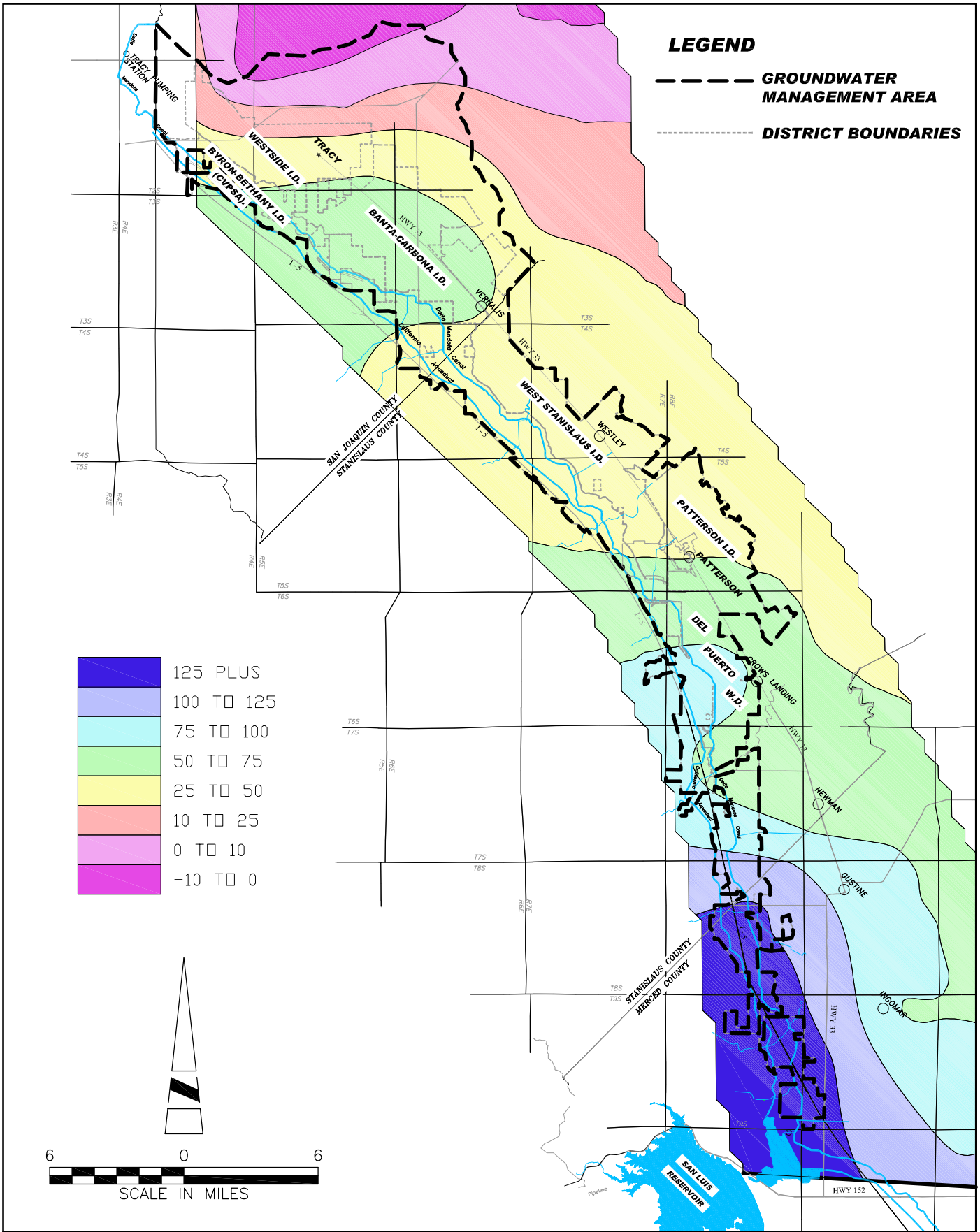
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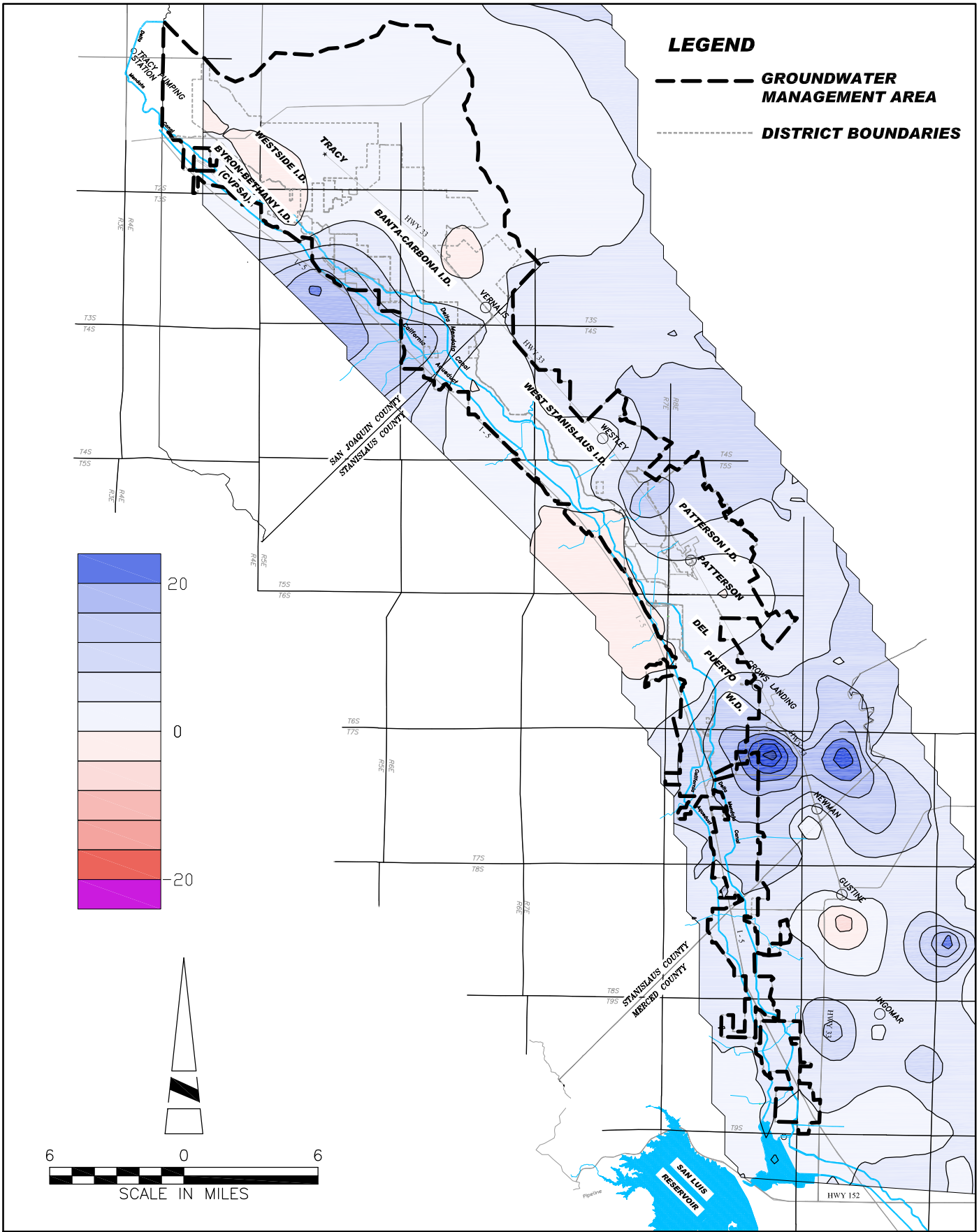
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FIGURE
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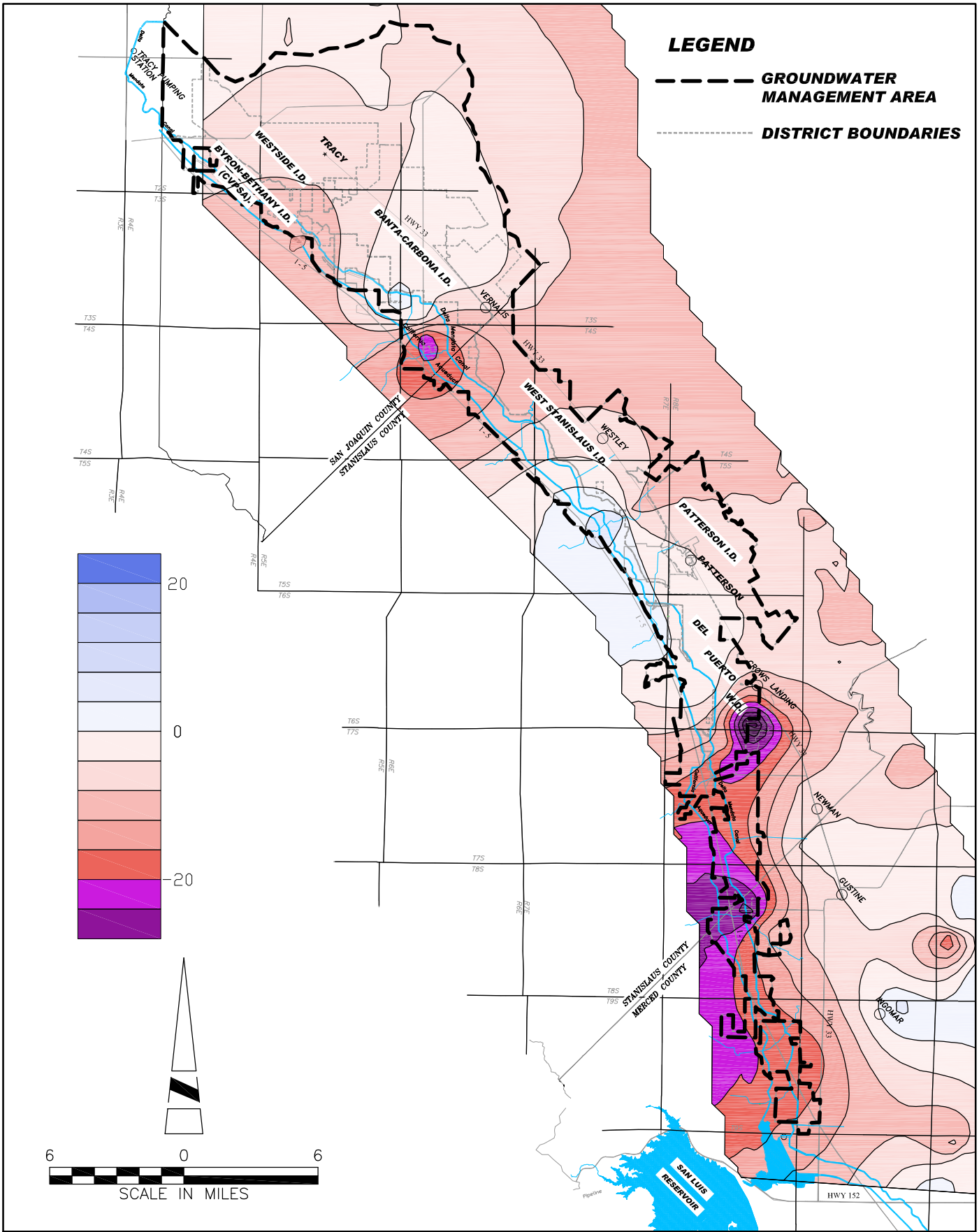
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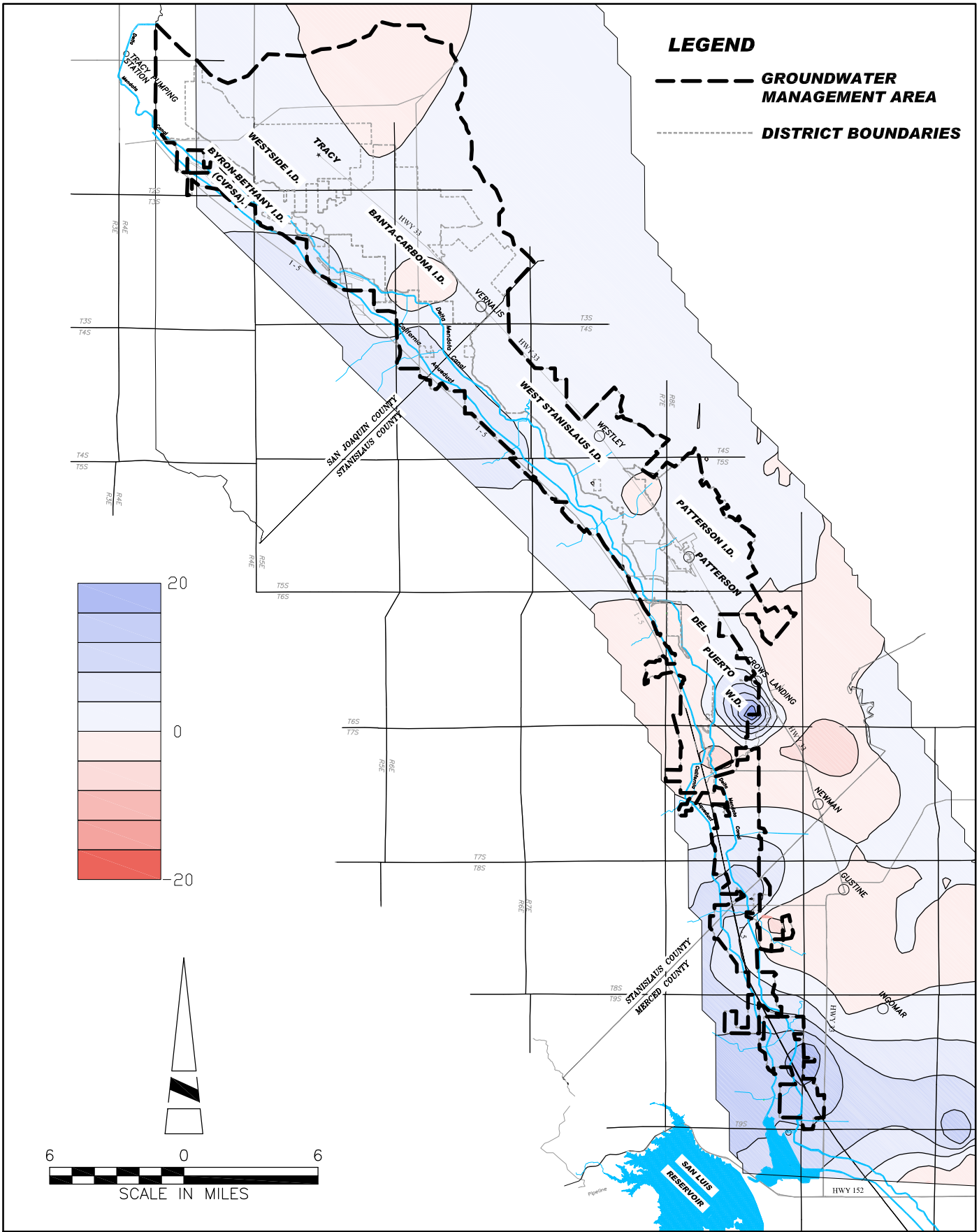
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CHANGE IN WATER TABLE ELEVATION
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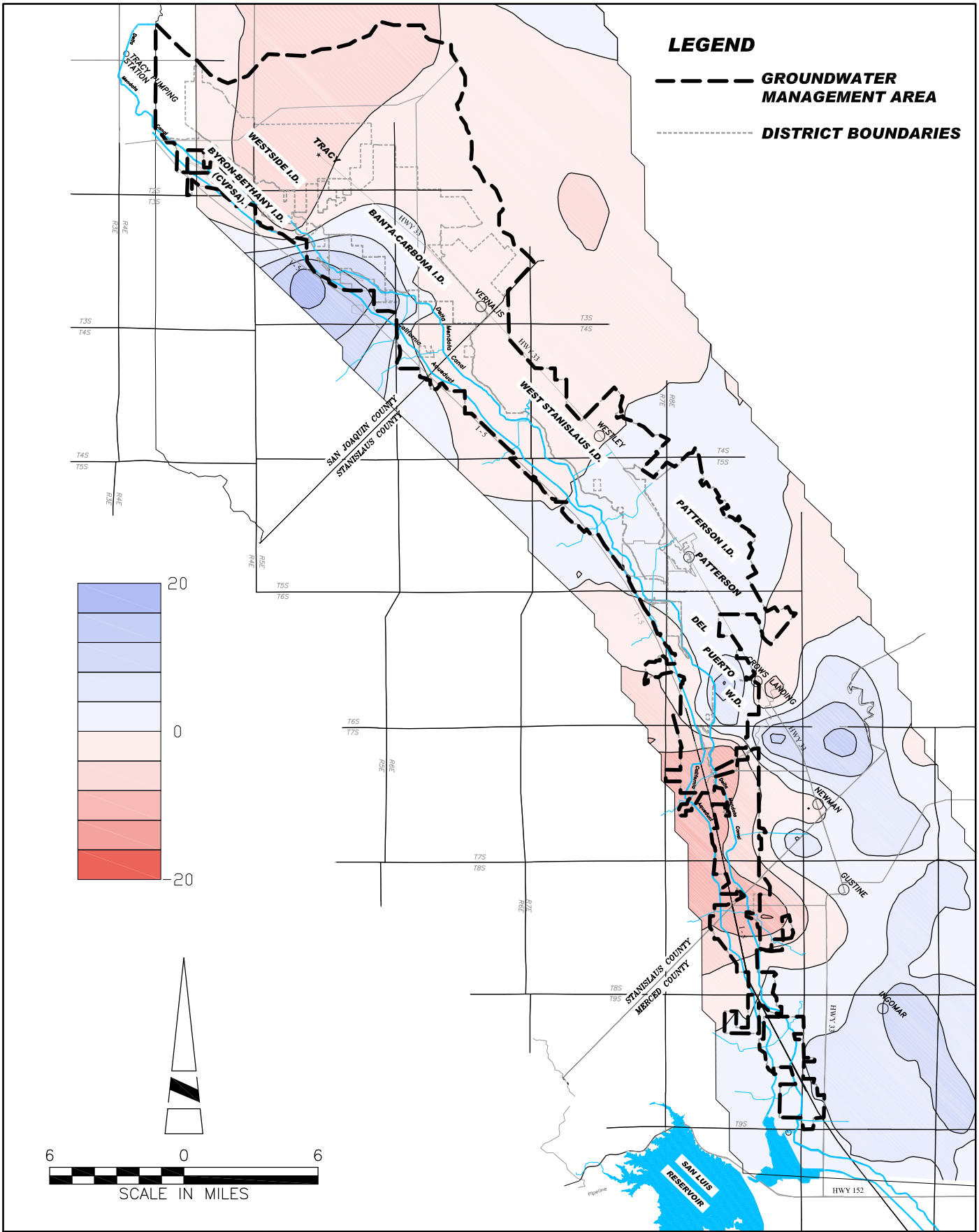
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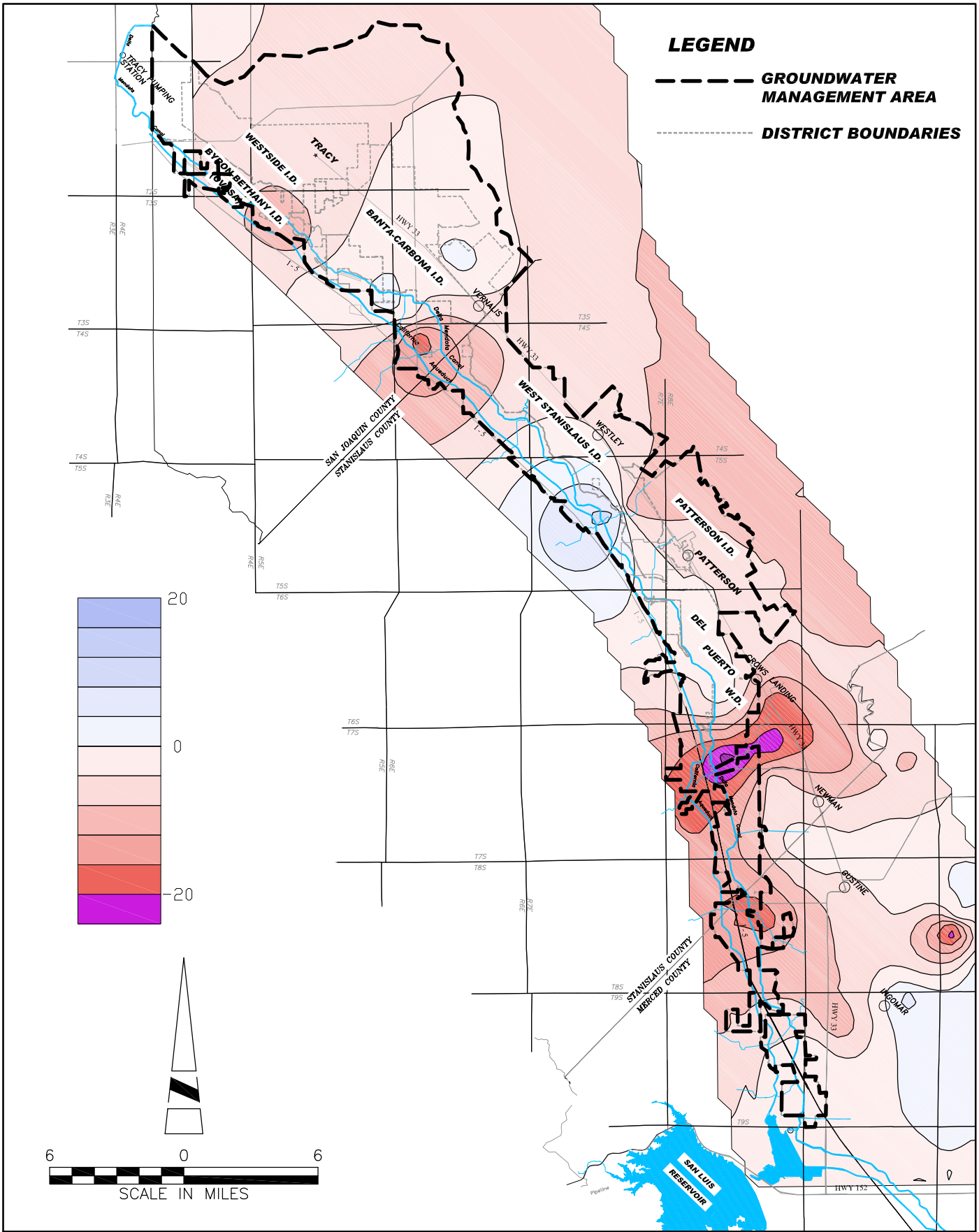
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APPENDIX A

USBR GAMA Water Quality Data for Tracy Subbasin Area

Table 4
Findings from GAMA Priority Basins Program for Tracy Subbasin Area of the Northern San Joaquin Study Area

	GAMA well identification number	Units	Threshold type	Threshold level	TRCY-01	TRCY-03	TRCY-08	TRCY-11	TRCYFP-02	TRCYFP-03	TRCYFP-04	TRCYFP-05
	Sample Date	(mm/dd/yy)	n/a	n/a	1/5/2005	1/6/2005	2/8/2005	2/17/2005	1/4/2005	1/5/2005	1/5/2005	1/5/2005
	Well head altitude	(ft above LSD)	n/a	n/a	16	207	105	26	29	22	199	45
	Year of construction		n/a	n/a	1953	1989	1997	1985	1961	n/a	1988	1989
	Well depth	(ft below LSD)	n/a	n/a	502	900	340	400	1148	400	870	990
	Top perforation	(ft below LSD)	n/a	n/a	384	420	320	310	337	n/a	420	490
	Bottom perforation	(ft below LSD)	n/a	n/a	480	890	340	400	561	n/a	850	980
Field Parameters	Total open length	(ft)	n/a	n/a	96	470	20	90	224	n/a	430	490
	Number of openings		n/a	n/a	1	1	1	2	5	n/a	1	1
	Turbidity(61028)	(NTU, field)	n/a	n/a	nc	0.2	nc	nc	0.1	nc	0.2	nc
	pH (00400)	(standard units, field)	n/a	n/a	nc	7.5	nc	nc	7.7	nc	7.5	nc
	pH (00403)	(standard units, laboratory)	n/a	n/a	nc	E6.6	nc	7.9	E7.2	7.5	7.3	7.5
	Specific conductance (00095)	(µS/cm at 25°C, field)	n/a	n/a	1880	1000	699	938	999	1060	1250	1290
	Total hardness, as CaCO3 (00900)	(mg/L, laboratory)	n/a	n/a	nc	310	nc	160	290	210	370	250
	Alkalinity, dissolved, as CaCO3 (29802)	(mg/L, field)	n/a	n/a	nc	A194	nc	nc	A122	nc	A184	nc
	Bicarbonate, dissolved, as HCO3 (63786)	(mg/L, field)	n/a	n/a	nc	A235	nc	nc	A149	nc	A224	nc
	Carbonate, dissolved, as CO3 (63788)	(mg/L, field)	n/a	n/a	nc	<1	nc	nc	<1	nc	<1	nc
Trihalomethanes	Chloroform (Trichloromethane) (32106)	(µg/L)	MCL-US	80	nc	E0.02	nc	nc	1.82	2.39	E0.02	E0.03
	Bromoform (Tribromomethane) (32104)	(µg/L)	MCL-US	80	nc	ND	nc	nc	1.2	3.8	ND	ND
	Bromodichloromethane (32101)	(µg/L)	MCL-US	80	nc	ND	nc	nc	3.06	5.91	E0.03	ND
	Dibromochloromethane (32105)	(µg/L)	MCL-US	80	nc	ND	nc	nc	2.9	6.8	ND	ND
Solvents	Tetrachloroethylene (PCE) (34475)	(µg/L)	MCL-US	5	nc	ND	nc	nc	ND	ND	ND	ND
	1,2-Dichloropropane (34541)	(µg/L)	MCL-US	5	nc	ND	nc	nc	ND	ND	ND	ND
	Trichloroethylene (TCE) (39180)	(µg/L)	MCL-US	5	nc	ND	nc	nc	ND	ND	ND	ND
	1,1-Dichloroethene (34501)	(µg/L)	MCL-CA	6	nc	ND	nc	nc	ND	ND	ND	ND
	cis-1,2-Dichloroethene (77093)	(µg/L)	MCL-CA	6	nc	ND	nc	nc	ND	ND	ND	ND
	Tetrahydrofuran (81607)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	ND	ND	ND
	Dichloromethane (34423)	(µg/L)	MCL-US	5	nc	ND	nc	nc	ND	E0.03	ND	ND
	Dibromomethane (30217)	(µg/L)	n/a	n/a	nc	ND	nc	nc	0.14	0.38	ND	ND
	trans-1,2-Dichloroethene (34546)	(µg/L)	MCL-CA	10	nc	ND	nc	nc	ND	0	ND	ND
	Tetrachloromethane (Carbon tetrachloride) (32102)	(µg/L)	MCL-CA	0.5	nc	ND	nc	nc	E0.02	0	ND	ND

	GAMA well identification number	Units	Threshold type	Threshold level	TRCY-01	TRCY-03	TRCY-08	TRCY-11	TRCYFP-02	TRCYFP-03	TRCYFP-04	TRCYFP-05
Gasoline	Ethylbenzene (34371)	(µg/L)	MCL-CA	300	nc	ND	nc	nc	ND	0	ND	ND
	Methyl tertbutyl ether (MTBE) (78032)	(µg/L)	MCL-US	13	nc	ND	nc	nc	ND	0	ND	ND
	Benzene (34030)	(µg/L)	MCL-CA	1	nc	ND	nc	nc	ND	0	ND	ND
	Methyl tertpentyl ether (50005)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	0	ND	ND
	Toluene (34010)	(µg/L)	MCL-CA	150	nc	ND	nc	nc	ND	V0.01	ND	V0.01
	m-and p- Xylene (85795)	(µg/L)	MCL-CA	1750	nc	ND	nc	nc	ND	0	ND	ND
	o-Xylene (77135)	(µg/L)	MCL-CA	1750	nc	ND	nc	nc	ND	ND	ND	ND
Organic synthesis	1,1-Dichloroethane (34496)	(µg/L)	MCL-US	5	nc	ND	nc	nc	ND	ND	ND	ND
	1,2,4-Trimethylbenzene (77222)	(µg/L)	NL	330	nc	E0.08	nc	nc	ND	ND	E0.09	ND
	Carbon disulfide (77041)	(µg/L)	NL	160	nc	ND	nc	nc	ND	ND	ND	ND
	Styrene (77128)	(µg/L)	MCL-US	100	nc	ND	nc	nc	ND	ND	ND	ND
Refrigerants	Bromochloromethane (77297)	(µg/L)	HA-L	9	nc	ND	nc	nc	ND	0.24	ND	ND
	Trichlorofluoromethane (CFC-11) (34488)	(µg/L)	MCL-CA	100	nc	ND	nc	nc	ND	ND	ND	ND
	Dichlorodifluoromethane (CFC-12) (34668)	(µg/L)	NL	1000	nc	ND	nc	nc	ND	ND	ND	ND
	Chloromethane (34418)	(µg/L)	HA-L	30	nc	ND	nc	nc	ND	ND	ND	ND
Tentatively identified compounds with CAS numbers1	Cyclopentane (287-92-3)	(µg/L)	n/a	n/a	nc	0.1	nc	nc	nc	nc	nc	nc
	Methane chlorodifluoro (75-45-6)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Methane dichlorofluoro (75-43-4)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	C5-Alkene (109-67-1)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	C2-cyclopropane (1191-96-4)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Sulfur dioxide (7446-09-5)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Hexafluoropropene (116-15-40)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Pentafluoropropene (690-27-7)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Hexafluoropropene and CO2	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Pentafluoropropene and CO2	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Unknown (a)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	C1-Cyclobutane (598-61-8)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc
	Unknown (b)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nc	nc	nc	nc

	GAMA well identification number	Units	Threshold type	Threshold level	TRCY-01	TRCY-03	TRCY-08	TRCY-11	TRCYFP-02	TRCYFP-03	TRCYFP-04	TRCYFP-05
Herbicides	Simazine (04035)	(µg/L)	MCL-US	4	nc	nc	nc	nc	ND	nc	nc	nc
	Atrazine (39632)	(µg/L)	MCL-CA	1	nc	nc	nc	nc	ND	nc	nc	nc
	11,2-Dibromo-3-chloropropane (DBCP) (82625)	(µg/L)	MCL-US	0.2	nc	nc	nc	nc	ND	nc	nc	nc
	2Diphenamid (04033)	(µg/L)	HA-L	200	nc	nc	nc	nc	ND	nc	nc	nc
	Hexazinone (04025)	(µg/L)	HA-L	400	nc	nc	nc	nc	E0.008	nc	nc	nc
	Metolachlor (39415)	(µg/L)	HA-L	100	nc	nc	nc	nc	0.006	nc	nc	nc
	Tebuthiuron (82670)	(µg/L)	HA-L	500	nc	nc	nc	nc	ND	nc	nc	nc
	Trifluralin (82661)	(µg/L)	HA-L	5	nc	nc	nc	nc	ND	nc	nc	nc
	11,2-Dibromoethane (EDB) (77651)	(µg/L)	MCL-US	0.05	nc	nc	nc	nc	ND	nc	nc	nc
	2Imazaquin (50356)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
	Phorate (82664)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
Pesticide degradates	2-Chloro-4-isopropylamino- 6-aminos-triazine (deethylatrazine) (04040)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
	22-Chloro-6-ethylamino-4-amino-striazine (deisopropylatrazine) (04038)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
	2,6-Diethylaniline (82660)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
	3,4-Dichloroaniline (61625)	(µg/L)	n/a	n/a	nc	nc	nc	nc	ND	nc	nc	nc
Wastewater-indicator Constituents	Isophorone (34409)	(µg/L)	HA-L	100	nc	E0.1	nc	nc	nq	nc	nq	nc
	Benzophenone (62067)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	nc	ND	nc
	4-Nonylphenol (62085)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	nc	ND	nc
	1Caffeine (50305)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	nc	ND	nc
	Bisphenol A (62069)	(µg/L)	n/a	n/a	nc	ND	nc	nc	ND	nc	ND	nc
	Tris (dichloroisopropyl) phosphate (62088)	(µg/L)	n/a	n/a	nc	ND	nc	nc	nq	nc	ND	nc
	2Phenol (34466)	(µg/L)	HA-L	2000	nc	V0.7	nc	nc	ND	nc	ND	nc

	GAMA well identification number	Units	Threshold type	Threshold level	TRCY-01	TRCY-03	TRCY-08	TRCY-11	TRCYFP-02	TRCYFP-03	TRCYFP-04	TRCYFP-05
	Bromide, dissolved (71870)	(mg/L)	n/a	n/a	nc	0.39	nc	0.51	0.44	0.46	0.5	0.71
	Calcium, dissolved (00915)	(mg/L)	n/a	n/a	nc	80.9	nc	38.5	66.5	49	94	57.9
	Chloride, dissolved (00940)	(mg/L)	SMCL-US	250	nc	102	nc	82.1	114	126	124	168
	Fluoride, dissolved (00950)	(mg/L)	MCL-US	2	nc	0.2	nc	E0.1	0.2	0.1	0.2	0.1
	Iodide, dissolved (71865)	(mg/L)	n/a	n/a	nc	0.015	nc	0.12	0.017	0.044	0.016	0.032
	Magnesium, dissolved (00925)	(mg/L)	n/a	n/a	nc	26.8	nc	16.2	30.6	21.9	33.2	24.7
	Potassium, dissolved (00935)	(mg/L)	n/a	n/a	nc	3.17	nc	3.39	4	3.67	3.41	4.49
	Silica, dissolved (00955)	(mg/L)	n/a	n/a	nc	23.4	nc	34.3	21.3	24	24.8	20.1
	Sodium, dissolved (00930)	(mg/L)	n/a	n/a	nc	138	nc	134	120	145	156	170
	Sulfate, dissolved (00945)	(mg/L)	SMCL-US	250	nc	248	nc	191	252	223	309	244
	Total dissolved solids (residue on evaporation) (70300)	(mg/L)	SMCL-US	500	nc	751	nc	604	721	675	889	778
	Aluminum, dissolved (01106)	(µg/L)	MCL-US	1000	nc	ND	nc	3	ND	E3	E1	ND
	Antimony, dissolved (01095)	(µg/L)	MCL-US	6	nc	ND	nc	ND	ND	ND	ND	ND
	Arsenic, dissolved (01000)	(µg/L)	MCL-US	10	nc	0.8	nc	7.2	1.3	2.5	0.8	1.7
	Barium, dissolved (01005)	(µg/L)	MCL-CA	1000	nc	25	nc	44	30	28	26	26
	Beryllium, dissolved (01010)	(µg/L)	MCL-US	4	nc	ND	nc	ND	ND	ND	ND	ND
	Boron, dissolved (01020)	(µg/L)	NL	1000	nc	2190	nc	916	1340	1180	2310	1180
	Cadmium, dissolved (01025)	(µg/L)	MCL-US	5	nc	ND	nc	ND	ND	ND	ND	ND
	Chromium, dissolved (01030)	(µg/L)	MCL-CA	50	nc	7.2	nc	ND	6.7	1.2	7.1	1.9
	Cobalt, dissolved (01035)	(µg/L)	n/a	n/a	nc	0.247	nc	0.107	0.211	0.142	0.29	0.163
	Copper, dissolved (01040)	(µg/L)	MCL-US	11300	nc	3	nc	1.1	3	1.2	3.8	1.1
	Iron, dissolved (01046)	(µg/L)	SMCL-US	300	nc	E4	nc	8	E3	9	15	ND
	Lead, dissolved (01049)	(µg/L)	MCL-US	115	nc	0.89	nc	0.27	1.15	0.44	1	0.65
	Lithium, dissolved (01130)	(µg/L)	n/a	n/a	nc	32.3	nc	5.4	20.8	16.6	35.3	18.8
	Manganese, dissolved (01056)	(µg/L)	NL	500	nc	VE0.2	nc	194	ND	1.9	1.5	2.1
	Mercury, dissolved (71890)	(µg/L)	MCL-US	2	nc	ND	nc	nc	E0.01	nc	ND	nc
	Molybdenum, dissolved (01060)	(µg/L)	HA-L	40	nc	1.9	nc	4.5	1.5	2.3	1.8	1.5
	Nickel, dissolved (01065)	(µg/L)	MCL-CA	100	nc	0.77	nc	1.11	0.8	1.7	1.05	1.44
	Selenium, dissolved (01145)	(µg/L)	MCL-US	50	nc	1.2	nc	0.7	1.3	1.7	1.6	3.2
	Strontium, dissolved (01080)	(µg/L)	HA-L	4000	nc	1060	nc	664	1630	1190	1310	1590
	Thallium, dissolved (01057)	(µg/L)	MCL-US	2	nc	ND	nc	ND	ND	ND	ND	ND
	Tungsten, dissolved (01155)	(µg/L)	n/a	n/a	nc	ND	nc	0.6	ND	ND	ND	ND

Inorganic Constituents

GAMA well identification number	Units	Threshold type	Threshold level	TRCY-01	TRCY-03	TRCY-08	TRCY-11	TRCYFP-02	TRCYFP-03	TRCYFP-04	TRCYFP-05
Uranium, dissolved (22703)	(µg/L)	MCL-US	30	nc	3.37	nc	0.21	1.69	1.05	3.68	0.97
Vanadium, dissolved (01085)	(µg/L)	NL	50	nc	2.7	nc	0.3	4.6	8.3	3.1	6.3
Zinc, dissolved (01090)	(µg/L)	HA-L	2000	nc	VE2.0	nc	10.3	12.4	17.2	2.8	3.1

Notes:

TRCY, Tracy Basin; TRCYFP, Tracy Basin flowpath

The five digit number below the constituent name is the USGS parameter code used to uniquely identify a specific constituent or property.

ft, feet; LSD, land surface datum; mm/dd/yy, month/day/year; °C, degrees Celsius; mg/L, milligram per liter; µg/L, microgram per liter; mm, millimeter; NTU, nephelometric turbidity units; µS/cm, microsiemens per centimeter

The threshold type identifies the source of the comparison threshold. The threshold level is the level with which ground-water detections are compared.

HA-L, lifetime health advisory (U.S. Environmental Protection Agency, 2004b); MCL-CA, California Department of Health Services Maximum Contaminant Level (California Department of Health Services, 2005a); MCL-US, U.S. Environmental Protection Agency Maximum Contaminant Level (U.S. Environmental Protection Agency, 2005); NL, notification level (California Department of Health Services, 2005d).

USGS, U.S. Geological Survey.

Concentrations preceded by "V" indicate detections potentially biased by contamination; A indicate averaged value; E, indicate estimated value.

n/a, not applicable or not available; nc, sample not collected, not analyzed; ND, analyzed but not detected;

Excerpts of Summary of Groundwater Conditions Report (November 2007 through November 2008)



GEI Consultants

Geotechnical
Environmental and
Water Resources
Engineering

Summary of Groundwater Conditions

November 2007 through November 2008

Prepared for:
City of Tracy

Date: January 23, 2009
Project No: 082910

GEI Consultants

January 23, 2009

Mr. Steve Bayley
Assistant Director of Public Works
City of Tracy
520 Tracy Boulevard
Tracy, CA 95377

Dear Mr. Bayley:

Re: Summary of Groundwater Conditions
November 2007 through November 2008

GEI Consultants, Inc., Bookman-Edmonston Division is pleased to submit this Summary of Groundwater Conditions Report for the City of Tracy. This report describes the evolution of monitoring, development of groundwater management, a brief discussion of the aquifers, and the purpose for monitoring the groundwater. The report also includes a description of the monitoring network, presents monitoring data, interprets the data for both the confined and unconfined aquifers and contains recommendations for future monitoring efforts.

If you have any questions pertaining to this report, please contact Mr. Shatz at 916-631-4566.

Sincerely,

GEI CONSULTANTS, INC.

Justin Crose
Staff Geologist

Richard W. Shatz, C.HG. 84
Senior Hydrogeologist

Enclosure

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1 Introduction

The City of Tracy (City or Tracy) recognizes the importance and value of groundwater and is taking a lead role to protect this resource. In 2006, the City led the development of the Tracy Regional Groundwater Management Plan (GMP) for the Tracy Groundwater Subbasin. Other major groundwater users in the subbasin (stakeholders) also participated and as a group are committed to managing groundwater in the subbasin. The GMP recommended that stakeholders monitor the groundwater conditions in each of their respective areas and share the results to cooperatively manage the resource. This report summarizes groundwater levels, groundwater quality, and ground subsidence conditions beneath the City for the period of November 1, 2007, through November 31, 2008. Our interpretations are based on available data and may be revised as additional information is collected.

1.1 Location

The City of Tracy is located near the west-central portion of the Central Valley providence, a large topographic trough located in the center of California (USGS 1971). The Central Valley is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. Underlying the Central Valley are extensive groundwater aquifers used by agriculture and rural and urban residents, including those in Tracy. This large aquifer is subdivided into basins and subbasins. The City is located near the center of the Tracy groundwater subbasin and is one of the largest groundwater users. Figure 1 shows the general location of the City.

The City is located in San Joaquin County about 15 miles southwest of Stockton, California. It is surrounded by open farmland to the east, the Coast Ranges to the south and west, and the Bay-Delta to the north. The southern portion of the City is adjacent to the Delta-Mendota Canal and the State Water Project canals. The City's airport, water treatment plant, and four of its production wells are also adjacent to the canals. Major roadways providing access to Tracy include Highway 205 from the north, Interstate 5 from the east, and Highway 580 from the south and west. Figure 1 shows these roadways.

1.2 Background

The City adopted an Urban Management Plan in July 2006. The plan directs growth in Tracy to ensure that growth is well planned and managed for the benefit of the current and projected future population.

Currently, the City obtains water from both surface water and groundwater sources. As a public water purveyor, it exercises its appropriative and overlying rights to use

groundwater for beneficial use by the public. The City obtains surface water from the Delta-Mendota Canal and the Stanislaus River and groundwater from eight City-owned groundwater supply wells.

The City requires that all new major developments secure sufficient surface water supplies. Current surface water supplies appear adequate to meet Tracy's needs in the long term. However, groundwater provides the City with an emergency water supply source in the event of the failure or contamination of its surface water supply sources and during peak water demand months. The wells are also used when the surface water treatment is shut down for maintenance.

The City increased groundwater extraction from about 5,800 acre-feet per year to 8,000 acre-feet per year over a three-year period, from 2001 to 2004. Additional groundwater extraction continued through the completion of the South County Surface Water Supply Project (SCSWSP) in 2005 and currently continues, but at a much lesser extent. During this period of increased pumping, in order to comply with the California Environmental Quality Act, the City monitored groundwater and ground surface elevations. Eighteen monitoring wells were constructed and benchmarks were established to ensure there were no significant impacts. Over the three-year period no significant impacts were detected.

The City successfully completed the assignment of up to 10,000 acre-feet per year of water from neighboring irrigation districts during 2003. Additionally, the SCSWSP became operational during July 2005. The City began to take delivery of a portion of the SCSWSP water in August 2005. The addition of these surface water supplies enabled the City to reduce its use of groundwater and allow groundwater to be reserved for emergency use and for peak water demands during the summer months.

In 2007 the City adopted the Tracy Regional GMP, which includes continued groundwater and ground surface elevation monitoring. The results of the monitoring will provide the technical basis for identifying and implementing groundwater management actions to preserve the groundwater quality and quantity.

The GMP reported the presence of two aquifers within the subbasin. An unconfined to confined aquifer is present from ground surface to a depth of about 300 feet below ground surface (bgs). The Corcoran clay separates the unconfined aquifer from the underlying confined aquifers, which extend from about 400 to 800 feet bgs.

2 Monitoring Network

The monitoring network within the City's boundaries consists of wells and benchmarks monitored by the City and measurements from monitoring wells that are owned by other entities who are sharing their information indirectly through their reports to the California Regional Water Quality Control Board (RWQCB). In general, the other entities monitor water levels and limited water quality in the unconfined aquifer whereas the City monitors groundwater in the confined aquifer. The City also monitors established benchmarks for subsidence that is an aggregate of the effects on both the unconfined and confined aquifers. The following sections describe the current monitoring network.

2.1 Unconfined Aquifer Monitoring Network

The unconfined aquifer is being monitored by other entities at four locations within the City as shown on Figure 2. The monitoring is being performed due to releases of contaminants to the environment that may have affected the groundwater. The monitoring wells are on private property. Table 1 summarizes the well construction details for wells in the unconfined aquifer.

Static water levels are measured on a quarterly basis and reported to the RWQCB. Data releases and postings may occur within 1 to 2 months after the data are received. The water quality monitored is typically just for the contaminants of concern and does not coincide with the general parameters monitored by the City and other GMP stakeholders in the confined aquifer; this limits water quality comparisons by aquifer.

Two of the unconfined aquifer monitoring wells (BC-19 and BW-4) are adjacent to City land where the City's confined aquifer monitoring wells (MW-4 and MW-6, respectively) are located. This relation allows a direct comparison of the conditions in the unconfined to confined aquifers.

2.2 Confined Aquifer Monitoring Network

2.2.1 Production Wells

The City currently has eight active groundwater production wells, including the Lincoln well and Production Wells 1, 2, 3, 4, 5 (Lewis Manor), 6 (Ball Park), and 7 (Park & Ride). Production Well 2 had been inactive since December 2005, but became active again in February 2008. The Tidewater well is out of service due to sanding problems. Production Well 8 is reserved for aquifer storage and recovery (ASR). The well is not on-line pending regulatory approval. Figure 2 shows the locations of the production wells. Table 2 summarizes the well construction details for each of these wells.

2.2.2 Monitoring Wells

Monitoring wells differ from production wells in that they are designed with shorter screen intervals (40 feet or less) to measure properties within a specific aquifer. Data from monitoring wells are considered to be representative of individual aquifer conditions and are generally of higher quality than the data obtained from production wells.

The City has two different types of monitoring wells, nested and clustered. Each type of monitoring well has a different purpose.

The nested monitoring wells assess conditions induced by pumping, including water quality, vertical gradients, and drawdown of each aquifer. Four nested monitoring wells, identified as PW-5A through PW-5D, were installed near Production Well 5 (PW-5). They can be used to monitor groundwater levels and water quality in the shallow, intermediate, deep, and deeper aquifers that are located beneath the Corcoran clay. The well depths and screened intervals for these wells are shown in Table 3.

Clustered monitoring wells were constructed in sets of three at six locations around Tracy. Their primary purpose is to monitor groundwater levels and water quality in the shallow, intermediate, and deep aquifers. In contrast to the nested monitoring wells that are located near the production wells, these wells were constructed at least one-quarter mile from the nearest production or agricultural well so that their water levels would not be influenced by pumping. Table 3 summarizes the monitoring well construction details for the wells. Figure 2 shows the locations of these monitoring wells.

Two monitoring wells were installed with Production Well 8 (PW-8). These monitoring wells have long screen intervals similar to the production well and cross several different aquifers, all below the E-clay. Both are within 100 feet of the production well. Since they measure an aggregate of water levels similar to the production well, these monitoring wells are not included in the monitoring network.

2.3 Benchmarks

Initially, benchmarks were to be established at each monitoring and production well, surveyed to the nearest 0.001 foot in elevation, and tied to benchmarks on the Delta-Mendota Canal. Prior to Boyle Engineering, however, the City contracted with a licensed surveyor, Stoddard and Associates, who recommended using a satellite survey for evaluating land subsidence to obtain greater precision. The accuracy of the global positioning survey (GPS), which will form the basis of the monitoring program, is in accordance with National Geodetic Survey guidelines for 2-centimeter accuracy. Alternative benchmark locations that provide the satellite with clear access to the benchmark were selected. The survey was not tied to the local Delta-Mendota Canal benchmark circuit, but was tied to a mountain benchmark that is more stable and not

affected by subsidence of the valley sediments. The subsidence survey data are expected to be of equal or better quality than what was initially planned.

Benchmarks have subsequently been established at each of the monitoring wells as well as at the access port to measure groundwater levels. The annual benchmark survey is performed in the spring of each year. Figure 2 shows the locations of the benchmarks. Tables 5 and 6 list the elevations from these surveys.

3 Groundwater Monitoring

The City implemented the monitoring program to fulfill its commitments and to continue to manage groundwater beneath the City. The following sections describe monitoring activities for this reporting period.

3.1 Unconfined Aquifer Groundwater Level Measurements

Groundwater level measurements in the unconfined aquifer were collected by the other entities at the following sites: Dick's Exxon, 7-11 convenience store #32262 (7-11 store), former Spreckels Sugar, the Tracy Army Depot, and Georgia-Pacific.

The groundwater level measurements collected at the Dick's Exxon (MW-1) and the 7-11 store (MW-2) sites were reported to the RWQCB and released to "Geotracker," an on-line data sharing program. Two groundwater level measurements were reported at MW-1 (Dick's Exxon), and three groundwater level measurements were reported at MW-2 (7-11 store) between November 2007 and November 2008.

Quarterly reports from the former Spreckels Sugar site were reported to the RWQCB; however, these reports have not been released to "Geotracker." One groundwater level measurement in April 2008 was recorded at wells BW-3, BW-4, and WP-7 during this reporting period at the former Spreckels Sugar site.

The Tracy Army Depot, located on the eastern side of the City, has three wells (LM047C, LM065C, and LM124C) screened within the unconfined aquifer. Data regarding these wells had previously not been obtained and the data received for these wells are limited to 3 groundwater level measurements at each well in 2008.

The Georgia-Pacific site, where groundwater level measurements were obtained for wells BC-19, BC-20, and MW-23 in the past, is going into closure and no groundwater level measurements have been collected since the previous Summary of Groundwater Conditions Report (November 2005 through November 2007). These wells, BC-19 in particular, are near the City's MW-4 and previously provided the evaluation of head differences in the unconfined to confined aquifers.

Appendix A contains groundwater level measurements. Figures 3 through 13 display the changes in these measurements over time.

3.2 Confined Aquifer Groundwater Level Measurements

Groundwater level measurements were obtained by the City from eight production wells (the Lincoln Park well and Production Wells 1 through 7) and 18 monitoring wells (MW-1A/B/C through MW-6A/B/C). Water level measurements were not obtained from production wells that could not be turned off for a minimum of 24 hours. Measurements taken with an ultrasonic water level were recorded to the nearest foot; those taken with an electric sounder were recorded to the nearest 0.01 foot.

Water level measurements were subtracted from the surface elevations to obtain the groundwater elevation. Table 4 lists the elevations for each well. Figures 14 through 41 show the groundwater level trends. Appendix A contains the groundwater level measurements from 2001 to present. Between November 2005 and November 2007, groundwater levels were measured sporadically, but since have been measured on a quarterly basis.

3.3 Groundwater Contouring

Groundwater level measurements in the unconfined aquifer, collected from various entities, were not consistently taken during the same months. Therefore, a groundwater contour map of the unconfined aquifer was generated using measurements collected during the months of February, March, and April 2008. Figure 42 shows the approximate groundwater contours and flow directions in the unconfined aquifer.

Groundwater measurements from the production wells and clustered monitoring wells were used to create regional groundwater contour maps for the confined aquifer. A direct comparison of water level data from the production wells and the monitoring wells results in some uncertainties because the monitoring wells are constructed into specific confined aquifers (i.e., shallow, intermediate, and deep, termed Zones A, B, and C, respectively), while the production wells have long screen intervals that collect water from all three of the confined aquifer Zones. However, using the production well water levels does show the potential local effects of pumping. Figure 43 shows the groundwater contours for all three Zones monitored in July 2008.

3.4 Production Data

In this reporting period, groundwater production data from the City's confined aquifer production wells were collected monthly. The Tidewater well was not pumped during the reporting period because of sand in the water. The production totals were recorded on a totalizing flow meter at each well. Figures 14 through 41 show the results in comparison to groundwater levels and water quality to the amount of groundwater pumped. Appendix B contains the groundwater production data from 2001 to present.

3.5 Unconfined Aquifer Water Quality Sampling

Water quality samples were collected and analyzed by different personnel and for different purposes. Each entity collected water quality samples and analyzed them for specific contaminants of concern, typically volatile organic compounds (VOCs), which have local importance to the subbasin. The general health of the subbasin is assessed through the use of inorganic compounds such as total dissolved solids (TDS), nitrate, boron, and sulfate. The other entities do not monitor for these constituents, but some of them do measure the electrical conductivity (EC), which can be used to approximate the TDS. Appendix C contains EC field measurements and the associated estimated TDS. Figures 3 through 13 display the changes in concentrations over time.

3.6 Confined Aquifer Water Quality Sampling

During this monitoring period City personnel collected groundwater samples from the confined aquifer Production Wells and clustered monitoring wells in June and July 2008.

Water quality samples from the production wells were collected from the wells while they were pumping, whereas the water quality samples from each of the clustered monitoring wells were collected using micropurge techniques. The clustered monitoring wells were purged at a rate of about 1 liter per hour until water levels, pH, and temperature stabilized and a representative sample from the aquifer could be obtained. The water from both the production wells and the clustered monitoring wells were collected directly from the pump discharge into laboratory-prepared sampling bottles.

The sample bottles were placed on ice and transported to MWH Laboratories in Pasadena, California. The samples were analyzed for major cations and anions, nitrate, boron, selected metals, and alpha activity. Appendix C contains a summary of the laboratory results. Figures 14 through 41 display the trends of the key water quality parameters.

3.7 Benchmarks

One annual benchmark survey in April 2008 was conducted by Boyle Engineering during this monitoring period. Table 5 provides the survey data results.

4 Findings

The following sections discuss the results of the groundwater and ground elevation monitoring for the reporting period of December 2007 through November 2008.

4.1 Groundwater Production

The City's wells that were pumped during this monitoring period include the Lincoln Well and Production Wells 1 through 7. The Tidewater Well is out of service because of sanding problems. Production Well 8 is being reserved for ASR pending regulatory approval and therefore was not pumped. Figures 14 through 23 show the production totals by month for each well. Appendix B contains monthly production totals for each well. The figures and data show the following:

- Cumulative production from January through October 2008 was 2,557 acre-feet. Groundwater well extractions have been reduced by about 50 to 60 percent since 2005, when the SCSWSP became operational.

- Monthly production in 2008 was the highest in March and April, reaching 449 and 442 acre-feet, respectively. Typically, July is the month with the highest amount of groundwater production; however, groundwater production in 2007 and 2008 was the highest in March and April, showing a shift in the City's pumping towards the spring months for peak groundwater usage, apparently because of the SCSWSP coming online.

4.2 Unconfined Aquifer Groundwater Levels

Groundwater level measurements from Dick's Exxon well MW-1, the 7-11 store well MW-2, former Spreckels Sugar wells BW-3, BW-4, and WP-7, and the Tracy Army Depot wells LM047C, LM065C, and LM124C show a slight cyclic seasonal change, but with little to no effect from pumping. The City does not pump water from this aquifer. Groundwater levels in the unconfined aquifer are significantly deeper at the south end of the City typically measuring about 48 feet below ground surface (bgs), whereas groundwater levels at the north end of the City were as shallow as 5 feet bgs. There appears to be a natural groundwater cycle where the water levels rise and then lower every few years. Currently groundwater levels in the unconfined 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 regards. Figures 3 through 13 present data showing groundwater level trends for each well. Georgia-Pacific wells BC-19, BC-20, and MW-23 were not measured this monitoring period.

4.3 Confined Aquifer Groundwater Levels

Groundwater level measurements for this monitoring period were collected at the Lincoln well, Production Wells 1 through 7 (no groundwater level measurements were obtained from the Tidewater well and Production Well 8), and 18 clustered monitoring wells. Figures 14 through 41 present data showing groundwater level trends for each well.

4.3.1 Production Wells

The groundwater levels recorded at the production wells (including the Lincoln well) varied considerably during this monitoring period. In general, the production wells showed the following:

- In most wells groundwater levels remained within historic ranges
- In March 2008, groundwater levels reached historic highs (since monitoring began in 2001) at Production Wells 1, 5, and 7
- Groundwater levels reached a historic low (since 2001) at Production Well 3 in September 2008

4.3.2 Clustered Monitoring Wells

As previously stated, monitoring wells at each site have been completed into different confined aquifers (i.e., shallow, intermediate, and deep, as monitored by Zone A, Zone B, and Zone C wells, respectively) in part to assess the water quality and vertical gradient between the individual aquifers that comprise the confined aquifer between 400 and 800 feet bgs. During this monitoring period groundwater levels (piezometric heads) were collected in March, June, and July 2008. The measurements collected in March and July are directly comparable to measurements collected in March and July 2007. A few trends were seen in the groundwater levels; however, there was a fair amount of variance in the trends from well to well. In general, the clustered monitoring wells showed the following:

- During March 2008, groundwater levels reached historic highs or were within a foot of the historic high at all wells (and all aquifer Zones), with the exception of MW-5A, MW-5B, and MW-5C.
- The groundwater levels in aquifer Zones A, B, and C during July 2008 were either at or within a few feet of historic highs at all wells, with the exception of MW-5A, MW-5B, and MW-5C.
- The groundwater levels in aquifer Zones B and C appear to be mostly stabilizing since 2007, whereas the groundwater levels in aquifer Zone A are on the rise in all wells with the exception of MW-5A where groundwater levels are lowering.

- The rise in groundwater levels appears to directly relate to the City's decreased pumping over the past few years since the SCSWSP started. However, groundwater levels near MW-5 appear to relate to increases in pumping wells to the east, outside the City.

- Similar to previous measurements, most monitoring wells showed a downward vertical gradient of about 4 to 13 feet between Zone A and Zone B wells. The measurements collected from MW-5A and MW-5B in July 2008 were the exception to this, having an upward gradient. It appears pumping outside of the City is predominately from Zone A where good quality water is present.

4.4 Comparison of Unconfined to Confined Aquifer

Groundwater level differences can show the vertical direction of groundwater flow if the confining bed has imperfections or wells screened across both aquifers. When combined with water quality results, it can help to explain the occurrence of poorer quality water.

A couple of the groundwater monitoring wells within the unconfined and confined aquifers are within close proximity to one another and offer a direct comparison of groundwater levels in each aquifer. Figures 44 and 45 show the relationship of the water levels in the southern and northern portions of the City. The unconfined aquifer has higher groundwater levels than the confined aquifer.

In the southern portions of the City the difference between the water levels is about 70 feet while in the northern portion, the difference is only about 20 feet. The effects of pumping within the confined aquifer are readily apparent, but are not reflected in the unconfined aquifer indicating that the Corcoran clay is an effective barrier to groundwater flow. No barrier is completely impermeable, however, and slow leakance can occur towards the lower groundwater level (head), in this case from the unconfined towards the confined aquifer.

4.5 Groundwater Contours

Groundwater contours show the horizontal direction of flow in the aquifers. The groundwater flow direction can be different in each aquifer. Figure 42 shows the groundwater contours in the unconfined aquifer for the beginning of 2008. Figure 43 shows groundwater contours in the confined aquifers for July 2008.

4.5.1 Unconfined Aquifer

The groundwater contours for the unconfined aquifer show a flow direction from the south, east, and west towards the Old River north of the City.

appear to be partially controlled by pumping. There is a consistent upward gradient at MW-5 and MW-6. At MW-5 the upward gradient could move poorer quality water from Zone C into Zone B production aquifers, even during periods when the City is not pumping. However, no evidence to date shows that this has occurred.

Groundwater contours for the confined aquifer were obtained using groundwater level measurements from the production wells and supplemented with measurements from the clustered monitoring wells. The groundwater contours in the confined aquifer show a couple different patterns. Zones B and C have a similar pattern, but are slightly different from the pattern seen in Zone A, indicating different recharge sources. The groundwater in Zone A is now flowing from west to east and has potential to draw poorer quality water from the west towards the City's production wells.

The water quality in the clustered monitoring wells located within the confined aquifers is fairly consistent with past water qualities within these wells. Many of the monitoring wells had concentrations of key indicator parameter constituents lower than historic ranges during this monitoring period; however, they were only marginally lower. The sulfate levels at MW-6 were the exception to this, being around five times lower than previous concentrations, which may likely be due to laboratory error.

Locally higher concentrations of TDS, chloride, nitrate, and sulfate are present near MW-2 and MW-5. Groundwater flow directions show pumping by the City is moving this poorer quality water towards its wells. This effect changes year to year, but overall, the condition has been present since at least 2001.

Trends in water quality in the clustered monitoring wells, in particular, MW-2B, MW-2C, MW-5B, MW-5C, and MW-6C, are important indicators in evaluating whether pumping by the City is adversely affecting water quality. With the reversal of the groundwater gradient in the Zone A aquifer (shallow confined aquifer), close attention should be paid to the water quality in MW-1A.

6 Recommendations

The South County Surface Water Supply Project is on line and the need for additional groundwater supplies appears to be diminishing. However, with predictions of drought conditions and the highly variable surface water supply, the City's groundwater supply ensures a reliable source of water. The City is also geographically located in an ideal position to implement conjunctive use. Therefore, continued groundwater monitoring is needed to protect the City's groundwater resources and begin to plan groundwater management actions.

The following monitoring actions are recommended:

- Fully implement confined aquifer groundwater monitoring activities on a routine basis.
- Include Production Well 8, the aquifer storage and recovery well (ASR), into the groundwater level monitoring network.
- Continue to closely monitor changes in MW-1, MW-2, and MW-5. Table 6 shows the monitoring frequencies.
- Continue annual benchmark surveys in the spring of each year.
- Prepare an annual report to assess the groundwater conditions.
- Increase monitoring frequency when groundwater production is anticipated to exceed 8,000 acre-feet per year.
- Work with other entities in the Basin to expand the monitoring network and sampling program.
- Coordinate Basin monitoring with other agencies collecting groundwater data in the Basin.
- Approach Georgia-Pacific to obtain permission (easement or title) to acquire groundwater measurements and quality from well BC-19. Georgia-Pacific may be in the process of wanting to destroy this well. This is a key well that allows assessment of vertical gradients between the unconfined and confined aquifers.

The following groundwater management actions should be considered and explored:

- Lead the effort to contact the Department of Water Resources to reactivate unconfined aquifer monitoring wells in the area.
- Share this report with other interested parties regarding the changes in the groundwater gradient in Zone A and the potential to move poor quality water in the area.
- Manage the water levels in the confined aquifer to maintain levels in MW-6A near or above the unconfined aquifer levels to limit potential movement of poor quality water between the aquifers.
- Perform a pilot test to assess the full potential of the confined aquifer storage by raising water levels above the groundwater levels in the unconfined aquifer to assess whether there are any negative impacts to groundwater levels within the unconfined aquifer. Groundwater levels in the confined aquifer would need to be increased by about 30 feet. Locally raising groundwater levels could prevent poor quality water from migrating in from the MW-6 area. Once proven, groundwater levels could be increased by about 100 feet, increasing the amount of stored water that could be used later by the City or through conjunctive use throughout the state, generating income for the City.
- When possible, reduce the pumping at the Lincoln and Ball Park Wells to assess the potential benefits to water quality. Reducing the pumping may limit the amount of water with high concentrations of TDS, chloride, and nitrate from migrating in from the east from the area near MW-5.
- Groundwater levels in the unconfined aquifer should be lowered to about 10 feet bgs in the northern portions of the City. However, the City's proximity to the Delta, which is a constant recharge source, makes control of the water levels more difficult. Also, because of potential poor quality water, the use or discharge of the water may be difficult. Potential actions could include construction of shallow irrigation wells to water City parks and schools. Sub-drains should also be considered. The effects of the confined aquifer may also be used to control water levels.

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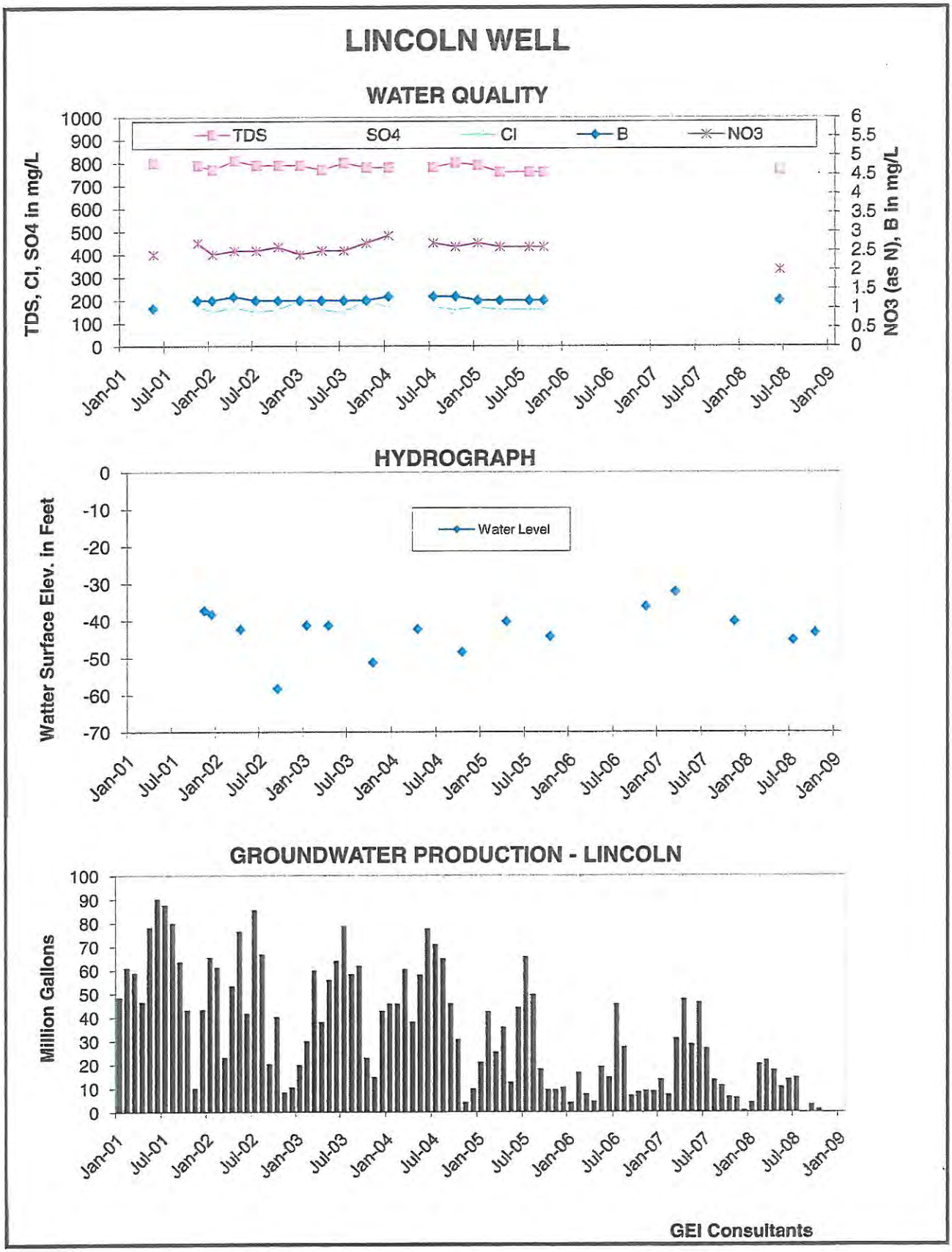

LINCOLN WELL
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
1000
900
800
700
600
500
400
300
200
100
0
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
HYDROGRAPH
Water Level
Watter Surface Elev. in Feet
0
-10
-20
-30
-40
-50
-60
-70
GROUNDWATER PRODUCTION - LINCOLN
Million Gallons
100
90
80
70
60
50
40
30
20
10
0
GEI Consultants

FIGURE 14

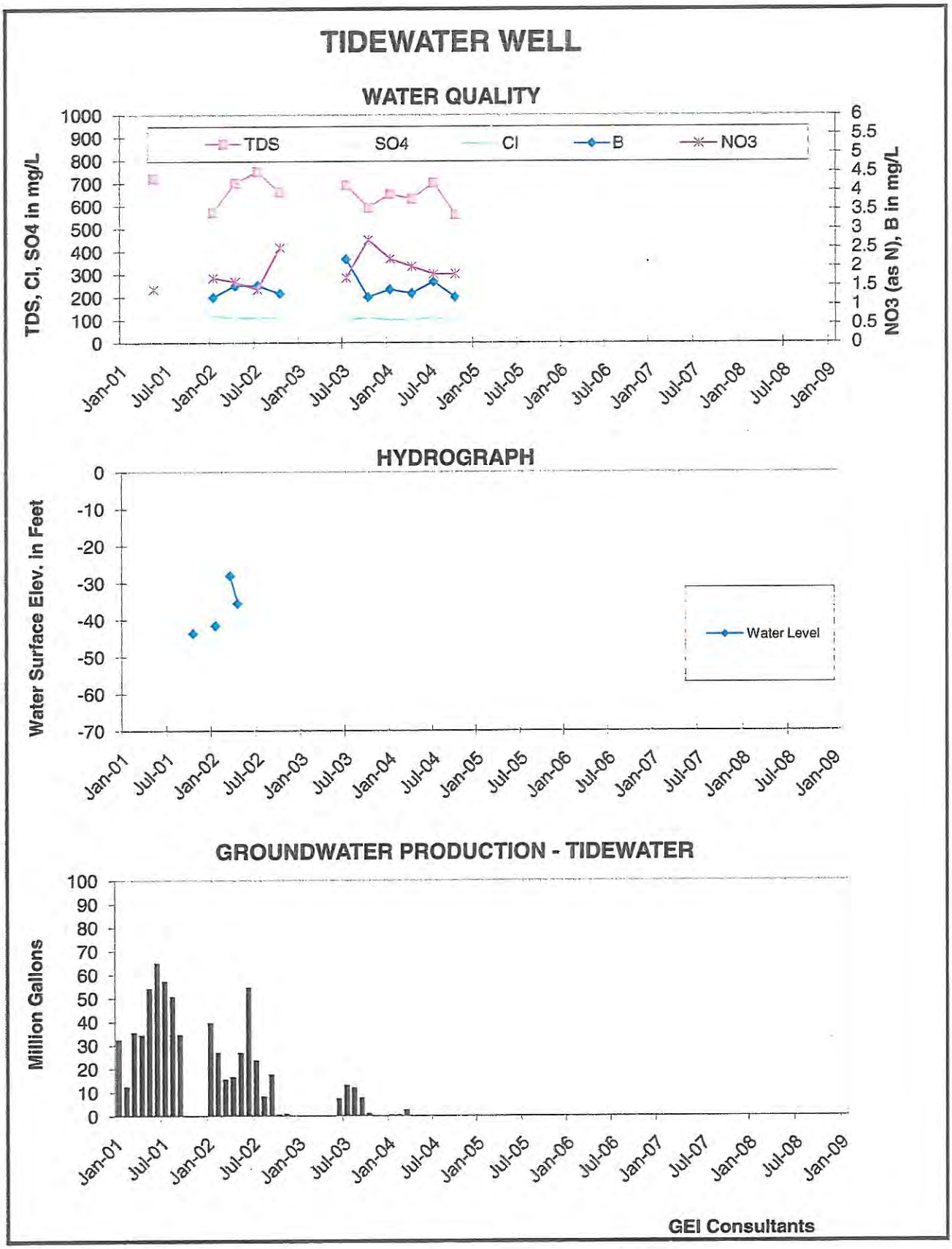

TIDEWATER WELL
WATER QUALITY
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
TDS
SO4
Cl
B
NO3
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - TIDEWATER
Million Gallons
GEI Consultants

FIGURE 15

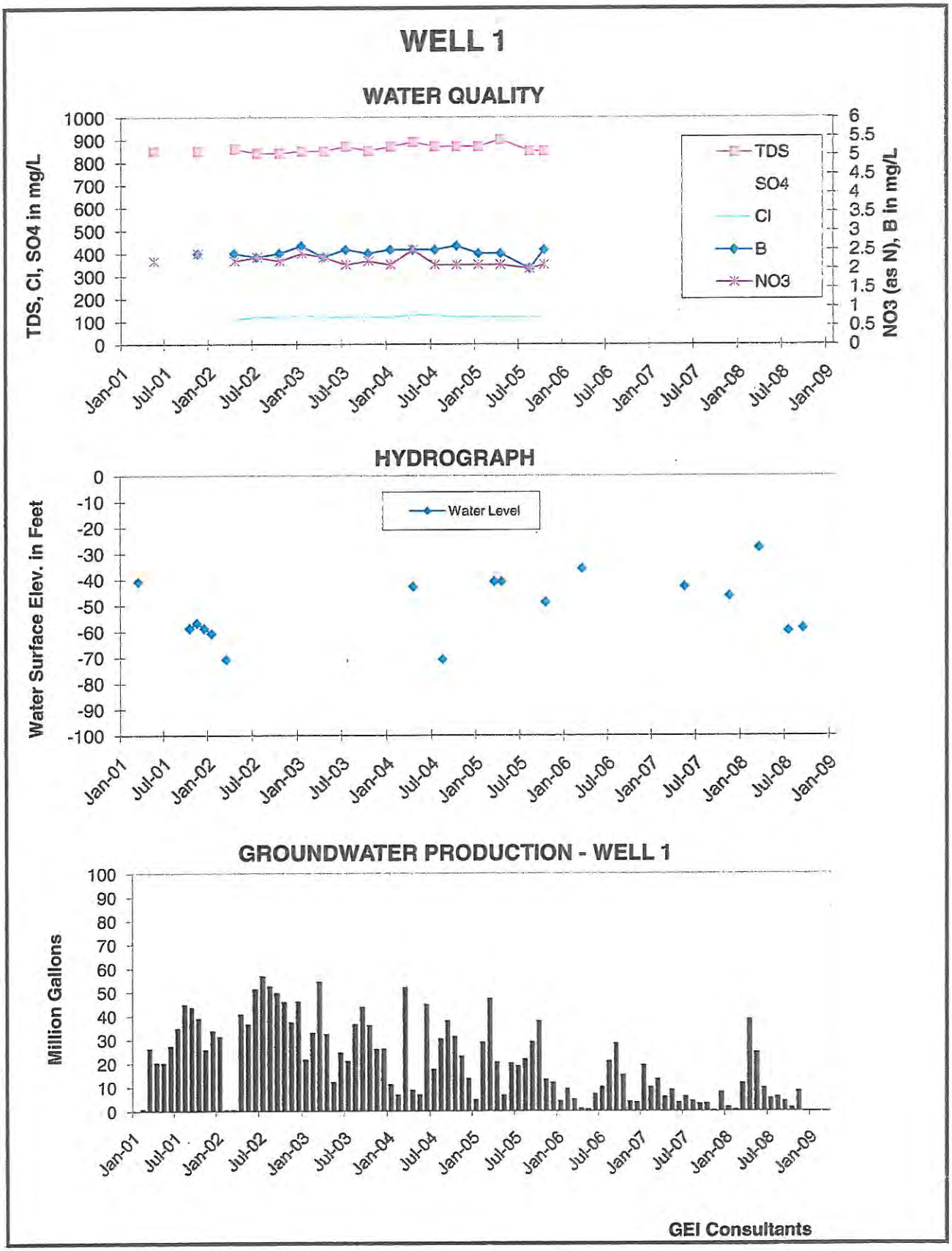

WELL 1
WATER QUALITY
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
TDS
SO4
Cl
B
NO3
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - WELL 1
Million Gallons
GEI Consultants

FIGURE 16

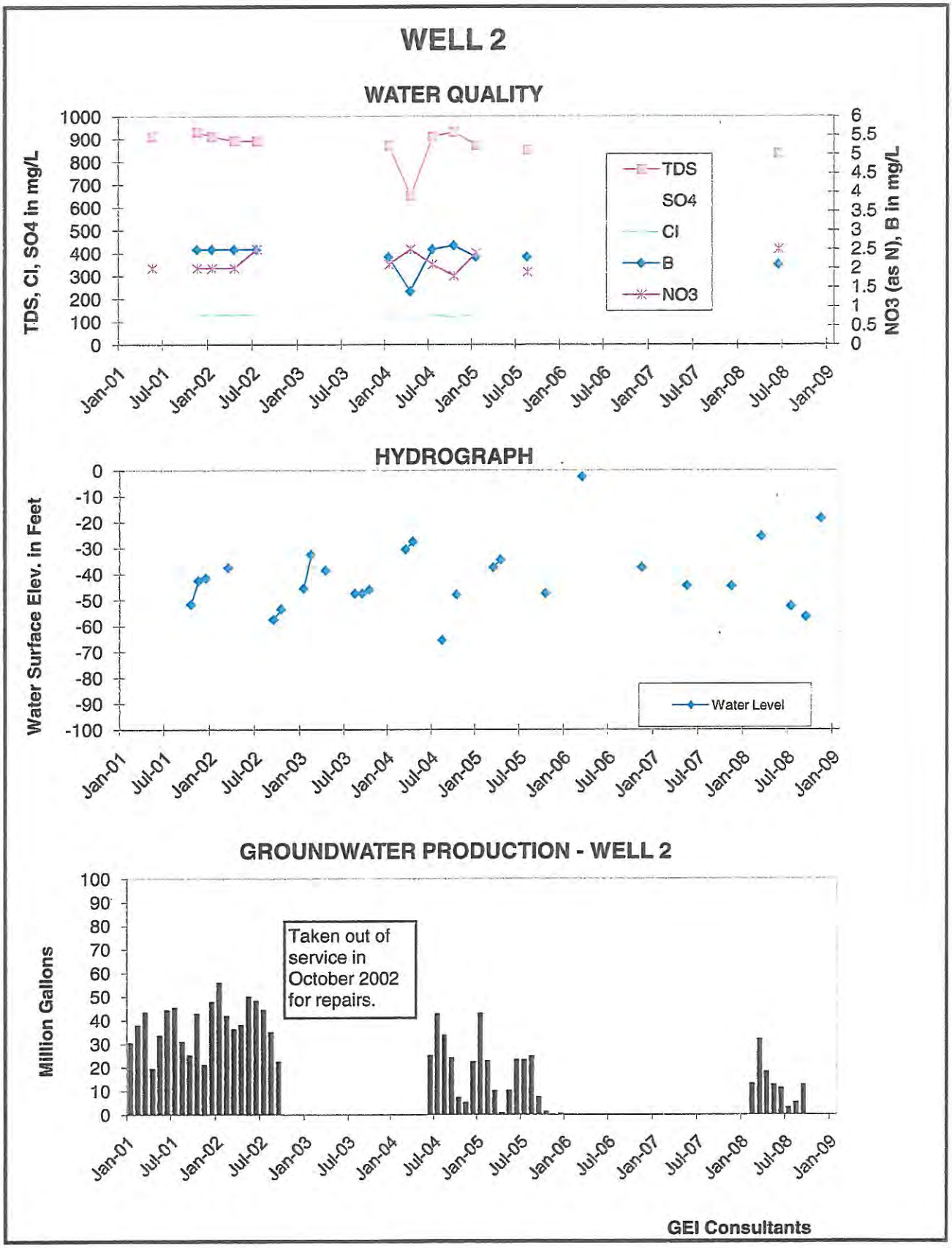

WELL 2
WATER QUALITY
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
TDS
SO4
Cl
B
NO3
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - WELL 2
Million Gallons
Taken out of service in October 2002 for repairs.
GEI Consultants

FIGURE 17

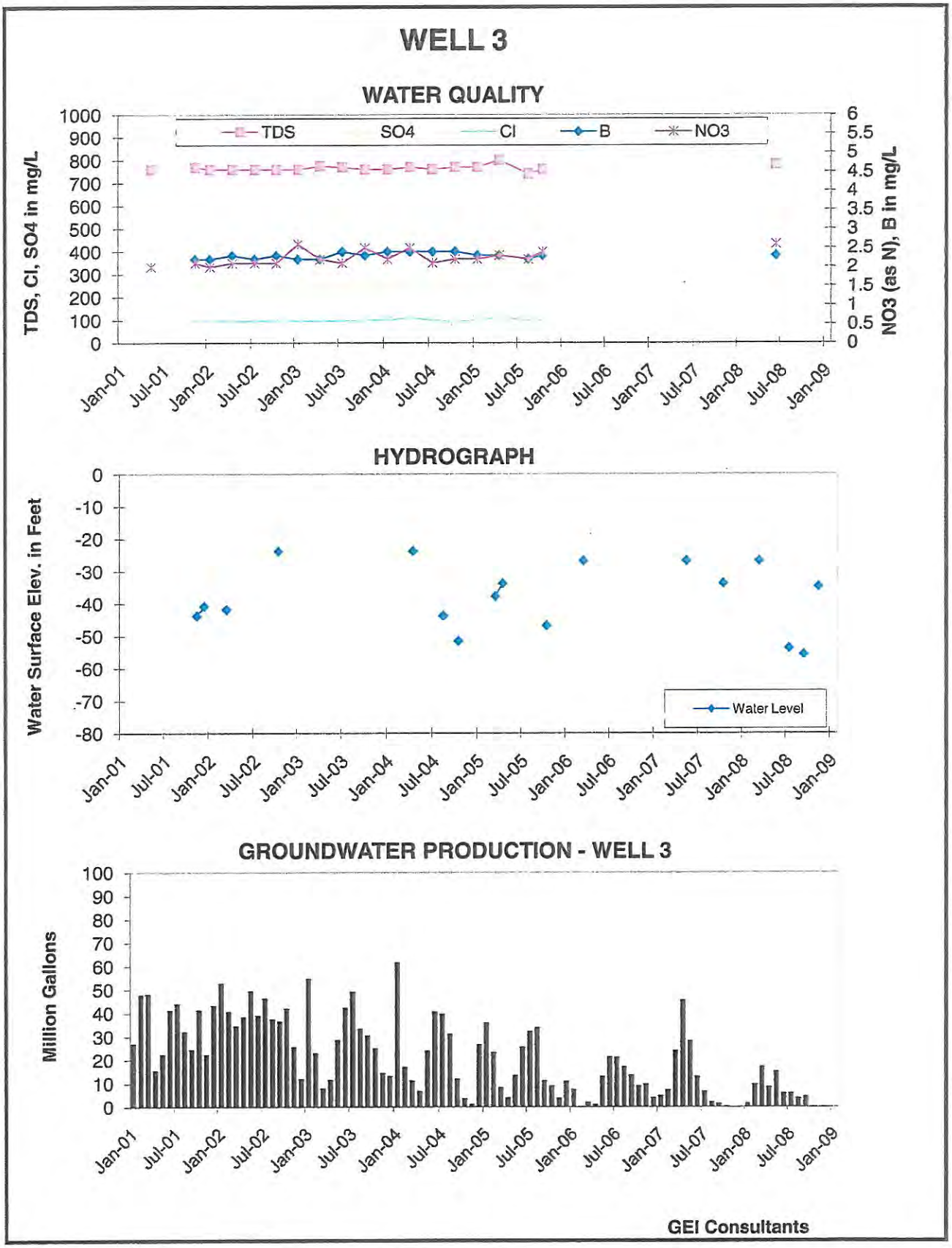

WELL 3
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
1000
900
800
700
600
500
400
300
200
100
0
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
HYDROGRAPH
Water Surface Elev. in Feet
0
-10
-20
-30
-40
-50
-60
-70
-80
Water Level
GROUNDWATER PRODUCTION - WELL 3
Million Gallons
100
90
80
70
60
50
40
30
20
10
0
GEI Consultants

FIGURE 18

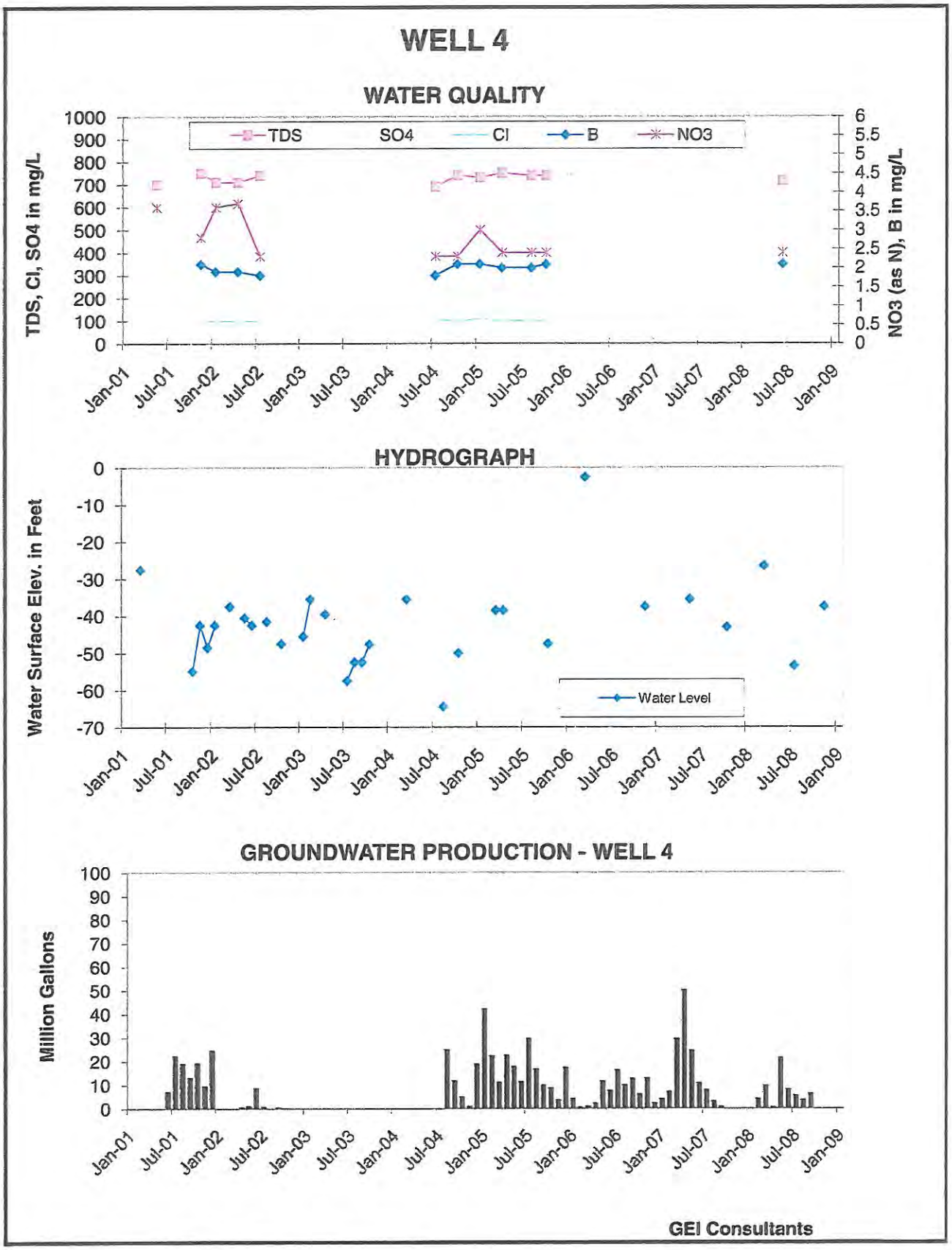

WELL 4
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - WELL 4
Million Gallons
GEI Consultants

FIGURE 19

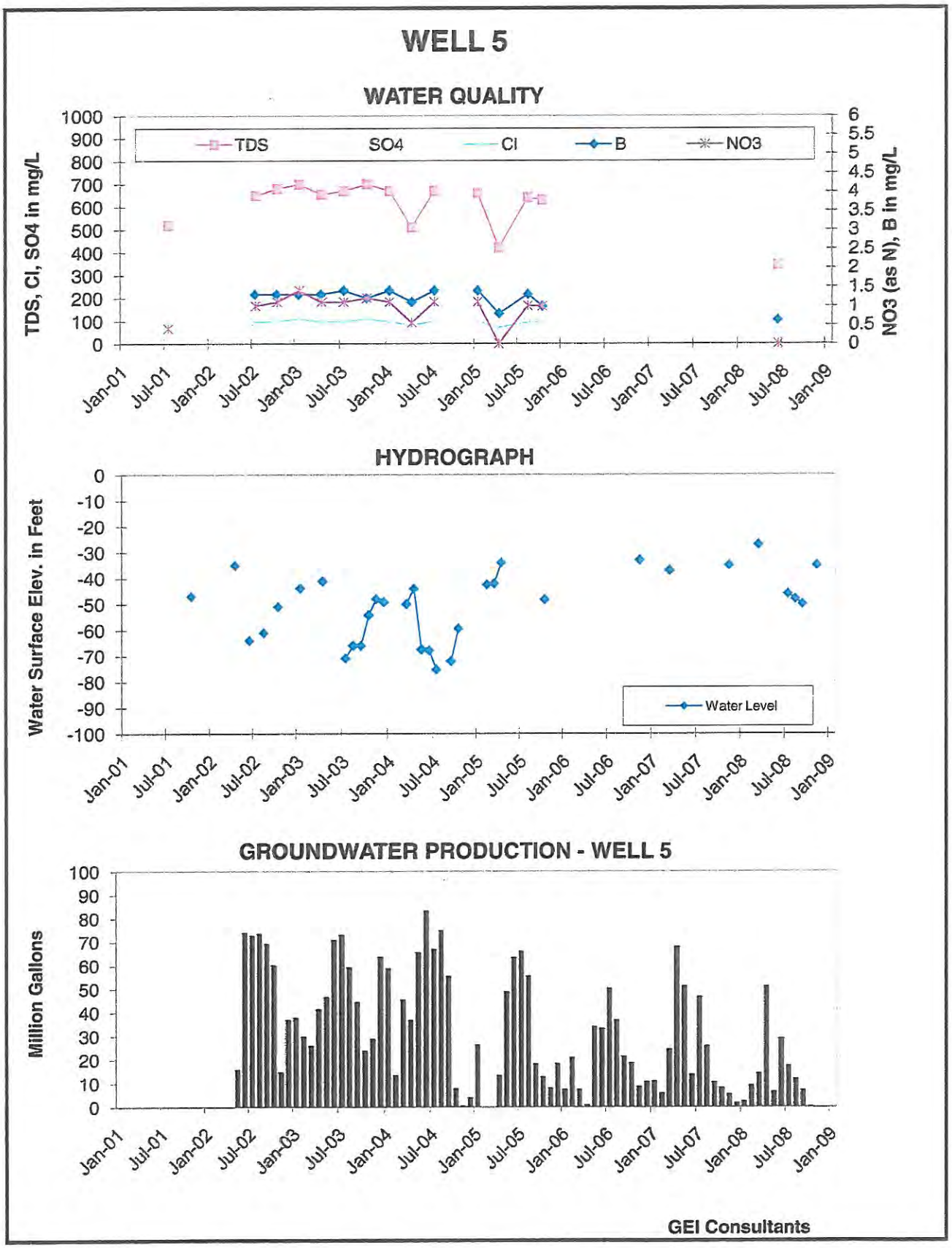

WELL 5
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - WELL 5
Million Gallons
GEI Consultants

FIGURE 20

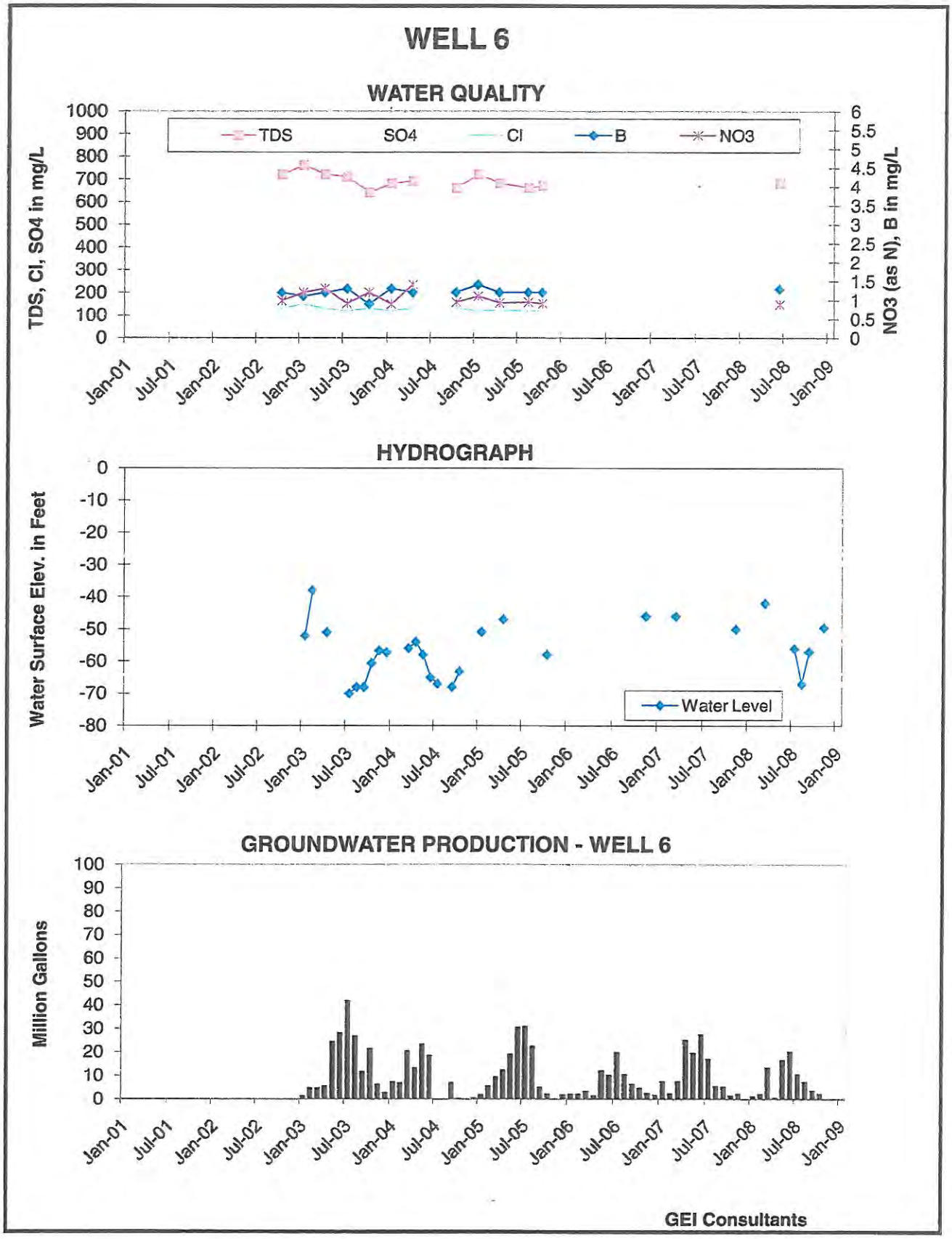

WELL 6
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
1000
900
800
700
600
500
400
300
200
100
0
6
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
HYDROGRAPH
Water Surface Elev. in Feet
0
-10
-20
-30
-40
-50
-60
-70
-80
Water Level
GROUNDWATER PRODUCTION - WELL 6
Million Gallons
100
90
80
70
60
50
40
30
20
10
0
GEI Consultants

FIGURE 21

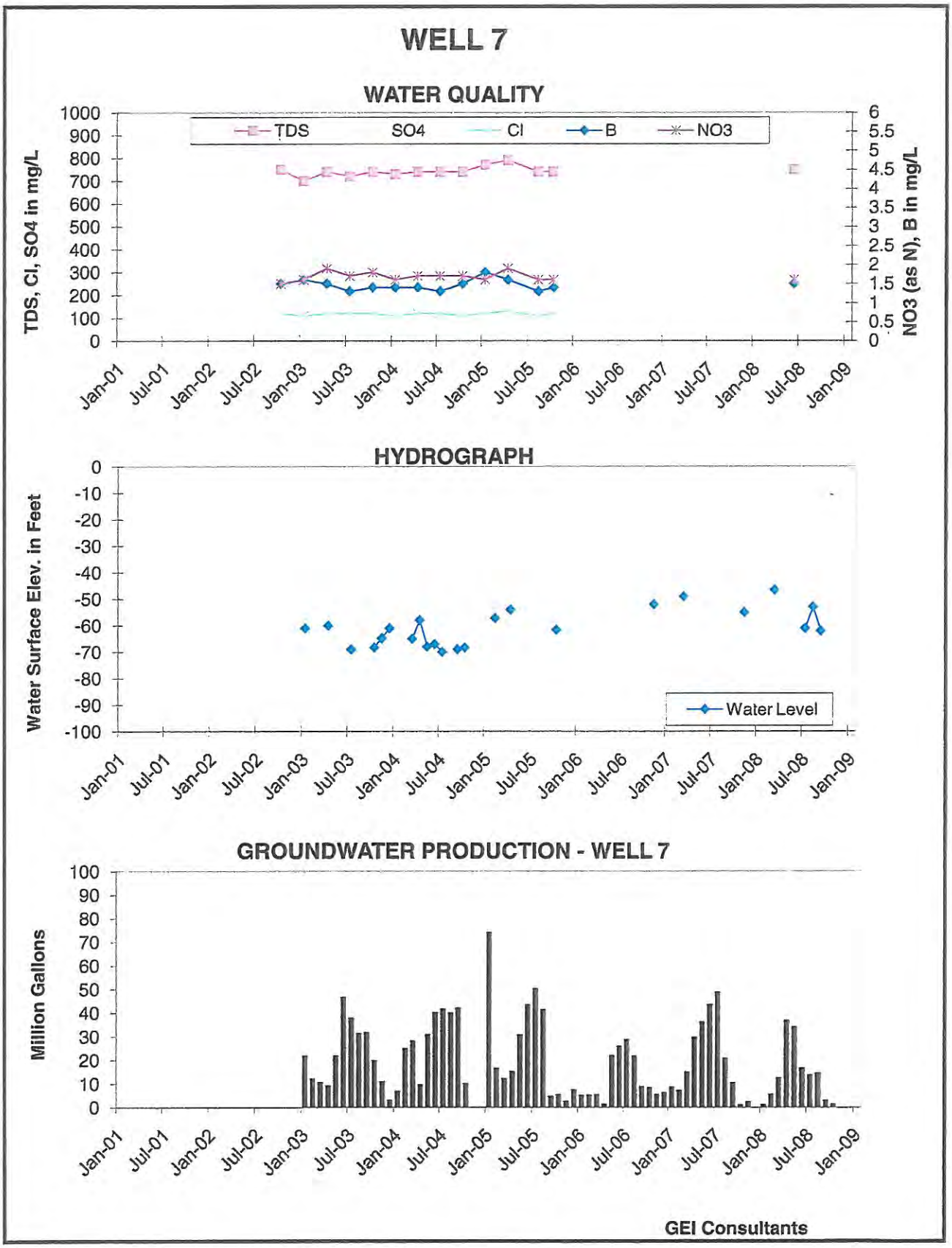

WELL 7
WATER QUALITY
TDS
SO4
Cl
B
NO3
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
HYDROGRAPH
Water Surface Elev. in Feet
Water Level
GROUNDWATER PRODUCTION - WELL 7
Million Gallons
GEI Consultants

FIGURE 22

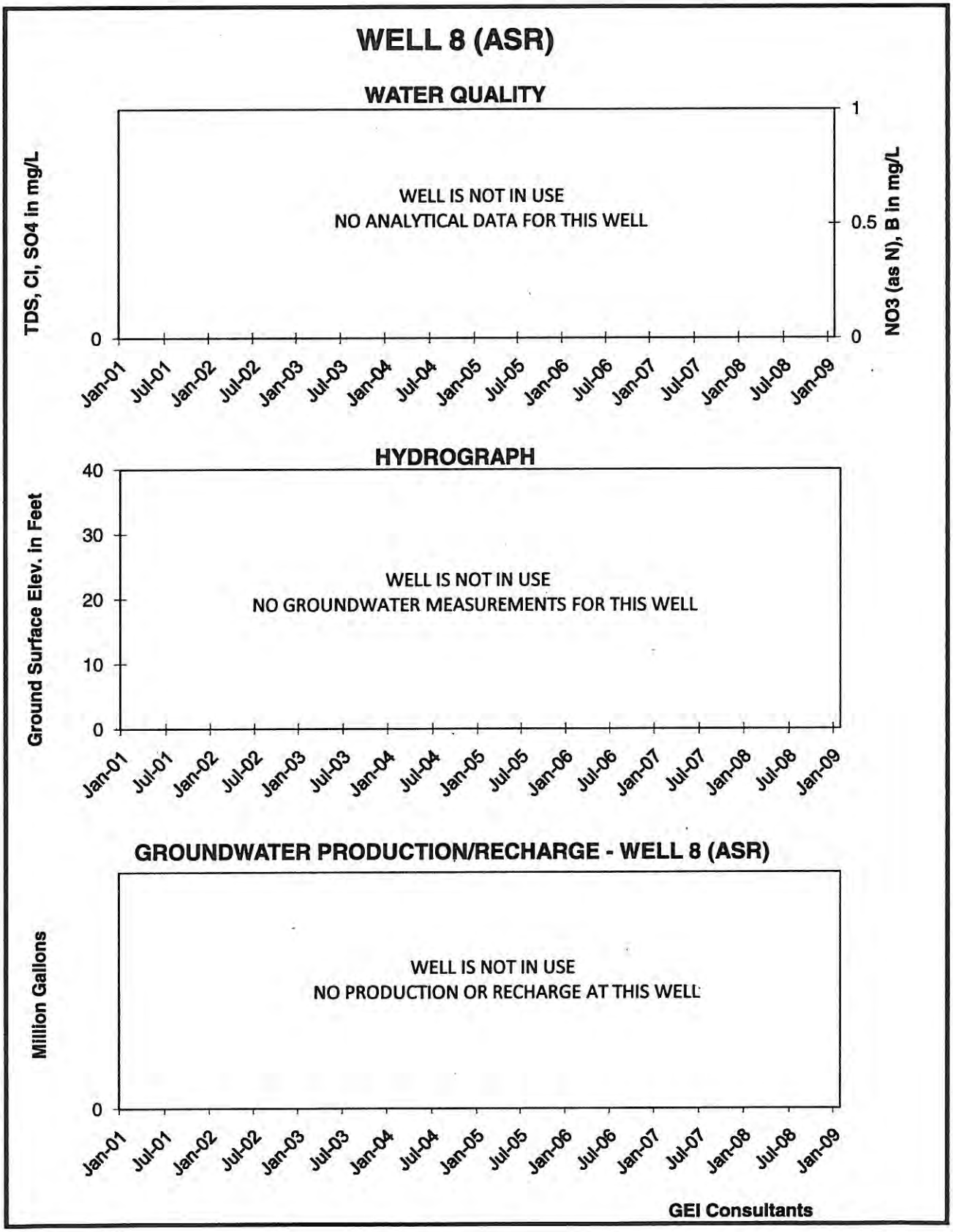
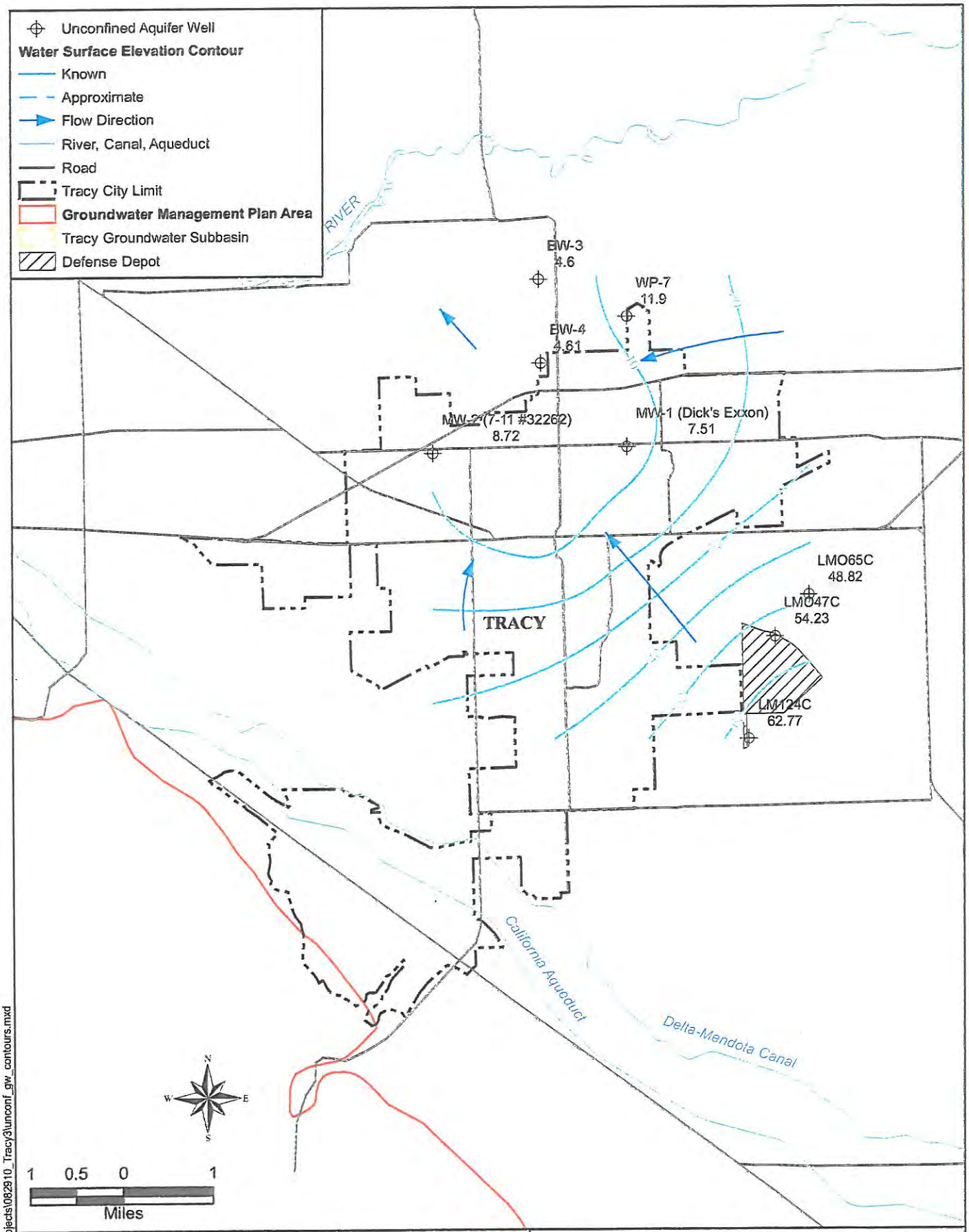

WELL 8 (ASR)
WATER QUALITY
TDS, Cl, SO4 in mg/L
NO3 (as N), B in mg/L
WELL IS NOT IN USE
NO ANALYTICAL DATA FOR THIS WELL
0
0.5
1
Jan-01
Jul-01
Jan-02
Jul-02
Jan-03
Jul-03
Jan-04
Jul-04
Jan-05
Jul-05
Jan-06
Jul-06
Jan-07
Jul-07
Jan-08
Jul-08
Jan-09
HYDROGRAPH
Ground Surface Elev. in Feet
WELL IS NOT IN USE
NO GROUNDWATER MEASUREMENTS FOR THIS WELL
0
10
20
30
40
GROUNDWATER PRODUCTION/RECHARGE - WELL 8 (ASR)
Million Gallons
WELL IS NOT IN USE
NO PRODUCTION OR RECHARGE AT THIS WELL
GEI Consultants

FIGURE 23



S:\GIS\Projects\082910_Tracy3\unconf_gw_contours.mxd

20-Jan-09

Summary of Groundwater Conditions
November 2007 through November 2008

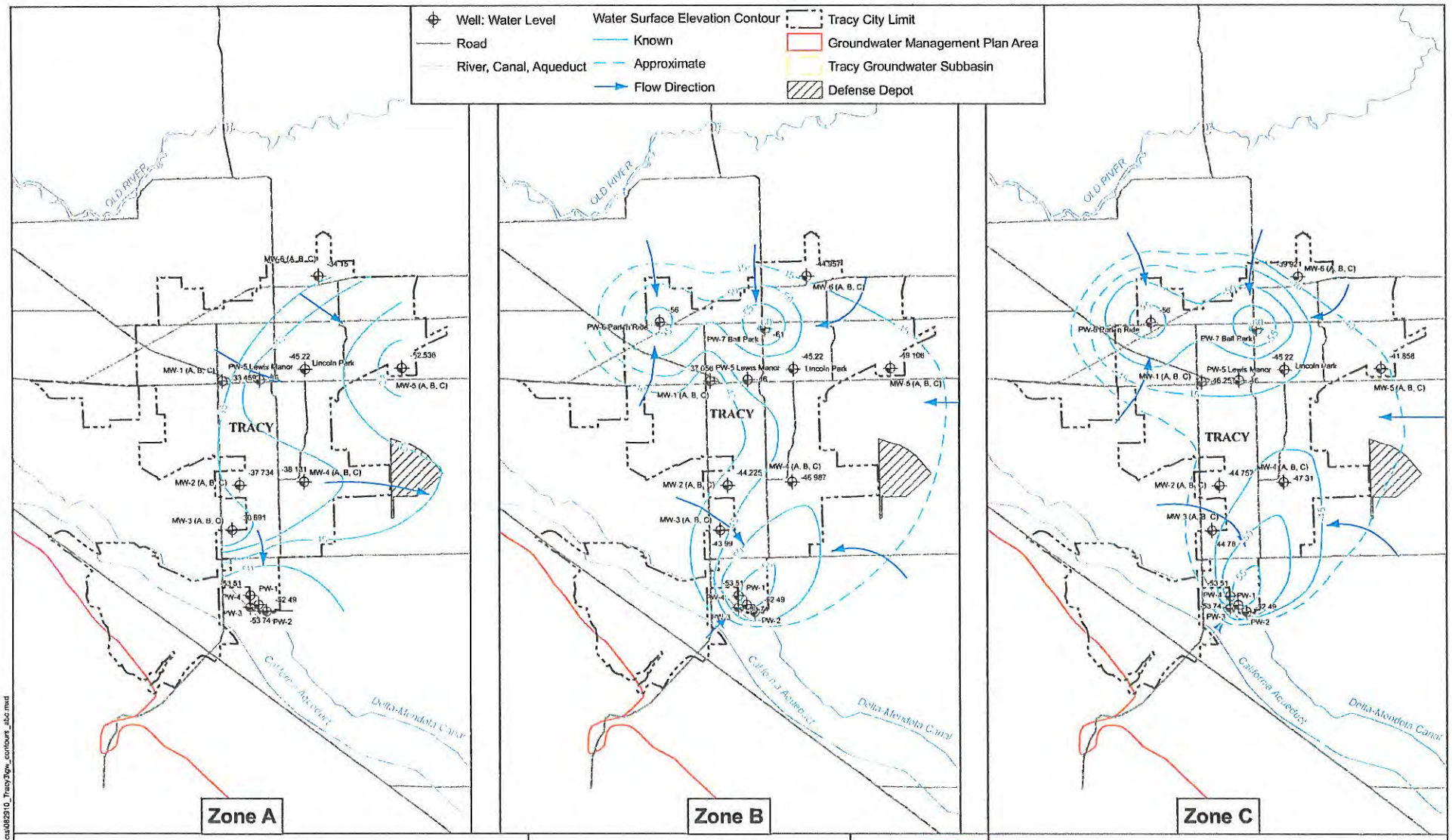
City of Tracy
San Joaquin County, California

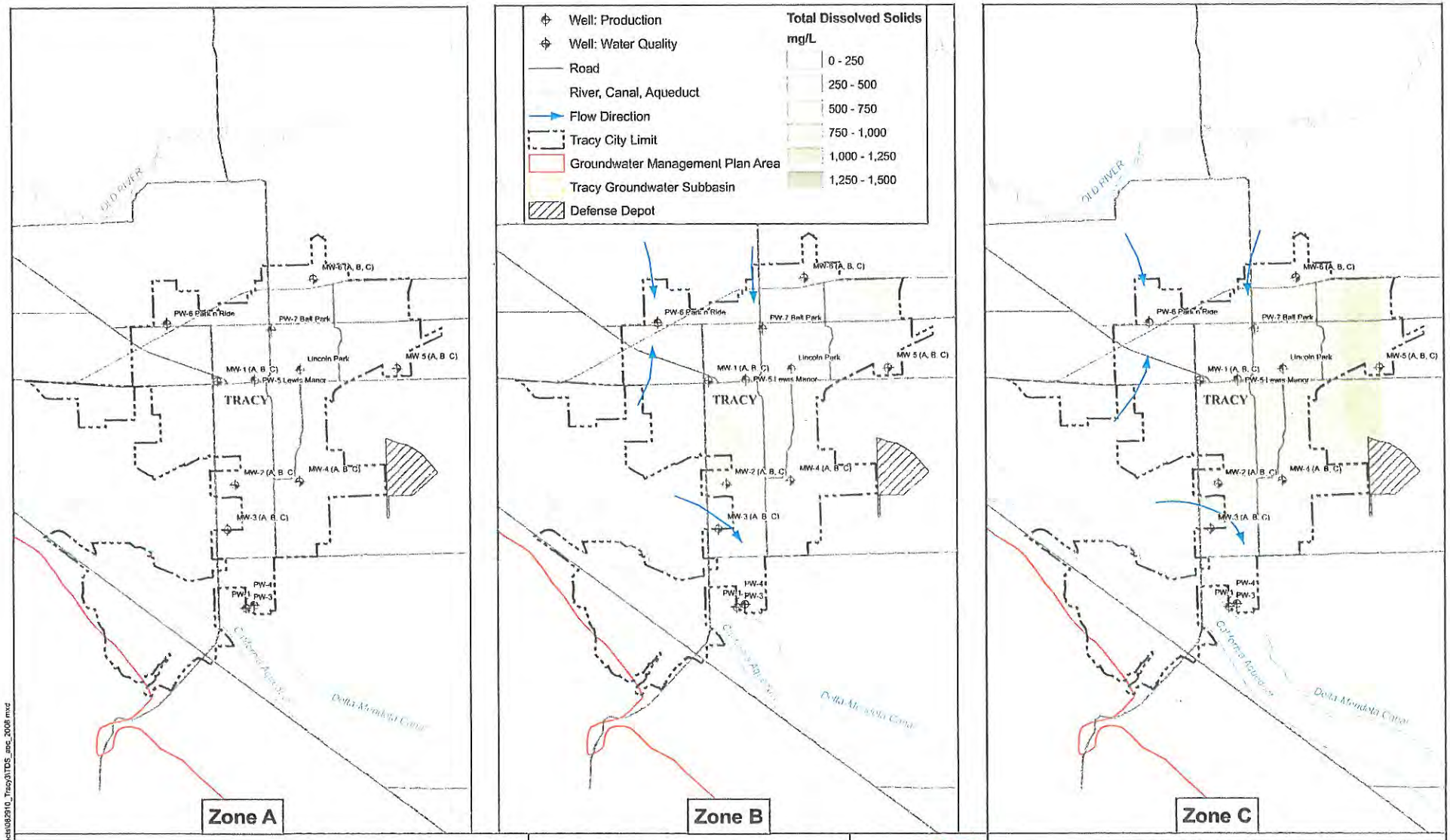
GEI Consultants

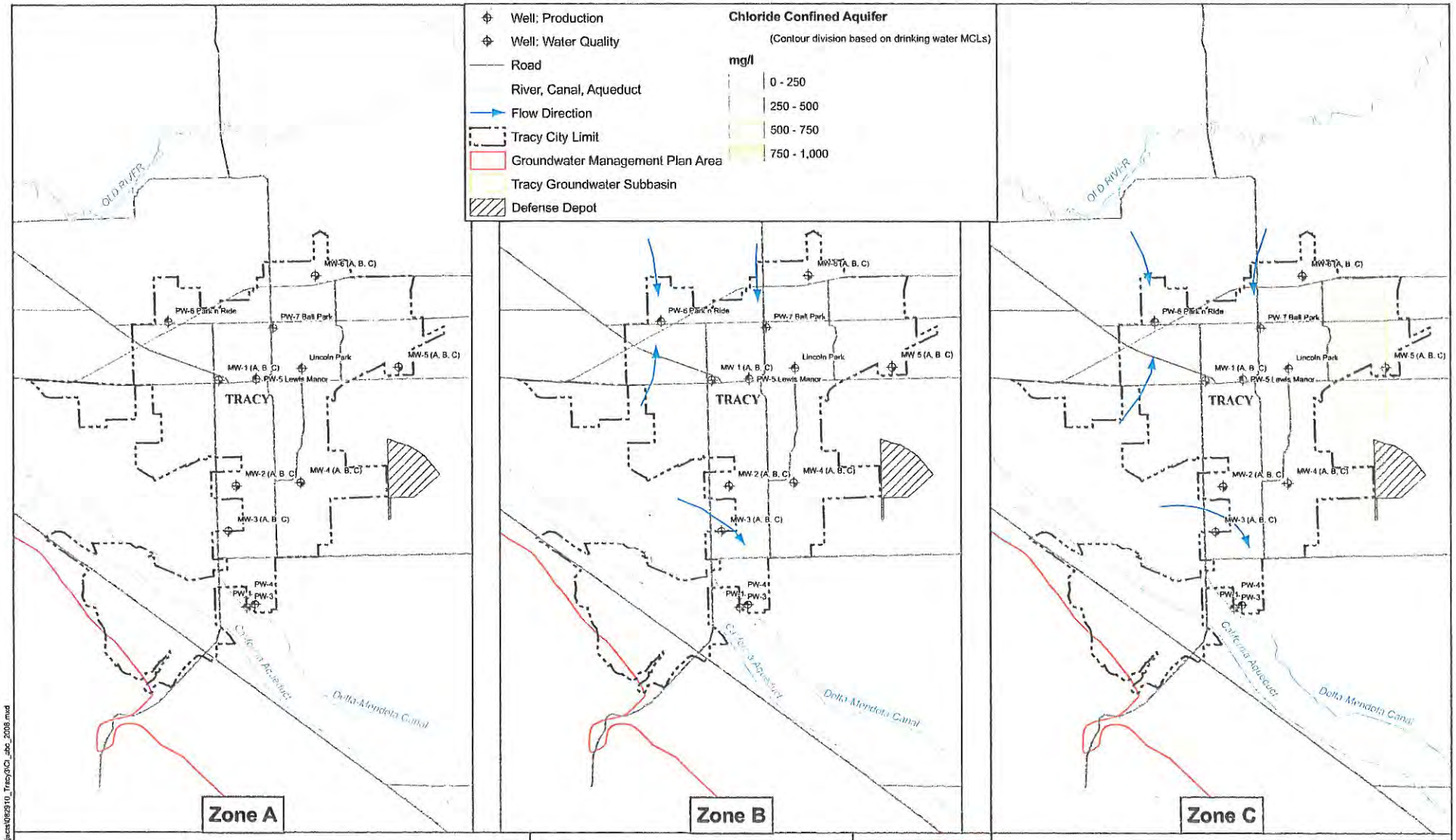
UNCONFINED AQUIFER GROUNDWATER CONTOURS FEB-APR 2008

JANUARY 2009

FIGURE 42


Well: Water Level
Road
River, Canal, Aqueduct
Water Surface Elevation Contour
Known
Approximate
Flow Direction
Tracy City Limit
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Defense Depot
OLD RIVER
TRACY
Lincoln Park
PW-5 Lewis Manor
PW-6 Park-n-Ride
PW-7 Ball Park
MW-1 (A, B, C)
MW-2 (A, B, C)
MW-3 (A, B, C)
MW-4 (A, B, C)
MW-5 (A, B, C)
MW-6 (A, B, C)
PW-1
PW-2
PW-3
PW-4
California Aqueduct
Delta-Mendota Canal
Zone A
Zone B
Zone C
2 1 0 2
Miles
N
W
E
S
Summary of Groundwater Conditions
November 2007 through November 2008
City of Tracy
San Joaquin County, California
GEI Consultants
CONFINED AQUIFER
GROUNDWATER CONTOURS, 2008
ZONES A, B AND C
JANUARY 2009
FIGURE 43
12_Jan-09 S:\GIS\Projects\082910_Tracy2gw_contours_abc.mxd


Well: Production
Well: Water Quality
Road
River, Canal, Aqueduct
Flow Direction
Tracy City Limit
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Defense Depot
Total Dissolved Solids
mg/L
0 - 250
250 - 500
500 - 750
750 - 1,000
1,000 - 1,250
1,250 - 1,500
OLD RIVER
MW-6(A, B, C)
PW-6 Park n' Ride
PW-7 Ball Park
Lincoln Park
MW-1 (A, B, C)
PW-5 Lewis Manor
MW-5 (A, B, C)
TRACY
MW-2 (A, B, C)
MW-4 (A, B, C)
MW-3 (A, B, C)
PW-4
PW-1
PW-3
California Aqueduct
Delta Mendota Canal
Zone A
Zone B
Zone C
2 1 0 2
Miles
N
W
E
S
Summary of Groundwater Conditions
November 2007 through November 2008
City of Tracy
San Joaquin County, California
GEI Consultants
CONFINED AQUIFER
TOTAL DISSOLVED SOLIDS, 2008
ZONES A, B AND C
JANUARY 2009
FIGURE 46
13-Jan-09 S:\GIS\Projects\082910_Tracy\TDS_spc_2008.mxd



Summary of Groundwater Conditions
November 2007 through November 2008

City of Tracy
San Joaquin County, California

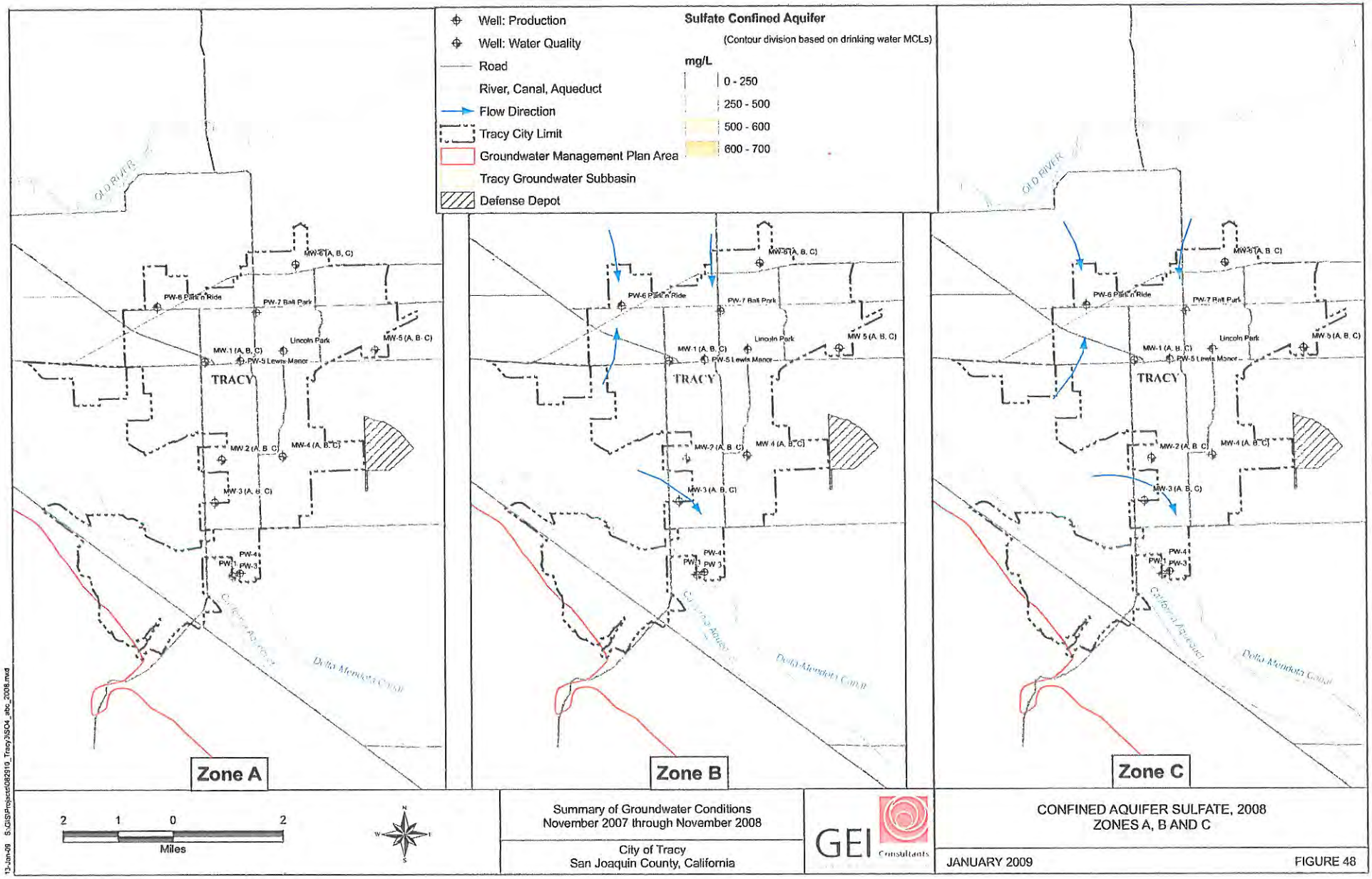
GEI Consultants

CONFINED AQUIFER CHLORIDE, 2008
ZONES A, B AND C

JANUARY 2009

FIGURE 47

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Summary of Groundwater Conditions
November 2007 through November 2008

City of Tracy
San Joaquin County, California

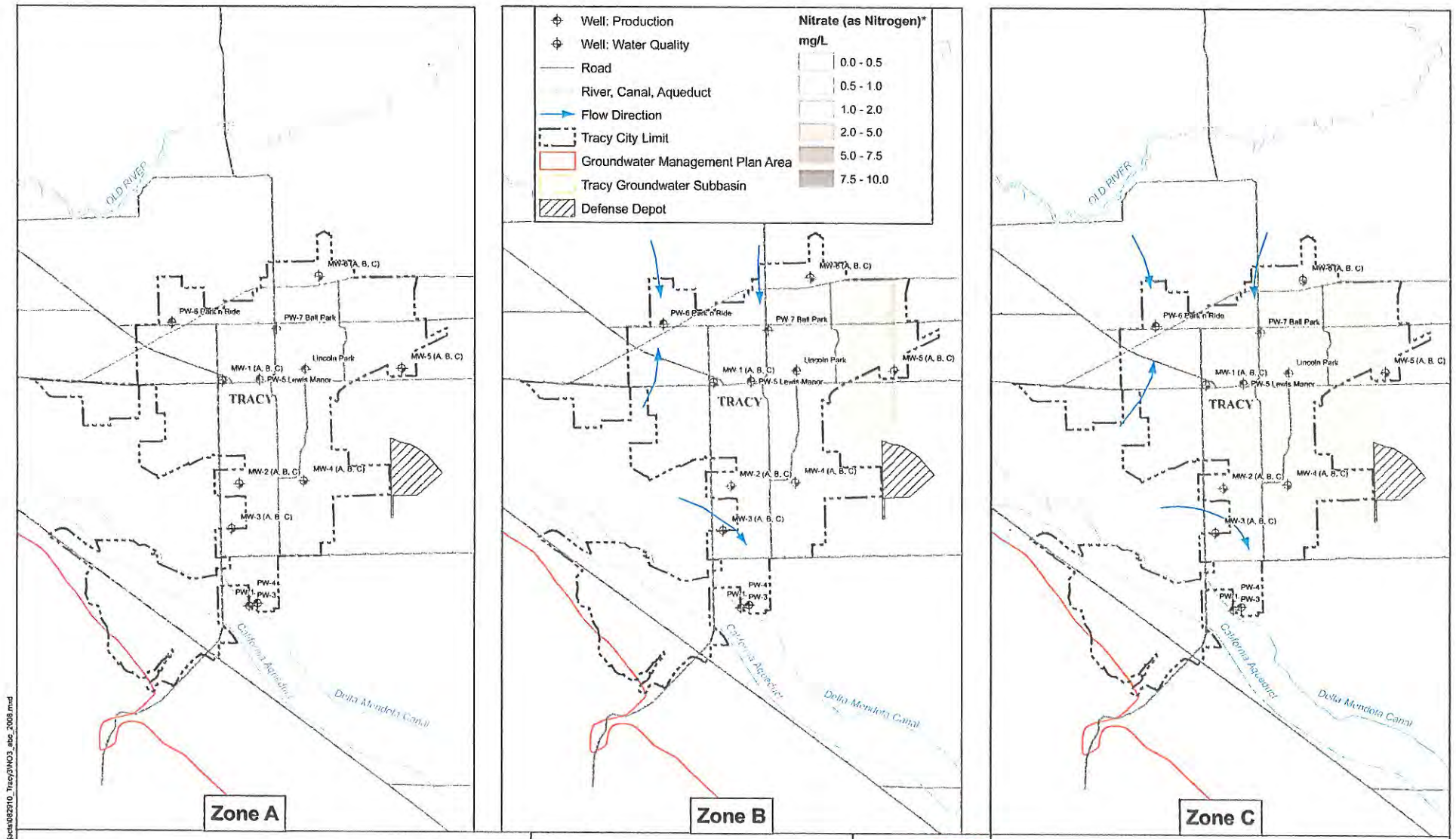
GEI Consultants

CONFINED AQUIFER SULFATE, 2008
ZONES A, B AND C

JANUARY 2009

FIGURE 48

13-Jan-09 S:\GIS\Projects\082910_Tracy\ASO4_abc_2008.mxd



Summary of Groundwater Conditions
November 2007 through November 2008

City of Tracy,
San Joaquin County, California

GEI Consultants

CONFINED AQUIFER NITRATE, 2008
ZONES A, B AND C

JANUARY 2009

FIGURE 49

13-Jan-09 S:\GIS\Projects\062910_Tracy\3\NO3_abc_2008.mxd

Excerpts of Tracy Regional Groundwater Management Plan

Tracy Regional Groundwater Management Plan

Submitted to:
City of Tracy

Date: March 2007
Project No: 060260

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B. Draft Tracy Subbasin Regional GMP Adoption Resolutions
C. Meeting Announcements
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E. Groundwater Monitoring Plan
F. Stakeholder Involvement Documentation

J:\Tracy, City of\Project\060260 City of Tracy GMP\GMP Report\COT GMP Draft Report 03-12-07 mjc_css.doc

Abbreviations and Acronyms

Basin	San Joaquin Valley Groundwater Basin
BBID	Byron-Bethany Irrigation District
BCID	Banta-Carbona Irrigation District
bgs	below ground surface
BMOs	basin management objectives
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
City	City of Tracy
CSA	County Service Area
CSD	Community Services District
CVP	Central Valley Project
DCE	dichloroethane
Delta	Sacramento-San Joaquin River Delta
DHS	Department of Health Services
DMC	Delta-Mendota Canal
DPWD	Del Puerto Water District
DWR	California Department of Water Resources
DWSAP	Drinking Water Source and Protection
EHD	Environmental Health Services
ET	evapotranspiration
GAC	GroundwaterAdvisory Committee
GMP	Groundwater Management Plan
gpd/ft	gallons per day per foot
gpm	gallons per minute
LAFCO	Local Agency Formation Commission
LUST	leaking underground storage tank
M&I	municipal and industrial
MCL	maximum contaminant level
mg/L	milligrams per liter
MOU	memorandum of understanding

NBID	Naglee-Burk Irrigation District
NCDC	National Climatic Data Center
NRCS	Natural Resources Conservation Service
PBE	Physical Barrier Effectiveness
PCAs	Potential Contamination Activities
PCE	tetrachloroethylene
ppb	parts per billion
RWQCB	Regional Water Quality Control Board
SCSWSP	South County Surface Water Supply Project
SJCFCWC0D	San Joaquin County Flood Control and Water Conservation District
SLDMWA	San Luis and Delta-Mendota Water Agencies
SOI	sphere of influence
SSJID	South San Joaquin Irrigation District
SSJWSP	South San Joaquin Water Supply Project
SWP	State Water Project
TCE	trichloroethylene
TWSID	The West Side Irrigation District
TDS	total dissolved solids
Tracy Subbasin	Tracy Groundwater Subbasin
USACE	U.S. Army Corps of Engineers
USBR	U.S. Bureau of Reclamation
USGS	U.S. Geological Survey
VOC	volitile organic compound
WHPA	Wellhead Protection Area
WSID	West Stanislaus Irrigation District

Executive Summary

Background

The Tracy Groundwater Subbasin (Tracy Subbasin) lies in San Joaquin, Contra Costa, and Alameda Counties, primarily between the eastern extent of the Diablo Range on the west and the San Joaquin River on the east. The surface area of the subbasin is 345,000 acres.

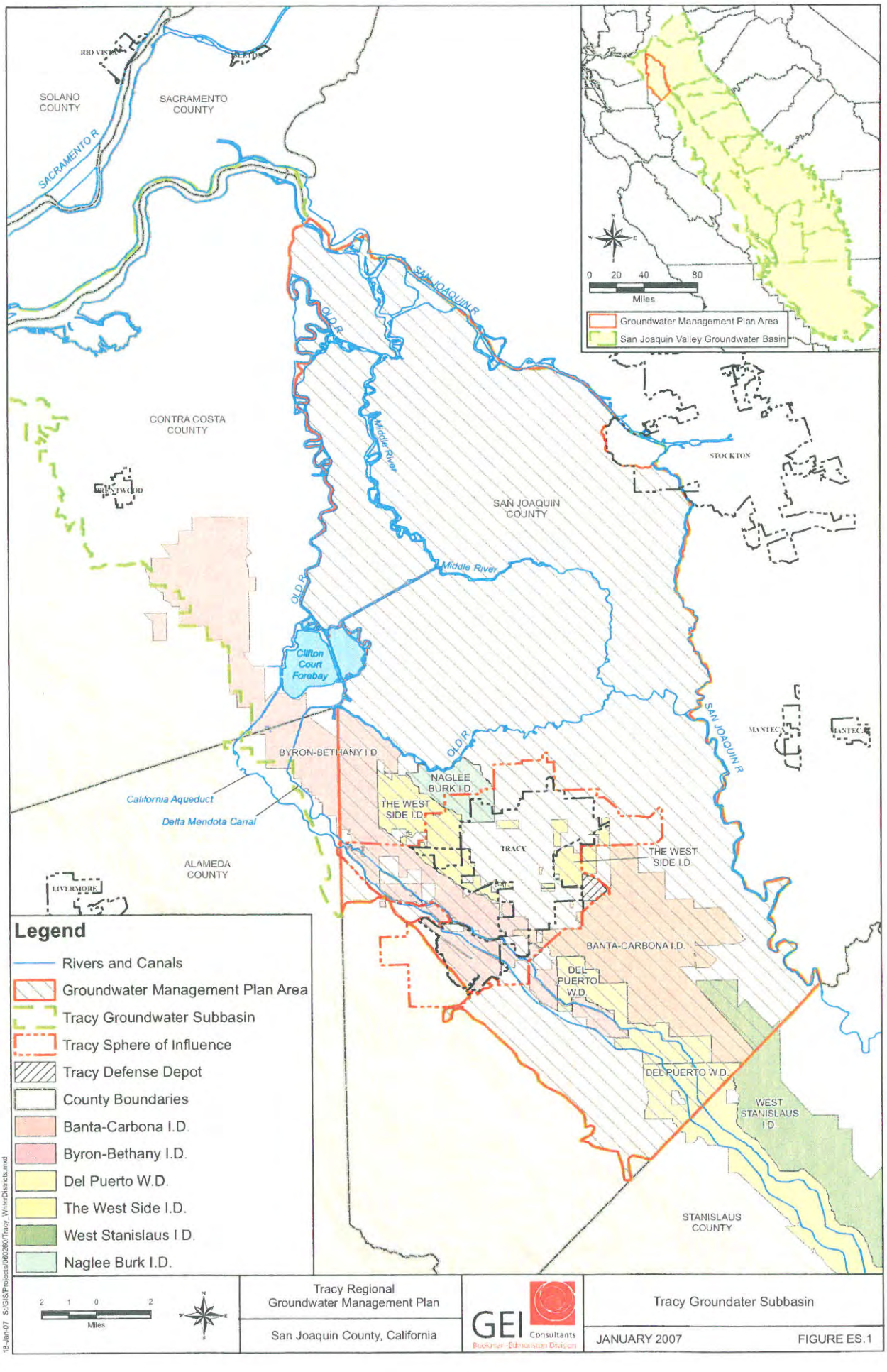
The western, northern and eastern, and southern boundaries are shared with the Pittsburg Plain, Eastern San Joaquin, and Delta-Mendota Groundwater Subbasins, respectively. The major water purveyors in the planning area include the Byron-Bethany Irrigation District (BBID), the Banta-Carbona Irrigation District (BCID), and the City of Tracy (City). Figure ES-1, a map of the subbasin, shows the boundaries of the principal water agencies. These agencies, along with San Joaquin County, formed a Groundwater Advisory Committee (GAC) to facilitate the development of a regional groundwater management plan (GMP) for the Tracy Groundwater Subbasin. The City of Tracy obtained a grant from California Department of Water Resources (DWR) in 2005 to prepare the GMP. Throughout the planning process, other interested parties within the subbasin as well as state agencies have been encouraged to participate in the plan's development.

Planning Area

Irrigated agriculture and urban land uses are the primary developed land uses within the area. The largest jurisdiction within the subbasin is BCID with an irrigated area of approximately 16,000 acres followed by BBID with an irrigated area of approximately 8,000 acres. The City and surrounding urban areas encompass approximately 15,000 acres in the Tracy Subbasin. The regional groundwater plan area encompasses the portion of the Tracy Subbasin within San Joaquin County. Most of the groundwater pumping occurs in the area south of Old River. North of the river, surface water from the Sacramento-San Joaquin Delta is used to meet most of the water demand.

Description of the Regional GMP

This regional GMP has been prepared in accordance with requirements of SB 1938 (California Water Code Section 10750 et seq.), with voluntary components of SB 1938 and AB 3030, and with the suggested components of Bulletin 118.


SOLANO COUNTY
SACRAMENTO COUNTY
SACRAMENTO R
RIO VISTA
ISLETON
CONTRA COSTA COUNTY
BRENTWOOD
SAN JOAQUIN R
OLD R
Middle River
SAN JOAQUIN COUNTY
STOCKTON
MANTECA
Clifton Court Forebay
BYRON-BETHANY I.D.
California Aqueduct
Delta Mendota Canal
NAGLEE BURK I.D.
THE WEST SIDE I.D.
TRACY
ALAMEDA COUNTY
LIVERMORE
BANTA-CARBONA I.D.
DEL PUERTO W.D.
WEST STANISLAUS I.D.
STANISLAUS COUNTY
0 20 40 80
Miles
Groundwater Management Plan Area
San Joaquin Valley Groundwater Basin
Legend
Rivers and Canals
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Tracy Sphere of Influence
Tracy Defense Depot
County Boundaries
Banta-Carbona I.D.
Byron-Bethany I.D.
Del Puerto W.D.
The West Side I.D.
West Stanislaus I.D.
Naglee Burk I.D.
2 1 0 2
Miles
Tracy Regional Groundwater Management Plan
San Joaquin County, California
GEI Consultants
Bookman-Edmonston Division
Tracy Groundater Subbasin
JANUARY 2007
FIGURE ES.1
18-Jan-07 S:/GIS/Projects/060260/Tracy_Water/Districts.mxd

The purpose of this regional GMP is to provide a framework for coordinating groundwater management activities into a set of management objectives and implementing the actions necessary to meet those objectives.

The goal of the regional GMP is to provide a management plan for the use of groundwater within the Tracy Subbasin to ensure the reliability of a long-term water supply that will meet current and future beneficial uses, including agricultural, industrial, and municipal water requirements while protecting the environment. Attaining this goal requires measures that enable the efficient use of groundwater and measures that protect water quality.

The overriding objective of the regional GMP is to improve the regional and local groundwater management through the formulation and implementation of Basin Management Objectives (BMOs).

Regional Priorities

Providing reliable good quality water for the water users in the basin is essential for the economic wellbeing and welfare of the citizens within the Tracy Subbasin. The GMP recognizes that the most effective approach to managing a basin's water resources is to enlist the cooperation of the agencies that share the same groundwater basin. As noted above, the GMP includes a number of regional BMOs that have been agreed upon by the participating agencies. The regional objective of the plan is to foster good stewardship of the resources and to promote wise management of regional resources that responds to regional and local BMOs.

Local Priorities

The overriding local priority for implementation of the GMP is satisfying regional and local water management objectives as they are formulated through the development of BMOs. Through their involvement in the development of the GMP, participating agencies have demonstrated their conviction that the most effective approach to local water management is through regional actions.

Statewide Priorities

Implementation of the GMP will enable the GAC and its member agencies to respond to a range of statewide water management initiatives. Key among these is the increasing emphasis placed on agencies to develop regional solutions to water management problems and to coordinate the conjunctive management of surface water and groundwater for sustainable water supply reliability and water quality in California.

The GMP also frames specific water management projects in the context of a regional water management strategy. Although the plan emphasizes groundwater management, elements of the plan address the use of surface water supplies to meet demands that have previously been

met with groundwater. There is potential for the integration of surface and groundwater resources, and this integration can lead to a more comprehensive management of water supplies and can provide a lucid framework for compliance with state and federal water quality standards.

Regional BMOs

Specific water management strategies developed during the formulation of the regional GMP are expressed by the regional BMOs agreed upon by all of the participating agencies. The following specific regional BMOs are presented in the regional GMP:

Manage Groundwater Levels: Except for some localized areas, groundwater levels in the basin are stable and the basin is generally "full." The increase in urban development is not expected to cause the groundwater table to lower if the growth does not occur in the groundwater recharge areas. This objective is intended to ensure that the overall groundwater levels in the basin are maintained to provide long-term reliable sources of water for the economic well-being of the area. Specific groundwater level management objectives include:

- Maintaining groundwater levels in the confined and unconfined aquifers to avoid long-term overdraft.
- Lowering shallow groundwater levels in the unconfined aquifer to reduce impacts to agricultural and municipal land uses.
- Identifying, mapping, and protecting groundwater recharge areas.
- Identifying additional opportunities to increase water management flexibility through the conjunctive use of surface water and groundwater supplies.

Maintain and Improve Groundwater Quality: Water quality in the basin is generally adequate for agricultural use in the western portion of the subbasin. Water quality becomes worse in the eastern part of the subbasin with high levels of total dissolved solids (TDS) and boron in the groundwater. The water quality generally improves with depth in the unconfined aquifer. In the confined aquifer, water quality generally declines with depth. The best quality water is generally located in the confined aquifer and typically near the upper portion of the confined aquifer. Specific water quality management objectives include:

- Protecting the water quality in the confined aquifer from poorer quality water in the unconfined aquifer by ensuring the proper construction of groundwater wells, including seals to separate the aquifer systems.
- Protecting groundwater from the migration of contamination sources by incorporating available groundwater quality data into groundwater management operations.

- Limiting upwelling of groundwater from the deeper aquifers that contain high concentrations of sulfate.

Protect Against Potential Inelastic Land Subsidence: Historically, no land surface subsidence has been identified within the basin. Given the balanced nature of groundwater storage in the basin, potential future land subsidence is not expected. The specific land subsidence objectives include:

- Managing the groundwater basin to prevent land subsidence.
- Adjusting groundwater management activities if land subsidence resulting from declining groundwater levels is identified.

Protect Against Adverse Impacts to Surface Water Flows: There is little information regarding the relationship and interaction between surface water and groundwater in the Tracy Subbasin. This information is needed to develop an understanding of the implications on the recharge/discharge areas and water quality conditions. GAC member agencies will coordinate with state and federal agencies regarding programs to collect this information. Specific objectives include:

- Monitoring river stage and nearby unconfined groundwater levels.
- Evaluating this information to understand the relationship between surface water flows and groundwater levels at specific locations to determine the effect on groundwater levels and quality.

Groundwater Monitoring and Assessment: Groundwater monitoring provides the data and information needed to make groundwater management decisions. The agencies within the Tracy Subbasin who have participated in monitoring programs are aware of their importance to groundwater management. Current groundwater monitoring efforts include participation by various local districts, San Joaquin County, and DWR. Until the preparation of this GMP, there was no groundwater monitoring plan (Monitoring Plan) for the Tracy Subbasin that coordinated the efforts of the various entities. The Monitoring Plan developed for this GMP is included in Appendix E.

The Monitoring Plan identifies the extent of the existing groundwater monitoring program in the unconfined and confined aquifer systems for both water levels and water quality, and land subsidence. The Monitoring Plan was prepared based on the existing wells monitored by several different agencies in the basin, and provided recommendations for additional monitoring. This plan will be implemented by the GAC member agencies. Specific objectives include:

- Implementing the Monitoring Plan included in Appendix E.

- Discussing with DWR regarding reactivating monitoring at wells where well logs are available.

- Filling the data gaps in the Monitoring Plan with new dedicated multi-completion monitoring wells.

Coordinate with Other Agencies: The City and the other agencies participating in the GAC routinely coordinate on water resources matters within the basin. This coordination can be expanded to include additional water entities that have authority over issues that affect water management activities in the Tracy Subbasin. This expanded forum can be used to assist in the formulation of regional projects and programs for protection and use of subbasin water resources. Specific objectives include:

- Coordinating with water management agencies in San Joaquin County east of the San Joaquin River.

- Coordinating with local agencies with land use planning authority.

- Coordinating with small urban developments fully dependent on groundwater.

- Coordinating with state and federal agencies.

Groundwater Management Measures

The regional BMOs described above have been developed to support groundwater management in the Tracy Subbasin. In particular, these BMOs provide a framework for developing projects that will advance the following groundwater management measures:

Identification and Management of Wellhead Protection Areas: The purpose of wellhead protection is to protect the groundwater used as a public water supply, thereby eliminating the costly treatment otherwise needed to meet relevant drinking water quality standards. Actions associated with the measures include:

- Request that member agencies provide vulnerability summaries from the Drinking Water Source and Protection (DWSAP) to be used for guiding management decisions in the basin.

- Contact groundwater basin managers in other areas of the state for technical advice, effective management practices, and "lessons learned," regarding establishing wellhead protection areas.

Regulation of the Migration of Contamination and Poor Quality Groundwater: The migration of poor quality groundwater is of primary concern to the City and the irrigation districts, as well as the Tracy Army Depot and the County Service Areas (CSAs) that pump groundwater. Also of concern is the localized contamination of groundwater by industrial

point sources such as dry cleaning facilities, food processors, and the numerous fuel stations throughout the Tracy Subbasin. The following actions will be taken to support this groundwater management measure:

- Develop maps showing the top and bottom and extent of the Corcoran clay.
- Coordinate with the U.S. Geological Survey (USGS), DWR, and San Joaquin County to expand the network of monitoring wells to provide additional water quality data for public supply wells.
- Provide a forum to share all information on mapped contaminant plumes and leaking underground storage tank (LUST) sites.
- Track upcoming regulations on septic systems, agricultural discharges, and other regulatory programs that pertain to water quality degradation.
- Consider a shallow groundwater pumping program to reduce groundwater levels and to create opportunities for controlling migration of poor quality groundwater.

Implementation of Well Construction Policies: The San Joaquin County EHD administers the well permitting program within the Tracy Subbasin. The well construction standards implemented by EHD are consistent with those recommended in State Water Code Section 13801. This section of State Water Code requires that counties, cities, and water agencies to adopt the State Model Well Ordinance as a minimum standard for well construction or a more rigorous standard if desired. The San Joaquin County EHD has enacted well ordinances adopting the *California Well Standards, Bulletin 74-81,* and all supplements for areas of the county. The San Joaquin County EHD staff also issue applications and review construction plans and specifications for wells drilled in the county. The EHD requires and maintains well logs and water well driller reports for constructed wells.

Operating permits for wells utilized for public drinking water are provided through either the DHS or San Joaquin County EHD, depending on the number of service connections. The DHS has jurisdiction over public water system wells with over 200 service connections. Wells that serve public water systems with fewer than 200 service connections fall under the jurisdiction of the county. The following actions will be taken to support this groundwater management measure:

- Ensure that all member agencies are provided a copy of the applicable county well construction ordinance.
- Coordinate with member agencies to provide guidance, as appropriate, on well construction to prevent creating conduits through regionally confining beds.

Administration of Well Abandonment and Destruction Programs: It is believed that there may be many unknown, obsolete, or abandoned water supply and natural gas wells within the Tracy Subbasin. These wells may provide potential locations as a source of contamination between aquifers or from saline water sources, at depth. The following actions should be taken as part of this GMP:

- Ensure that all GAC members are provided a copy of the code and understand the proper destruction procedures and support implementation of these procedures.
- Follow up with GAC members on reported abandoned and destroyed wells to confirm information collected from DWR and receive information on abandoned and destroyed wells to fill gaps in county records.
- Obtain "wildcat" map from California Division of Oil and Gas to ascertain the extent of historic gas well drilling operations in the area because these wells could function as conduits of contamination if not properly destroyed.
- Seek funding to develop and implement a program to assist well owners in the proper destruction of abandoned wells.

Construction and Operation of Recharge, Storage, and Extraction Projects: Various GAC members share responsibility for development and operation of recharge, storage, and extraction projects. The GAC will promote cooperation and sharing of information between the agencies sponsoring water management projects and other member agencies. To the extent feasible, the GAC will also support measures to coordinate development and optimize operation of facilities to improve the basin-wide effectiveness and efficiency of water management. These include the following:

- Encourage sharing of information on project planning, design, and operation among member agencies.
- Promote a coordinated approach toward project development and operation to lower the costs and increase the benefits of water management efforts.
- Seek funding for projects and programs that will contribute to recharge of the groundwater basin.
- Work with the Central Valley RWQCB to permit the City aquifer storage-recovery program.

Public Involvement

The agencies forming the GAC utilize the same groundwater and surface water resources and worked together to formulate this plan to improve their overall management and protection.

Throughout this planning process, other interested agencies and entities within the subbasin were encouraged to participate. The GAC will continue to work with its member agencies and other entities to implement the components of this plan and will engage state and federal agencies in the implementation.

Plan Implementation

The implementation plan presents specific management actions that enable the GAC to meet the BMOs. The purpose of the BMOs and the associated management action is to encourage a balance of surface water and groundwater use that will protect the resources of the basin and maximize the reliable supply of high quality water to meet municipal, agricultural, and industrial demands now and in the future. The BMOs reflect issues that the participating agencies have recognized as potentially jeopardizing the reliability or quality of local water supplies. The management actions are designed to resolve these issues. A list of recommend actions is presented below.

Identification of Natural Recharge Areas: Groundwater recharge from the surface occurs primarily along the western edge of the basin. Recharge due to applied water through this area may be reduced over time because trends in agricultural irrigation practices have reduced deep percolation of applied water. Also, planned urban development in the Tracy Subbasin may impact natural recharge areas. These trends underscore the need to more precisely identify and map the remaining natural recharge areas and to use this mapping to protect important sources of recharge. The objective is to develop specific planning actions that offer varying degrees of protection, depending upon an area's significance as a source of recharge. Types of protection could include programs to educate the public and planning entities about the importance of protecting recharge areas.

Development of a Basin-Wide Water Budget: Development of a basin-wide water budget will provide essential baseline data on water needs and groundwater conditions, serve as a tool for assessing the likely impacts of proposed groundwater management actions, and enable an evaluation of how ongoing changes in land use and water management affect the basin's groundwater resources.

Feasibility Evaluation of Recharge Projects: The basin-wide water balance will illustrate trends in the balance between groundwater recharge and groundwater use. The water balance will probably demonstrate that the basin is full; however, there are recharge options available for sustaining and protecting groundwater supplies. Such projects could include expanded use of South San Joaquin Water Supply Project water and alternative uses of Central Valley Project (CVP) supply by the City. In addition, this management action would continue to support the development and expansion of conjunctive use projects in urban areas with poor groundwater quality (i.e., supplement urban areas around the City with surface water in order to reduce its reliance on groundwater and prevent further migration of poor quality water).

Hydrologic Investigation: A hydrogeologic assessment was completed as part of the preparation of this GMP based on readily available data. Because most of the data available was from existing groundwater wells, there was limited information available from those areas with few or no wells. An expanded hydrogeologic investigation should be completed to supplement the existing information and fill data gaps. Specifically, the investigation would provide additional hydrogeologic information in key areas such as the potential recharge areas in the southwest part of the basin and provide dedicated multi-completion monitoring wells to the expand the monitoring program. Additional information developed as part of this project would also support the evaluation of recharge projects.

Support of Public Health Programs: Well construction and demolition standards are designed specifically to protect groundwater quality. Management actions to assist local agencies in complying with public health standards include the following components:

- Installation of sanitary well seals on all new wells in accordance with the California Well Standards.
- Installation of wells that conform to San Joaquin County standards that include an impermeable seal between the upper and lower aquifers to prevent low quality water in the upper aquifer from entering the lower aquifer.
- Abandonment and destruction of wells in accordance with the California Well Standards.

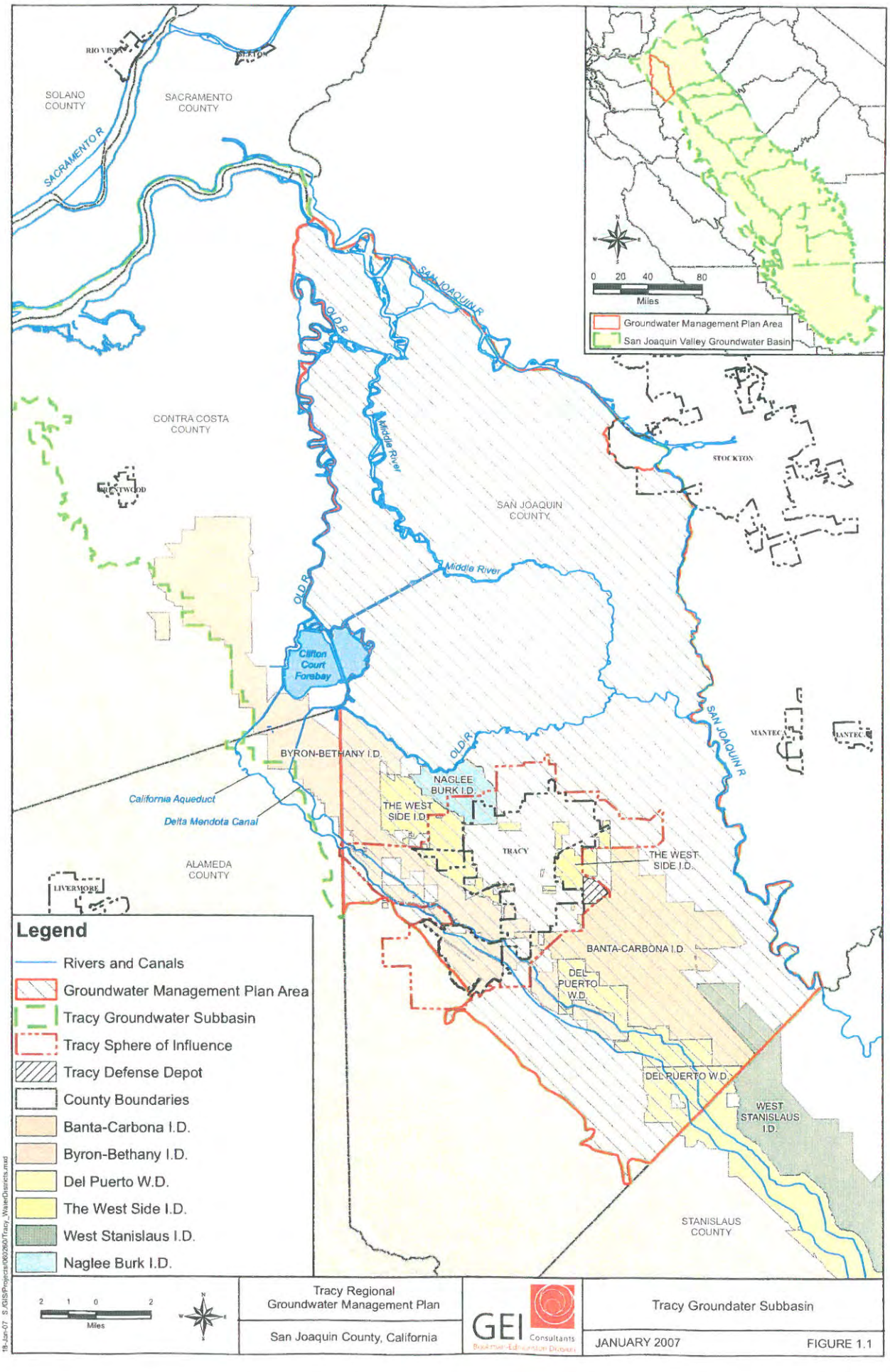
Water Quality Management: The protection of groundwater quality is a concern because the basin's population is growing and there is increased competition for potable water. A detailed geologic assessment of the basin focusing on the areas with poor water quality and identifying the sources of the poor quality should be conducted. This assessment would result in mapping recharge areas and development of strategies to control the migration and movement of poor quality water into and throughout the basin.

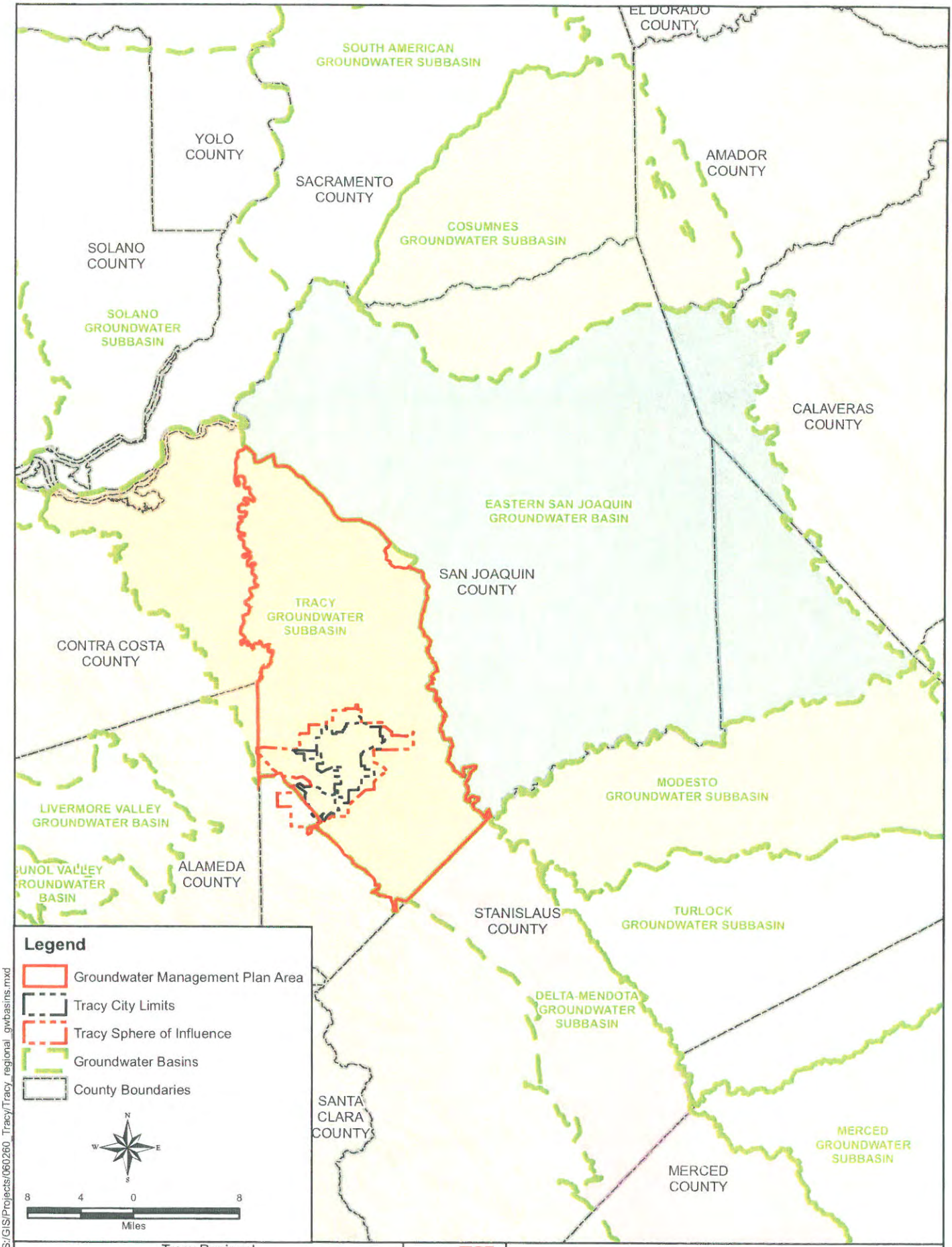
Groundwater Monitoring and Subsidence Monitoring Program: Groundwater monitoring and analysis and archiving of collected data are needed to implement several of the recommended management actions (e.g., conjunctive management and water quality management). Additional monitoring is needed to fill data gaps identified in the monitoring plan and provide dedicated monitoring locations. It is also recommended that the GAC consider developing a database to facilitate the storage, retrieval, and archiving of groundwater data.

Policy Assessment: Several of the technical management actions introduced above have clear policy requirements and implications. For example, effective protection of natural recharge areas will require coordination and communication with entities responsible for land use policies. Similarly, annexations to expand agencies' service areas as part of an in-lieu recharge

program presume clear policies regarding annexation and a process to evaluate the impacts of annexation on groundwater levels and groundwater quality.

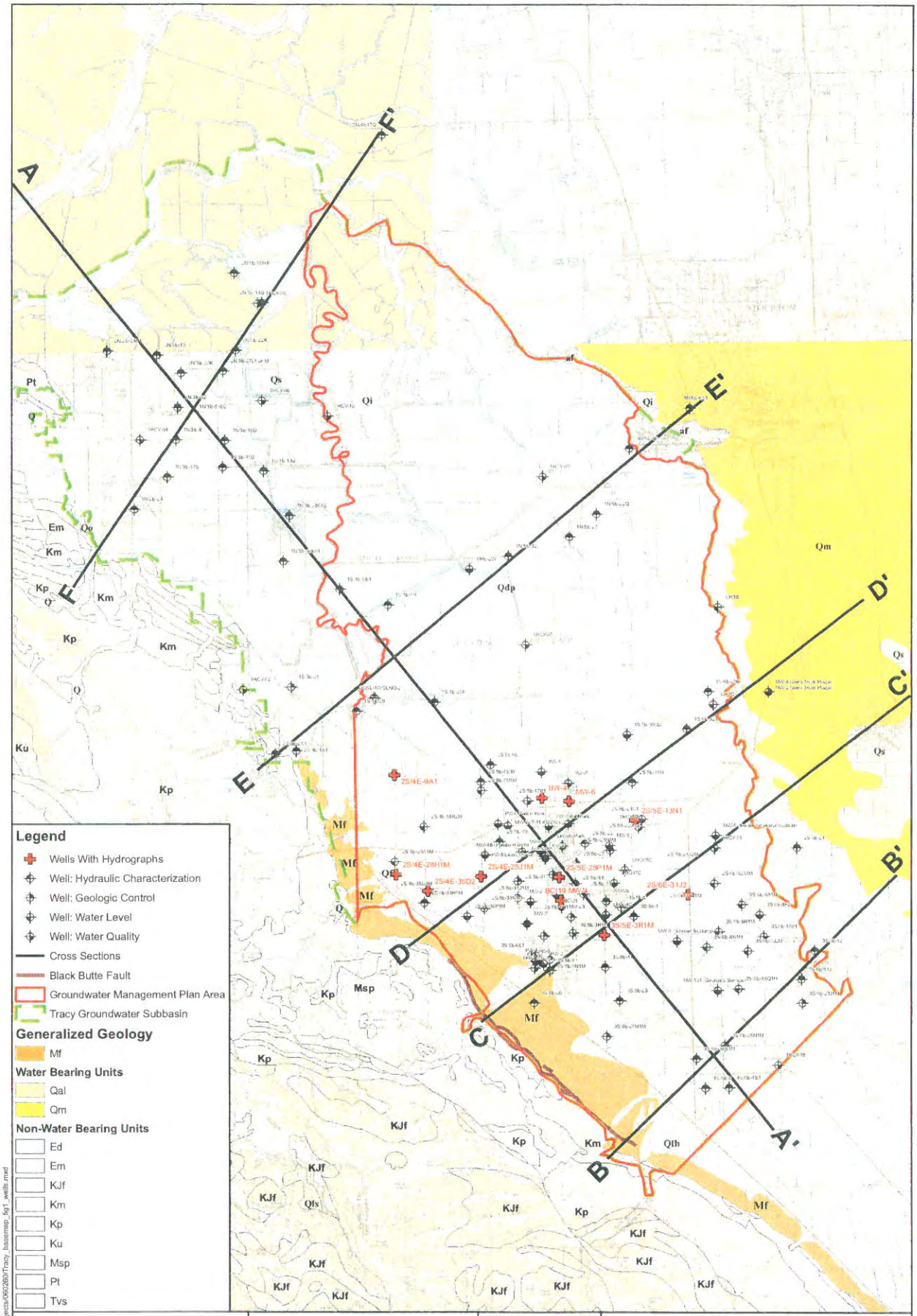
Promoting Cooperation and Coordination between Water Entities: The GAC will continue to coordinate water management activities within the basin and to work cooperatively for implementation of agreed-upon BMOs. The GAC should also develop an outreach and educational program to engage other water interests for management of the basin. One example of such outreach would be working cooperatively with industrial water users to improve water quality in the basin.


SOLANO COUNTY
SACRAMENTO COUNTY
CONTRA COSTA COUNTY
SAN JOAQUIN COUNTY
ALAMEDA COUNTY
STANISLAUS COUNTY
SACRAMENTO R
SAN JOAQUIN R
OLD R
Middle River
Clifton Court Forebay
California Aqueduct
Delta Mendota Canal
BYRON-BETHANY I.D.
NAGLEE BURK I.D.
THE WEST SIDE I.D.
BANTA-CARBONA I.D.
DEL PUERTO W.D.
WEST STANISLAUS I.D.
TRACY
STOCKTON
MANTECA
LIVERMORE
0 20 40 80
Miles
Groundwater Management Plan Area
San Joaquin Valley Groundwater Basin
Legend
Rivers and Canals
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Tracy Sphere of Influence
Tracy Defense Depot
County Boundaries
Banta-Carbona I.D.
Byron-Bethany I.D.
Del Puerto W.D.
The West Side I.D.
West Stanislaus I.D.
Naglee Burk I.D.
2 1 0 2
Miles
Tracy Regional Groundwater Management Plan
San Joaquin County, California
GEI Consultants
Tracy Groundater Subbasin
JANUARY 2007
FIGURE 1.1
18-Jan-07 S:\GIS\Projects\060260\Tracy_WaterDistricts.mxd



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Tracy Regional Groundwater Management Plan	GEI Consultants	GROUNDWATER BASINS
San Joaquin County, California		JANUARY 2007 FIGURE 3.1



Tracy Regional Groundwater Management Plan

San Joaquin County, California

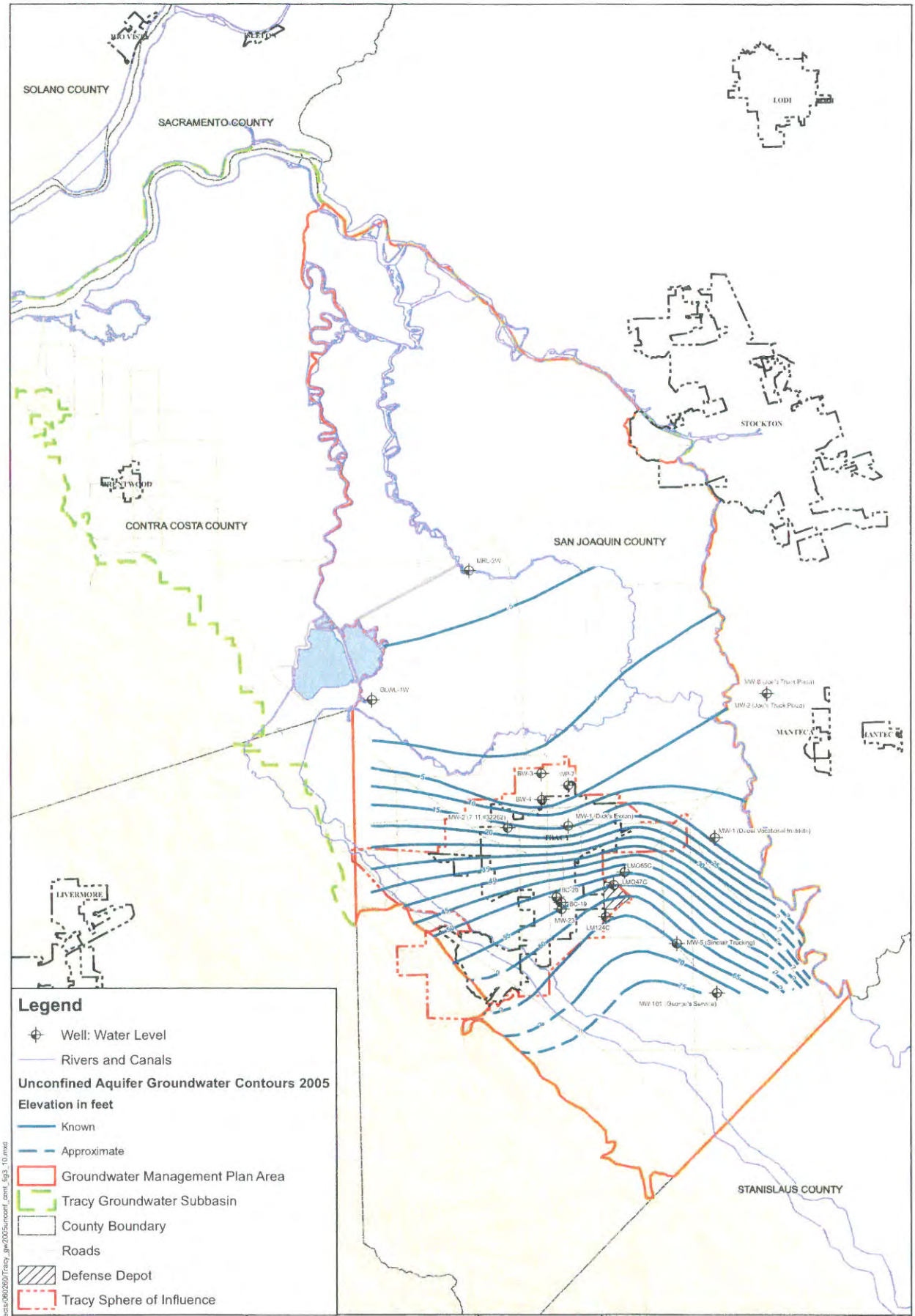
GEI Consultants
Bookman-Edmonston Division

WELL LOCATIONS AND GENERALIZED GEOLOGY IN TRACY GROUNDWATER SUBBASIN

JANUARY 2007

FIGURE 3.2

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Tracy Regional Groundwater Management Plan

San Joaquin County, California

GEI Consultants

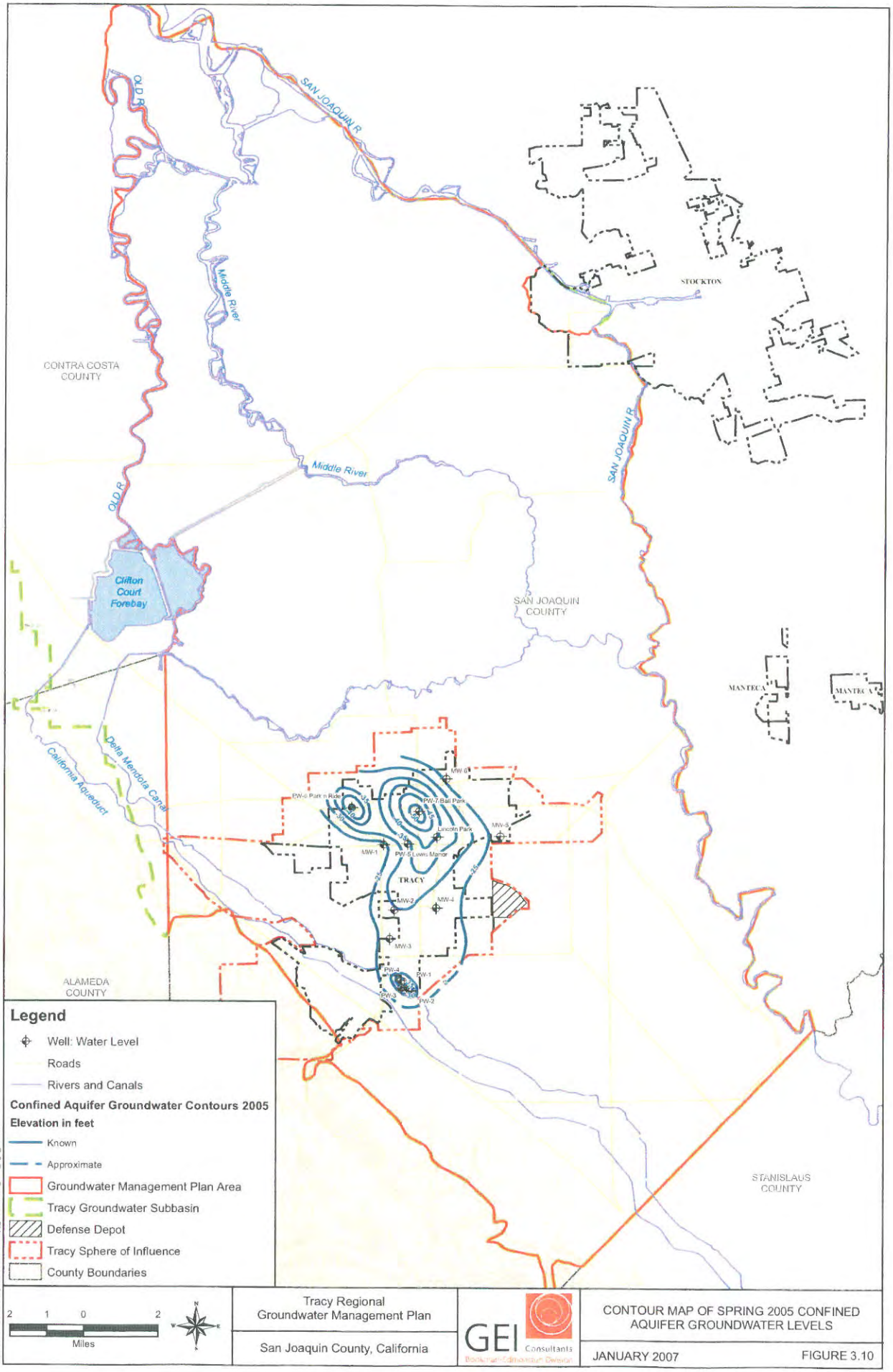
Water and Environment Division

CONTOUR MAP OF SPRING 2005 UNCONFINED AQUIFER GROUNDWATER LEVELS

JANUARY 2007

FIGURE 3.9

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SAN JOAQUIN R
OLD R
Middle River
STOCKTON
CONTRA COSTA COUNTY
Middle River
OLD R
SAN JOAQUIN R
Clifton Court Forebay
SAN JOAQUIN COUNTY
MANTECA
MANTECA
California Aqueduct
Delta Mendota Canal
MW-6
PW-6 Park n Ride
PW-7 Ball Park
Lincoln Park
MW-5
MW-1
PW-5 Lewis Manor
TRACY
MW-2
MW-4
MW-3
PW-4
PW-1
PW-3
PW-2
ALAMEDA COUNTY
STANISLAUS COUNTY
Legend
Well: Water Level
Roads
Rivers and Canals
Confined Aquifer Groundwater Contours 2005
Elevation in feet
Known
Approximate
Groundwater Management Plan Area
Tracy Groundwater Subbasin
Defense Depot
Tracy Sphere of Influence
County Boundaries
2 1 0 2
Miles
N
W
E
S
Tracy Regional Groundwater Management Plan
San Joaquin County, California
GEI Consultants
Bonk, Vogt, Shannon, Dwenger
CONTOUR MAP OF SPRING 2005 CONFINED AQUIFER GROUNDWATER LEVELS
JANUARY 2007
FIGURE 3.10
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Groundwater Assessment for Drought Emergency Conditions Requiring Groundwater to be used as the Sole Source of Potable Water Supply

August 2015

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Groundwater Assessment for Drought Emergency Conditions Requiring Groundwater to be Used as the Sole Source of Potable Water Supply

Prepared for:
City of Tracy

Date: August 10, 2015
Project No: 1509810

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GEI Consultants

August 10, 2015

Steve Bayley, Project Specialist
City of Tracy
520 Tracy Boulevard
Tracy, CA 95377

Geotechnical
Environmental and
Water Resources
Engineering

Re: Groundwater Assessment for Drought Emergency Conditions Requiring Groundwater to be Used as the Sole Source of Potable Water Supply City of Tracy, California

Dear Mr. Bayley:

GEI Consultants, Inc. (GEI) assessed the potential effects of City of Tracy (City) relying solely on groundwater as its source of supply in the unlikely event that surface water was not available. An evaluation of the operational yield of the aquifers for beneath the City in 2001 estimated that about 9,000 acre-feet per year (AFY) could be extracted without creating adverse effects outside of the City limits. During 2001 through 2005, the City obtained physical evidence (groundwater drawdown, water quality and subsidence measurements) of pumping the aquifers at 6,000 to 8,000 AFY. Using this more recent data GEI analyzed and made predictions of the potential effects of pumping 16,000 AFY, the City's current water demand and 22,000 AFY, its projected 10-year future water demand.

The results of the analyses shows that pumping 16,000 to 22,000 AFY will draw groundwater levels down by as little as one foot to as great as 78 feet below historic low groundwater levels which could be significant. The drawdown creates a potential for subsidence but in the central and northern portions it is less than significant. Near the southern portion of the City the pumping would exceed historic drawdown and could create subsidence due to groundwater levels being drawn down below the bottom of the Corcoran Clay. This effect could be mitigated by shifting pumping to wells located in the central and northern portions the City. The effects of the pumping are unlikely to affect the long term water quality and are considered to be less than significant. Groundwater levels will recover within seven years after increased pumping. Good groundwater management practices will mandate that groundwater monitoring and benchmark surveying frequency be increased during these higher pumping durations.

Please contact Richard Shatz at (916) 631-4566 if you have any questions or concerns pertaining to this report.

Regards,

Justin Crose, P.G. 9034
Project Geologist

Richard W. Shatz, C.HG. 84
Principal Hydrogeologist

Enclosures

J:\Tracy, City of\Project\1509810_Drought Preparedness Assessment\L-Investigation Report_cover letter.docx

GEI Consultants, Inc.
2868 Prospect Park Drive Suite 400, Rancho Cordova,, CA 95670
PHONE: 916.631.4500 FAX: 916.631.4501

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Abbreviations

AF	acre-feet
AFY	acre-feet per year
ASR	aquifer storage and recovery
BBID	Byron Bethany Irrigation District
BCID	Banta-Carbona Irrigation District
bgs	below ground surface
City	City of Tracy
Clay	Corcoran Clay
DMC	Delta-Mendota Canal
CDWR	California Department of Water Resources
gpd	gallons per day
gpm	gallons per minute
GMP	Tracy Regional Groundwater Management Plan
GSA	Groundwater Sustainability Agency
MCLs	maximum contaminant levels
Mf	older fanglomerate
msl	mean sea level
Qal	alluvium
QTt	Tulare Formation
SCWSP	South County Water Supply Project
SGMA	Sustainable Groundwater Management Act
SSJID	South San Joaquin Irrigation District
Subbasin	Tracy Groundwater Subbasin

SJV Basin	San Joaquin Valley Groundwater Basin
TDS	total dissolved solids
USBR	United States Bureau of Reclamation

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1 Introduction

The City of Tracy (City) uses both groundwater and surface water to provide water to its residents. Historically, the City has used up to 8,000 acre-feet per year (AFY) of groundwater to augment its water supplies. The City has a current water demand of about 16,000 AFY in 2014 with projections that this would expand to about 28,300 AFY by 2025 with planned future development.

The City requested GEI Consultants, Inc. (GEI) analyze and make predictions of the potential effects of supplying the City for one year with groundwater as its sole source of potable water supply. A scenario where the current four-year drought may continue and could result in conditions where surface water supplies may not be available.

An evaluation of the operational yield of the aquifers beneath the City in 2001 estimated that about 9,000 acre-feet per year (AFY) could be extracted without creating adverse effects both inside and outside of the City limits. During 2001 through 2005, the City obtained physical evidence (groundwater drawdown, water quality, and subsidence measurements) of pumping the aquifers at up to 8,000 AFY and the effects on groundwater levels. This current assessment uses this more recent data to analyze and make predictions of the potential effects of pumping in the range of 16,000 to 22,000 AFY during a single year period.

1.1 Location

The City of Tracy is located near the west-central portion of the Central Valley providence, a large topographic trough located in the center of California. The Central Valley is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. Underlying the Central Valley are extensive groundwater aquifers used by agriculture, industrial, rural and urban residents, including those in Tracy. The Central Valley is subdivided into groundwater basins and subbasins. The City is located in the Tracy Groundwater Subbasin (Subbasin) and historically has been one of the largest groundwater users in the subbasin. **Figure 1** shows the general location of the City and the subbasins.

The City is located in San Joaquin County about 15 miles southwest of Stockton, California, as shown on **Figure 2**. It is surrounded by open farmland to the east, the Coast Ranges to the south and west, and the Bay-Delta to the north. The southern portion of the City is adjacent to the Delta-Mendota Canal (DMC) and the State Water Project (SWP) canals. The City's water treatment plant and four of its production wells are located adjacent to the canals. Major roadways providing access to Tracy include Highway 205 from the north, Interstate 5 from the east, and Highway 580 from the south and west.

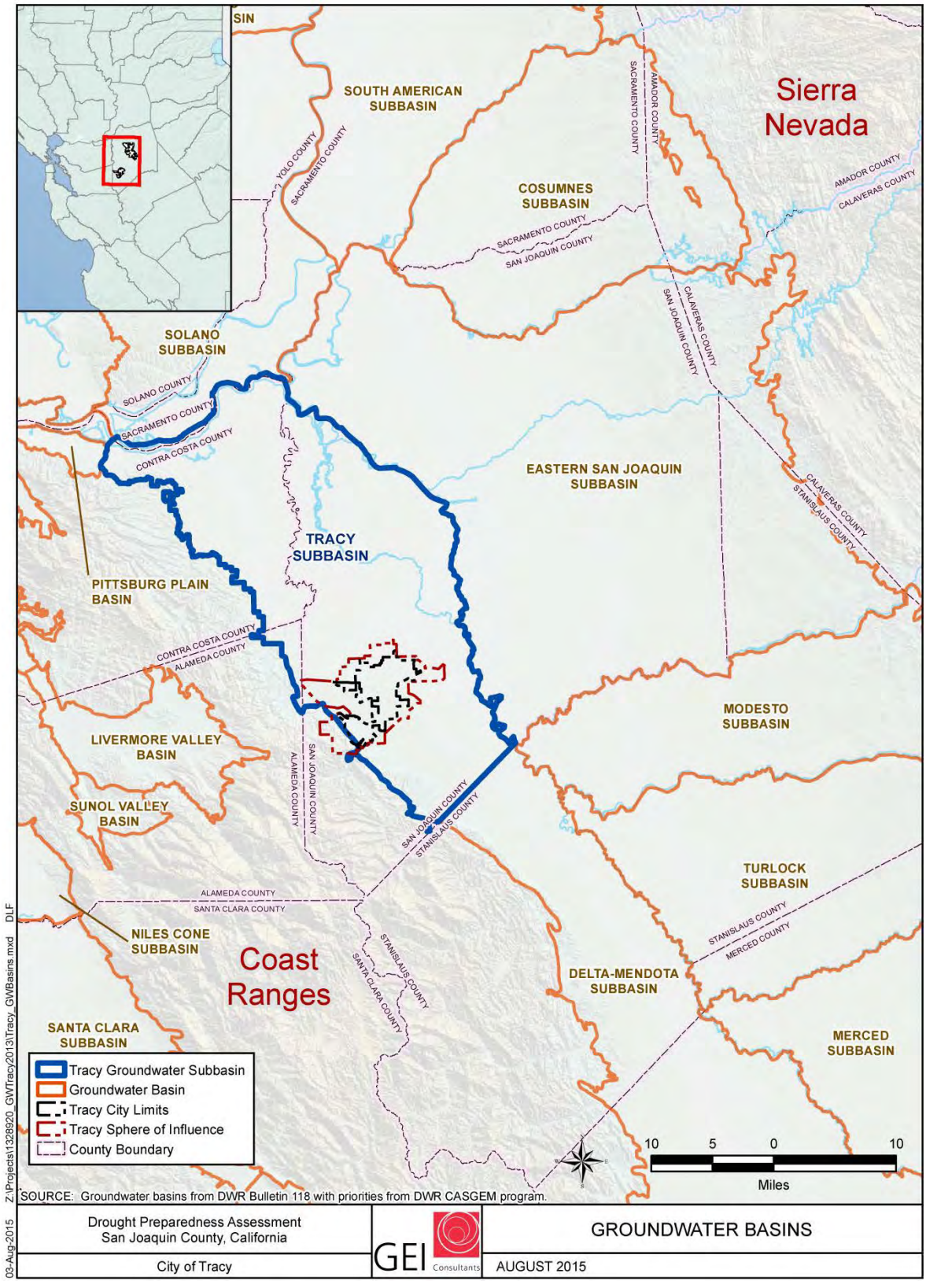


Figure 1. Groundwater Basins

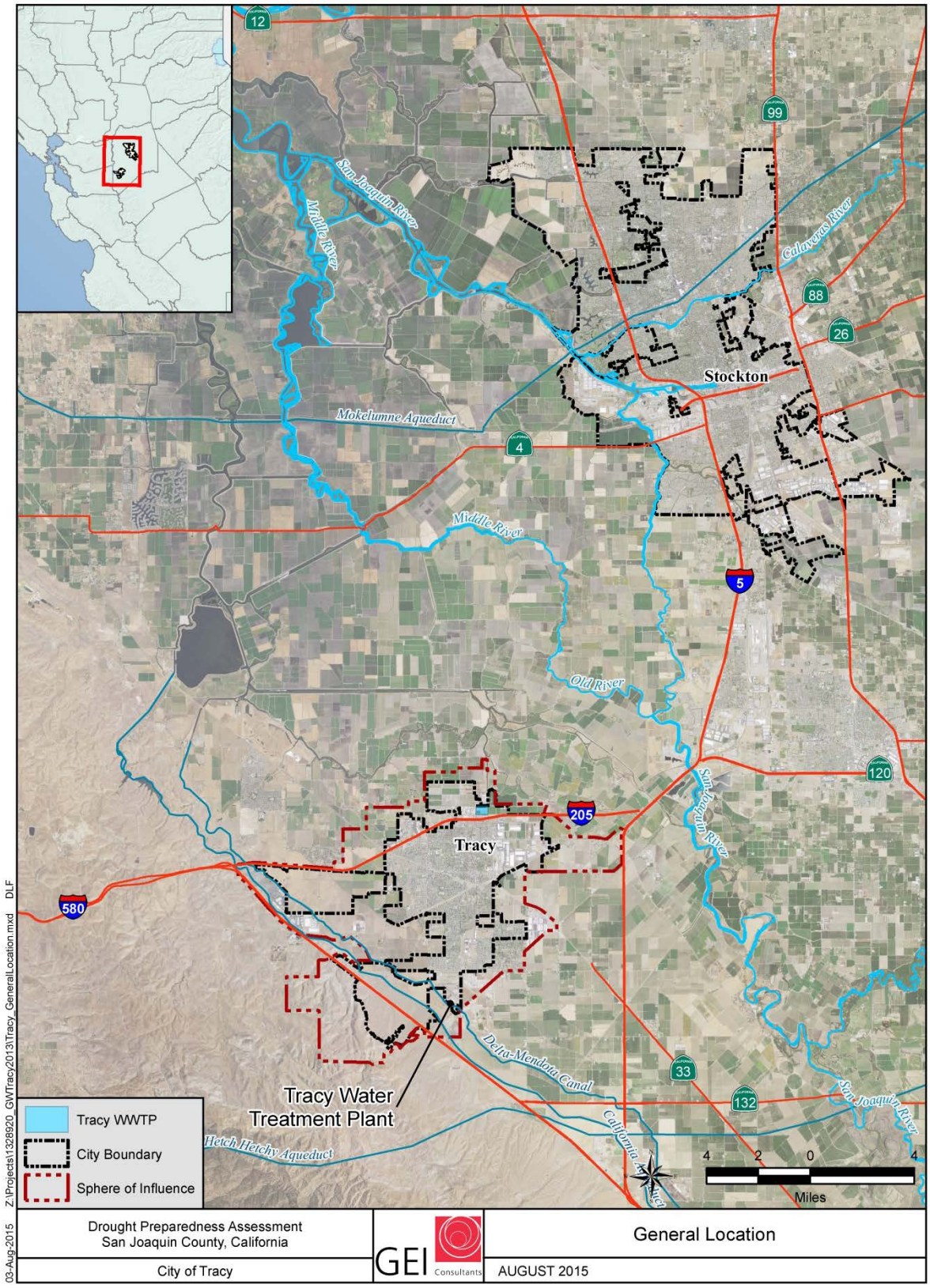


Figure 2. General Location

1.2 Background

The City adopted a General Plan in 2011. The plan directs growth in Tracy to ensure that growth is planned and managed for the benefit of the current and projected future population.

Currently, the City obtains water from surface water and groundwater sources. As a public water purveyor, it exercises its appropriative and overlying rights to use groundwater for beneficial use by the public. The City obtains surface water from the Delta-Mendota Canal (DMC) and the Stanislaus River and groundwater from nine City-owned groundwater supply wells.

The City requires that all new major development secure sufficient surface water supplies. Current surface water supplies appear adequate to meet Tracy's long-term needs; however, groundwater provides the City with an emergency water supply source in the event of the failure or contamination of its surface water supply sources and during peak water demand months. The wells are also used when the surface water treatment is shut down for maintenance.

The City increased groundwater extraction from about 5,800 AFY, year prior to 2001, to between 6,000 and 8,000 acre-feet per year over a five-year period, from 2001 to 2005 (GEI, 2013). Since 2005 and the completion of the South County Water Supply Project (SCWSP) groundwater extraction continues, but at a much lesser extent. During the period of increased pumping, the City monitored groundwater and ground surface elevations to comply with the California Environmental Quality Act. Eighteen monitoring wells at six locations were constructed and seven benchmarks were established to ensure there were no significant impacts. No significant impacts were detected.

The City has a robust surface water supply portfolio. They successfully completed the assignment of up to 10,000 AFY of water from neighboring irrigation districts during 2003. Additionally, the SCWSP became operational during July 2005. The addition of these surface water supplies enabled the City to reduce its use of groundwater and allow groundwater to be reserved for emergency use and for peak water demands during the summer months.

In 2007, the City adopted the Tracy Regional Groundwater Management Plan (GMP), which includes continued groundwater monitoring (GEI, 2007). The monitoring provides a technical basis for identifying and implementing groundwater management actions to preserve the groundwater quality and quantity.

1.3 Operational Yield

In 2001, estimated groundwater yield analysis was performed for the City (Bookman-Edmonston, 2001). As this analysis was performed in 2001, significant new information

has been obtained from within the City to calibrate and refine some of the assumptions made in the 2001 analysis.

The 2001 report included an attempt to quantify the sustainable groundwater yield within the City. Sustainable yield is defined as the long-term average annual groundwater withdrawal that does not exceed the long-term average recharge of the aquifer from which the water is being drawn. However, arriving at a definitive sustainable yield for the City was difficult owing to such factors as the complexities of the aquifer system and selecting the appropriate geographic area within the much larger groundwater subbasin in which to perform the analysis. The report indicated that identify the portion of the sustainable yield available to the City depends on assumptions about pumping by other, and thus, the sustainable yield of the aquifer was not something the City had the ability to estimate and completely control (Bookman-Edmonston, 2001).

Approaches that are commonly used to estimate the sustainable yield include a hydrologic inventory, groundwater modeling, and historical tend analysis by comparing groundwater production to groundwater levels. In 2001, available data would not support the development of a quantified inventory for the area. The groundwater model available at that time also did not fully account for geologic conditions, was of such a coarse grained nature that a water balance could not be extracted for just the City area, and to revise the model was a high cost that could not be supported by the City.

Recognizing the difficulties with the sustainable yield, consideration was given to defining an appropriate "operational yield" for the City. This operational yield, while considering the sustainable yield, also includes limits on the allowable lowering of groundwater levels. These limits reflect the potential consequences of lower groundwater levels with respect to subsidence and water quality impacts. The operational yield concept also provides a means to reflect the significant uncertainties in the estimated sustainable yield and to build in some conservatism in the yield (Bookman-Edmonston, 2001).

The 2001 evaluation used groundwater level data to estimate an operational yield based on analog numeric analytical methods. In conjunction with this operation yield estimate groundwater level drawdowns were projected at several different annual yields to evaluate the drawdown both within and at a distance from the City. In summary, the analysis provided an operational yield of 9,000 AFY that for any City well pumping at 1,500 gpm, 24 hours per day for 365 days the drawdown would be about 55 feet in a well and that at a distance of about five miles from the well the drawdown would be about ten feet. The aggregate effects of pumping all wells at the same time were not estimated.

1.4 Water Supply System and Monitoring

The City has improved its groundwater production wells and the ability to measure pumping effects on groundwater levels and water quality. Benchmarks were also constructed to evaluate the potential for land surface subsidence associated with groundwater pumping. This section describes the improvements to the water supply wells and the monitoring network since 2001, when the previous investigation was conducted.

1.4.1 Water Supply Wells

The City currently has nine active groundwater production wells, including the Lincoln well and Production Wells 1, 2, 3, 4, 5 (Lewis Manor), 6 (Park and Ride), 7 (Ball Park), and 8 (Aquifer Storage and Recovery (ASR) well). **Figure 3** shows their locations. **Appendix A** contains the well construction details and groundwater level trends graphs (hydrographs). It should be noted that groundwater levels contained in the hydrographs are not pumping water levels but were taken after the wells were allowed to rest for at least one day after pumping stopped. Water quality and annual groundwater production are also provided.

Many of the groundwater production wells have been replaced since 2001 predominately due to the older wells being screened above and below the Corcoran clay and or not having sanitary seals that entirely sealing off the shallow aquifer from contributing to the deeper confined aquifer, below the Corcoran clay. A summary of the well replacements is provided in **Table 1**. Because the conditions at these wells have changed, historic groundwater production and groundwater levels used in the 2001 assessment to establish an operational yield of the aquifer could not be used for comparison to the more recent measurements. Production Wells 2 through 4 and the Lincoln well are the only water supply wells that were present prior to 2001 that have not been replaced, modified, or destroyed.

Production Well 8 is reserved for aquifer storage and recovery (ASR). In December 2010, the well was approved for ASR feasibility demonstration pilot testing. The testing was completed approximately two years later and Production Well 8 was then approved for unrestricted use for ASR purposes in 2013.

Table 1. Production Well History

PRODUCTION WELL NAME	ACTIVITY	DATE (MODIFIED, CONSTRUCTED/REPLACED or DESTROYED)
Lincoln	No Change	NA
Tidewater	Destroyed	2005
South Area	Destroyed	2004
Wainwright	Destroyed	2004
Production Well No. 1	Lower Well Screen Sealed Off	2013
Production Well No. 2	No Change	NA
Production Well No. 3	No Change	NA
Production Well No. 4	No Change	NA
Production Well No. 5 (Lewis Manor)	Replaced with a New Well	2001
Production Well No. 6 (Park and Ride)	New Well	2002
Production Well No. 7 (Ball Park)	Replaced with a New Well	2002
Production Well No. 8 (ASR)	New Well	2005

Notes: NA = no change

1.4.2 City Owned Monitoring Wells

Monitoring wells differ from production wells in that they are designed with shorter screen intervals (40 feet or less) to measure properties within a specific aquifer. Data from monitoring wells are considered to be representative of individual aquifer conditions and are generally of higher quality than the data obtained from production wells. **Figure 3** shows their locations. **Appendix B** contains the well construction details and hydrographs for these monitoring wells.

The City has two different types of monitoring wells, nested (multiple monitoring wells screened at different depths within one borehole) and clustered (multiple monitoring wells constructed to different depths in separate boreholes spaced about 25 feet apart). Each type of monitoring well has a different purpose. Currently, only the clustered monitoring wells are being monitored.

Clustered monitoring wells were constructed in sets of three at six locations around Tracy. Their primary purpose is to monitor groundwater levels and water quality in the confined aquifers below the Corcoran clay; the shallow, intermediate, and deep aquifers. These wells were constructed at least one-quarter mile from the nearest municipal or agricultural well so that their water levels would represent regional conditions.

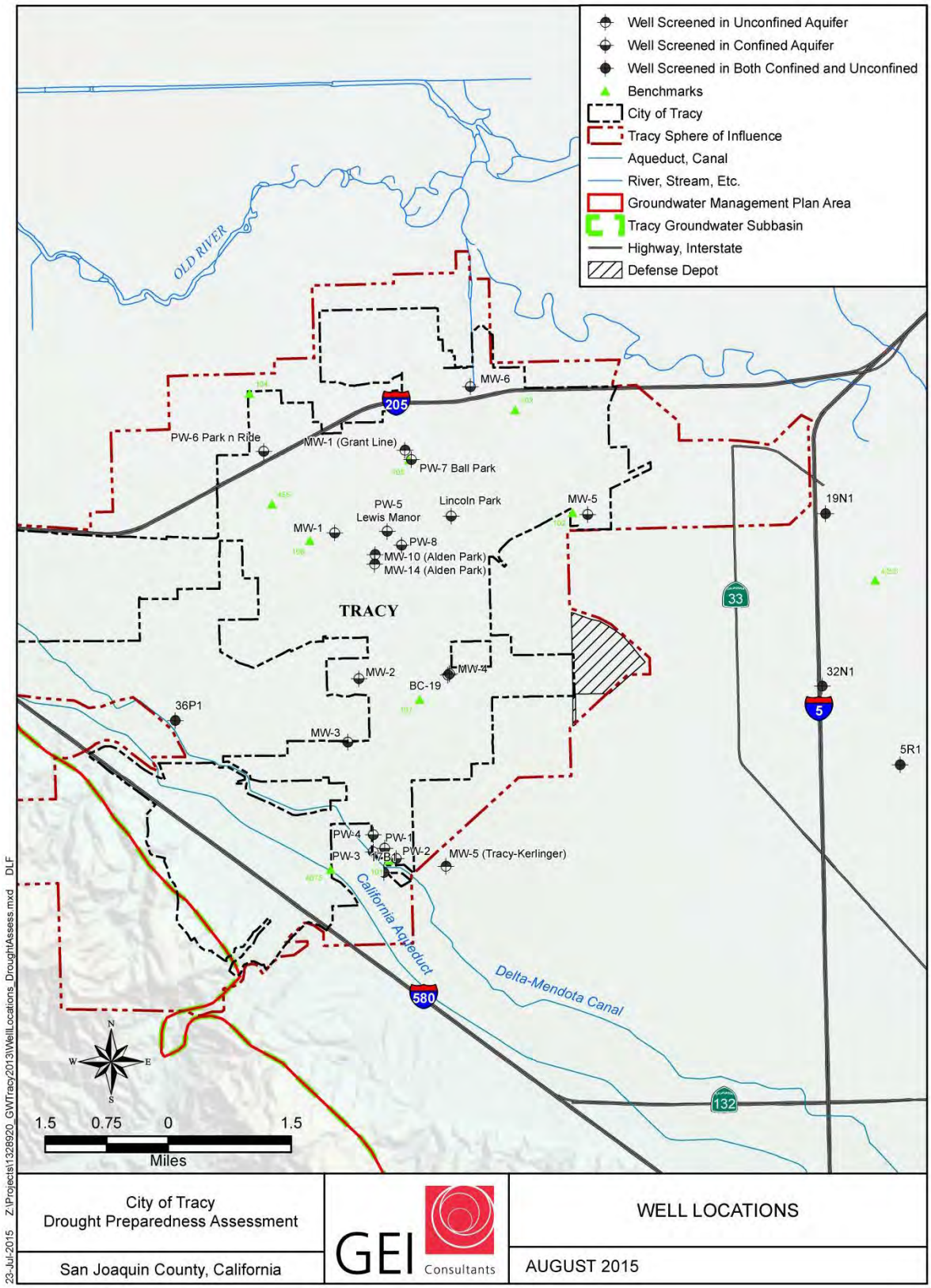


Figure 3. Groundwater Supply and Monitoring Wells

Nested monitoring wells (PW-5A through PW-5D) were installed near Production Well 5. They can be used to assess conditions induced by pumping Production Well 5, including water quality, vertical gradients, and drawdown of each aquifer (unconfined and confined aquifers). These monitoring wells are not included as part to of the City's monitoring network.

Two monitoring wells were installed with Production Well 8. These monitoring wells have long screen intervals similar to the production well and cross several different aquifers, all below the Corcoran clay. Both are within 100 feet of Production Well 8 and measure composite water levels similar to the production wells.

1.4.3 Other Monitoring Wells

The 2001 report used four wells outside of the City to evaluate the potential operational yield of the aquifers and pumping effects beneath the City. These wells are screened in the aquifers above and below the Corcoran clay (Kennedy Jenks/Chilton, 1990) and therefore they represent composite groundwater levels and are not of as high of quality because they do not monitor just one aquifer as do the City owned monitoring wells. However, as these were initially used in the 2001 report the groundwater level trends graphs (hydrographs) are provided for continuity aspects. Unfortunately, only one of the wells (5R1) has been measured since 2001. **Figure 3** shows their locations. **Appendix B** contains the hydrograph for well 5R1. No construction details are available for this well.

1.5 Historic Water Demand

Annual water demand by the City has varied over the years. The water is supplied by a combination of surface and groundwater. The current water demand is about 16,000 AFY (based on 2014 water production data provided by the City). Since 2001, the City has meet portions of its demand with groundwater. In 2000 through 2005, the City pumped about 6,000 to 8,000 AFY, within the operational yield. Since 2005, the City has gradually reduced its groundwater pumping.

The DMC and the State Water Project canals are located just south of the City. Surface water from the Sacramento-San Joaquin Delta is currently provided to the City and other nearby customers via these canals by the United States Bureau of Reclamation (USBR), the South San Joaquin Irrigation District (SSJID), and other water agencies, including the West Side Irrigation District, Byron Bethany Irrigation District (BBID) and Banta-Carbona Irrigation District (BCID).

Approximately 97 percent of the City's potable water supply in 2010 was provided by USBR and SSJID from the Sacramento-San Joaquin Delta. The City also has a water rights contract with BBID and a water banking agreement with Semitropic Water Storage District (EKI, 2011).

1.6 Future Water Demand

The City is expecting to grow significantly in the coming decade. It is estimated that by 2025 the population will be 109,000, up from 82,500 in 2010. This increase in population will result in a projected 32 percent increase in residential water users. The annual potable water demand is expected to increase as well, from 16,690 AFY in 2010 to a projected 28,300 AFY in 2025 (EKI, 2011). For the purposes of this groundwater pumping assessment it was assumed that water conservation would result in about 25 percent reduction in water demand. For analyses 22,000 AFY was assumed for the future potential water demand for estimating groundwater pumping effects.

2 Groundwater Conditions

The section provides a detailed description of the geologic and hydrogeologic conditions of the area and aquifers along with groundwater level and production data, aquifer characteristics, water quality, and subsidence data to serve as a foundation for projecting the effects of relying solely on groundwater for a one year period if surface water supplies are not available. This information forms the basis for the evaluation to assess the City's pumping effects should surface water not be available.

2.1 Groundwater Basin

The Tracy Groundwater Subbasin (Subbasin) as shown in **Figure 1**. The Subbasin is located in the northwest portion of the expansive San Joaquin Valley Groundwater Basin (SJV Basin), which is a structural trough about 200 miles long and 70 miles wide. The SJV Basin is filled with up to 32,000 feet of marine and continental sediments deposited by periodic inundation by the Pacific Ocean and erosion of the surrounding mountains. Locally near the City there are over 3,400 feet of non-marine continental sediments (State Division of Mines, 1943). Only the upper 800 to 2,000 feet of these sediments contain water that is considered potable or suitable for drinking or agricultural use (Page, 1973 and Berkstresser, 1973).

2.2 Regional Geology

The Subbasin is underlain by poorly-consolidated to well-consolidated sediments of Tertiary to Quaternary age. The deposits are primarily continentally-derived alluvial sediments eroded from the surrounding mountains. The sediments are generally coarser grained in the western portion of the Subbasin, having been deposited as coalescing alluvial fans from the nearby Diablo Mountain Range and finer grained to the east and north where the deposits are primarily from the San Joaquin and Sacramento Rivers.

The fresh water-bearing sediments in the Subbasin are grouped into recent alluvium (Qal), older fanglomerate (Mf), and the Tulare Formation (QTt) (CGS, 2005). Underlying the Tulare Formation are the San Joaquin clays (SDMG, 1943). The clays are present at a depth of about 900 feet below ground surface (bgs) near the City. **Figure 4** shows a map of the surface geology and **Figures 5 and 6** show cross-sections that illustrate the extent and relationships of the sedimentary units (GEI, 2007).

Recent alluvium is generally found in the valley floor and along recent stream channels. The alluvium is generally thicker and finer grained in the valley and thins and becomes coarser towards the southwest as it approaches the Coast Ranges.

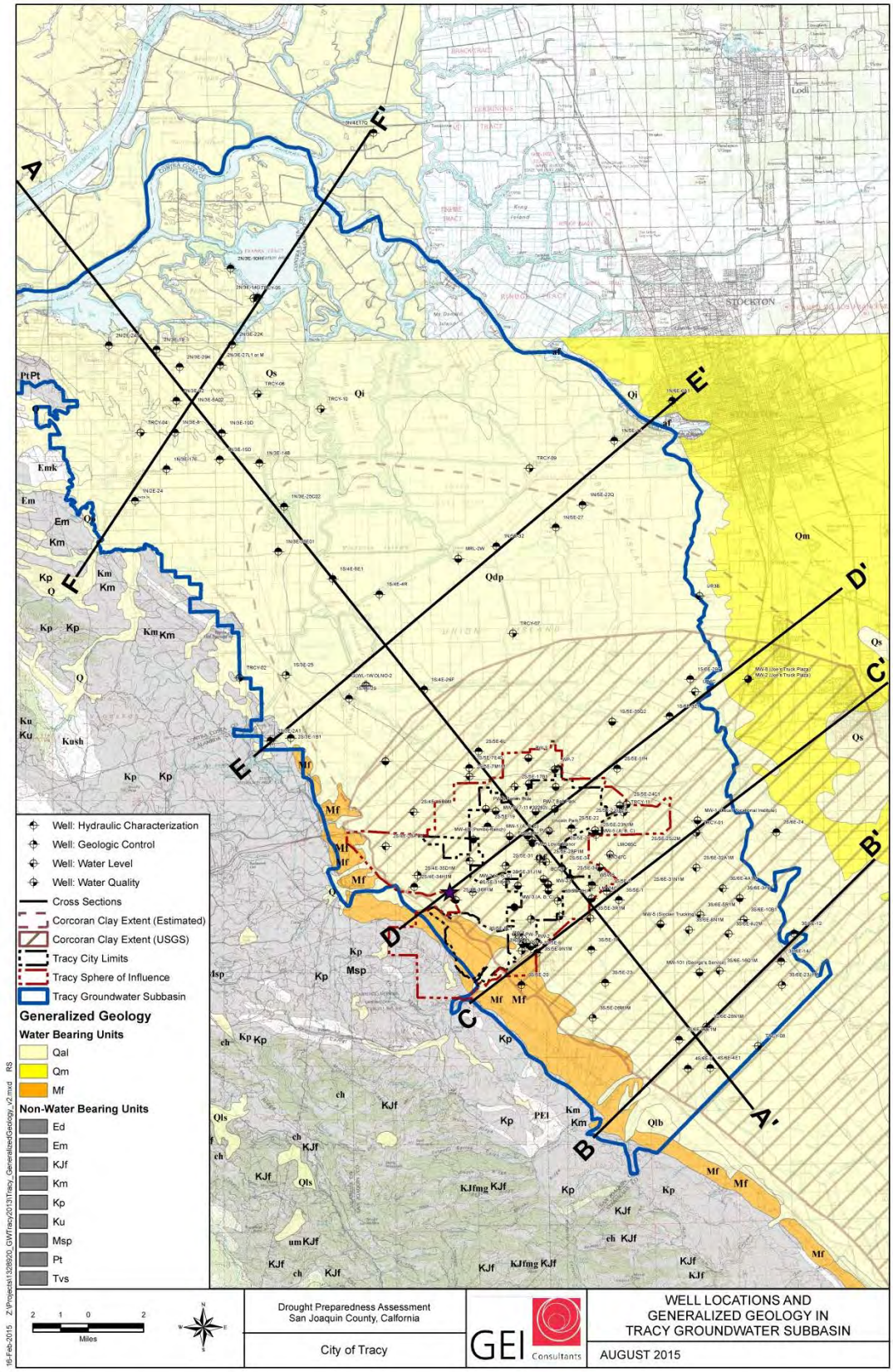


Figure 4. Surface Geology and Geologic Sections

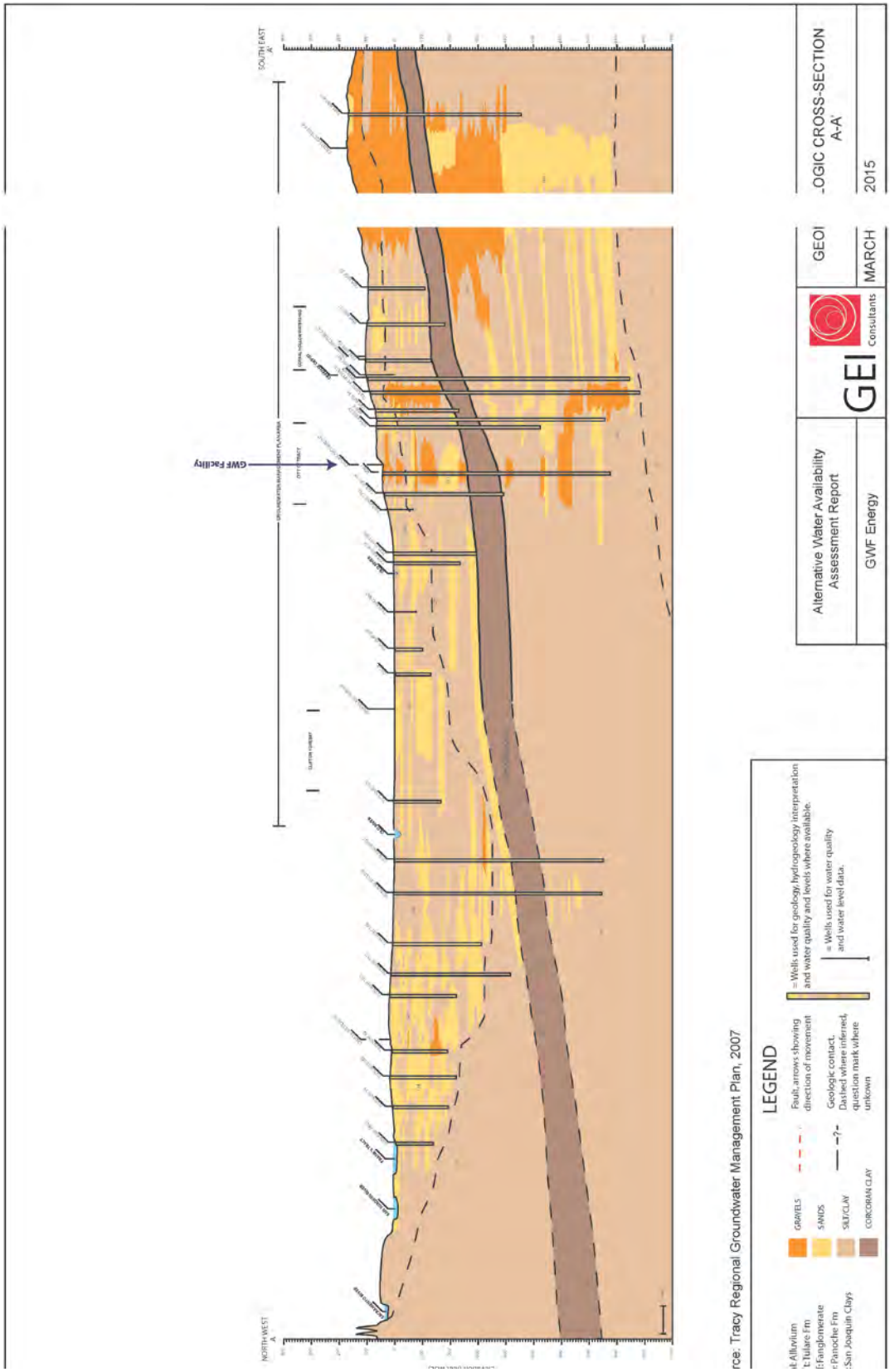


Figure 5. Geologic Section A-A'

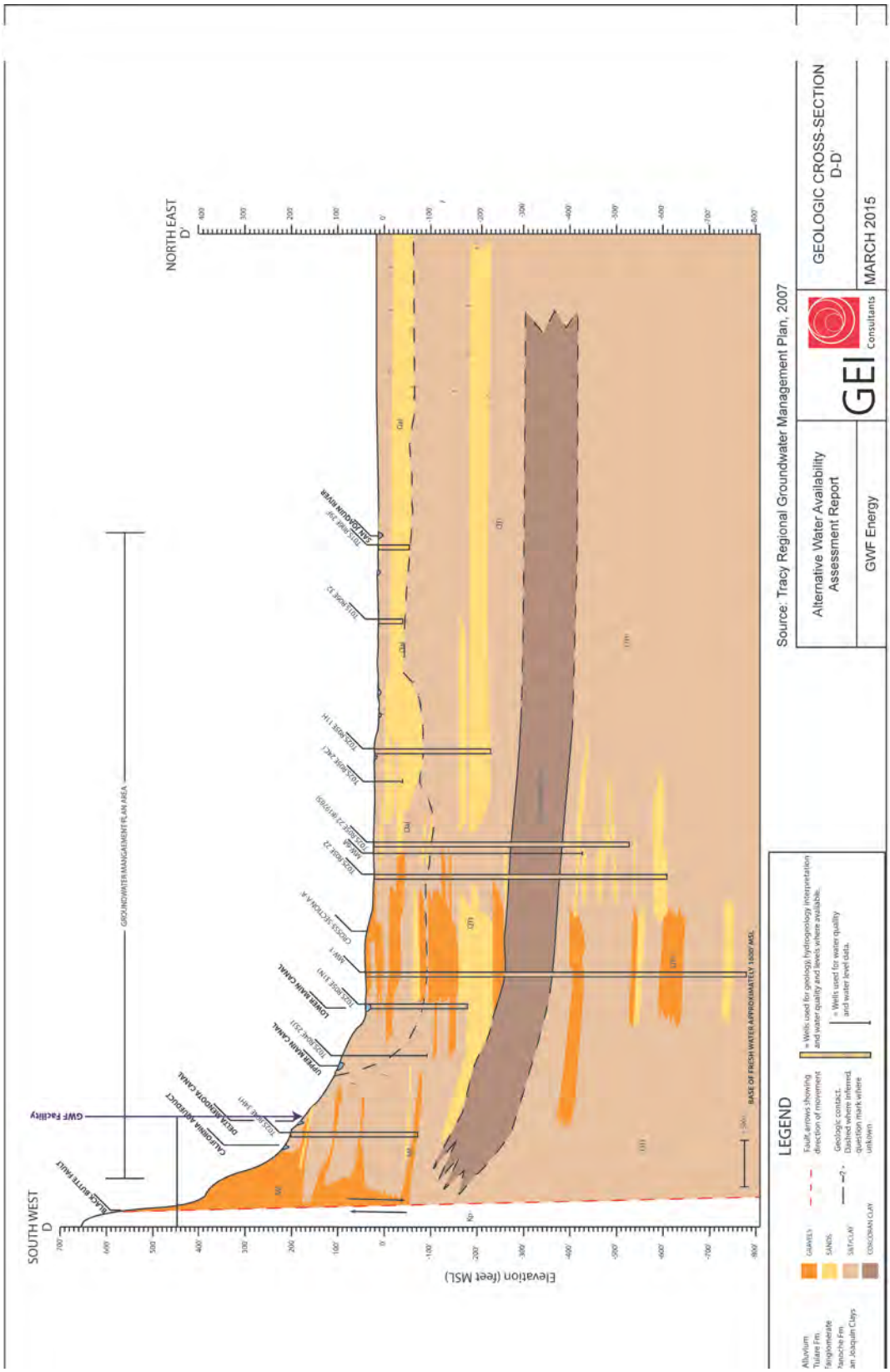


Figure 6. Geologic Section D-D'

Underlying the recent alluvium is the Tulare Formation, the older fanglomerate, and the San Joaquin clays. The Tulare Formation is subdivided into an upper and lower portion that is separated by a thick regional clay bed known as the Corcoran Clay (also known as the E-Clay). The upper portions of the Tulare Formation above the Corcoran Clay (Clay) consist of fine- to coarse-grained floodplain, fan, and terrace deposits. The fan sediments (fanglomerate) consist of angular gravels mixed with sand, clay, and silt and are thicker near the southwestern margin of the Subbasin and thin toward the center of the valley.

The Clay formed in a large lake that extends from the Bakersfield area north to Tracy and is found mostly beneath the western half of the San Joaquin Valley. The Clay is about 60 to 100 feet thick in the Subbasin (Page, 1986). **Figures 5 and 6** show the extent and structure of the Clay. Older studies (Hotchkiss and Balding, 1971 and CDWR, 1967) indicated that the Clay ended south of the City, but more recent studies (Page, 1986) show the Clay may end west of the City as shown on **Figure 6.** An analysis of geophysical logs indicated the Clay likely continues past the City (GEI, 2007).

The lower portion of the Tulare Formation is typically coarser than the upper portion of the formation. The sediments consist of sand and gravel beds that are interbedded with clays and silt. This portion of the Tulare Formation is used by the City's production wells.

The Diablo Mountain Range is separated from the Subbasin by the inactive Black Butte Fault. It is unknown whether the fault is a barrier to groundwater flow.

2.3 Local Geology

The geologic formations within the City include recent alluvium, older fanglomerates, and the Tulare Formation. The older fanglomerates and the Tulare Formation are exposed southwest of the City near the foothills. The relationship between these two formations is not well defined in this area, but the Tulare Formation (including the Clay) likely interfingers with the fanglomerates as shown on **Figure 6**. The fanglomerates may have prevented the Clay from being deposited near the foothills. The fanglomerates may create a potential conduit to allow recharge from precipitation in the Diablo Mountain Range to migrate below the Clay.

The geologic profiles shows there is greater than 1,000 feet of older fanglomerates and the Tulare Formation sediments beneath the City; however, they are mostly fine-grained (silts and clays), but there are some coarse-grained sediments (sand and gravels), that can contribute water to wells. The thickness of the coarse-grained sediments varies locally. The Clay is projected to occur at a depth of about 300 feet bgs or ranging from an elevation of about -100 to -420 feet mean sea level (msl).

2.4 Aquifers

Sand and gravel beds are generally grouped together to form aquifers that may display similar characteristics. The aquifers are separated by single or multiple clay layers (or aquitards) that can slow or prevent vertical movement of groundwater between aquifers.

There are two principal aquifers in the subbasin that are separated by the Clay. The Clay acts as a regional low permeability layer that limits vertical movement of groundwater. **Figure 7** shows the relationship and extent of the aquifers.

Above the Clay is an unconfined to semi-confined aquifer (hereafter referred to as the unconfined aquifer). The groundwater is not compressed by overlying confining units but instead is at atmospheric pressure or a water table aquifer.

Below the Clay, the aquifer is confined. In a confined aquifer, the groundwater is under pressure with water levels that rise above the confining bed or aquitard. The confined aquifer appears to be over 500 feet thick, but only about 120 feet may be saturated coarse grained sediments that contribute water to a well. These coarse grained sediments have been divided into three zones (Zones A, B, and C from shallowest to deepest, respectively) (GEI, 2007). Each of these zones has different groundwater levels and water quality suggesting they are potentially separate and distinct aquifers. There may be additional aquifers below the depths explored.

2.5 Base of Fresh Water

The entire Tracy Subbasin is underlain by saline water. The base of fresh water is the boundary where the water exceeds a specific conductance of 3,000 micromhos per centimeter (µmhos/cm) (equivalent to total dissolved solids (TDS) of about 2,000 mg/L). In the Tracy Subbasin, the mapped base of fresh water ranges from about 800 feet bgs below the City to depths of 2,000 feet bgs beneath the western part of the City (Page, 1973 and Berkstresser, 1973).

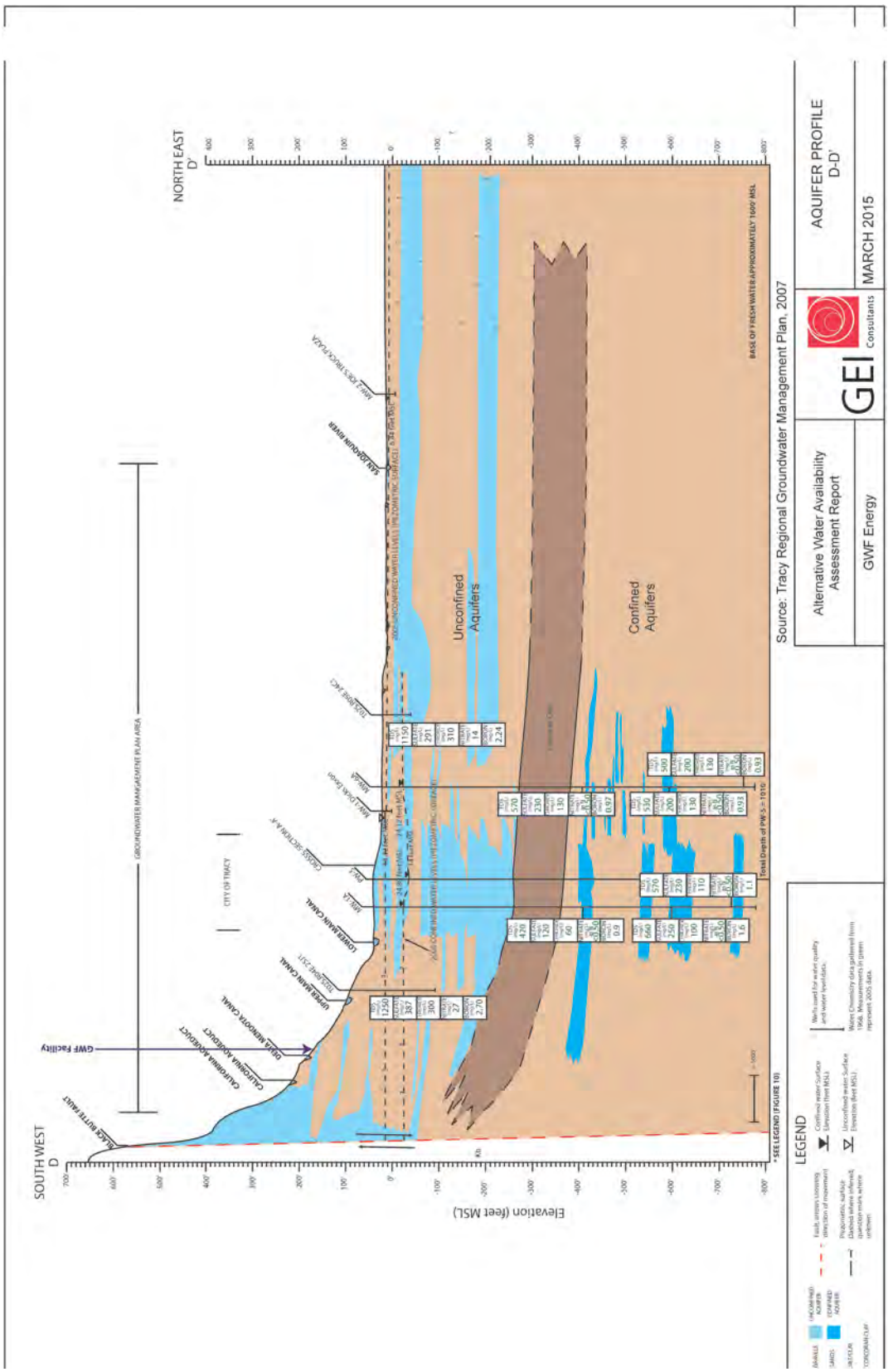


Figure 7. Aquifers along Section D-D'

2.6 Groundwater Levels

The City only has one monitoring well (PW-5A) that monitors the unconfined aquifer; however, it has not been routinely monitored. Historically, other parties in the area have had monitoring wells that were constructed to monitor for releases of contaminants to the environment. One of these wells (BC-19) is located near the City's MW-4 well cluster. These measurements have been relied upon to evaluate groundwater levels in the unconfined aquifer. **Figure 8** shows the groundwater levels in this well and those from PW-5A.

In general, the depth to groundwater in the unconfined aquifer ranges from a little as a few feet below ground surface near the north portion of the City, near the Delta, to over 100 feet below ground surface near the southern portion of the City. The unconfined aquifer water levels in the area are about 50 to 60 feet above msl as shown on **Figure 7**. The water levels are trending flat and do not show significant seasonal fluctuations. As shown on **Figure 8** the unconfined aquifer did not respond to the City's pumping of its supply wells.

The City has constructed monitoring wells at six locations within their boundary to monitor the groundwater levels and quality in the aquifers below the Clay. Their locations are shown on **Figure 3**. MW-2, MW-3, and MW-4 are located in the central portion of the City between all of its pumping wells and therefore represent average confined aquifer conditions beneath the City. All wells are screened at three distinct levels within the confined aquifer (designated A, B, and C from shallowest to deepest, respectively). **Figure 8** shows the confined aquifer groundwater elevations in the confined aquifer at MW-4 in comparison to groundwater pumping by the City and those in the unconfined aquifer. The depth to water at this location is about 150 feet bgs, but varies year to year. The lowest groundwater elevation (piezometric) measured in these wells was about 61 feet below msl, in 2004. Groundwater levels in the confined aquifer show seasonal fluctuations of as much as 20 feet in response to pumping (by the City and possibly agriculture) and seasonal recharge as shown on **Figure 8**. The groundwater levels have shown a gradual rise since 2005, which continued until early 2013 likely in response to reduced pumping of City wells, but there are other private wells in the Subbasin that could affect this trend. In 2013 and 2014, the water levels have declined in response to reduced recharge due to drought conditions and possibly increased pumping.

Because the City owned monitoring wells were constructed between 2001 and 2003, initial groundwater levels before the City increased its pumping were not measured. The Lincoln well was present at that time and water levels were recorded each spring. In spring of 1999, the static water level was about 30 feet below msl. From 2001 through 2005 higher pumping periods from the City's wells, the spring static water levels groundwater levels declined to an elevation of 40 feet below msl. By February 2009 they had recovered to pre-1999 levels. The highest groundwater level reported at this well was in 1990, at 18 feet below msl.

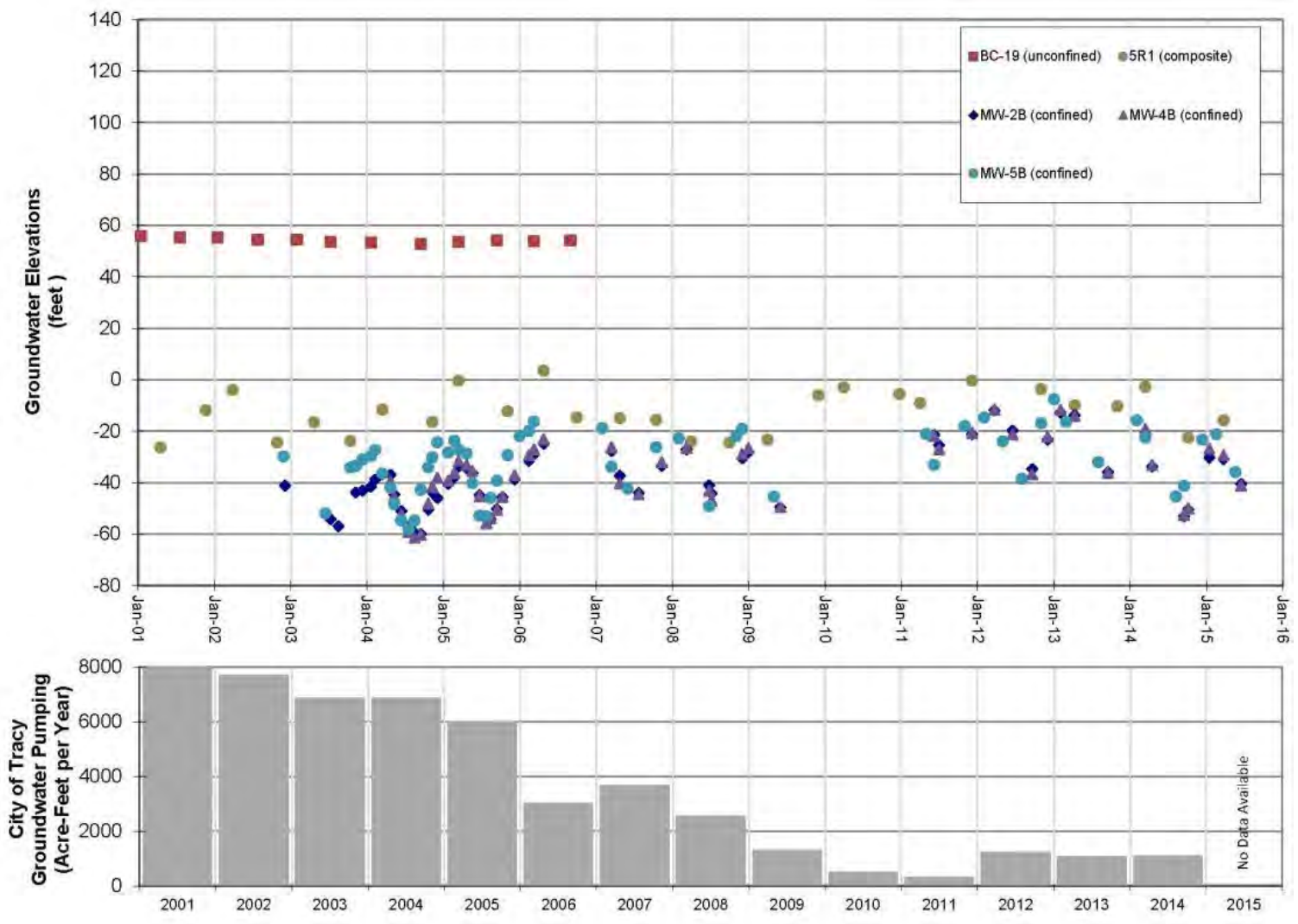


Figure 8. Water Level Hydrographs

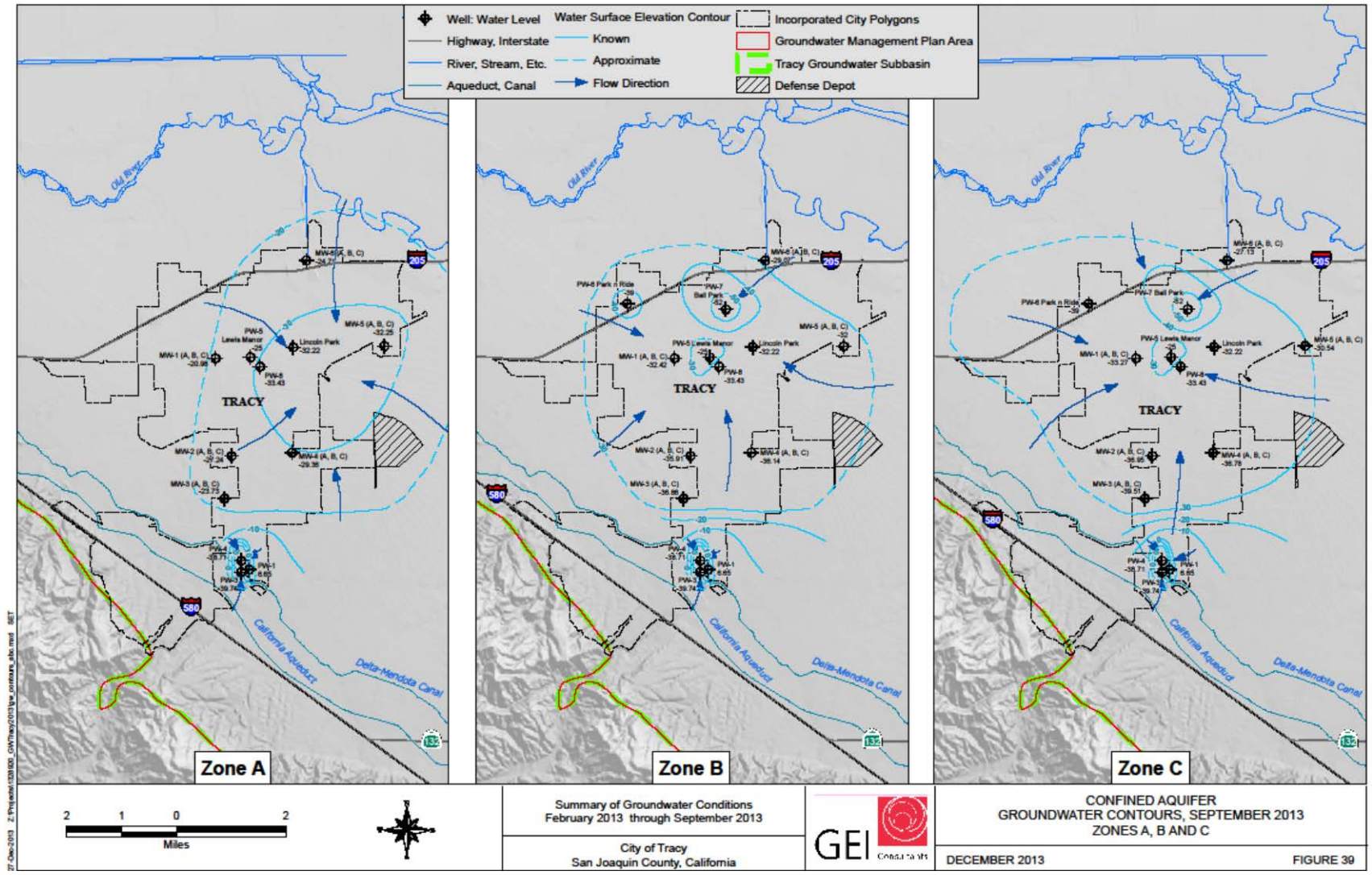


Figure 9. 2013 Confined Aquifer Groundwater Contours

The depth to water in the confined aquifer is about 40 feet lower than is found in the unconfined aquifer, (GEI 2007).

Groundwater levels in well 5R1, located about 7 miles from the City's pumping wells, are composite of both the unconfined and confined aquifers due to the well being constructed with screens opposite both aquifers. The groundwater levels show some variation in the groundwater levels by about 20 feet seasonally, but more likely due to use of the well. A comparison of the groundwater levels to the City's pumping shows little to no correlation. This is possibly due to the City's wells not having an effect on the confined aquifer at this distance or due to the unconfined aquifer masking the effects of pumping the confined aquifer. **Figure 3** shows the well location and **Figure 8** shows the groundwater elevations.

2.7 Groundwater Flow Directions

Figure 9 show groundwater contours (piezometric) developed for 2012 and indicate the direction of groundwater flow, recharge areas, and areas of discharge. The groundwater flow direction is typically 90 degrees to the groundwater contour.

In the confined aquifer, the City monitors groundwater levels in three different sedimentary layers (Zone A, B, and C from shallowest to deepest, respectively) starting at a depth of about 400 feet to 800 feet bgs. The contours show there are two pumping depressions, a relatively large one beneath the City and a smaller one in the southern portion of the City near the canals. Groundwater is moving in a radial pattern from the south, east, west, and north toward pumping depressions beneath central portions of the City. The gradient is steeper on the north side of the depression, suggesting the presence of lower permeability aquifers or a recharge source.

Another pumping depression is centered over Production Well 1 near the DMZ and SWP canals. This pumping depression has been present since monitoring began in 2002, but the size of the depression is poorly constrained (few or no monitoring wells south, west, or east of the well field).

Groundwater flow in the deeper confined aquifers (Zones B) is similar to that in the Zone A aquifer, but the flow pattern suggests they are more influenced by sources east of Tracy. Groundwater contours for the deep aquifer (Zone C monitoring wells) are similar to the intermediate aquifer (Zone B), but with recharge to the aquifer from the east and little to no recharge from the southwest.

2.8 Aquifer Hydraulic Characteristics

The hydraulic characteristics of sediments that make up the aquifers are data that provide the foundation for predicting the pumping effects of wells. They are basic scientific parameters used to estimate and predict the speed and direction of groundwater movement,

groundwater storage, and the potential effects of groundwater pumping on groundwater levels.

The hydraulic characteristics of sediments and aquifers use several terms to quantify the ability to store and transmit water. The hydraulic conductivity is the ability of the sediments to transmit water. Transmissivity, a term applied to aquifers, is the hydraulic conductivity multiplied by the thickness of coarse sediments capable of transmitting water. All sediments have some void space between the particles; this void space is reported as porosity. Water in the void spaces cannot be entirely removed due to capillary forces. The storage coefficient is the percentage of water that can be removed from the pores by gravity drainage and is applied when describing unconfined aquifers. Storativity is similar to storage coefficient, but is the percentage of water that can be released from the pores by a decrease in pressure. Storativity is used when referring to semi-confined or confined aquifers.

In 2001, aquifer testing was performed on the new Lewis Manor Well (Production Well 5) (West Yost & Associates and Padre Associates, Inc., 2002). Four nearby monitoring wells (PW-5A, PW-5B, PW-5C, and PW-5D) and one production well (Tidewater Well, which has since been destroyed) were used as observation wells during testing. An observation well is necessary to obtain the storativity of an aquifer. During the constant discharge test the well was pumped for 24 hours at an average rate of 1,874 gpm. The transmissivity of the confined aquifer at Production Well 5, ranged between 63,400 and 82,600 gpd/ft, averaging about 73,700 gpd/ft. The storativity was estimated to be 2.86×10^{-4}. This estimate would be valid for those production wells located in the center to northern portions of the City, but may not be valid for the southern portion of the City, near Production Wells 1 through 4, which are closer to the foothills where the sediments may be coarser grained and they are near the area where the Clay may pinch out and the aquifer could change from confined to unconfined.

An estimate of the drawdown, using the transmissivity and storativity from aquifer testing at the Lewis Manor Well, was made by GEI for the Lincoln well and then compared to actual test data (six hour pumping duration). The estimated drawdown was 72 feet while the actual drawdown was measured to be 70 feet, a very reasonable match. **Appendix C** contains this validation of the aquifer parameters.

In 2010, the City rehabilitated Production Well 1. While it was idle a transducer was installed and Production Wells 3 and 2 were turned on sequentially to observe the drawdown effects to understand the amount of well interference and how it could affect selection of the permanent pump for Production Well 1. Using the data GEI analyzed the test results to develop an estimate of the aquifer characteristics for this area. The aquifer test results had a transmissivity range of 169,000 to 305,000 gpd/ft with a storativity of 4.51×10^{-4} to 9.06×10^{-4} suggesting the aquifer is confined, at least during short pumping durations. **Appendix C** contains the aquifer test analyses.

2.9 Corcoran Clay Hydraulic Characteristics

The Clay is a regional layer that restricts movement between the unconfined and confined aquifers. There is about 40 feet of head difference between the unconfined and confined aquifers suggesting the Clay is a regional barrier to groundwater flow. No test data are available for the Clay, but some groundwater models have "backed into" what appear to be reasonable permeability values. The vertical hydraulic conductivity was estimated to range from 0.01 to 0.007 feet per day (Burow et al., 2004).

The Clay's ability to act as a regional aquitard has been compromised because of the large number of wells in the Subbasin, some of which are constructed with well screens both above and below the Clay, which interconnects the two aquifers. The gravel pack surrounding the wells and the wells themselves act to connect the unconfined aquifer with the confined aquifer (Page and Balding, 1973).

2.10 Groundwater in Storage

There is insufficient data currently available on the amount of groundwater in storage for the Subbasin. It has been inferred that the approximate storage capacity of the southern portion of the Subbasin, which includes the City, is on the order of 1,300,000 AF (CDWR, 2006).

2.11 Sustainable Yield

A groundwater budget and an estimate of the sustainable yield for Tracy Subbasin have not been developed due to insufficient published data (CDWR, 2006). As required by the 2014 Sustainable Groundwater Management Act (SGMA); however, a sustainable yield will be required to be developed by 2022.

Groundwater level trends and pumping data can be used to give a qualitative assessment of the sustainable yield of the basin over time. **Figure 8** shows groundwater levels in the unconfined aquifer have a flat trend, suggesting the aquifer is within its sustainable yield. It is possible the flat trend is also due to an abundant recharge source, as the aquifers could potentially be in communication with surface water (i.e., the Delta).

A pumping depression is present beneath the City in the confined aquifer since at least 2004. The depression has been shrinking since 2005 when groundwater pumping decreased in response to the new SSJID surface water supply source becoming available.

Groundwater levels in the confined aquifer fluctuate seasonally, but levels have risen about 20 feet between 2004 and 2013, as shown on **Figure 8**. The increasing groundwater levels suggest the confined aquifer is also within its sustainable yield. Groundwater levels have declined since 2013, but this is likely just a short-term response to drought conditions with limited recharge and/or increased pumping by agriculture.

2.12 Groundwater Quality

Groundwater quality data for the confined aquifer is monitored at least twice per year by the City in owned wells. **Appendices A and B** hydrographs also show water quality trends for key constituents. Water in the confined aquifer in Zone A is of high quality and meets all primary and secondary drinking water standards. Water from the B and C Zones is more variable and typically exceed the secondary MCL for total dissolved solids (TDS) and sulfate.

Groundwater quality is the poorest at MW-2 and MW-5 where highest TDS and chloride concentrations are present and at Production Well 4 were the nitrate is about half of the MCL. The high TDS and chloride concentrations appear to be from sources to the east and west of the City.

As shown on the hydrographs, groundwater quality has changed little even through the periods of higher pumping rates.

2.13 Subsidence

The City established seven benchmark locations in 2003. The benchmarks locations are shown on **Figure 3** and were surveyed annually through 2007. The elevation data are shown in **Table 2** along with the cumulative change in ground surface. By 2007, the cumulative change in ground surface elevation was about 0.13 of a foot downward. The equipment accuracy used for the survey is 0.06 feet. All stations showed a slight decrease in elevation suggesting if subsidence is occurring it is regional and not associated with pumping of any single well by the City. Because of the varying amounts of pumping at each well, it would be expected that if the pumping was the cause of the subsidence there would be significantly more subsidence near wells with higher production. As this is not the case, the apparent subsidence is regional and is not caused by the City.

Table 2. Annual Benchmark Survey Results

Station Name	2003 Elevation (feet)*	2004 Elevation (feet)	2006 Elevation (feet)	2007 Elevation (feet)	Cumulative Elevation Difference 2003 to 2007
101	212.038	212.0439	211.944	211.817	-0.127
102	46.031	46.03002	45.836	45.709	-0.127
103	25.193	25.17299	25.056	24.929	-0.127
104	15.022	15.00396	14.888	14.761	-0.127
105	29.804	29.81417	29.646	29.520	-0.126
106	45.641	45.6246	45.466	45.345	-0.121
107	111.533	111.5471	111.300	111.169	-0.131

*Base elevations determined by land & global positioning survey conducted by Stoddard & Associates, 2003; The results are the product of the 2007/2006 GPS ellipsoid height differences applied to the 2003 land leveled height values. The results are at the design accuracy of the survey (2cm). All stations indicate lower elevations at similar values. These results appear to indicate a fairly uniform trend of subsidence.

3 Assessment

This chapter presents an evaluation of the potential effects of the City relying solely on groundwater for a one-year period under current (16,000 AFY) and projected future (22,000 AFY) conditions.

3.1 Assessment Approach

GEI's approach to assess whether the City could feasibly pump in the range of 16,000 to 22,000 AFY in a single year and the potential effects was to use the recent aquifer test results from the Production Wells 1 and 5 for drawdown calculations. Aquifer characteristics (transmissivity of 169,000 gpd/ft with a storativity of 9.06×10^{-4}) derived from Production Well 1 were used at Production Wells 2 through 4. Aquifer characteristics derived from Production Wells 5 (transmissivity of 73,700 gpd/ft with a storativity of 2.86×10^{-4}) were used at the Lincoln and Production Wells 5 through 8.

Historic drawdown projections were made at each of the City's wells using a numeric spreadsheet calculator that is a polynomial expression of the Theis equation because pumping groundwater level measurements were not available from the water supply wells. The values were estimated using the pumping capacities listed in **Table 3**. A static water level from September 2013 was used as a relative and consistent datum for all calculations. The historic groundwater drawdown at each monitoring well was derived by using the September 2013 groundwater level measurement and subtracting the greatest depth to water measured at each well. The estimates include well interference, which can be significant. The historic maximum pumping rates provided in **Table 3** are not all from the same year as the City tends to rotate its pumping to different wells from year to year. The maximum production for most of its wells occurred either in 2001 (8,000 AFY) or in 2003 (6,900 AFY). These two years were used in this analysis to forecast the maximum historic drawdowns with well interference. **Table 4** summarizes the results of these calculations. **Appendix D** contains additional calculation details.

Projected drawdowns when pumping to supply 16,000 and 22,000 AFY for a one-year period were developed by using the pumping rates and pumping durations contained in **Table 3** as input to the numeric spreadsheet calculator. Well interference was accounted for by making multiple calculations at varying distances from each of the pumping wells. The drawdown at in each well is the summation of the drawdown in each pumping well along with those created from each of the other pumping wells. **Table 4** provides a summary of the calculation results and **Appendix D** contains additional calculation details.

Projected drawdowns were converted to groundwater surface elevations to assess whether the drawdown would exceed the bottom of the Clay to evaluate the potential for

subsidence. Projected drawdown was converted to elevation by using the ground surface elevations at each from the well and subtracting the September 2013 static water level and the projected drawdown. **Table 5** summarizes these measurements.

3.2 Groundwater Supply Wells Capabilities

The City owns and operates nine municipal water supply wells that have variable groundwater pumping capacities. The pumping capacities of the wells were assessed to evaluate if groundwater could be relied upon to produce 16,000 and 22,000 AFY. **Table 3** lists the well's pumping capacities, pumping duration to produce the required water, and their annual production. The pumping durations as shown in **Table 3** are all less than 24 hours per day, indicating the wells can supply the required water to meet 16,000 to 22,000 AFY. However, when wells are pumped for more than 12 hours per day the potential to develop a temporary pumping depression increases.

Table 3. Current and Projected Potable Water Supply Capacity

WELL NAME	PUMPING CAPACITY (gpm)	HISTORIC MAXIMUM PUMPING (AFY)	16,000 AFY PUMPING DURATION (hours per day)	PRODUCTION BY WELL (AFY)	22,000 AFY PUMPING DURATION (hours per day)	PRODUCTION BY WELL (AFY)
Lincoln	2,500	2,179	13	2,184	18	3,024
Production Well No. 1	1,400	1,449	13	1,223	18	1,694
Production Well No. 2	2,000	1,301	13	1,747	18	2,420
Production Well No. 3	1,750	1,398	13	1,529	18	2,117
Production Well No. 4	2,000	661	13	1,747	18	2,420
Production Well No. 5 (Lewis Manor)	2,550	1,679	13	2,228	18	3,085
Production Well No. 6 (Park and Ride)	2,000	558	13	1,747	18	2,420
Production Well No. 7 (Ball Park)	2,000	937	13	1,747	18	2,420
Production Well No. 8 (ASR)	2,100	1,155	13	1,835	18	2,540
Subtotal (AFY)		11,317		15,989		22,138

3.3 Pumping Drawdown Effects at City Wells

The effects of pumping each well on groundwater levels varies based upon the pumping rate at each well, pumping duration, and the amount of well losses (plugging). Estimates of the effects of pumping to meet 16,000 and 22,000 AFY for one year were made using the transmissivity and storativity from aquifer testing. Estimates of drawdown for each production well were made based on historic production, at 16,000 AFY and at 22,000 AFY. **Table 4** summarizes the results of these calculations. **Appendix D** contains these calculations. The results show that by increasing the pumping duration the groundwater levels are drawn down by as little as one additional foot to as much as 78 feet greater than historic drawdowns. The reason that there is this much drawdown is the effects of well interference, which historically has been minimal due to only pumping one of the City wells for longer duration but not all of the wells pumping at the same time. Well

interference from nearby agricultural wells was not incorporated into these analyses due to their unknown construction details, pumping rates and durations. The drawdown in most City wells will be significantly more than what has been projected to have historically occurred but will it will only last for a one-year period.

Table 4. Pumping Drawdown Projections

WELL NAME	PUMPING CAPACITY (gpm)	HISTORIC MAXIMUM PUMPING (AFY)	PROJECTED HISTORIC MAXIMUM DRAWDOWN (feet)	16,000 AFY PRODUCTION BY WELL (AFY)	PROJECTED DRAWDOWN (feet)	22,000 AFY PRODUCTION BY WELL (AFY)	PROJECTED DRAWDOWN (feet)	MAXIMUM HISTORIC TO PROJECTED DRAWDOWN DIFFERENCE (feet)
Lincoln	2,500	2,179	**137**	2,184	**206**	3,024	**215**	**-78**
Production Well No. 1	1,400	1,449	**125**	1,223	**125**	1,694	**126**	**-1**
Production Well No. 2	2,000	1,301	**83**	1,747	**121**	2,420	**128**	**-45**
Production Well No. 3	1,750	1,398	**83**	1,529	**121**	2,117	**128**	**-45**
Production Well No. 4	2,000	661	**85**	1,747	**124**	2,420	**131**	**-46**
Production Well No. 5 (Lewis Manor)	2,550	1,679	**158**	2,228	**191**	3,085	**198**	**-40**
Production Well No. 6 (Park and Ride)	2,000	558	**127**	1,747	**160**	2,420	**167**	**-39**
Production Well No. 7 (Ball Park)	2,000	937	**141**	1,747	**178**	2,420	**185**	**-44**
Production Well No. 8 (ASR)	2,100	1,155	**119**	1,835	**177**	2,540	**184**	**-65**
MW-4B	0	0	**60**	0	**97**	0	**104**	**-44**
MW-5B	0	0	**60**	0	**92**	0	**99**	**-39**
5R1	0	0	**31**	0	**53**	0	**60**	**-29**
Subtotal (AFY)		11,317		15,989		22,138		

3.4 Cumulative Pumping Effects within the City

Groundwater levels in the City owned wells and monitoring wells vary seasonally and yearly based on the City's annual groundwater production, recharge from precipitation, ASR efforts and pumping influences from agriculture. The maximum historic projected groundwater level at MW-4B was 60 feet. Projections with all of the City's wells pumping to produce 16,000 to 22,000 AFY results with well interference to be projected to be about 44 feet deeper than has been historically observed. At the edge of the City, near MW-5B the drawdown will be about 40 feet deeper. The drawdown will be significantly more than what has been projected to have historically occurred but will it will only last for a one-year period.

3.5 Cumulative Pumping Effects Outside of City

The cumulative effects of pumping all of the City's wells at one time will create drawdown at a distance from the pumping wells. **Table 4** summarizes the pumping effects at Well 5R1 which is screened both above and below the Clay. The drawdown projections show groundwater levels will be drawn down by about 27 feet below historic levels in the confined aquifers below the Clay. Historically, the drawdown in this well has not been able to be correlated to the City's pumping.

It should be noted for the well 5R1 (composite water levels), that the historic maximum drawdowns are actual values (using September 2013 as the static water level) whereas the

projected drawdowns are only for the confined aquifer. The actual effects on groundwater levels will likely be less due to the unconfined aquifer contributions to the well. The drawdown is significantly more than what has historically been observed, but will only last for a one-year period.

3.6 Groundwater Recovery

During the five-year period between 2001 and 2005, the City pumped between 6,000 to 8,000 AFY from its wells. The total amount of groundwater extracted from the aquifers was over 35,000 AF. Since 2006, the City has reduced its pumping. Groundwater levels at the Lincoln well have recovered to elevation 24 feet msl, by about 20 feet from 2006 through 2011. Historically, the static water levels in the Lincoln well in 1999 were at elevation 30 feet below msl. Therefore, extraction of 16,000 to 22,000 AF for a one-year period, being less than the total historically pumped between 2001 and 2005, indicates groundwater levels will likely fully recover within seven years. Therefore, the potential to create long-term adverse effects on water levels is less than significant.

3.7 Potential for Adverse Water Quality Changes

As shown on the hydrographs in **Appendix A** and **Appendix B** the groundwater quality is very stable beneath the City and does not appear to have been adversely affected by higher extraction rates, which as shown in **Table 3** have approached the production rates needed to supply water at 16,000 AFY for a one year period. However, as shown on **Table 4** the depth to water and therefore the groundwater gradient will increase, allowing water from areas surrounding the City to migrate beneath the City. However, because the pumping duration is only for one year and the groundwater levels will recover pushing any poorer quality water back to its original position. Therefore, the potential to create adverse effects on water quality is less than significant.

3.8 Potential for Subsidence

Land subsidence can be caused by groundwater extraction. Consolidation of compressible soils is generally caused by the dewatering of clays and silts. Land subsidence due to short-term dewatering may be elastic and recoverable as water pressures in the pores of these materials are restored. More severe dewatering can cause a collapse of the pores and result in inelastic or non-recoverable land subsidence. The reduction of pressure in thick clay units can be very slow, and once reduced pressure has begun to propagate through the unit, consolidation may continue for years of decades. Generally, land subsidence due to consolidation can be prevented by avoiding the initial dewatering of clay and silt aquifer units. Normally, the potential for subsidence is low as long as groundwater levels are not drawn down below historic levels.

The bottom of the Clay varies throughout the City as provided in the tables contained in **Appendix A and B**. Groundwater levels in the confined aquifer, as shown on **Figure 7,** are up to 200 feet above the top of the Clay.

Table 5 summarizes the projected historic and forecasted drawdowns by converting these drawdowns to elevations. The elevation of the bottom of the Clay is provided as reference to assess whether the pumping could potentially allow dewatering of the Clay and subsidence. Bolded values in **Table 5** indicate the pumping water levels have exceeded the bottom of the Clay and therefore the potential for subsidence will increase. In most City wells, the historic drawdown has not exceeded the bottom of the Clay except at Production Wells 1 through 4. The maximum groundwater level drawdown at 22,000 AFY for a one year period will not be drawn down below the bottom of the Clay for most City's wells located in the central to northern portions of the City and therefore the potential for subsidence is low. However, historic and forecasted pumping of Production Wells 1 through 4 to supply 22,000 AFY will draw the groundwater levels below the bottom of the Clay. Therefore, the potential for subsidence with the increased pumping is considered moderate near these wells, in part because they have historically exceeded the bottom of the Clay. By reducing the pumping duration at these wells and increasing pumping from those in the central to northern portions of the City could mitigate the pumping to less than significant.

Table 5. Projected Drawdown Relative to the Bottom of the Corcoran Clay

WELL NAME	GROUND SURFACE (feet msl)	2013 ASSUMED STATIC WATER LEVELS (feet bgs)	PROJECTED MAXIMUM HISTORIC PUMPING LEVEL (feet msl)	MAXIMUM PROJECTED DRAWDOWN (feet msl)	BOTTOM OF CORCORAN CLAY (feet msl)
Lincoln	44	76	-169	-247	-336
Production Well No. 1	199	193	**-118**	**-119**	-94
Production Well No. 2	203	193	**-74**	**-119**	-67
Production Well No. 3	211	251	**-123**	**-168**	-59
Production Well No. 4	192	231	**-123**	**-169**	-78
Production Well No. 5 (Lewis Manor)	49	74	-183	-223	-341
Production Well No. 6 (Park and Ride)	22	61	-166	-206	-328
Production Well No. 7 (Ball Park)	27	79	-193	-237	-313
Production Well No. 8 (ASR)	55	88	-153	-217	-305
MW-4B	103	139	-97	-140	-347
MW-5B	48	80	-92	-131	-362
5R1	60	70	-41	-70	Unknown

4 Groundwater Management

In 2007, the City adopted the GMP, which recommended continued groundwater monitoring. The monitoring provides a technical basis for identifying and implementing groundwater management actions to preserve the groundwater quality and quantity. The GMP also identified management alternatives including direct recharge, indirect recharge, and in-lieu recharge as potential management components. Implementation of these groundwater management alternatives can increase the sustainable yield of the Subbasin and mitigate for periods of higher groundwater use.

4.1 Recharge Methods

There are two general approaches to artificial groundwater recharge: direct recharge and indirect recharge. Direct recharge includes physically delivering water to the aquifer system, whereas indirect (or in-lieu) recharge increases groundwater storage by reducing the groundwater removed from the basin. There are advantages to each approach, and local conditions may suggest which method(s) is more appropriate for a particular location.

4.1.1 Direct Recharge – Spreading Basins

The use of surface spreading basins or spreading ponds is the most common type of artificial groundwater recharge. Typically, a recharge location would consist of a series of connected surface basins that may range in size, depending on the available space and slope of the land. Recharged water moves away laterally and vertically from the recharge ponds, initially through the unsaturated zone to the unconfined aquifer system.

4.1.2 Direct Recharge – Aquifer Storage and Recovery

ASR recharge involves using wells to recharge surface water into target aquifers. Stored water can be later recovered, often through the same wells. Because the recharge well can penetrate confining layers, confined aquifers (those overlain by relatively impermeable sediments or aquitards) can be recharged.

4.1.3 Indirect Recharge (In-Lieu Recharge)

Indirect recharge differs from the direct recharge methods because it does not physically place the water into the aquifer system; rather, surface water replaces the use of groundwater, thereby reducing local demand on the groundwater basin and providing the opportunity for the groundwater basin to recharge from natural sources. Indirect recharge is often called in-lieu recharge and is commonly used in areas where the historical water demand has relied on the underlying groundwater basin for supply.

In-lieu recharge has been used in urban and agricultural areas and often utilizes the existing infrastructure to distribute water supply to individual customers. One of the requirements of an in-lieu recharge program is that the replacement surface water supply must be of the appropriate quantity and quality to satisfy the existing supply requirements.

In-lieu recharge programs are often used to improve overall supply reliability by using the imported surface water supply in wet years or months when it is available, thereby reducing the dependence on the groundwater basin. Then in dry years, when imported supplies may be reduced or not available, groundwater is used to meet those demands not met by the imported supply. In this fashion, in-lieu recharge also takes advantage of the natural hydrogeologic setting and the existing groundwater infrastructure.

4.2 City Groundwater Management Activities

The City has a robust portfolio of water supply sources including surface water and groundwater. As such, the City has practiced in-lieu recharge by using surface water when abundant and conserving groundwater supplies. As has been demonstrated by the comparison of groundwater levels versus groundwater pumping, the City has a proven track record of in-lieu recharge allowing the aquifers to recharge since pumping up to 8,000 AFY in the early 2000s and since that time with reduced pumping having groundwater levels recover by as much as 20 feet.

In December 2010, the City received approval from the Central Valley Regional Water Quality Control Board for ASR feasibility demonstration pilot testing. The testing was completed approximately two years later and Production Well 8 is fully permitted and is currently being used for ASR purposes.

By having these groundwater management alternatives, the City can feasibly mitigate for its one year higher groundwater pumping by using the proven techniques described above.

5 Conclusions and Recommendations

Since 2001, the City has reconstructed most of their wells so they only obtain water from the confined aquifer and are sealed through the Corcoran Clay. The City has also constructed 18 monitoring wells at six locations along with another five monitoring wells to monitor groundwater levels in the confined aquifer. The City has used their wells to test the confined aquifer's ability to produce water and have produced up to 8,000 AFY.

The City has historically used its wells and each year has rotated its maximum production from well to well. To meet a range of 16,000 to 22,000 AFY for a one year period all wells will be pumped which creates well interference which can create up to 100 foot feet of additional drawdown at each of the wells, increasing the effects of pumping on groundwater levels. The projections of the historic pumping in comparison to the forecasted pumping effects to meet 16,000 or 22,000 AFY for a one-year period results in groundwater levels being drawdown by as little as one to as much as 78 feet more than projected historic pumping water levels.

The cumulative effects of pumping all of the wells to meet the additional demand were projected for within the City at MW-4B. The projections show up to 44 feet of additional drawdown midway (near MW-4B) between the two general groups of pumping wells.

The effects of pumping of the City's wells outside of the City limits were projected to Well 5R1 which has historic groundwater level data. Historically the drawdown in this well has not been able to be correlated to the City's pumping. This well is screened in both the unconfined and confined aquifers. The drawdown effects of the City pumping in the range of 16,000 to 22,000 AFY for a one year period would increase drawdown in the confined aquifer by about 30 feet. The actual effects on the groundwater levels cannot be projected due to the well being screened in both aquifers.

The effects of increased pumping from the confined aquifer on the shallow unconfined aquifer are not expected to have any significant effect. Aquifer tests have shown that the unconfined aquifer does not respond to pumping of the confined aquifer. If wells are screened across both aquifers the groundwater in the unconfined aquifer the greater head difference in the confined aquifer could induce the unconfined aquifer to recharge the confined aquifer.

Historically, groundwater quality has been relatively stable. Increased pumping from the confined aquifer for one-year periods is not expected to have a significant effect on water quality; however, poorer quality water is locally present in some areas and would need to be monitored.

Traditionally, the City's Production Wells 1 through 4, wells near the SWP and DMC canals, have drawn down groundwater levels below the bottom of the Clay and may have created subsidence. Projections of pumping 16,000 to 22,000 AFY results in as little as 1 foot to as much as 46 feet of additional drawdown in the area, pulling the groundwater levels further below the bottom of the Clay. This increases the potential for subsidence in this area. Within the central to northern portions of the City the increased drawdown does not lower the groundwater levels below the bottom of the Clay and therefore the potential for subsidence is low in these areas. By reducing the pumping duration at Production Wells 1 through 4 and increasing pumping from those in the central to northern portions of the City, the City could mitigate the pumping effects and the potential for subsidence to less than significant.

The City has a proven groundwater management can manage groundwater levels within the City by in-lieu and direct recharge through its ASR well program. It is anticipated that the City could fully recover groundwater levels within seven years after these one-year periods of higher pumping durations. The recovery and drawdown of groundwater levels can be mitigated by utilizing ASR wells to build up a local groundwater mound in wet years so that in dry years the groundwater levels will be less likely to drop below historic levels.

In summary, this assessment has found that pumping in the range of 16,000 to 22,000 AFY will produce significant short-term groundwater level declines that will occur both within and outside of the City. The potential for subsidence near Production Wells 1 through 4 is moderate, but can be mitigated by increasing pumping at the Lincoln and Production Wells 5 through 8. The potential for water quality impacts is less than significant. The most significant effects of increasing pumping will be the need for the City to replace their existing pumps to accommodate the additional pumping heads created by the increased drawdown.

The following monitoring actions are recommended should the City need to rely on the groundwater as it sole source of supply:

- Increase groundwater level monitoring frequency to monthly if groundwater production is anticipated to exceed 8,000 acre-feet per year.

- Increase water quality sampling from twice per year to quarterly in the monitoring wells. Closely monitor MW-2, MW-5 and Production Well 4 for any changes in water quality as these wells have had either poorer quality water or variable water quality. Measure the electrical conductivity of the water from each of the production wells on a monthly basis.

- Continue documenting the monthly production from each of the City's wells.

- Re-institute the City's subsidence benchmark surveying to assess the potential for subsidence. Measure the benchmarks on a quarterly basis during the one year periods when increased pumping occurs.

Should the monitoring data indicate a potential significant change, the data should be reviewed by a qualified professional hydrogeologist. As necessary, change the pumping locations or duration to limit any adverse conditions. Consider limiting groundwater pumping to never drop below the projected historic low groundwater levels, especially in Production Wells 1 through 4 to avoid subsidence or the accusation of having contributed to subsidence due to over pumping of the aquifers.

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APPENDIX A
CITY PRODUCTION WELL CONSTRUCTION DETAILS AND MONTIORNG RESULTS

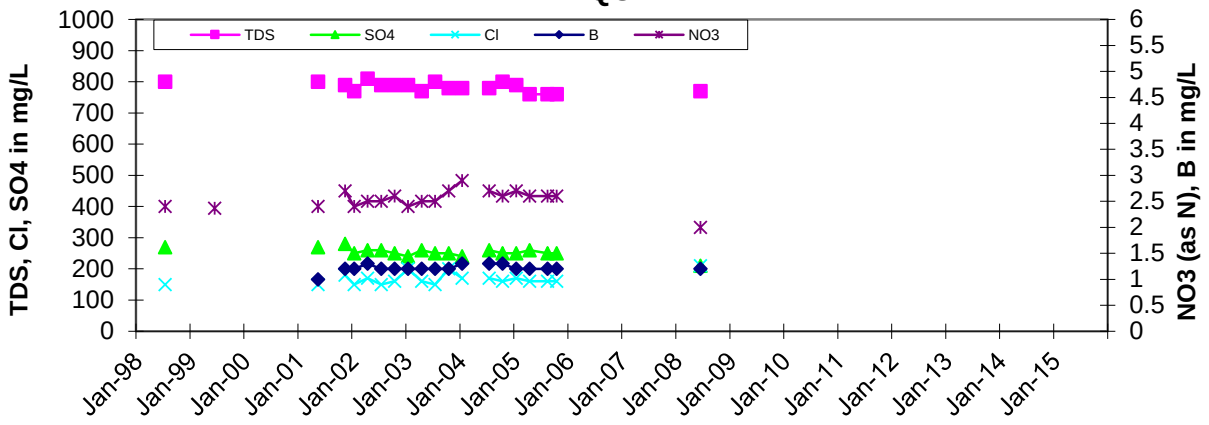
TABLE A-1
CONFINED AQUIFER PRODUCTION WELL CONSTRUCTION DETAILS

WELL NAME	STRATA SEALED (feet)	FILTER PACK INTERVAL (feet)	SCREEN INTERVAL (feet)	CORCORAN CLAY INTERVAL (feet)	AQUIFER MONITORED	AQUIFER MONITORED (Confined Aquifer Subdivided)
Lincoln	0-250	250-980	490-980	130-380[1]	Confined	Shallow
						Intermediate
						Deep
						Deeper
Production Well No. 1	0-300	300-980	450-550	204-293	Confined	Shallow
			580-980			Intermediate
						Deep
Production Well No. 2	0-250	250-850	420-850	220-270	Confined	Shallow
						Intermediate
						Deep
Production Well No. 3	0-250	250-890	420-890	174-270	Confined	Shallow
						Intermediate
						Deep
Production Well No. 4	0-250	250-940	380-940	220-270	Confined	Shallow
						Intermediate
						Deep
Production Well No. 5			410-480		Confined	Shallow
(Lewis Manor)			610-630			Intermediate
			650-670			Deep
			805-830			Deeper
			900-930			
	0-305	305-990	965-990	229-390[1]		
Production Well No. 6	0-500	500-690	550-598	250-350	Confined	Intermediate
(Park and Ride)	690-700	700-850	610-636			Deep
	850-870	870-1216	656-678			Deeper
			738-754			
			774-796			
			966-982			
			1014-1122			
			1176-1196			
Production Well No. 7	0-490	490-750	550-598	200-340	Confined	Intermediate
(Ball Park)	750-770	770-914	570-732			Deep
			850-874			
Production Well No. 8	0-340	340-850	370-460	240-360	Confined	Shallow
(ASR)			510-640			Intermediate
			680-820			Deep

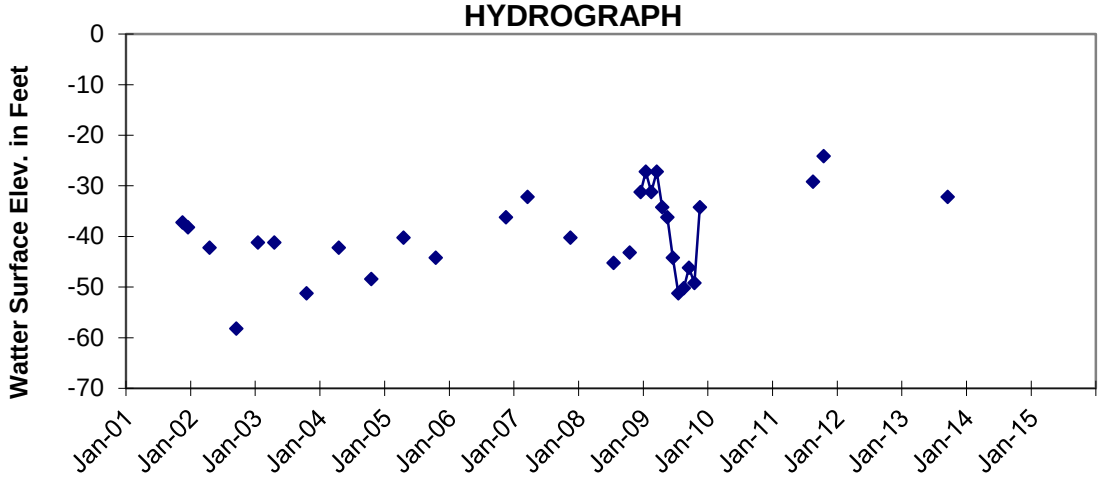
[1] = Clay interval includes Cocoran clay between about 310 and 380 feet, but depth may vary within the City

LINCOLN WELL

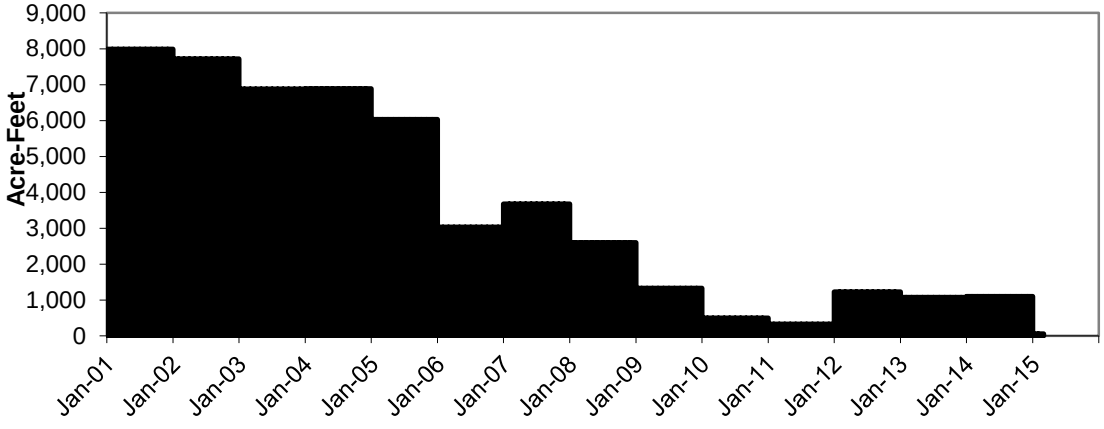
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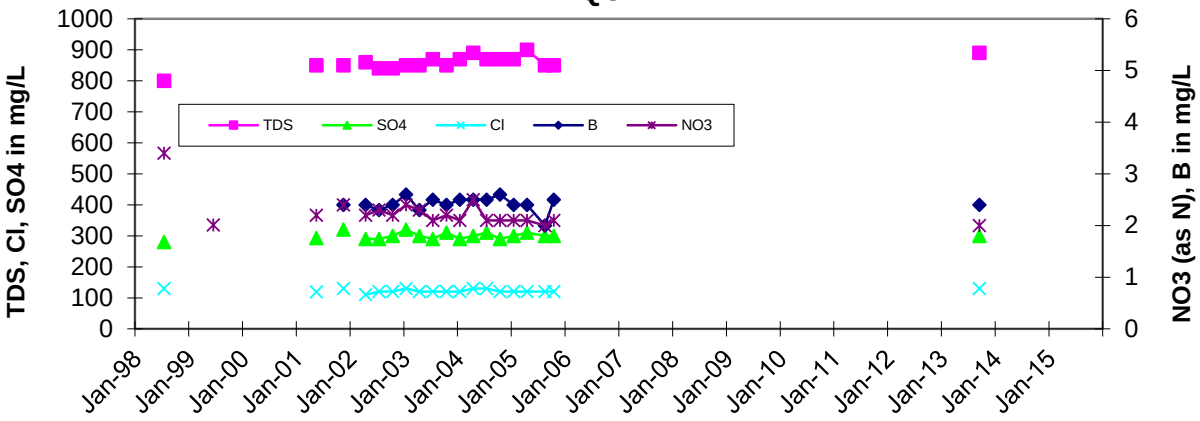
GROUNDWATER PRODUCTION - LINCOLN



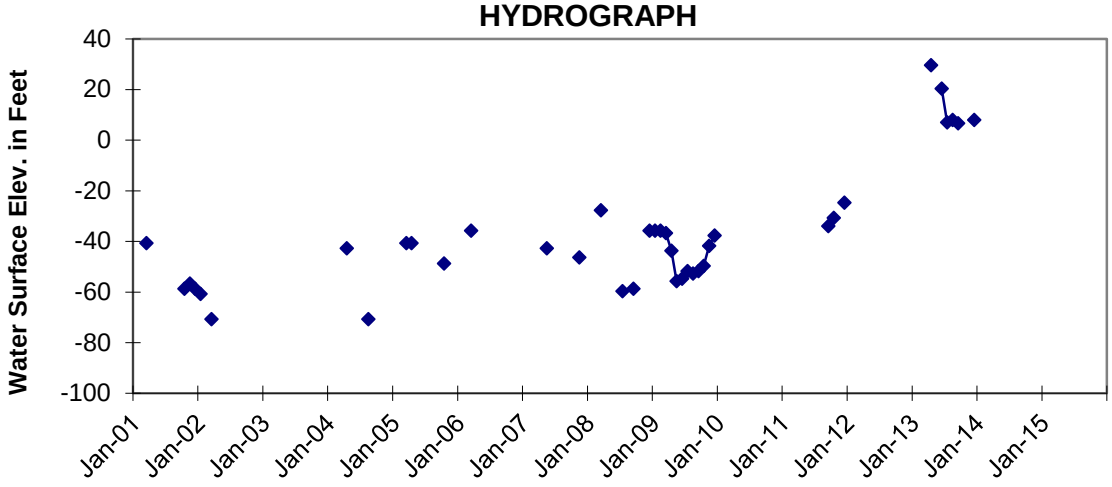
GEI Consultants

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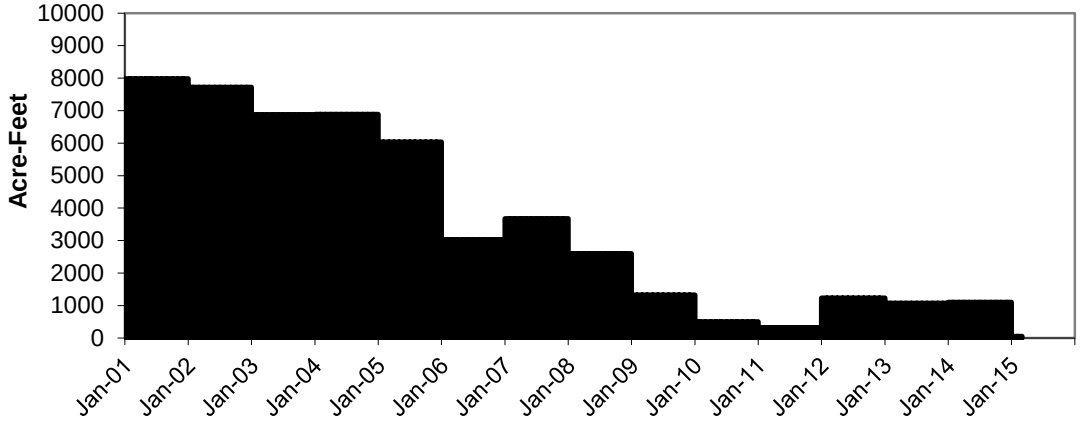
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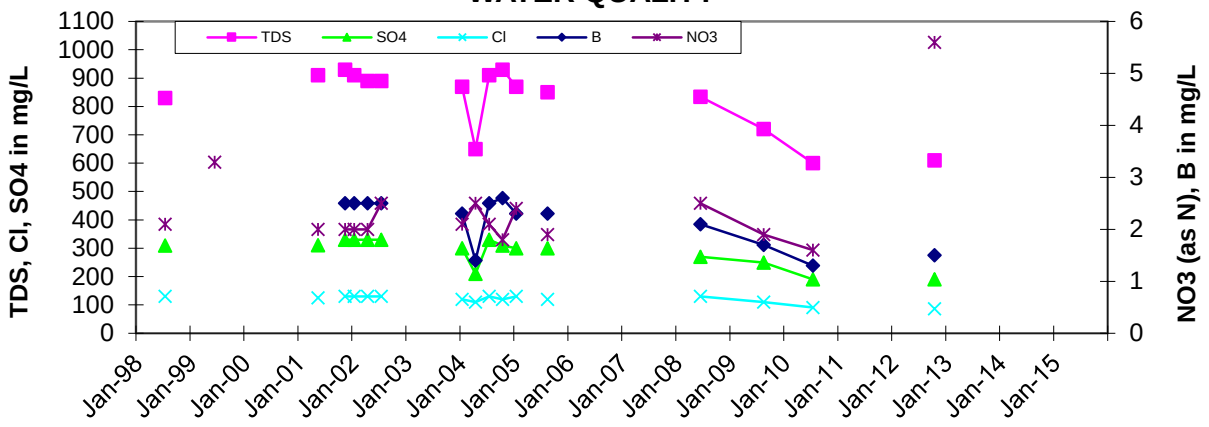
GROUNDWATER PRODUCTION - WELL 1



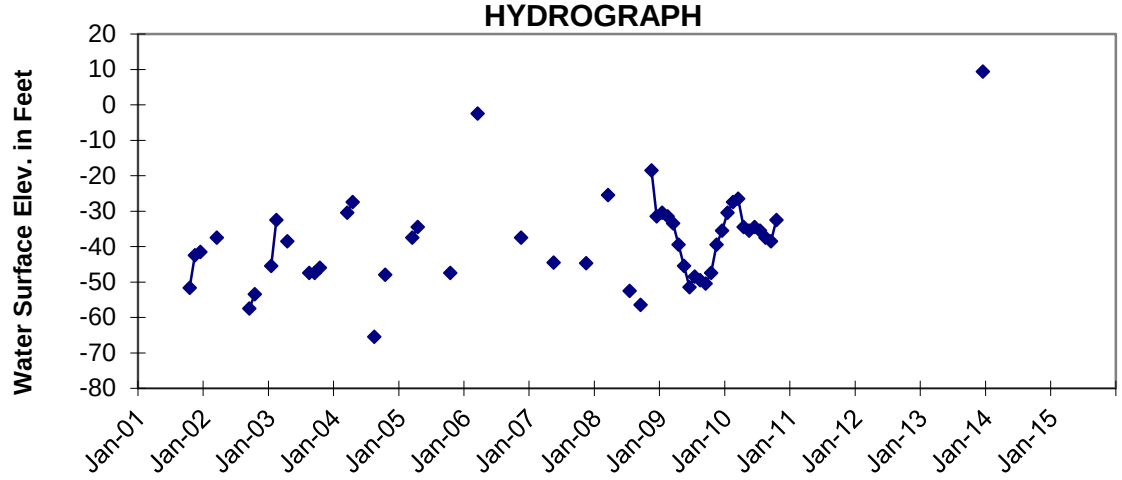
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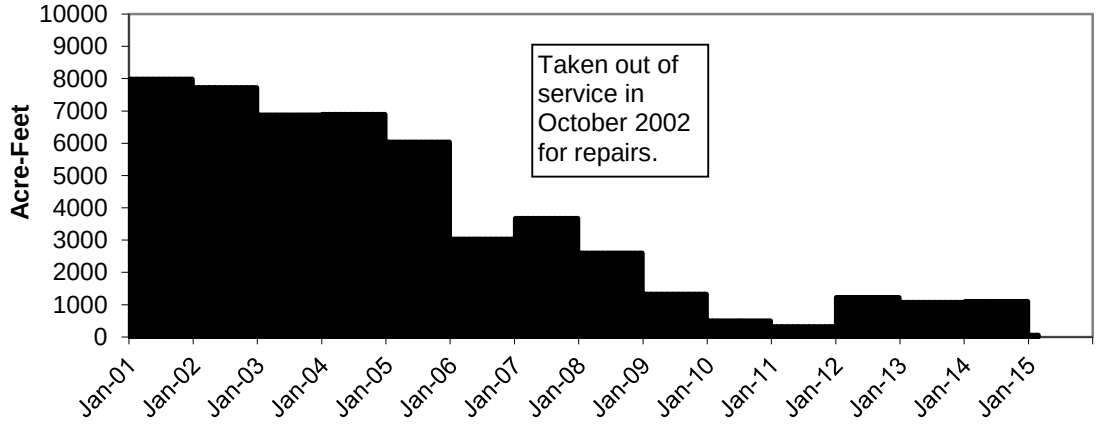
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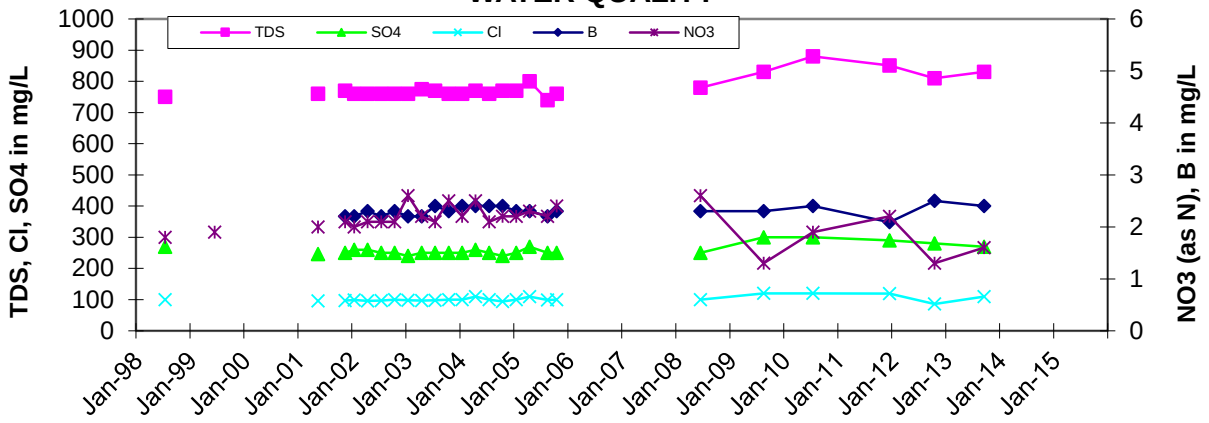
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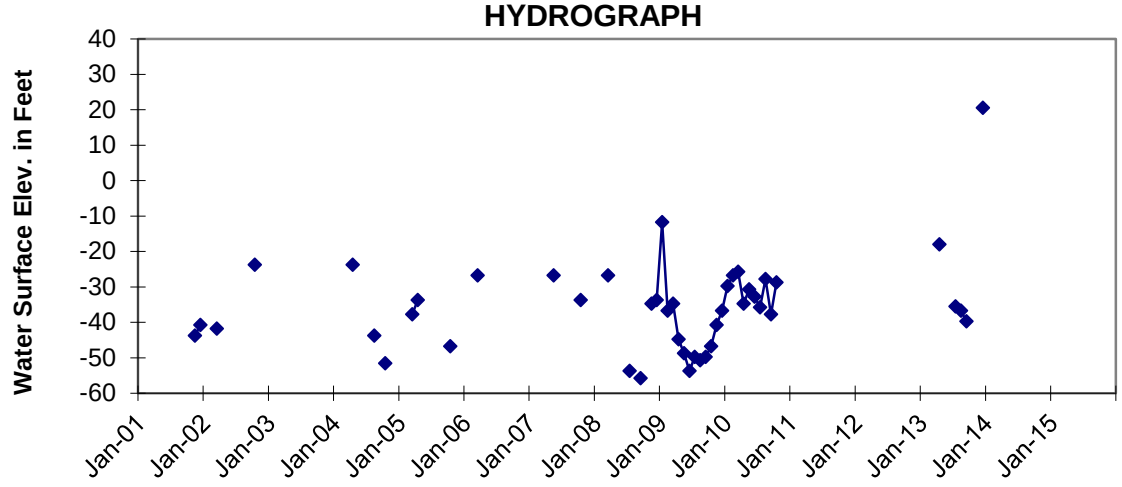
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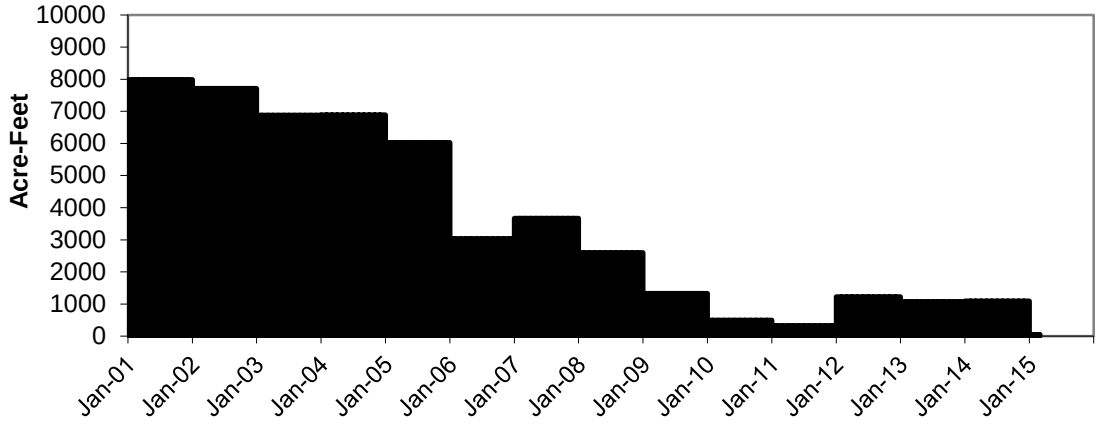
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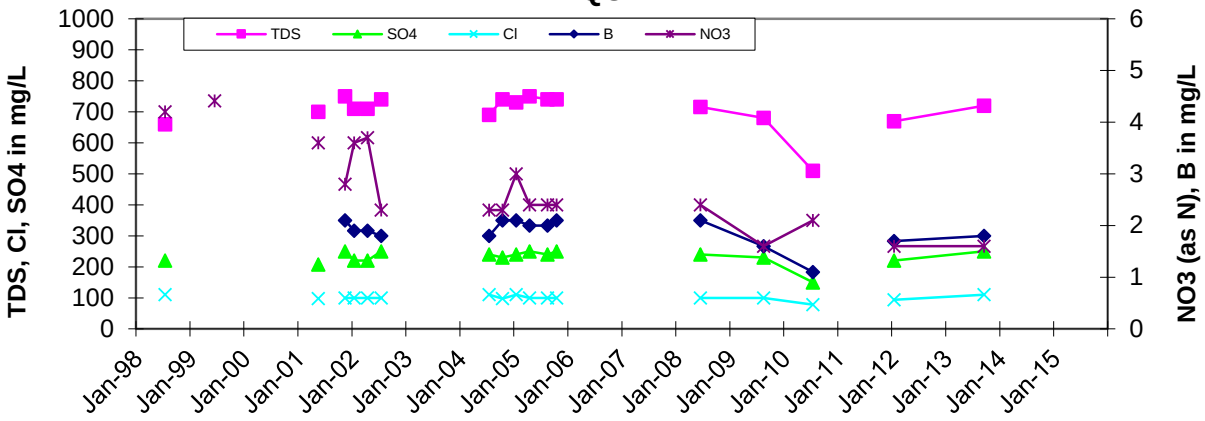
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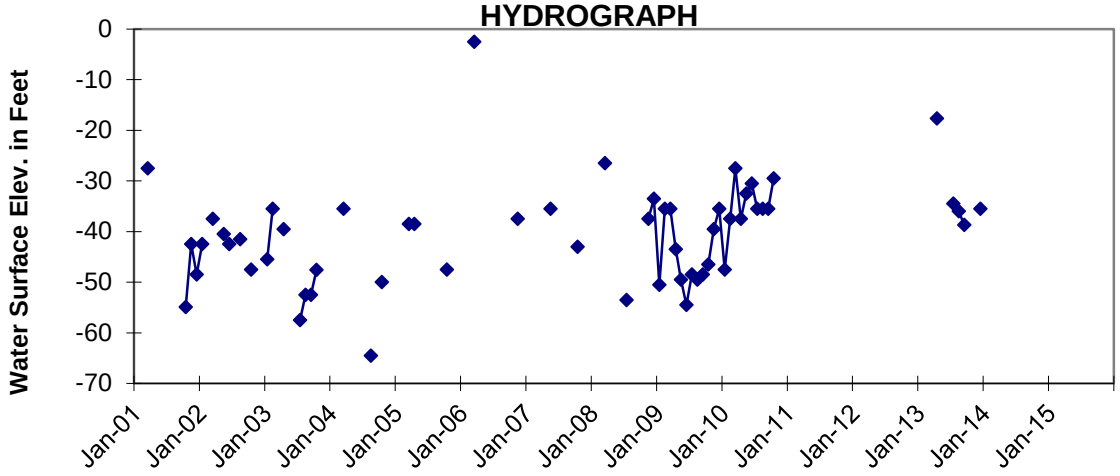
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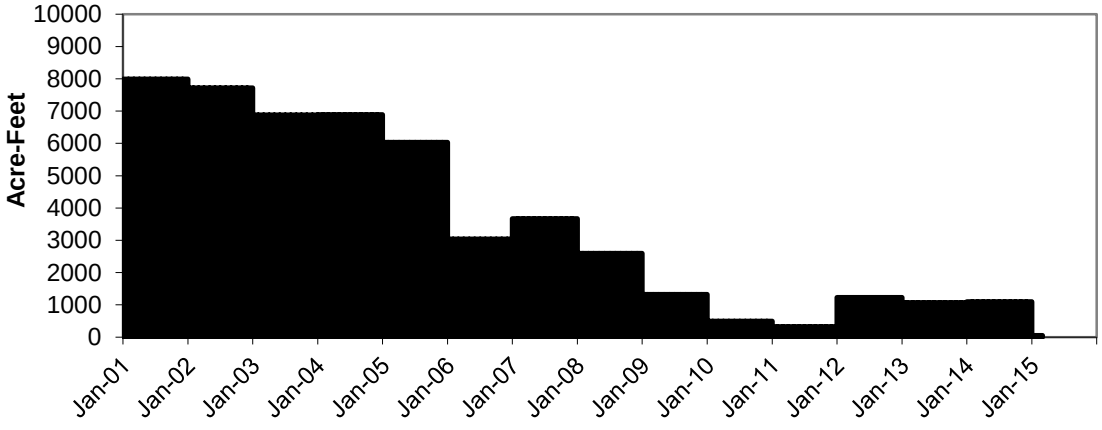
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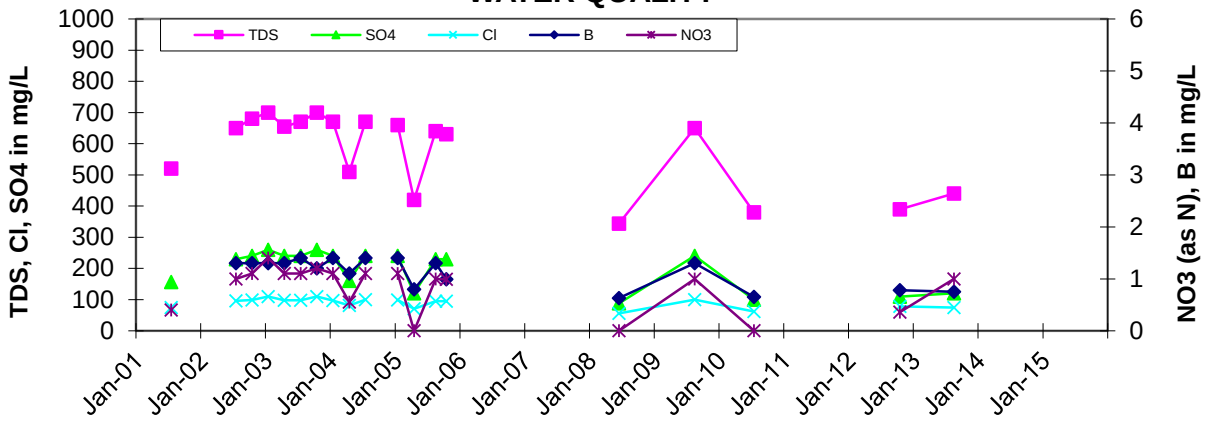
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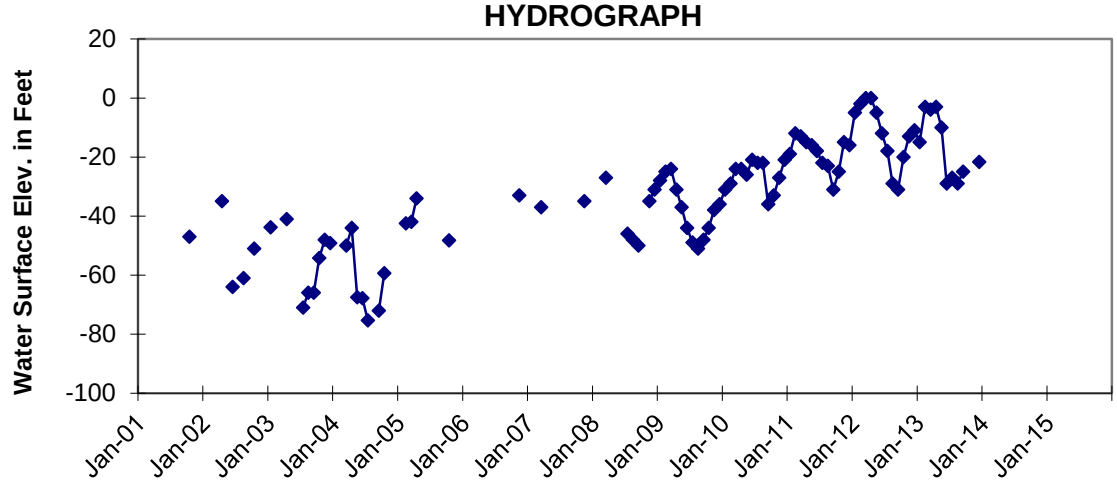
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WELL 5

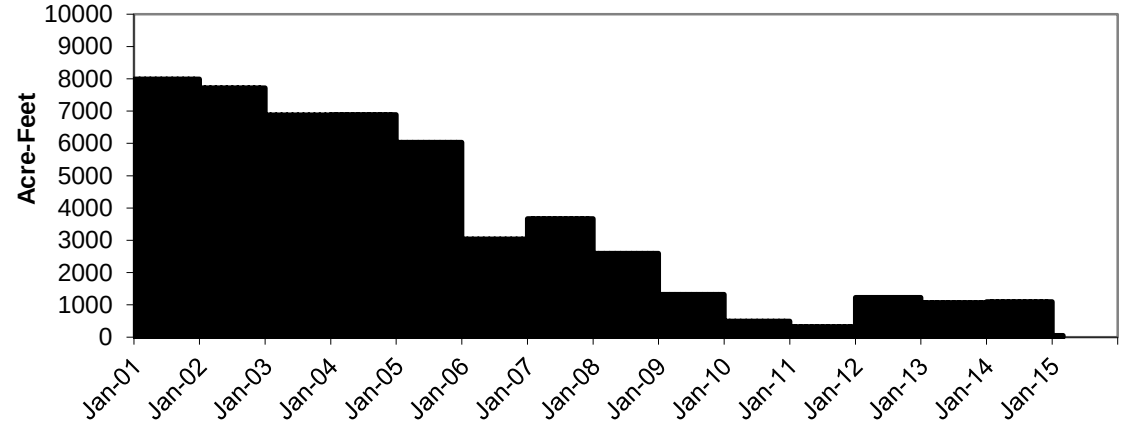
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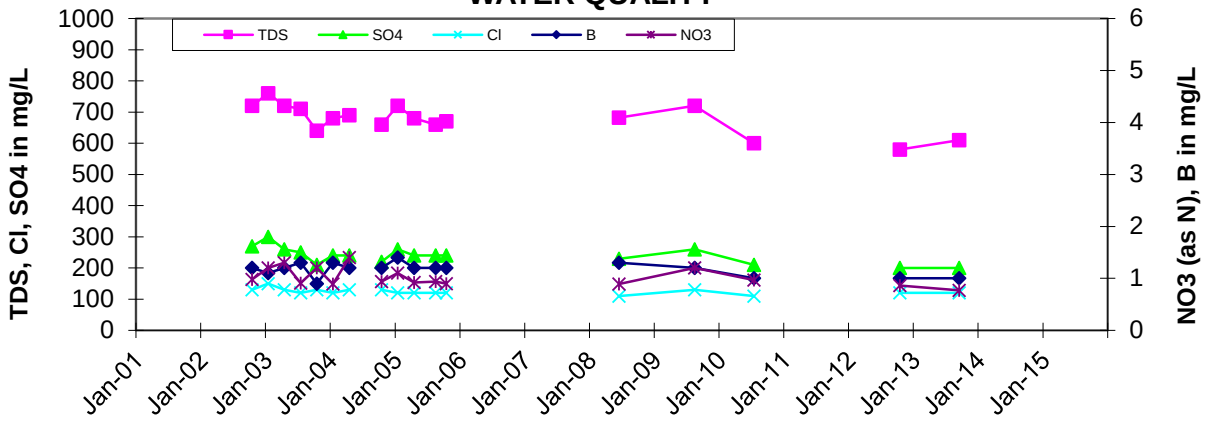
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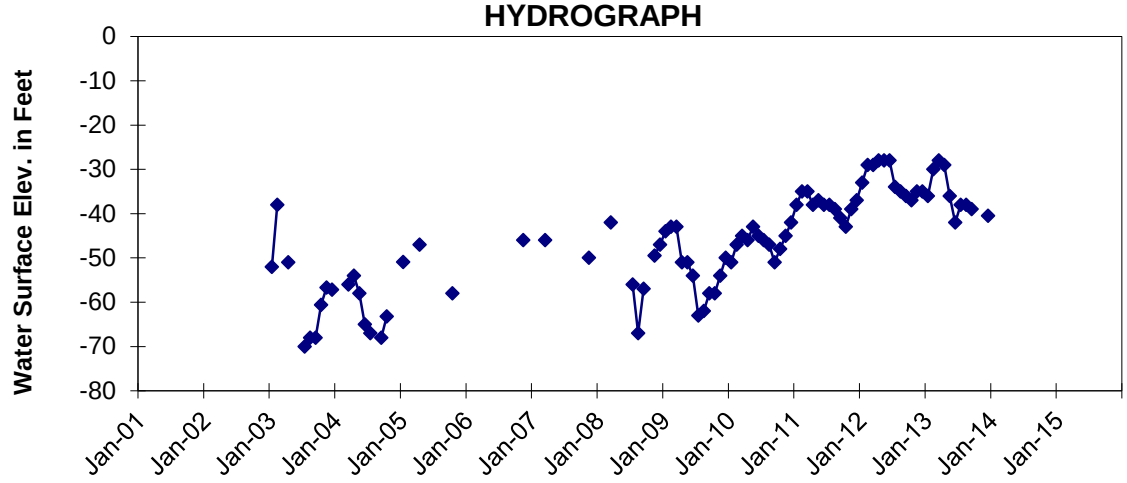
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WELL 6

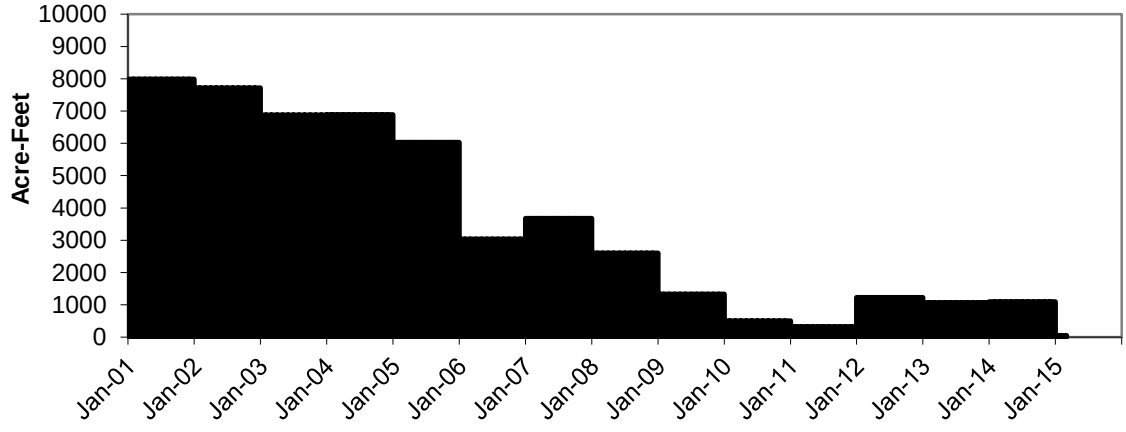
WATER QUALITY



HYDROGRAPH



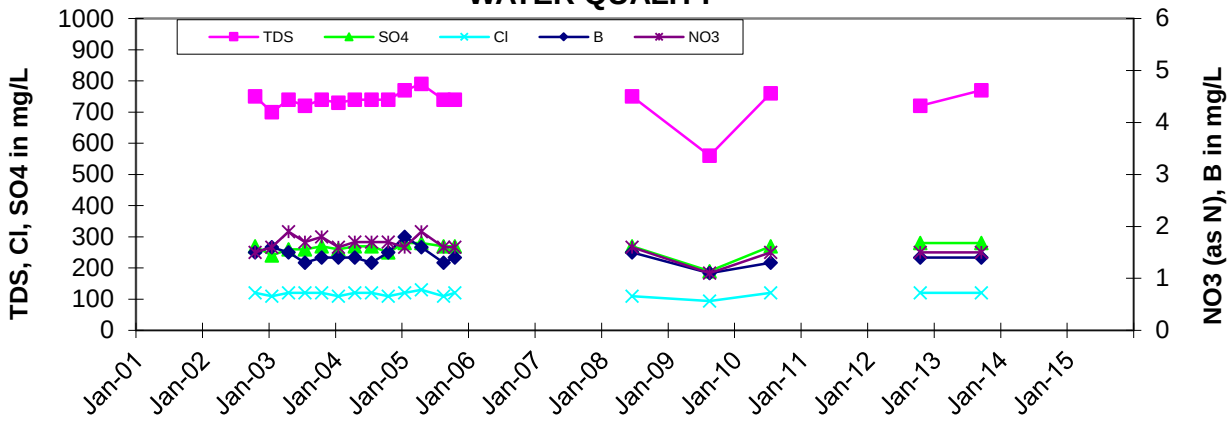
GROUNDWATER PRODUCTION - WELL 6



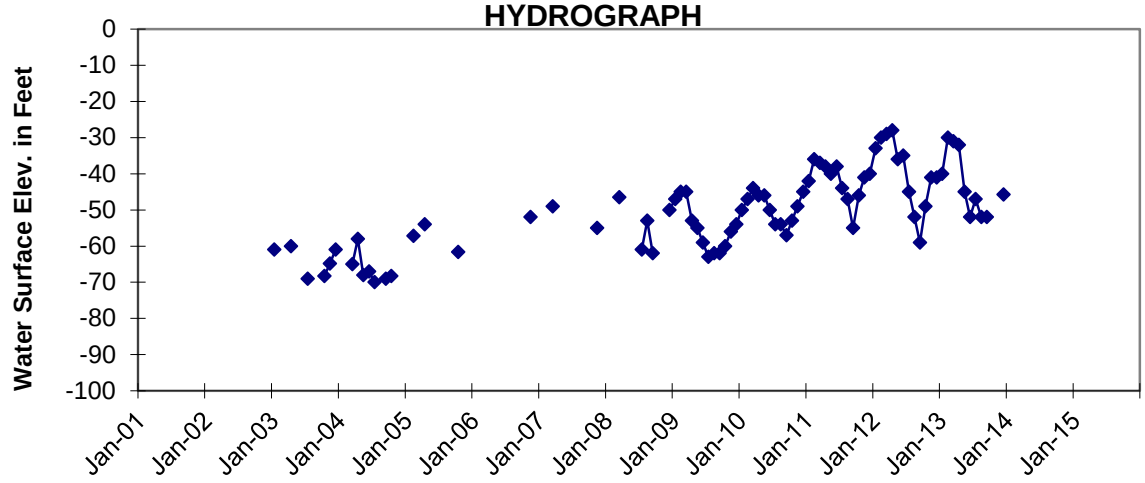
GEI Consultants

WELL 7

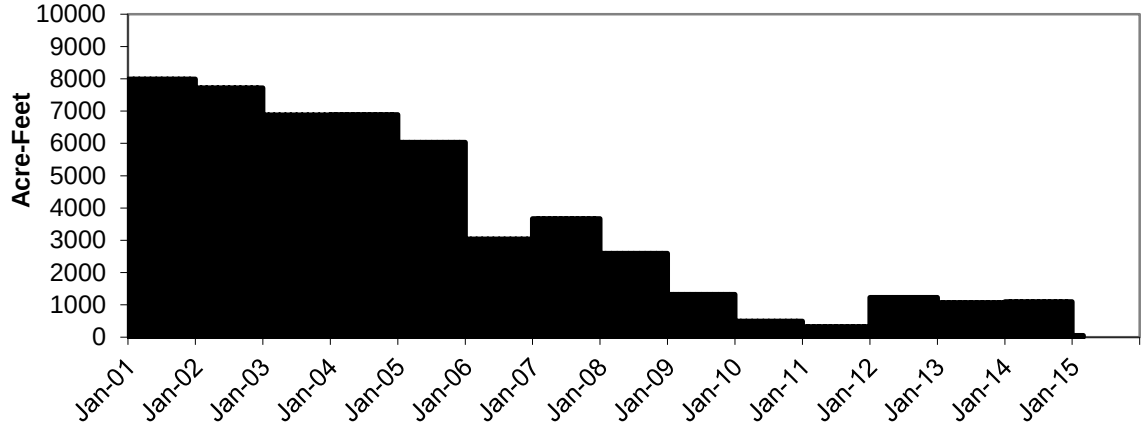
WATER QUALITY



HYDROGRAPH



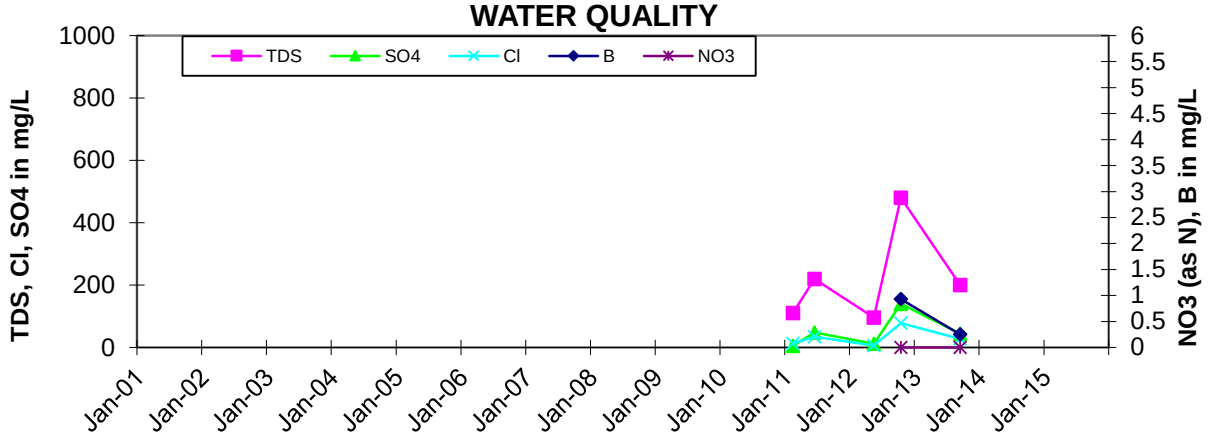
GROUNDWATER PRODUCTION - WELL 7



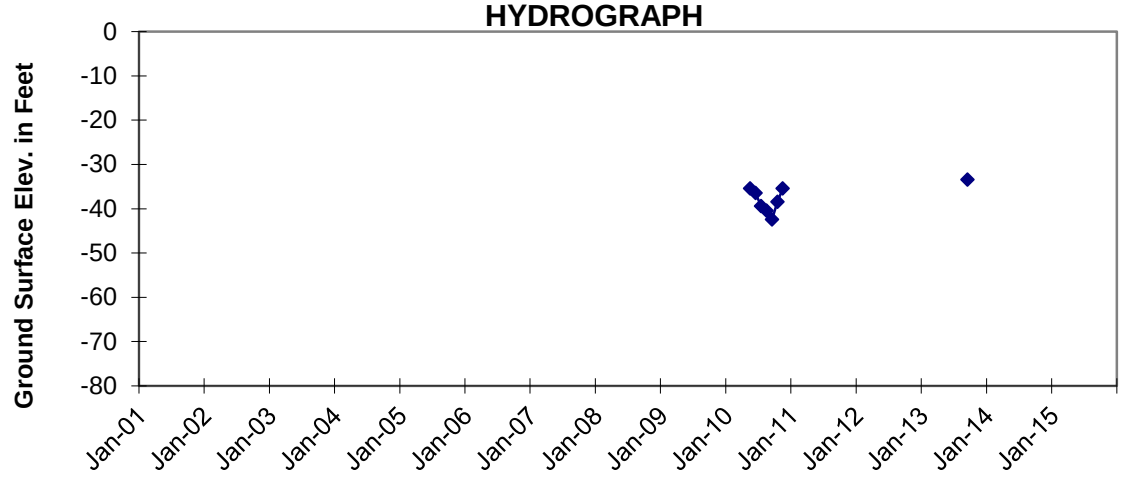
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WELL 8 (ASR)

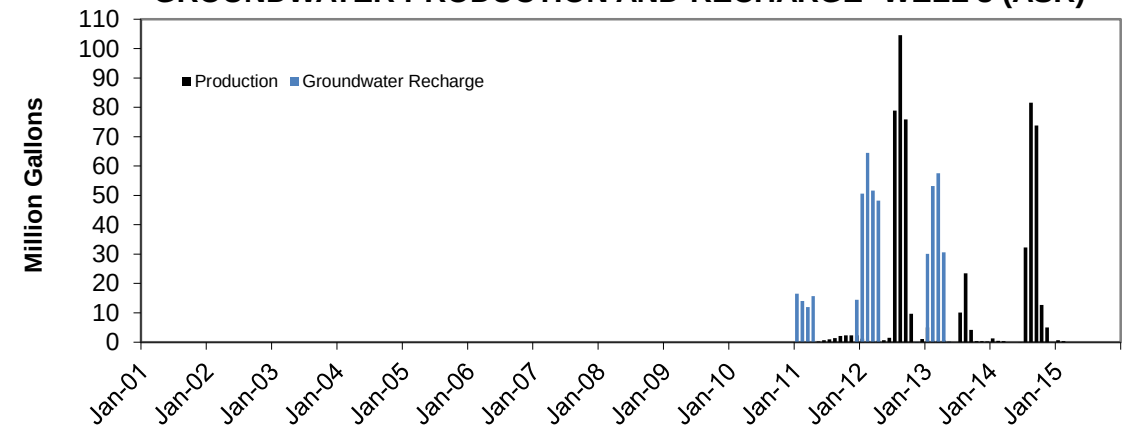
WATER QUALITY



HYDROGRAPH



GROUNDWATER PRODUCTION AND RECHARGE- WELL 8 (ASR)



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APPENDIX B
MONITORING WELL CONSTRUCTION DETAILS AND MONTIORNG RESULTS

TABLE B-1

CONFINED AQUIFER MONITORING WELLS CONSTRUCTION DETAILS

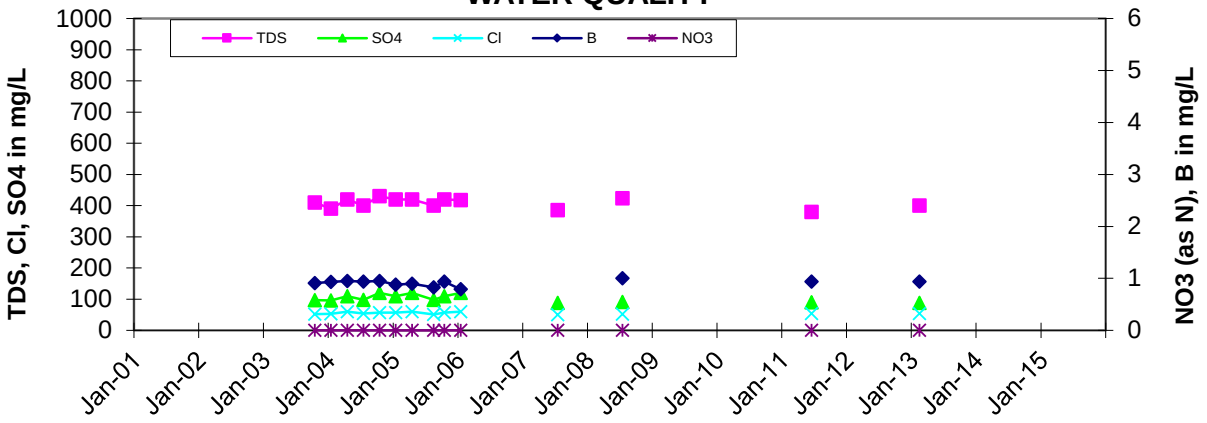
WELL NAME	STRATA SEALED (feet)	FILTER PACK INTERVAL (feet)	SCREEN INTERVAL (feet)	CORCORAN CLAY INTERVAL (feet)	AQUIFER MONITORED	AQUIFER MONITORED (Below Corcoran Clay Subdivided)
NESTED MONITORING WELLS						
PW-5A	0-100 390-410	410-580	420-460	229-390[1]	Unconfined	
PW-5B	580-590	590-780	610-670	229-390[1]	Confined	Intermediate
PW-5C	780-790	790-870	810-830	229-390[1]	Confined	Deep
PW-5D	870-880	880-1020	910-930 970-990	229-390[1]	Confined	Deeper
CLUSTERED MONITORING WELLS						
MW-1A	0-400	400-480	428-468	300-430	Confined	Shallow
MW-1B	0-590	590-670	618-658	300-430	Confined	Intermediate
MW-1C	0-720	720-800	748-788	300-430	Confined	Deep
MW-2A	0-400	400-480	426-466	234-430	Confined	Shallow
MW-2B	0-614	614-690	634-674	234-430	Confined	Intermediate
MW-2C	0-760	760-820	770-810	234-430	Confined	Deep
MW-3A	0-370	370-415	382-402	210-370	Confined	Shallow
MW-3B	0-530	530-595	540-580	210-370	Confined	Intermediate
MW-3C	0-726	726-820	770-810	210-370	Confined	Deep
MW-4A	0-440	440-505	450-490	240-450	Confined	Shallow
MW-4B	0-660	660-715	680-700	240-450	Confined	Intermediate
MW-4C	0-760	760-820	770-810	240-450	Confined	Deep
MW-5A	0-390	390-460	406-446	290-410	Confined	Shallow
MW-5B	0-560	560-640	576-616	290-410	Confined	Intermediate
MW-5C	0-750	750-820	770-810	290-410	Confined	Deep
MW-6A	0-400	410-450	400-465	320-400	Confined	Shallow
MW-6B	0-560	560-645	590-630	320-400	Confined	Intermediate
MW-6C	0-730	755-810	755-795	320-400	Confined	Deep

1 = Clay interval includes Corcoran clay.

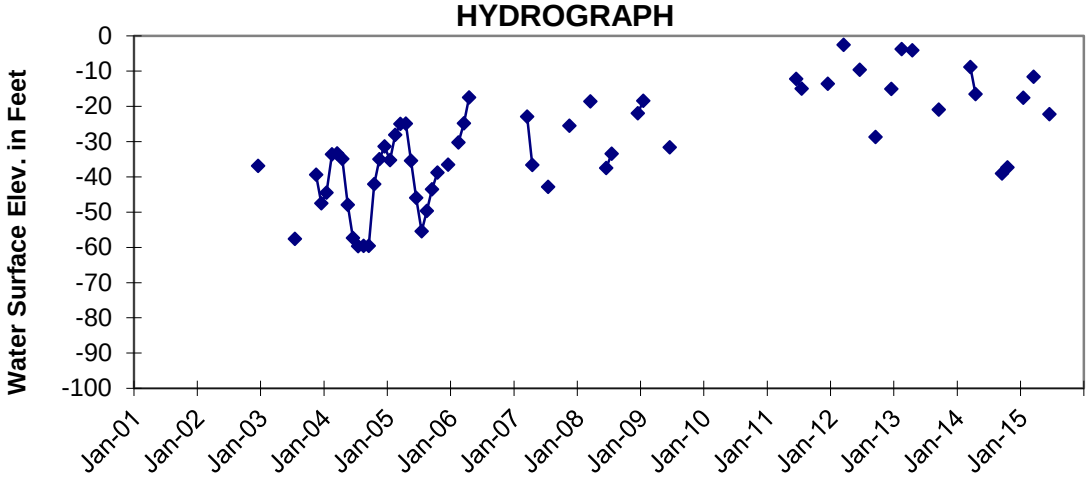
2 = Shallow aquifer as defined as between 380 to 420 is present at a lower depth at this location

MW-1A

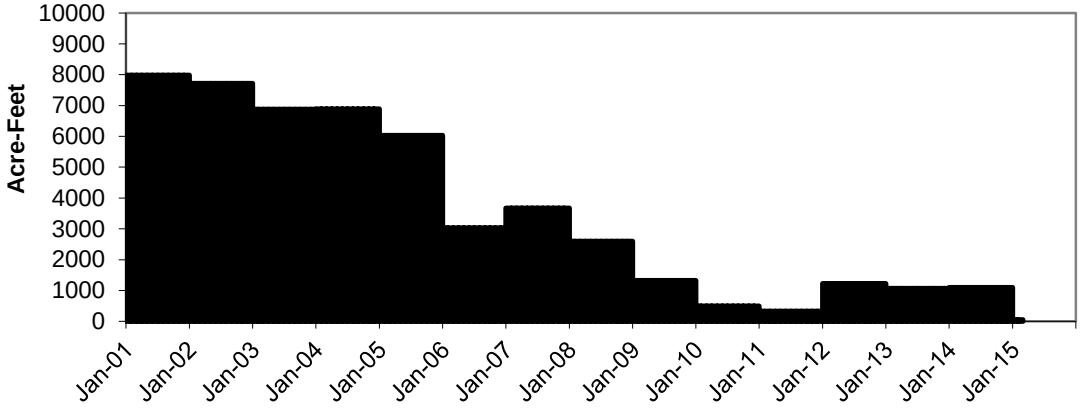
WATER QUALITY



HYDROGRAPH



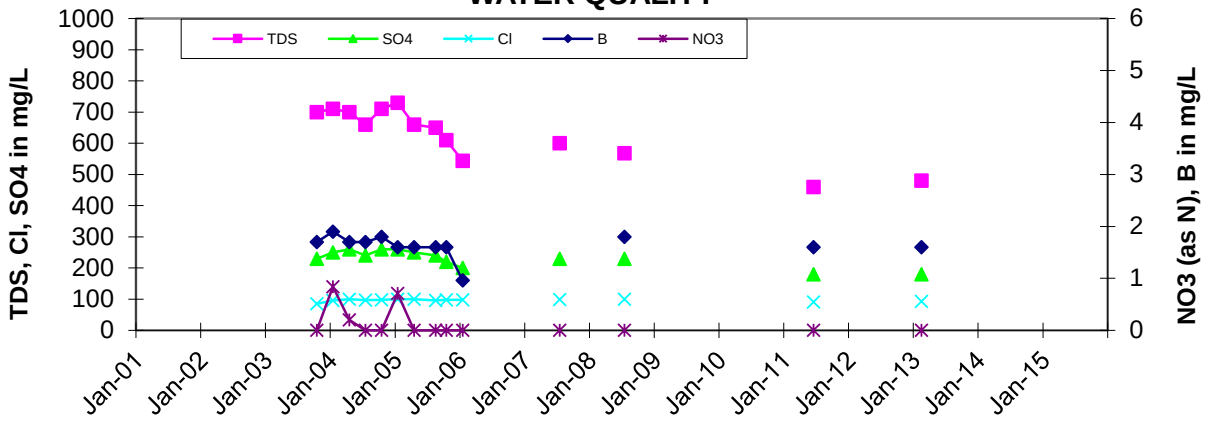
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



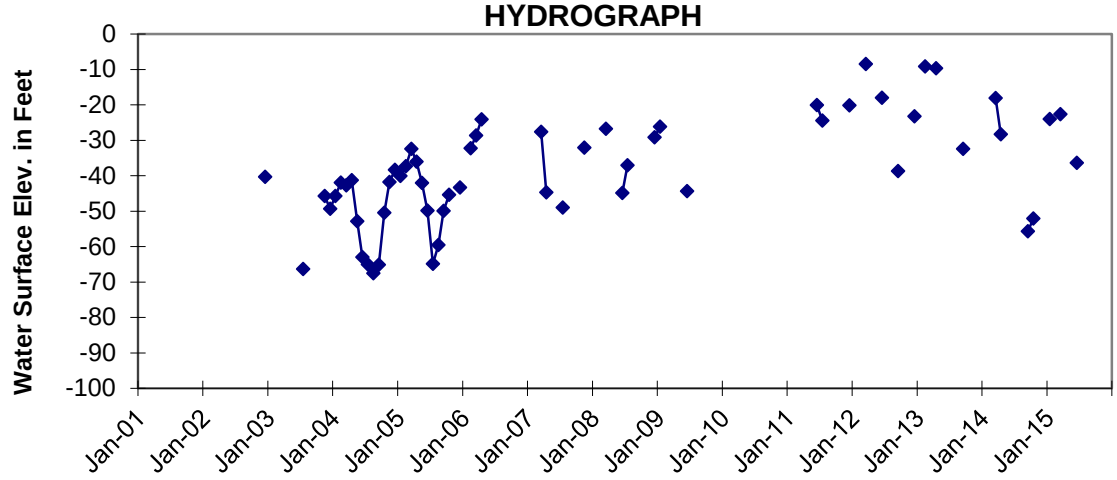
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MW-1B

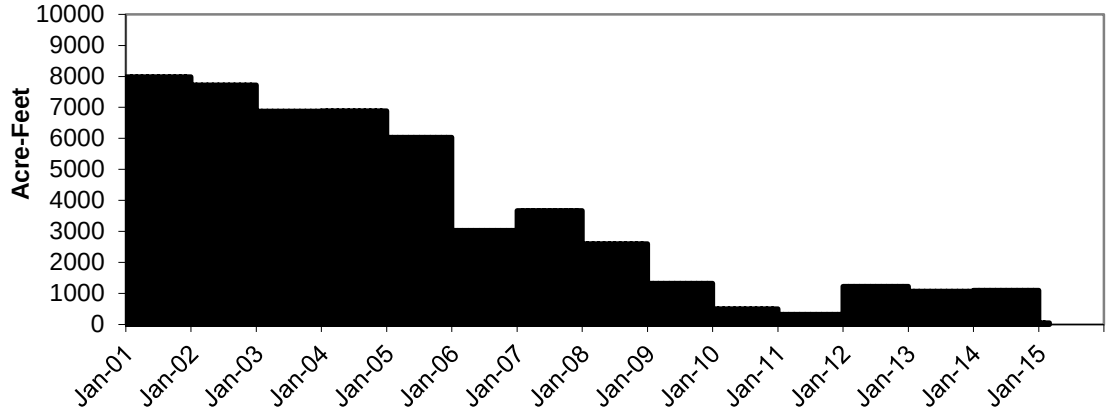
WATER QUALITY



HYDROGRAPH



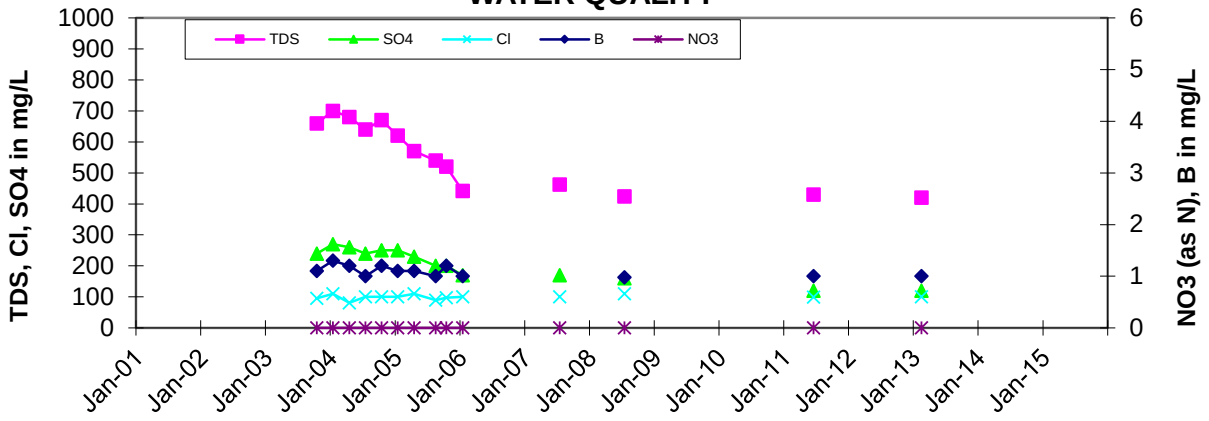
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



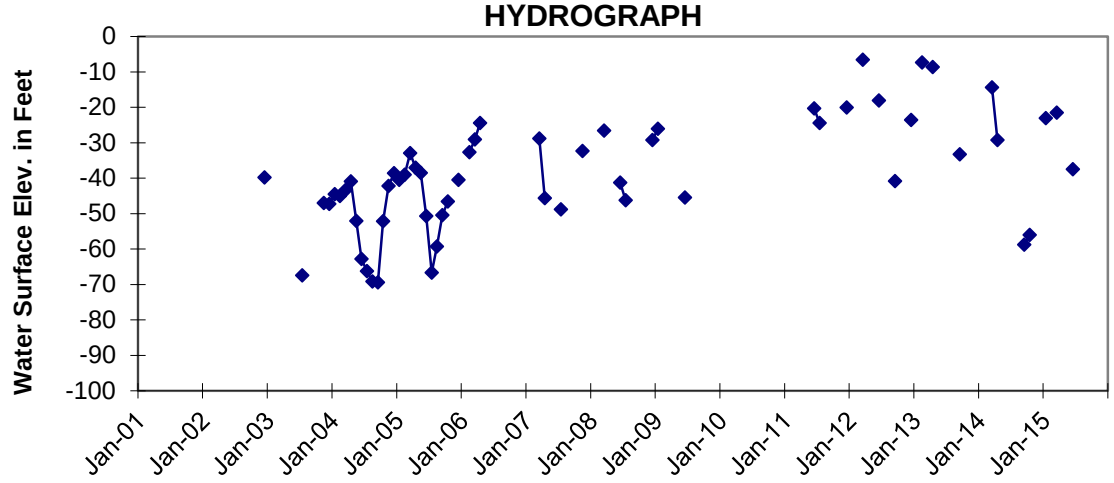
GEI Consultants

MW-1C

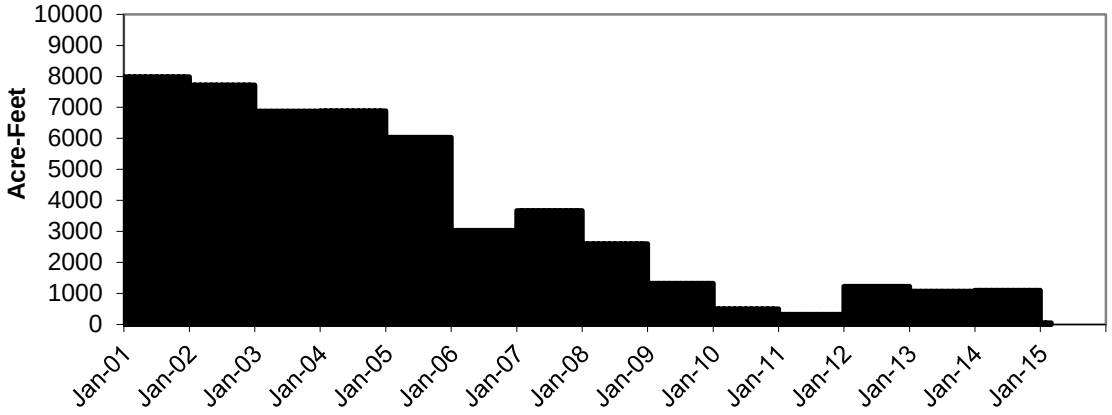
WATER QUALITY



HYDROGRAPH



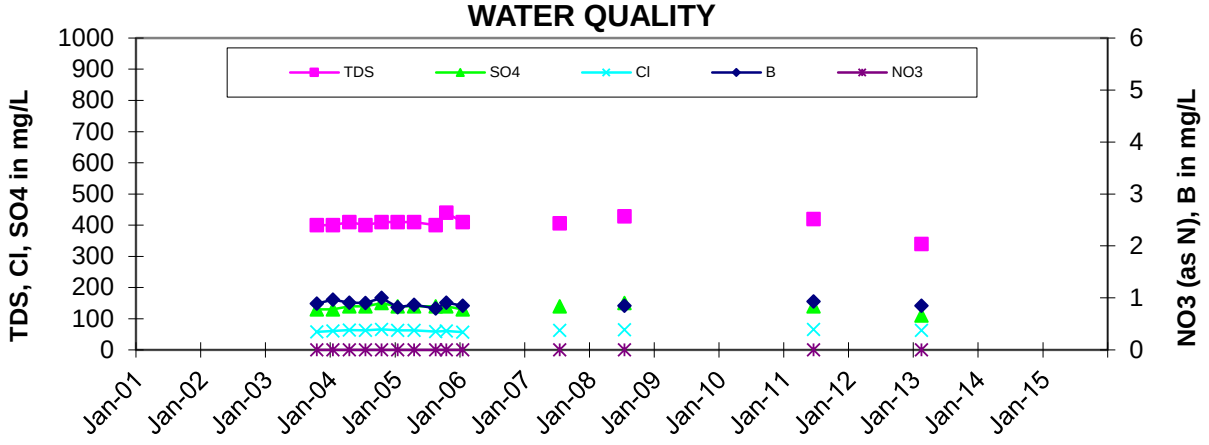
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



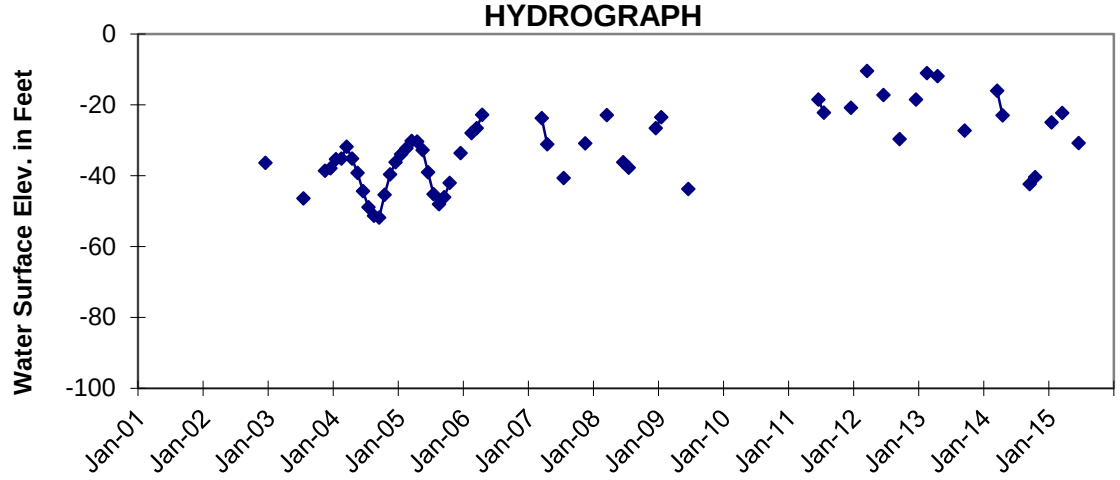
GEI Consultants

MW-2A

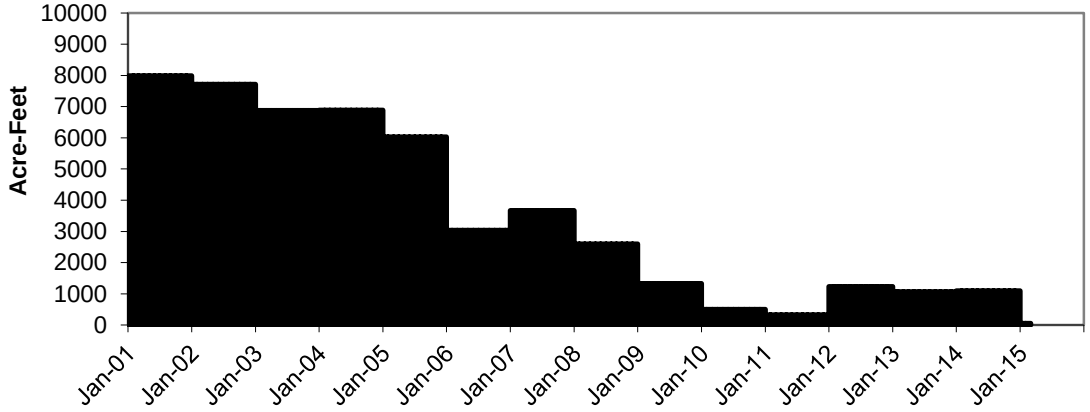
WATER QUALITY



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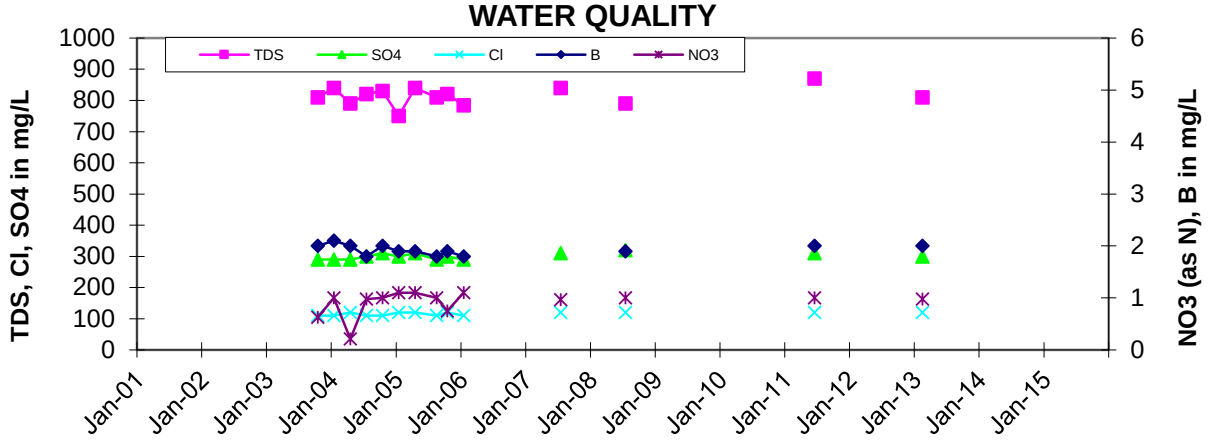
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



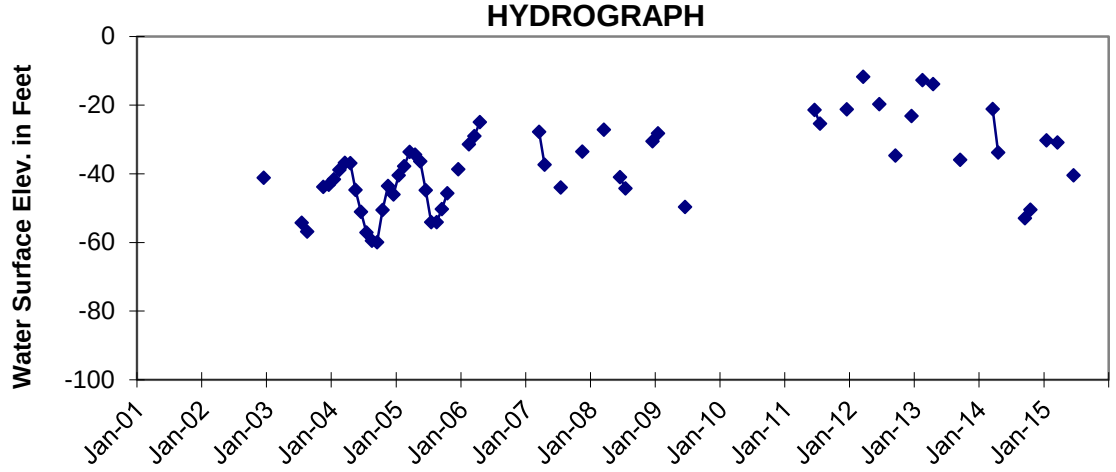
GEI Consultants

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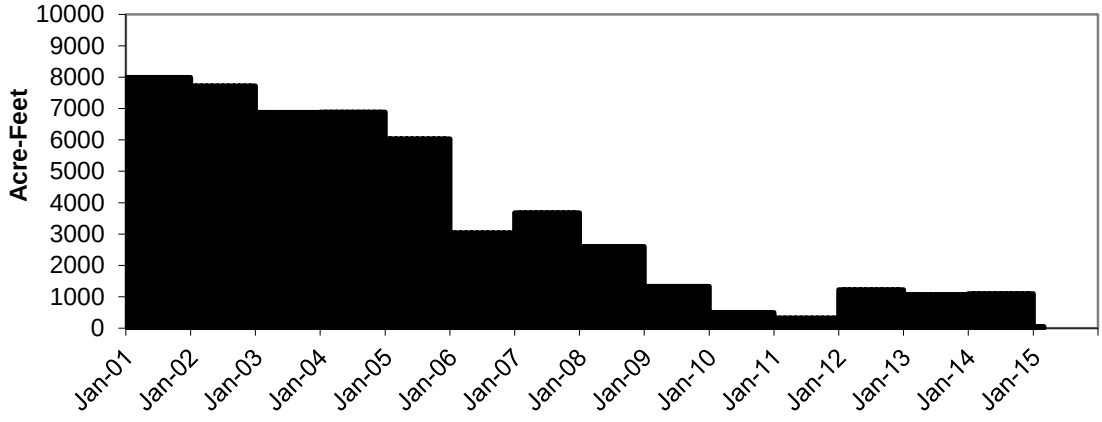
WATER QUALITY



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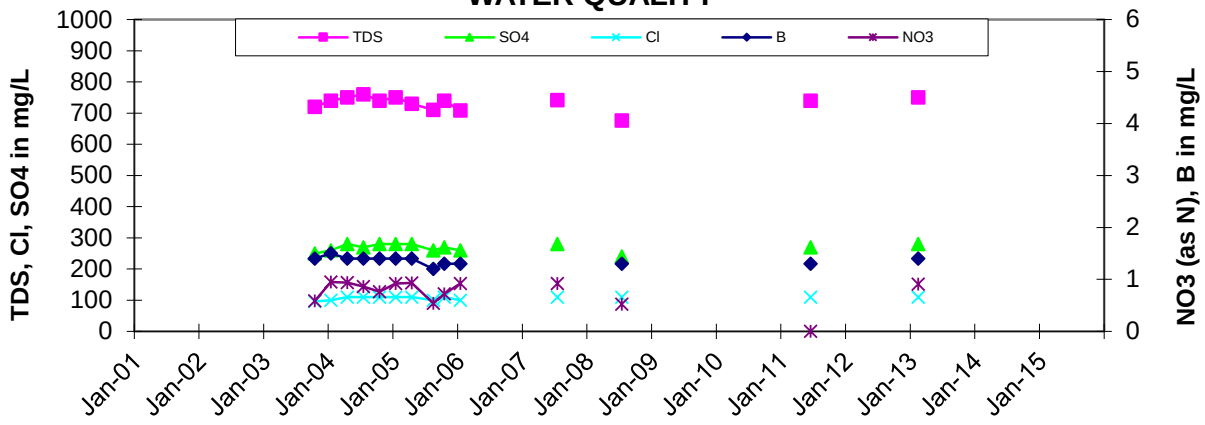
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



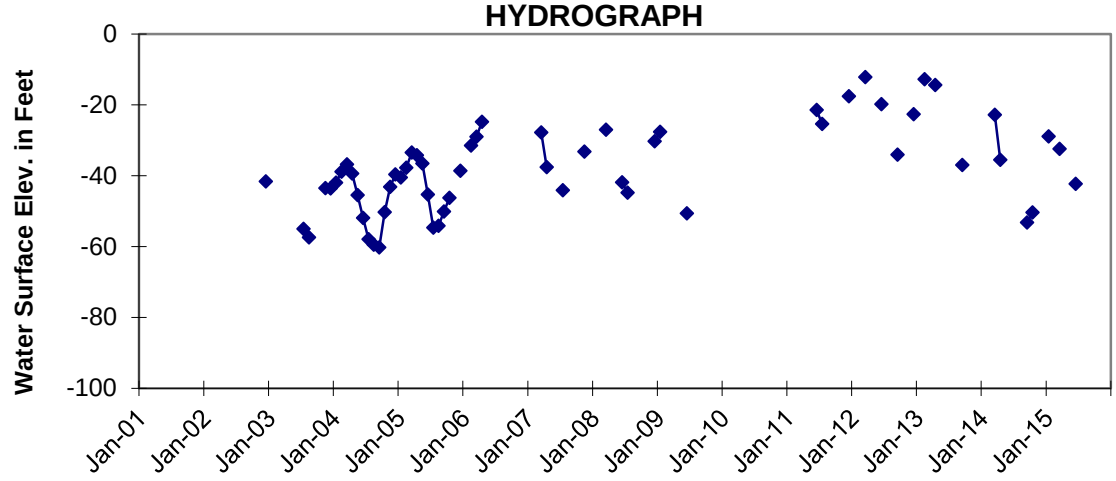
GEI Consultants

MW-2C

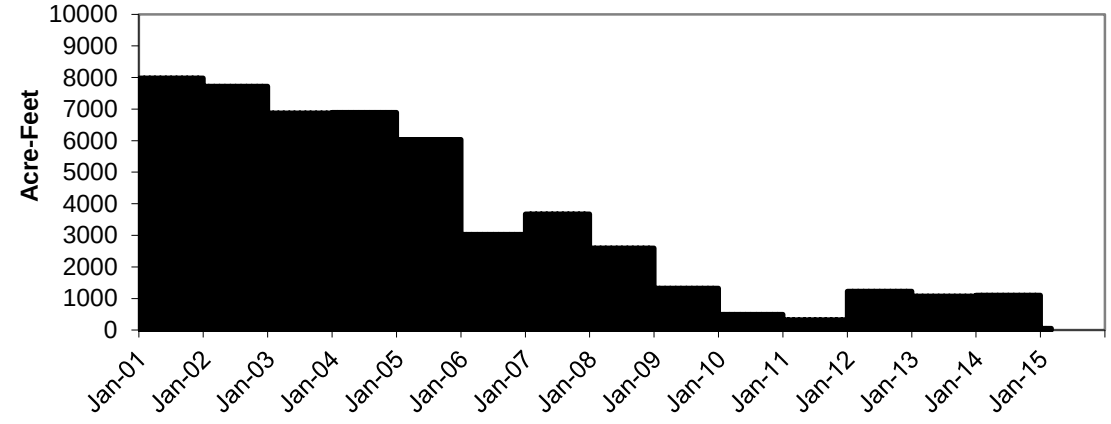
WATER QUALITY



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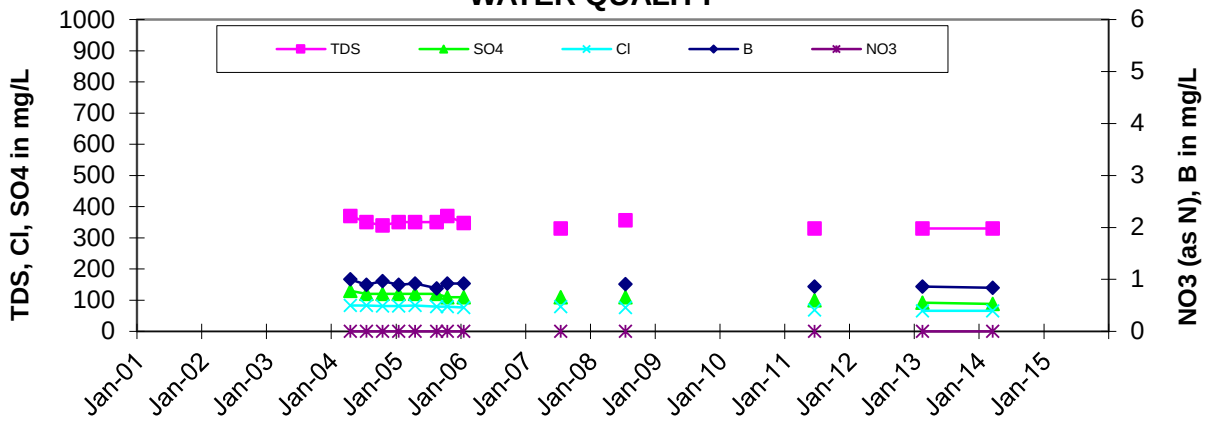
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



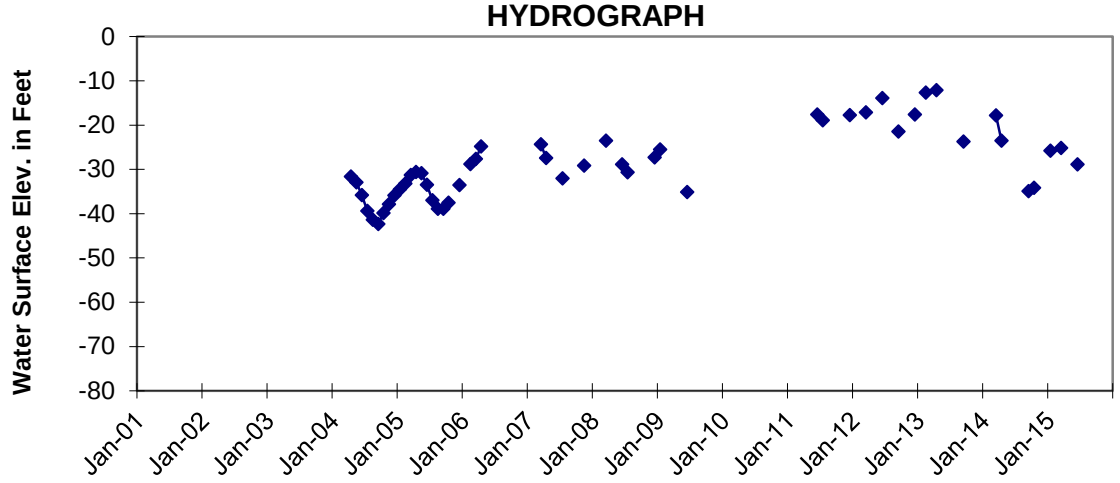
GEI Consultants

MW-3A

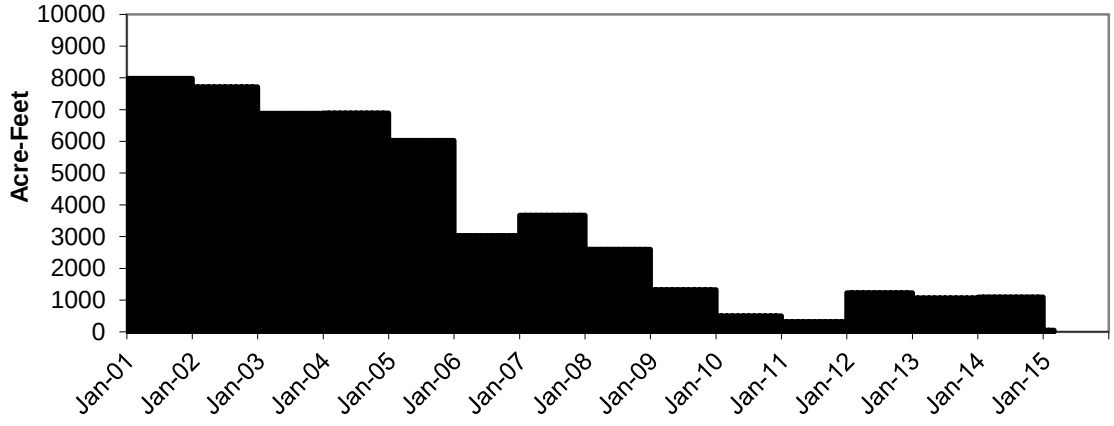
WATER QUALITY



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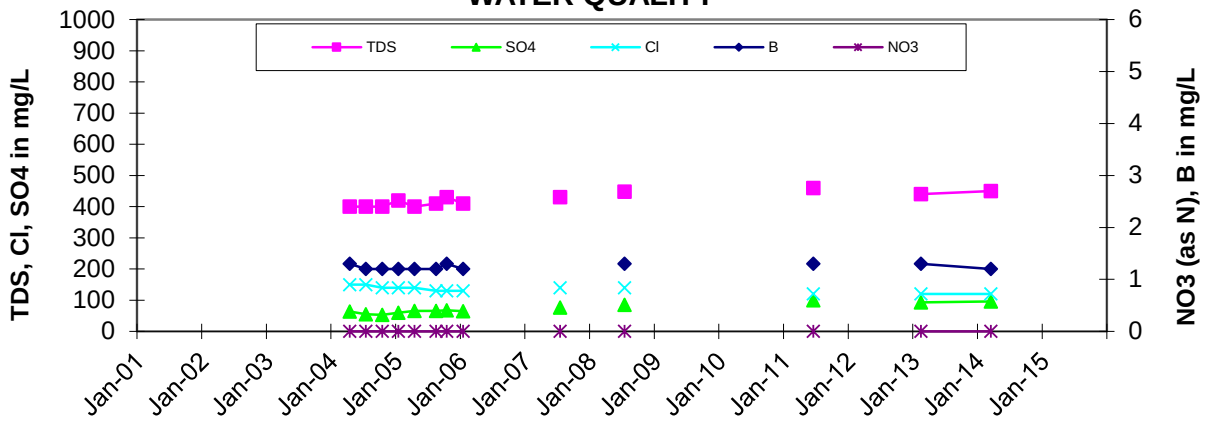
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



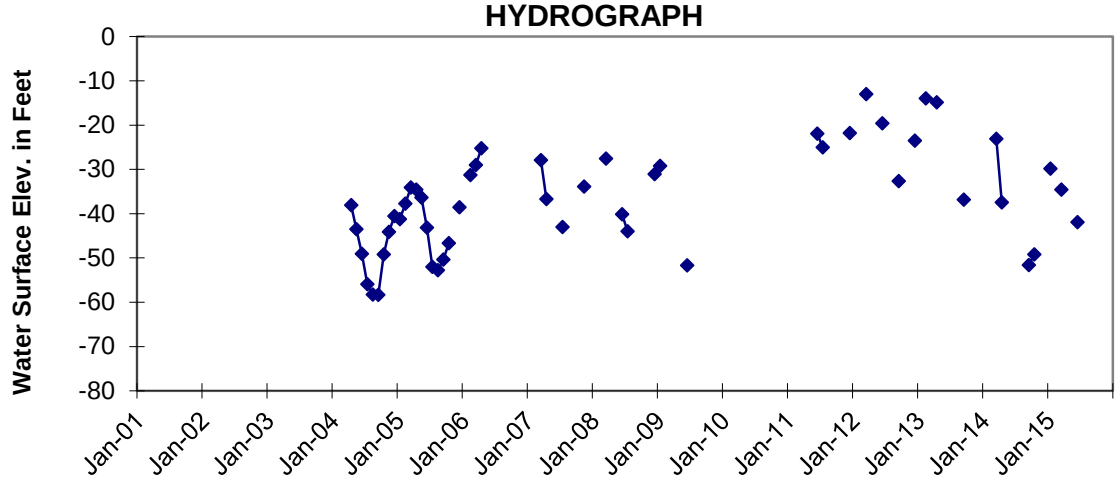
GEI Consultants

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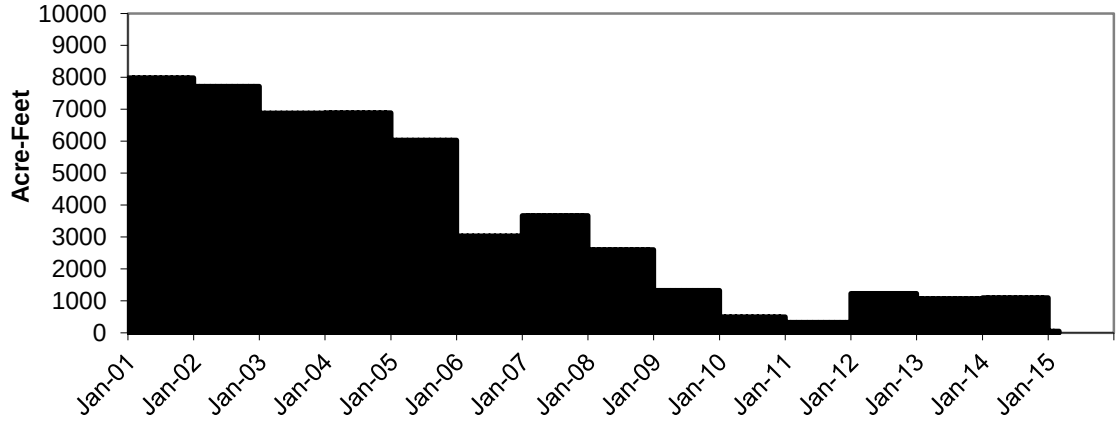
WATER QUALITY



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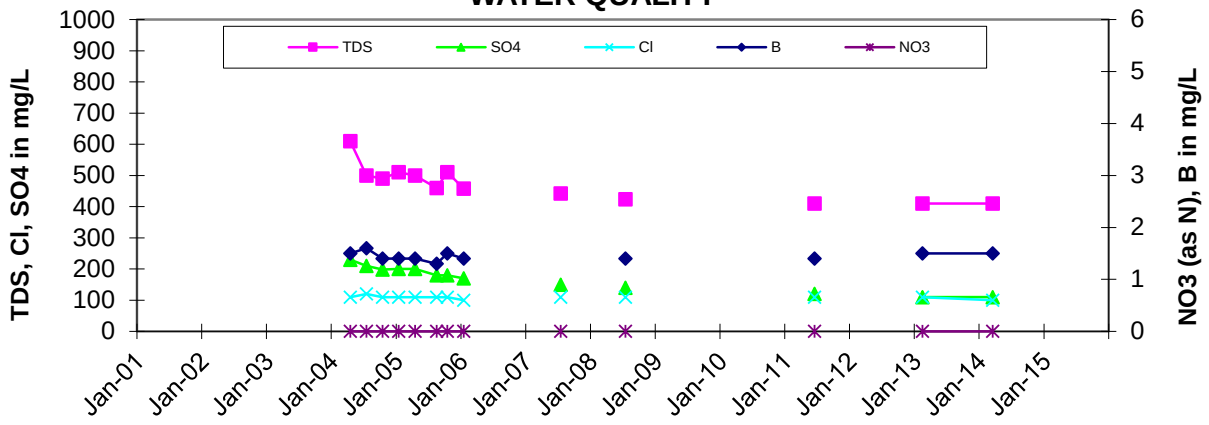
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



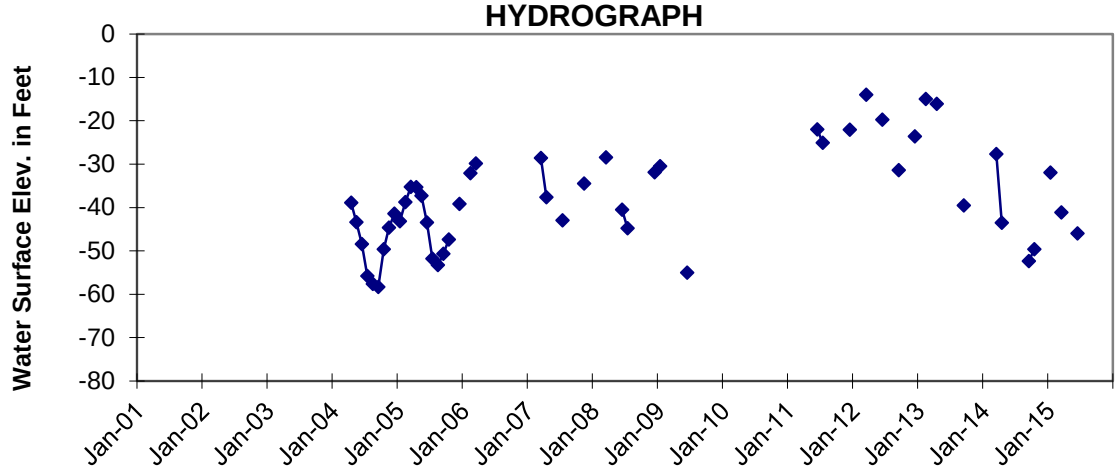
GEI Consultants

MW-3C

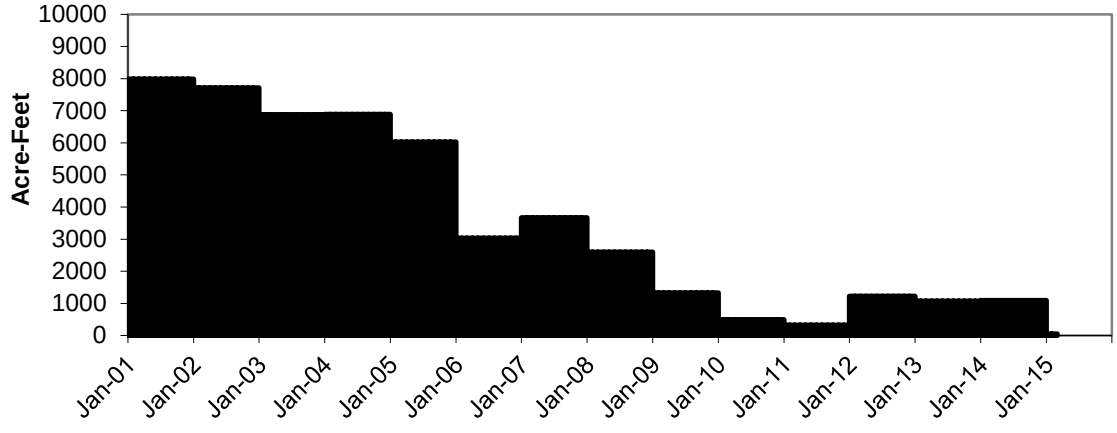
WATER QUALITY



HYDROGRAPH



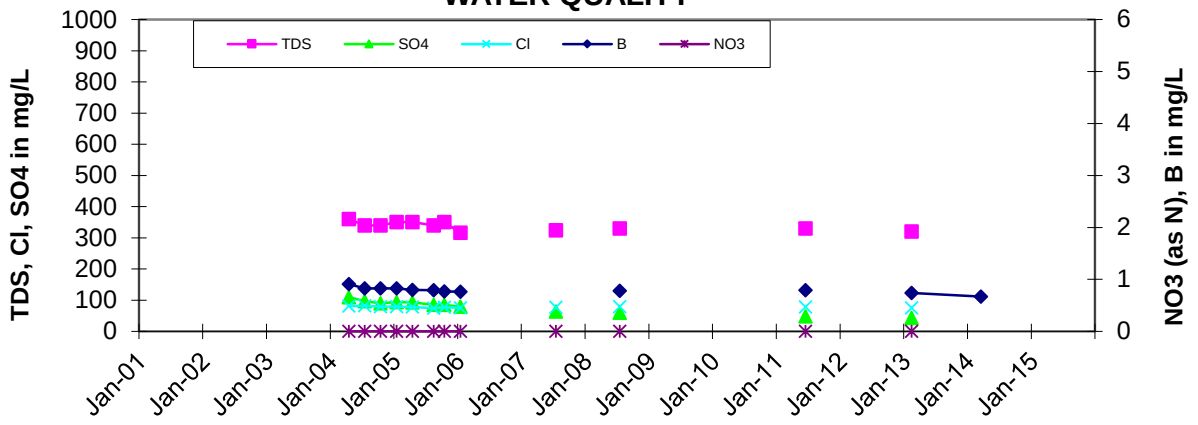
CITY OF TRACY TOTAL GROUNDWATER PRODUCTION



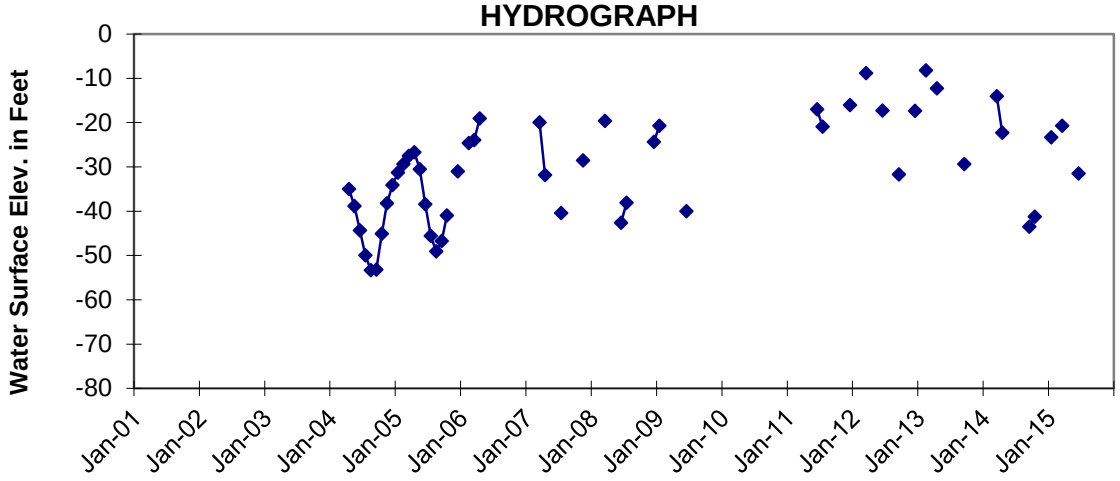
GEI Consultants

MW-4A

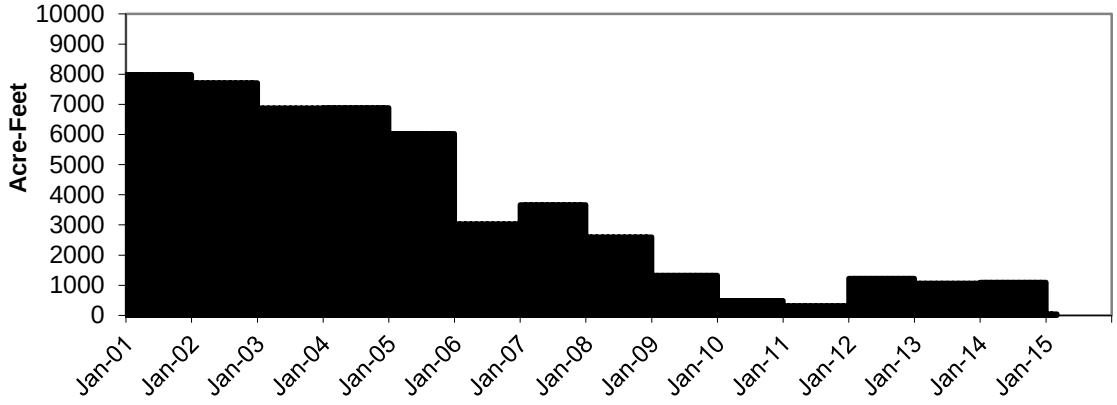
WATER QUALITY



HYDROGRAPH



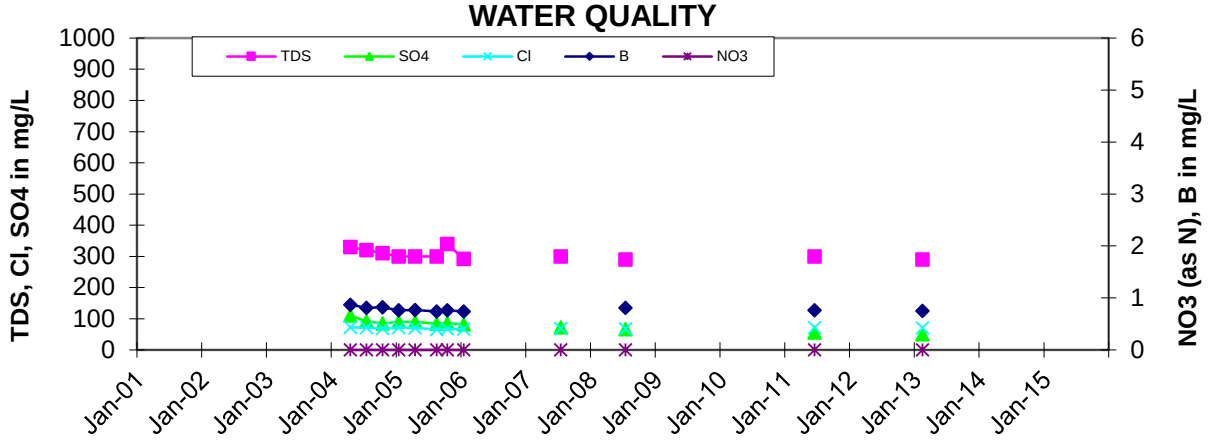
GROUNDWATER PRODUCTION - TOTAL



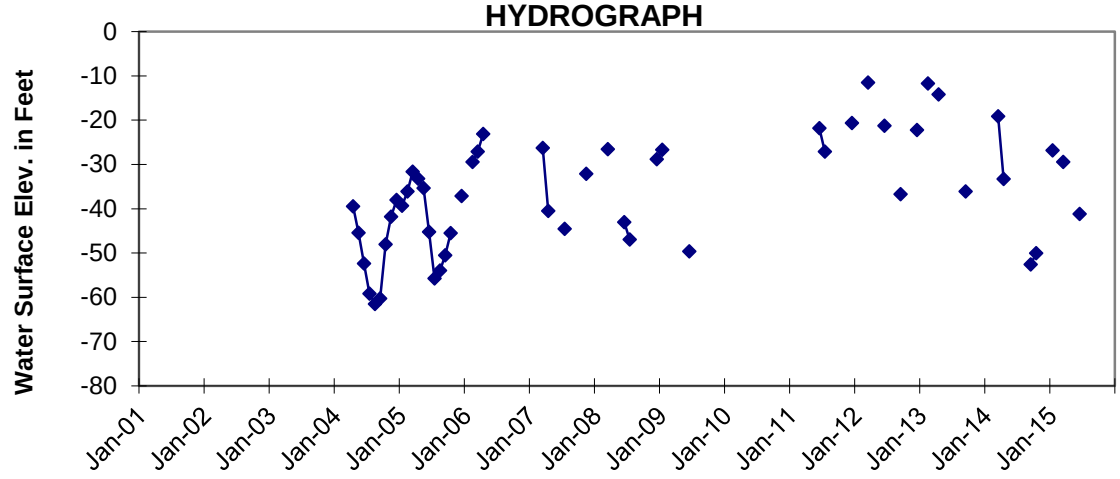
GEI Consultants

MW-4B

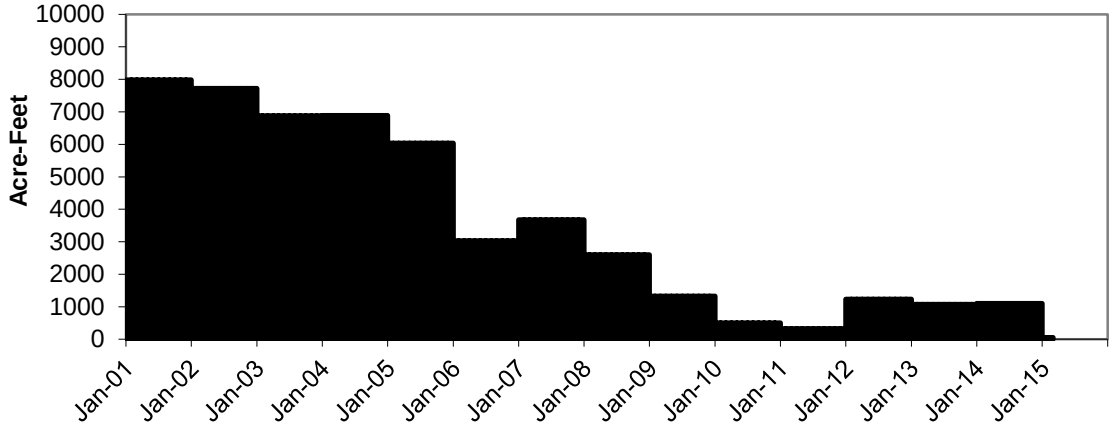
WATER QUALITY



HYDROGRAPH



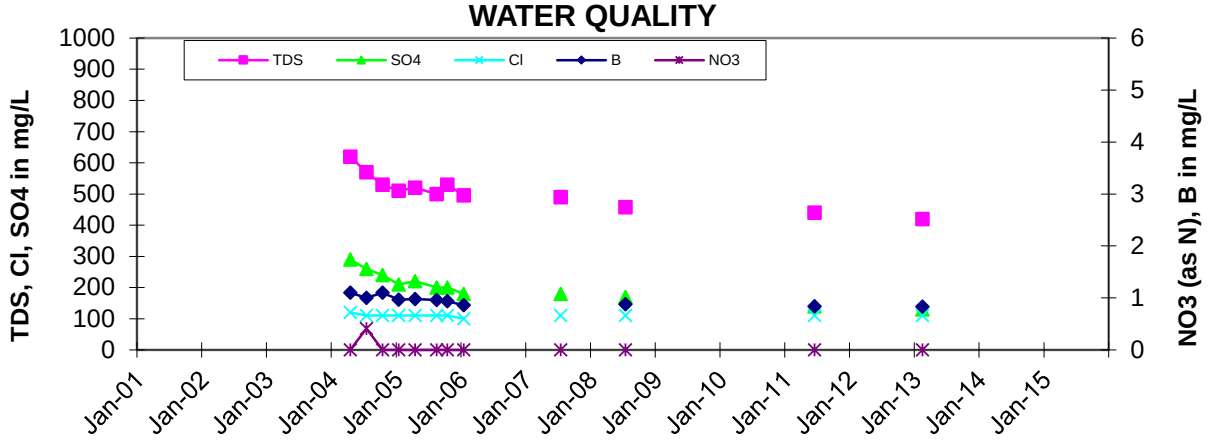
GROUNDWATER PRODUCTION - TOTAL



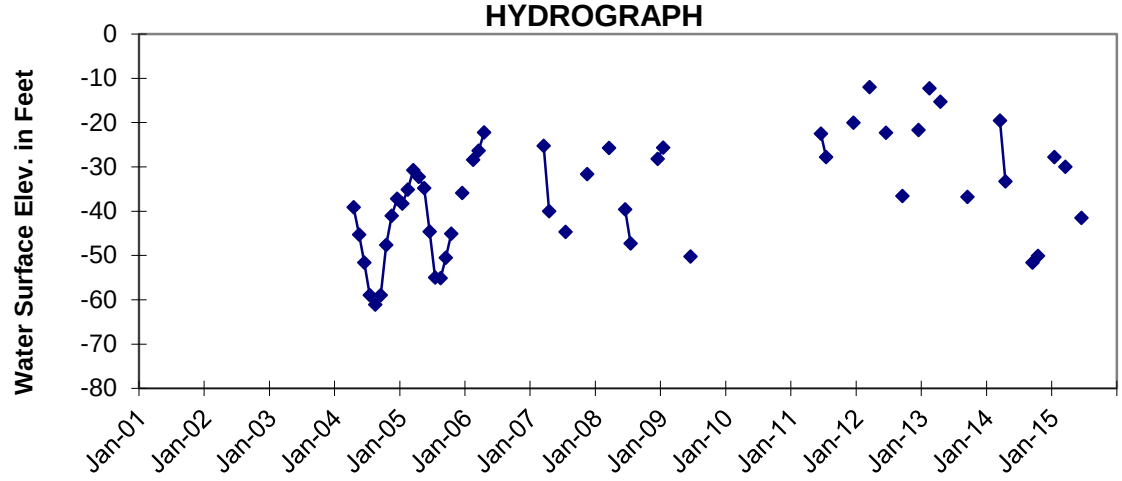
GEI Consultants

MW-4C

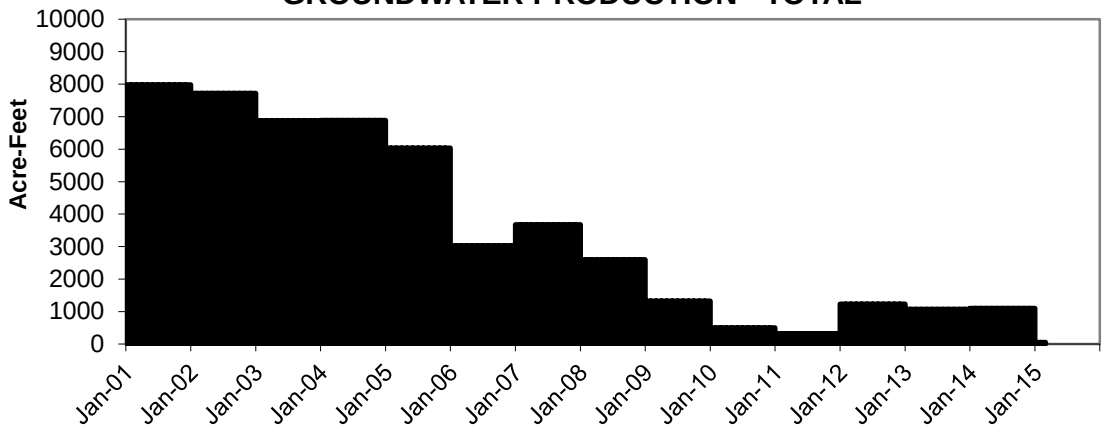
WATER QUALITY



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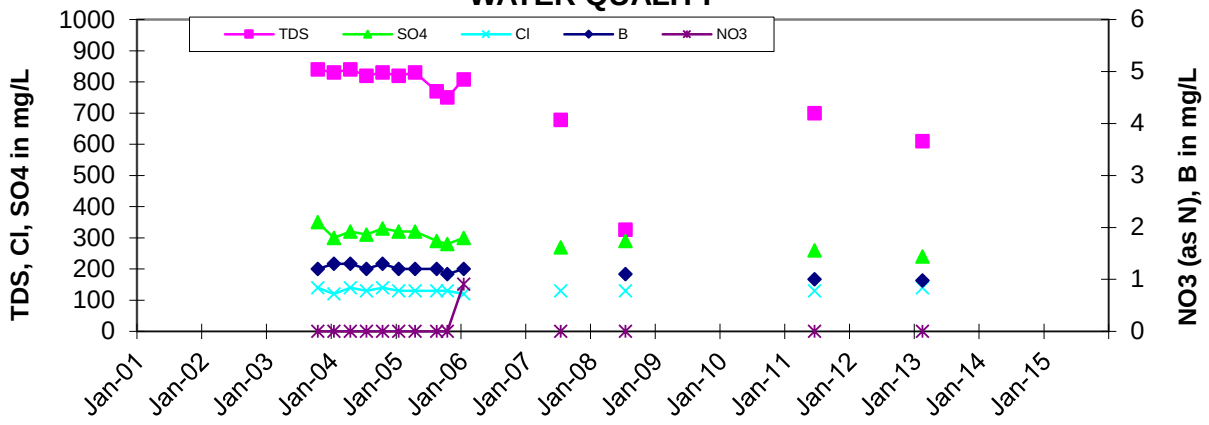
GROUNDWATER PRODUCTION - TOTAL



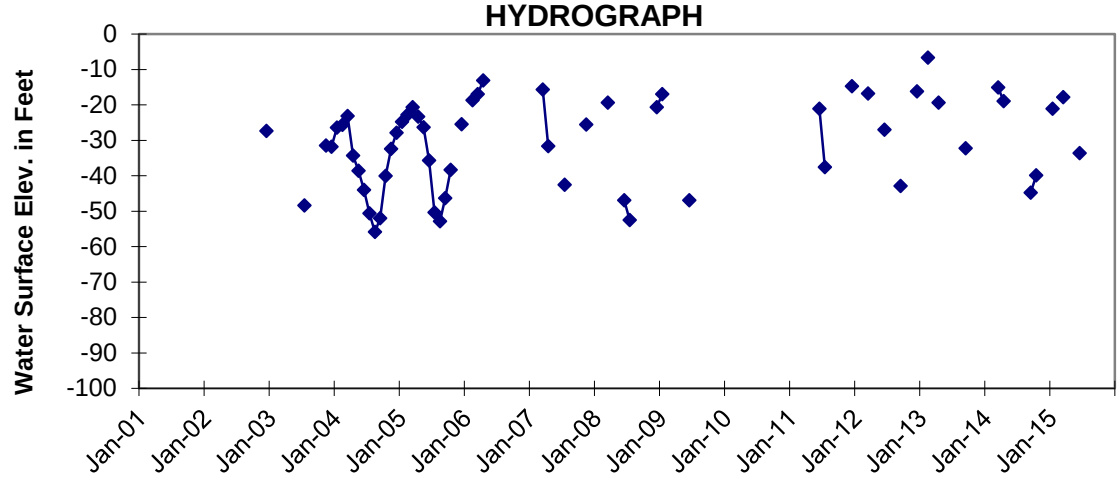
GEI Consultants

MW-5A

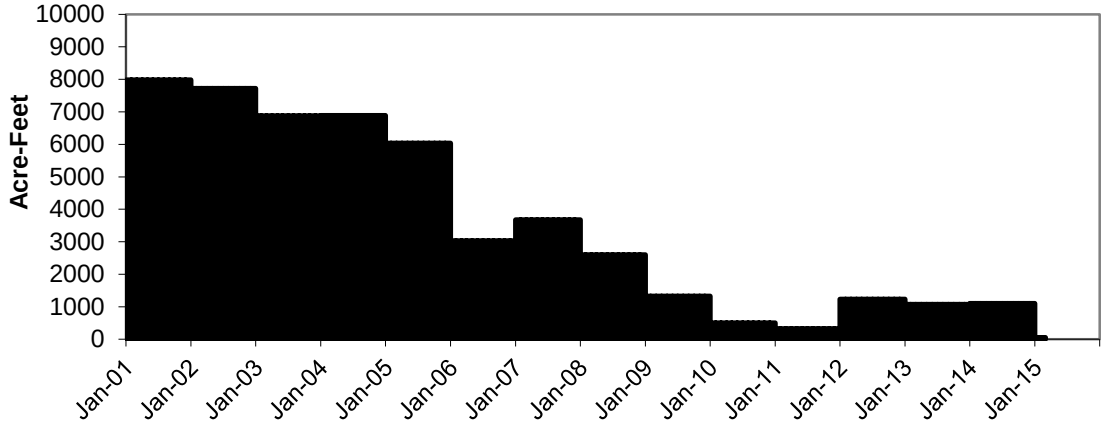
WATER QUALITY



HYDROGRAPH



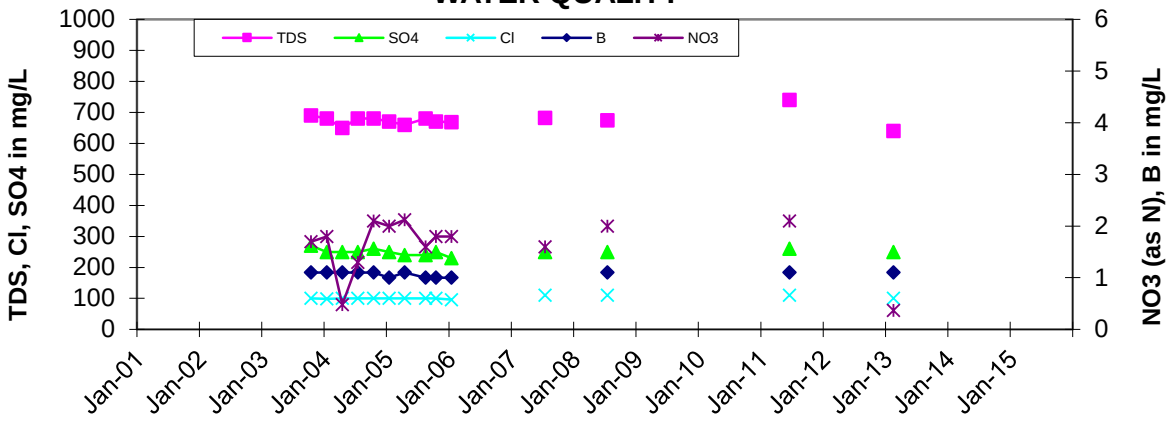
GROUNDWATER PRODUCTION - TOTAL



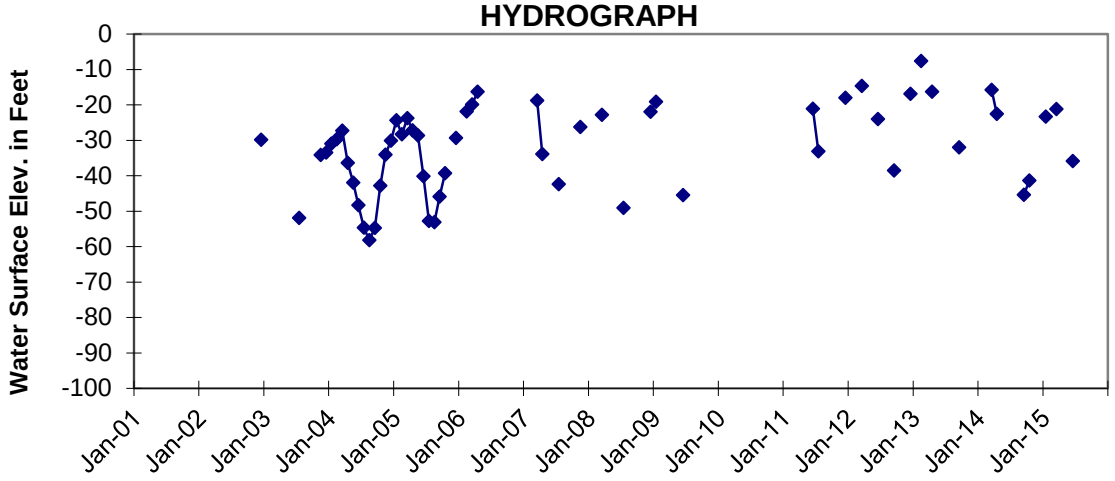
GEI Consultants

MW-5B

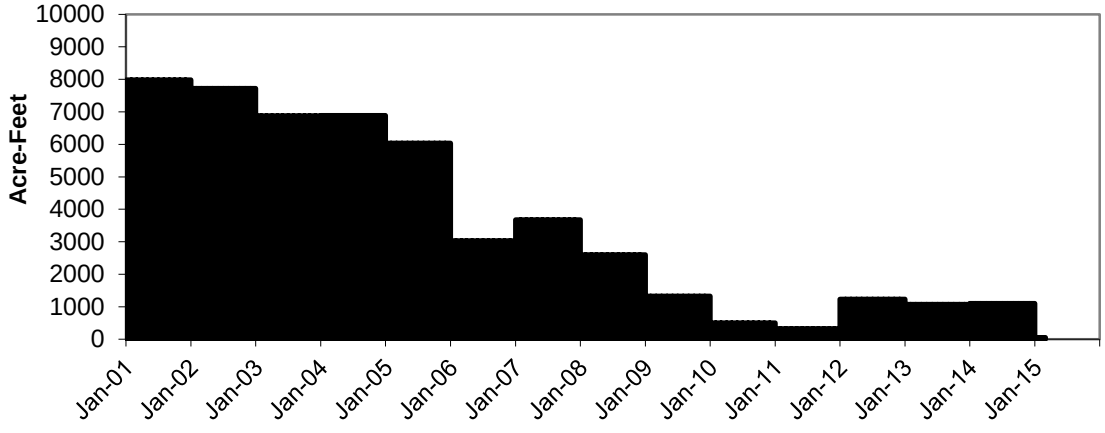
WATER QUALITY



HYDROGRAPH



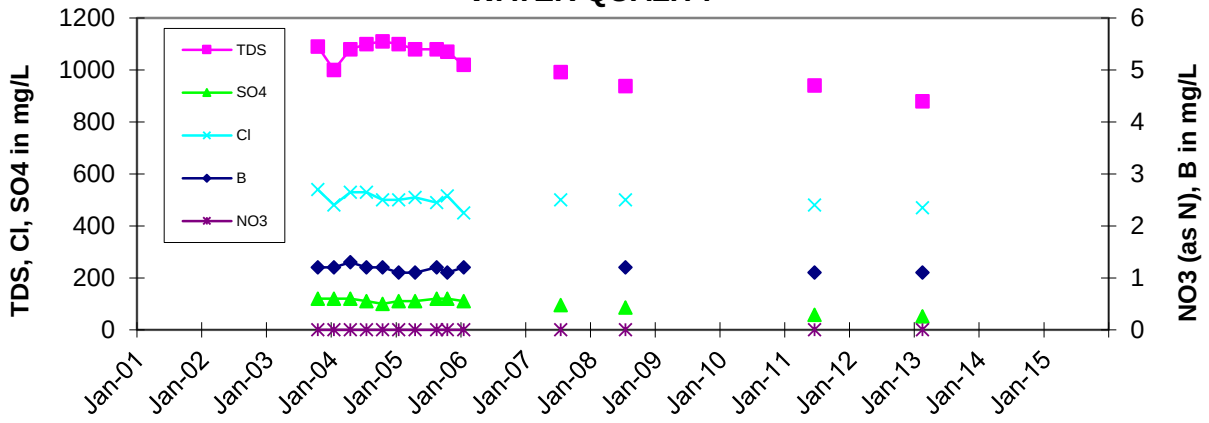
GROUNDWATER PRODUCTION - TOTAL



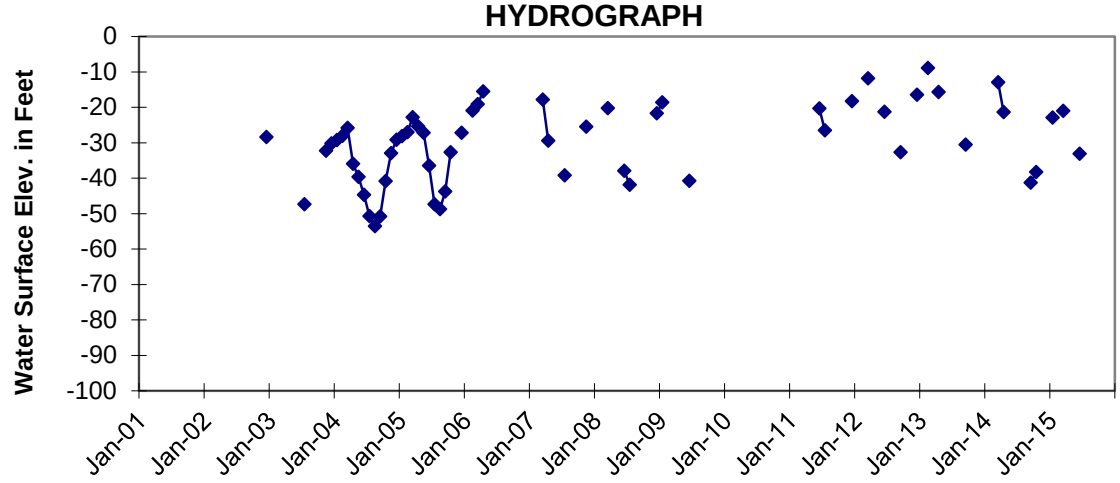
GEI Consultants

MW-5C

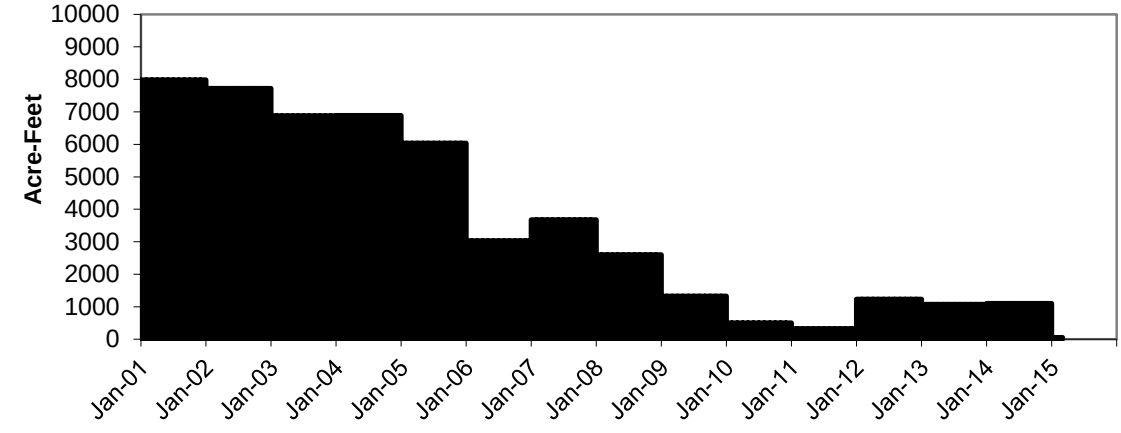
WATER QUALITY



HYDROGRAPH



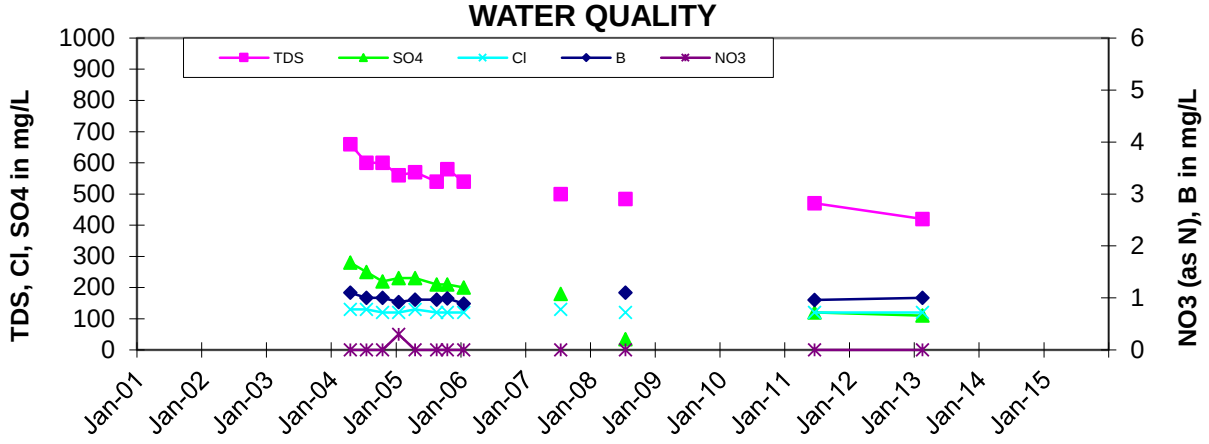
GROUNDWATER PRODUCTION - TOTAL



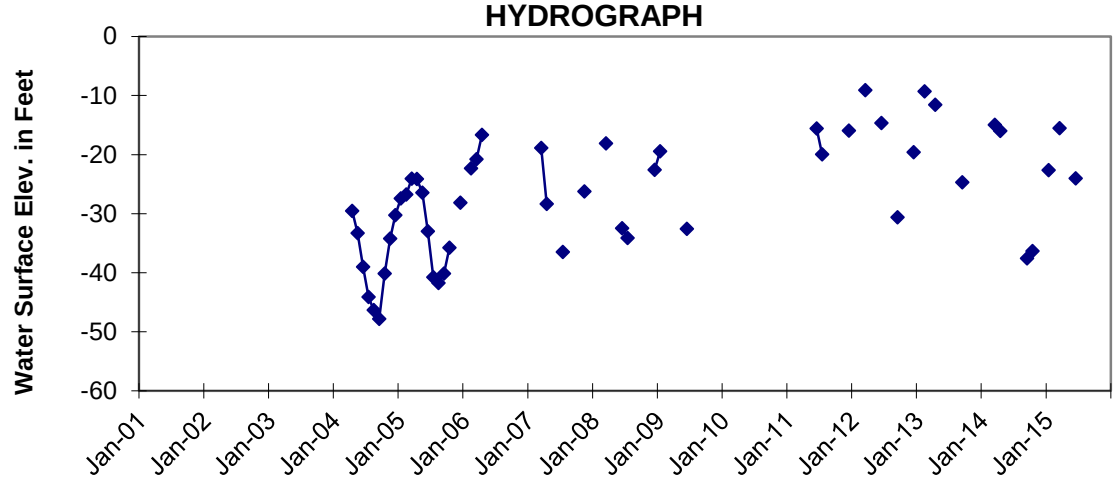
GEI Consultants

MW-6A

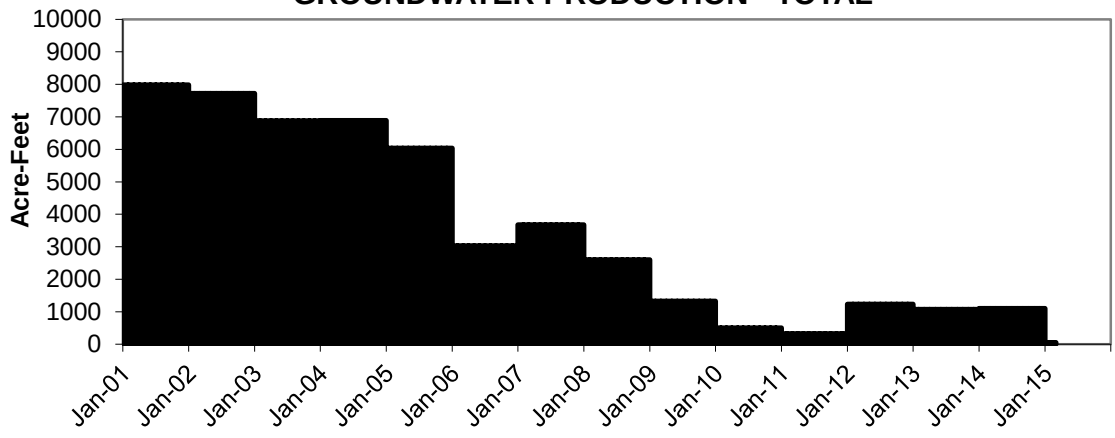
WATER QUALITY



HYDROGRAPH



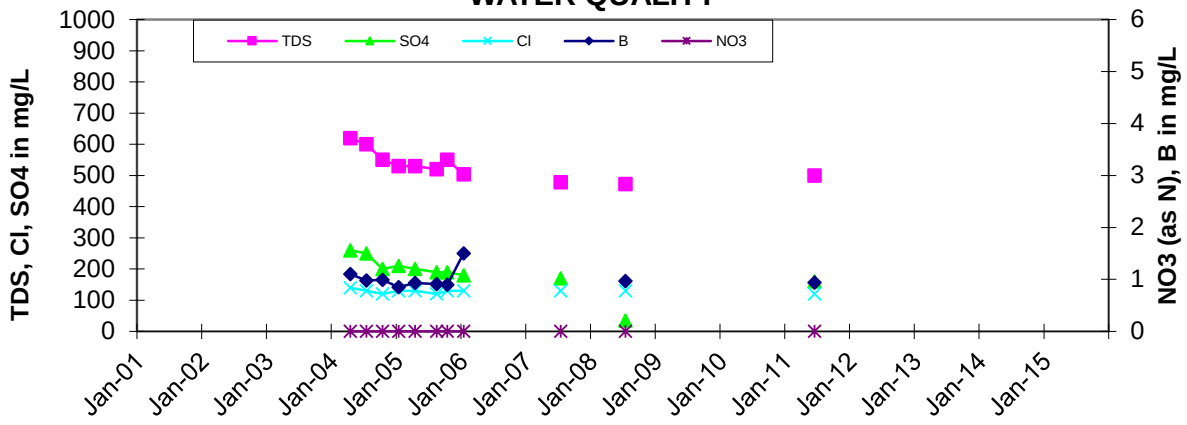
GROUNDWATER PRODUCTION - TOTAL



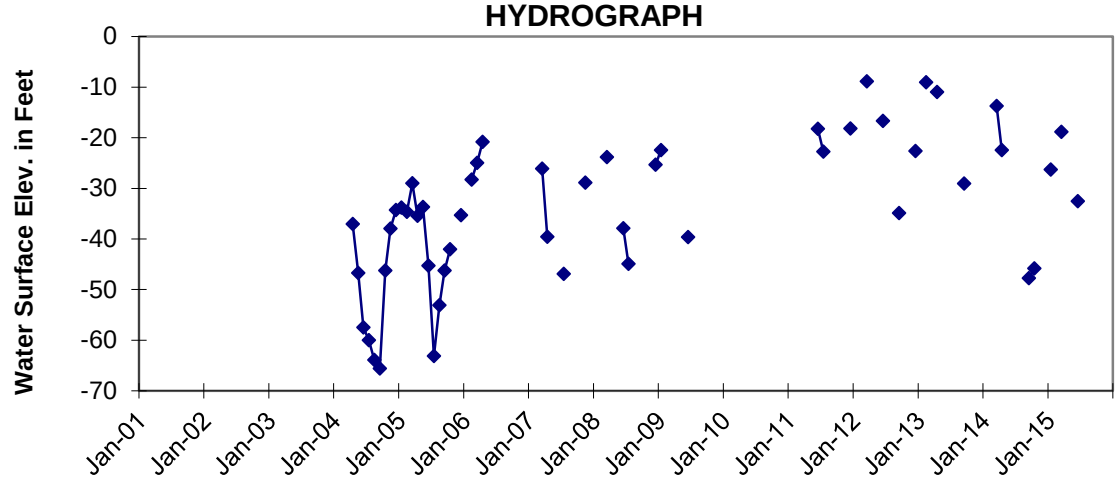
GEI Consultants

MW-6B

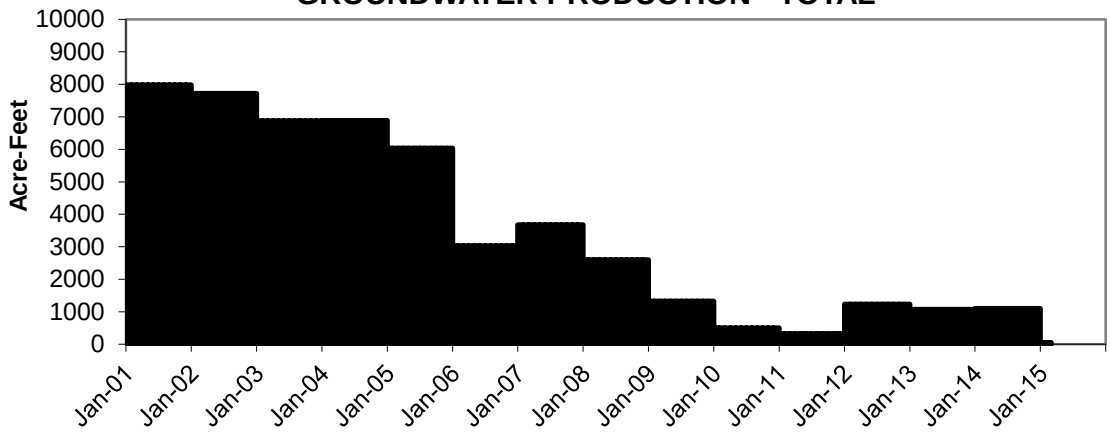
WATER QUALITY



HYDROGRAPH



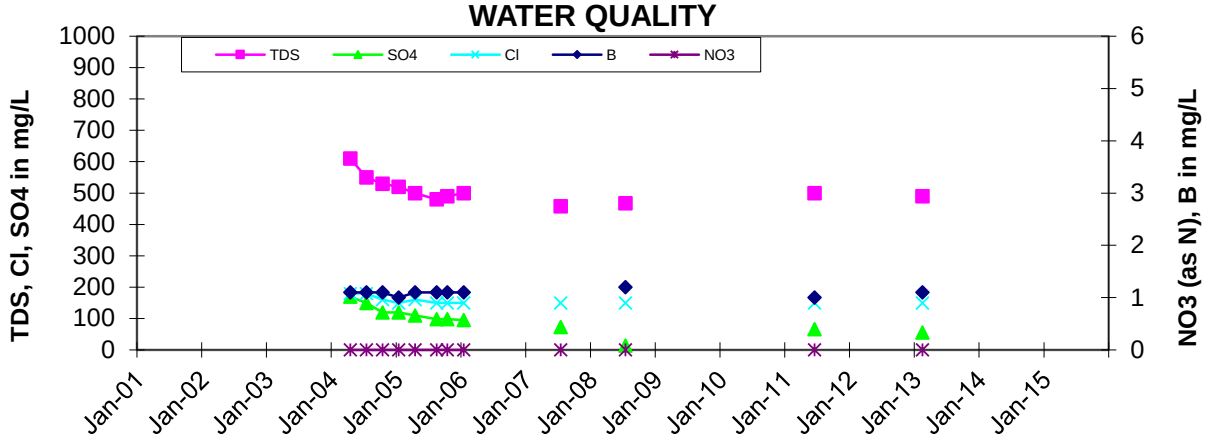
GROUNDWATER PRODUCTION - TOTAL



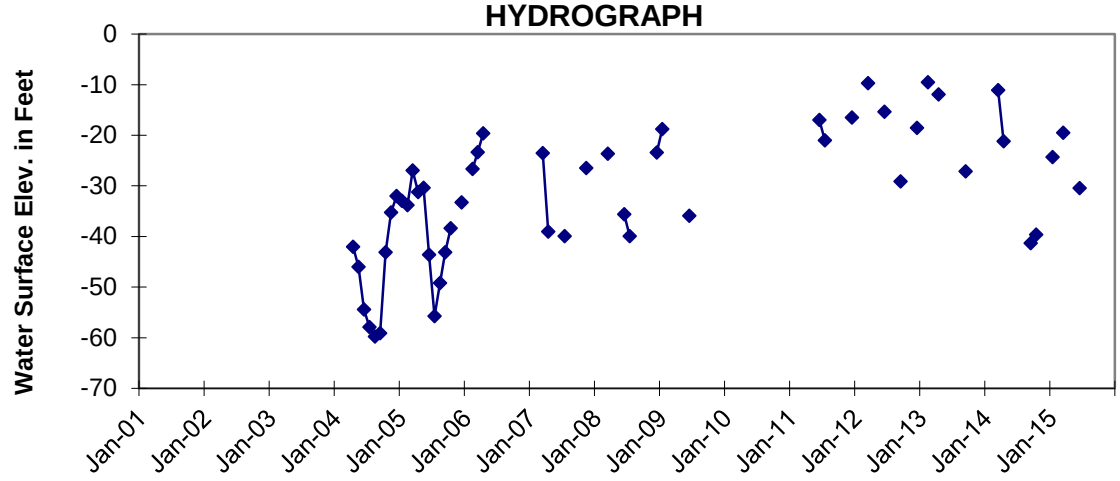
GEI Consultants

MW-6C

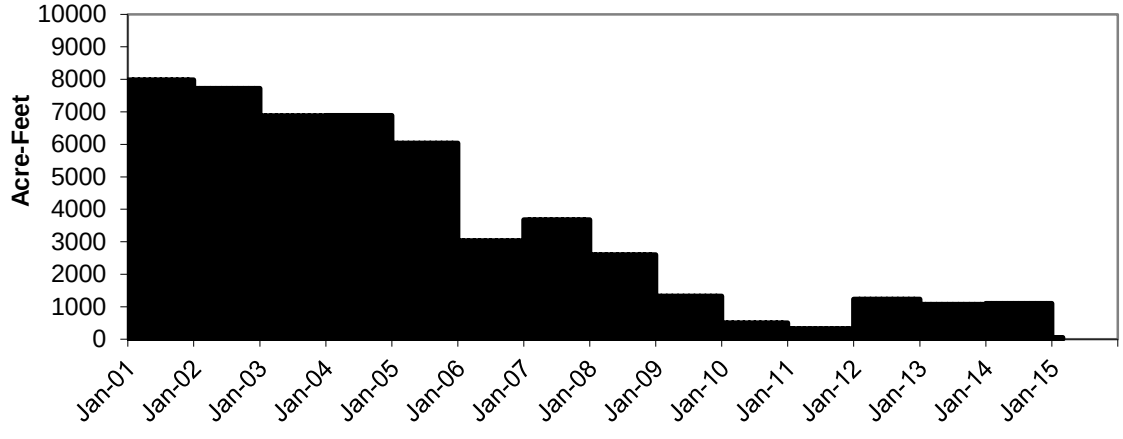
WATER QUALITY



HYDROGRAPH

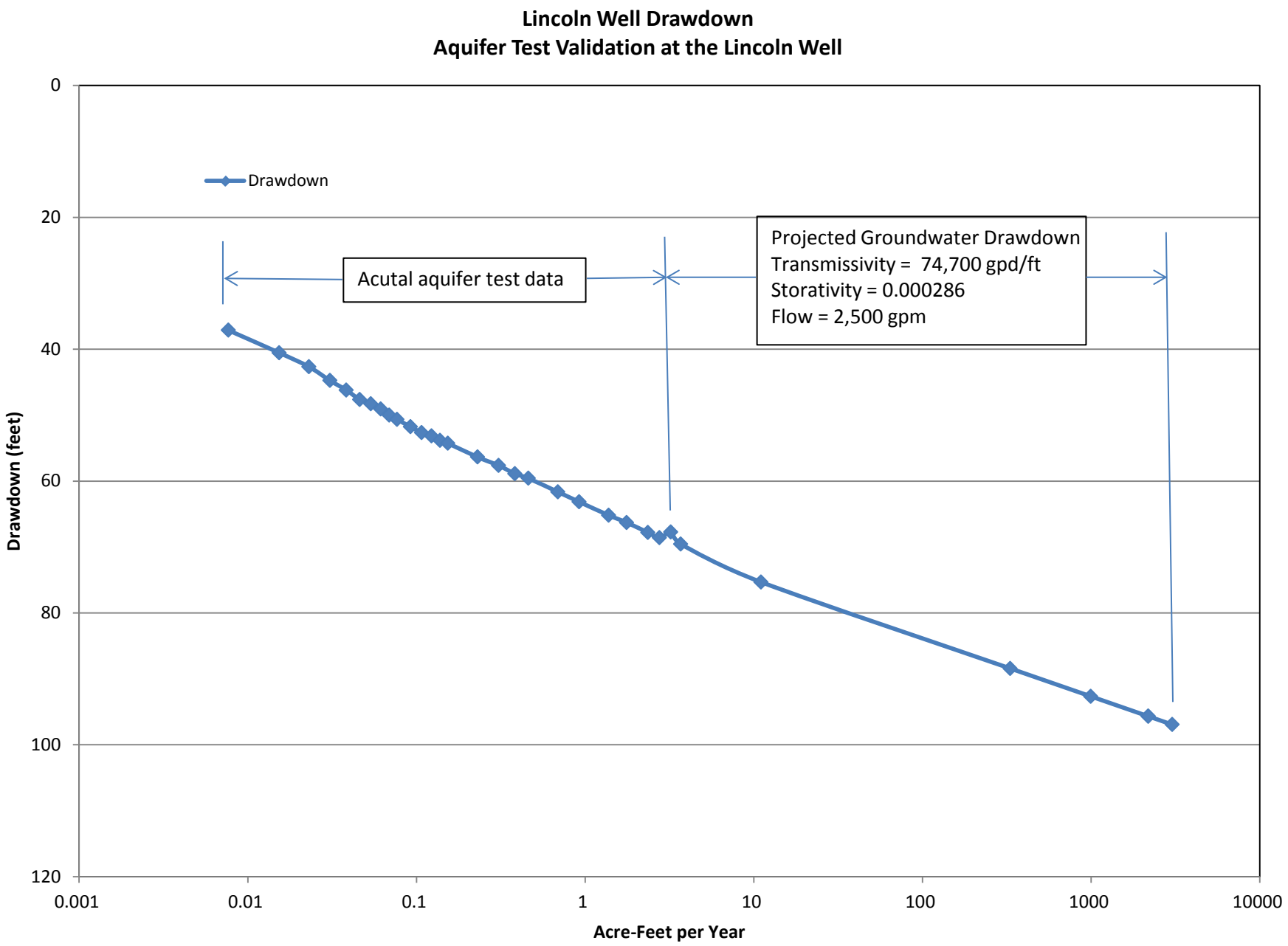


GROUNDWATER PRODUCTION - TOTAL



GEI Consultants

APPENDIX C
AQUIFER TESTS


Lincoln Well Drawdown
Aquifer Test Validation at the Lincoln Well
Drawdown
Acutal aquifer test data
Projected Groundwater Drawdown
Transmissivity = 74,700 gpd/ft
Storativity = 0.000286
Flow = 2,500 gpm
Drawdown (feet)
0
20
40
60
80
100
120
0.001
0.01
0.1
1
10
100
1000
10000
Acre-Feet per Year

THEIS EQUATION ANALYSIS

City of Tracy: Lincoln Well Calibration

GEI Consultants, Inc.

Calibration - 6 hours pumping, PWL = 137 ft

By: **J.Crose**
Date: **7/2/2015**

Well Name: Lincoln
Answer :

Static Water Level =	67.95	feet
Drawdown =	**71.20**	feet
Pumping Water Level =	139.2	feet

u = 5.391E-09

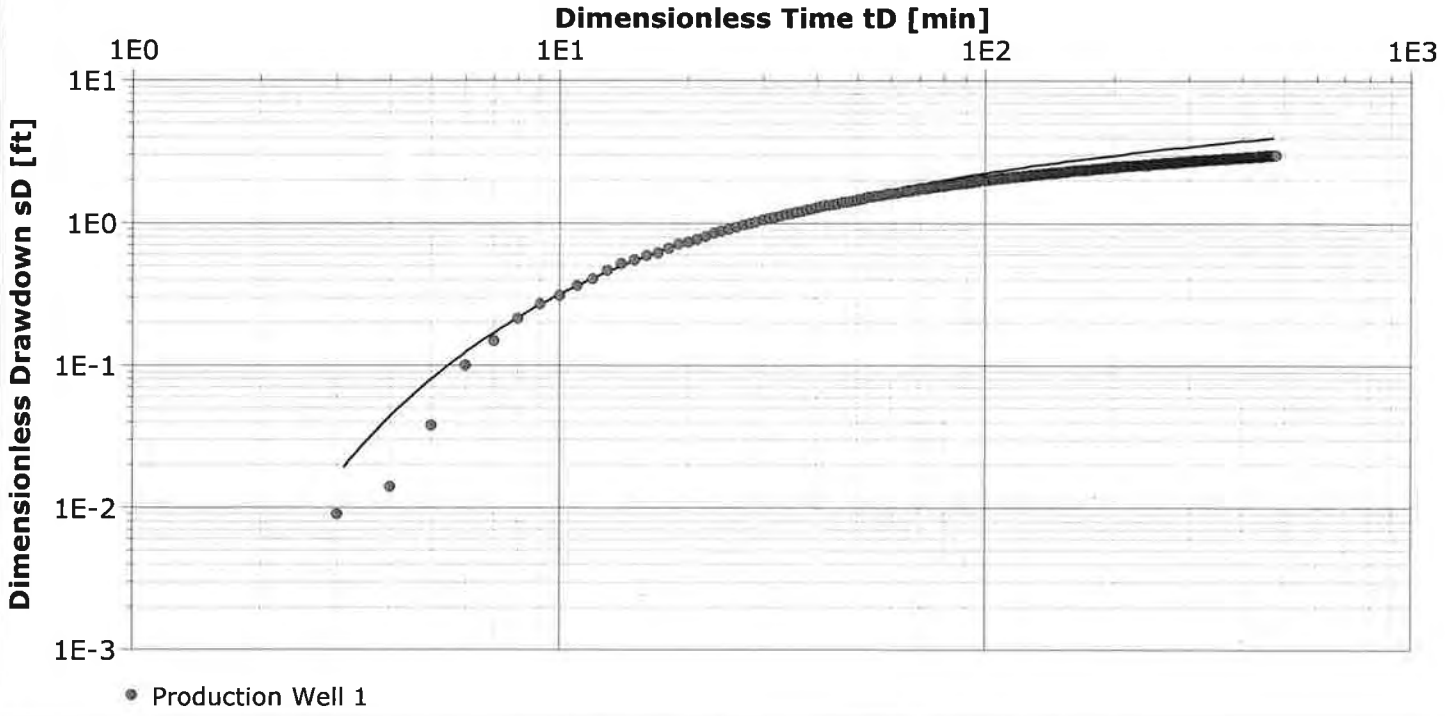
Thickness (b)	**120**	ft
Flow (Q)	**2504**	gpm
Flow (Q)	3605760	gpd
Transmissivity (T)	**74,400**	gpd/ft
Transmissivity (T)	9946.5241	ft^2/day
Radius	**0.5**	feet
Storativity	**2.9.E-04**	unitless
Time	**0.3333333**	days
Hydraulic Conductivity	82.887701	ft/day

CALCULATIONS

u =	*5.391E-09*		
IF u <= 1 THEN W(u) =	*18.461274*		
IF u > 1 THEN W(u) =	*12548275*		
u =	*18.461274*		
DRAWDOWN IN OB. WELL =	*71.204537*		*71.23540548*
TOTAL VOLUME PUMPED =	*1346.1504*	*ac-ft/yr*	
	0.0011202	*conversion gal to ft & day to yr.*	

Waterloo HYDROGEOLOGIC	Contact Info Address Company Name City, State/Province	**Pumping Test Analysis Report**
		Project:
		Number: 1509810
		Client: City of Tracy

Location: Tracy, CA	Pumping Test: Pumping Test 1	Pumping Well: Production Well 3
Test Conducted by:		Test Date: 8/5/2015
Analysis Performed by: Justin Crose	Theis	Analysis Date: 8/5/2015
Aquifer Thickness: 120.00 ft	Discharge Rate: 1700 [U.S. gal/min]	

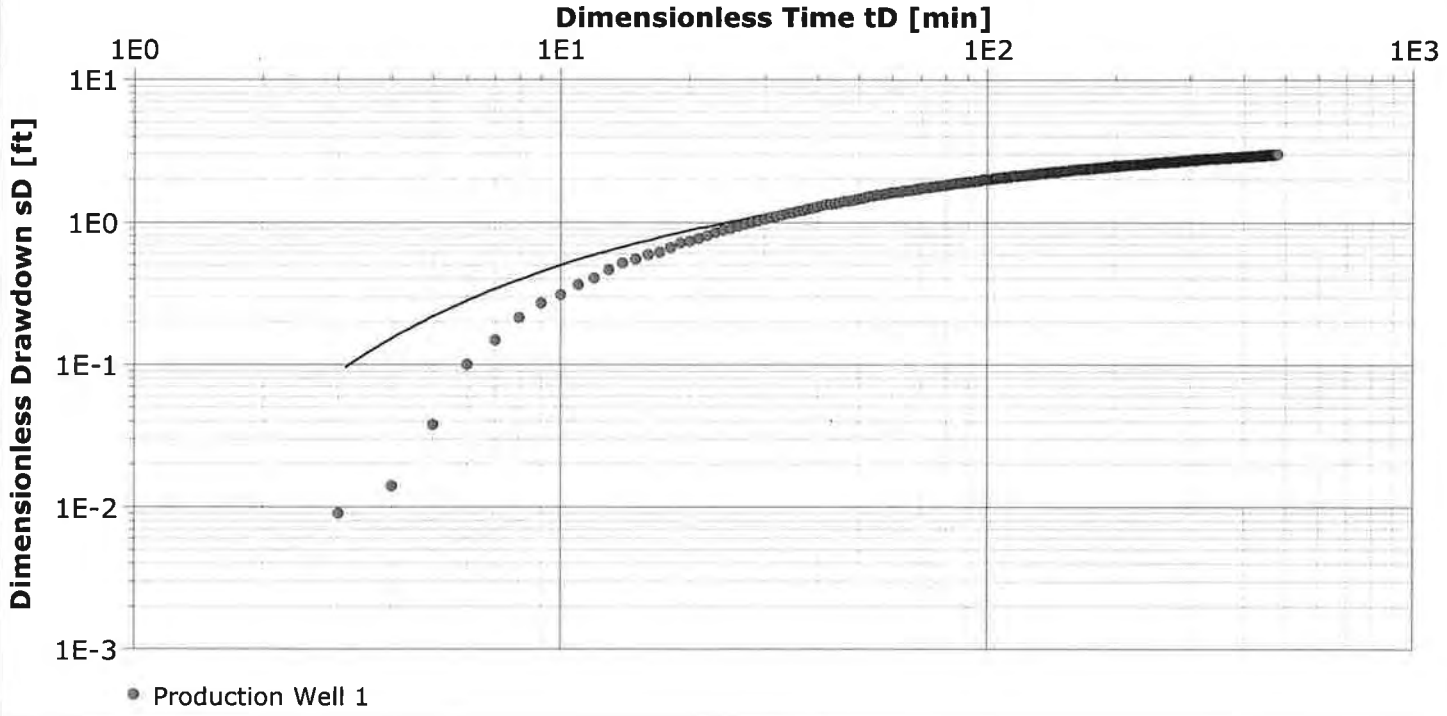


Calculation using Theis

Observation Well	Transmissivity [U.S. gal/d-ft]	Hydraulic Conductivity [U.S. gal/d-ft²]	Storage coefficient	Radial Distance to PW [ft]	
Production Well 1	1.69×10^{5}	1.40×10^{3}	9.06×10^{-4}	777.0	

Waterloo HYDROGEOLOGIC	Contact Info Address Company Name City, State/Province	**Pumping Test Analysis Report**
		Project:
		Number: 1509810
		Client: City of Tracy

Location: Tracy, CA	Pumping Test: Pumping Test 1	Pumping Well: Production Well 3
Test Conducted by:		Test Date: 8/5/2015
Analysis Performed by: Justin Crose	Theis	Analysis Date: 8/5/2015
Aquifer Thickness: 120.00 ft	Discharge Rate: 1700 [U.S. gal/min]	

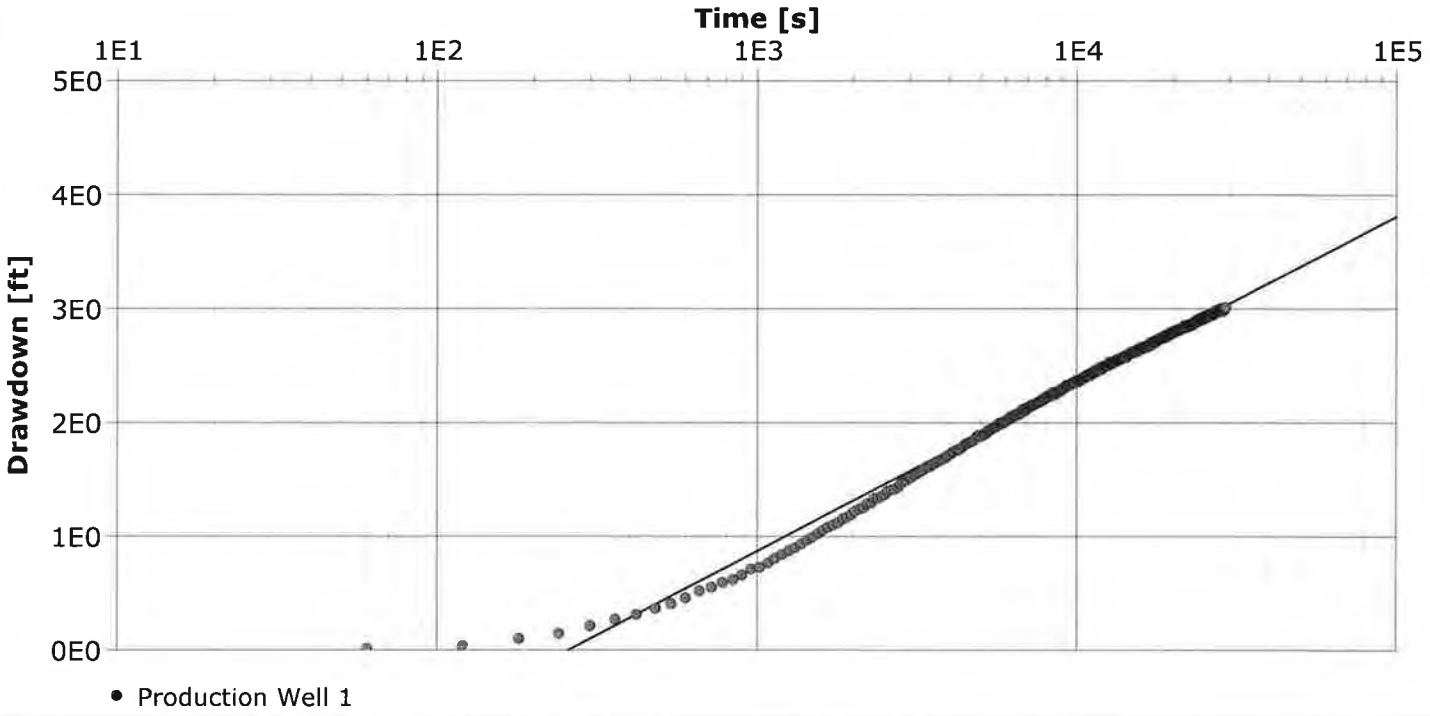


Calculation using Theis

Observation Well	Transmissivity [U.S. gal/d-ft]	Hydraulic Conductivity [U.S. gal/d-ft²]	Storage coefficient	Radial Distance to PW [ft]	
Production Well 1	2.67×10^{5}	2.22×10^{3}	6.74×10^{-4}	777.0	

Waterloo HYDROGEOLOGIC	Contact Info Address Company Name City, State/Province	**Pumping Test Analysis Report**
		Project: Drought Preparedness Assesment
		Number: 15099810
		Client: City of Tracy

Location: Tracy, CA	Pumping Test: Pumping Test 1	Pumping Well: Production Well 3
Test Conducted by:		Test Date: 5/17/2005
Analysis Performed by: J.Crose	New analysis 1	Analysis Date: 8/5/2015
Aquifer Thickness: 120.00 ft	Discharge Rate: 1700 [U.S. gal/min]	

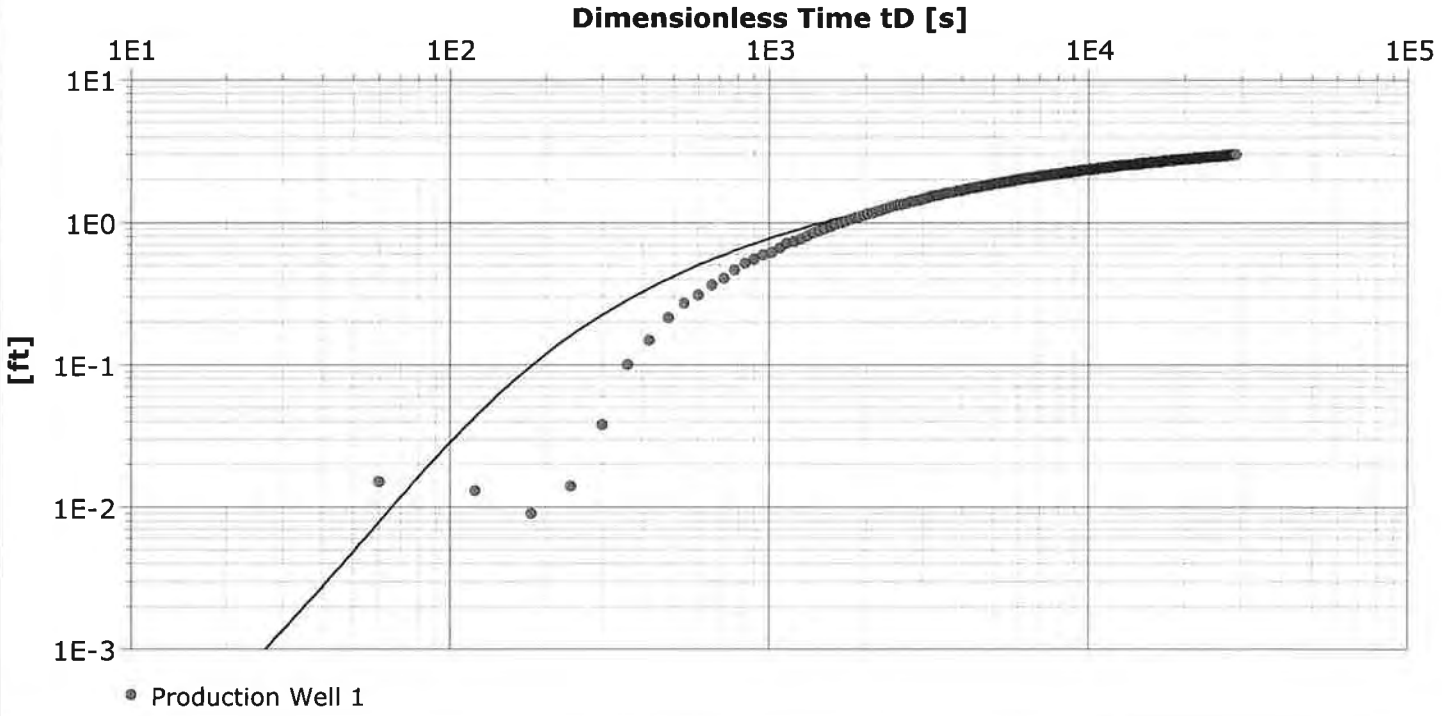


Calculation using COOPER & JACOB

Observation Well	Transmissivity [U.S. gal/d-ft]	Hydraulic Conductivity [U.S. gal/d-ft²]	Storage coefficient	Radial Distance to PW [ft]	
Production Well 1	3.05×10^{5}	2.54×10^{3}	4.51×10^{-4}	777.0	

Waterloo HYDROGEOLOGIC	Contact Info Address Company Name City, State/Province	**Pumping Test Analysis Report**
		Project:
		Number: 1509810
		Client: City of Tracy

Location: Tracy, CA	Pumping Test: Pumping Test 1	Pumping Well: Production Well 3
Test Conducted by:		Test Date: 8/5/2015
Analysis Performed by:	New analysis 1	Analysis Date: 8/5/2015
Aquifer Thickness: 120.00 ft	Discharge Rate: 1700 [U.S. gal/min]	

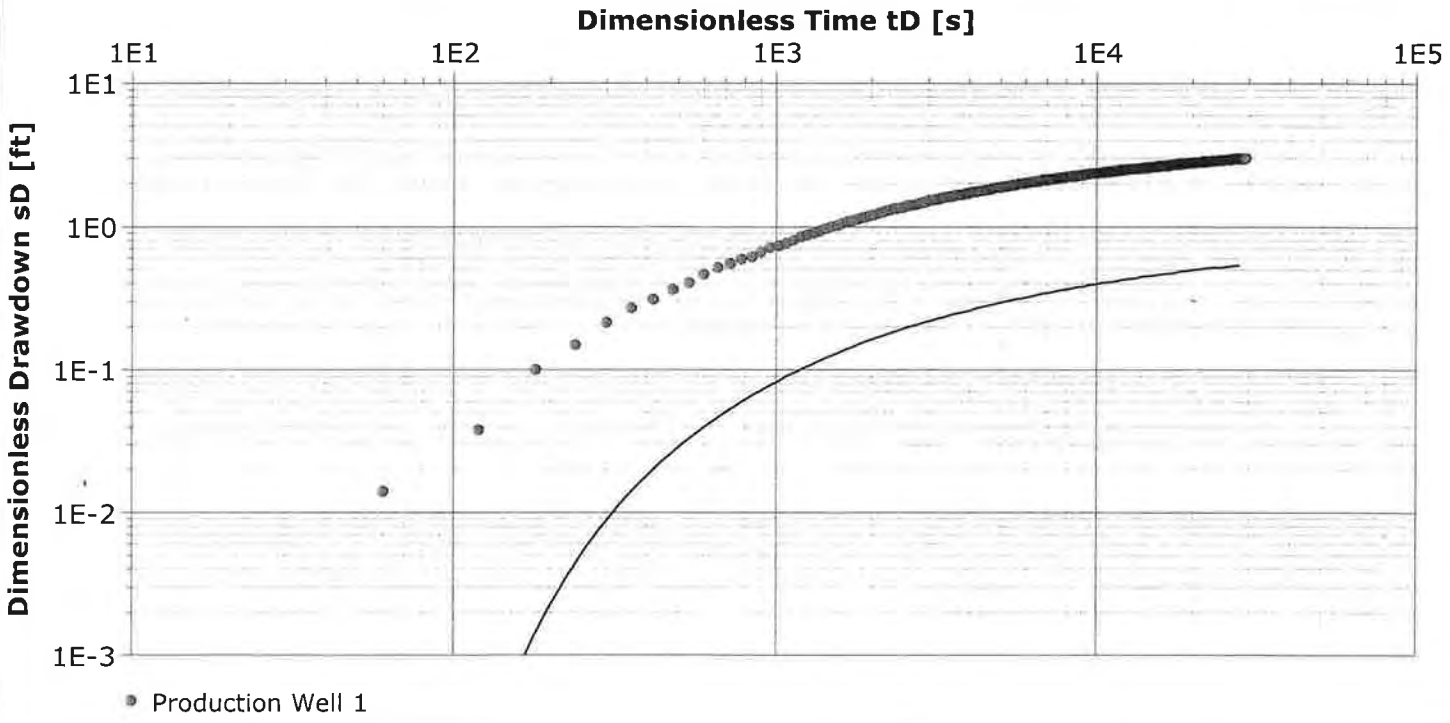


Calculation using Neuman

Observation Well	Transmissivity [U.S. gal/d-ft]	Hydraulic Conductivity [U.S. gal/d-ft²]	Specific Yield	Ratio K(v)/K(h)	Ratio Sy/S	Radial Distance to PW [ft]
Production Well 1	2.67×10^{5}	2.22×10^{3}	6.13×10^{-4}	9.77×10^{-1}	1.00×10^{1}	777.0

Waterloo HYDROGEOLOGIC	Contact Info Address Company Name City, State/Province	**Pumping Test Analysis Report**
		Project: Drought Preparedness Assesment
		Number: 15099810
		Client: City of Tracy

Location: Tracy, CA	Pumping Test: Pumping Test 1	Pumping Well: Production Well 3
Test Conducted by:		Test Date: 5/17/2005
Analysis Performed by: J.Crose	New analysis 1	Analysis Date: 8/5/2015
Aquifer Thickness: 120.00 ft	Discharge Rate: 1700 [U.S. gal/min]	



Calculation using Hantush

Observation Well	Transmissivity [U.S. gal/d-ft]	Hydraulic Conductivity [U.S. gal/d-ft²]	Storage coefficient	Ratio K(v)/K(h)	Hydr. resistance [s]	Leakage factor [ft]	Radial Distance to PW [ft]
Production Well 1	1.06×10^{6}	8.83×10^{3}	6.57×10^{-3}	1.00×10^{-1}	1.00×10^{7}	4049.004055409477	77.0

APPENDIX D
WELL DRAWDOWN PROJECTIONS

INPUT

By: **R. Shatz**

Date: **8/5/2015**

Distance Drawdown with Historic 2001 Production Totals

Well Name:	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis Mar	Well No. 6 (P	Well No. 7 (B	Well No. 8 (ASR)	
Static Water Level 2013 =	76	192.6	193.1	251	231.2	74	61	79	88	feet
Thickness (b)	120	120	120	120	120	120	120	120	120	feet
Flow (Q)	2500	1400	2000	1750	2000	2550	2000	2000	2100	gpm
Transmissivity (T)	73700	169000	169000	169000	169000	73700	73700	73700	73700	gpd/ft
Storativity	0.000286	0.000906	0.000906	0.000906	0.000906	0.000286	0.000286	0.000286	0.000286	unitless
Time	196	172	146	163	40	0	0	0	124	days

Distance to Wells (feet)										
	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Lincoln	0.5	21,829	22,340	22,219	21,140	4,239	12,781	4,462	3,721	
Well No. 1	21,829	0.5	986	777	1,141	20,450	26,743	25,116	19,565	
Well No. 2	22,340	986	0.5	1,535	2,121	21,110	27,587	25,728	20,191	
Well No. 3	22,219	777	1,535	0.5	1,109	20,707	26,767	25,415	19,857	
Well No. 4	21,140	1,141	2,121	1,109	0.5	19,600	25,699	24,312	18,753	
Well No. 5 (Lewis Manor)	4,239	20,450	21,110	20,707	19,600	0.5	9,462	4,867	11,291	
Well No. 6 (Park and Ride)	12,781	26,743	27,587	26,767	25,699	9,462	0.5	9,530	10,728	
Well No. 7 (Ball Park)	4,462	25,116	25,728	25,415	24,312	4,867	9,530	0.5	5,559	
Well No. 8 (ASR)	3,721	19,565	20,191	19,857	18,753	11,291	10,728	5,559	0.5	
MW-4B	11900	11880	11880	13200	11880	12100	19800	17180	10600	
MW-5B	9200	23700	23700	23700	23500	13400	21200	13600	12700	
5R1	33000	32000	33000	34500	35100	37200	45800	37500	36700	
Not used										
Not used										
198 days	**Drawdown at**									
Drawdown Effects	Lincoln (pum	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis Mar	Well No. 6 (P	Well No. 7 (B	Well No. 8 (A	**Total Drawdown**
Lincoln	96.52	4.87	6.36	5.86	3.15	#DIV/0!	#DIV/0!	#DIV/0!	21.36	**138**
Well No. 1	13.52	24.37	14.23	13.02	13.84	14.34	9.61	9.99	12.09	**125**
Well No. 2	13.35	8.74	32.84	9.80	8.41	#DIV/0!	#DIV/0!	#DIV/0!	10.39	**84**
Well No. 3	13.39	9.19	11.06	28.86	10.17	#DIV/0!	#DIV/0!	#DIV/0!	10.50	**83**
Well No. 4	13.77	8.46	10.18	10.58	31.06	#DIV/0!	#DIV/0!	#DIV/0!	10.86	**85**
Well No. 5 (Lewis Manor)	26.20	3.00	3.99	3.66	2.50	#DIV/0!	#DIV/0!	#DIV/0!	14.13	**53**
Well No. 6 (Park and Ride)	17.64	2.51	3.29	3.07	1.86	#DIV/0!	#DIV/0!	#DIV/0!	14.47	**43**
Well No. 7 (Ball Park)	25.80	2.62	3.47	3.19	1.99	#DIV/0!	#DIV/0!	#DIV/0!	18.74	**56**
Well No. 8 (ASR)	27.21	3.08	4.10	3.76	2.61	#DIV/0!	#DIV/0!	#DIV/0!	79.58	**120**
MW-4B	18.19	4.02	5.52	4.71	3.78	#DIV/0!	#DIV/0!	#DIV/0!	14.54	**51**
MW-5B	20.18	2.73	3.68	3.35	2.07	#DIV/0!	#DIV/0!	#DIV/0!	13.37	**45**
5R1	10.40	2.18	2.83	2.50	1.19	#DIV/0!	#DIV/0!	#DIV/0!	6.66	**26**
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#DIV/0!	#DIV/0!	#DIV/0!	#NUM!	
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#DIV/0!	#DIV/0!	#DIV/0!	#NUM!	

INPUT
By: R. Shatz
Date: 8/5/2015

Distance Drawdown with Historic 2003 Production Totals

Well Name:	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Static Water Level 2013 =	76	192.6	193.1	251	231.2	74	61	79	88	feet
Thickness (b)	120	120	120	120	120	120	120	120	120	feet
Flow (Q)	2500	1400	2000	1750	2000	2550	2000	2000	2100	gpm
Transmissivity (T)	73700	169000	169000	169000	169000	73700	73700	73700	73700	gpd/ft
Storativity	0.000286	0.000906	0.000906	0.000906	0.000906	0.000286	0.000286	0.000286	0.000286	unitless
Time	152	164	0	132	0	149.0416667	63.11458	89.88125	0	days

Distance to Wells (feet)										
	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Lincoln	0.5	21,829	22,340	22,219	21,140	4,239	12,781	4,462	3,721	
Well No. 1	21,829	0.5	986	777	1,141	20,450	26,743	25,116	19,565	
Well No. 2	22,340	986	0.5	1,535	2,121	21,110	27,587	25,728	20,191	
Well No. 3	22,219	777	1,535	0.5	1,109	20,707	26,767	25,415	19,857	
Well No. 4	21,140	1,141	2,121	1,109	0.5	19,600	25,699	24,312	18,753	
Well No. 5 (Lewis Manor)	4,239	20,450	21,110	20,707	19,600	0.5	9,462	4,867	11,291	
Well No. 6 (Park and Ride)	12,781	26,743	27,587	26,767	25,699	9,462	0.5	9,530	10,728	
Well No. 7 (Ball Park)	4,462	25,116	25,728	25,415	24,312	4,867	9,530	0.5	5,559	
Well No. 8 (ASR)	3,721	19,565	20,191	19,857	18,753	11,291	10,728	5,559	0.5	
MW-4B	11900	11880	11880	13200	11880	12100	19800	17180	10600	
MW-5B	9200	23700	23700	23700	23500	13400	21200	13600	12700	
5R1	33000	32000	33000	34500	35100	37200	45800	37500	36700	
Not used										
Not used										

198 days	**Drawdown at**									
Drawdown Effects	Lincoln (p	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8	**Total Drawdown**
Lincoln (drawdown effects)	95.52	4.78		5.34		25.63	10.62	18.22		**160**
Well No. 1	12.54	24.37		13.02		14.34	9.61	9.99		**84**
Well No. 2	12.37	8.69		9.56		12.99	6.05	7.48		**57**
Well No. 3	12.41	9.14		28.61		13.14	6.22	7.55		**77**
Well No. 4	12.79	8.41		10.33		13.56	6.45	7.81		**59**
Well No. 5 (Lewis Manor)	25.20	2.96		3.42		97.36	12.47	17.68		**159**
Well No. 6 (Park and Ride)	16.65	2.47		2.84		19.28	73.69	13.51		**128**
Well No. 7 (Ball Park)	24.80	2.58		2.95		24.54	12.42	74.79		**142**
Well No. 8 (ASR)	26.21	3.04		3.52		17.89	11.70	16.85		**79**
MW-4B	17.20	3.97		4.47		17.34	7.98	9.90		**61**
MW-5B	19.19	2.69		3.11		16.54	7.58	11.33		**60**
5R1	9.44	2.14		2.27		8.67	3.34	5.31		**31**
Not used	#NUM!	#NUM!		#NUM!		#NUM!	#NUM!	#NUM!		
Not used	#NUM!	#NUM!		#NUM!		#NUM!	#NUM!	#NUM!		

INPUT
By: **R. Shatz**
Date: **8/5/2015**

Distance Drawdown for Extraction of 16,000 AFY

Well Name:	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Static Water Level 2013 =	76	192.6	193.1	251	231.2	74	61	79	88	feet
Thickness (b)	120	120	120	120	120	120	120	120	120	feet
Flow (Q)	2500	1400	2000	1750	2000	2550	2000	2000	2100	gpm
Transmissivity (T)	73700	169000	169000	169000	169000	73700	73700	73700	73700	gpd/ft
Storativity	0.000286	0.000906	0.000906	0.000906	0.000906	0.000286	0.000286	0.000286	0.000286	unitless
Time	198	198	198	198	198	198	198	198	198	days

Distance to Wells (feet)										
	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Lincoln	0.5	21,829	22,340	22,219	21,140	4,239	12,781	4,462	3,721	
Well No. 1	21,829	0.5	986	777	1,141	20,450	26,743	25,116	19,565	
Well No. 2	22,340	986	0.5	1,535	2,121	21,110	27,587	25,728	20,191	
Well No. 3	22,219	777	1,535	0.5	1,109	20,707	26,767	25,415	19,857	
Well No. 4	21,140	1,141	2,121	1,109	0.5	19,600	25,699	24,312	18,753	
Well No. 5 (Lewis Manor)	4,239	20,450	21,110	20,707	19,600	0.5	9,462	4,867	11,291	
Well No. 6 (Park and Ride)	12,781	26,743	27,587	26,767	25,699	9,462	0.5	9,530	10,728	
Well No. 7 (Ball Park)	4,462	25,116	25,728	25,415	24,312	4,867	9,530	0.5	5,559	
Well No. 8 (ASR)	3,721	19,565	20,191	19,857	18,753	11,291	10,728	5,559	0.5	
MW-4B	11900	11880	11880	13200	11880	12100	19800	17180	10600	
MW-5B	9200	23700	23700	23700	23500	13400	21200	13600	12700	
5R1	33000	32000	33000	34500	35100	37200	45800	37500	36700	
Not used										
Not used										

198 days	**Drawdown at**									
Drawdown Effects	Lincoln (p	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8	**Total Drawdown**
Lincoln	96.56	5.16	7.24	6.36	7.57	26.76	14.14	20.67	22.89	**207**
Well No. 1	13.56	24.37	14.23	13.02	13.84	14.34	9.61	9.99	12.09	**125**
Well No. 2	13.38	8.87	33.25	10.04	10.59	14.09	9.42	9.85	11.89	**121**
Well No. 3	13.42	9.32	11.47	29.09	12.35	14.24	9.61	9.92	12.00	**121**
Well No. 4	13.80	8.59	10.59	10.81	33.25	14.67	9.85	10.19	12.37	**124**
Well No. 5 (Lewis Manor)	26.24	3.13	4.39	3.89	4.59	98.49	16.00	20.13	15.65	**193**
Well No. 6 (Park and Ride)	17.68	2.64	3.69	3.29	3.87	20.40	77.25	15.96	15.99	**161**
Well No. 7 (Ball Park)	25.84	2.75	3.87	3.41	4.02	25.67	15.96	77.25	20.27	**179**
Well No. 8 (ASR)	27.25	3.21	4.51	3.98	4.70	19.01	15.22	19.30	81.11	**178**
MW-4B	18.23	4.15	5.93	4.94	5.93	18.46	11.44	12.32	16.06	**97**
MW-5B	20.22	2.86	4.08	3.57	4.11	17.66	11.03	13.76	14.89	**92**
5R1	10.43	2.31	3.22	2.72	3.06	9.73	6.42	7.59	8.10	**54**
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	**#NUM!**
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	**#NUM!**

INPUT
By: **R. Shatz**
Date: **8/5/2015**

Distance Drawdown for Extraction of 22,000 AFY

Well Name:	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Static Water Level 2013 =	76	192.6	193.1	251	231.2	74	61	79	88	feet
Thickness (b)	120	120	120	120	120	120	120	120	120	feet
Flow (Q)	2500	1400	2000	1750	2000	2550	2000	2000	2100	gpm
Transmissivity (T)	73700	169000	169000	169000	169000	73700	73700	73700	73700	gpd/ft
Storativity	0.000286	0.000906	0.000906	0.000906	0.000906	0.000286	0.000286	0.000286	0.000286	unitless
Time	274	274	274	274	274	274	274	274	274	days

Distance to Wells (feet)										
	Lincoln	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8 (ASR)	
Lincoln	0.5	21,829	22,340	22,219	21,140	4,239	12,781	4,462	3,721	
Well No. 1	21,829	0.5	986	777	1,141	20,450	26,743	25,116	19,565	
Well No. 2	22,340	986	0.5	1,535	2,121	21,110	27,587	25,728	20,191	
Well No. 3	22,219	777	1,535	0.5	1,109	20,707	26,767	25,415	19,857	
Well No. 4	21,140	1,141	2,121	1,109	0.5	19,600	25,699	24,312	18,753	
Well No. 5 (Lewis Manor)	4,239	20,450	21,110	20,707	19,600	0.5	9,462	4,867	11,291	
Well No. 6 (Park and Ride)	12,781	26,743	27,587	26,767	25,699	9,462	0.5	9,530	10,728	
Well No. 7 (Ball Park)	4,462	25,116	25,728	25,415	24,312	4,867	9,530	0.5	5,559	
Well No. 8 (ASR)	3,721	19,565	20,191	19,857	18,753	11,291	10,728	5,559	0.5	
MW-4B	11900	11880	11880	13200	11880	12100	19800	17180	10600	
MW-5B	9200	23700	23700	23700	23500	13400	21200	13600	12700	
5R1	33000	32000	33000	34500	35100	37200	45800	37500	36700	
Not used										
Not used										

198 days	**Drawdown at**									
Drawdown Effects	Lincoln (p	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5 (Lewis	Well No. 6	Well No. 7	Well No. 8	**Total Drawdown**
Lincoln	97.82	5.84	8.20	7.21	8.53	28.05	15.15	21.68	23.95	**216**
Well No. 1	14.80	24.37	14.23	13.02	13.84	14.34	9.61	9.99	12.09	**126**
Well No. 2	14.63	9.18	33.69	10.42	11.03	15.36	10.41	10.84	12.94	**128**
Well No. 3	14.67	9.63	11.91	29.48	12.79	15.51	10.59	10.91	13.05	**129**
Well No. 4	15.05	8.90	11.03	11.19	33.69	15.94	10.84	11.18	13.42	**131**
Well No. 5 (Lewis Manor)	27.50	3.43	4.82	4.26	5.02	99.78	17.01	21.14	16.71	**200**
Well No. 6 (Park and Ride)	18.93	2.94	4.11	3.67	4.30	21.69	78.26	16.97	17.04	**168**
Well No. 7 (Ball Park)	27.10	3.05	4.30	3.79	4.45	26.95	16.97	78.26	21.33	**186**
Well No. 8 (ASR)	28.51	3.52	4.94	4.36	5.14	20.29	16.23	20.31	82.17	**185**
MW-4B	19.49	4.46	6.37	5.32	6.37	19.74	12.44	13.32	17.12	**105**
MW-5B	21.48	3.16	4.51	3.95	4.54	18.94	12.02	14.76	15.94	**99**
5R1	11.65	2.61	3.64	3.09	3.48	10.97	7.36	8.55	9.12	**60**
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	
Not used	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	#NUM!	

APPENDIX D

City of Tracy Recycled Water Ordinance

- City of Tracy Municipal Code Chapter 11.30—Recycled and Non-Potable Water

City of Tracy Municipal Code Chapter 11.30—Recycled and Non-Potable Water

Chapter 11.30 RECYCLED AND NON-POTABLE WATER [2]

Sections:

11.30.010 Purpose; regulatory authority.
11.30.020 Definitions.
11.30.030 Use and distribution of recycled water.
11.30.040 Duty to connect to recycled water distribution system; recycled water use permit.
11.30.050 Recycled Water User's Guide.
11.30.060 Operation and maintenance of user equipment; site supervisor; backflow prevention; entry on premises.
11.30.070 Enforcement.
11.30.080 Exemptions.
11.30.090 Appeal.

11.30.010 Purpose; regulatory authority.

(a) *Purpose.* It is the City's policy that recycled water determined to be available under Water Code section 13550 be used for non-potable uses within the designated recycled water use areas set forth in this chapter and as permitted by Title 22 of the California Code of Regulations (Division 1, Chapter 5; Division 5, Chapters 1-3).

(b) *Regulatory authority.* This chapter is adopted under the authority of the California Water Conservation Act of 2009 (SBx7-7; Water Code section 10608 and following); State Water Resources Control Board Resolution No. 2009-0011 (Adoption of Recycled Water Policy); the 2010 California Green Building Standards Code; the California Department of Water Resources Model Water Efficient Landscape Ordinance; and the City's Sustainability Action Plan.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.020 Definitions.

In this chapter, unless the context in which they are used clearly indicates otherwise:

(a) *Common areas* means, but is not limited to, golf courses, parks, greenbelts, landscaped streets, landscaped medians.

(b) *Development project* means any development as defined in Government Code section 65927 (the Permit Streamlining Act) and includes a project requiring subdivision approval, a use permit, grading permit or building permit.

(c) *Director* means the City's Director of Public Works or his or her designee.

(d) *Industrial cooling or processing purposes* means evaporative or heat exchange cooling serving industrial processing, or power production, as accomplished by cooling towers, enclosed heat exchange systems, washdown systems, and other similar equipment and devices.

(e)

Non-potable groundwater means any groundwater that does not conform to federal, state, and local agency standards for human consumption.

(f) *Non-potable water* means water which does not conform to federal, state, and local agency standards for human consumption. It includes recycled water, non-potable groundwater, untreated surface water, and other subsurface or surface water which may be used for a beneficial purpose in compliance with applicable local, state, and federal laws defining standards for non-potable uses.

(g) *Potable water* means water which conforms to federal, state, and local agency standards for human consumption.

(h) *Premises* shall mean any lot or any piece or parcel of land comprising two or more lots of record in one ownership, or any building or other structure, or any part of any building or structure, used or useful for human habitation or gathering or for carrying on a business or occupation or any commercial or industrial activity.

(i) *Person* means an individual and any domestic and foreign corporation, association, syndicate, joint stock corporation, partnership of every kind, club.

(j) *Recycled water* means tertiary treated water which results from the treatment of wastewater, is suitable for direct beneficial use, and conforms to the definition of disinfected tertiary recycled water in accordance with State law.

(k) *Recycled water area* or *designated recycled water use area* means all geographic areas located within the City limits.

(l) *Recycled water distribution system* means a system intended for the delivery of recycled water, including, but not limited to, pipelines, pumps, and reservoirs. The recycled water distribution system is separate from any potable water distribution system. The system controls the recycled water distribution from the source of supply to the point of connection with a building or structural lateral supply pipeline.

(m) *Recycled water use* means irrigation of landscaped common areas which are professionally maintained by a licensed landscape contractor, and use for industrial cooling or processing purposes and other approved industrial uses.

(n) *Recycled water use permit* means a permit given by the City to the customer which grants permission to use recycled water and requires the user to use recycled water in accordance with the rules, regulations and standards of the Recycled Water User's Guide and all applicable state and local rules and regulations.

(o) *Recycled Water User's Guide* means the City's document which details the requirements of the state and local rules and regulations that apply to the design, installation, and operations and maintenance of the on-site recycled water system, including, but not limited to, the requirements of the California Code of Regulations, Title 22.

(p) *Untreated surface water* means surface water that has not received the required treatment necessary to conform to federal, state, and local agency standards for human consumption.

(q) *User* means a person or entity having a connection into the City's recycled water system or potable water system.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.030 Use and distribution of recycled water.

(a) The City reserves the right to require all users who connect to the City water system to use recycled water for approved recycled water uses.

(b) Each subdivision for which a tentative map or parcel map is required under Government Code section 66426 and located within designated recycled water use areas is required to install a recycled water distribution system to provide recycled water to the common areas of the subdivision and for any industrial cooling or processing uses in the subdivision.

(c) The water distribution system shall be constructed in conformance with Title 22 of the California Code of Regulations.

(d) The recycled water distribution system shall be independent of the plumbing system provided to serve domestic, residential, or other potable water uses within the subdivision.

(e) Recycled water service shall not commence within a designated recycled water use area:

(1) In any service area of a private utility as defined in Public Utilities Code section 1502; or

(2) To any service area of a public agency retail water supplier that is not a local agency as defined in Government Code section 65603(b), except in accordance with a written agreement between the recycled water producer and the private utility or public agency retail water supplier.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.040 Duty to connect to recycled water distribution system; recycled water use permit.

(a) *Duty to connect.* Unless an exception applies under section 11.30.080, each person owning or using any premises within the City limits and upon or in which any recycled water supply is produced or used is required to make an application to connect to the recycled water distribution system. If the application is approved, the City will issue a recycled water use permit and the user shall connect the premises to the City recycled water system within sixty (60) days after the date when a City recycled water main located within 200 feet is completed and available for connection to the premises. Thereafter, all recycled water supplied to such premises shall be obtained from the City system.

(b) *Recycled water use permit.* The City will issue to each recycled water user a recycled water use permit for each site. The permit grants permission to use recycled water and requires the user to use recycled water in accordance with the rules, regulations and standards of the Recycled Water User's Guide and all applicable state and local rules and regulations.

(c) *Prohibition.* No person owning or using any premises within the City limits shall maintain on the premises a non-potable water supply other than a recycled water supply from the City water system, or an untreated surface water supply as described in [subsection] 11.30.080 (b), when the premises are located within 200 feet from the point at which a connection can be made to the City recycled water mains. The further maintenance or use of another non-potable water supply on any premises constitutes a public nuisance.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.050 Recycled Water User's Guide.

The City Director of Public Works will prepare, maintain and update a Recycled Water User's Guide. The purpose of the Recycled Water User's Guide is to detail the following requirements as they apply to the City's recycled water system: this chapter; the California Code of Regulations Title 22; and other state and local rules and regulations related to the use of recycled water.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.060 Operation and maintenance of user equipment; site supervisor; backflow prevention; entry on premises.

(a) *Operation and maintenance.* Each user is required to operate and maintain the on-site recycled water system in accordance with the Recycled Water User's Guide and recycled water use permit.

(b) *Site supervisor.* Each user will be required to designate a site supervisor for each site covered by a recycled water use permit. The site supervisor serves as a liaison with the City, and must have the authority to carry out the requirements of the Recycled Water User's Guide and recycled water use permit, including the operations and maintenance of the on-site recycled water system and prevention of potential hazards.

(c) *Backflow prevention.* The City reserves the right to require a backflow prevention device on the user's recycled water system if it is determined that there is a backflow hazard on site. If a backflow device is required, it must be properly maintained by the user, inspected quarterly and tested at least annually. All required tests must be submitted to the City in accordance with the City backflow prevention program in the Recycled Water User's Guide.

(d) *Entry on premises.* As a condition of the recycled water use permit, the user will permit the City to enter upon the user's property during the City's normal working hours, or in case of emergency at any time, to inspect the user's on-site recycled water system for compliance with this chapter and the terms of the permit. The City reserves the right to take any action necessary with respect to the operation of the user's recycled water system to safeguard public health.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.070 Enforcement.

The Director may immediately terminate recycled water service to a user who violates this chapter or the terms of the permit. In the alternative, the Director may issue a written warning. If a user does not correct the violation within 15 days of notification, or such other time as specified, the Director may terminate recycled water service without further notice.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.080 Exemptions.

(a) *Exemptions.* This chapter does not apply if:

(1) The tentative map or development was approved by the City before February 6, 2002.

(2) The subdivision map application was deemed complete under Government Code section 65943 before February 2, 2002.

(3) A person establishes to the satisfaction of the Director that any of the following circumstances apply:

i. There is a higher or better use for the recycled water consistent with the regulatory authorities described in [subsection] 11.30.010(b);

ii. Use of recycled water is not economically justified; or

iii. Use of recycled water is not technically feasible.

(b) *Recycled water supplies not readily available.* Upon approval from the Director, if recycled water supplies are not readily available, untreated surface water supplies may be used in lieu of recycled water supplies to meet non-potable water demands on an interim basis, until December 31, 2020. Such untreated surface water supplies shall be distributed using the

recycled water distribution system. The use of untreated surface water supplies in lieu of recycled water supplies is not permitted after December 31, 2020.

(Ord. No. 1183, § 1, 3-5-2013)

11.30.090 Appeal.

A person may appeal to the City Manager a staff determination that the exemptions of section 11.30.080(a) are inapplicable, in accordance with section 1.12.010 of the Tracy Municipal Code.

(Ord. No. 1183, § 1, 3-5-2013)

FOOTNOTE(S):

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***Editor's note**—Ord. No. 1183, adopted Mar. 5, 2013, amended ch. 11.30 in its entirety to read as herein set out. Former ch. 11.30 pertained to the same subject matter, consisted of §§ 11.30.010—11.30.050, and derived from Ord. 1035, 2002; and Ord. 1111, 2007. (Back)*