San Benito County
Water District

Annual Groundwater Report 2019

TODD GROUNDWATER

ANNUAL GROUNDWATER REPORT

December 2019

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SIGNATURE PAGE

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President

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EXECUTIVE SUMMARY

This Annual Groundwater Report for San Benito County Water District (District) describes groundwater conditions in the San Benito County portions of the North San Benito Subbasin of the Gilroy-Hollister Basin. Consistent with past reports, this Annual Report focuses on the District's Zone 6, the zone of benefit for importation of Central Valley Project (CVP) water supply. The Report is prepared at the request of the District Board of Directors and is consistent with the special act of the State that established the District. It documents water sources and uses, groundwater elevations and storage, and management activities for Water Year 2019 and it provides recommendations. Water Year 2019 was characterized by higher than average rainfall, above average CVP allocations, and stable to slightly increased groundwater storage in parts of the basin and stable groundwater storage in the other areas.

This Water Year, the District successfully requested that the Department of Water Resources (DWR) combine three separate subbasins of the Gilroy-Hollister Basin (Bolsa, Hollister, and San Juan) with the Tres Pinos Valley basin to form the new North San Benito Groundwater Subbasin. Portions of the new Subbasin extend into Santa Clara County; the entire Llagas Subbasin of the Gilroy-Hollister Basin is in Santa Clara County. The District is the exclusive Groundwater Sustainability Agency (GSA) for the San Benito portion of North San Benito Subbasin and Santa Clara Valley Water District (SCVWD) is GSA for Santa Clara portions. The District is leading preparation of the Groundwater Sustainability Plan (GSP) in cooperation with SCVWD and in compliance with the Sustainable Groundwater Management Act (SGMA). Upon adoption by the District and SCVWD boards, the GSP will provide the information and tools for continued groundwater management. After completion of the GSP, the District will be required to submit Annual GSP Reports to DWR. This 2019 Annual Groundwater Report begins a transition to an annual groundwater report that meets the requirements of the District Act and satisfies SGMA requirements. This includes expanding the report coverage to address the entire North San Benito Subbasin.

The Annual Groundwater Report for Water Year 2019 includes a triennial update of the water quality database and assessment of water quality; this is the fifth triennial update as planned originally in 2006. Water quality did not change significantly during 2017-2019, although some areas of the basin continue to have elevated levels of TDS and nitrate. Water quality monitoring will continue consistent with existing District management objectives and will be transitioned over the next two years to conform with the District Act and with SGMA.

The District has effectively managed water resources in San Benito County for decades. Working collaboratively with other agencies, the District has eliminated historical overdraft, developed and managed multiple sources of supply, established an effective water conservation program, protected water quality, and provided annual reporting. Water Year 2019 witnessed a continuation of these collaborative efforts. The continued partnership of the Hollister Urban Area (including the District, City of Hollister, and Sunnyslope County Water District (SSCWD)) resulted in increased water treatment capacity that significantly enhances opportunities for conjunctive use of CVP and groundwater and improves delivered water quality for municipal costumers. The District has also worked directly with well owners to supplement the groundwater elevation monitoring network and fill data gaps identified in the GSP process. The District's continued public outreach—including preparation of Annual Groundwater Reports—has been an asset to the GSP process and is a foundation for future groundwater management.

1-INTRODUCTION

The San Benito County Water District (District or SBCWD) was formed in 1953 by a special act (District Act) of the State with responsibility and authority to manage groundwater. The District Act authorizes the Board of Directors to require an annual investigation and report on groundwater conditions of the District and its zones of benefit, such as Zone 6, the area for distribution of Central Valley Project (CVP) water. As documented in **Appendix A,** the District Act specifies the minimum content of the report should the District choose to prepare one. Annual Reports have been prepared historically to analyze the status of the groundwater basin, to evaluate conditions in the next year, and to provide management recommendations.

With passage of the Sustainable Groundwater Management Act (SGMA) in 2014, the State has created a new framework for groundwater basin management, monitoring, and reporting by local agencies. The District has responded proactively. The District is the exclusive Groundwater Sustainability Agency (GSA) for the North San Benito Groundwater Basin in San Benito County shown on **Figure 1-1**. This basin was formerly defined as three separate subbasins of the Gilroy-Hollister basin and the Tres Pinos Valley basin. The District is currently preparing a Groundwater Sustainability Plan (GSP) for the North San Benito Basin in cooperation with Santa Clara Valley Water District (SCVWD), which is the GSA for the small portions of the basin within Santa Clara County. As proposed in the GSP, the North San Benito Groundwater Basin can be divided into four management areas, shown in **Figure 1-2**. These management areas are designed to facilitate implementation of the GSP. In Water Year 2019, the District and Todd Groundwater have completed several sections of the plan, participated in two public workshops, and four Technical Advisory Committee meetings.

Consistent with the District Act and prepared at the request of the District, this Annual Report documents water supply sources and use, groundwater elevations and storage, and District management activities from October 2018 through September 2019. It fulfills the minimum content for a District Annual Report and presents an overview of the state of the groundwater basin with recommendations for management. It conveys considerable information, including tables and figures, which are provided largely in **Appendices B through E**. **Appendix F** provides information on water rates and charges and **Appendix G** contains a list of acronyms.

The 2019 Annual Groundwater Report strives to maintain consistency with past Annual Reports while also providing a path to fulfill future requirements for SGMA Annual Reports. As development of the GSP proceeds over the next two years (with completion before January 31, 2022), the SBCWD Annual Reports may be modified further to ensure compliance with SGMA. While complying with GSP regulations, Annual Reports will also adhere to requirements for SBCWD annual reporting, as described in the District Act.

Acknowledgments

This report was prepared by Iris Priestaf, PhD, Maureen Reilly, PE, Arden Wells, and Chad Taylor, PG, CHG of Todd Groundwater. We appreciate the assistance of San Benito County Water District staff, particularly Jeff Cattaneo, Sara Singleton, Garrett Haertel, and David Macdonald.

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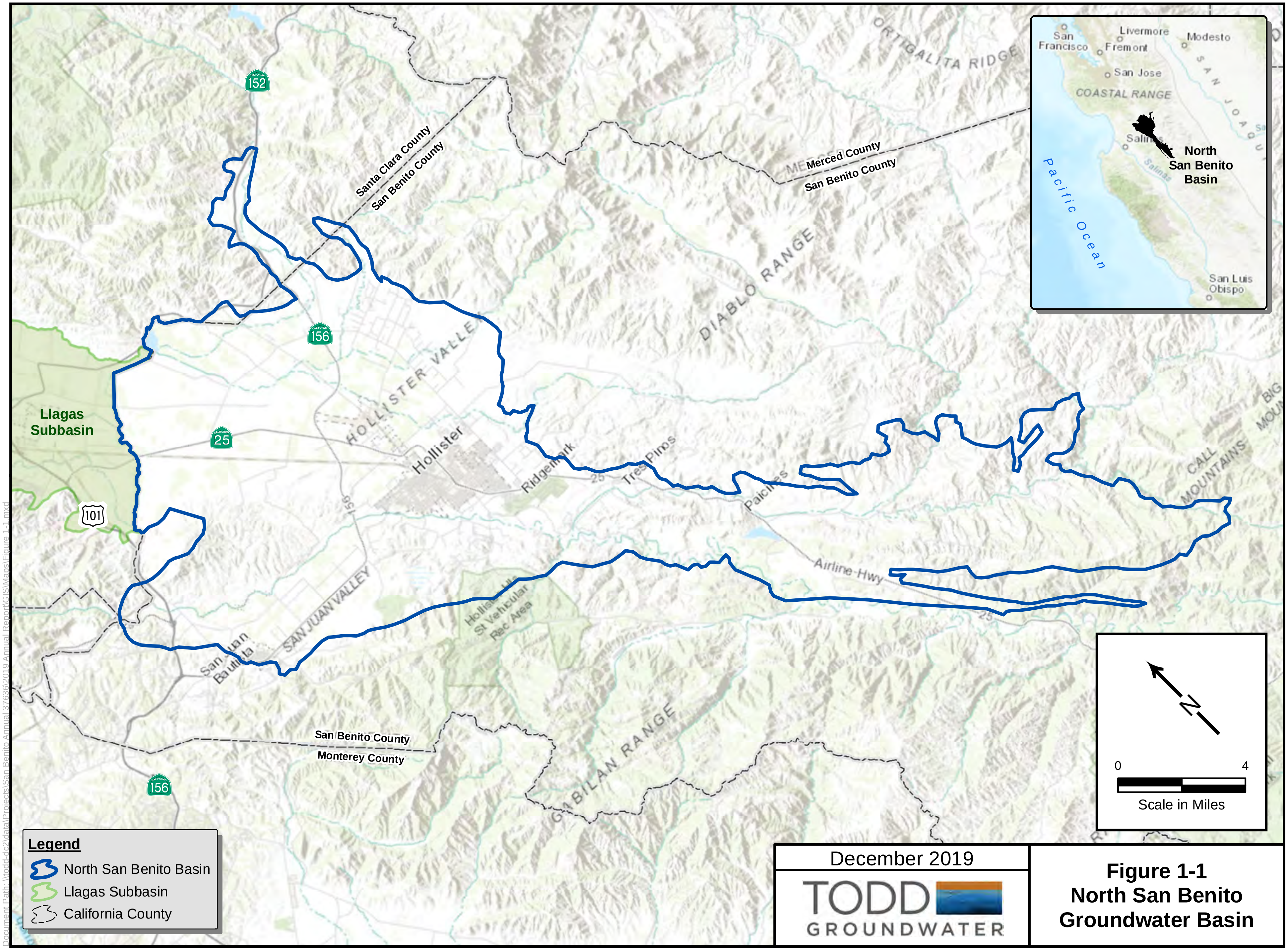

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Figure 1-1
North San Benito Groundwater Basin

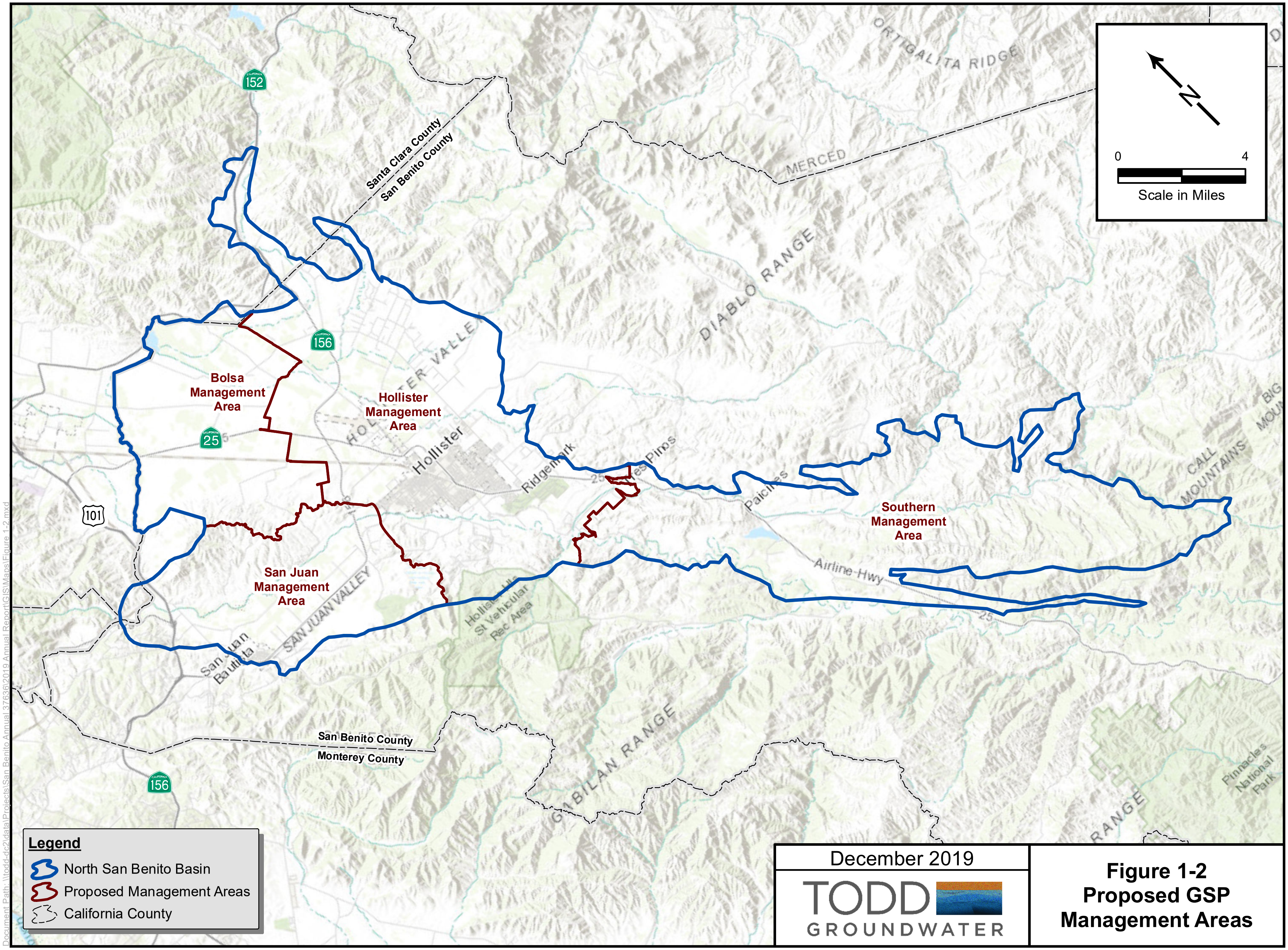

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Figure 1-2
Proposed GSP Management Areas

2 – GEOGRAPHIC AREA

The geographic area and boundaries of local groundwater basins have been defined differently by the District and by the California Department of Water Resources (DWR) for their specific purposes. Like previous annual reports, this Annual Report focuses on the San Benito County portions of the Gilroy-Hollister Groundwater Basin, including the previously-defined Bolsa, Hollister, and northern San Juan Bautista subbasins. Nonetheless, it is recognized that the North San Benito Basin (Basin)[1] includes portions in Santa Clara County and that it extends farther to the south; the entire basin is the subject of the GSP. To support a transition to SGMA, the monitoring program is being improved and expanded.

District-Defined Subbasins

For the past 24 years, the Annual Reports have focused on subbasins delineated in 1996 and based on hydrogeologic and other local factors (e.g., Zone 6 boundaries). These subbasins are shown in **Figure 2-1** in light blue. Six of these subbasins are defined within Zone 6, including Bolsa Southeast (SE), Pacheco, Hollister East (North and South), Tres Pinos, Hollister West, and San Juan subbasins. The seventh is the Bolsa subbasin; of the subbasins shown on the map, only the Bolsa subbasin receives no direct CVP deliveries and relies on local groundwater.

DWR-Defined Basins

As the District proceeds with SGMA planning and implementation, its area of focus is changing from the 1996-defined subbasins and Zone 6 to the North San Benito Basin and GSP area outlined in **Figure 1-1**, in dark blue. All groundwater basins defined by DWR as wholly or partially in San Benito County are shown in **Figure C-1** in **Appendix C.**

Over the next few years, the annual report will transition from analyses on the basis of subbasins to management areas, shown in red on **Figure 1-2**. The four proposed Management Areas (MAs) have been defined as part of the GSP process to facilitate implementation. A major factor in defining MAs is availability of water sources (e.g., CVP) and Zone 6. While recognizing that water supply availability (in terms of sources, infrastructure, and institutional arrangements) can change in the future, current availability is a reasonable starting point. SBCWD provides local surface water from Hernandez and Paicines reservoirs that is provided to a local zone of benefit, Zone 3, and imported Central Valley Project (CVP) water that is provided to Zone 6. The District-defined subbasins also relied on Zone 6 as a boundary and thus the District-defined subbasins generally fall within the boundaries of the MAs.

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[1] The official nomenclature is North San Benito Subbasin of the Gilroy Hollister Basin; it has been assigned DWR Basin Number 3-003.05. For the purposes of this report, it is referred to as North San Benito Basin to clearly differentiate it from previous DWR-defined subbasins and from previous SBCWD-defined subbasins.

The four Management Areas (MAs) are listed below with District-defined subbasins that they generally encompass:

- Southern MA
- Hollister MA (includes Tres Pinos, Hollister East and West, Bolsa SE, Pacheco subbasins)
- San Juan MA (includes almost all District-defined San Juan subbasin)
- Bolsa MA (includes almost all previously-defined Bolsa subbasin)

Hollister and San Juan MAs include portions of Zone 6; Southern and Bolsa MAs do not.

Ongoing District Monitoring Programs

Data from monitoring programs undertaken by local, state, and federal agencies are summarized below as currently incorporated in the Annual Report. The District data compilation and monitoring programs are likely to be expanded and revised in the future as data needs are identified in the GSP, for example to address topics such as potential subsidence, and to represent the entire North San Benito Basin.

Climate. Climate data are regularly compiled from DWR's California Irrigation Management Information System (CIMIS) and include: total solar radiation, soil temperature, air temperature/relative humidity, wind direction, wind speed, and precipitation. Additional precipitation data are available from the WRCC station at Hollister from 1934-2019 (WRCC 2019). For the Annual Groundwater Reports, historical annual precipitation has been compiled and reported using the Hollister rain gage for the long-term precipitation and the CIMIS San Benito station for recent monthly precipitation. Monthly precipitation and evapotranspiration for the Hollister #126 CIMIS station are tabulated in **Appendix B**.

Groundwater levels. SBCWD has had a semi-annual groundwater level monitoring program since Water Year (WY) 1977; groundwater level data gathered by USGS and other agencies are available as early as 1913 (Clark, 1924). The Annual Groundwater Reports provide quarterly groundwater level data in **Appendix C** for each year. The data are the basis for groundwater level contour maps, change maps, hydrographs, groundwater level profiles, and storage change computations presented in the Annual Reports. The SBCWD monitoring program includes wells in the Pacheco Valley in Santa Clara County. SCVWD's monitoring program provides data for the southern Llagas Subbasin; these shared data are used in the SBCWD annual groundwater level maps.

SBCWD is the designated CASGEM monitoring agency for the GSP Area; CASGEM data are available from DWR's online Groundwater Information Center Interactive Map (GICIMA).

Water quality. In 1997, SBCWD initiated a program for monitoring nitrate and electrical conductivity (EC) in wells. In 2004, SBCWD established a comprehensive water quality database that records from all water systems and regulated facilities. The database has been updated this year as part of the triennial Annual Report update. Monitoring for the Salt and Nutrient Management Plan is closely coordinated. State-wide sources of groundwater quality data include the Water Data Library (WDL), Geotracker/GAMA program, and the State Water Resources Control Board's Division of Drinking Water.

These are accessed for the triennial update of the SBCWD Water Quality Database; available data are shown in **Appendix C**, and water quality conditions are presented in Section 3.

Reservoirs. The Annual Report summarizes reservoir water budget information for Hernandez, Paicines, and San Justo reservoirs and provides annual total releases from Hernandez and Paicines reservoirs from Water Year 1996 to present. Reservoir storage and release data are available in **Appendix D**.

Surface water flows and percolation. Surface water monitoring and percolation are summarized in **Appendix D** of the Annual Groundwater Reports. For Water Year 1994 to present, percolation of imported CVP water is documented in **Table D-3** and percolation of wastewater is shown in **Tables D-4 and D-5**. The District temporally suspended its surface water monitoring network but plans to relaunch the monitoring in Water Year 2020.

Wells and groundwater pumping. SBCWD monitors groundwater pumping in Zone 6. Pumping amounts are calculated semiannually by metering the number of hours of pump operation and multiplying by the average discharge rate. This monitoring program began in about 1990 (soon after CVP imports started) and was based on recognition that CVP imports resulted in reduced pumping, increased recharge, and sustainable groundwater storage with regional benefits to groundwater users. Irrigation pumping beyond Zone 6 is not monitored but has been estimated for regular water budget updates based on land use information and water use factors. Groundwater pumping estimates for Zone 6 are summarized by major use category and subbasin in **Appendix E**, which also provides information on CVP use in Zone 6.

Units and accuracy. Throughout this report, water volumes and changes in storage are shown to the nearest acre-foot (AF). These values are accurate to one to three significant digits (depending on the measurement). All digits are retained in the text to maintain as much accuracy as possible during subsequent calculations, but results should be rounded appropriately.

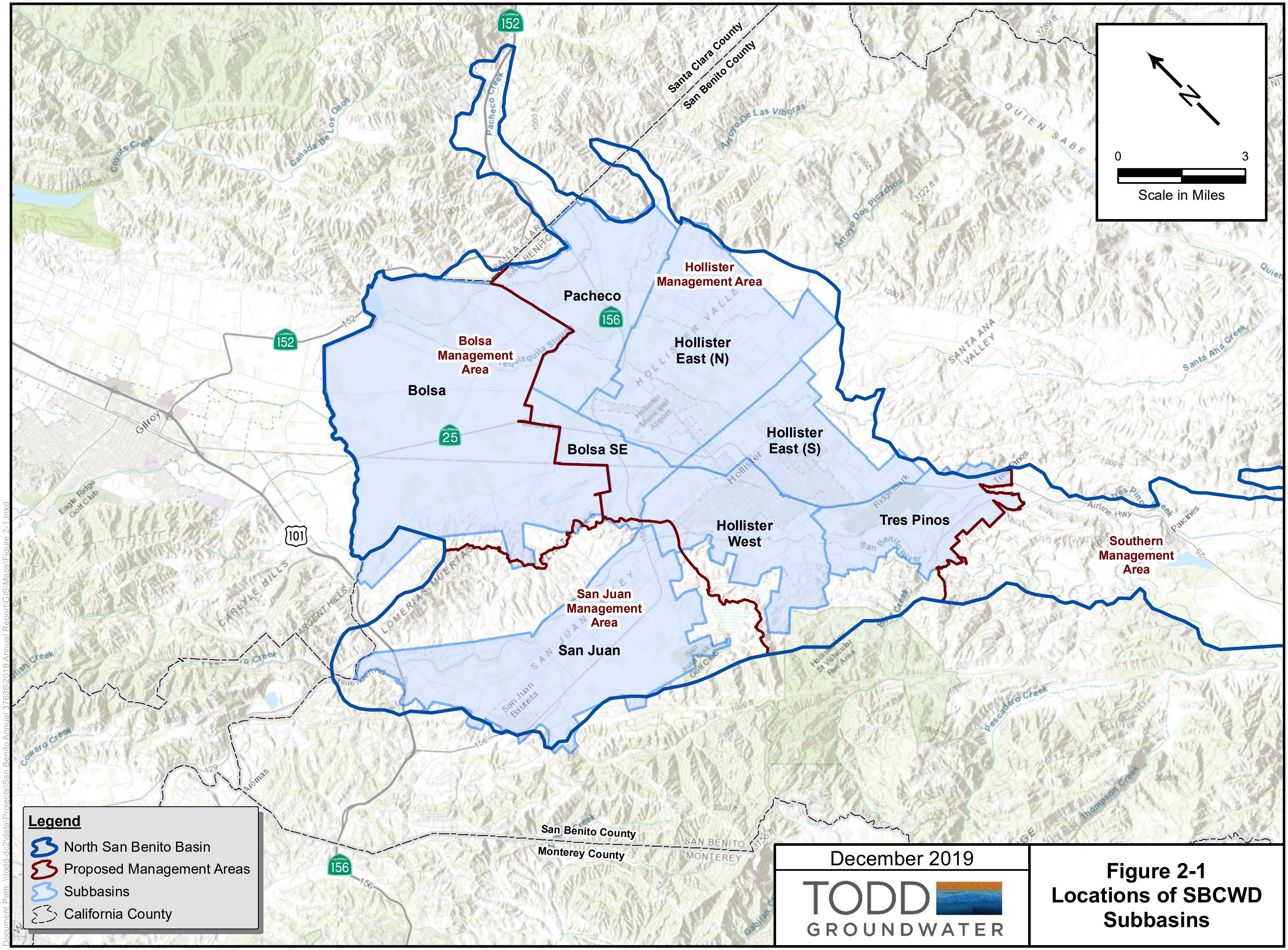

Figure 2-1
Locations of SBCWD Subbasins

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3-GROUNDWATER CONDITIONS

The Annual Report summarizes basin conditions including climate, groundwater elevations, groundwater storage, and groundwater level trends. Overall, Water Year 2019 was an above average hydrologic year, and CVP allocations remained above average.

Climate

Assessment of climatic conditions begins with collection of climate data (rainfall and evapotranspiration), which are summarized in **Appendix B**. Local rainfall amounts are compiled on a monthly basis and reviewed as an increasingly variable factor that affects basin inflows (e.g., deep percolation) and outflows (groundwater pumping). Recognizing that drought often is extensive across California, local dry years also may be indicative of regional drought and reduced CVP allocations. Dry years often are characterized by increased groundwater pumping for agricultural irrigation to offset lack of rainfall and reduced CVP allocations.

In 2019, overall precipitation was 15.38 inches as shown in **Figure 3-1**; November and early spring received higher than normal precipitation. Monthly rainfall and evapotranspiration data can be found in **Appendix B**. Water year 2019 was 116 percent of normal, reflecting an above-normal year. **Figure 3-2** shows annual precipitation and water year type from 1976 through 2019. The basin is still recovering from the extreme drought of 2013, 2014, and 2015 and from low CVP allocations for 2013 through 2016; additional inflow from this above-normal year will help replenish groundwater reserves. NOAA's weather forecast for the winter 2019-2020 predicts a 25 to 50 percent chance of less than average rainfall for the central coast region (NOAA 2019).

The Annual Report has relied on CIMIS station #126 since Water Year 1995. The station, located in Hollister, is hosted by the District and maintained by DWR. In recent years, precipitation data have been affected by periodic irrigation overspray that has been recorded on the sensors, including October and November 2018. The District has resolved this problem.

Groundwater Elevations

In October 2019, the District collected groundwater elevations in 103 wells from their existing network and 20 additional wells. The newly selected wells will be added to the network after the reference points have been surveyed. **Figure 3-3** shows the well locations in the current monitoring network and the groundwater elevation contours for October 2019.

Groundwater elevations have generally risen throughout the basin over 2019, except for northern portions of Bolsa and San Juan. Overall, the basin is still recovering from the most recent drought (2013-2016) but at a slower rate than in the wet year of 2017. More information is in **Appendix C.**

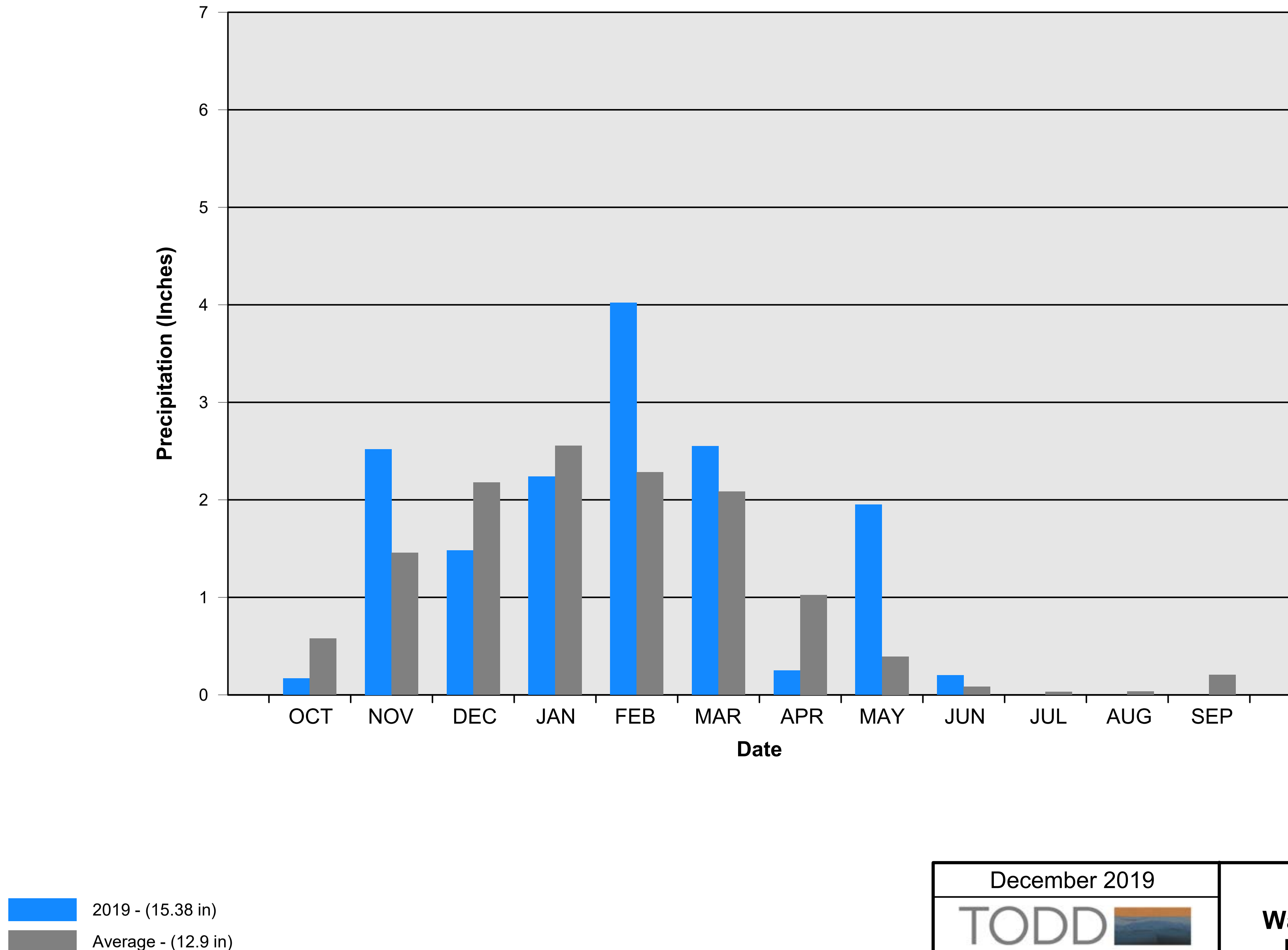

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Figure 3-1
Water Year 2019
Precipitation

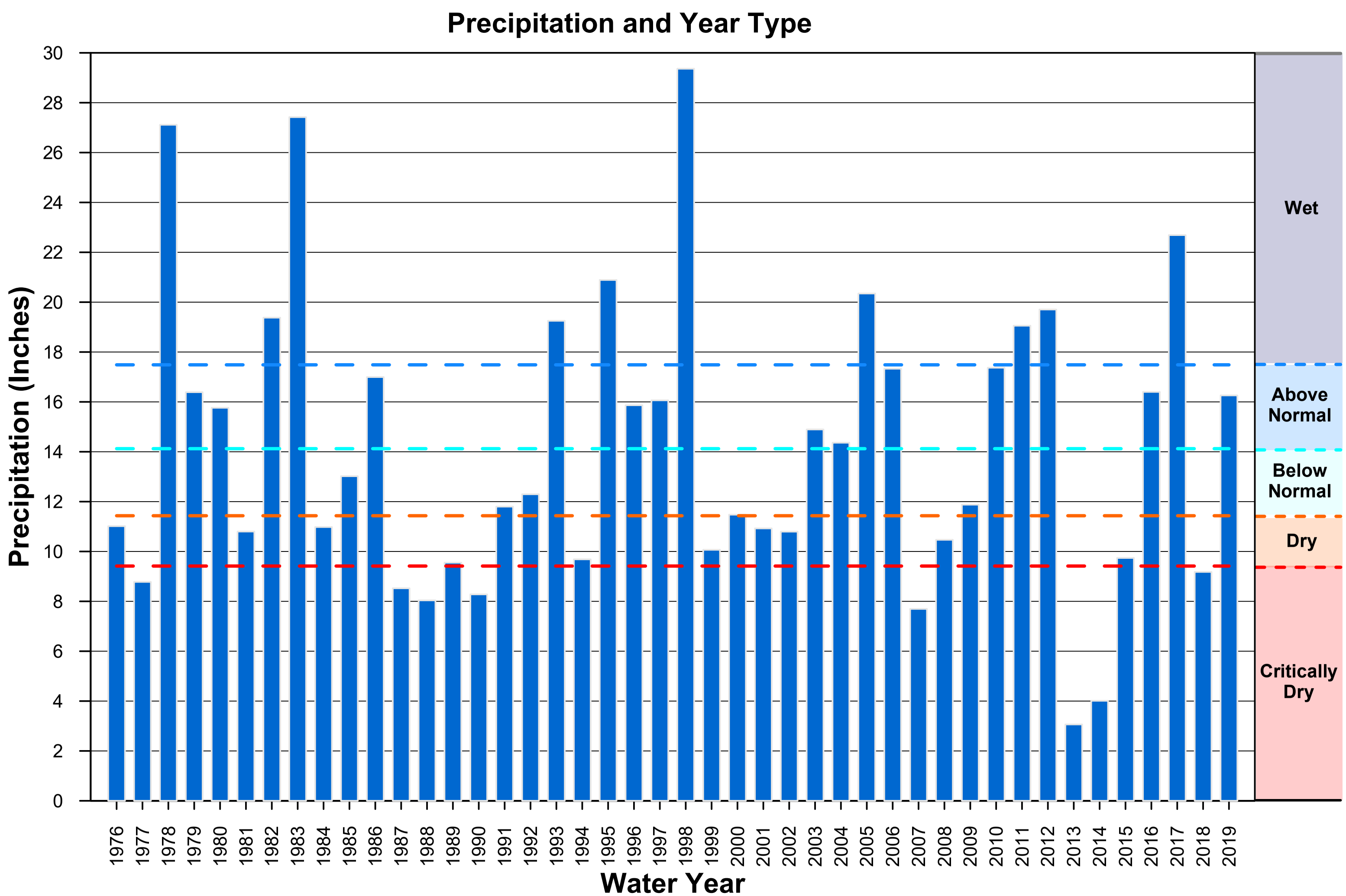

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Figure 3-2
Annual Precipitation
1976-2019

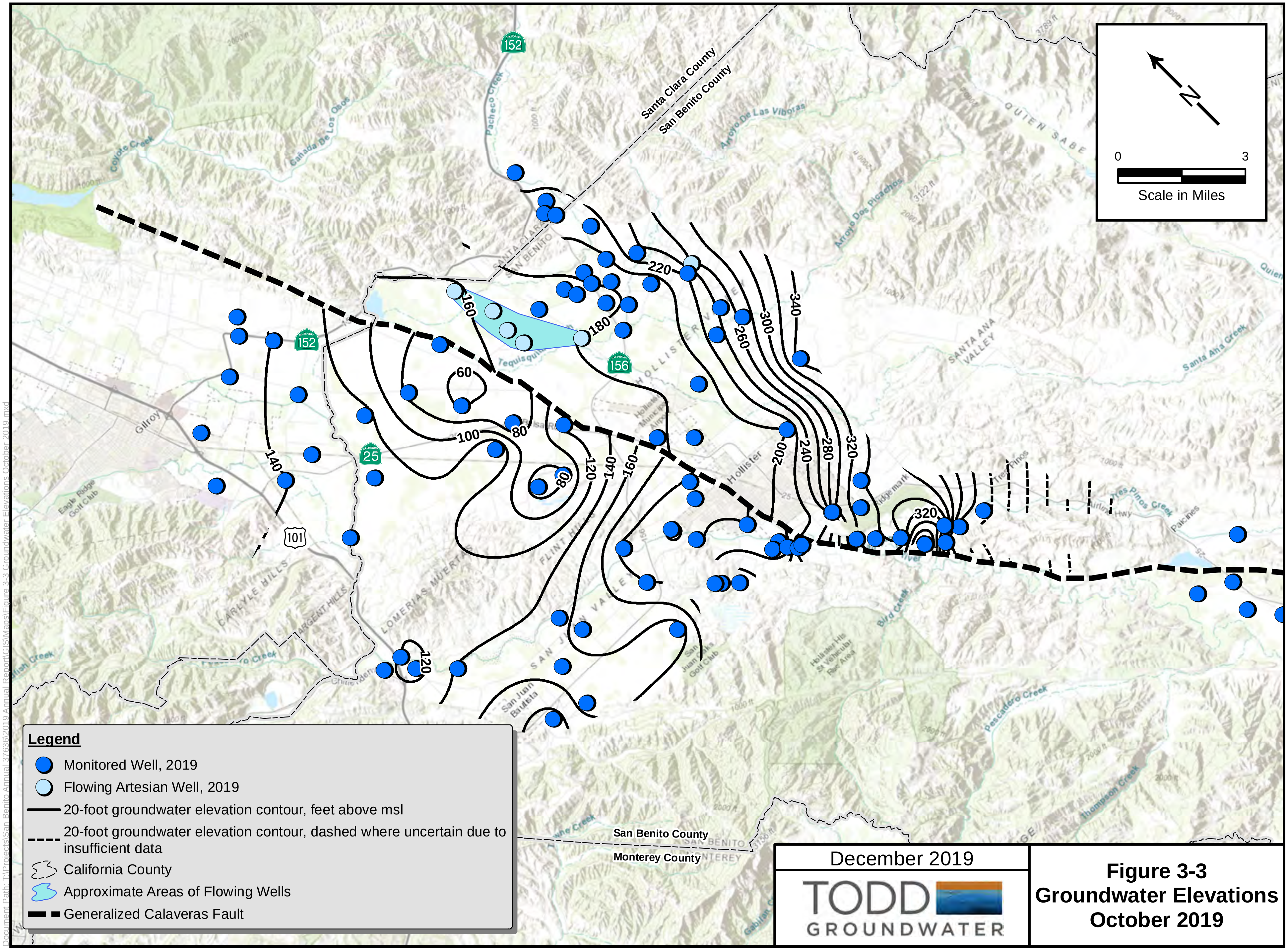

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Figure 3-3
Groundwater Elevations
October 2019

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Change in Storage

Groundwater elevation changes from October 2018 to October 2019 were used to evaluate the change in storage. **Figure 3-4** displays change data spatially with a color ramp (see legend), ranging from red that would indicate as much as a 50-foot decline in groundwater levels to blue that indicates a 50-foot or more increase in storage. Groundwater levels and storage continue to recover across the basin. Most areas have shown slight increases (less than 20 feet) from 2018, except portions of Bolsa and San Juan.

Change in storage is the net volume of water added to or removed from the basin over the water year. The change in storage was calculated using the change in groundwater elevations (feet) and multiplying by the total area (acres) to determine the total bulk change in volume. This bulk volume of change was then multiplied by the average storativity of the subbasin to represent the amount of water that a given volume of aquifer will produce. The storativity values for each subbasin were derived from previous numerical models of the basin and continue to be used for consistency with previous Annual Reports. However, the new numerical model developed for the GSP can calculate storage change volumetrically (inflow-outflow) and its estimate may vary from these results. **Table 3-1** documents the change in groundwater storage; as in previous Annual Reports, change in storage is reported on the basis of the 1996 District-defined subbasins, Zone 6, and the total of these subbasins.

Table 3-1. 2019 Change in Groundwater Storage

Subbasin	Subbasin Area (Acres)	Average Change in Groundwater Level (feet)	Change in Volume (Acre-Feet)	Average Storativity	Change in Storage (Acre-Feet)
San Juan	11,708	-1.74	-20,329	0.05	-1,016
Hollister West	6,050	6.49	39,248	0.05	1,962
Tres Pinos	4,725	15.03	71,044	0.05	3,552
Pacheco	6,743	1.79	12,074	0.03	362
Northern Hollister East	10,686	0.63	6,772	0.03	203
Southern Hollister East	5,175	2.35	12,178	0.03	365
Bolsa SE	2,691	3.23	8,694	0.08	695
TOTAL ZONE 6			**129,680**		**6,124**
Bolsa	20,003	-0.56	-11,201	0.01	-112
TOTAL SUBBASINS			**118,479**		**6,012**

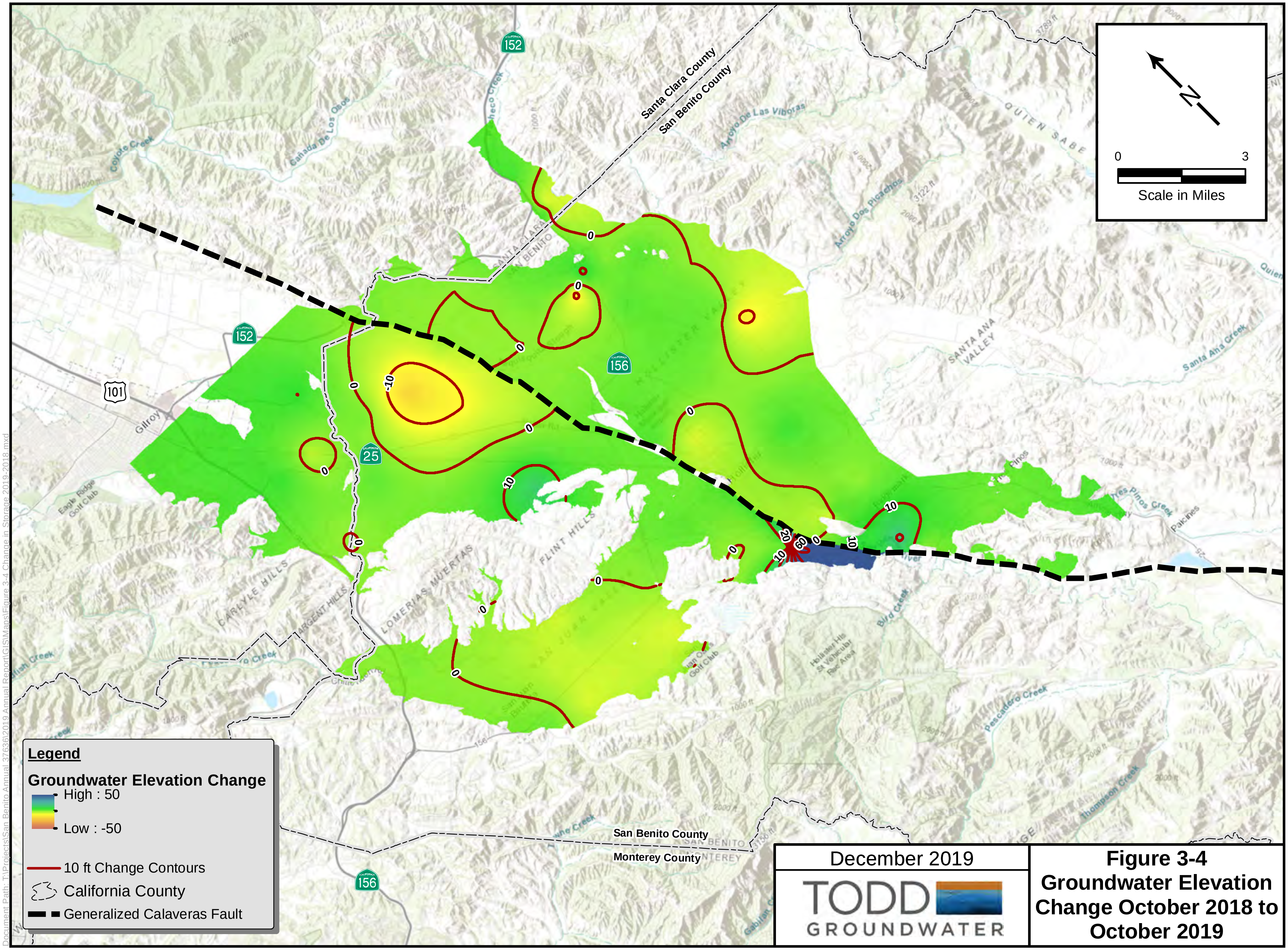

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Figure 3-4
Groundwater Elevation Change October 2018 to October 2019

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Groundwater Trends

Long term changes in groundwater elevations are illustrated in hydrographs of key wells, shown on **Figure 3-5**. These wells and other representative wells were selected based on length of monitoring record, recent monitoring, and trends similar to regional observed patterns.

Southern Management Area. While the District began monitoring selected wells in 2001, groundwater elevation data are limited in the Southern MA. Available data in Southern Well 14-7-20K shows trends similar to other MAs; groundwater elevations reached a local maximum in the wet year 2006, decreased during the most recent drought (2013-2015), and continued to recover in 2019. Groundwater elevations are about 400 feet higher than elevations in the Hollister MA about nine miles away, reflecting the topography and northward groundwater flow direction.

San Juan Management Area. While some wells in the San Juan MA show variation, especially with declines during the drought, well 12-4-17L20 located near the outflow of the basin has held a consistent elevation. The most recent drought and the dry year of 2007 resulted in relative decreases in elevation. In Water Year 2019, water levels are slightly higher than the long-term average reflecting the slightly higher than average rainfall over the past three years. Well 12-4-26G1 located in the north central part of the basin shows long-term stability although groundwater elevations decreased slightly during the most recent drought (2013-2015).

Hollister Management Area. The general pattern for the Hollister MA is exemplified in the hydrograph 12-5-23A20. Groundwater elevations were relatively low in the 1970s (before CVP) and have steadily risen to local high elevations in 2006. Water elevations have remained somewhat consistent since that time with a small decrease during the most recent drought (2013-2015). Water year 2019 elevations are average for the post recovery period. Well 13-6-19K1 shows a similar but more muted pattern of recovery. Groundwater elevations have remained fairly consistent in this year – increasing and decreasing with respective wet and dry years. The location of this well is more influenced by inflow from upgradient groundwater and less controlled by local pumping than 12-5-23A20.

Bolsa Management Area. The Bolsa MA includes artesian wells like 12-5-03B1. Groundwater elevations steadily increased from 1992 until the wet year of 1998 and have remained at a constant level since suggesting artesian conditions with groundwater levels pressurized to above ground surface. These artesian conditions are likely caused by local clay layers that create local confined conditions in the northern Bolsa and Hollister MAs.

The District Act (see **Appendix A**) requires presentation of estimates of annual overdraft for the current water year and ensuing water year. Consistent with previous Annual Reports, this would be represented by long-term groundwater level declines with accounting for rainfall conditions and CVP imports. As of 2019, groundwater elevation trends do not indicate overdraft. Recovery following the drought indicates that overdraft is not anticipated for 2020.

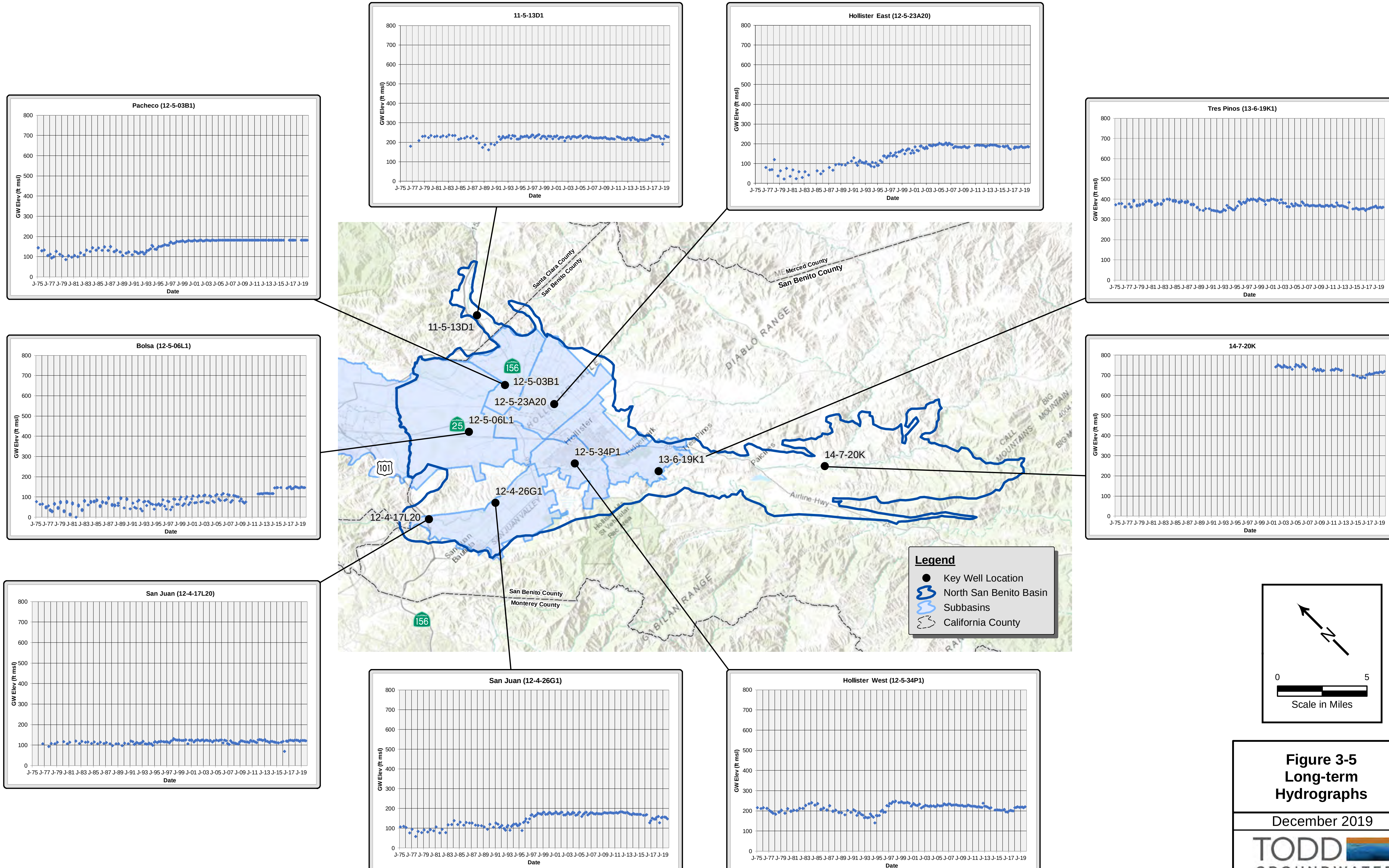

Figure 3-5
Long-term Hydrographs

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Groundwater Quality

The San Benito County Water District water quality database contains data from monitored wells, regulated facilities, and public water systems. This database was created in 2004 with a State Local Groundwater Assistance Grant and updated every three years. Water quality data for 2017-2019 were added to the database from the District, the Regional Water Quality Control Board (regulated facilities and the Ag Lands program), California State Water Resources Control Board Division of Drinking Water, City of San Juan Bautista, Tres Pinos County Water District, City of Hollister, and SSCWD. The 2019 District Water Quality Database currently contains over 520,000 records from over 1,800 monitored locations and 175 water systems or regulated facilities.

To understand how water quality has changed over time, the District has regularly monitored a distributed network of wells including the Nested Well in Hollister MA, a dedicated monitoring well that samples from five depth zones. **Figure 3-6** shows the locations of the monitored wells and Nested Well sampled by the District. As shown SBCWD has monitored 23 wells; six wells sampled by other agencies also are shown, which provide geographic coverage.

Key Constituents

An important document addressing groundwater quality has been the Salt and Nutrient Management Plan (SNMP) for Northern San Benito County, which was developed in 2014. The SNMP identified key constituents of concern (COCs) including total dissolved solids (TDS) and nitrate. These are used as indicators of overall groundwater quality in the basin. Both TDS and nitrate concentration data are available for basin inflow and outflows. Total dissolved solids and nitrate concentrations vary with depth, temporally, and spatially, and they are indicators of the overall changes in groundwater quality throughout the basin.

Total dissolved solids, a measurement of groundwater salinity, can indicate anthropogenic impacts, including the infiltration of urban runoff, agricultural return flows, and wastewater disposal. The North San Benito Basin naturally has an elevated TDS concentration in groundwater, with high concentrations reported since the 1930s. These salinity concentrations are likely due to marine sediments in the basin.

Nitrate (NO_3) is the most common form of nitrogen detected in groundwater. Natural nitrate concentrations are typically low, and elevated nitrate concentrations are often due to agricultural activities, septic systems, confined animal facilities, landscape fertilization, and wastewater treatment facility discharges. Locally elevated nitrate concentrations are recognized as a long-term concern in the basin.

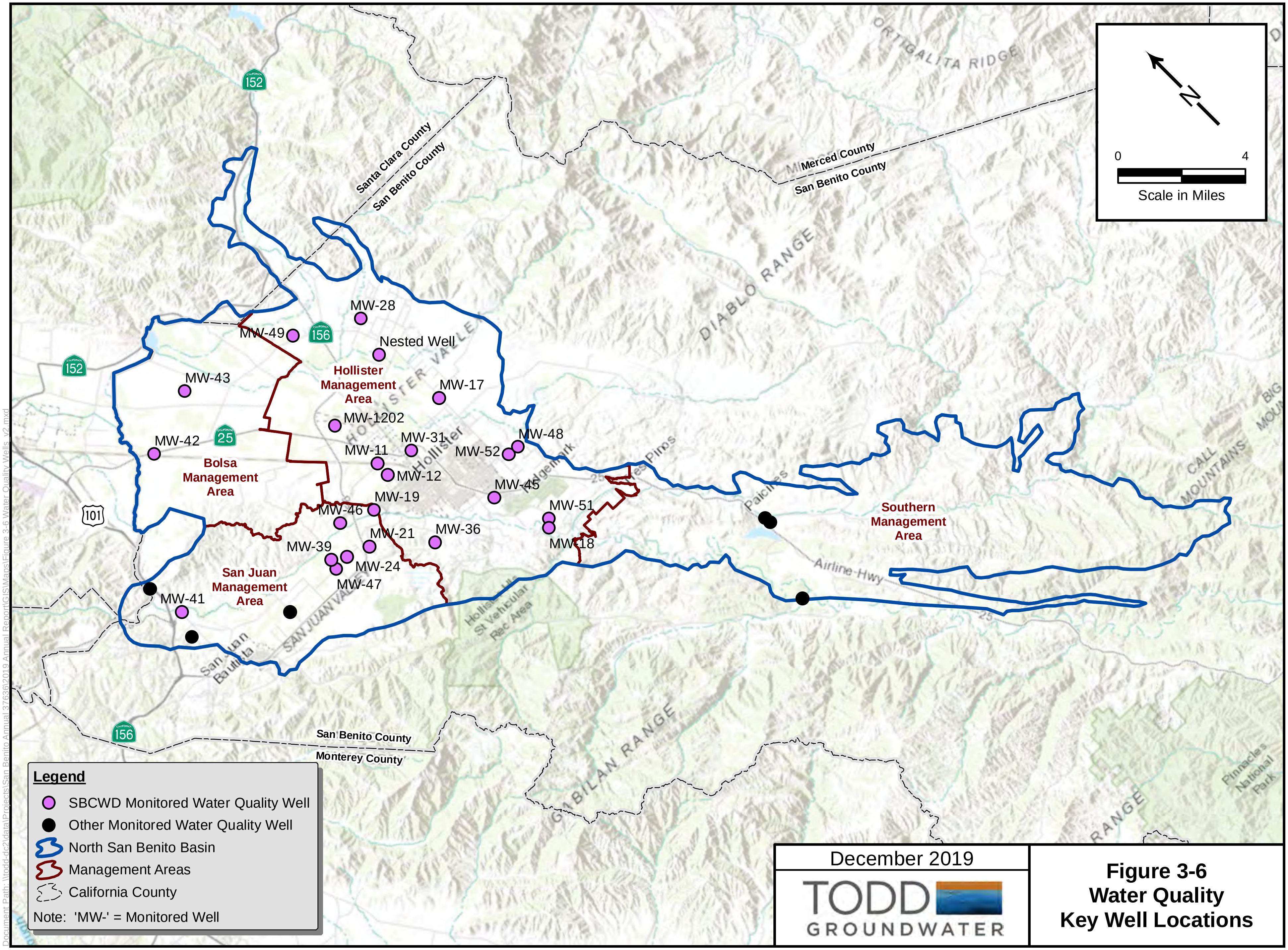

Figure 3-6
Water Quality
Key Well Locations

Previous studies in the region have identified high concentrations of boron, chloride, hardness, metals, sulfide, and potassium and have considered these constituents of concern. Hexavalent chromium is no longer considered a constituent of concern because its maximum contaminant level (MCL) was raised in 2017, but chromium concentrations should continue to be monitored; these are further discussed in this section. High TDS concentrations are often indicative of high boron, chloride, sulfide, potassium, and hardness concentrations. High metal concentrations from anthropogenic sources are site-specific, and metals from geologic sources, like arsenic and chromium, can depend on local aquifer sediments, oxygen levels in groundwater, or groundwater pH. The water quality standards and number of samples in exceedance are listed in **Appendix C.**

Water Quality Goals

Water quality goals, or General Basin Plan Objectives (GBPOs), for TDS and nitrate concentrations were developed in the SNMP. GBPOs for the Central Coast are shown in **Table 3-2.**

Three GBPO goals exist for TDS, adopted from the Division of Drinking Water's three secondary maximum contaminant levels (SMCLs). SMCLs are concentration levels where water may develop a bad taste, color, or odor but is still safe to drink. The lower SMCL for TDS is 500 mg/L, and the upper limit of 1,000 mg/L. TDS has a short-term limit of 1,500 mg/L. High concentrations of TDS in irrigation water can be detrimental to sensitive crops or livestock health, and TDS has an agricultural GBPO of 450 mg/L.

Nitrate has a primarily MCL of 45 mg/L when expressed as nitrate (as NO3). Nitrate is also reported as nitrate (as N), with an MCL of 10 mg/L. For this report, all nitrate measurements are expressed as nitrate (as NO3). Nitrate concentrations above the MCLs can cause methemoglobinemia, or "blue baby syndrome," in humans and livestock. High nitrate concentrations may also be hazardous to pregnant women (SWRCB, 2016).

Basin-specific plan objectives were also developed in the SNMP for the Hollister area and for Tres Pinos Valley, now part of the Southern Management Area. The TDS objective for the Hollister Basin was used for the Bolsa and San Juan Subbasins because these regions have similar water quality. **Table 3-3** shows the Plan Objectives for the management areas.

Table 3-2. General Basin Plan Objectives

Parameter	Units	Municipal[1]	Ag[2]
TDS	mg/L	500/1,000/1,500	450
Nitrate (as NO3)	mg/L	45	100

1. The municipal levels specified for TDS are the "recommended" levels for constituents with secondary maximum contaminant levels
2. The Agricultural objectives for nitrate are recommended for livestock watering

Table 3-3. Basin-Specific Basin Plan Objectives

Parameter	Units	Hollister (Bolsa and San Juan)	Tres Pinos (now Southern MA)
TDS	mg/L	1,200	1,000
Nitrogen (as N)	mg/L	5	5
Nitrate (as NO_3)	mg/L	22.5	22.5

Key Constituents Results

Average constituent concentrations can provide a snapshot of groundwater quality in each management area. The average TDS and nitrate concentrations were calculated for each management area for the past three years (**Table 3-4**). The average constituent concentration is the average of all drinking water and ambient monitoring measurements from 2017-2019 for a given management area. Water quality samples from regulated facilities were excluded from the analyses as these are generally from shallow wells that do not represent the regional trend. Time concentration plots in **Figure 3-7** and **3-8** show TDS and nitrate concentrations in monitored wells over the past 17 years. The monitored wells plotted were selected to represent the general water quality of different subbasins and management areas; all water quality data collected by the District can be reviewed in **Tables C-5 and C-6** in **Appendix C**.

Table 3-4. Average Constituent Values in Management Areas

Management Area	Total Dissolved Solids mg/L	Nitrate (As NO3) mg/L
Southern	340	6
San Juan	1,417	25
Bolsa	1,280	37
Hollister	955	35

Total Dissolved Solids. As shown in Table 3-4, average TDS concentrations exceeded the 500 mg/L SMCL in every management area except for Southern MA during 2017-2019. The highest TDS concentrations occur in the northwestern portion of the Hollister MA and the eastern portion of the San Juan MA. For public supply wells and monitored wells, 50 percent of wells in San Juan and 25 percent of wells in Hollister management areas had median TDS concentrations greater than 1,000 mg/L measured from 2017-2019.

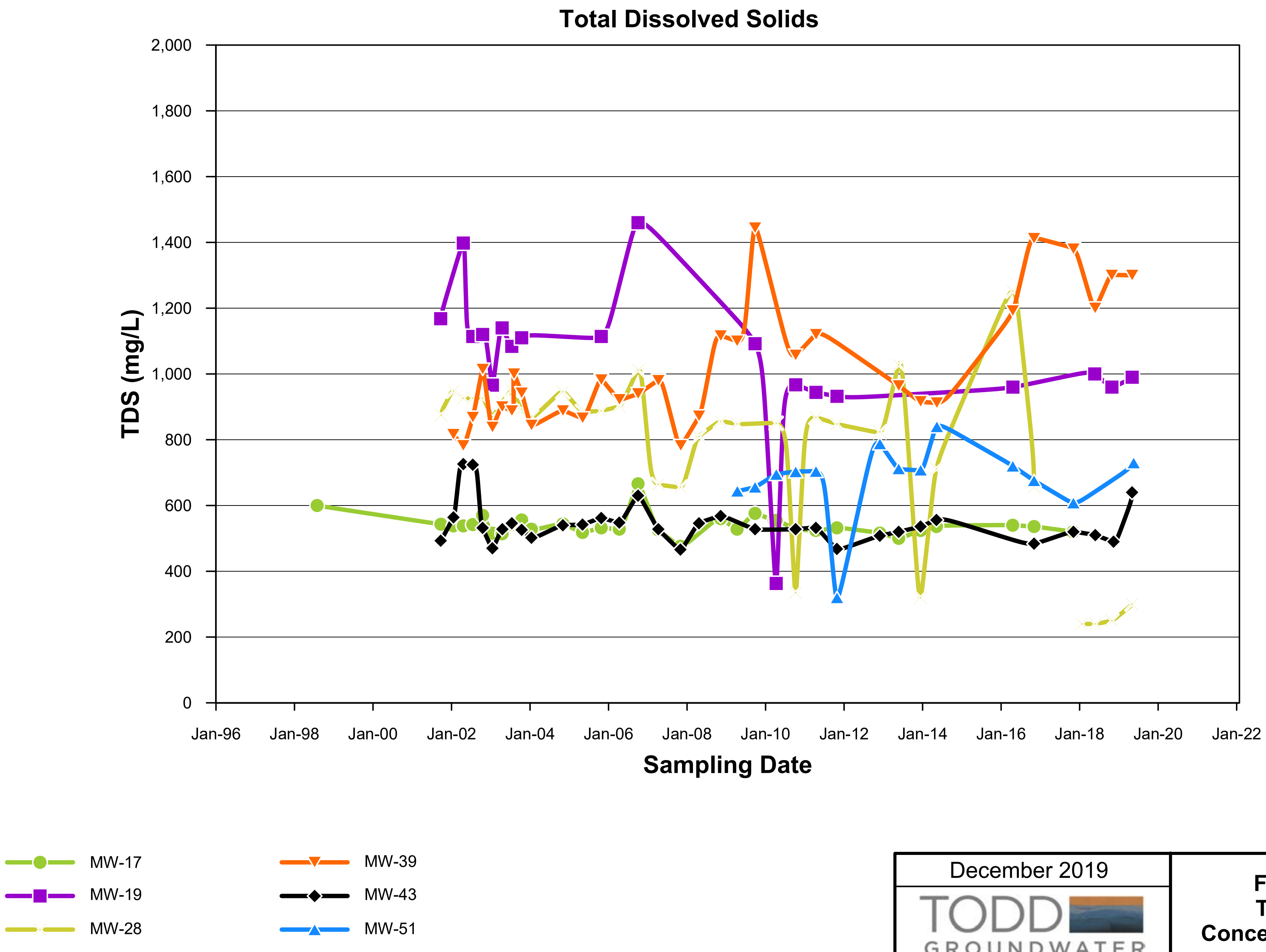

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Figure 3-7
TDS Time Concentration Plots

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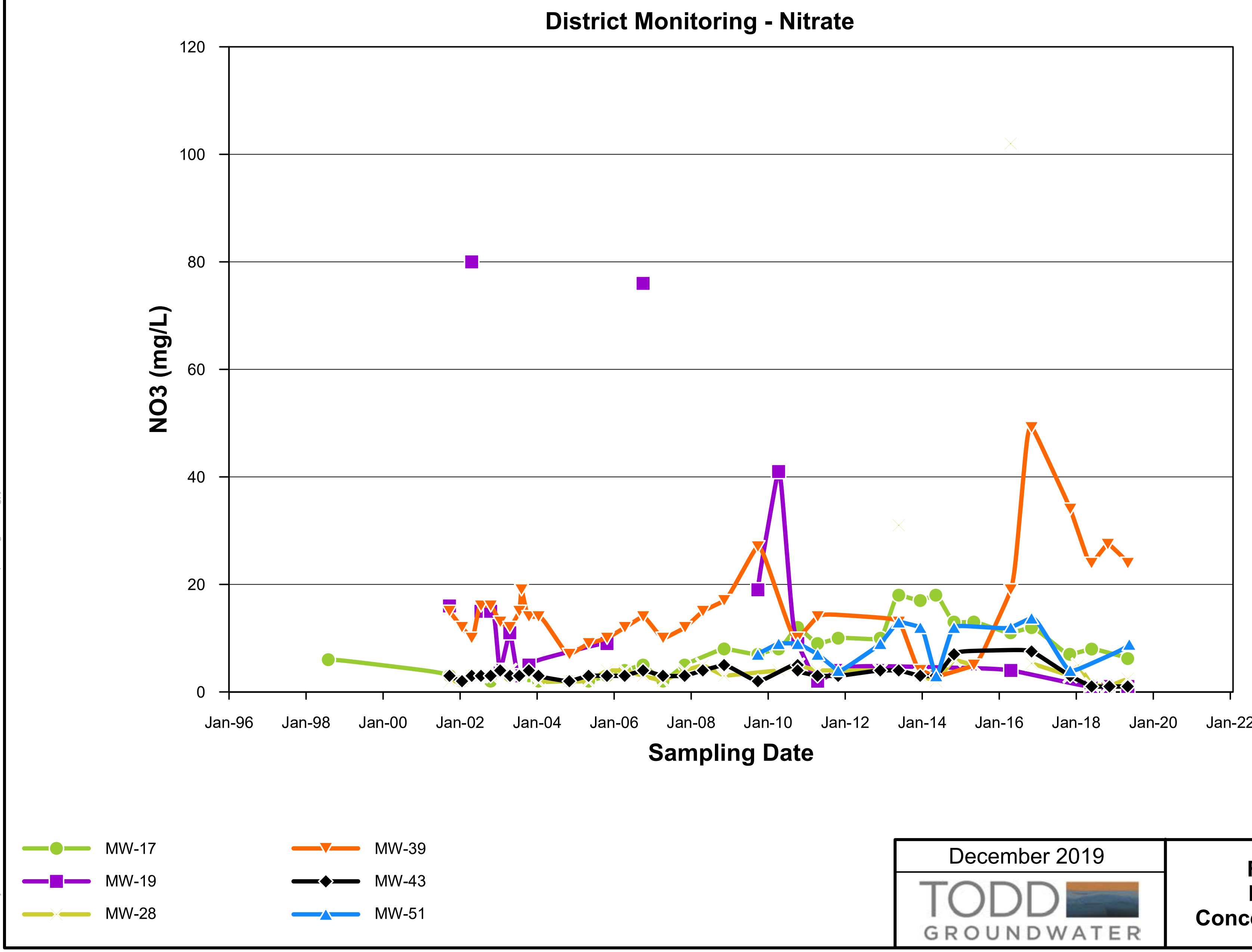

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Figure 3-8
NO3 Time Concentration Plots

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Figure 3-7 depicts TDS concentrations over time. In general, TDS concentrations have remained within a range 500 to 1,500 mg/L; wells with relatively good quality generally show less variability and wells with relatively poor quality show a wider range of concentrations. TDS concentrations in a well can vary for a number of reasons, including the presence nearby of a variable source, changing groundwater flow directions, and varying vertical influences as groundwater levels change and as a well is pumped (With the exception of the Nested Well, the sampled wells are active private production wells). Possible error in sampling and/or analysis contributes to apparent variability.

While **Figure 3-7** indicates general variation with a range, evaluation of trends is difficult and would likely be improved with a rigorous program including specifically sited, designed, and dedicated monitoring wells. Nonetheless, water quality problems can be detected; a case in point is provided by well MW-42 (in Bolsa). As documented in **Table C-5**, groundwater from this well historically has been characterized by low TDS concentrations (<500 mg/L) that became variably elevated after 2014 with concentrations apparently exceeding 5,000 mg/L in 2019. The District is inquiring into the situation; additional sampling is being arranged to determine if the latest measurement is a data outlier reflecting procedural problems or is indicative of a local TDS source.

Figure 3-9 shows the maximum concentrations of TDS spatially across the basin from 2017-2019. In general, TDS concentrations are below 1,000 mg/L (and within the basin objective of 1,200 mg/L) along Pacheco Creek and the San Benito River. Relatively high TDS concentrations are mainly in the central portion of the basin, some reflecting legacy municipal wastewater discharge.

Some TDS measurements were removed from the database due to believed procedural errors. The process to determine their removal is outlined in **Appendix C.**

Nitrate (as NO3). Table 3-4 shows that relatively high nitrate concentrations occur in every management area but the Southern MA. The average nitrate concentrations do not exceed the 45 mg/L drinking water standard, but average nitrate concentrations in Hollister, Bolsa, and San Juan management areas are higher than the 22.5 mg/L basin-specific plan objectives. The distribution of wells where high nitrate concentrations were measured is similar to that of TDS measurements. In all, thirteen wells had a maximum nitrate concentration greater than the 45 mg/L MCL during 2017-2019. Of these, only five had a median measurement above this drinking water limit.

Elevated nitrate in groundwater is often due to fertilizer application and wastewater disposal, so shallow wells typically have higher nitrate concentrations than deeper wells. Many of the high nitrate concentrations in the San Juan MA (MW 31, for example), are down-gradient of wastewater disposal.

Nitrate levels in monitored wells vary over time, as shown in **Figure 3-8**. Natural nitrate levels are generally below 10 mg/L, so most of these wells are deriving nitrate from anthropogenic sources. However, most wells do have nitrate concentrations below 45 mg/L. Wells with higher nitrate concentrations generally indicate greater variability, likely reflecting the same factors that affect TDS in terms of local sources and changing groundwater levels and flow directions.

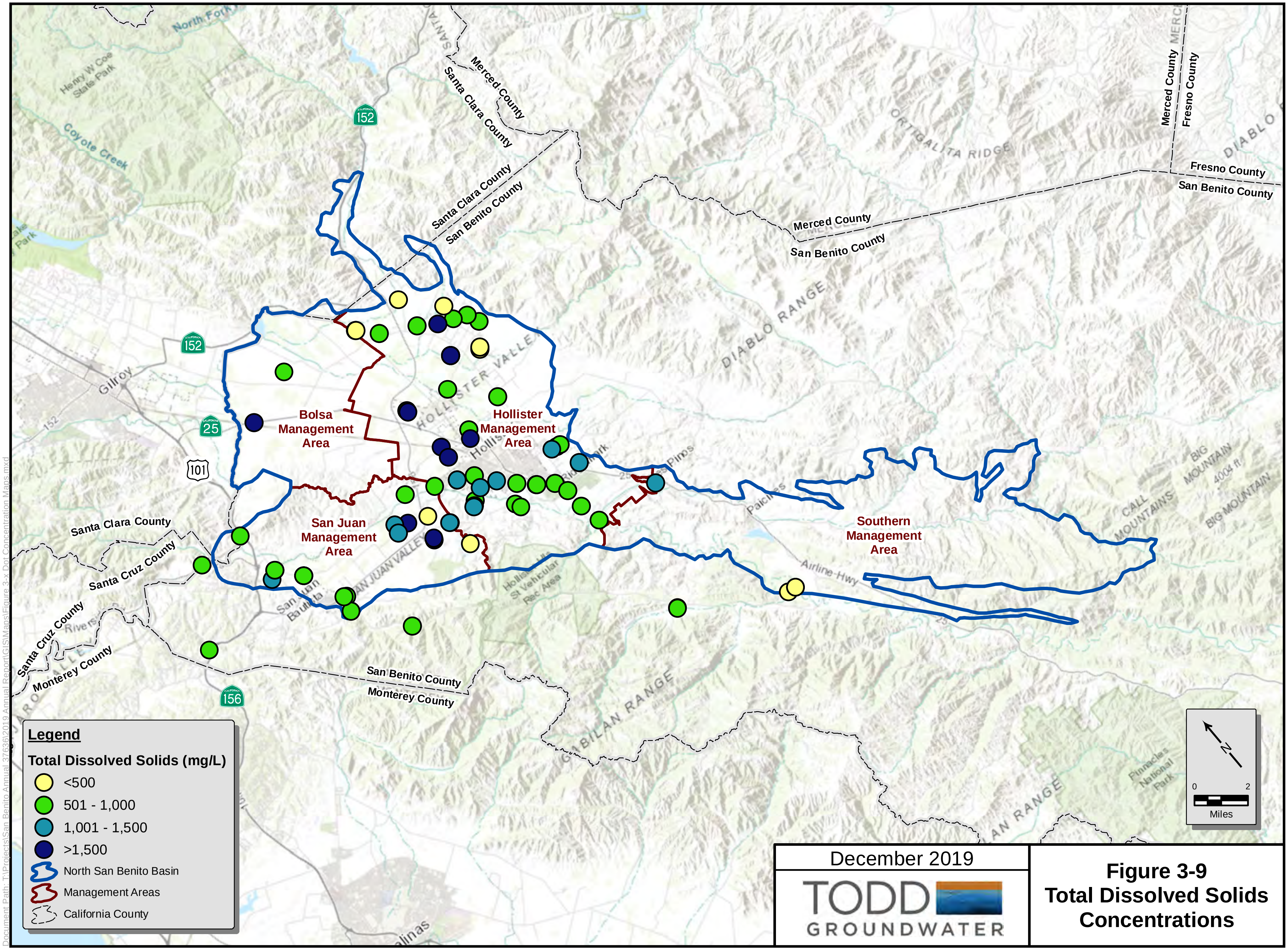

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Figure 3-9
Total Dissolved Solids Concentrations

Figure 3-10 shows the recent maximum concentrations of nitrate since 2017. Similar to TDS, wells along Pacheco Creek and the San Benito River show relatively low concentrations. However, areas with a long history of agricultural use and wastewater disposal (municipal and domestic) include hot spots of high nitrate that exceed the basin objective and MCL of 45 mg/L.

Metals in Groundwater. Hexavalent chromium (also known as CrVI or chromium VI) was considered a constituent of concern in the 2016 annual groundwater report. In 2017, the maximum contaminant level (MCL) for hexavalent chromium was increased from 10 ug/L to 20 ug/L. Because of this change, hexavalent chromium is no longer a designated constituent of concern in this basin. While chromium can originate from anthropogenic waste, much of the chromium in western California is derived from serpentinite rocks in the Coastal Range (Izbicki, 2016). Every chromium measurement from 2017-2019 for non-regulated facilities in the basin measured total chromium instead of hexavalent chromium. The MCL for total chromium is 50 ug/L, but hexavalent chromium is often the dominant form of chromium in oxygen-rich groundwater.

Ten wells in non-regulated facilities measured at least one total chromium concentration greater than 20 ug/L, and two of these wells measured total chromium levels over 50 mg/L. Groundwater from four wells in Hollister MA and one well in the San Juan MA had median total chromium concentrations over 20 mg/L. In general, groundwater with elevated chromium should be analyzed for both total chromium and hexavalent chromium. High chromium concentrations occur in the central portion of the Hollister MA, in the region with high nitrate and TDS in groundwater; a map of maximum concentrations is shown as **Figure C-5** in the Appendix.

Arsenic can enter groundwater from aquifer sediments when groundwater has low oxygen levels or a high pH. Arsenic concentrations over the 10 ug/L MCL were measured in 13 wells, most of which are in the western Hollister MA. Groundwater in this region frequently has high manganese concentrations, which suggests that it has low oxygen levels, or reducing conditions. The arsenic is likely derived from iron oxide on sediments, which dissolves in low-oxygen environments.

Vertical Variations

A Nested Well was completed in 2006 funded in part by a State Local Groundwater Assistance Act grant. Located in Hollister MA (see **Figure 3-6**), the Nested Well has ports at five different depths: A through E, in order from shallowest to deepest. Most recently, the wells were sampled in December 2018 and again in May/June 2019 (**Table 3-5**). All wells reported TDS concentrations greater than 500 mg/L and nitrate (as NO3) concentrations less than 5 mg/L.

The lowest salinity levels were reported in wells B and C, middle-depth wells. Salinity from the shallowest well, Well A, may be influenced by anthropogenic sources, like agricultural drainage. The highest salinity levels were reported in the two deepest wells. In deeper wells, high TDS levels may be from natural groundwater salinity. Throughout the basin, shallow groundwater is more vulnerable to high TDS from human activity, while deeper groundwater has high natural salinity levels.

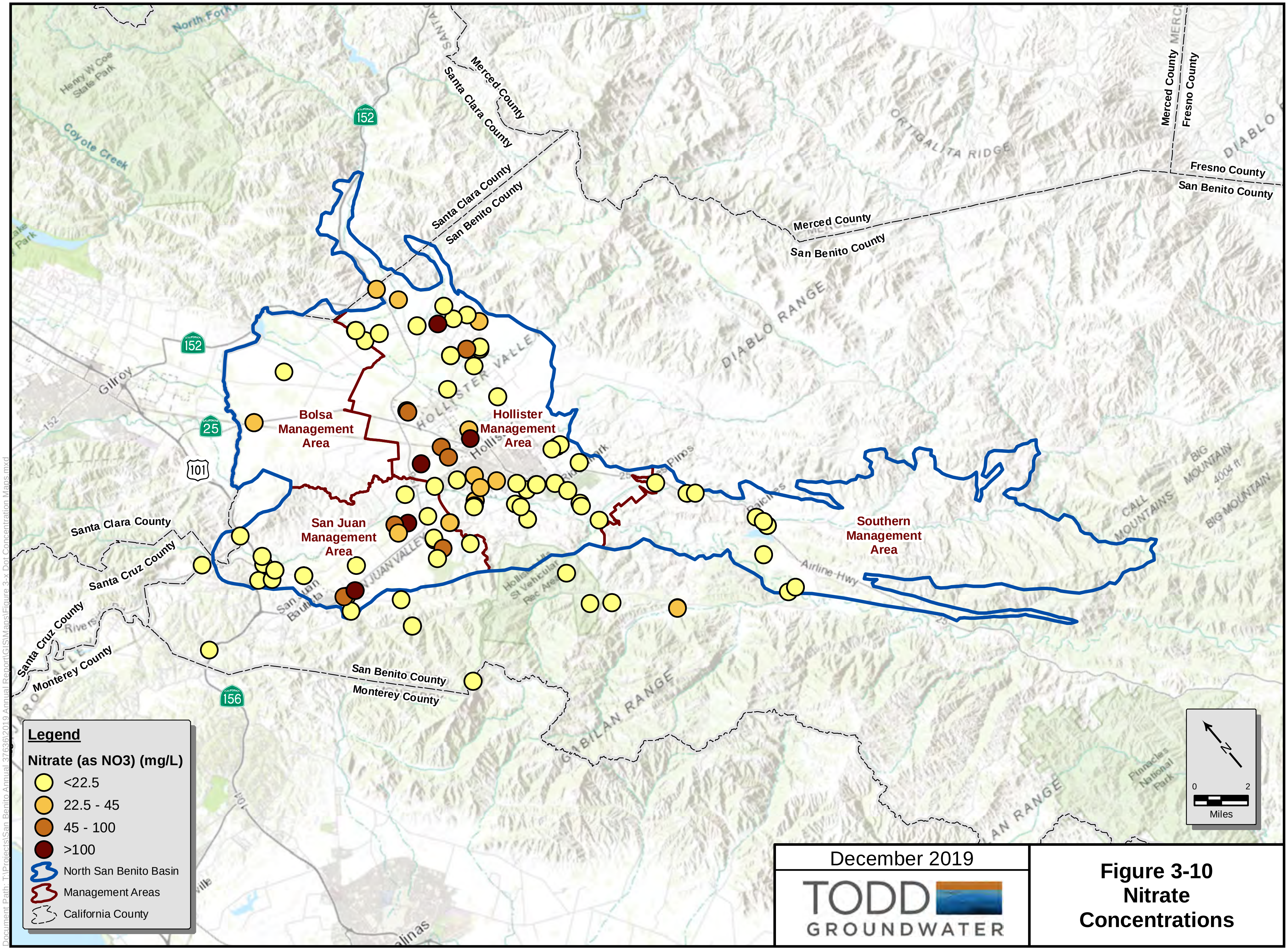

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Figure 3-10
Nitrate Concentrations

Table 3-5. TDS and Nitrate Concentrations in Nested Wells

Depth	Well	COC	Dec-18	May-19	Jun-19
	A	TDS	850		920
		NO3	3.0		1.0
	B	TDS	540		540
		NO3	1.0		1.0
	C	TDS	660		630
		NO3	1.0		1.0
	D	TDS	1,300	1,200	
		NO3	1.0	1.0	
	E	TDS	2,700		1,700
		NO3	1.0		1.0

Salt and Nutrient Management Plan

The San Benito SNMP was developed in 2014 to comply with the 2013 State Water Resources Control Board Recycled Water Policy. The SNMP identifies sources of salts and nutrients currently in the basin and addresses future sources and loading. The plan outlines salt and nutrient management actions to ensure that groundwater quality is appropriate for drinking and other beneficial uses.

Analyses conducted in 2014 for the San Benito County SNMP concluded that recycled water irrigation projects satisfied the Recycled Water Policy guidelines and that recycled water use can be increased without degrading groundwater quality for beneficial uses. While the SNMP concluded that no additional implementation measures were necessary beyond existing management plans, water quality monitoring in the San Benito County Water District is ongoing. Monitoring for the SNMP is intended to determine the effectiveness of implementation measures, with a focus on basin water quality near large recycled water projects, recharge projects, and water supply wells.

Through its Annual Groundwater Reporting process and consistent with its SNMP, the District collects and compiles groundwater quality data on a semi-annual basis. These data have been analyzed and reported to the RWQCB in the District's triennial Groundwater Report and thus fulfills the SNMP-required discussion of TDS and nitrate concentrations in groundwater using the following analytical techniques:

- Time-Concentration Plots
- Evaluation of Vertical Variations in Groundwater
- Water Quality Concentration Maps
- Comparison to detections with basin-specific basin plan objectives (BSPOs)

The SNMP also requires analyses and a discussion of the status of recycled water use, stormwater capture projects, and stormwater capture implementation measures. Recycled water and stormwater are discussed in the next section.

Water quality did not change significantly during the period 2017 to 2019. This supports the conclusion in the SNMP that recycled water use would not adversely affect water quality. Nitrate and TDS concentrations have not increased in most wells in the basin. Groundwater quality monitoring will be continued, transitioning from the triennial quality update in the Annual Groundwater Reports to SGMA Annual Reporting (which focuses on groundwater quantity issues but includes progress reporting and new information) and Five-Year Updates.

4-WATER SUPPLY AND USE IN ZONE 6

Water Supply Sources

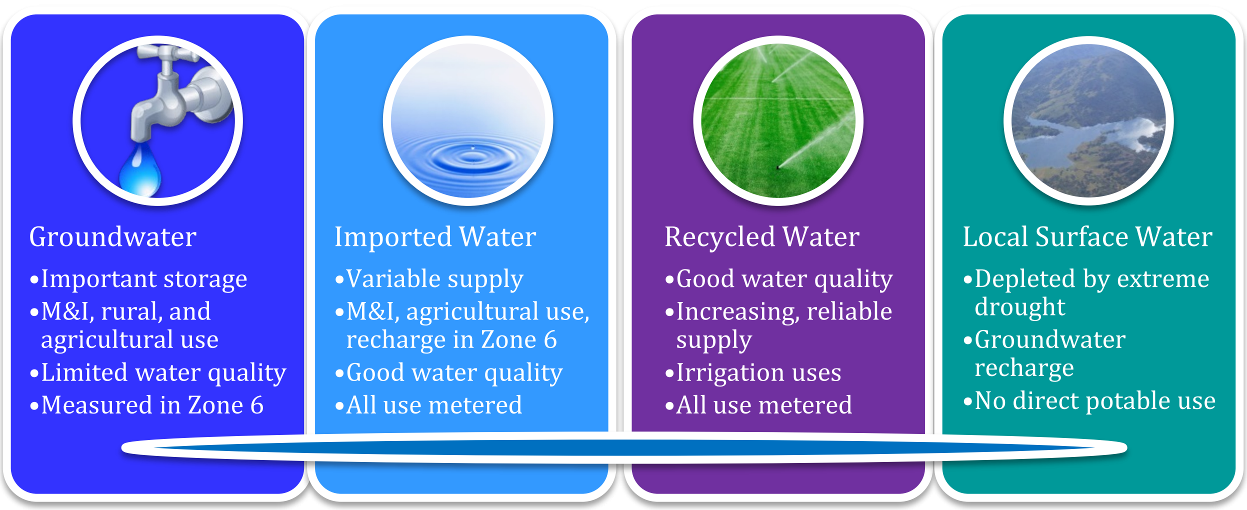
Four major sources of water supply are available for municipal, rural, and agricultural water demands in Zone 6. These are summarized below; for more data and graphs, see **Appendix E.**

Local Groundwater. Groundwater is pumped by private irrigation and domestic wells and by public water supply retailers. The District does not directly produce or sell groundwater but has the responsibility and authority to manage groundwater throughout San Benito County.

Imported Water. The District purchases Central Valley Project (CVP) water from the U.S. Bureau of Reclamation (USBR) and distributes to customers in Zone 6. Some CVP water has also been released for groundwater recharge. The District has a 40-year contract (extending to 2027 and renewable thereafter) for a maximum of 8,250 AFY of municipal and industrial (M&I) water and 35,550 AFY of agricultural water.

Recycled Water. Water recycling began in 2010 with landscape irrigation at Riverside Park. Recycled water currently is provided to selected landscape irrigation and agricultural users. This source is reliable during drought and helps secure a sustainable water supply.

Local Surface Water. Surface water is not used directly for potable or irrigation use in the basin, but creek percolation is a significant source of groundwater recharge. Releases from the District's Hernandez and Paicines reservoirs were above average in 2019, significantly contributing to recharge of the groundwater basin. Stormwater capture currently is limited to some diversion by the City of Hollister to the Hollister Industrial WWTP (via a combined sewer system) with subsequent treatment and discharge to percolation and evaporation ponds.



4-WATER SUPPLY AND USE IN ZONE 6

Available Imported Water

The District distributes CVP water to agricultural and M&I customers in Zone 6. The allocation of the contract for each year is variable and contingent on total available supply of the CVP system. In dry years, the allocation may be zero and in wet years, it may be 100 percent of the contract amount. The USBR contract years are March through February, so Water Year 2019 (Oct 2018-Sept 2019) overlapped two contract years. The above average rainfall of this current year resulted in increased allocations for the March 2019-February 2020 contract year. **Table 4-1** shows the contract entitlements and recent allocations for both USBR contract years that overlap Water Year 2019 (SLDMWA 2019).

As shown in **Table 4-1**, USBR contract year 2018 (March 2018 - February 2019) allocations were 50 percent and 75 percent for agricultural users and M&I users respectively. For USBR contract year 2019 (March 2019 - February 2020) allocations were 75 percent and 100 percent for agricultural users and M&I users respectively. Both years were above the average allocations over the past 10 years; from 2010-2019 the average allocations were 42 percent and 62 percent for agricultural users and M&I users respectively.

Table 4-1. Allocation for USBR Water Years 2018-2019

	Contract	% Allocation	Allocation Volume (AF)
Agriculture	35,550	50%	17,775
M&I	8,250	75%	6,188
TOTAL	43,800		23,963

March 2019 - February 2020

	Contract	% Allocation	Allocation Volume (AF)
Agriculture	35,550	75%	26,663
M&I	8,250	100%	8,250
TOTAL	43,800		32,723

4-WATER SUPPLY AND USE IN ZONE 6

Reported Water Use

Table 4-2 shows the total reported water use in Zone 6 by source and user type for Water Years 2018 and 2019. Municipal use is metered. Agricultural CVP water use is recorded and agricultural groundwater use in Zone 6 is estimated using power meters. Independent estimates of total groundwater pumping based on crop type and irrigation rates generally indicate more groundwater use than is reported by the meters. At this time, the Annual Groundwater Report continues to use the reported water use to allow for consistency of analysis from year to year. Actual groundwater pumping in North San Benito Groundwater Basin is considered a data gap and the GSP will identify potential methods to improve assessment of pumping in Zone 6 and throughout the basin.

In Water Year 2019, total water use decreased 25 percent from 2018, returning to volumes similar to 2017. Reported water use decreased for agricultural and M&I customers using CVP and/or groundwater. However, recycled water use increased 21 percent reflecting the District's plan to continue to increase recycled water delivery. **Figure 4-1** shows Zone 6 reported water use by source since 1988. Overall, the graph indicates that water use has a general declining trend since 2013, except for the significant increase in 2018 (attributable in part to increased M&I use of CVP and increased groundwater pumping for agriculture; see 2018 Annual Report). Water conservation that began during the 2013-2015 drought continues to moderate water use in the basin. The graph also shows the general balance between CVP and groundwater use; groundwater represented a large portion of the supply during the drought and following year when CVP water was curtailed. In Water Year 2019, groundwater was 52 percent of the total reported water use, CVP represented 46 percent of supply, and recycled water was 2 percent.

Figure 4-2 illustrates the use of groundwater and CVP supply in Zone 6 from 1988 to 2019. The top graph shows groundwater reported use in Zone 6, including the increase of groundwater use during the most recent drought and following year (i.e., 2013-2016) when CVP allocations were reduced and a marked decrease in the past three years when CVP allocations were restored. Groundwater use for M&I has decreased as the treatment plant capacity for Hollister and SSCWD has allowed more CVP water to be delivered to M&I customers in the Hollister Urban Area. The bottom graph shows CVP use in Zone 6. Corresponding to the decreased groundwater use, CVP for M&I has increased steadily from 1996 through 2019. In addition, the District has resumed percolation of CVP water in recent years. The graph illustrates the variability of CVP supply due to drought/wet year cycles and other restrictions, notably the decrease after the 2007 Federal Court decision on Delta smelt. In brief, when CVP supply has been reduced, groundwater supply has been available, representing conjunctive management.

Table 4-2. Total Water Use in Zone 6 by User and Water Source 2018-2019

	CVP		Groundwater		Recycled Water		Total	
	2018	2019	2018	2019	2018	2019	2018	2019
Agriculture	14,453	11,731	21,108	15,423	364	461	35,925	27,616
M&I	5,679	4,457	4,748	2,660	107	108	10,533	7,225
TOTAL	**20,131**	**16,188**	**25,856**	**18,083**	**471**	**569**	**46,458**	**34,841**

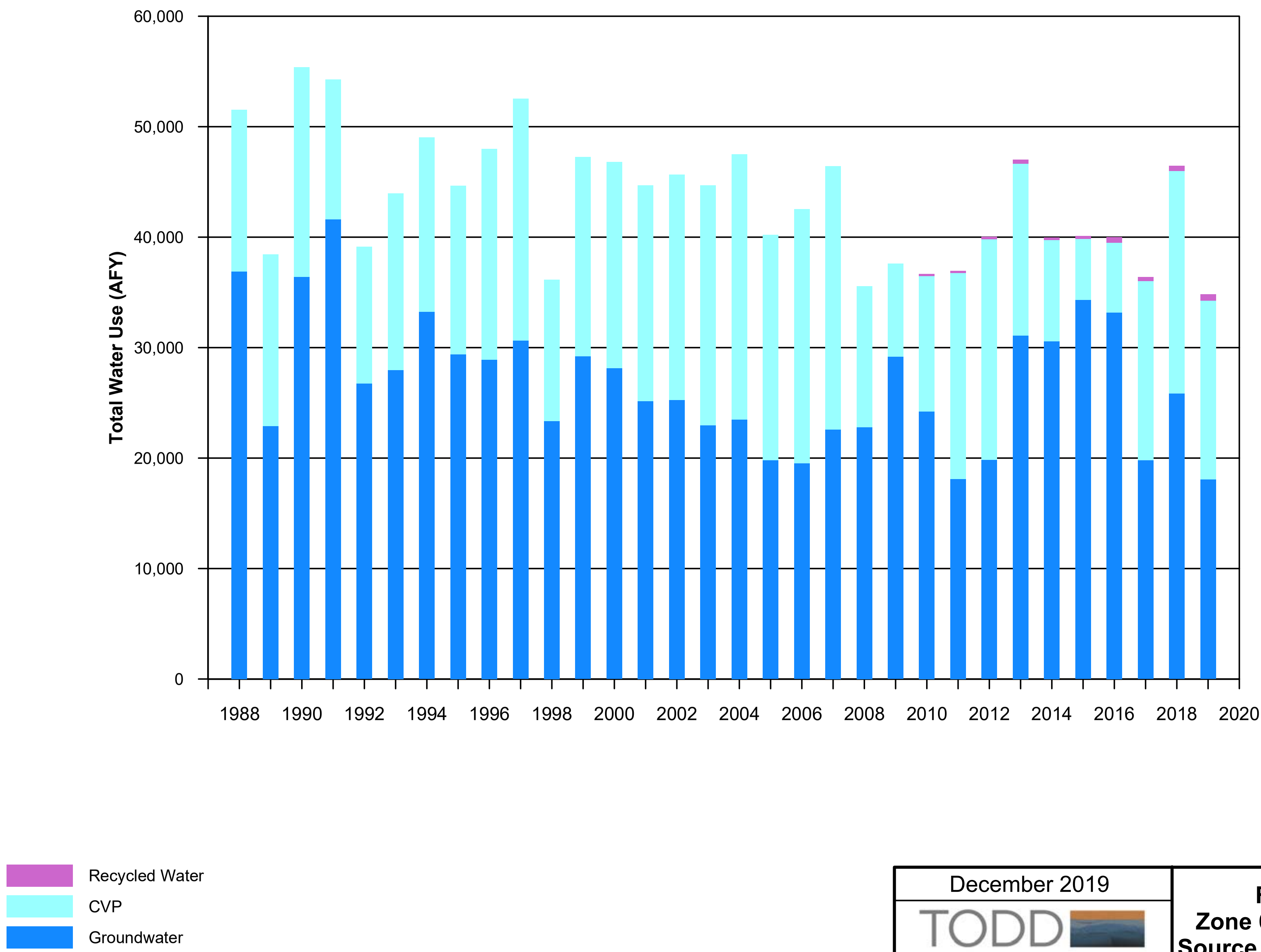


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Figure 4-1
Zone 6 Water Use by Source 1988-2019 (AFY)

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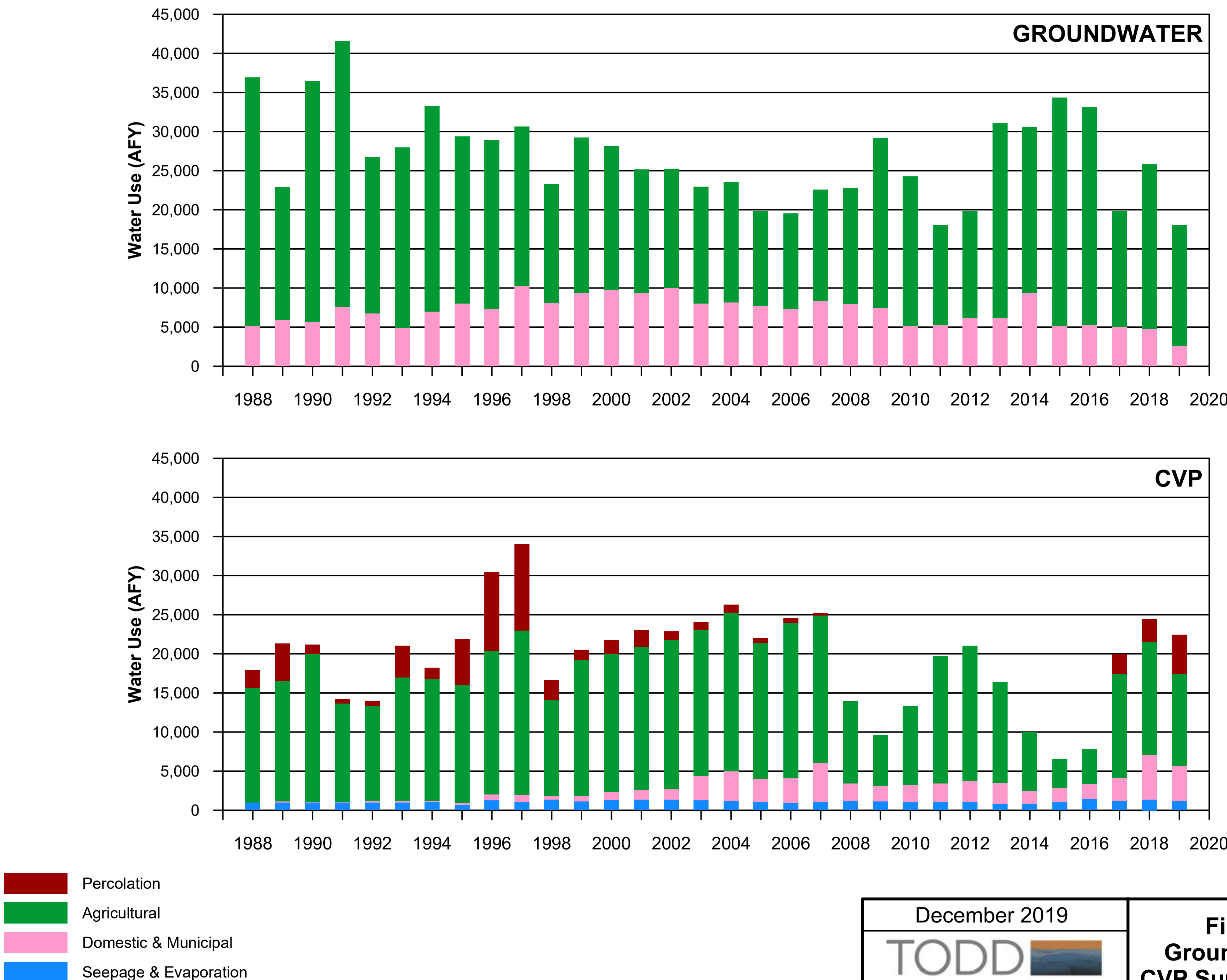

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TODD GROUNDWATER

Figure 4-2
Groundwater and CVP Supply in Zone 6

Table 4-3 shows the breakdown of total water use by each subbasin (and management area) in Zone 6. Consistent with past patterns, San Juan is the largest producer of groundwater and the second largest user of CVP supplies, mainly for agricultural irrigation. Hollister East is the largest user of CVP for both agricultural users and municipal uses, reflecting extensive agriculture and the expanded municipal water treatment capacity.

Table 4-3. Zone 6 Water Use by User and Water Source 2018-2019

Management Area	Subbasin	CVP Water		Groundwater		Recycled Water	
		Agriculture	Domestic & Municipal[1]	Agriculture	Domestic & Municipal	Agriculture	Domestic & Municipal
Hollister	Bolsa South East	318	0	2,568	0	2	0
	Hollister East	5,076	4,184	2,597	205	0	0
	Hollister West	252	21	1,095	998	459	108
	Tres Pinos	96	88	180	1,013	0	0
	Pacheco	2,121	41	2,717	63	0	0
San Juan	San Juan	3,867	123	6,266	381	0	0
TOTAL		11,731	4,457	15,423	2,660	461	108

1. Hollister East includes 2,524 AF of CVP water delivered to the West Hills Treatment Plant in San Juan but supplied to Hollister East customers.

Figure 4-3 shows the municipal water supply for the City of Hollister, SSCWD, San Juan Bautista, and Tres Pinos County Water District. Prior to 2003, the municipal demand was satisfied entirely by groundwater. The completion of Lessalt Water Treatment Plant (WTP) in 2003, the expansion of Lessalt in 2016, and the completion of West Hills WTP in 2018 have significantly increased the use of CVP water for the Hollister and SSCWD municipal systems. In **Figure 4-3**, annual water supply provided through the Lessalt WTP is shown in maroon and West Hills WTP in grey. In 2019, these two treatment plants served over 70 percent of the M&I supply. This ability to maximize CVP use will increase flexibility for local water users to use groundwater or CVP. It also provides better quality water for delivery to municipal customers and result in improved wastewater quality, which supports water recycling.

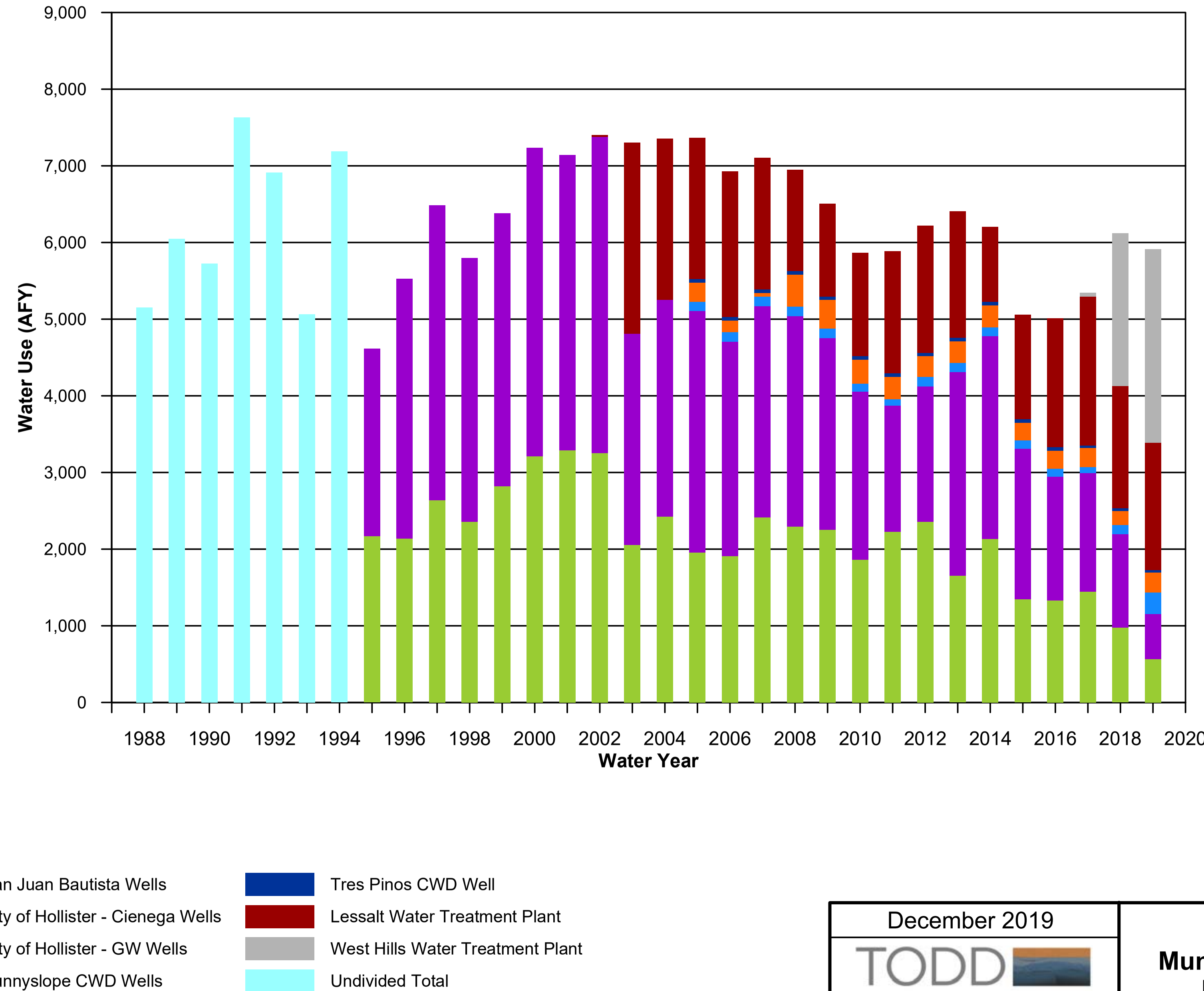

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Figure 4-3
Municipal Supply by Source

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Difference Between Meters and Model

As noted above, this section addresses Zone 6, where CVP water use for agriculture is measured through the blue valves and groundwater use for agriculture is evaluated through hour meters that measure power use. Municipal use of CVP water is measured; the major municipal providers (Hollister, San Juan Bautista, SSCWD) also measure groundwater production through meters. Groundwater use beyond Zone 6 for agricultural, domestic, and community water supplies generally is not metered.

For comprehensive evaluation of groundwater pumping across the basin (including Zone 6 and beyond), an alternative methodology has been used for development of the basin-wide numerical model and water balance for the GSP. The methodology evaluates groundwater pumping using land use maps and information on the consumptive use of crops and other factors such as rainfall, runoff, and evapotranspiration. This analytical estimate, calculated independently from the hour meters, indicates that groundwater use in the basin is greater than the use observed from hour meters and reported in annual reports. SGMA requires annual reporting of all groundwater extractions (except de minimis pumpers using less than two AFY) using best available measurement methods. Accordingly, the District has identified groundwater pumping amounts as a data gap and as part of the GSP is identifying alternative methods to accurately measure the annual volume of groundwater pumping.

5-WATER MANAGEMENT ACTIVITIES

District water management activities include comprehensive monitoring (summarized in Section 2) and importation and distribution of CVP water in Zone 6 (Section 4). In addition, the District provides water resources planning, water conservation support services, and managed percolation of local surface water to augment groundwater; these are summarized in this section. Sources of revenue to support District operations also are presented here.

Water Resources Planning

The District has used multiple planning efforts to support groundwater sustainability. These have included water management plans such as the Groundwater Management Plan (1998 and 2003), Integrated Regional Water Management Plan (2007) and subsequent updates, Salt and Nutrient Management Plan (2014), Agricultural Water Management Plan (2015), and Urban Water Management Plans (2016). These plans have addressed a range of groundwater sustainability issues with advancement of conjunctive use of imported water, local surface water, recycled water and groundwater; with water conservation, and with protection of water quality. Current efforts and recent accomplishments are summarized below.

Hollister Urban Area Water Project. This project is an ongoing collaborative effort with local agencies to provide a secure and stable water supply to the region. The project has involved provision of water treatment for CVP water, which allows its direct use for municipal and industrial (M&I) purposes. It also allows delivery of improved quality water to customers. 2019 continues to see the beneficial effects of the new West Hills WTP and newly expanded Lessalt WTP. The District also has worked cooperatively for years with the City of Hollister to implement recycled water use primarily for agricultural irrigation, which is expected to increase in coming years.

Pacheco Reservoir Expansion Project. The District has been collaborating with Santa Clara County Water District and Pacheco Pass Water District on planning and studies related to the Pacheco Reservoir Expansion Project. The reservoir would allow storage of CVP supplies and local flows from the Pacheco Creek watershed. The District is contributing modeling services to evaluate potential impacts on stream flow, steelhead trout migration, and groundwater recharge along Pacheco Creek downstream of the dam. These studies are being conducted concurrently with the GSP, which will address related issues of surface water-groundwater interactions along Pacheco Creek. The analysis is addressing the 1922-2003 period, consistent with CVP operations modeling. This work is in progress and expected to continue into 2020.

North County Project. In collaboration with the City of Hollister and Sunnyslope County Water District, the District is proceeding with Phase I of the North County Project. The goal of this phase is to install a new municipal well near the northern part of Hollister. A key objective is to obtain groundwater of relatively high quality (low hardness, TDS and nitrate); the effort will commence with a survey of existing groundwater quality to support selection of two sites for test wells. The work will commence in 2020.

Water Conservation

Water conservation is an important tool to manage demands on the groundwater basin particularly during drought. Water conservation efforts in San Benito County are conducted through the Water Resources Association (WRA). WRA is a cooperative effort among the District, City of Hollister, City of San Juan Bautista, and Sunnyslope County Water District.

The WRA worked tirelessly during the recent drought (2013-2015 plus 2016 with reduced CVP) to decrease water use and many of these initiatives continue to show results. Water demand for the large municipal retailers has remained lower than 2013 volumes. For example, SSCWD average monthly water use in 2019 was 17.3 percent lower than respective water use in 2013.

Water Conservation continues throughout the basin with activities including provision of information, home surveys, and rebates. To keep the public informed, the WRA has prepared bill inserts that highlight water conservation programs and provide updates on water conditions. The WRA takes an active role in SGMA public workshops educating the public on changes in groundwater management.

In 2019, WRA provided presentations to 28 schools (reaching over 850 students last year) and to local organizations such as the Chamber of Commerce, Association of Realtors, and Rotary Club. WRA also has staffed a booth at the County Fair and at the League of United Latin American Citizens (LULAC) Health Fair, with posters and handouts providing information on local water resources. In addition, print and online articles promoting water conservation have been published in the Free Lance newspaper and Benito Link. The Home Water Survey allows the WRA to directly work with customers who have a leak or large water bill. The WRA has been able to reach approximately 250 people a year with this service.

WRA also provides various rebates (toilets, landscape hardware, etc.) The most popular rebate program is the water softener demolishing/replacement program. With provision of CVP supply for municipal use, the delivered water quality has improved, and customers are willing to abandon unneeded water softeners. This program has the benefit of improving the water quality of municipal wastewater and recycled water.

Managed Percolation

Percolation of Local Surface Water. In most years, local surface water released from Hernandez and Paicines reservoirs is percolated along the San Benito River and Tres Pinos Creek. Releases are managed to maximize percolation along the stream channels of the San Benito River and Tres Pinos Creek and to avoid any losses out of the basin. Hernandez Reservoir releases in 2019 were above average (reflecting the above normal rainfall), amounting to 15,924 AF. Releases from Paicines were 2,045 AF, also above average.

Percolation of Wastewater. Wastewater is percolated by the City of Hollister at its Domestic and Industrial plants, by SSCWD at its Ridgemark Facilities, and by Tres Pinos County Water District. Recent changes in operation of the wastewater facilities (including increased water recycling) and decreased municipal water use have decreased the volume percolating to the groundwater. Information about the amount of groundwater recharged from these wastewater facilities is found in **Appendix D**.

Percolation of CVP Water. In Water Year 2019, the District percolated 5,043 AF of CVP water in three dedicated off-stream basins; locations are shown in **Figure 5-1. Figure 5-2** shows the volume of CVP recharge by major water way over time. The managed recharge of the imported water was critical in replenishing the basin in the 1980s and 1990s; however, the threat of zebra mussel contamination and low CVP allocations prevented the practice from 2008 to 2016. The District has resumed recharge at dedicated basins adjacent to streams.

Financial Information

The District derives its operating revenue from charges levied on landowners and water users. Non-operating revenue is generated from property taxes, interest, standby and availability charges, and grants. District zones of benefit are listed in Appendix A. Zone 6 charges, relating to the importation and distribution of CVP water, are the focus of this section.

Table 5-1 presents the groundwater charges for Zone 6 water users, which reflect costs associated with monitoring and management. A full worksheet of how groundwater charges are determined can be found in **Appendix F**. Groundwater charges are adjusted annually in March. For March 2019 – February 2020, District rates are $12.75 for agricultural use and $38.25 for M&I use. The District adopts rates on a three-year cycle. Current water rates were adopted January 30, 2019.

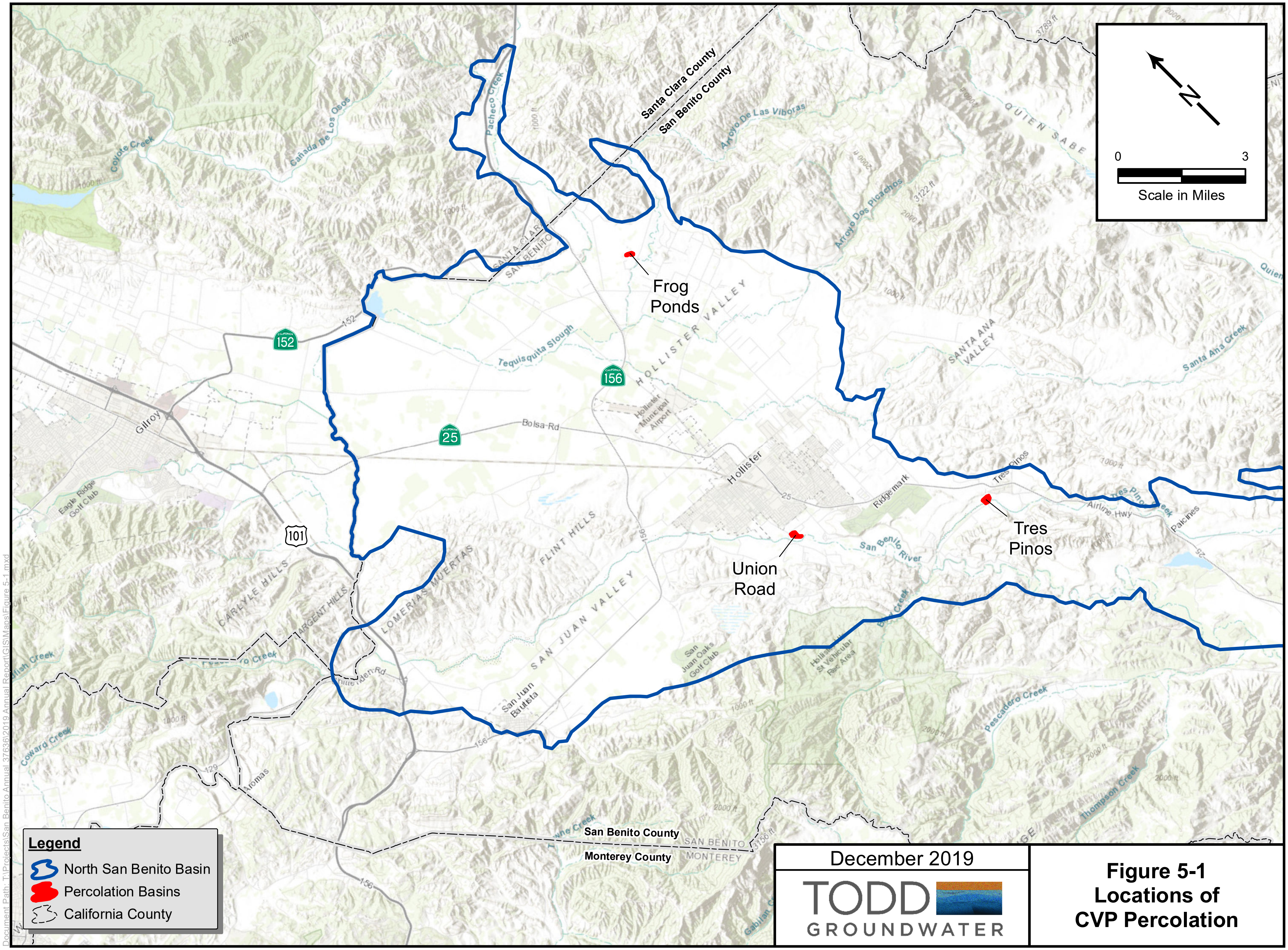

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Figure 5-1
Locations of
CVP Percolation

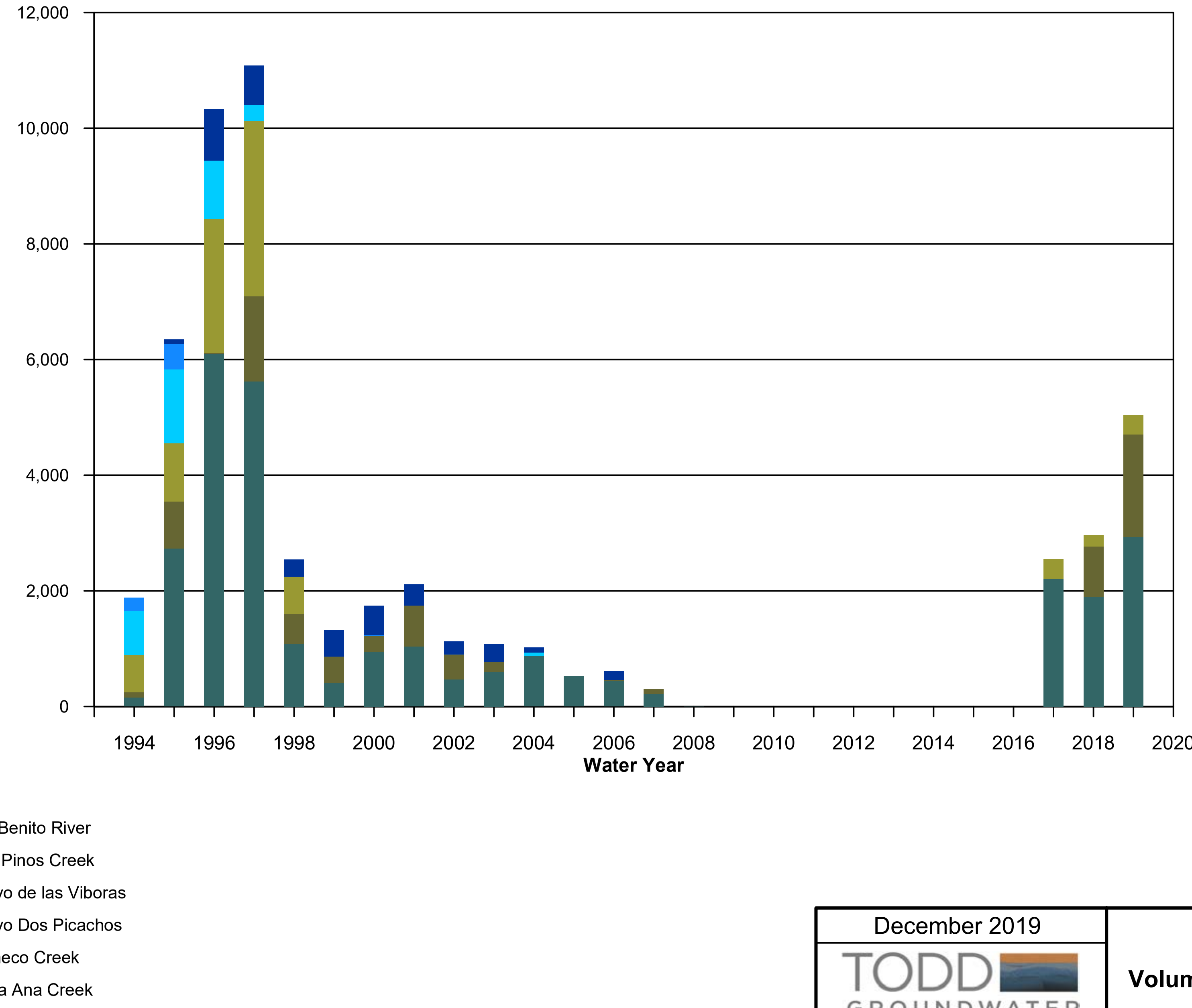

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Figure 5-2
Volume of Percolation

Table 5-1. Adopted Groundwater Charges

Year	Agriculture ($/AF)	M&I ($/AF)
2019-2020	$12.75	$38.25
2020-2021	$13.15	$39.40

CVP rates (provided by the USBR) include the cost of service, restoration fund payment, charges for maintenance of San Luis Delta Mendota Water Authority facilities, and other fees (the breakdown is found in **Appendix F**). The District's blue valve rates (paid by users of CVP water) include a water charge and a power charge. Additionally, the standby and availability charge is a $6 per-acre charge assessed on all parcels with access to CVP water (an active or idle turnout from the distribution system). **Table 5-2** shows the CVP water charge and **Table 5-3** shows the CVP power charge.

Table 5-2. Adopted Blue Valve Water Charges

	Blue Valve Water Charge ($/AF)			
		Agricultural		Municipal
Year	Non - Full Cost	Full Cost (1a)	Full Cost (1b)	& Industrial
2019-2020	$254.00	$386.00	$407.00	$404.00
2020-2021	$265.00	$400.00	$421.00	$415.00

Table 5-3. Adopted Blue Valve Power Charges

Blue Valve Power Charge ($/AF)	Subsystem 2	Subsystem 6H	Subsystem 9L	Subsystem 9H	All other subsystems
2019-2020	$80.45	$39.30	$88.15	$130.30	$33.70
2020-2021	$82.85	$40.45	$90.80	$134.20	$34.75

Recycled water charges (**Table 5-4**) are set to recover current operating and maintenance costs related to the water service. Recycled water rates include those associated with water supply, water quality, and infrastructure.

Table 5-4. Adopted Recycled Water Charges

	Recycled Water ($/AF)	
Effective	Agriculture Rate	Power Charge
Mar-18	$183.45	$59.45
Mar-19	$183.45	$59.45

6-GROUNDWATER SUSTAINABILITY

Sustainable Groundwater Management Act (SGMA)

The Sustainable Groundwater Management Act (SGMA) requires sustainable management of priority groundwater basins and empowers local Groundwater Sustainability Agencies (GSAs) to manage groundwater resources. San Benito County Water District GSA (SBCWD GSA), in partnership with Santa Clara Valley Water District GSA (SCVWD GSA) for small portions of the basin in Santa Clara County, is developing a Groundwater Sustainability Plan (GSP) for the North San Benito Basin, which encompasses the historically-defined Bolsa, Hollister, and San Juan Bautista Subbasins of the Gilroy-Hollister Basin and the Tres Pinos Valley Basin. This GSP is being funded in part with a $830,000 grant from the California Department of Water Resources (DWR) and with GSA cost sharing. **Figure 1-1** shows the GSP area, which is mostly in San Benito County with small portions extending into Santa Clara County.

Groundwater Sustainability Plan Development

The District began GSP development in 2018 and several draft plan sections are already available to the public through the District's website SBCWD website: https://www.sbcwd.com/sustainable-groundwater-management/. These draft sections of the initial GSP include the following.

Plan Area/Institutional Setting. The first two sections of the GSP, Introduction and Plan Area, describe the North San Benito Basin and the institutional setting. The *Introduction* presents the North San Benito Basin and the authority of the GSAs to prepare a GSP. The *Plan Area* section provides basic information on the North San Benito Basin including its physical boundaries, jurisdictions of water and land use planning agencies, water sources and water use sectors, existing monitoring and management, land use planning, and well permitting. The public draft of these sections is available on the District's website.

Hydrogeologic Conceptual Model/Groundwater Conditions. The hydrogeologic conceptual model is a description of the structural and physical characteristics that govern groundwater occurrence, flow, storage, and quality. These characteristics—described in text, tables, maps, and cross-sections—include regional geology, soils, geologic structures (such as faults) and boundaries (including bottom of the basin), and aquifer properties. The Groundwater Conditions section documents historical and current groundwater conditions including groundwater levels and flow, groundwater quality, land subsidence, and interactions of groundwater and surface water. In brief, these sections describe how the local surface water-groundwater system works. The public draft is available on the District's website.

Water Budgets. Currently in preparation, the water budget section quantifies the surface water and groundwater inflows, outflows, and change in storage. Water budgets are provided for historical and current conditions and simulated into the future using the newly updated and expanded numerical model of the basin. Water balances developed by SCVWD for the adjacent Llagas Basin were reviewed to promote a consistent approach. The GSP Water Budget Section discusses sustainable yield and considers potential overdraft. This section also includes the definition of *management areas*, involving subdivision of the North San Benito Basin to facilitate sustainable groundwater management. The public draft of this section will be available on the District's website soon.

Technical Advisory Committee (TAC)

Development of an effective and credible GSP is a multi-disciplinary process that combines engineering, science, and planning with local stakeholder interests and community values. To help guide this process, a Technical Advisory Committee (TAC) was organized in 2018. The TAC has held six quarterly public meetings to incorporate community and stakeholder interests into the GSP process. The TAC members are responsible for reviewing draft products and materials and providing input to support a technically sound GSP. Members of the TAC have been selected to represent GSP-related subject areas, including but not limited to environmental, technical, and land use planning fields. The TAC members will continue their quarterly meetings working collaboratively with SBCWD GSA staff and consultants throughout the GSP process. Information is provided at https://www.sbcwd.com/community-involvement/.

Community Engagement

The GSP process seeks to engage the diverse public, stakeholders, and groundwater interests. The first two public workshops were held in Water Year 2019. These workshops focused on:

Introduction to SGMA and GSPs – The November 2018 workshop detailed what is required through SGMA and described the District's approach to management. In addition, the first two sections of the GSP (Introduction and Plan Area) were presented. The meeting was well attended and provided a forum for the community to engage and ask questions of the District staff and consultants.

Hydrogeological Conceptual Model (HCM) and Groundwater Conditions (GW) – The May 2019 workshop presented the preliminary findings of the HCM and GW. The formal presentation was followed by an informal poster session where District staff and consultants were available to discuss specific findings with the public.

Additional workshops will be scheduled in 2020 to discuss the water budget, sustainability criteria, and possible management actions. Announcements are provided on the website above.

GSP Next Steps

Additional portions of the GSP are currently being discussed and developed, including:

Sustainability Criteria. While SBCWD has a long history of groundwater management, such management has not included systematic quantification of undesirable results, minimum thresholds, or measurable objectives to the extent required by SGMA. The GSP process will address the five undesirable results/sustainability indicators relevant to North San Benito Basin and indicated by the icons below. These include: chronic lowering of groundwater levels, groundwater storage depletion, water quality degradation, land subsidence, and depletion of interconnected surface water. Each of these will be defined in terms of minimum thresholds where occurrence of an undesirable result becomes significant and unreasonable and in terms of measurable management objectives.

Management Actions/Monitoring. The GSP will present management actions—policies, programs, and projects—that will address the sustainability criteria and provide for sustainable management into the future. This GSP also will establish the GSP monitoring network and protocols that: 1) provide data to inform the hydrogeologic conceptual model, water budget and numerical model, 2) provide tracking and early warning regarding groundwater conditions and undesirable results, and 3) demonstrate progress toward and achievement of sustainability.

Data Compilation/Data Management System. SBCWD has an annual program of collecting and compiling groundwater data into a data management system (DMS) that includes groundwater elevation, water quality, and water use data for the Annual Groundwater Reports. The GSP will review and update the DMS, identify data gaps, and support the GSP monitoring program. Available information will support the entire GSP including analysis of the hydrologic setting, groundwater conditions, sustainability criteria, and potential projects and management actions. This process will be ongoing throughout the initial GSP, annual reports, and GSP updates.

Annual Reporting. Once the GSP is completed (before January 31, 2022) the SGMA process will continue through annual reporting and through five-year updates. SBCWD has been preparing Annual Groundwater Reports for many decades consistent with the District Act (see **Appendix A**) and it is anticipated that future Annual Reports will be responsive to both SGMA and the District Act. SGMA Annual Reports have specific requirements that include documentation of groundwater levels and storage change and reporting of basin-wide groundwater extraction. Five-year updates are intended mostly to identify new information, to address newly-identified data gaps (and what to do about them), to discuss changed conditions, to consider if changes are needed for any aspect of the GSP (including sustainability criteria), to describe recent management actions and GSP amendments (if any), and to summarize current coordination among local agencies; in other words, to provide an update on how sustainable management is proceeding.

7-RECOMMENDATIONS

District policies and programs have served to effectively manage water resources for many years. The District, working collaboratively with other agencies, has eliminated historical overdraft through importation of CVP water, has developed and managed multiple sources of supply to address drought, has established an active and effective water conservation program, has initiated programs to protect water quality, and has improved delivered water quality to many municipal customers. The District also has provided consistent reporting and outreach. The following recommendations are responsive to the District Act and look forward to continuing effective management consistent with SGMA.

Monitoring Programs

The monitoring programs will be expanded to the entire North San Benito Groundwater Basin and improved to ensure accurate and consistent data for GSP development and the Annual Reports. A network of dedicated monitoring wells would support documentation in the Annual Reports and GSP of groundwater levels and quality. Accurate measurement of groundwater pumping has been identified as a data gap and the GSP includes consideration of different methods to evaluate groundwater pumping. SGMA Annual Reports will need to document groundwater extraction for the entire basin.

Groundwater Charges

The groundwater charge for the USBR contract year (March 2020-February 2021) is recommended to be $13.15 per AF for agricultural use in Zone 6 and a groundwater charge of $39.40 per AF is recommended for M&I use The District adopts rates on a three-year cycle. Current water rates were adopted January 30, 2019.

Groundwater Production and Replenishment

Past District percolation operations helped to reverse historical overdraft and then accumulate a water supply reserve. The District currently manages groundwater storage and surface water to minimize excessively high or low groundwater elevations on a temporal and geographic basis. The District should continue to operate Hernandez and Paicines to improve downstream groundwater conditions. In 2018, the District provided off-channel percolation of CVP water; this too should be continued given availability of CVP water and persistence of local low groundwater levels. Basin-wide analysis of opportunities for additional percolation (i.e., managed aquifer recharge) would support development of additional percolation capacity to capture surface water when available. Given the decreased reliability of imported supplies and continuing threat of drought, such replenishment operations are critical to sustainable groundwater supply.

8-REFERENCES

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APPENDIX A REPORTING REQUIREMENTS

List of Tables

APPENDIX A REPORTING REQUIREMENTS

The San Benito County Water District Act (1953) is codified in California Water Code Appendix 70. Section 70-7.6 authorizes the District Board of Directors to require the District to prepare an annual groundwater report; this report addresses groundwater conditions of the District and its zones of benefit (**Table A-1**) for the water year, which begins October 1 of the preceding calendar year and ends September 30 of the current calendar year. The Board has consistently ordered preparation of Annual Reports, and the reports have included the contents specified Section 70-7.6:

- An estimate of the annual overdraft for the current water year and for the ensuing water year
- Information for the consideration of the Board in its determination of the annual overdraft and accumulated overdraft as of September 30 of the current year
- A report as to the total production of water from the groundwater supplies of the District and its zones as of September 30 of the current year
- Information for the consideration of the Board in its determination of the estimated amount of agricultural water and the estimated amount of water other than agricultural water to be withdrawn from the groundwater supplies of the District and its zones
- The amount of water the District is obligated to purchase during the ensuing water year
- A recommendation as to the quantity of water needed for surface delivery and for replenishment of the groundwater supplies of the District and its zones during the ensuing water year
- A recommendation as to whether or not a groundwater charge should be levied in any zone(s) of the District in the ensuing water year and if so, a rate per acre-foot for all water other than agricultural water for such zone(s)
- Any other information the Board requires.
- The full text of Appendix 70, Section 70-7.6 through 7.8 is enclosed at the end of this appendix.
- Each water year a special topic is identified for further consideration. These topics have included water quality, salt loading, shallow wells, and others. Additional analyses and documentation provided in previous annual reports are summarized in **Table A-2.**

District management of water resources is focused on three Zones of Benefit, listed below.

Table A-1. District Zones of Benefit

Zone	Area	Provides
1	Entire County	Specific District administrative expenses
3	San Benito River Valley (Paicines to San Juan) and Tres Pinos River Valley (Paicines to San Benito River)	Operation of Hernandez and Paicines reservoirs and related groundwater recharge and management activities
6	San Juan, Hollister East, Hollister West, Pacheco, Bolsa SE, and Tres Pinos subbasins	Importation and distribution of CVP water and related groundwater management activities

Table A-2. Special Topics in Previous Annual Reports

APPENDIX A REPORTING REQUIREMENTS

Water Year	Additional Analyses and Reporting
2000	Methodology to calculate water supply benefits of Zone 3 and 6 operations
2001	Preliminary salt balance
2002	Investigation of individual salt loading sources
2003	Documentation of nitrate in supply wells, drains, monitor wells, San Juan Creek
2004	Documentation of depth to groundwater in shallow wells
2005	Tabulation of waste discharger permit conditions and recent water quality monitoring results
2006	Rate study
2007	Water quality update
2008	Water budget update
2009	Water demand and supply
2010	Water quality update
2011	Water budget update
2012	Land use update
2013	Water quality update
2014	Water balance update and Groundwater Sustainability
2015	Groundwater Sustainability – Basin Boundaries and GSAs
2016	Water quality update
2017	Water budget update
2018	GSP Update
2019	Water quality update

APPENDIX A REPORTING REQUIREMENTS

Water Code Appendix 70 Excerpts

Section 70-7.6. Groundwater; investigation and report: recommendations San Benito County

Sec. 7.6. the board by resolution require the district to annually prepare an investigation and report on groundwater conditions of the district and the zones thereof, for the period from October 1 of the preceding calendar year through September 30 of the current year and on activities of the district for protection and augmentation of the water supplies of the district and the zones thereof. The investigation and report shall include all of the following information:

(a) Information for the consideration of the board in its determination of the annual overdraft.

(b) Information for the consideration of the board in its determination of the accumulated overdraft as of September 30 of the current calendar year.

(c) A report as to the total production of water from the groundwater supplies of the district and the zones thereof as of September 30 of the current calendar year.

(d) An estimate of the annual overdraft for the current water year and for the ensuing water year.

(e) Information for the consideration of the board in its determination of the estimated amount of agricultural water and the estimated amount of water other than agricultural water to be withdrawn from the groundwater supplies of the district and the zones thereof for the ensuing water year.

(f) The amount of water the district is obligated to purchase during the ensuing water year.

(g) A recommendation as to the quantity of water needed for surface delivery and for replenishment of the groundwater supplies of the district and the zones thereof the ensuing water year.

(h) A recommendation as to whether or not a groundwater charge should be levied in any zone or zones of the district during the ensuing year.

(i) If any groundwater charge is recommended, a proposal of a rate per acre-foot for agricultural water and a rate per acre-foot for all water other than agricultural water for such zone or zones.

(j) Any other information the board requires.

(Added by Stats. 1965, c. 1798, p.4167, 7. Amended by Stats.1967,c.934, 5, eff. July27,1967; Stats. 1983, c. 402, 1; Stats. 1998, c. 219 (A.B.2135), 1.)

Section 70-7.7. Receipt of report; notice of hearing; contents; hearing

Sec. 7.7. (a) On the third Monday in December of each year, the groundwater report shall be delivered to the clerk of the board in writing. The clerk shall publish, pursuant to Section 6061 of the Government Code, a notice of the receipt of the report and of a public hearing to be held on the second Monday of January of the following year in a newspaper of general circulation printed and published within the district, at least 10 days prior to the date at which the public hearing regarding the groundwater report shall be held. The notice shall include, but is not limited to, an invitation to all operators of water producing facilities within the district to call at the offices of the district to examine the groundwater report.

(b) The board shall hold, on the second Monday of January of each year, a public hearing, at which time any operator of a water-producing facility within the district, or any person interested in the condition of the groundwater supplies or the surface water supplies of the district, may in person, or by representative, appear and submit evidence concerning the groundwater conditions and the surface water supplies of the district. Appearances also may be made supporting or protesting the written groundwater report, including, but not limited to, the engineer's recommended groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4167, 8. Amended by Stats. 1983, c. 02,2; Stats. 1998, c. 219 (A.B.2135,2.)

Section 70-7.8. Determination of groundwater charge; establishment of rates; zones; maximum charge; clerical errors

Sec. 7.8. (a) Prior to the end of the water year in which a hearing is held pursuant to subdivision (b) of Section 7.7, the board shall hold a public hearing, noticed pursuant to Section 6061 of the government Code, to determine if a groundwater charge should be levied, it shall levy, assess, and affix such a charge or charges against all persons operating groundwater- producing facilities within the zone or zones during the ensuing water year. The charge shall be computed at fixed and uniform rate per acre-foot for agricultural water, and at a fixed and uniform rate per acre-foot for all water other than agricultural water. Different rates may be established in different zones. However, in each zone, the rate for agricultural water shall be fixed and uniform and the rate for water other than agricultural water shall be fixed and uniform. The rate for agricultural water shall not exceed one-third of the rate for all water other than agricultural water.

(b) The groundwater charge in any year shall not exceed the costs reasonably borne by the district in the period of the charge in providing the water supply service authorized by this act in the district or a zone or zones thereof.

(c) Any groundwater charge levied pursuant to this section shall be in addition to any general tax or assessment levied within the district or any zone or zones thereof.

(d) Clerical errors occurring or appearing in the name of any person or in the description of the water-producing facility where the production of water there from is otherwise properly charged, or in the making or extension of any charge upon the records which do not affect the substantial rights of the assesse or assesses, shall not invalidate the groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4168, 9. Amended by Stats. 1983, c. 402, 3; Stats.1983, c. 402, 3; Stats. 1998, c. 219 (A.B.2135), 3.)

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Sec. 7.7. (a) On the third Monday in December of each year, the groundwater report shall be delivered to the clerk of the board in writing. The clerk shall publish, pursuant to Section 6061 of the Government Code, a notice of the receipt of the report and of a public hearing to be held on the second Monday of January of the following year in a newspaper of general circulation printed and published within the district, at least 10 days prior to the date at which the public hearing regarding the groundwater report shall be held. The notice shall include, but is not limited to, an invitation to all operators of water producing facilities within the district to call at the offices of the district to examine the groundwater report.

(b) The board shall hold, on the second Monday of January of each year, a public hearing, at which time any operator of a water-producing facility within the district, or any person interested in the condition of the groundwater supplies or the surface water supplies of the district, may in person, or by representative, appear and submit evidence concerning the groundwater conditions and the surface water supplies of the district. Appearances also may be made supporting or protesting the written groundwater report, including, but not limited to, the engineer's recommended groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4167, 8. Amended by Stats. 1983, c. 02,2; Stats. 1998, c. 219 (A.B.2135,2.)

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(b) The groundwater charge in any year shall not exceed the costs reasonably borne by the district in the period of the charge in providing the water supply service authorized by this act in the district or a zone or zones thereof.

(c) Any groundwater charge levied pursuant to this section shall be in addition to any general tax or assessment levied within the district or any zone or zones thereof.

(d) Clerical errors occurring or appearing in the name of any person or in the description of the water-producing facility where the production of water there from is otherwise properly charged, or in the making or extension of any charge upon the records which do not affect the substantial rights of the assesse or assesses, shall not invalidate the groundwater charge.

(Added by Stats. 1965, c. 1798, p. 4168, 9. Amended by Stats. 1983, c. 402, 3; Stats.1983, c. 402, 3; Stats. 1998, c. 219 (A.B.2135), 3.)

APPENDIX B CLIMATE DATA

List of Tables and Figures

Table B-1. Monthly Precipitation at the SBCWD CIMIS Station (inches)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	% Normal
1996	0.12	0.01	2.21	4.38	4.52	1.56	1.33	1.32	0.00	0.01	0.00	0.00	15.46	116%
1997	0.96	3.16	4.26	6.84	0.21	0.09	0.19	0.02	0.10	0.00	0.00	0.03	15.86	119%
1998	0.16	3.78	2.59	4.94	9.06	2.70	2.31	2.40	0.09	0.02	0.00	0.08	28.13	212%
1999	0.54	1.93	0.79	2.54	2.49	1.52	0.67	0.06	0.07	0.00	0.00	0.00	10.61	80%
2000	0.14	0.98	0.11	4.05	4.53	0.68	0.40	0.45	0.10	0.00	0.00	0.02	11.46	86%
2001	3.54	0.80	0.23	2.86	2.77	0.62	2.20	0.01	0.01	0.03	0.02	0.00	13.09	99%
2002	0.70	11.48	11.93	0.66	1.15	1.57	0.37	0.28	0.00	0.00	0.00	0.00	28.14	212%
2003	0.00	1.67	5.04	0.77	1.41	1.06	3.05	0.06	0.00	0.00	0.06	0.00	13.12	99%
2004	0.20	0.60	5.25	1.31	4.21	0.59	0.27	0.08	0.01	0.00	0.00	0.01	12.53	94%
2005	1.95	0.54	3.46	2.49	2.89	3.42	0.83	0.64	0.43	0.00	0.00	0.04	16.69	126%
2006	0.07	0.27	3.08	1.49	1.01	4.96	1.73	0.39	0.01	0.00	0.02	0.01	13.04	98%
2007	0.20	0.73	1.69	0.57	2.22	0.29	0.55	0.02	0.00	0.02	0.00	0.43	6.72	51%
2008	0.71	0.67	0.92	4.56	2.06	0.09	0.06	0.00	0.00	0.00	0.00	0.00	9.07	68%
2009	0.28	1.05	1.89	0.35	3.73	1.83	0.20	0.47	0.00	0.00	0.00	0.15	9.95	75%
2010	0.50	0.02	1.31	2.29	2.19	1.74	3.44	0.61	0.00	0.01	0.00	0.00	12.11	91%
2011	0.72	1.85	2.59	1.57	2.63	2.33	0.19	0.78	0.30	0.00	0.00	0.00	12.96	98%
2012	0.69	0.96	0.07	0.81	0.46	2.34	1.39	0.26	0.09	0.00	0.00	0.00	7.07	53%
2013	0.01	2.23	1.15	1.35	0.64	0.46	0.30	0.02	0.01	0.00	0.03	0.10	6.30	47%
2014	0.07	0.37	0.17	0.22	1.91	1.59	0.86	0.02	0.00	0.00	0.00	0.14	5.35	40%
2015	1.57	0.48	5.78	0.02	1.20	0.22	0.24	0.87	0.00	0.01	0.09	0.08	10.56	80%
2016	0.22	3.65	1.58	3.98	0.57	3.72	0.79	0.05	0.08	0.08	0.06	0.10	14.88	112%
2017	1.77	2.48	3.33	4.66	6.05	1.70	1.09	0.50	0.32	0.00	0.02	0.00	21.92	165%
2018	0.20	1.12	0.19	2.39	0.29	2.74	1.33	0.00	0.00	0.00	0.00	0.00	8.26	62%
2019	0.17	2.52	1.48	2.24	4.02	2.55	0.25	1.95	0.20	0.00	0.00	0.00	15.38	116%
AVG	0.65	1.81	2.55	2.39	2.59	1.68	1.00	0.47	0.08	0.01	0.01	0.05	13.28	100%

-The CIMIS value for September 2017 (2.4") includes measurement error due to irrigation overspray. The corrected District value is 0".

-The CIMIS value for February, May, June, and August 2018 (0.8", 2.6", 0.1", 0.03") includes measurement error due to irrigation overspray. The corrected District value is 0.3" for February and 0" for all other months.

-The CIMIS value for October and November 2018 included measurement error due to irrigation overspray. The corrected District value is 0.17" for October and 2.52" for November (WRCC Hollister2 Station)

Table B-2. Reference Evapotranspiration at the SBCWD CIMIS Station (inches)

Water Year	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	% Normal
1996	3.88	2.24	1.22	1.48	1.88	3.67	5.10	6.06	6.73	7.39	6.68	4.71	51.04	104%
1997	3.84	1.84	1.37	1.38	2.48	4.27	5.84	7.51	7.13	7.18	6.71	5.67	55.22	112%
1998	3.85	1.84	1.52	1.29	1.38	2.82	4.26	4.53	5.27	6.91	6.83	4.72	45.22	92%
1999	3.51	1.73	1.52	1.54	1.84	3.01	4.72	5.80	6.66	6.92	5.91	4.67	47.83	97%
2000	4.00	1.98	1.89	1.22	1.62	3.69	5.14	6.04	6.73	6.74	6.19	4.74	49.98	102%
2001	2.91	1.71	1.47	1.47	1.81	3.07	3.90	6.15	6.54	6.02	6.23	4.75	46.03	94%
2002	3.51	1.91	1.24	1.53	2.26	3.66	4.21	6.37	7.05	7.24	6.14	5.39	50.51	103%
2003	3.57	1.94	1.25	1.56	1.80	3.87	3.79	6.00	6.47	7.29	6.15	5.07	48.76	99%
2004	4.11	1.73	1.24	1.32	1.72	3.98	5.19	6.38	6.71	6.63	5.98	5.32	50.31	102%
2005	3.08	1.69	1.44	1.30	1.69	2.95	4.38	5.74	6.36	6.86	6.13	4.55	46.17	94%
2006	3.59	2.00	1.19	1.43	2.18	2.43	3.00	5.49	6.41	7.02	5.60	4.38	44.72	91%
2007	3.28	1.69	1.37	1.77	1.77	4.11	4.76	6.29	6.89	6.79	6.46	4.65	49.83	101%
2008	3.48	2.21	1.44	1.25	2.03	3.76	5.17	5.97	6.88	6.74	6.31	5.00	50.24	102%
2009	3.82	1.87	1.36	1.70	1.72	3.51	4.83	5.53	6.31	7.08	6.31	5.30	49.34	100%
2010	3.45	2.21	1.71	1.26	1.80	3.49	3.87	5.37	6.71	6.29	5.88	4.98	47.02	96%
2011	3.02	1.86	1.05	1.59	2.05	2.71	4.43	5.34	5.99	6.56	5.74	4.64	44.98	91%
2012	3.27	1.89	1.83	1.84	2.46	3.34	4.39	6.39	6.81	6.63	6.00	4.60	49.45	101%
2013	3.25	1.82	1.16	1.50	2.10	3.71	5.39	6.26	6.36	6.46	5.98	4.83	48.82	99%
2014	3.51	2.02	1.80	2.08	1.85	3.58	4.89	6.83	6.61	6.43	6.02	4.74	50.36	102%
2015	3.90	1.86	1.45	1.80	2.16	4.13	5.12	5.01	6.41	6.52	6.49	5.34	50.19	102%
2016	4.11	2.05	1.39	1.32	2.72	3.40	4.65	5.71	7.54	7.22	5.74	5.15	51.00	104%
2017	3.40	2.11	1.47	1.55	1.76	3.73	4.45	6.29	6.82	7.62	6.03	5.16	50.39	102%
2018	4.15	1.93	1.98	1.57	2.66	3.25	4.81	5.83	7.29	7.65	6.60	5.15	52.87	107%
2019	3.85	2.20	1.54	1.58	1.91	3.42	4.81	5.17	6.68	7.15	6.54	5.36	50.21	102%
AVG	3.60	1.93	1.45	1.51	1.99	3.48	4.63	5.92	6.64	6.89	6.19	4.95	49.19	100%

Note: The averages are for the available period of record, 1995 for reference evapotranspiration.

APPENDIX C HYDROLOGIC DATA

List of Tables and Figures

Table C-1. Groundwater Elevations October 2018 through October 2019								
Well Number	Well Depth (feet)	Depth to Top of Screens (feet)	Subbasin	Groundwater Elevations (feet MSL)				
				Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
Southern Management Area								
14-6-14Q	UNK	UNK	Paicines	617.68	630.06	632.73	616.75	634.54
14-6-35B	UNK	UNK	Paicines	657.82	655.13	655.10	653.05	654.95
14-6-26K1	UNK	UNK	Paicines	635.10	634.73	637.68	634.32	642.55
14-6-26F	UNK	UNK	Paicines	638.25	639.00	639.90	634.15	644.82
14-6-26H1	UNK	UNK	Paicines	608.26	634.26	638.31	629.81	640.10
1536	UNK	UNK	TPCV	293.00	299.00	297.50	298.00	298.00
14-6-13B	UNK	UNK	TPCV	636.43	639.68	642.43	640.38	648.16
GRANITE ROCK WELL 1	UNK	UNK	TPCV	305.50	307.40	313.60	306.32	312.40
GRANITE ROCK WELL 2	UNK	UNK	TPCV	315.90	318.68	338.20	327.50	337.00
San Justo 5	UNK	UNK	TPCV	275.40	275.18	275.52	275.08	275.45
14-7-19G	UNK	UNK	TPCV	NM	NM	NM	NM	711.34
14-7-20K	UNK	UNK	TPCV	711.50	715.75	716.50	712.75	719.25
San Juan Management Area								
12-4-17L20	UNK	UNK	SJ	118.85	122.47	122.37	123.19	120.47
12-4-18J1	UNK	UNK	SJ	122.62	124.00	127.00	123.75	123.04
12-4-20C3	UNK	UNK	SJ	109.97	106.90	113.82	113.67	111.83
12-4-21M1	250	UNK	SJ	142.62	145.29	144.98	141.25	142.38
12-4-26G1	876	240	SJ	154.25	156.75	157.00	155.75	148.25
12-4-34H1	387	120	SJ	156.65	167.30	175.18	147.50	151.72
12-4-35A1	325	110	SJ	174.05	188.00	195.60	169.34	172.55
12-5-30H1	240	UNK	SJ	204.75	205.05	205.64	206.64	206.22
12-5-30R1	199	87	SJ	NM	NM	NM	NM	366.50
12-5-31H1	UNK	UNK	SJ	198.60	204.00	210.10	194.47	199.53
13-4-03H1	312	168	SJ	156.10	165.75	172.58	147.33	149.77
13-4-4A3	UNK	UNK	SJ	188.05	189.43	193.28	192.65	191.20
RIDER BERRY	UNK	UNK	SJ	146.67	159.98	-77.33	-86.68	146.15
Bolsa Management Area								
11-4-25H1	UNK	UNK	B	23.70	130.79	117.58	64.20	75.30
11-4-34A1	100	UNK	B	127.75	128.65	138.75	130.50	132.77
11-5-20N1	300	UNK	B	71.31	111.60	112.72	59.15	68.84
11-5-21E2	220	100	B	155.00	155.00	155.00	155.00	155.00
11-5-27P2	331	67	B	168.50	168.72	174.69	169.73	170.40
11-5-28B1	198	125	B	168.00	168.00	168.00	168.00	168.00
11-5-28P4	140	80	B	165.00	165.00	165.00	165.00	165.00
11-5-31F1	515	312	B	67.45	94.87	88.66	49.30	57.18
11-5-33B1	125	UNK	B	169.00	169.00	169.00	169.00	169.00
12-5-05G1	500	150	B	NM	NM	NM	NM	107.07
12-5-05M1	UNK	UNK	B	61.38	83.00	66.62	45.90	58.32
12-5-06L1	UNK	UNK	B	145.22	146.04	149.16	145.89	147.00
12-5-07P1	750	360	B	50.00	51.00	71.00	47.20	68.00
12-5-17D1	950	314	B	67.00	68.50	79.00	65.00	75.00
Llagas - SCVWD								
11S04E02D008	UNK	UNK	SCVWD	142.70	160.95	162.23	137.04	146.30
11S04E02N001	UNK	UNK	SCVWD	134.76	155.81	154.66	119.43	139.58
11S04E03J002	UNK	UNK	SCVWD	140.40	160.35	160.82	132.06	144.86
11S04E08K002	UNK	UNK	SCVWD	145.00	159.10	163.79	151.31	152.07
11S04E10D004	UNK	UNK	SCVWD	137.92	156.82	157.41	139.01	145.57
11S04E15J002	UNK	UNK	SCVWD	123.06	NM	NM	123.79	133.15
11S04E17N004	UNK	UNK	SCVWD	144.93	159.83	163.32	151.18	151.63
11S04E21P003	UNK	UNK	SCVWD	132.78	146.92	149.90	136.08	141.44
11S04E22N001	UNK	UNK	SCVWD	128.03	141.80	141.18	121.94	123.96
11S04E32R002	UNK	UNK	SCVWD	121.35	133.42	131.79	117.40	120.89

Table C-1. Groundwater Elevations October 2018 through October 2019								
Well Number	Well Depth (feet)	Depth to Top of Screens (feet)	Subbasin	Groundwater Elevations (feet MSL)				
				Oct-18	Jan-19	Apr-19	Jul-19	Oct-19
Hollister Management Area								
12-5-09M1	240	105	BSE	123.65	124.26	125.31	122.22	124.87
2317	UNK	UNK	HE	222.68	223.90	224.56	222.89	224.50
12-5-22C1	237	102	HE	169.68	177.49	181.72	119.62	176.00
12-5-22J2	355	120	HE	199.45	191.97	193.35	192.60	192.45
12-5-23A20	862	178	HE	181.00	181.50	183.20	186.68	184.00
12-5-36B20	500	430	HE	191.03	NM	197.14	194.75	199.23
12-6-07P1	147	UNK	HE	240.20	243.86	248.69	244.59	243.56
12-6-18G1	198	70	HE	277.20	268.98	278.18	271.44	265.30
12-6-30E1	UNK	UNK	HE	347.54	348.10	348.80	346.83	347.90
13-6-07D2	UNK	UNK	HE	337.90	338.50	338.39	334.85	338.25
ROSSI 1	UNK	UNK	HE	228.97	231.23	237.38	232.00	231.60
12-5-27E1	175	UNK	HW	198.78	202.90	204.76	200.12	201.73
12-5-28J1	220	UNK	HW	210.70	213.64	214.35	213.60	215.00
12-5-28N1	408	168	HW	217.66	NM	220.48	216.16	222.66
12-5-33E2	121	81	HW	211.78	213.50	214.10	215.00	216.00
12-5-34P1	195	153	HW	217.55	219.50	219.10	215.50	220.00
13-5-03L1	126	UNK	HW	225.60	226.55	227.00	229.80	231.00
13-5-04B	UNK	UNK	HW	226.80	228.21	232.48	229.73	230.35
13-5-10B1	UNK	UNK	HW	215.55	216.85	217.52	216.00	220.50
13-5-10L1	252	52	HW	NM	312.00	NM	NM	292.04
13-5-11E1	UNK	UNK	HW	277.30	279.25	281.38	284.79	281.68
San Justo 4	UNK	UNK	HW	271.38	274.70	272.55	271.05	272.10
San Justo 6	UNK	UNK	HW	234.16	235.37	233.65	231.79	236.15
11-5-26N2	232	95	P	168.65	171.62	174.90	171.60	171.00
11-5-26R3	225	65	P	177.49	181.09	185.97	183.49	188.96
11-5-35C1	180	UNK	P	169.70	171.21	180.00	173.27	157.52
11-5-35G1	230	UNK	P	179.25	180.65	185.70	183.30	182.20
11-5-35Q3	UNK	UNK	P	167.78	175.10	169.87	158.89	170.00
11-5-36C1	98	UNK	P	194.00	193.25	198.14	196.39	195.40
11-5-36M1	UNK	UNK	P	180.38	181.50	187.90	184.25	183.90
11-6-31M2	188	155	P	230.98	227.25	234.13	231.31	236.52
12-5-01G2	300	UNK	P	180.40	186.90	184.30	183.73	183.65
12-5-02H5	128	42	P	176.80	177.64	184.82	180.37	182.79
12-5-02L2	170	UNK	P	192.42	193.72	198.55	197.29	195.05
12-5-03B1	128	100	P	182.00	182.00	182.00	182.00	182.00
12-6-06K1	260	16	P	260.00	260.00	260.00	260.00	260.00
12-6-06L4	235	50	P	218.12	219.90	220.51	215.00	220.40
13-5-11Q1	178	61	TP	NM	NM	NM	NM	294.37
13-5-12D4	UNK	UNK	TP	234.50	249.00	252.00	239.00	229.00
13-5-12K1	UNK	UNK	TP	321.90	325.00	325.90	328.00	328.00
13-5-12N20	352	301	TP	308.32	315.44	316.75	318.75	319.63
13-5-13F1	134	30	TP	323.61	333.10	335.74	333.70	334.13
13-5-13H1	252	112	TP	NM	NM	NM	NM	344.80
13-5-13J2	180	UNK	TP	325.24	328.22	329.35	347.25	347.08
13-5-13Q1	185	44	TP	NM	NM	NM	NM	333.00
13-5-14C1	UNK	UNK	TP	NM	NM	NM	NM	293.00
13-6-19J1	340	128	TP	429.03	434.20	436.32	434.41	435.17
13-6-19K1	211	UNK	TP	357.50	359.75	361.08	357.75	360.84
13-6-20K1	UNK	UNK	TP	426.20	424.55	427.75	426.38	429.03
11-5-13D1	125	UNK	PC	190.07	217.25	233.77	228.33	227.31
11-5-23R2	118	43	PC	NM	NM	NM	NM	206.68
11-5-24C1	134	UNK	PC	207.35	205.36	NM	NM	212.97
11-5-24C2	165	70	PC	216.33	215.38	227.81	226.15	223.00
11-5-24L1	70	UNK	PC	211.75	212.68	213.39	211.15	207.63
11-5-25G1	225	UNK	PC	210.73	210.97	210.83	213.27	208.41

UNK - Unknown
NM - Not Monitored

Table C-2. Groundwater Change Attributes

Subbasin	Subbasin Area (Acres)	Average Storativity
San Juan	11,708	0.05
Hollister West	6,050	0.05
Tres Pinos	4,725	0.05
Pacheco	6,743	0.03
Northern Hollister East	10,686	0.03
Southern Hollister East	5,175	0.03
Bolsa SE	2,691	0.08
Bolsa	20,003	0.01

Table C-3. Groundwater Change in Elevation 2006-2019 (feet)

	Average Change in Groundwater Elevation													
Subbasin	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
San Juan	0.9	(4.5)	0.3	(0.7)	(1.4)	(0.9)	0.0	(10.7)	(7.9)	(9.4)	(3.6)	14.6	3.5	(1.7)
Hollister West	3.1	(1.7)	3.3	(1.4)	(1.6)	(0.7)	2.1	(5.7)	(17.4)	(3.6)	0.9	6.9	9.5	6.5
Tres Pinos	2.5	(2.3)	0.7	8.1	(10.5)	1.0	2.5	(2.5)	(6.7)	(6.7)	(6.0)	4.4	0.9	15.0
Pacheco	1.9	(4.4)	(1.4)	8.1	(6.6)	1.9	(4.4)	(3.0)	(7.4)	1.9	3.0	8.6	(2.4)	1.8
Northern Hollister East	3.6	(6.5)	(4.2)	10.1	(8.7)	2.7	(2.4)	1.6	(9.1)	0.8	(1.5)	5.8	2.6	0.6
Southern Hollister East	3.3	(1.5)	5.5	9.4	4.9	(1.9)	(2.2)	(1.1)	(6.9)	1.6	8.1	0.5	7.2	2.4
Bolsa SE	1.5	(6.8)	11.5	(24.8)	25.3	(11.6)	0.2	(4.3)	(10.7)	(3.3)	(9.9)	8.2	7.2	3.2
Bolsa	6.8	(3.3)	9.0	(16.9)	23.2	(11.2)	10.7	(3.4)	(25.6)	4.6	(2.9)	10.6	(2.6)	(0.6)

Table C-4. Groundwater Change in Storage 2006-2019 (acre-feet)

	Average Change in Groundwater Storage (AF)													
Subbasin	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
San Juan	510	(2,626)	168	(437)	(811)	(523)	0	(6,239)	(4,653)	(5,530)	(2,086)	8,531	2,077	(1,016)
Hollister West	947	(510)	1,001	(431)	(477)	(198)	640	(1,730)	(5,267)	(1,090)	282	2,084	2,878	1,962
Tres Pinos	584	(553)	169	1,913	(2,485)	228	601	(586)	(1,574)	(1,579)	(1,427)	1,034	216	3,552
Pacheco	391	(892)	(275)	1,639	(1,335)	389	(882)	(597)	(1,490)	388	604	1,736	(488)	362
Northern Hollister East	1,167	(2,087)	(1,350)	3,253	(2,798)	870	(757)	528	(2,918)	242	(474)	1,867	818	203
Southern Hollister East	506	(227)	846	1,457	766	(301)	(339)	(177)	(1,067)	250	1,263	72	1,123	365
Bolsa SE	333	(1,458)	2,478	(5,338)	5,443	(2,508)	53	(918)	(2,300)	(719)	(2,139)	1,767	1,543	695
Bolsa	1,358	(659)	1,794	(3,372)	4,631	(2,239)	2,144	(674)	(5,112)	915	(578)	2,125	(514)	(112)

Table C-5. SBCWD Monitoring Well Water Quality Data - Total Dissolved Solids (mg/L)

See Figure 3-6 for well locations

	Brian's Nested Well																										
Date	A	B	C	D	E	MW 11	MW 12	MW 17	MW 18	MW 19	MW 21	MW 24	MW 28	MW 31	MW 36	MW 39	MW 41	MW 42	MW 43	MW 45	MW 46	MW 47	MW 48	MW 49	MW 51	MW 52	MW 1202
													Total Dissolved Solids (TDS)														
Apr-97											1,500	2,300															
Aug-98						1,010	1,160	600	800		1,720	2,780								840							
Sep-01						1,175	1,220	543	810	1,168	2,100	2,482	875		1,173	852	2,135	347	493	845	593		1,098				
Oct-01														1,360								2,032					
Jan-02						1,156	1,292	538				2,786	948	1,376	1,178	816	2,032	360	564	836	582	1,774		1,084			
Mar-02																							1,078				
Apr-02						1,180	1,266	538		1,398	1,630	538	926	1,352	1,152	782	1,964	368	726	824	582	1,760	1,090	932			
Jul-02						1,216	1,216	542		1,114	1,676	2,506	926	1,386	1,170	868	2,014	354	724	806	594	1,996		1,078			
Oct-02						1,178	1,186	570		1,120	2,052		926	1,326	1,178	1,014		394	532	834	628	1,862	1,084	1,020			
Jan-03						1,056	1,086	516		966	2,024	2,448	870	1,198	1,094	838	1,970	346	470	768	550	1,548	1,046	746			
Apr-03						1,182	1,294	514		1,140	2,072	2,736	914	1,444	1,132	900	2,092	362	528	818	598	1,892	1,076	976			
Jul-03						1,244	1,312	542		1,084	1,640	2,692	950	1,376	1,180	888	2,144	372	546	802	610	2,004	856	1,004			
Aug-03																1,000											
Oct-03						1,188	1,164	556		1,110	2,110	3,064	892	1,424	1,200	942	2,144	394	526	836	628	1,888	966	948			
Jan-04						1,218	1,316	528	774		1,766	2,910	870	1,282	1,156	844	2,074	380	502	798			1,058	902			
Nov-04						1,302	1,372	544	740		1,936	3,470	946	1,336	1,202	888	2,128	368	540	854	568	2,194		1,012			
May-05						1,168	1,308	518	706		1,574	2,250	886	1,178	1,112	866	2,092	374	542	874	580	1,964		768			
Nov-05						1,246	1,398	532	774	1,114	1,874	3,544	888	1,390	1,232	982	2,110	386	562	854	590	2,208	1,034	876			
Apr-06						1,184		528	818		2,006	3,120	902	1,280	1,178	922	2,076	372	548	902	592	1,958		904			
Oct-06						1,292	1,294	666	786	1,460	1,090	2,826	1,012	1,374	1,074	940	1,924	440	630	758	628	1,772	676				
Feb-07	2,440	1,302	1,372	1,128	1,410																						
Apr-07						1,088		526	762			2,486	664	1,242	1,096	980	2,030	264	528	780	566	1,848					
Nov-07						882		476	616		1,256	2,024	656	900	886	782	1,434	316	466	696	512	1,414		654			
Apr-08						1,076							810	970				370	546		562						
May-08											1,462	2,528			1,102	872				814		1,782					
Nov-08						1,064		560				3,036	856	2,152	868	1,116	2,400	372	568	860		1,536		400			
Apr-09						1,112	916	528			312	2,780	848	2,068	2,428	1,100	860	346		780	568	1,772		728	644		
Oct-09						1,024	548	576		1,092	360	2,864		2,088	848	1,444	1,040	352	528	656	1,008	1,436			656	768	
Nov-09	1,136	1,140	1,160	1,108	1,148																						
Apr-10						955	955	555		422	343	1,783	850	2,032	330			363		815		1,812		688	695	794	
Oct-10	1,105	887		1,000	753	1,168		528		967	352	2,683	335	1,928		1,057		368	528	815	572	1,215			703	843	
Apr-11						1,192	1,168	524		944	348	2,752	868	1,784	732	1,120		376	532	560	848	1,600		660	704	764	
Jun-11	772	1,028	644	2,764	724																						
Nov-11								532		932			848	1,648				368	468	796	548			232	320	704	
Dec-12						1,096	1,580	516			288	1,348	824	1,648	720			376	508	892	512	1,760			788	1,032	
Jun-13	796	600	624	936	2,784	1,124		500			348	2,444	1,028	1,820	480	964		368	520					1,028	712	840	
Dec-13						1,012		524				2,520	320	1,704		916			536	800	544	1,344		552	708	744	
Jan-14	928	792	992	1,112	2,868																						
May-14	808	568	1,004	1,564	2,880	1,208	1,232	536			352	2,756	712	1,720		912		388	556	856				540	840		
Nov-14	900	820	888	1,816	2,880			548				2,904	704	2,000				1,484	532	876	1,212				724	740	
May-15	916	812	856	1,696	2,860	1,160	1,204	560			356		708	1,960		992		798		868						900	
May-16	832	652	520	1,592	2,788	1,152	2,276	540		960	332	1,184	1,252	1,696		1,192		420			564				720	1,304	
Nov-16								536			316	2,840	656			1,412		1,900	484			1,328			676	684	
Nov-17						1,616		520			328	2,496	2,496	1,572		1,380		632	520	788	520	1,376			680	656	
Feb-18													240									1,300					
Jun-18						1,500	1,300	530		1,000	350	1,600	240	1,200		1,200		1,600	510		540	1,200				740	1,700
Nov-18						1,200	1,300			960	330	1,700	250	1,700		1,300			490		540	1,300		720			820
Dec-18	850	540	660	1,300	2,700																						
May-19				1,200		1,300		540		990	340	1,700	300	2,100		1,300		5,600	640		560	1,300					1,900
Jun-19	920	540	630		1,700																				730	400	

Note: Shading indicates values that exceed water quality goals (light green > 500 mg/L and dark green > 1,000 mg/L)

Table C-6. SBCWD Monitoring Well Water Quality Data - Nitrate as NO3 (mg/L)

See Figure 3-6 for well locations

	Brian's Nested Well																										
Date	A	B	C	D	E	MW 11	MW 12	MW 17	MW 18	MW 19	MW 21	MW 24	MW 28	MW 31	MW 36	MW 39	MW 41	MW 42	MW 43	MW 45	MW 46	MW 47	MW 48	MW 49	MW 51	MW 52	MW 1202
	NITRATE (AS NO3)																										
Apr-97											32	170															
Aug-98							7	6	12		46	220								16							
Sep-01						15	14	3	17	16	83	228	2		8	15	4	31	3	24	3		12				
Oct-01														57								86					
Jan-02						21	13	2				242	2	53	8	12	2	30	2	20	2	124		106			
Mar-02																							32				
Apr-02						19	13	3		80	33	3	3	53	7	10	3	28	3	21	3	114	10	112			
Jul-02						17	14	3		15	37	199	3	54	9	16	3	30	3	24	3	122		111			
Oct-02						20	18	2		15	80		3	55	9	16		35	3	28	3	129	13	112			
Jan-03						17	17	4		4	66	336	4	56	11	13	4	35	4	22	4	122	13	104			
Apr-03						21	20	3		11	83	327	4	69	9	12	3	36	3	27	3	114	13	116			
Jul-03						20	17	3		3	37	108	3	57	7	15	3	33	3	22	3	123	3	98			
Aug-03																19											
Oct-03						19	18	3		5	75	228	3	53	8	14	3	33	4	25	3	120	8	94			
Jan-04						15	15	2	24		33	513	2	44	13	14	5	31	3	22			17	81			
Nov-04						16	19	2	8		61	259	2	44	5	7	2	35	2	20	2	101		82			
May-05						21	24	2	10		45	161	2	44	6	9	2	34	3	24	3	110		88			
Nov-05						19	23	3	14	9	57	321	4	47	7	10	3	33	3	23	4	103	11	78			
Apr-06						24		4	24		82	393	4	63	12	12	4	43	3	35	4	120		94			
Oct-06						22	18	5	22	76	47	501	3	53	8	14	4	35	4	25	5	140	14				
Feb-07	5	1	7	1	1																						
Apr-07						20		2	14			321	2	49	6	10	2	32	3	26	2	98					
Nov-07						23		5	14		42	295	4	31	9	12	4	33	3	29	3	128		74			
Apr-08						26							5	31				31	4		5						
May-08											36	225			17	15				25		99					
Nov-08						26		8				332	3	216	20	17	40	42	5	36		73		6			
Oct-09						30	2	7		19	23	3		175	8	27	44	32	2	7	12	53			7	2	
Nov-09	2	2	2	2	2																						
Apr-10						19	19	8		35	4	3	3	208	3			41		29		3		65	9	3	
Oct-10	4	5		4	4	30		13		10	5	301	5	225		11		39	5	27	4	36			10	4	
Apr-11						29	17	10		3	4	230	4	179	10	15		36	4	3	24	67		44	8	3	
Jun-11	7	4	4	17	3																						
Nov-11								11		5			4	170				33	4	26	4			4	5	5	
Dec-12						18	17	11			5	23	4	74	9			24	5	17	5	7			10	5	
Jun-13	6	5	6	5	25	28		19			6	180	31	211	9	14		36	5					31	14	6	
Dec-13						30		17				283	3	222		4			3	27	3	42		30	12	3	
Jan-14	3	3	3	2	15																						
May-14	3	3	3	2	18	30	16	18			2	302	2	212		3		35	3	24				13	3		
Nov-14	6	6	7	7	18			13				247	6	205				29	7	21	25				12	7	
May-15	5	5	5	8	19	26	18	13			5		5	215		5		23		25						6	
May-16	3	3	3	6	4	29	89	11		4	4	38	102	198		19		17	42		4				12	4	
Nov-16								12			6	302	5					34	8	10		42			14	4	
Nov-17						63		7			4	240	3	206		49		36	3		3	36			18	3	
Feb-18													5			34				22		36					
Jun-18						42	20	8		1	1	155	1	234				34	1		1	34				1	93
Nov-18						26				1	1	168	1	226		27			1		1	37		9			19
Dec-18	3	1	1	1	1																						
May-19				1		31	20	6		1	1	155	2	243		24		27	1		1	33					89
Jun-19	3	1	1		1																				9	8	

Note: Shading indicates values that exceed the primary MCL for drinking water

Table C-7. Water Quality Goals and Standards

Constituents of Concern	Units	Drinking Water Standards Maximum Contaminant Levels (MCLs)				Other Standards				
		State Water Resources Control Board		USEPA		California DHS			RWQCB Basin Plan Water Quality Objectives for Irrigation	
		Primary	Secondary	Primary	Secondary	Public Health Goal (PHG)	Action Level (AL)	Agricultural Water Quality Limits	Irrigation Supply	Livestock Watering
MAJOR CATIONS:										
calcium	mg/L	–	–	–	–	–	–	–	–	–
magnesium	mg/L	–	–	–	–	–	–	–	–	–
sodium	mg/L	–	–	–	–	–	–	69	–	–
potassium	mg/L	–	–	–	–	–	–	–	–	–
MAJOR ANIONS:										
chloride	mg/L	–	250	–	250	–	–	106	–	–
sulfate	mg/L	–	250	500	250	–	–	–	–	–
bicarbonate	mg/L	–	–	–	–	–	–	–	–	–
carbonate	mg/L	–	–	–	–	–	–	–	–	–
MINOR IONS:										
hydroxide (as CaCO3)	mg/L	–	–	–	–	–	–	–	–	–
iron	mg/L	–	0.3	–	0.3	–	–	0.5	5	–
manganese	mg/L	–	0.05	–	0.05	–	0.5	0.2	0.2	–
fluoride*	mg/L	2	–	4	2	1	–	1	1	2
nitrate as NO3 –	mg/L	45	–	–	–	–	–	–	–	–
nitrate as nitrogen	mg/L	–	–	10	–	10	–	–	–	–
nitrite (NO2 –) as nitrogen	mg/L	1	–	1	–	1	–	–	–	10
nitrate + nitrite as nitrogen	mg/L	10	–	10	–	10	–	–	–	100
PHYSICAL PROPERTIES:										
apparent color	Color Units	–	15	–	15	–	–	–	–	–
conductivity		–	900	–	–	–	–	700	–	–
odor	TON@60°C	–	3	–	3	–	–	–	–	–
total alkalinity (as CaCO3)	mg/L	–	–	–	–	–	–	–	–	–
total dissolved solids (TDS)	mg/L	–	500	–	500	–	–	450	–	–
total hardness (as CaCO3)	mg/L	–	–	–	–	–	–	–	–	–
turbidity	NTU	1/5**	5	1/5**	–	–	–	–	–	–
pH	SU	–	–	–	6.5 to 8.5	–	–	6.5 to 8.4	5.5 to 8.3	–
TRACE IONS:										
aluminum	mg/L	1	0.2	–	0.050 to 0.2	0.6	–	5	5	5
antimony	mg/L	0.006	–	0.006	–	0.02	–	–	–	–
arsenic	mg/L	0.05	–	0.01	–	0.000004	–	0.1	0.1	0.2
barium	mg/L	1	–	2	–	2	–	–	–	–
beryllium	mg/L	0.004	–	0.004	–	0.001	–	0.1	0.1	–
boron	mg/L	–	–	–	–	–	1	0.700/0.750†	0.5	5
cadmium	mg/L	0.005	–	0.005	–	0.00004	0.00007	–	0.01	0.05
chromium vi	ug/L	20	–	0.1	–	0.02	–	–	0.1	1
cobalt	mg/L	–	–	–	–	–	–	–	0.05	1
copper	mg/L	1.3	–	1.3	1	0.3	–	0.2	–	–
lead	mg/L	1.015	–	0.015	–	0.0002	–	5	5	0.1
lithium	mg/L	–	–	–	–	–	–	–	2.5	–
mercury	mg/L	0.002	–	0.002	–	0.0012	–	–	–	–
molybdenum	mg/L	–	–	–	–	–	–	–	0.01	0.5
nickel	mg/L	0.1	–	–	–	0.012	–	0.2	0	–
selenium	mg/L	0.05	–	0.5	–	–	–	0.002	–	–
silver	mg/L	–	–	–	0.1	–	–	–	0.02	0.05
thallium	mg/L	0.002	–	0.002	–	0.0001	–	–	–	–
uranium	ug/L	30	–	30	–	0.5	–	–	–	–
vanadium	mg/L	–	–	–	–	–	0.05	0.1	0.1	0.1
zinc	mg/L	–	5	–	5	–	–	2	2	25
VOCs:		–	–	–	–	–	–	–	–	–
1,1,1-trichloroethane	mg/L	1000	–	0.2	–	200	–	–	–	–
1,1,2-trichloro-1,2,2-trifluoroethane	mg/L	4000	–	1.2	–	1200	–	–	–	–
1,1,2-trichloroethane	mg/L	5	–	0.005	–	0.3	–	–	–	–
1,1-dichloroethane	mg/L	5	–	0.005	–	3	–	–	–	–
1,1-dichloroethene	mg/L	6	–	0.006	–	10	–	–	–	–
1,2,3-trichlorobenzene	mg/L	–	–	0	–	–	–	–	–	–
1,2,4-trichlorobenzene	mg/L	–	–	0.005	–	–	–	–	–	–
1,2-dichlorobenzene	mg/L	0.5	–	0.6	–	0.4	–	–	–	–
1,2-dichloroethane	mg/L	–	–	0.0005	–	–	–	–	–	–
1,2-dichloropropane	mg/L	–	–	0.005	–	–	–	–	–	–
1,3-dichlorobenzene	mg/L	–	–	0.6	–	–	0.6	–	–	–
chlorobenzene	mg/L	–	–	0.07	–	–	–	–	–	–
di(2-ethylhexyl)phthalate	mg/L	–	–	0.004	–	–	–	–	–	–

Table C-7. Water Quality Goals and Standards

Constituents of Concern	Units	Drinking Water Standards Maximum Contaminant Levels (MCLs)				Other Standards				
		State Water Resources Control Board		USEPA		California DHS			RWQCB Basin Plan Water Quality Objectives for Irrigation	
		Primary	Secondary	Primary	Secondary	Public Health Goal (PHG)	Action Level (AL)	Agricultural Water Quality Limits	Irrigation Supply	Livestock Watering
dichlorodifluoromethane	mg/L	–	–	1	–	–	–	–	–	–
PCE	mg/L	–	–	0.005	–	–	–	–	–	–
TCE	mg/L	0.005	–	0.005	–	0.0017	–	–	–	–
trans-1,2-dichloroethene	mg/L	–	–	0.01	–	–	–	–	–	–
trichlorofluoromethane	mg/L	–	–	0.15	–	–	–	–	–	–
vinyl chloride	mg/L	0.5	–	0.0005	–	0.05	–	–	–	–
BTEX:										
MTBE	mg/L	–	–	0.013	–	–	–	–	–	–
Benzene	mg/L	–	–	0.001	–	–	–	–	–	–
Toluene	mg/L	150	–	0.15	–	150	–	–	–	–
Ethylbenzene	mg/L	300	–	0.7	–	300	–	–	–	–
Total xylenes	mg/L	1750	–	1.75	–	1800	–	–	–	–
OTHER:										
MBAS (Surfactants)	mg/L	–	500	–	500	–	–	–	–	–
perchlorate	mg/L	6	–	–	–	1	0.006	0.006	–	–

Notes:
All concentrations in milligrams per liter (mg/L) or parts per million (ppm) except where noted.
Dash (–) indicates no current standard or no available information.
USEPA = U.S. Environmental Protection Agency.
California DHS = California Department of Health Services, now Department of Public Health
MBAS = Methylene Blue Active Substances.
NTU = Nephalometric Turbidity Units.
TON = Threshold Odor Number.
SU = Standard Units
* Optimal fluoride level and (range) vary with average of maximum daily temperature:
50.0 to 53.7 degrees F – 1.2 (1.1 to 1.7) mg/L; 53.8 to 58.3 degrees F – 1.1 (1.0 to 1.7) mg/L
58.4 to 63.8 degrees F – 1.0 (0.9 to 1.5) mg/L; 63.9 to 70.6 degrees F – 0.9 (0.8 to 1.4) mg/L
70.7 to 79.2 degrees F – 0.8 (0.7 to 1.3) mg/L; 79.3 to 90.5 deg

** Systems that use conventional or direct filtration may not exceed 1 NTU at any time or 0.3 NTU for 95th percentile value; systems that use other “alternative” filtration systems may not exceed 5 NTU at any time or 1 NTU for 95th percentile value.

† USEPA recommended agricultural limit for boron is 0.750 mg/L.
References:
Current USEPA and California DHS drinking water standards from California

Table C-8a. List of Regulated Facilities with Recent Water Quality Data

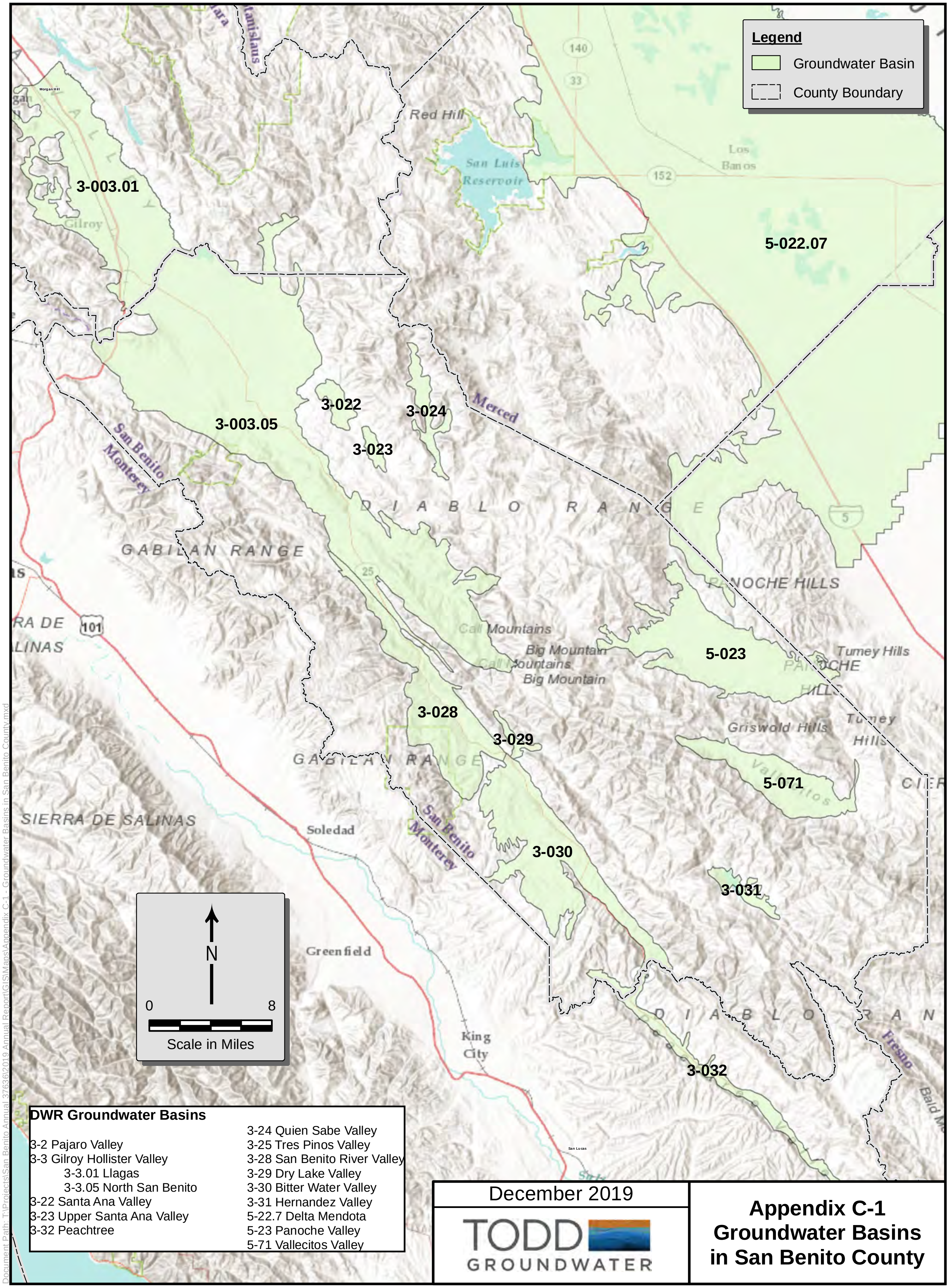
Name	Current or Former Operations	# of Wells	Potential Water Quality Problems	Order Number	Notes
Aromas-San Juan USD (Anzar High School)	High school with a wastewater treatment facility	3	salinity, nitrogen species	96-36	
BAE Systems (United Defense)	Ballistics Testing	64	perchlorate, nitrogen species	R3-2055-0113	
CEMEX Ready Mix Plant San Juan Bautista		2			
Chervon 9-1898	Gas station with a leaking underground storage tank	10			
Chevron 9-9156	Gas station with a leaking underground storage tank	1	BTEX	00-68	
Cielo Vista Estates	Housing development with a wastewater treatment facility	3	TDS, Na, Cl, Nitrogen		
Crop Production Services (Western Farm Service)	Fertilizer and Pesticide storage	6	pesticides, nitrogen species, salinity	01-052	
El Toro	Leaking underground storage tank	14	BTEX		
Hollister Domestic WWTP	for the City of Hollister	13	salinity, nitrogen species	87-47	
Hollister Industrial WWTP	Industrial wastewater treatment facility for the City of Hollister	7	salinity, nitrogen species	00-020	
John Smith Landfill	Waste disposal	19	organic, inorganic, metals	R3-2002-001	
McCormick Teledyne	Explosive products for the aerospace and automotive safety industries	38	perchlorate, nitrogen species, metals, salinity		
MK Ballistics (United Defense)	Ballistics Testing	9	perchlorate	CU-06-00123	
NH3 Service Company	Fertilizer and Pesticide storage	1	pesticides, nitrogen species, salinity		
PSEMC (former PacSci)		11			
Sambrailo Packaging		6	BTEX		
San Juan Bautista WWTP	Wastewater disposal	3	salinity, nitrogen species	R3-2003-0087	
Sunnyslope WWTP	Wastewater disposal	3	salinity, nitrogen species	R3-2004-0065	
Tres Pinos WWTP	Wastewater disposal	4	salinity, nitrogen species	99-101	
Whittaker Ordinance	Manufacturing	199	perchlorate	99-006	

Table C-8b. List of Regulated Facilities with Historical Water Quality Data

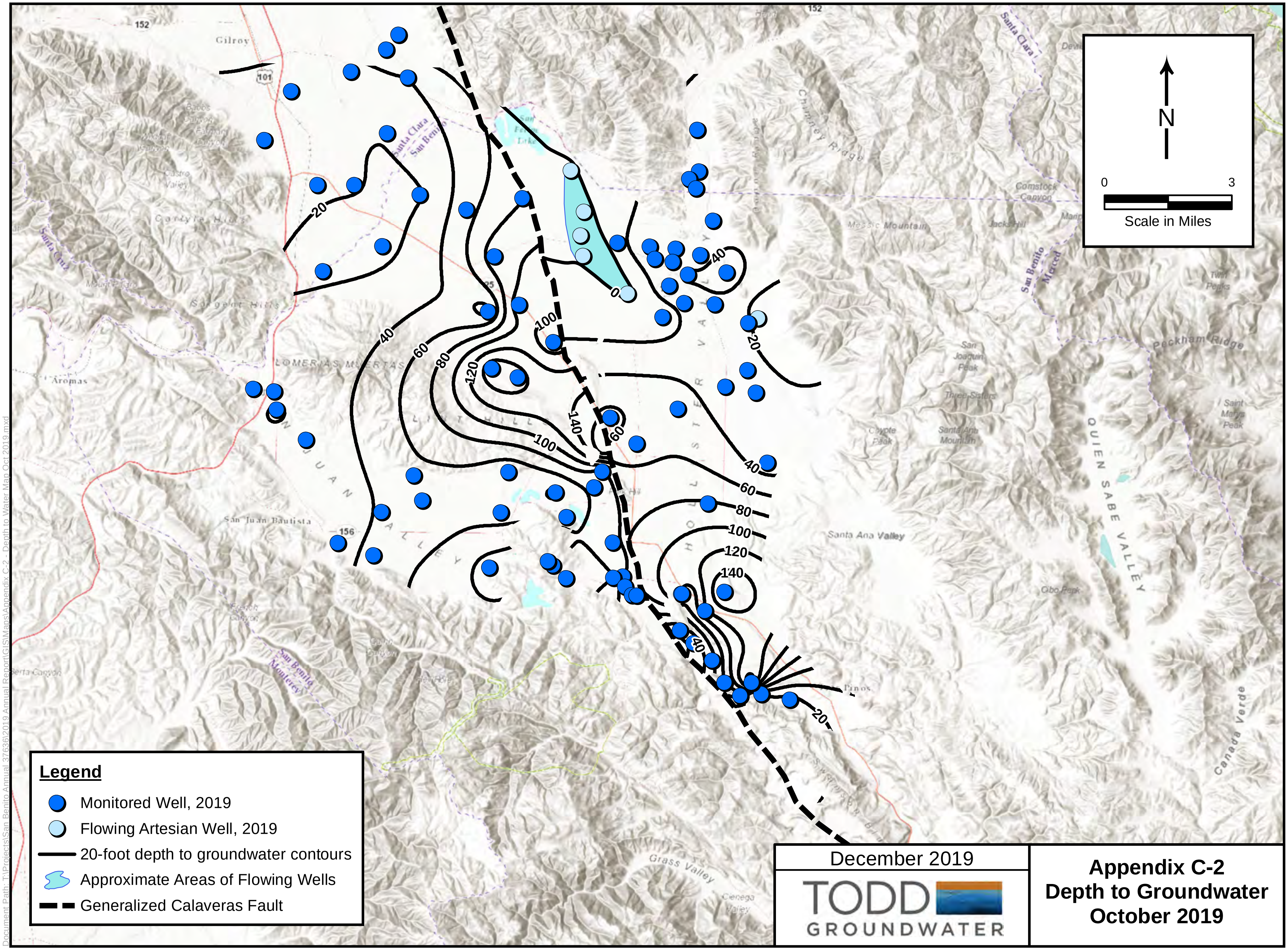
Name	Current or Former Operations	# of Wells	Potential Water Quality Problems	Order Number	Notes
Betabel Valley RV Resort	Recreational vehicle camp with a wastewater treatment facility	2	salinity, nitrogen species	88-23	No recent information
Biosystems Management	Biosolids waste disposal	4	salinity, nitrogen species, metals		closed
Blossom Hill Winery	Winery	6	hardenss, salinity		
Casa De Fruta	Fruit stand/tourist attraction with a wastewater treatment facility	5	salinity, nitrogen species		
Chevron 9-1898	Gas station with a leaking underground storage tank	9	BTEX, MTBE		closed
E Ranch Milk	Gas station with a leaking underground storage tank	23	BTEX and other organics, pH, EC	98-68	
El Modeno Gardens	Commercial nursery irrigation runoff	4	salinity, nitrogen species	99-050	
GAF Leatherback Industries Warehouse Facility	Former Saturator	4	VOCs, Petroleum products		Ceased Operations in 2007, RWQCB Site Opened April 2009
Gibson Farms Inc.	Fruit producer (processing wastes)	1	salinity, nitrogen species	R3-2004-0066	
Granite Rock Co	Sand and gravel quarry	6	turbidity	R3-2005-0063	
Laverone Property (BK Towing)	Leaking underground storage tank	14	BTEX	92-101	
Natural Food Selection/ Earthbound Farms	Fruit and Vegetable processing wastes	11	salinity, nitrogen species	R3-2004-006	
Nyland Ranch Warehouse	Leaking underground storage tank	4	salinity, boron		closed
PG &E / City of Hollister Fire Department	Leaking underground storage tank	4	BTEX		Closed 7/21/92
Rancho Justo Company	Golf course with domestic wastewater disposal system	3	salinity, nitrogen species		
San Juan Bautista City Yard	Underground storage tanks	6	BTEX		No recent information
San Juan Oaks Golf Club	Golf course with domestic wastewater disposal system	2	salinity, nitrogen species		
TOSCO Facility #3738		3	BTEX		Soil samples only
Victory Gas and Food	Gas station	13	BTEX		No recent information
Wilbur-Ellis	Agricultural products and chemicals marketer and distributor	3	salinity, nitrogen species		

Table C-9. Number of Wells with Contaminant Measurements in Each Management Area

Contaminant Name	Units	Southern	San Juan	Hollister	Bolsa
Sodium	MG/L	4	19	40	2
Chloride	MG/L	4	19	41	2
Fluoride	MG/L	0	13	12	2
Iron	UG/L	6	21	41	2
Manganese	UG/L	7	21	41	2
Nitrate (As No3)	MG/L	14	26	45	5
Nitrate + Nitrite (As N)	MG/L	0	12	18	2
Nitrite (As N)	MG/L	7	23	38	3
Color	UNITS	0	13	20	2
Odor Threshold @ 60 C	TON	0	12	17	2
Specific Conductance	US	6	20	40	2
Total Dissolved Solids	MG/L	4	20	40	2
Turbidity, Laboratory	NTU	0	13	21	2
Antimony	UG/L	4	20	37	2
Aluminum	UG/L	4	20	38	2
Arsenic	UG/L	4	20	38	2
Barium	UG/L	4	20	38	2
Boron	UG/L	0	6	24	2
Cadmium	UG/L	4	20	37	2
Chromium VI	UG/L	0	7	16	0
Chromium	UG/L	4	20	37	2
Copper	UG/L	3	18	38	2
Lead	UG/L	4	15	33	2
Mercury	UG/L	4	20	37	2
Nickel	UG/L	4	20	37	2
Selenium	UG/L	4	20	37	2
Silver	UG/L	3	15	29	2
Sulfate	MG/L	3	18	41	2
Thallium	UG/L	4	20	37	2
Uranium	UG/L	3	9	7	0
Zinc	UG/L	3	18	39	2
Total Trihalomethanes	UG/L	6	9	29	0
Perchlorate	UG/L	6	14	22	0



Appendix C-1
Groundwater Basins in San Benito County



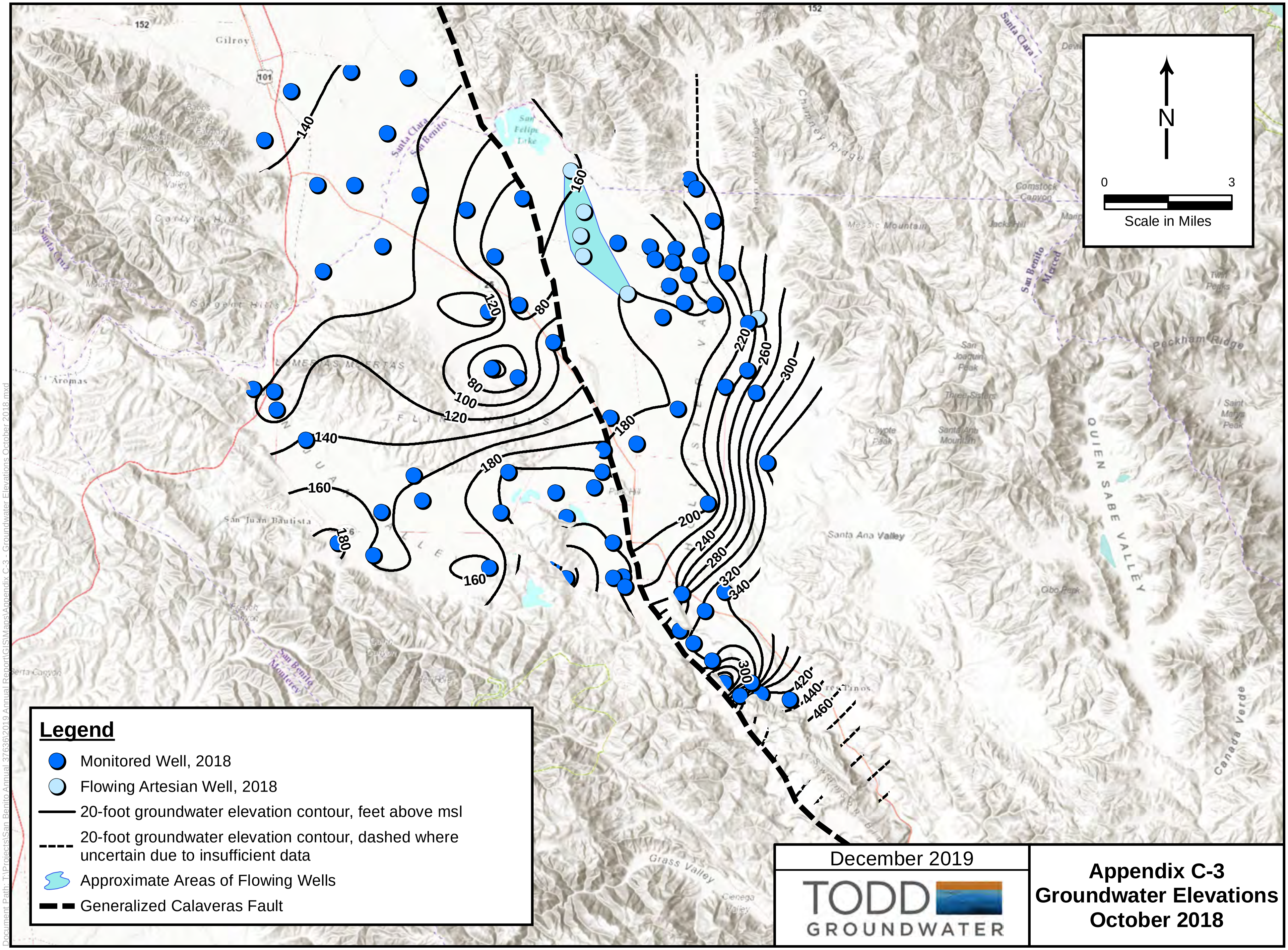
Legend

- Monitored Well, 2019
- Flowing Artesian Well, 2019
- 20-foot depth to groundwater contours
- Approximate Areas of Flowing Wells
- Generalized Calaveras Fault

December 2019

TODD GROUNDWATER

Appendix C-2
Depth to Groundwater
October 2019



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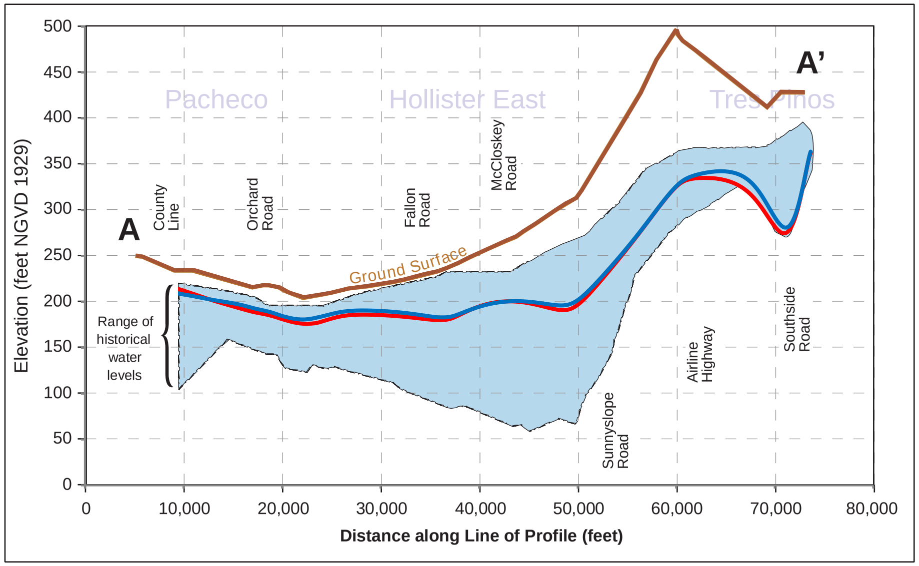
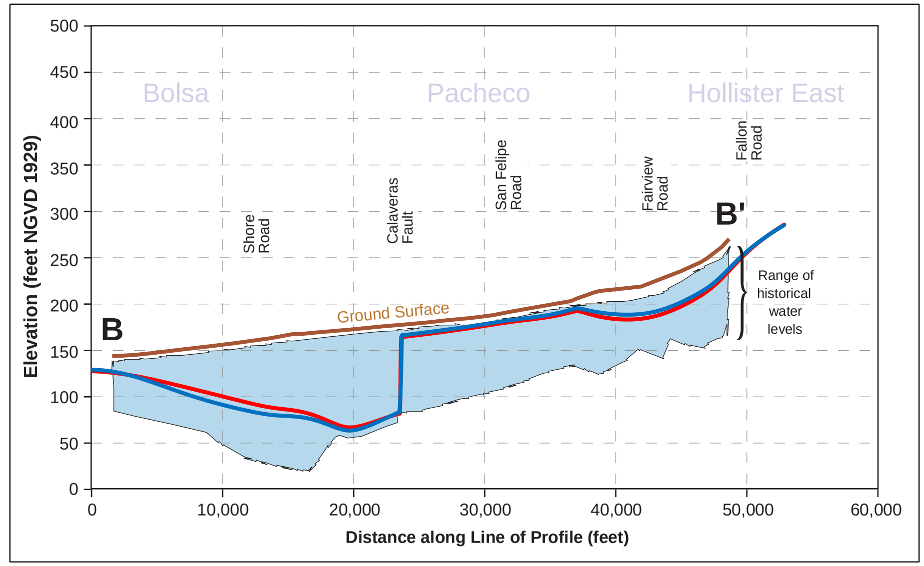
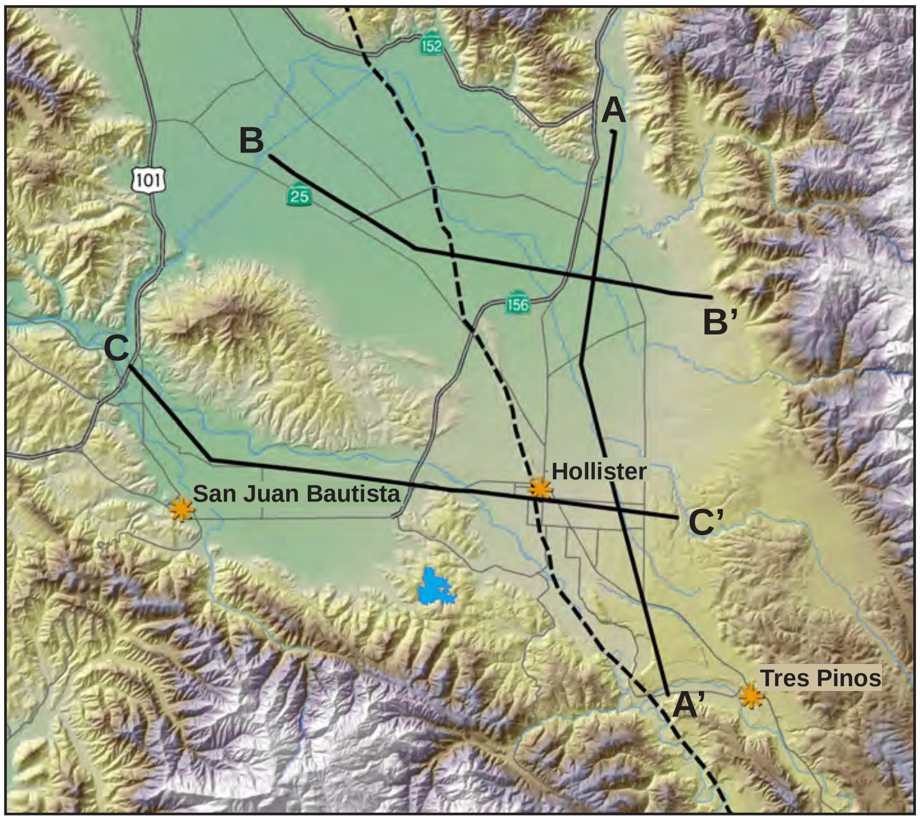
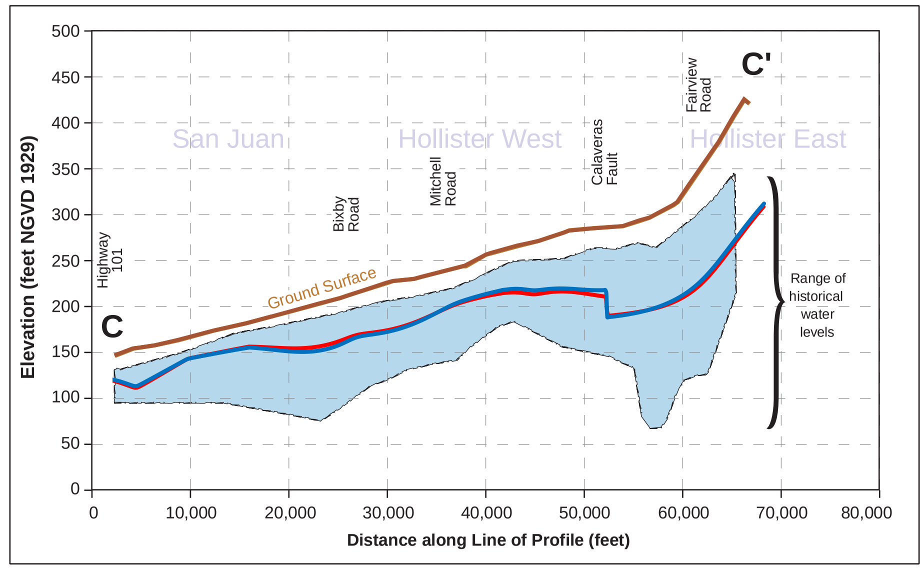






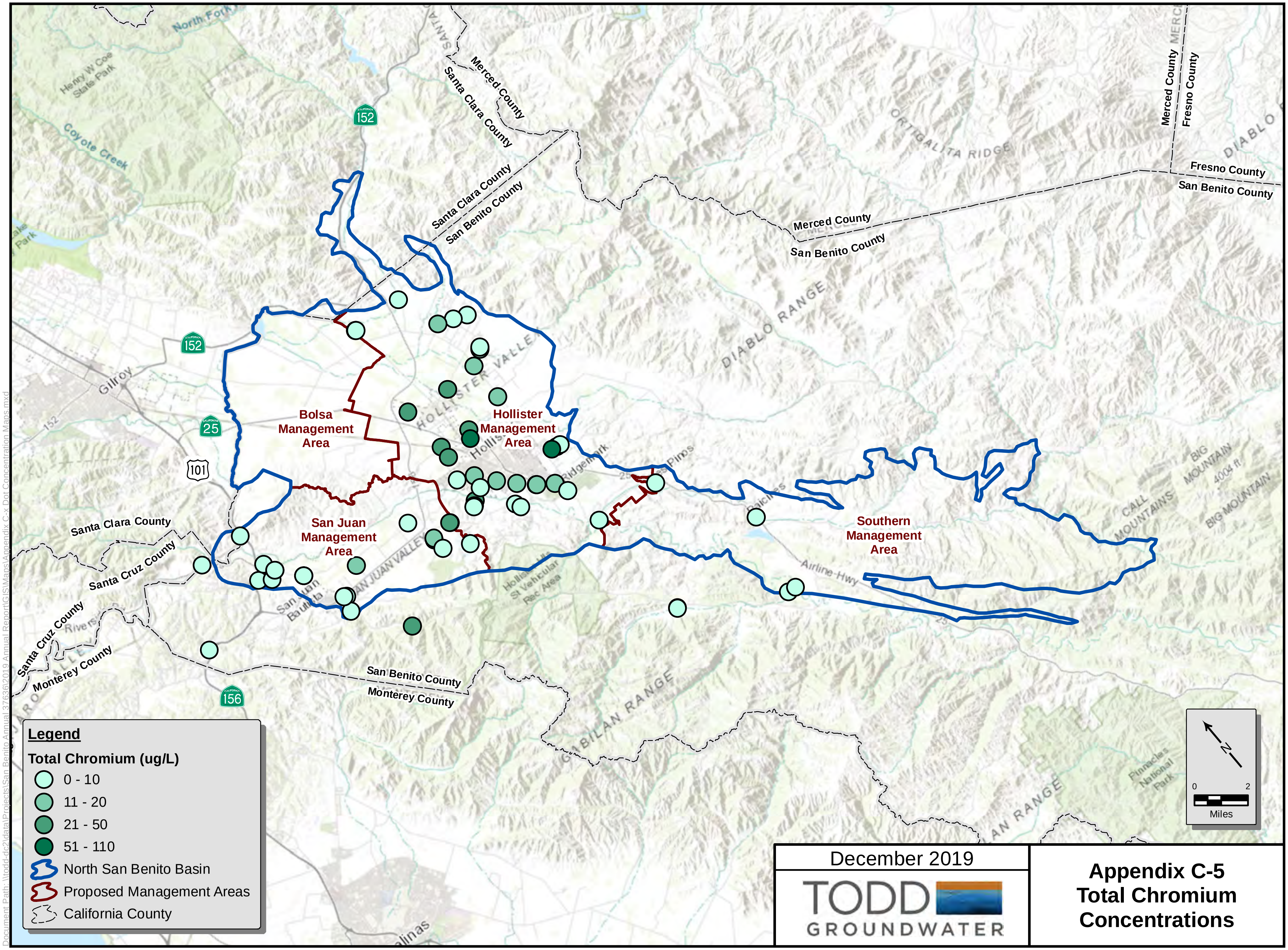


Water Year 2018
Water Year 2019
Ground Surface
Range of Historical Water Levels

December 2019

TODD GROUNDWATER

Appendix C-4
Profiles of Historical Groundwater Levels



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Appendix C-5 Total Chromium Concentrations

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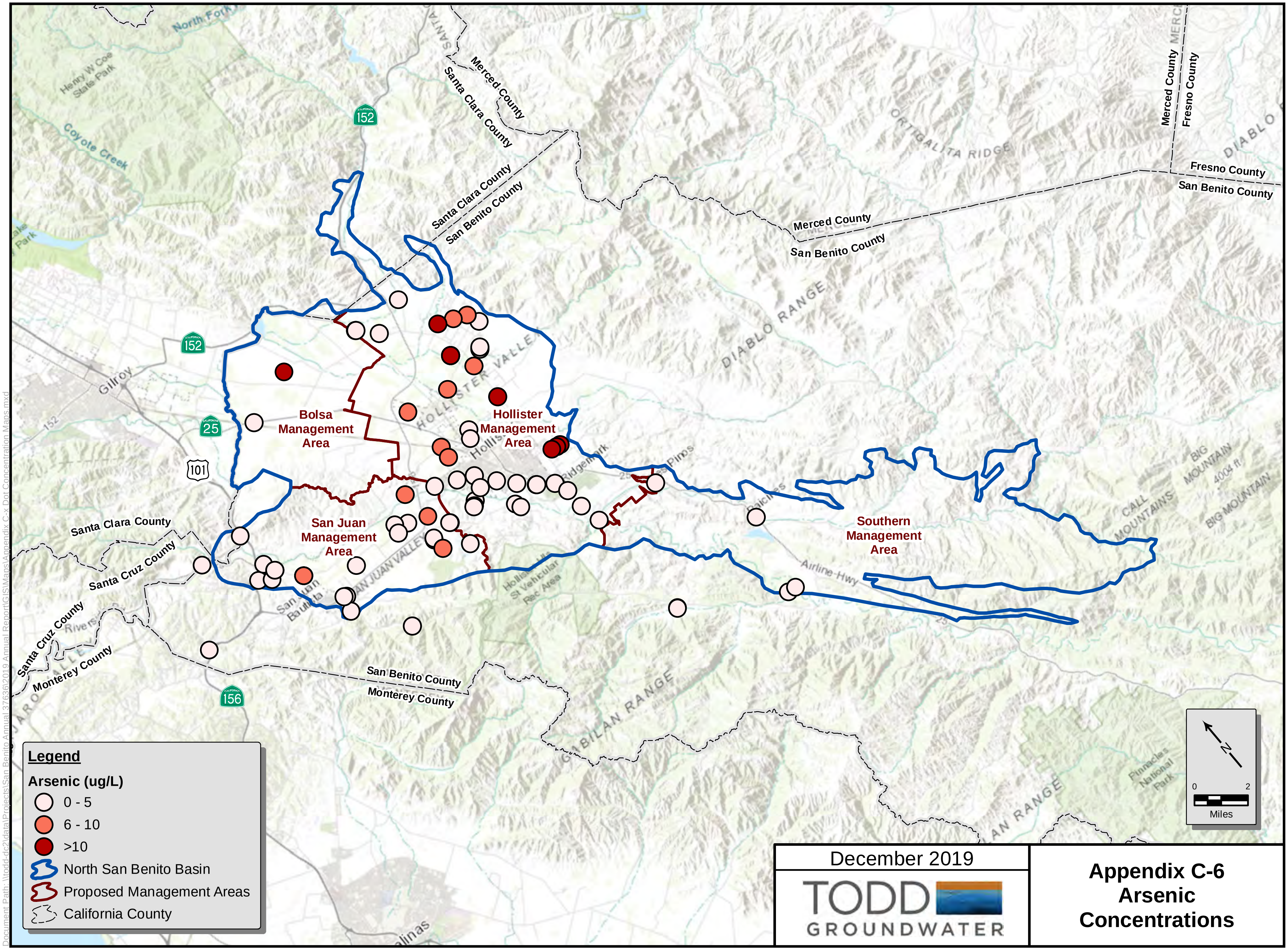

December 2019

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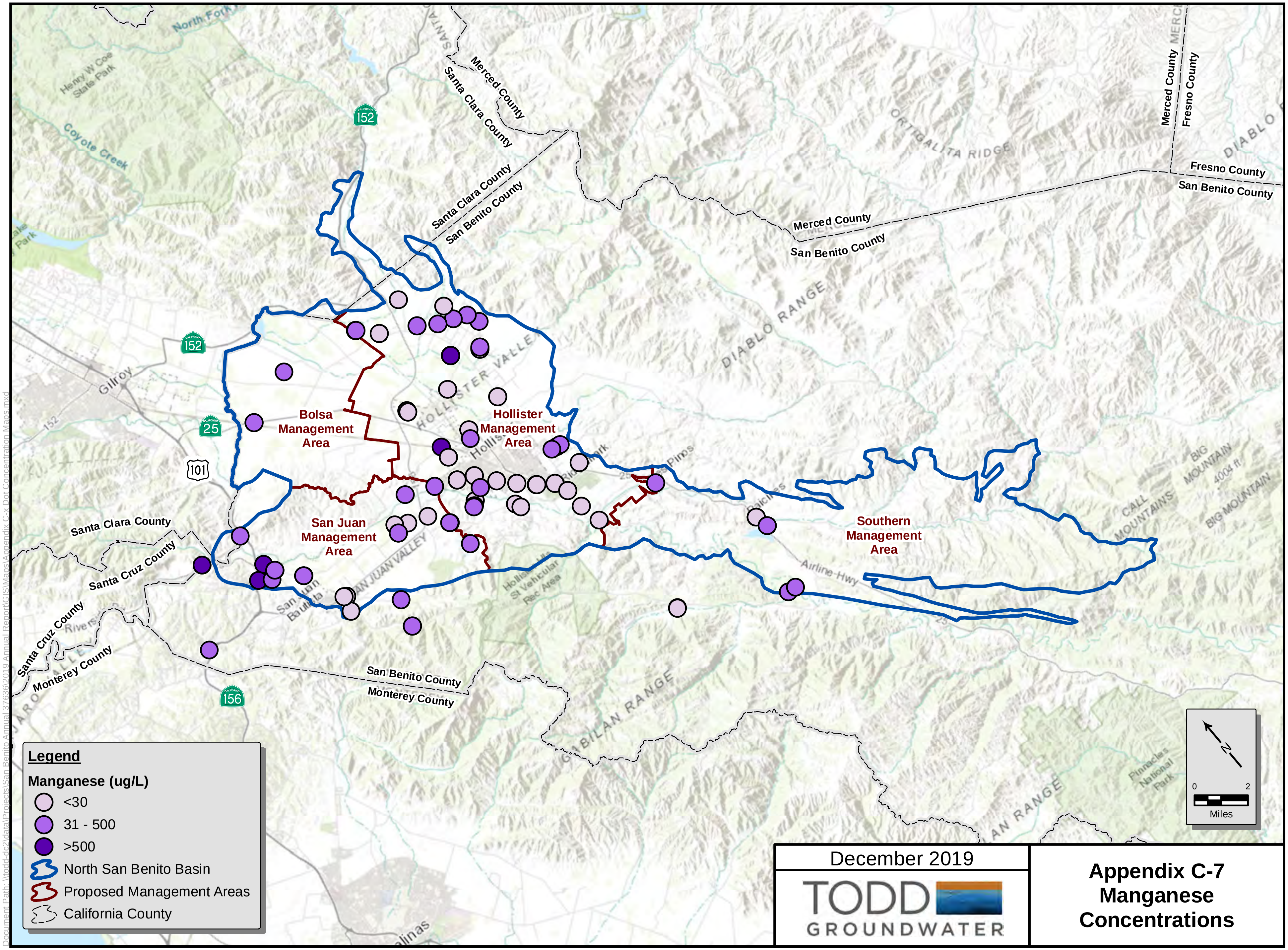
Appendix C-6
Arsenic Concentrations



Appendix C-7
Manganese Concentrations

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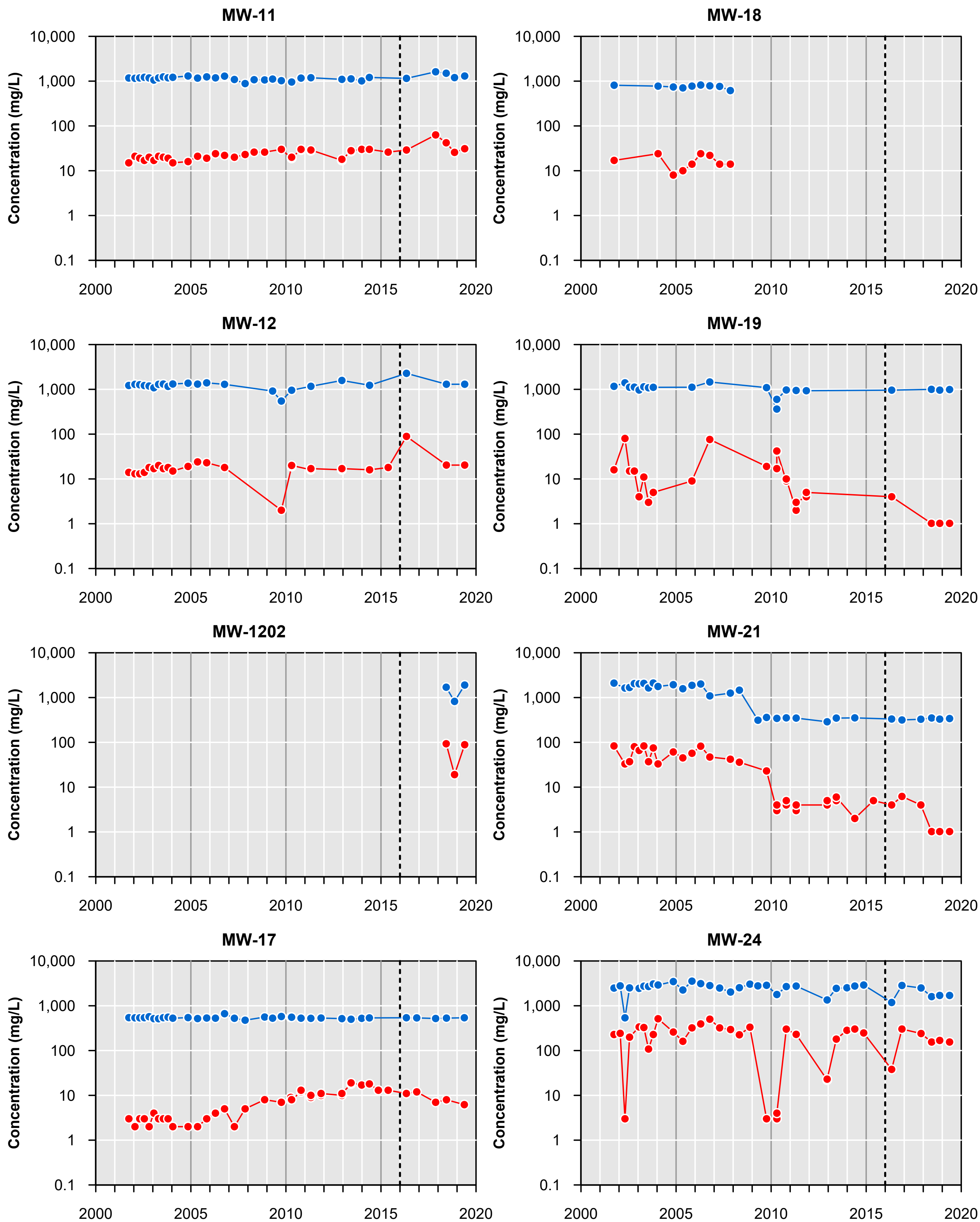

- Nitrate (NO3)
- Total Dissolved Solids (TDS)
- Beginning of study period (2016)

'MW-' = Monitored Well

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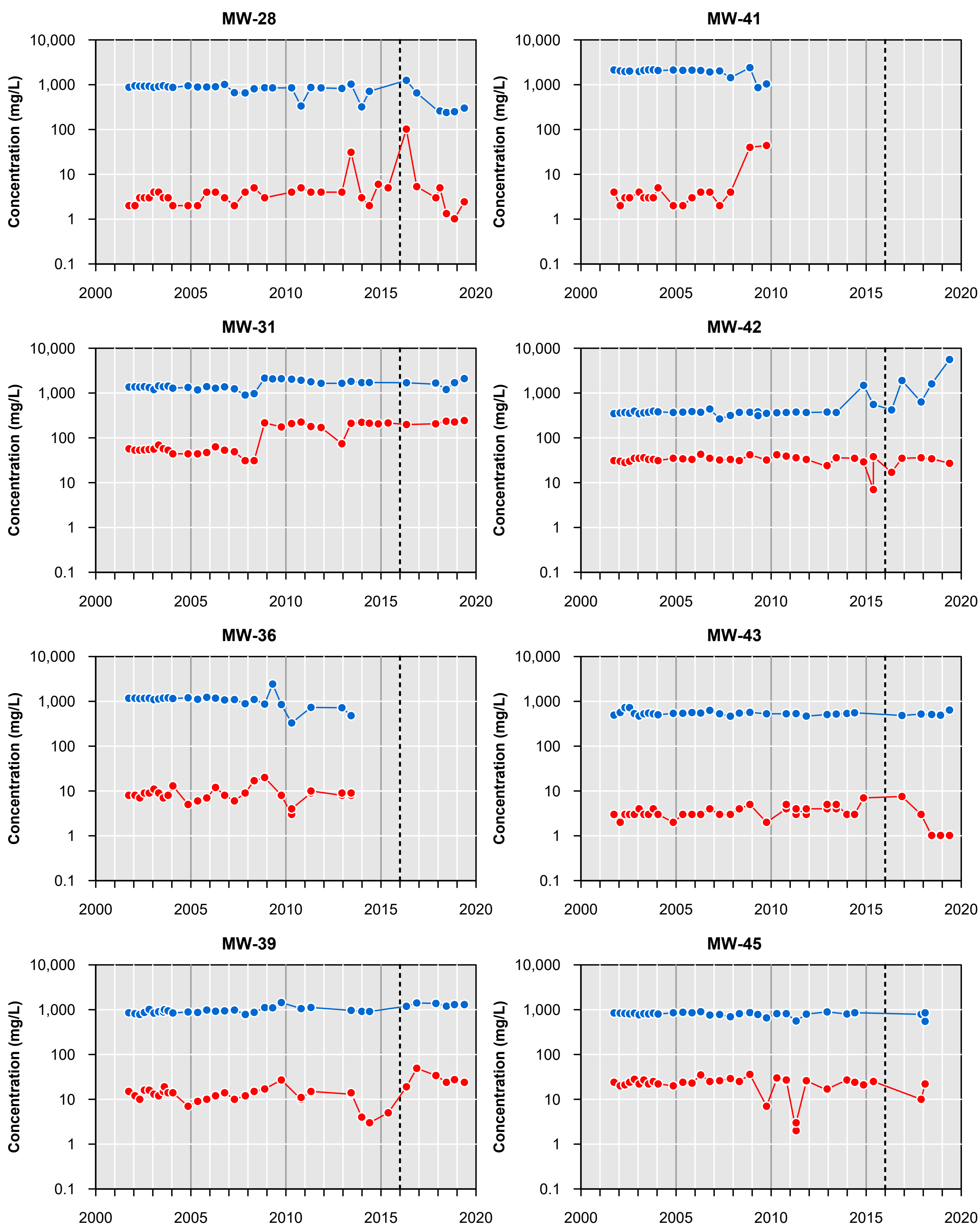
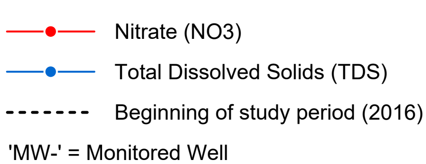
Appendix C-8
NO3 and TDS Concentration (mg/L) Over Time
SBCWD Monitored Wells





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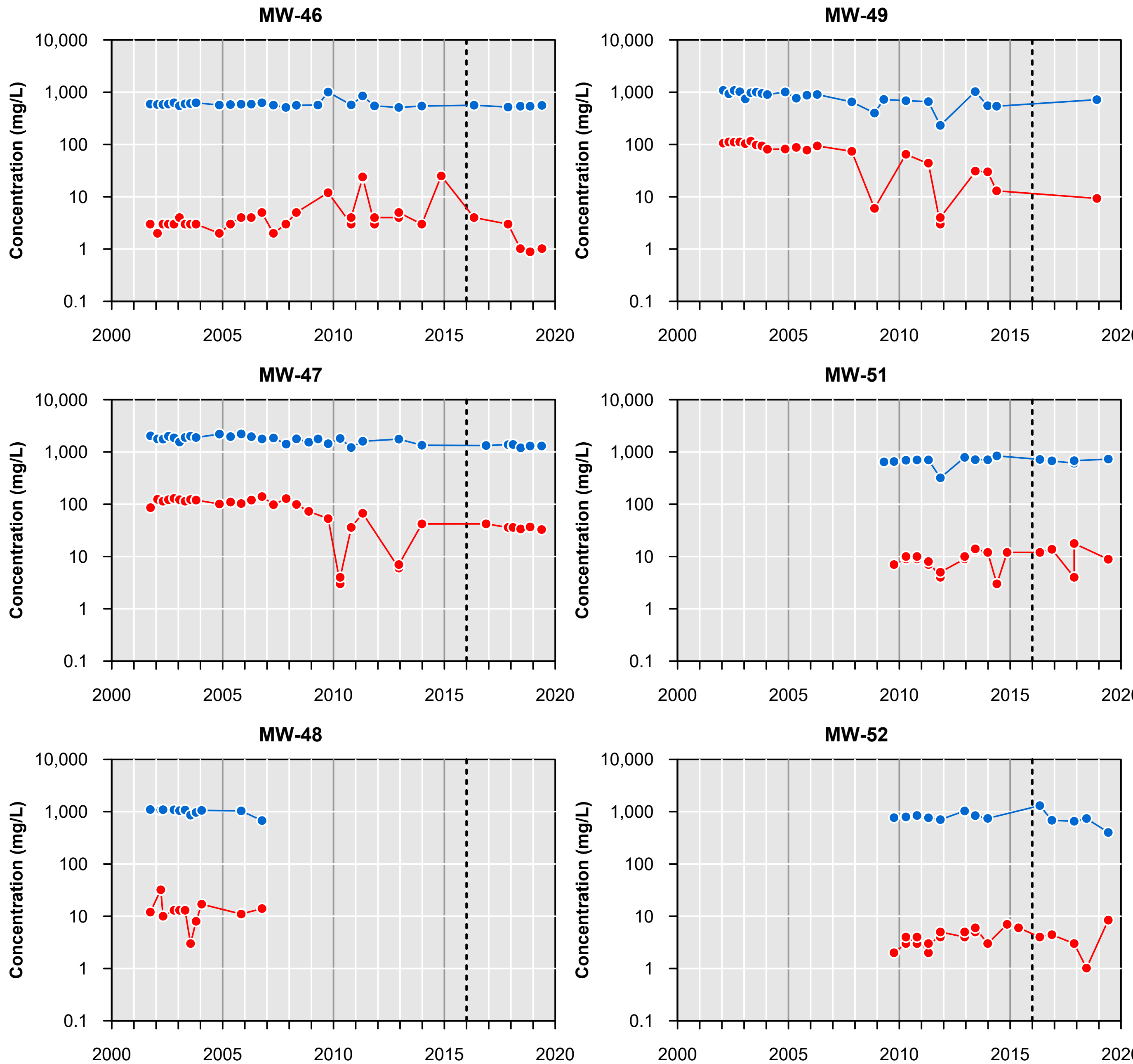
Appendix C-9
NO3 and TDS Concentration (mg/L) Over Time
SBCWD Monitored Wells



Nitrate (NO3)

Total Dissolved Solids (TDS)

Beginning of study period (2016)

'MW-' = Monitored Well

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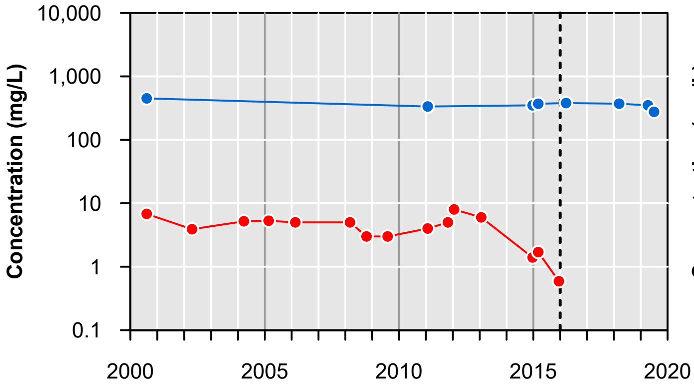
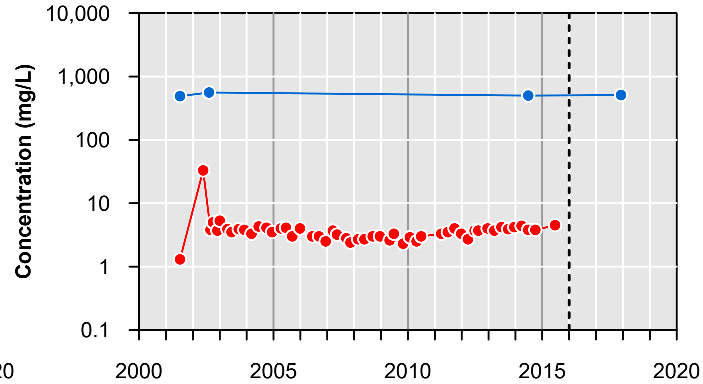
Appendix C-10
NO3 and TDS Concentration (mg/L) Over Time
SBCWD Monitored Wells

3500505-001



3500836-001



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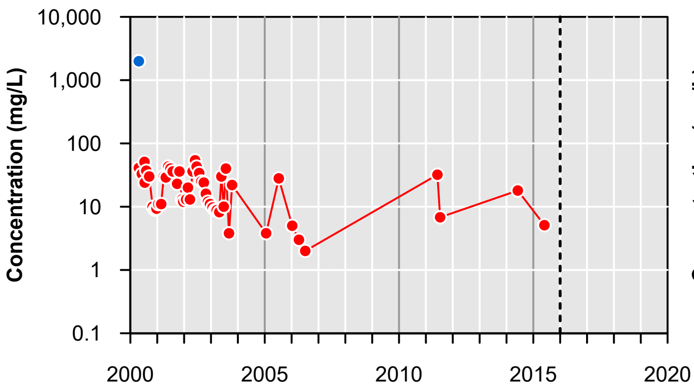
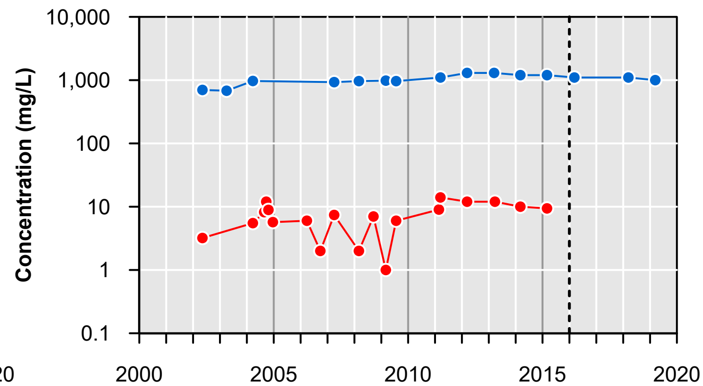
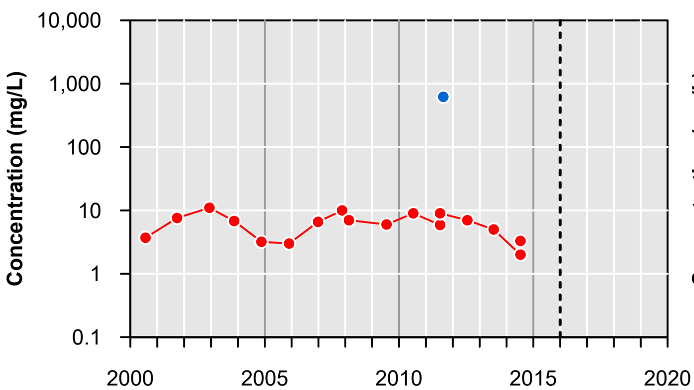


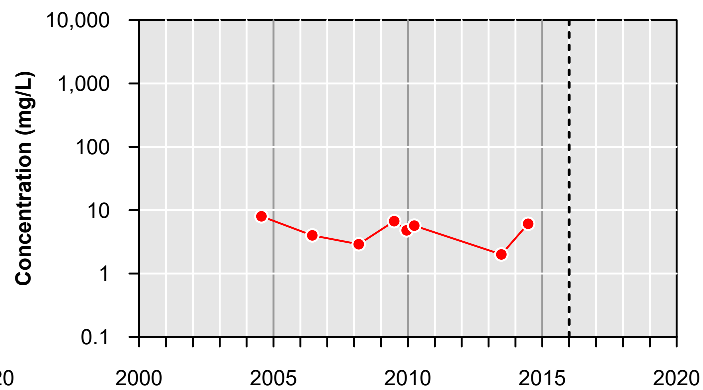
3500913-002



3500806-002



3500920-001



Nitrate (NO3)
Total Dissolved Solids (TDS)
Beginning of study period (2016)

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Appendix C-11
NO3 and TDS Concentration (mg/L) Over Time in Regulated Systems

APPENDIX D PERCOLATION DATA

List of Tables and Figures

Table D-1. Reservoir Water Budgets for Water Year 2019 (acre-feet)

	Hernandez	Paicines	San Justo	
Observed Storage				
Starting Storage (Oct 2018)	558	300	5,131	
Ending Storage (Sept 2019)	2,375	250	4,641	
Inflows				
Rainfall	430	106	204	
San Benito River	18,175	1,162	n.a.	
Hernandez-Paicines transfer	n.a.	2,670	n.a.	
San Felipe Project*	n.a.	n.a.	21,411	*
Total Inflows	**18,605**	**3,938**	**21,615**	
Outflows				
Hernandez spills	0	n.a.	n.a.	
Hernandez-Paicines transfer	2,670	n.a.	n.a.	
Tres Pinos Creek percolation releases	n.a.	2,045	n.a.	
San Benito River percolation releases	15,924	n.a.	n.a.	
CVP Deliveries*	n.a.	n.a.	21,501	*
Evaporation and seepage	906	2,898	1,197	
Total Outflows	**19,500**	**4,942**	**22,698**	
Change in Storage				
Observed storage change (Ending - Starting)	**1,817**	**-50**	**-490**	
Calculated net storage change (Inflow - Outflows)	**-896**	**-1,004**	**-1,083**	
Unaccounted for Water (Observed - Calculated)**	**2,712**	**954**	**593**	
Reservoir Information				
Reservoir capacity	17,200	2,870	11,000	
Maximum storage	12,572	2,580	10,308	
Minimum storage	558	250	4,573	

* Reflects imported water for beneficial use, not all stored in reservoir

** Negative value is water shortage, positive value is water surplus

Table D-2. Historical Reservoir Releases (AFY)

WY	Hernandez	Paicines	TOTAL
1996	13,535	6,139	19,674
1997	3,573	2,269	5,842
1998	26,302	450	26,752
1999	12,084	1,293	13,377
2000	13,246	2,326	15,572
2001	12,919	3,583	16,502
2002	9,698	310	10,008
2003	5,434	0	5,434
2004	3,336	0	3,336
2005	19,914	677	20,591
2006	14,112	196	14,308
2007	12,022	1,254	13,276
2008	7,646	495	8,141
2009	4,883	0	4,883
2010	8,484	4,147	12,631
2011	9,757	2,397	12,154
2012	6,341	1,321	7,662
2013	3,963	677	4,640
2014	0	0	0
2015	0	0	0
2016	0	0	0
2017	23,191	2,407	25,597
2018	6,054	384	6,438
2019	15,924	2,045	17,969
AVG	**9,684**	**1,349**	**11,033**

Table D-3. Historical Percolation of CVP Water (AFY)

		Arroyo de las Viboras			Arroyo Dos Picachos			Santa Ana Creek						
Water Year[1]	Pacheco Creek	Road	Creek 1 (Frog Ponds)	Creek 2	Fallon Road	Jarvis Lane	Creek	John Smith Road	Maranatha Road	Airline Highway	Ridgemark	Tres Pinos Creek (and Pond)	San Benito River (Union Road Pond)	Total
1994	232	136	515	0	0	550	209	0	0	0	0	85	158	1,885
1995	444	238	770	2	0	654	622	73	0	0	0	809	2,734	6,345
1996	0	494	989	832	67	235	708	531	197	134	25	21	6,097	10,330
1997	0	447	601	1,981	77	0	200	17	353	286	29	1,477	5,619	11,087
1998	0	132	109	403	0	0	0	65	0	158	74	518	1,084	2,543
1999	0	0	0	0	0	0	4	256	48	141	10	452	413	1,322
2000	1	0	0	6	0	0	3	236	21	240	12	285	938	1,740
2001	0	0	0	0	0	0	0	161	17	186	1	703	1,041	2,110
2002	0	0	0	2	0	0	1	78	2	143	0	426	470	1,122
2003	0	0	0	0	0	0	5	119	9	172	0	163	605	1,074
2004	0	0	0	0	0	0	52	83	0	0	0	1	882	1,018
2005	0	0	0	0	0	0	0	0	0	0	0	0	527	527
2006	0	0	0	0	0	0	7	156	0	0	0	1	451	614
2007	0	0	0	0	0	0	0	0	0	0	0	88	216	304
2008	0	0	0	0	0	0	0	0	0	0	0	0	6	6
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2,017	0	0	340	0	0	0	0	0	0	0	0	0	2,209	2,549
2,018	0	0	199	0	0	0	0	0	0	0	0	867	1,899	2,965
2,019	0	0	335	0	0	0	0	0	0	0	0	1,775	2,932	5,043

1. 2017-2019 percolation occurred only to recharge basins adjacent to the listed streams.

Table D-4. Percolation of Municipal Wastewater during Water Year 2019

	Pond Area[1] (acres)	Effluent Discharge (acre-feet)	Evaporation[2] (acre-feet)	Percolation (acre-feet)
Hollister - domestic	93	2,088	266	1,822
Hollister - industrial	39	0	0	0
Ridgemark Estates I & II	7	170	21	149
Tres Pinos	2	21	5	16
Total	141	2,279	292	1,986

Notes:

1. Hollister pond areas are from Dickson and Kenneth D. Schmidt and Associates (1999) and include treatment ponds in addition to percolation ponds at the domestic wastewater treatment plant. Assumes 80% of total pond area in use at any time (Rose, pers. comm.). These areas should be updated as operations change.

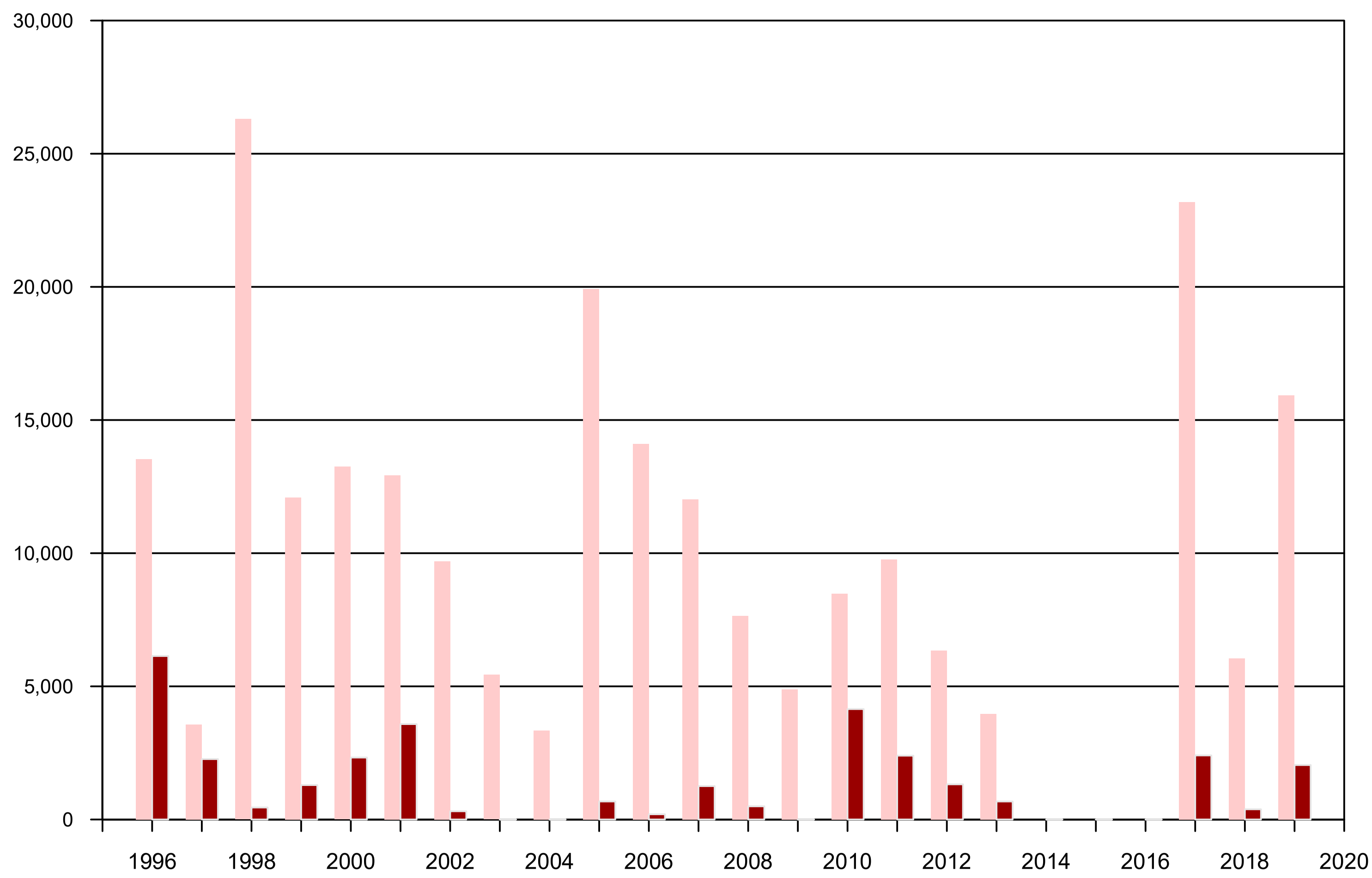
2. Average evaporation less precip = 43 inches (56 in/yr evaporation (DWR Bulletin 73-79) less 13 in/yr precip (CIMIS) The IWTP evaporation was adjusted to account only for when the ponds are in use.

The San Juan Bautista plant is not included because the unnamed tributary of San Juan Creek that receives its effluent usually gains flow along the affected reach and is on the southwest side of the San Andreas Fault. These conditions prevent the effluent from recharging the San Juan Subbasin.

Table D-5. Historical Percolation of Municipal Wastewater (AFY)

	Hollister Reclamation Plant - Domestic	Hollister - industrial wastewater and stormwater	Ridgemark Estates I & II	Tres Pinos	TOTAL
1994	1,775	665	155	5	2,600
1995	1,935	610	180	10	2,735
1996	2,020	689	207	14	2,930
1997	1,965	909	201	17	3,092
1998	2,490	518	231	17	3,256
1999	1,693	1,476	156	12	3,337
2000	2,110	1,136	293	24	3,563
2001	1,742	1,078	303	24	3,147
2002	1,884	1,545	283	24	3,736
2003	2,009	1,432	279	24	3,744
2004	1,787	1,536	268	21	3,612
2005	1,891	1,323	227	26	3,468
2006	1,797	1,211	216	33	3,257
2007	1,740	1,228	139	19	3,126
2008	1,580	1,257	139	19	2,996
2009	1,976	428	172	19	2,594
2010	1,922	37	172	19	2,150
2011	1,807	466	183	19	2,476
2012	1,740	605	177	19	2,541
2013*	889	332	188	21	1,430
2014	1,552	86	179	21	1,838
2015	1,816	344	161	21	2,342
2016	1,923	305	154	21	2,402
2017	1,945	57	154	20	2,177
2018	1,365	57	150	15	1,587
2019	1,822	0	149	16	1,986

*Potential missing data



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Appendix D-1
Reservoir Releases for Percolation

APPENDIX E WATER USE DATA FOR ZONE 6

List of Tables and Figures

Table E-1. Recent CVP Allocation and Use

Water Year	Municipal and Industrial (M&I) CVP				Agricultural CVP			
	Percent of Contract Allocation[1]	Percent of Historic Average[2]	Contract Amount Used (AF)	Contract Amount Used (%)	Percent of Contract Allocation[3]	Percent of Contract and M&I Adjustment[2]	Contract Amount Used (AF)[4]	Contract Amount Used (%)
	(USBR Water Year Mar-Feb)		(Hydrologic Water Year Oct-Sep)		(USBR Water Year Mar-Feb)		(Hydrologic Water Year Oct-Sep)	
2006	100%		3,152	38%	100%		19,840	56%
2007	100%		4,969	60%	40%		18,865	53%
2008	37%	75%	2,232	27%	40%	45%	10,514	30%
2009	29%	60%	1,978	24%	10%	11%	6,439	18%
2010	37%	75%	2,197	27%	45%	50%	10,061	28%
2011	100%		2,433	29%	80%		16,234	46%
2012	51%	75%	2,683	33%	40%	40%	17,267	49%
2013	47%	70%	2,652	32%	20%	22%	12,914	36%
2014	34%	50%	1,599	29%	0%	0%	7,545	21%
2015	25%		1,810	22%	0%		3,697	10%
2016	55%		1,914	23%	5%		4,434	12%
2017	100%		2,909	35%	100%		15,837	45%
2018	75%		5,679	69%	50%		17,418	49%
2019	100%		4,457	54%	75%		16,774	47%

Notes: 1 Total contract (100% allocation) M&I 8,250 AFY
2 Shortage Policy Adjustments
3 Total contract (100% allocation) Ag 35,550 AFY
4 Includes water percolated

Table E-2. Historical Water Use by Subbasin and Water Source (AFY)

Subbasin	Pacheco		Bolsa Southeast			San Juan		Hollister West			Hollister East			Tres Pinos		Total Zone 6		
Source	GW	CVP	GW	CVP	RW	GW	CVP	GW	CVP	RW	GW	CVP	RW	GW	CVP	GW	CVP	RW
1993	2,251	3,210	3,474	533		9,278	4,300	7,213	90		3,744	7,275		5,658	224	31,618	15,633	0
1994	3,748	3,394	3,467	602		10,859	3,836	7,327	87		5,475	6,808		5,294	263	36,169	14,990	0
1995	2,756	3,474	2,855	720		9,328	4,554	7,092	460		3,428	6,647		4,475	275	29,935	16,130	0
1996	2,533	3,500	2,682	782		8,726	5,187	5,717	679		3,396	8,267		3,695	408	26,748	18,823	0
1997	2,209	4,205	2,755	997		9,587	6,191	7,602	907		3,534	8,284		4,620	466	30,307	21,048	0
1998	2,035	2,165	1,561	361		6,963	4,099	4,991	591		4,037	5,291		3,751	289	23,338	12,796	0
1999	2,553	3,219	2,453	433		9,312	5,990	7,013	726		3,701	7,279		4,199	391	29,231	18,038	0
2000	2,270	3,256	2,418	355		8,681	6,372	7,590	869		3,108	7,279		4,006	542	28,073	18,673	0
2001	1,848	3,443	2,126	411		7,977	7,232	7,377	685		2,213	7,010		3,599	621	25,140	19,402	0
2002	2,322	3,840	2,193	497		7,571	7,242	6,577	706		2,588	7,390		3,994	737	25,244	20,411	0
2003	2,425	3,277	2,175	493		7,434	7,127	6,222	720		1,897	9,329		2,805	788	22,958	21,734	0
2004	2,461	3,607	2,405	740		8,121	7,357	4,971	614		2,321	10,726		3,204	966	23,484	24,010	0
2005	1,320	3,106	1,849	514		6,608	6,245	5,084	680		2,586	9,198		2,378	642	19,825	20,384	0
2006	1,208	3,495	1,864	661		6,741	7,200	4,633	579		2,555	10,253		2,537	803	19,538	22,992	0
2007	1,034	3,832	2,005	572		7,658	6,160	5,118	553		3,867	10,194		2,908	804	22,590	22,115	0
2008	1,900	1,568	2,014	333		7,796	3,160	4,375	399		3,962	6,792		2,743	493	22,789	12,745	0
2009	3,370	1,257	2,082	179		11,956	1,605	4,186	19		4,733	4,697		2,871	447	29,199	8,204	0
2010	2,553	1,771	1,897	207		9,561	3,452	4,081	10	151	4,460	6,056		1,686	488	24,238	11,984	151
2011	1,992	2,420	2,781	229		4,987	5,623	3,940	394	183	1,947	9,575		2,454	427	18,102	18,667	183
2012	3,723	2,652	1,556	288		5,782	5,976	4,298	549	230	2,004	9,917		2,492	568	19,855	19,949	230
2013	4,157	1,976	2,348	292		11,044	4,134	5,656	374	357	5,430	8,224		2,452	565	31,087	15,566	357
2014	3,303	1,020	2,157	32		10,018	1,984	7,227	233	262	4,872	5,490		3,014	384	30,592	9,144	262
2015	4,279	555	2,401	20		12,739	975	4,730	148	101	7,230	3,568		2,948	241	34,327	5,507	101
2016	4,386	420	2,558	30	38	13,581	819	4,031	162	253	6,383	4,810	207	2,223	106	33,162	6,347	499
2017	2,949	2,097	1,414	365	66	7,542	5,853	3,255	217	108	2,209	7,488	192	2,447	177	19,815	16,197	366
2018	4,375	1,529	3,063	291	3	8,932	6,383	3,922	2,054	468	3,699	9,686	0	1,865	188	25,856	20,131	471
2019[1]	2,780	2,162	2,568	318	2	6,648	3,990	2,093	273	567	2,802	0	0	1,193	184	18,083	16,188	569
AVG 93-19	2,694	2,609	2,338	417	27	8,720	4,928	5,419	510	268	3,636	7,316	100	3,167	462	25,974	16,586	118

GW = groundwater, CVP = Central Valley Project, RW = recycled water

1. Hollister East includes 2,524 AF of CVP water delivered to the West Hills Treatment Plant in San Juan but supplied to Hollister East customers.

Table E-3a. Recent Water Use by Subbasin and User Type, Includes Recycled Water (AFY) - Agriculture

Management Area	Subbasin	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
								Agriculture								
Hollister	Bolsa SE	2,352	2,517	2,570	2,334	2,252	2,103	3,004	1,837	2,635	2,180	2,417	2,601	1,831	3,315	2,889
	Hollister East	8,543	9,526	10,685	8,012	6,860	8,315	9,067	9,453	10,832	8,151	8,464	8,784	7,756	9,594	7,673
	Hollister West	2,128	1,936	2,145	1,509	1,708	1,888	2,190	2,228	3,324	2,584	2,750	2,192	1,338	2,337	1,807
	Pacheco	4,190	4,469	4,573	3,220	4,304	4,242	4,279	6,148	5,990	4,121	4,658	4,616	4,964	5,663	4,838
	Tres Pinos	800	1,004	954	655	670	640	471	641	652	514	1,513	572	468	448	276
San Juan	San Juan	11,496	12,622	12,185	9,581	12,397	11,960	10,009	10,964	14,376	11,183	13,123	13,826	11,916	14,568	10,134
	TOTAL	**29,509**	**32,074**	**33,112**	**25,310**	**28,192**	**29,148**	**29,020**	**30,980**	**37,810**	**28,734**	**32,926**	**32,591**	**28,273**	**35,925**	**27,616**

Table E-3b. Recent Water Use by Subbasin and User Type, Includes Recycled Water (AFY) - M&I

Management Area	Subbasin	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
								M&I								
Hollister	Bolsa SE	12	8	7	13	9	0	6	6	4	9	5	25	14	43	0
	Hollister East[1]	3,241	3,280	3,203	2,742	2,570	2,307	2,594	2,608	2,961	2,277	2,334	2,617	2,132	3,790	4,389
	Hollister West	3,636	3,168	3,361	3,265	2,710	2,555	2,235	2,710	2,796	5,072	2,229	2,254	2,242	4,106	1,126
	Pacheco	235	234	293	248	323	83	133	227	144	203	176	191	81	241	104
	Tres Pinos	2,220	2,336	2,748	2,581	2,648	1,534	2,410	2,710	2,365	2,884	1,676	1,757	2,156	1,606	1,101
San Juan	San Juan	1,356	1,320	1,640	1,375	1,164	1,053	601	793	803	820	590	574	1,479	747	504
	TOTAL	**10,700**	**10,345**	**11,252**	**10,225**	**9,424**	**7,532**	**7,979**	**9,055**	**9,073**	**11,263**	**7,010**	**7,417**	**8,105**	**10,533**	**7,225**

1. Hollister East includes 2,524 AF of CVP water delivered to the West Hills Treatment Plant in San Juan but supplied to Hollister East customers.

Table E-4. Historical Water Use by User Type in Zone 6 - Includes Recycled Water (AFY)

WY	Agricultural	Municipal, and Industrial	Total	% Ag
1988	46,366	5,152	51,518	90%
1989	32,387	6,047	38,434	84%
1990	49,663	5,725	55,388	90%
1991	46,640	7,631	54,271	86%
1992	32,210	6,912	39,122	82%
1993	38,878	5,066	43,944	88%
1994	41,854	7,186	49,040	85%
1995	36,399	8,272	44,671	81%
1996	39,845	8,131	47,976	83%
1997	41,482	11,068	52,550	79%
1998	27,526	8,605	36,131	76%
1999	37,203	10,066	47,269	79%
2000	36,062	10,764	46,826	77%
2001	34,035	10,640	44,675	76%
2002	34,354	11,300	45,654	75%
2003	33,533	11,159	44,692	75%
2004	35,597	11,898	47,495	75%
2005	29,510	10,699	40,209	73%
2006	32,074	10,456	42,530	75%
2007	33,112	13,311	46,424	71%
2008	25,310	10,225	35,535	71%
2009	28,192	9,424	37,616	75%
2010	29,148	7,531	36,679	79%
2011	29,020	7,932	36,952	79%
2012	30,980	9,055	40,095	77%
2013	37,810	9,073	46,653	81%
2014	28,734	11,226	39,960	72%
2015	32,926	7,161	39,935	82%
2016	32,591	7,417	40,008	81%
2017	28,273	8,105	36,012	79%
2018	35,925	10,533	46,458	77%
2019	27,616	7,225	34,841	79%
AVERAGE	34,539	8,906	43,424	79%

Table E-5. Municipal Water Use by Major Purveyor for Water Year 2019 (AF)

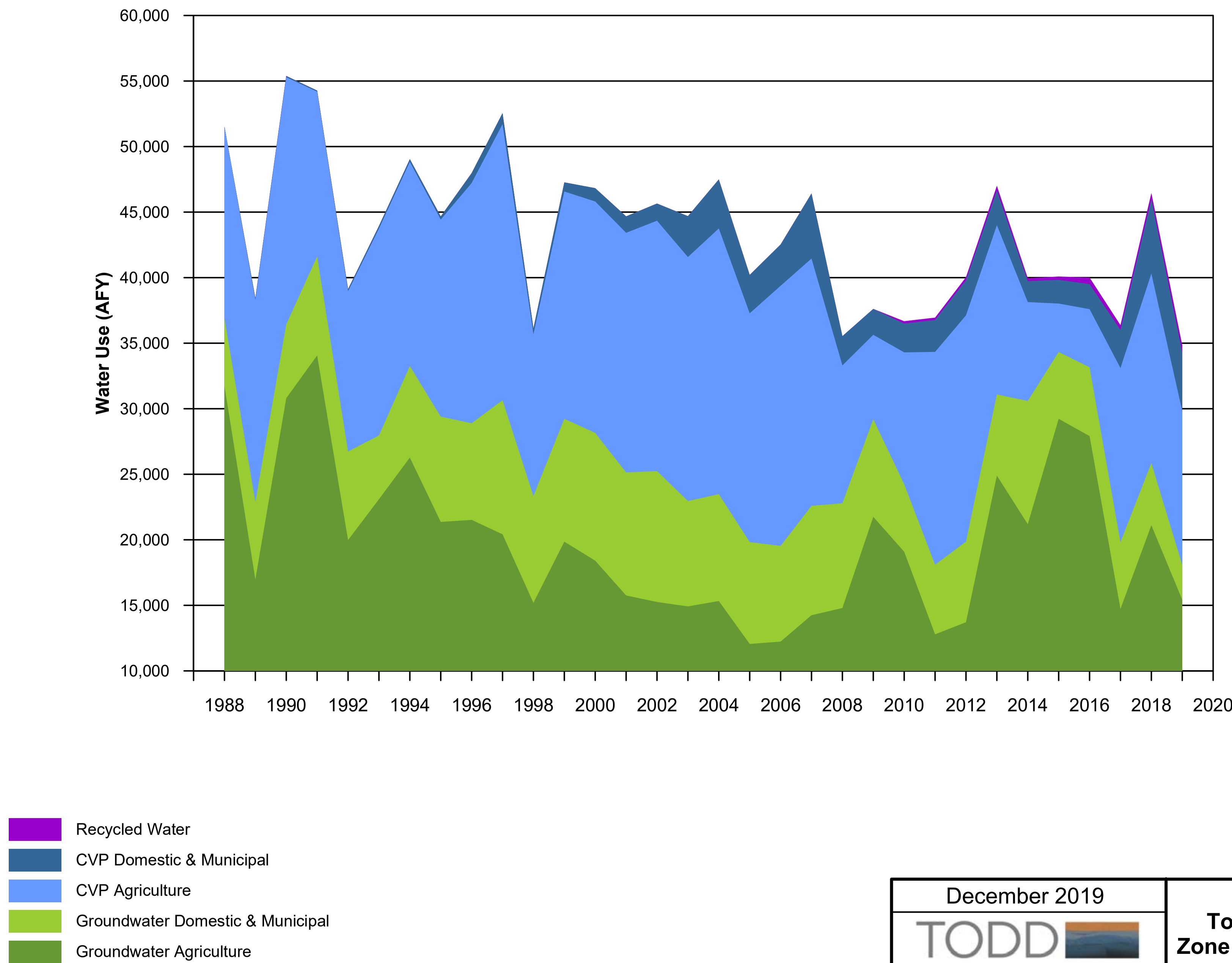
	WY 2019	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Groundwater													
Sunnyslope CWD	**565**	72	44	27	18	22	12	20	64	60	72	71	84
City of Hollister	**588**	32	25	14	19	10	20	54	29	89	96	105	97
City of Hollister - Cienega Wells	**283**	10	3	8	9	8	10	9	54	78	78	8	8
San Juan Bautista	**257**	17	16	20	25	10	9	17	36	17	21	46	23
Tres Pinos CWD	**33**	3	3	2	2	1	2	2	3	4	4	4	4
Groundwater Subtotal	**1,728**	**133**	**90**	**71**	**73**	**51**	**53**	**102**	**186**	**247**	**271**	**235**	**215**
CVP Imported Water													
Lessalt Treatment Plant	**1,660**	160	173	130	95	70	91	114	134	166	173	158	194
West Hills Treatment Plant	**2,524**	209	214	190	195	150	177	180	249	197	277	258	229
Imported Water Subtotal	**4,184**	**369**	**387**	**320**	**290**	**221**	**269**	**293**	**383**	**363**	**449**	**416**	**423**
Municipal Total													
TOTAL Municipal Water Supply	**5,912**	**502**	**477**	**391**	**363**	**272**	**322**	**396**	**569**	**610**	**720**	**651**	**638**

Table E-6. Historical Municipal Water Use by Major Purveyor (AFY)

WY	Sunnyslope CWD - GW	City of Hollister - GW	City of Hollister - Cienega Wells[1]	San Juan Bautista	Tres Pinos CWD	Lessalt Treatment Plant	West Hills Treatment Plant	Undivided Total	TOTAL
1988						0		5,152	5,152
1989						0		6,047	6,047
1990						0		5,725	5,725
1991						0		7,631	7,631
1992						0		6,912	6,912
1993						0		5,066	5,066
1994						0		7,186	7,186
1995	2,167	2,446				0			4,613
1996	2,139	3,386				0			5,525
1997	2,638	3,848				0			6,486
1998	2,357	3,441				0			5,798
1999	2,820	3,558				0			6,378
2000	3,214	4,021				0			7,235
2001	3,290	3,851				0			7,141
2002	3,256	4,120				21			7,398
2003	2,053	2,754				2,494			7,302
2004	2,426	2,828				2,101			7,356
2005	1,959	3,147	123	247	49	1,843			7,368
2006	1,907	2,801	123	150	49	1,900			6,930
2007	2,413	2,758	123	47	49	1,719			7,108
2008	2,294	2,746	123	417	47	1,323			6,949
2009	2,251	2,503	123	373	47	1,212			6,509
2010	1,861	2,194	108	308	47	1,344			5,861
2011	2,225	1,651	80	292	47	1,593			5,887
2012	2,360	1,761	130	267	45	1,657			6,219
2013	1,655	2,655	120	281	46	1,648			6,405
2014	2,134	2,646	114	285	49	979			6,207
2015	1,348	1,960	114	225	49	1,364			5,060
2016	1,331	1,615	105	232	49	1,682			5,014
2017	1,449	1,543	79	249	32	1,940	51		5,344
2018	978	1,217	121	184	34	1,596	1,990		6,119
2019	565	588	283	257	33	1,660	2,524		5,912

1. Data from Hollister Cienega Wells for 2005-2008 was estimated to be the same as WY 2009
Cells with no data indicate that the information is unavailable, while years with no use are shown explicitly as 0's.

Todd Groundwater 12/9/2019



December 2019

TODD GROUNDWATER

Appendix E-1
Total Water Use in Zone 6 by Water Source and User Category

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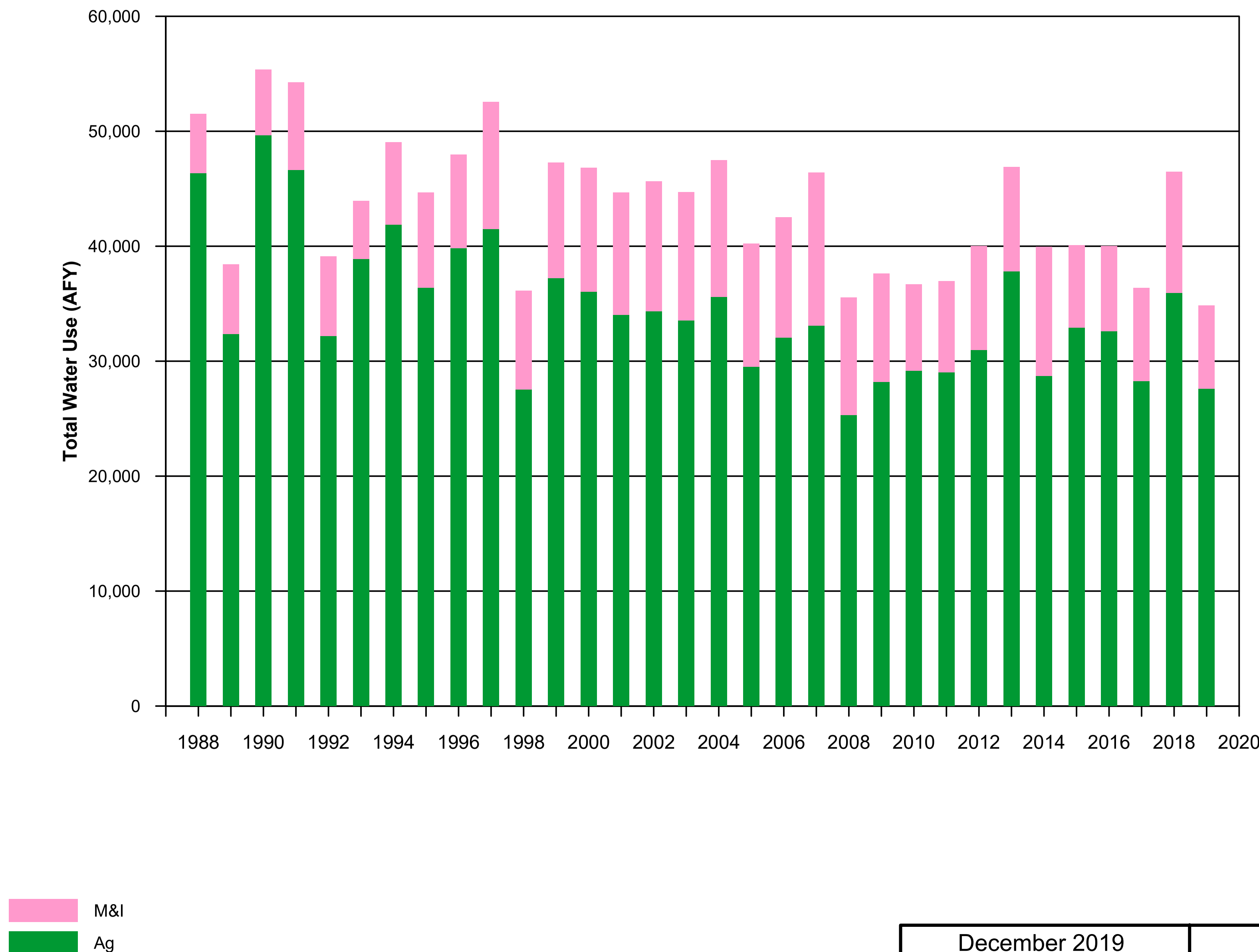
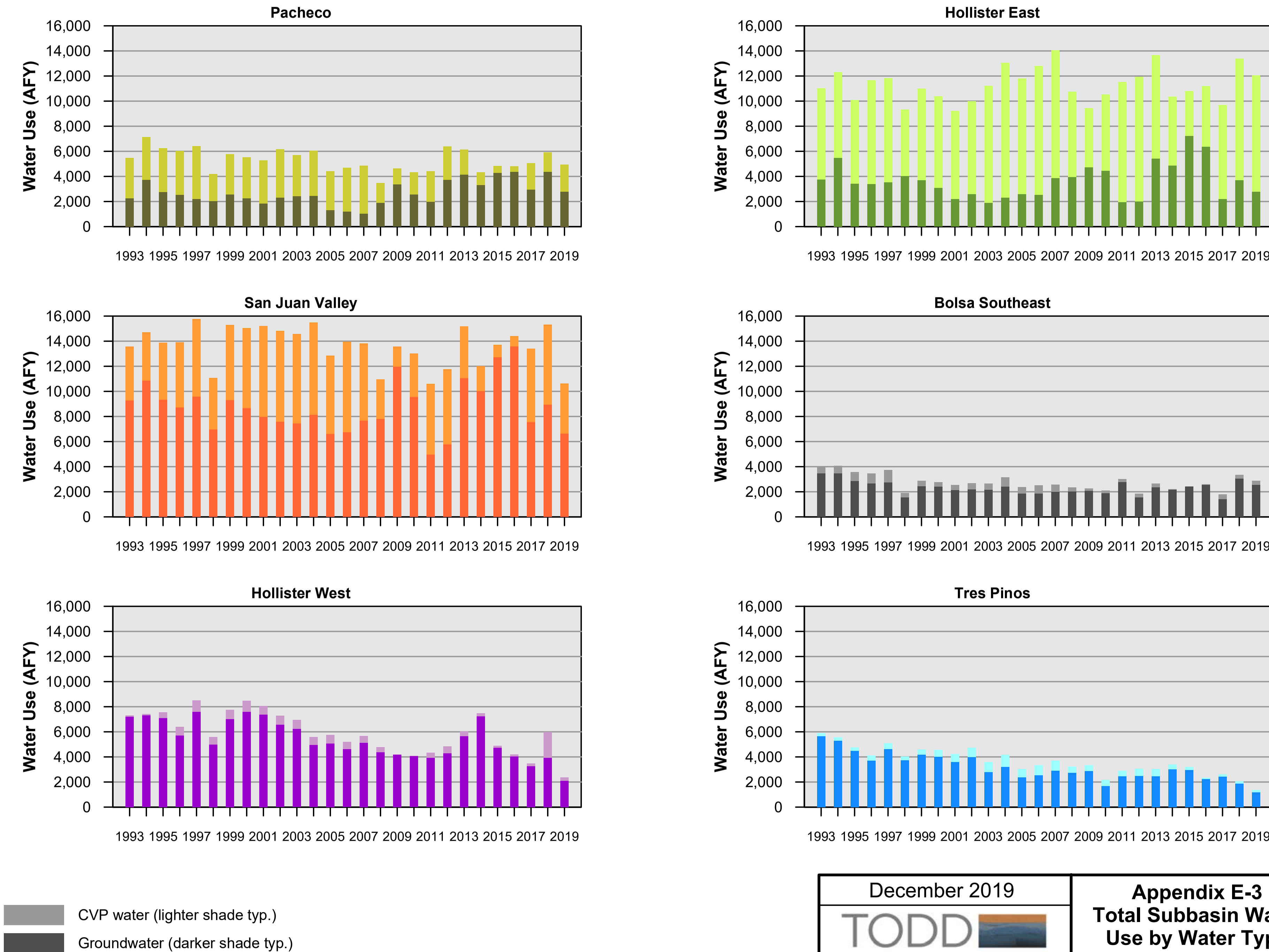


December 2019

TODD GROUNDWATER

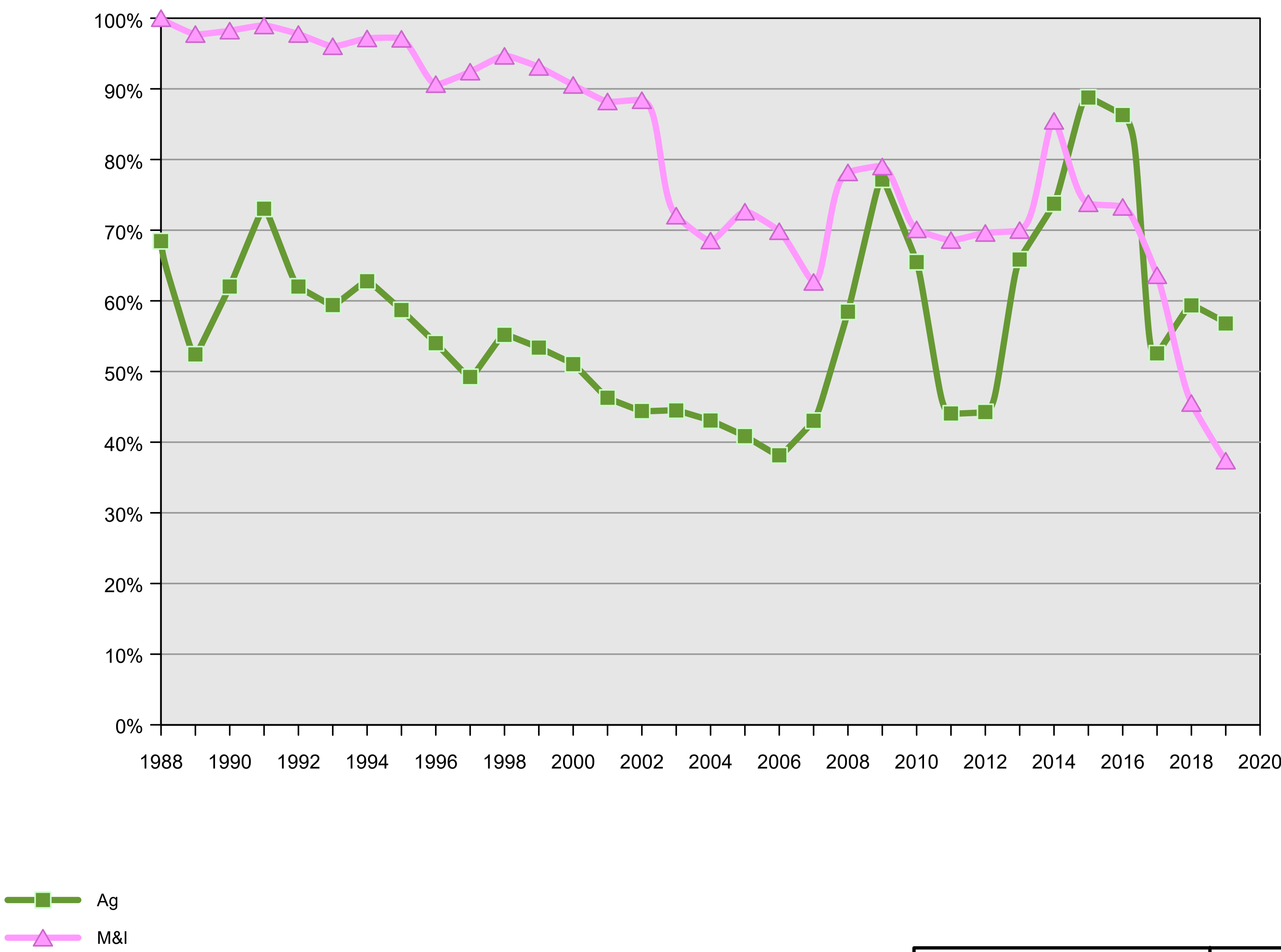
Appendix E-2
Water Use in Zone 6
by User Category



December 2019

TODD GROUNDWATER

Appendix E-3
Total Subbasin Water Use by Water Type
Zone 6



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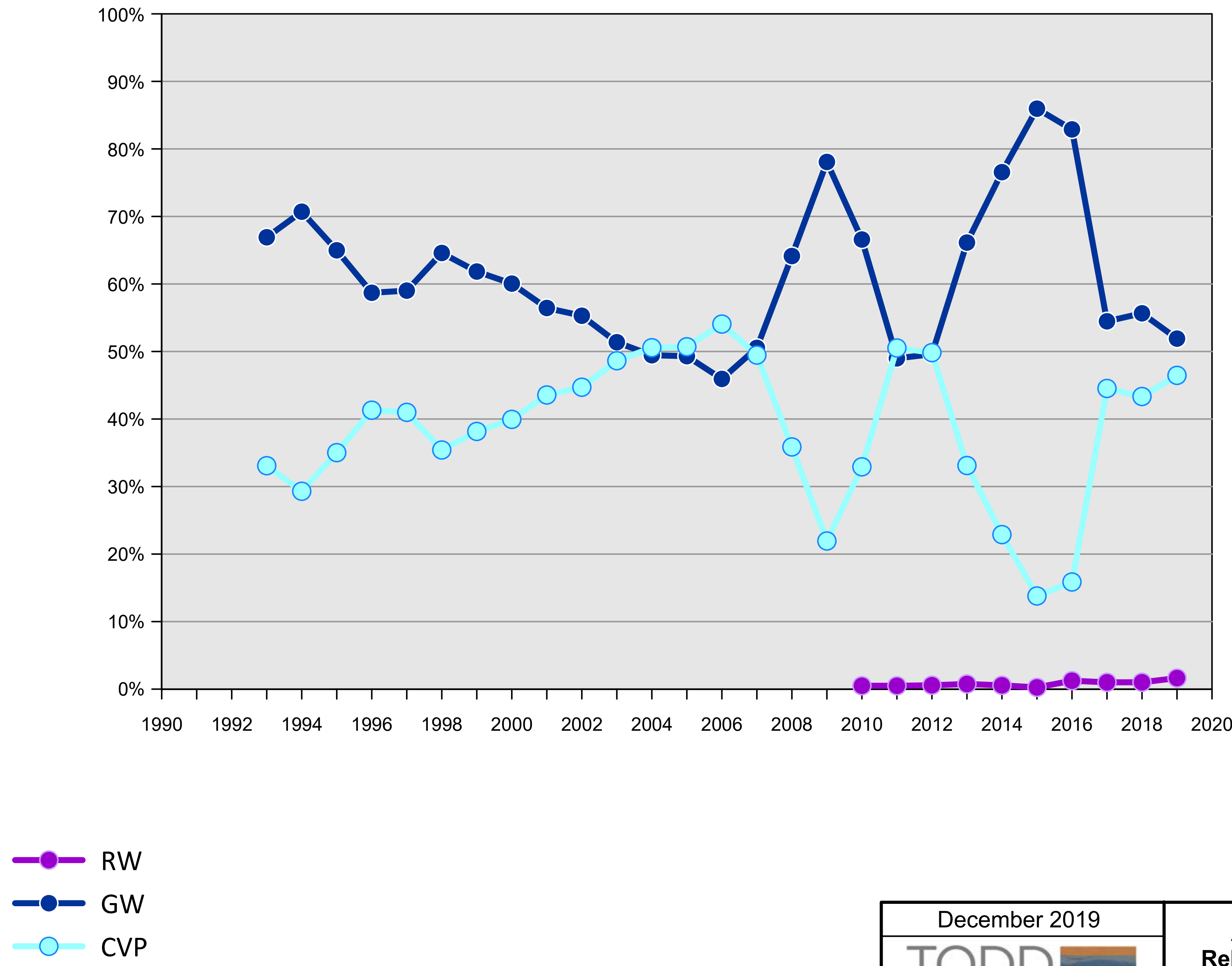
December 2019

TODD GROUNDWATER

Appendix E-4
Portion of Ag and M&I Supply Satisfied by Groundwater



December 2019

TODD GROUNDWATER

Appendix E-5
Relative Water Use by Supply Source

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APPENDIX F RATES AND CHARGES

List of Tables and Figures

Table F-1. 2019 Recommended Groundwater Revenue Requirement/Charges

San Benito County Water District
Groundwater Rates
Water Year
2019-2020, 2020-2021, 2021-2022
Zone 6

REVENUE REQUIREMENTS				Rates[2]	
Component	**Rate ($/AF)**	**Quantity (A/F)[1]**	**Amount**	**Ag** (per A/F)	**M & I** (per A/F)
SOURCE OF SUPPLY O&M					
AG	$ 18.68	23,974	$ 447,851	$ 18.68	
M&I	$ 18.68	4,877	$ 91,110		$ 18.68
PERCOLATION COSTS					
Cost of Water					
AG Cost of Water[3]	$ 53.51	2,105	$ 112,612	$ 4.70	
M&I Cost of Water[3]	$ 163.58	428	$ 70,036		$ 14.36
Power Costs					
AG Power Charge for percolation	$ 58.83	2,105	123,812	$ 5.16	
M&I Power Charge for percolation	$ 58.83	428	25,188		$ 5.16
TOTAL				$ 28.54	$ 38.21
Current Groundwater Charge[4] (per acre foot)				$ 7.95	$ 24.25
RECOMMENDED Rate Basis (per acre foot)					
Water Year 2019-2020				**$ 12.74**	**$ 38.21**
Water Year 2020-2021				**$ 13.12**	**$ 39.36**
Water Year 2021-2022				**$ 13.51**	40.54
RECOMMENDED CHARGES (per acre foot)					
Water Year 2019-2020				**$ 12.75**	38.25
Water Year 2020-2021				**$ 13.15**	39.40
Water Year 2021-2022				**$ 13.55**	40.55

Notes:

1 Assumed Volumes
Groundwater usage (based on average of past 4 years)

Ag usage	23,974
M&I usage	4,877
Total	28,851

2 Rates=Revenue Requirements/projected groundwater usage

3 Cost of Water:
AG: USBR and SLDMWA O&M
M&I: USBR and SLDMWA O&M, USBR Out-of-Basin Interest

4 Groundwater charge adopted by San Benito County Water District Board of Directors in January 2017 (Ag) and January 2016 (M&I)

5 Assumed volumes for percolation (based on 3 year average)

Ag	83%	2105
M&I	17%	428
Total	100%	2533

6 Annual escalation rate 3%

7 Rates charged will be rounded up to nearest $.05

Note: Section 70-7.8 (a) of the District Act states that the agricultural rate shall not exceed one-third of the rates for all water other than agricultural water.

Table F-2. Historical and Current San Benito County Water District CVP (Blue Valve) Water Rates (dollars/af)

USBR Water Year	Standby & Availability Charge (dollars/acre)	Water Charge		Power Charge					Groundwater Charge (dollars/af)			Recycled Water (per AF)	
		Agricultural	Municipal & Industrial	Distribution Subsystem					Agricultural	Municipal & Industrial		Agricultural	Power Charge
				2	6H	9L	9H	Others					
1987	$8.00	$34.00	n.c.						n.i.	n.i.			
1988	$2.00	$34.00	n.c.						n.i.	n.i.			
1991	$4.00	$38.00	$110.00						$6.25	$22.00			
1992	$4.00	$45.00	$120.00						$2.00	$10.00			
1994	$4.50	$77.61	$168.92						$1.00	$5.00			
1995	$4.50	$77.61	$168.92						$1.00	$15.75	First 100 af		
										$36.70	Next 500 af		
										$54.60	Over 600 af		
1996	$6.00	$75.00	$150.00						$1.50	$33.00			
1997	$6.00	$75.00	$157.00						$1.50	$33.00			
1998	$6.00	$75.00	$155.00						$1.50	$33.00			
2000	$6.00	$75.00	$155.00						$1.50	$11.50			
2001	$6.00	$75.00	$155.00						$1.50	$25.00			
2004	$6.00	$75.00	$150.00	$24.30	$46.75	$25.05	$53.70	$15.25	$1.50	$10.00			
2005	$6.00	$80.00	$150.00	$26.15	$49.40	$35.00	$66.90	$17.10	$1.50	$21.50			
2006	$6.00	$85.00	$160.00	$23.60	$36.05	$34.70	$65.75	$18.40	$1.50	$21.50			
2007	$6.00	$85.00	$160.00	$23.60	$36.05	$34.70	$65.75	$18.40	$1.50	$21.50			
2008	$6.00	$100.00	$170.00	$17.25	$19.40	$32.60	$62.75	$14.85	$1.50	$21.50			
2009	$6.00	$115.00	$180.00	$17.50	$20.25	$42.55	$74.85	$16.30	$2.50	$22.50			
2010	$6.00	$135.00	$200.00	$22.00	$27.30	$49.75	$84.35	$21.75	$2.50	$22.50			
2011	$6.00	$155.00	$220.00	$22.70	$28.15	$51.25	$86.90	$22.40	$2.50	$22.50			
2012	$6.00	$170.00	$235.00	$23.35	$29.00	$52.80	$89.50	$23.10	$2.50	$22.50			
2013	$6.00	$170.00	$235.00	$40.30	$29.25	$43.05	$91.55	$22.40	$3.25	$23.25			
2014	$6.00	$170.00	$238.00	$41.55	$30.15	$44.35	$94.30	$23.10	$3.60	$23.25			
2015	$6.00	$179.00	$247.00	$42.75	$31.05	$45.70	$97.15	$23.80	$3.95	$23.25			
2016	$6.00	$272.00	$363.00	$123.10	$75.65	$109.95	$162.55	$66.05	$4.95	$24.25		$182.55	$57.70
2017	$6.00	$191.00	$363.00	$126.80	$77.90	$113.25	$167.45	$68.05	$6.45	$24.25		$183.45	$59.45
2018	$6.00	$209.00	$363.00	$130.60	$80.25	$116.25	$172.45	$70.10	$7.95	$24.25		$183.45	$59.45
2019	$6.00	$254.00	$404.00	$80.45	$39.30	$88.15	$130.30	$33.70	$12.75	$38.25		$183.45	$59.45

Notes:
af = acre-feet.
n.c. = no classification.
n.i. = not implemented
All rates effective March 1 through following February.

Table F-3. Recent US Bureau of Reclamation Charges per Acre-Foot for CVP Water

User Category and Cost Item	Irrigation[1]						Municipal & Industrial					
	Cost of service (non-full cost)	Restoration fund[3]	SLDMWA[4]	Trinity PUD Assessment	Total	Contract rate[5]	Cost of service[2] (non-full cost)	Restoration fund[3]	SLDMWA[4]	Trinity PUD Assessment	Total	Contract rate[5]
1994	$71.68	$6.20	n.a.		$77.88	$17.21	$165.67	$12.40	n.a.		$178.07	$85.86
1995	$66.47	$6.35	n.a.		$72.82	$17.21	$132.90	$12.69	n.a.		$145.59	$85.86
1996	$65.63	$6.53	n.a.		$72.16	$27.46	$127.40	$13.06	n.a.		$140.46	$85.86
1997	$69.57	$6.70	n.a.		$76.27	$27.46	$143.27	$13.39	n.a.		$156.66	$85.86
1998	$61.58	$6.88	$5.00		$73.46	$27.46	$130.88	$13.76	$5.00		$149.64	$85.86
1999	$60.30	$6.98	$2.73		$70.01	$27.46	$127.91	$13.96	$2.73		$144.60	$85.86
2000	$64.24	$7.10	$6.43		$77.77	$27.46	$129.59	$14.20	$6.43		$150.22	$85.86
2001	$69.50	$7.28	$2.65		$79.43	$27.46	$129.40	$14.56	$4.15		$148.11	$85.86
2002	$68.71	$7.54	$6.61		$82.86	$24.30	$130.32	$15.08	$6.61		$152.01	$79.13
2003	$72.20	$7.69	$5.46		$85.35	$24.30	$129.07	$15.38	$5.46		$149.91	$79.13
2004	$74.52	$7.82	$6.61		$88.95	$24.30	$134.86	$15.64	$6.61		$157.11	$79.13
2005	$77.10	$7.93	$7.99		$93.02	$24.30	$132.01	$15.87	$7.99		$155.87	$79.13
2006	$91.13	$8.24	$9.31		$108.68	$30.93	$214.41	$16.49	$9.31		$240.21	$77.12
2007	$93.53	$8.58	$9.99	$0.11	$112.21	$30.93	$215.32	$17.15	$9.99	$0.11	$242.46	$80.08
2008[6]	$28.12	$8.79	$10.95	$0.07	$47.93	$30.93	$33.34	$17.57	$10.95	$0.07	$61.68	$33.34
2009	$30.20	$9.06	$11.49	$0.07	$50.82	$30.20	$32.77	$18.12	$11.49	$0.07	$62.45	$32.77
2010	$33.27	$9.11	$11.91	$0.11	$54.40	$33.27	$36.11	$18.23	$11.91	$0.11	$66.36	$36.11
2011	$38.92	$9.29	$9.51	$0.05	$57.77	$38.92	$42.58	$18.59	$9.51	$0.05	$70.73	$42.58
2012	$39.71	$9.39	$15.20	$0.05	$64.35	$39.71	$37.95	$18.78	$15.20	$0.05	$71.98	$37.95
2013	$40.39	$9.79	$17.29	$0.05	$67.52	$39.91	$38.71	$19.58	$17.29	$0.05	$75.63	$40.92
2014	$46.87	$9.99	$28.81	$0.23	$85.90	$46.87	$29.70	$19.98	$28.81	$0.23	$78.72	$29.70
2015	$53.82	$10.07	$30.66	$0.23	$94.78	$53.82	$34.74	$20.14	$30.66	$0.23	$85.77	$34.74
2016	$85.12	$10.21	$30.66	$0.30	$126.29	$38.28	$61.24	$20.41	$30.66	$0.30	$112.61	$23.42
2017	$66.17	$10.23	$14.15	$0.30	$90.85	$39.90	$49.50	$20.45	$14.15	$0.30	$84.40	$22.85
2018	$79.09	$10.47	$20.39	$0.30	$110.25	$48.35	$43.74	$20.94	$20.39	$0.30	$85.37	$17.45
2019	$67.32	$10.63	$20.26	$0.30	$98.51	$40.14	$37.54	$21.26	$20.26	$0.30	$79.36	$17.98

Notes:

(1) Total USBR rate given for non-full cost users only, as they represent the majority of water users.

(2) Cost-of-service for agricultural and municipal and industrial users includes a capital repayment rate and an operation and maintenance (O&M) rate. For municipal and industrial customers, cost-of-service also includes a deficit charge, which includes interest on unpaid O&M and interest on capital and on unpaid deficit.

(3) Restoration fund charges apply October 1 through September 30. All other rates effective March 1 through following February.

(4) Beginning in 1998, the San Luis-Delta Mendota Water Authority instituted this charge to "self-fund" costs associated with maintaining the Delta-Mendota Canal and certain other facilities, which were formerly funded directly by the Bureau of Reclamation. SLDMWA issues preliminary rates in December for the upcoming contract year (March-February). These rates are used for rate-setting purposes; actual rates may vary.

(5) The contract rate is the minimum rate CVP contractors are allowed to pay. To the extent that the contract rate does not cover interest plus actual operation and maintenance costs, a contractor deficit is accumulated that is charged interest at the current-year treasury borrowing rate.

(6) Per the amendatory contract with the USBR "out of basin" capital costs that were previously included in the cost of service are now under a separate repayment contract.

(7) Cost of service rates are inclusive of USBR direct pumping and Project Use Energy costs.

APPENDIX G LIST OF ACRONYMS

List of Acronyms

AF or A/F	acre-foot
AFY	acre-foot per year
AG	agriculture
BMP	Best Management Practices
CASGEM	California Statewide Groundwater Elevation Monitoring
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
COC	Constituent of Concern
CVP	Central Valley Project
District or SBCWD	San Benito County Water District
CWD	County Water District
DDW	Division of Drinking Water
DWR	California Department of Water Resources
DWTP	Domestic Wastewater Treatment Plant
ET	evapotranspiration
ft	feet
GAMA	Groundwater Ambient Monitoring and Assessment
GICIMA	Groundwater Information Center Interactive Map
GPBO	General Basin Plan Objective
gpd	gallons per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GW	groundwater
HUA	Hollister Urban Area
IRWMP	Integrated Regional Water Management Plan
ITRC	Irrigation Training and Research Center, California Polytechnic State University
IWTP	Industrial Wastewater Treatment Plant
M&I	Municipal and Industrial
MA	Management Area
MCL	Maximum Contaminant Level
MGD	million gallons per day
msl	mean sea level
MW	Monitored well
NGVD	National Geodetic Vertical Datum
pdf	Adobe Acrobat Portable Document Format
PPWD	Pacheco Pass Water District
PVWMA	Pajaro Valley Water Management Agency
RW	recycled water
RWQCB	Regional Water Quality Control Board

List of Acronyms (cont.)

SCVWD	Santa Clara Valley Water District
SEIR	Supplemental Environmental Impact Report
SGMA	Sustainable Groundwater Management Act
SLDMWA	San Luis & Delta-Mendota Water Authority
SMCL	Secondary Maximum Contaminant Levels
SSCWD	Sunnyslope County Water District
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
WRA	Water Resources Association of San Benito County
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant
WY	water year