

**Maximum Benefit Monitoring Program
2020 Annual Report
for the
Beaumont, San Timoteo and Yucaipa Groundwater
Management Zones**

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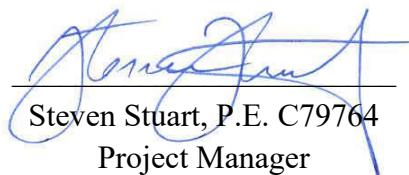
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APRIL 9, 2021

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1 INTRODUCTION

This maximum benefit monitoring program annual report (annual report) presents the combined monitoring efforts and maximum-benefit demonstration of all the stakeholder agencies in the Yucaipa, San Timoteo, and Beaumont groundwater management zones (GMZs) (Figure 1). This annual report was prepared pursuant to the maximum benefit commitments specified in the 2014 amendment (Resolution No. R8-2014-0005) to the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) (California Regional Water Quality Control Board Santa Ana Region [Regional Board], 2014). The responsible stakeholder agency in the Yucaipa GMZ maximum benefit program is the Yucaipa Valley Water District (YVWD). The responsible stakeholder agencies in the San Timoteo GMZ maximum benefit program are the City of Beaumont and YVWD. The responsible stakeholder agencies in the Beaumont GMZ maximum benefit program are the Beaumont-Cherry Valley Water District (BCVWD), the Cities of Banning and Beaumont, the San Gorgonio Pass Water Agency (Pass Agency), and YVWD.

The primary objective of the maximum benefit groundwater monitoring program is to collect the data needed for the triennial re-computation of ambient water quality in the Santa Ana River Basin. The most recent recalculation was completed in 2020 for water quality data collected from 1999 to 2018 (WSC, 2020). The next recalculation will occur in 2023 and cover the period from 2002 to 2021. This annual report presents data collected and work completed between January 1 and December 31, 2020, and is structured to reflect the reporting requirements defined in both the 2014 Basin Plan amendment and the Draft 2015 Maximum Benefit Monitoring Report (MBMR) 2015 Work Plan (Wildermuth, 2014), which was approved by the Regional Board on January 6, 2015.

Section 2 of this report provides background on the Basin Plan and the maximum benefit commitments specified in Tables 5-9a, 5-9b, and 5-9c of the 2014 Basin Plan Amendment for the Yucaipa, San Timoteo, and Beaumont GMZs. Section 3 presents the summary of compliance with each of the maximum benefit commitments listed in Tables 5-9a, 5-9b, and 5-9c, of the 2014 Basin Plan Amendment. In Section 4, the surface and groundwater monitoring programs are assessed and, where necessary, changes are recommended.

2 BACKGROUND

In 1995 the Regional Board adopted the Basin Plan. The Basin Plan established water quality standards for both surface water and groundwater, and serves as the basis for the Regional Board regulatory programs.

In 2004, the Basin Plan was updated to include revised management plans for total dissolved solids (TDS) and nitrogen. The 2004 update was the result of the work of the Nitrogen/ TDS task force, which conducted watershed-wide studies of TDS and nitrate as nitrogen (nitrate-nitrogen)

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objectives between 1994 and 2004. The 2004 Basin Plan update included the creation of new groundwater management zones (GMZs) based on previously defined groundwater subbasin boundaries, revised water quality objectives for TDS and nitrate-nitrogen in groundwater, revised wasteload allocations for TDS and nitrogen, and revised beneficial uses and objectives for TDS and nitrogen in surface waters.

Additionally, the 2004 Basin Plan set “maximum benefit” objectives for TDS and nitrate-nitrogen in the Chino North, Cucamonga, San Jacinto Upper Pressure, Yucaipa, Beaumont and San Timoteo GMZs. These maximum benefit objectives are less stringent than anti-degradation objectives, which were based on historical water quality data, and only apply to regions in which the responsible parties have demonstrated appropriate protection of beneficial use and maintenance of water quality consistent with maximum benefit to the people of the State of California.

In 2014, the Regional Board adopted Resolution No. R8-2014-0005, an amendment to the Basin Plan that revised the maximum benefit commitments in the Yucaipa, San Timoteo and Beaumont GMZs and expanded the boundary of the Beaumont management zone farther east to match the hydrogeological boundary. The previous boundary was a jurisdictional boundary that corresponded to the boundary between the Santa Ana regional board and the Colorado River regional board. The modified maximum benefit commitments assure reliable water supplies to meet present and anticipated future demands. The maximum benefit commitments, which are generally similar in all three GMZs, are summarized below:

- Develop and implement a surface water monitoring program.
- Develop and implement a groundwater monitoring program.
- Determine ambient groundwater quality in the maximum benefit GMZs every three years.
- Completion of recycled water supply systems that serve recycled water for irrigation purposes.
- Compliance must be achieved by the end of the 10th year after initiation of recycled water use/recharge operations.
- Compliance will be measured by calculating the 10-year volume-weighted running average TDS and nitrate-nitrogen concentrations of recycled water. The 10-year running average concentration must be less than or equal to the maximum benefit objective for the underlying GMZ.

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- Recycled water recharge shall be limited to the amount that can be blended with other recharge sources to achieve a 10-year (120 month) rolling volume-weighted concentration that is less than or equal to the maximum benefit objectives for TDS and nitrate-nitrogen for the underlying GMZ.
- Completion of plans for and construction of wastewater desalters and brine disposal facilities.
- Development of anti-degradation salt mitigation plans to offset discharges in excess of the anti-degradation objectives for the GMZs in the event that the Regional Board finds that the maximum benefit commitments are not met by the participating party.

3 REGIONAL PRECIPITATION

Daily precipitation data were obtained from National Oceanic and Atmospheric Administration (NOAA) weather stations located in Redlands (Station #USC00047306), Yucaipa (Station #US1CASR0044), and Beaumont (Station #US1CARV0018), California. The Redlands station is located approximately 2 miles northwest of the intersection of San Timoteo Canyon Road and Alessandro Road in the San Timoteo GMZ (Figure 1). The station is at an elevation of 1,417 feet North American Vertical Datum of 1988 (NAVD88). The Yucaipa station is located approximately 0.5 mile northwest of the Wilson Creek spreading basins in the Yucaipa GMZ (Figure 1). The Yucaipa station is at an elevation of 2,776 feet NAVD88. The Beaumont station is located approximately 2 miles northwest of the intersection of interstate highway 10 and State Highway 60 in the Beaumont GMZ (Figure 1). The elevation of the Beaumont station is 2,532 feet NAVD88.

Historical precipitation data from the Redlands station were compiled as monthly total rainfall from January 1963 through December 2020, from April 2014 through December 2020 from the Yucaipa Station, and from March 2009 through December 2020 from the Beaumont station. The precipitation data were organized by water year (Appendix R). A water year extends from October 1 to September 30 of the following calendar year.

The mean annual precipitation between the three stations ranged from 12.62 inches at the Redlands station to 16.34 inches at the Yucaipa station. Annual precipitation in the last four water years ranged from 46% to 167% of the annual means. A review of the cumulative departure from the mean monthly (CDMM) precipitation at the Redlands station since the 1963–1964 water year shows a general declining trend (i.e., less-than-normal rainfall) since the major El Niño event in 1997-1998 water year (Figure 2). The CDMM for Beaumont and Yucaipa show the same declining trends as Redlands from 2011 to 2016 during the extended drought in that period. All stations indicate more-than-normal rainfall wet seasons in 2017, 2019 and 2020.

4 MAXIMUM BENEFIT COMMITMENTS

The following subsections present a summary of compliance with the maximum benefit commitments defined in the 2014 Basin Plan Amendment for the Yucaipa, San Timoteo, and Beaumont GMZs. They also address the protocols defined in the Draft 2015 Maximum Benefit Monitoring Report (MBMR) Work Plan (Wildermuth, 2014) for collecting groundwater and surface water data in the field, compiling the data and fulfilling the reporting requirements for the annual monitoring report.

4.1 Yucaipa Groundwater Management Zone

There are seven maximum benefit commitments for the Yucaipa GMZ, as defined in the 2014 Basin Plan Amendment. The YVWD is the sole responsible party for the Yucaipa GMZ. The data collected and work completed for each of the seven commitments is discussed below.

4.1.1 Surface Water Monitoring Program

Stream surface water monitoring is only required in areas potentially impacted by recycled water discharges per the 2015 MBMR Work Plan (Wildermuth, 2014). No recycled water was discharged to Oak Glen Creek, the Oak Glen Spreading Basins, Wilson Creek, and the Wilson Creek Spreading Basins in the Yucaipa GMZ in 2020. Therefore, stream surface water monitoring was not conducted in this management zone in 2020.

4.1.2 Groundwater Monitoring Program

The groundwater monitoring program in the Yucaipa GMZ comprises both water level monitoring and water quality monitoring. Ninety-three (93) wells in the Yucaipa GMZ were identified in the 2015 Work Plan to be monitored for groundwater levels and/or water quality (Table 1). Of these wells, 32 were monitored by YVWD and the remainder were monitored independently by their respective owners.

Per the MBMR Work Plan, water level data is to be collected at a “minimum frequency of twice per year, corresponding with spring (April/May) and fall (October/November) time periods.” Additionally, water level measurements should represent “static and stable groundwater level conditions.” Water level data that met these monitoring requirements were collected from 84 of 91, or 92%, of the wells designated for water level data collection in 2020 (Table 1). The locations of wells identified for water level data collection are shown in Figure 3. Historical water level data including 2020 data are presented in hydrographs for each well in Appendix A.

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Per the MBMR Work Plan, and to ensure that the wells identified for water quality monitoring will continuously qualify for the ambient water quality analysis, water quality samples shall be collected from each well at a minimum frequency of once every three years. Water quality data that met this requirement were collected from 52 of 72, or 72%, of the wells designated for water quality data collection in 2020 (Table 1). The locations of wells identified for water quality data collection are shown in Figure 4. Water quality samples were collected and analyzed for concentrations of TDS, nitrate-nitrogen, and other constituents per the MBMR Work Plan. If a well was not sampled for water quality, the reason is provided in the comment line of Table 1 and discussed further in Section 5. Historical water quality data including 2020 data are presented in hydrographs for each well in Appendix B.

4.1.3 YVWD Wastewater and/or Groundwater Desalter(s) and Brine Disposal Facilities

YVWD installed a reverse osmosis (RO) treatment system to the Wochholz Regional Water Reclamation Facility (WRWRF) in 2013, but it was not used until the desalter and brine disposal facilities were completed and operational in 2016. RO treatment removes ions, salts and other minerals from wastewater and groundwater as the water is passed through a semi-permeable membrane. The RO concentrate, containing the constituents removed from the water, is disposed via the Yucaipa Valley Regional Brine Line, which was completed in 2012. The RO permeate is recombined with the WRWRF microfiltration effluent, which does not pass through the RO membranes, to dilute this effluent stream to meet the TDS maximum benefit objectives for the Yucaipa GMZ, Beaumont GMZ and San Timoteo GMZ.

Under the 2014 Basin Plan amendment, the desalter and brine disposal facilities were required to be operational by June 30, 2015. The District obtained the required permits to operate these facilities and continues to purchase additional brine line capacity as needed to provide for future expansion of the desalting facilities. These facilities were put into operation on July 25, 2016. Consequently, the mean monthly TDS concentration of the WRWRF effluent beginning August 2016 has ranged from 210 to 480 mg/L with a mean monthly TDS concentration of 285 mg/L (Appendix H).

4.1.4 Non-Potable Water Supply Distribution System

YVWD implemented a non-potable water supply system that serves recycled water, or a mix of recycled water, diluent water from WRWRF and un-treated imported water, for irrigation purposes and other direct non-potable reuse. YVWD started using recycled water for irrigation purposes in December 2015. YVWD anticipates using recycled water for groundwater recharge purposes in 2022.

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Per the Basin Plan Amendment Resolution No. R8-2014-0005, YVWD is required to produce a non-potable supply with a 10-year volume-weighted running average TDS concentration of 370 milligrams per liter (mg/L) or less and a nitrate-nitrogen concentration of 6.7 mg/L or less (assuming a 25% nitrogen loss coefficient). The mean monthly TDS concentration in recycled water from WRWRF has averaged 285 mg/L since the implementation of the desalter and brine disposal facilities on July 25, 2016 (Appendix H). The nitrate-nitrogen concentration in recycled water from WRWRF has averaged 2.7 mg/L since the implementation of denitrification processes at the plant in 2009 (Appendix I).

4.1.5 Recycled Water Recharge

No recycled water was discharged to or used to recharge the groundwater basin in the Yucaipa Groundwater Management Zone in 2020.

4.1.6 Anti-Degradation Objectives Salt Mitigation Plan

YVWD prepared a Salinity and Nutrient Management Plan (SNMP) that provides a conceptual framework for mitigation projects in the event that the Regional Board finds that the maximum benefit is no longer being achieved in the Yucaipa, San Timoteo and Beaumont GMZs. This plan was submitted to the Regional Board on October 29, 2015. A copy of the SNMP is included in Appendix S.

4.1.7 Ambient Groundwater Quality Determination

As specified in the 2014 Basin Plan Amendment, the ambient groundwater quality must be recalculated every three years. The most recent recalculation was completed in 2020 for water quality data collected from 1999 to 2018 (WSC, 2020). The next recalculation will occur in 2023 and cover the period from 2002 to 2021. Therefore, water quality data collected from January 1, 2019 to December 31, 2021 will be needed to complete the 2002 to 2021 calculation of ambient water quality.

The ambient groundwater quality calculation includes water level and/or water quality data from 93 wells in the Yucaipa GMZ. In 2020, water quality samples were collected from 52 of the 72, or 72%, wells identified for water quality sampling in the MBMR Work Plan (Table 1). Of the 20 wells that did not meet the water quality monitoring requirements from 2018-2020, seventeen (17) wells belong to the United States Geological Survey, and two fall under the responsibility of YVWD. USGS confirms that the three shallowest wells set at the 6th Street and Ave E location were sampled and analyzed for TDS concentrations with NO₃-N analyzed at the shallowest well. The two deeper wells were not sampled between 2018 and 2020. The other USGS wells were last

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sampled between 2006 and 2015. No other water quality studies are planned at this time. The last water quality sampling for the two YVWD wells occurred between 2014 and 2016.

The maximum concentrations of TDS in groundwater from 2018 to 2020 are shown in Figure 5. The maximum concentrations of nitrate-nitrogen are shown in Figure 6.

4.2 San Timoteo Groundwater Management Zone

There are nine maximum benefit commitments for the San Timoteo GMZ, as defined in the 2014 Basin Plan Amendment. YVWD shares responsibility for the San Timoteo GMZ with the City of Beaumont (Beaumont). YVWD is responsible for monitoring in the San Timoteo GMZ. The data collected and work completed for each of the nine commitments is discussed below.

4.2.1 Surface Water Monitoring Program

The potential sources of surface water in the San Timoteo GMZ are recycled water from the WRWRF and Beaumont, and storm water runoff to San Timoteo Creek. Because recycled water is discharged to San Timoteo Creek in the San Timoteo GMZ, stream surface water monitoring is required for this management zone.

In order to help demonstrate appropriate protection of beneficial use and maintenance of water quality consistent with maximum benefit to the people of the State of California:

- Surface water discharge measurements and water quality grab samples were collected biweekly at Sites YVWD-A, YVWD-B/B2 and YVWD-Z (Figure 7).
- Water quality grab samples were collected from the vicinity of sites YVWD-E and YVWD-Z (Figure 7) following six storm events in 2020, in addition to the biweekly sampling events. The six storm events (with total rainfall including day of sample collection and up to 5 days prior at the Redlands NOAA climate station) and were:
 - February 24, 2020 (0.29 inches of rainfall from February 22 to 23)
 - March 16, 2020 (3.09 inches of rainfall from March 10 to 15)
 - March 25, 2020 (0.58 inches of rainfall from March 23 to 24)
 - April 9, 2020 (3.50 inches of rainfall from April 6 to 9)
 - November 9, 2020 (0.69 inches of rainfall from November 7 to 9)
 - December 30, 2020 (1.35 inches of rainfall from December 28 to 30)

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- Temperature, pH, electrical conductivity, and dissolved oxygen were measured in the field at all surface water sites, and grab samples were analyzed at an analytical laboratory for the parameters listed in the 2015 MBMR Work Plan.

Stream flow was manually measured at sites YVWD-A, YVWD-B2, and YVWD-Z. Water velocity was measured with a USGS pygmy current meter and a USGS top setting wading rod. The cross-sectional area of the stream was determined by measuring stream depths with a measurement stick and stream widths with measurement tape. The Current-Meter Method was used to calculate flow. This method is referred to in USGS Techniques of Water Resources Investigations, Book 3, Chapter A8¹.

Hydrographs showing measured stream flow compared to the cumulative departure from the mean monthly (CDMM) rainfall measured at the NOAA Redlands station are in Figures 8, 9, and 10, respectively, for sites YVWD-A, YVWD-B2, and YVWD-Z. Historical stream flow data from site YVWD-C, which was approximately 3,200 feet upstream from YVWD-Z, is included to provide information on stream flow in this reach of San Timoteo Creek prior to the identification of YVWD-Z as a monitoring site in 2015. Site YVWD-C is no longer monitored. Additionally, due to issues accessing YVWD-B, this monitoring location was moved 1 mile downstream to the Alessandro Road bridge in July 2019 and was renamed YVWD-B2. YVWD-B is no longer monitored.

Temperature, pH, specific conductance, and dissolved oxygen were measured in the field prior to collecting a water quality sample. A YSI Pro Plus multiparameter probe was calibrated prior to submergence in the stream. After submerging the probe, field measurements were recorded until the field parameters were found to stabilize within acceptable limits. Grab samples were then collected in polyethylene containers and sent to Clinical Laboratory of San Bernardino, Inc. of Grand Terrace, California, a California certified analytical laboratory (ELAP #1088), for analysis. Water quality hydrographs showing concentrations of TDS and nitrate-nitrogen for sites YVWD-A, YVWD-B2 (including YVWD-B), YVWD-Z (including YVWD-C), and YVWD-E are shown in Figures 11 to 18.

The historical stream flow data recorded at sites YVWD-A, YVWD-B, and YVWD-Z (combined with YVWD-C) are included in Appendix C. Scanned copies of the calibration records and field forms completed during the surface water monitoring events in 2020 are included in Appendix D. Copies of the analytical laboratory reports with Chain-of-Custody forms are included in Appendix E.

¹ http://pubs.usgs.gov/twri/twri3a8/pdf/TWRI_3-A8.pdf

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4.2.2 Groundwater Monitoring Program

The groundwater monitoring program in the San Timoteo GMZ comprises both water level and water quality monitoring. Forty (40) wells in the San Timoteo GMZ were identified in the 2015 Work Plan to be monitored for groundwater levels and/or water quality (Table 2). There are 32 wells in the San Timoteo GMZ that are monitored for groundwater levels. Of these wells, 19 are monitored by the YVWD and Beaumont, and the remainder are monitored independently by their respective owners. Wells monitored by the YVWD and Beaumont were monitored under the field monitoring protocol set forth in the MBMR Work Plan (Wildermuth, 2014).

Water level data that met the groundwater monitoring requirements established in the MBMR Work Plan were collected from 20 of 32, or 62% of the wells designated for water level data collection in 2020. Wells where water level data did not meet the MBMR monitoring requirements were because no static water level measurements were collected in 2020, the well owner denied access to the well, the well no longer exists, or the well was artesian (and hence no static depth-to-water was measured). Historical water level data including 2020 data are presented in hydrographs for each well in Appendix F.

Per the MBMR Work Plan, and to ensure that the wells identified for water quality monitoring will continuously qualify for the ambient water quality analysis, water quality samples shall be collected from each well at a minimum frequency of once every three years. Water quality data that met this requirement were collected from 22 of 28, or 79%, of the wells designated for water quality data collection in 2020 (Table 2). Explanations for why six of the 28 wells weren't sampled are provided in Section 5 and in Table 2.

Groundwater quality samples were collected and analyzed for concentrations of TDS, nitrate-nitrogen, and other constituents per the MBMR Work Plan. If a well was not sampled for water quality, the reason is provided in the comment line of Table 2. Historical groundwater quality data including 2020 data are presented in hydrographs for each well in Appendix G.

4.2.3 YVWD Wastewater and/or Groundwater Desalter(s) and Brine Disposal Facilities

YVWD installed a RO treatment system to the WRWRF in 2013, but it was not used until the desalter and brine disposal facilities were completed and operational in 2016. RO treatment removes ions, salts and other minerals from wastewater and groundwater as the water is passed through a semi-permeable membrane. The RO concentrate, containing the constituents removed from the water, is disposed via the Yucaipa Valley Regional Brine Line. The RO permeate is recombined with the WRWRF microfiltration effluent, which does not pass through the RO

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membranes, to dilute this effluent stream to meet the TDS maximum benefit objectives for the Yucaipa GMZ, Beaumont GMZ and San Timoteo GMZ.

Under the 2014 Basin Plan amendment, the desalter and brine disposal facilities were required to be operational by June 30, 2015. The District obtained the required permits to operate these facilities and continues to purchase additional brine line capacity when available to provide for future expansion of the desalting facilities as needed. These facilities were put into operation on July 25, 2016. Consequently, the mean monthly TDS concentration of the WRWRF effluent beginning August 2016 has ranged from 210 to 480 mg/L with a mean monthly TDS concentration of 285 mg/L (Appendix H).

4.2.4 City of Beaumont Wastewater and/or Groundwater Desalter(s) and Brine Disposal Facilities

Under the 2014 Basin Plan Amendment, Beaumont was required to submit a detailed plan and schedule for construction of a desalter and brine disposal facility. Beaumont completed the design of a Wastewater Treatment Plant Renovation and Expansion Project and submitted the design to the Santa Ana Regional Water Quality Control Board on December 29, 2017. The project includes reverse osmosis (RO) and a brine line to connect to the Inland Empire Brine Line. Beaumont started construction of the new plant and brine line in the Fall of 2018, completing construction of the brine line and phase 1 of the new plant in 2020. Operation of the desalter commenced in November 2020.

4.2.5 YVWD, City of Beaumont Non-Potable Water Supply

Basin Plan Amendment Resolution No. R8-2014-0005 stated that “both YVWD and Beaumont are planning for the construction of a non-potable supply system to serve a mix of recycled water, un-treated imported water, reverse osmosis permeate (diluent) and/or storm water for landscape irrigation uses and direct non-potable reuse.” YVWD started supplying recycled water for landscape irrigation purposes in December 2015. YVWD anticipates using non-potable water for groundwater recharge purposes in 2022. Beaumont is currently working with BCVWD to distribute Title 22 recycled water as well as to conduct long-term planning for future distribution and growth in Title 22 production.

Per the Basin Plan Amendment R8-2014-0005, both YVWD and Beaumont are required to produce a non-potable supply with a 10-year volume-weighted running average TDS concentration of 400 mg/L or less and, for any non-irrigation reuse that has the potential to affect groundwater quality, the 10-year volume-weighted running average nitrate-nitrogen concentration shall comply with 6.7 mg/L (taking the 25% nitrogen loss coefficient into account to assure that the maximum benefit objective of 5 mg/L will be met).

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The mean monthly TDS concentration in recycled water from the WRWRF has averaged 285 mg/L since the implementation of the desalter and brine disposal facilities on July 25, 2016 (Appendix H). The 10-year volume-weighted running average of TDS from the WRWRF has steadily declined from 450 mg/L in 2015 to 382 mg/L in 2020 (Figure 19). The nitrate-nitrogen concentration in recycled water from WRWRF has averaged 2.8 mg/L since the implementation of denitrification processes at the plant in 2009 (Appendix I). The 10-year volume-weighted running average of nitrate (as nitrogen) from the WRWRF has steadily declined from 8.4 mg/L in 2011 to 2.6 mg/L in 2020 (Figure 20).

4.2.6 Recycled Water Recharge/Habitat Maintenance Discharge

The only recycled water discharge in the San Timoteo GMZ is from the WRWRF. This facility generates one live stream discharge to San Timoteo Creek (Figure 7). Recycled water is the only water source discharged to San Timoteo Creek. Daily live-stream discharge volumes and water quality sample results were collected in 2020 in compliance with the YVWD NPDES waste discharge permit.

Per Basin Plan Amendment R8-2014-0005, “the discharge of recycled water to San Timoteo Creek to maintain the riparian habitat and the demonstration of ‘maximum benefit’ are contingent on the recharge/discharge of recycled water at a 10-year annual average (running average) TDS concentration of 400 mg/L and nitrate-nitrogen concentration of 6.7 mg/L (taking the 25% nitrogen loss coefficient into account to assure that the ‘maximum benefit’ objective of 5 mg/L will be met).”

The 10-year volume-weighted running average concentration of TDS for recycled water discharged to San Timoteo Creek from 2011 through 2020 was 382 mg/L (Appendix H). The implementation of the desalter and brine line facilities in July 2016 has reduced the mean monthly TDS concentration of recycled water to 280 mg/L in 2020. A hydrograph showing historical TDS concentrations of recycled water discharged at the YVWD outfall to San Timoteo Creek, as well as the 10-year volume-weighted running average for TDS, is in Figure 19.

The 10-year running average concentration of nitrate-nitrogen for recycled water discharged to San Timoteo Creek from 2011 through 2020 was 2.6 mg/L (Appendix I). Appendix I also includes calculations for total inorganic nitrogen (TIN). The average annual TIN concentration since 2009 is 4.0 mg/L. YVWD implemented a denitrification process that removed a significant amount of nitrate from the treated effluent (i.e. recycled water) at the WRWRF in 2009. A hydrograph showing historical nitrate-nitrogen concentrations of recycled water discharged at the YVWD outfall to San Timoteo Creek, as well as the 10-year volume-weighted running average for nitrate-nitrogen, is in Figure 20.

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4.2.7 Improve Quality of Surface Water Discharges to the San Timoteo Groundwater Management Zone

YVWD implemented a denitrification process that removed a significant amount of nitrate from the treated effluent (i.e. recycled water) at the WRWRF in 2009. The nitrate-nitrogen concentration of recycled water discharged from the WRWRF to San Timoteo Creek has averaged 2.8 mg/L since 2009. YVWD implemented its desalter and brine line disposal facilities in July 2016. The TDS concentration of recycled water discharged to San Timoteo Creek has averaged 285 mg/L since July 2016. Additionally, YVWD has obtained permits to reduce the discharge of recycled water to San Timoteo Creek, which will “improve the quality of groundwater in the San Timoteo Management Zone” (YVWD, 2015; Appendix S).

4.2.8 Anti-Degradation Objectives Salt Mitigation Plan

YVWD prepared a Salinity and Nutrient Management Plan for the Beaumont Management Zone, San Timoteo Management Zone and the Yucaipa Management Zone and submitted it to the Regional Board on October 29, 2015 (Appendix S). The plan was developed by YVWD and includes steps or actions that YVWD will implement to mitigate excess salt loading above the anti-degradation water quality objectives. YVWD has invested in denitrification facilities to allow additional denitrification treatment as need in the future. In the case where the WRWRF effluent exceeds the maximum benefit objectives, YVWD will employ the desalting and denitrification facilities at the WRWRF and the Yucaipa brine line to discharge effluent at the anti-degradation objectives of annual flow weighted average TDS concentration of 300 mg/L and TIN concentration of 3.6 mg/L.

4.2.9 Ambient Groundwater Quality Determination

As specified in the 2014 Basin Plan Amendment, the ambient groundwater quality must be recalculated every three years. The most recent recalculation was completed in 2020 for water quality data collected from 1999 to 2018 (WSC, 2020). The next recalculation will occur in 2023 and cover the period from 2002 to 2021. Therefore, water quality data collected from January 1, 2019 to December 31, 2021 will be needed to complete the 2002 to 2021 calculation of ambient water quality.

The ambient groundwater quality calculation includes water level and/or water quality data collected from 40 wells in the San Timoteo GMZ. In 2020, water quality samples were collected from 22 of the 28, or 79% of the wells scheduled for water quality sampling in the MBMR Work Plan (Table 2). Of the six wells with no water quality data collected from 2018-2020, two of the wells, ST-01 and ST-07, were abandoned in 2005. Well ST-11 was abandoned in 2016. Well BH-20 is no longer accessible for water quality sampling. The last water quality sample collected at

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that well was in 2008. Well BH-21 was dry in July 2019; the last water quality sample collected at that well was in 2017. The private owner of the GL-6 well has denied access to the well.

The maximum concentrations of TDS in groundwater from 2018 to 2020 are shown in Figure 21. The maximum concentrations of nitrate-nitrogen are shown in Figure 22.

4.3 Beaumont Groundwater Management Zone

There are nine maximum benefit commitments for the Beaumont GMZ, as defined in the 2014 Basin Plan Amendment. YVWD shares responsibility for the Beaumont GMZ with Beaumont, the City of Banning (Banning), the San Geronio Pass Water Agency, and BCVWD. Beaumont is responsible for monitoring in the Beaumont GMZ. The data collected and work completed for each of the nine commitments is discussed below.

4.3.1 Surface Water Monitoring Program

The potential sources of surface water in the Beaumont GMZ are recycled water from Wastewater Treatment Plant No.1, operated by Beaumont, imported State Water Project water, storm water, and stream surface water. Because recycled water is discharged to Cooper's Creek at discharge point DP-001 in the Beaumont GMZ, stream surface water monitoring is required for this management zone.

In order to demonstrate appropriate protection of beneficial use and maintenance of water quality consistent with the maximum benefit to the people of the State of California in the Beaumont GMZ, Beaumont is required to undertake the following surface water monitoring tasks:

- Biweekly surface water flow measurements and water quality grab samples in Cooper's Creek just upstream (site CC-02) and just downstream (site CC-01) of discharge point DP-001, and as close to the boundary between the Beaumont and San Timoteo GMZs (site CC-03) (Figure 23).
 - Stream flow measurements were collected biweekly at sites CC-01 and CC-03. Hydrographs showing measured stream flow at sites CC-01 and CC-03 are compared to the cumulative departure from the mean monthly (CDMM) rainfall (Figures 24 and 25). Site CC-02 was first identified in the 2015 MBMR Work Plan, so there is no historical data prior to 2015, and no stream flow was observed at this location in 2020. Stream flow data for CC-01 and CC-03 are included in Appendix J.

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- Water quality samples were collected biweekly from sites CC-01 and CC-03. Water quality hydrographs showing surface water concentrations of TDS and nitrate-nitrogen for sites CC-01 and CC-03 are shown in Figures 26 through 29.
- Biweekly surface water flow measurements and water quality grab samples on San Timoteo Creek approximately six miles downstream of DP-001 (existing site STC-01 on Figure 23).
 - Stream flow measurements were collected biweekly at site STC-01. A hydrograph showing measured stream flow at site STC-01 was compared to the cumulative departure from the mean monthly rainfall (Figure 30). Stream flow data for STC-01 is included in Appendix J.
 - Water quality samples were collected biweekly from site STC-01. Water quality hydrographs showing surface water concentrations of TDS and nitrate-nitrogen for site STC-01 are shown in Figures 31 and 32, respectively.
- Biweekly surface water flow measurements and water quality grab samples on the unnamed tributary to Marshall Creek just upstream (site TMC-01) and just downstream (site TMC-02) of discharge point DP-007 (Figure 23).
 - No stream flow measurements or water quality samples were collected at sites TMC-01 and TMC-02 because no flow was observed at these locations in 2020. The City of Beaumont did not discharge recycled water at this location in 2020. Sites TMC-01 and TMC-02 were first identified in the 2015 MBMR Work Plan, so there is no historical data for either site prior to 2015.
- Biweekly recording of the location where surface flow terminates downstream of the discharge at DP-007. If surface flow does not terminate in the Beaumont GMZ, a discharge measurement and surface water quality sample will be collected as close to the boundary between the Beaumont and San Timoteo GMZs as possible (site STC-02) (Figure 23).
 - No data was collected in marking the location where surface flow terminates downstream of the discharge at DP-007 because Beaumont did not discharge recycled water at this location in 2020.
- Collect water quality grab samples on Noble Creek upstream of the confluence with Marshall Creek (site NC-02), San Timoteo Creek at the boundary between the Beaumont and San Timoteo GMZs (site STC-02), and Cooper's Creek at the boundary between the Beaumont and San Timoteo GMZs (site CC-03) for up to 6 storm events per year.

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- No water quality samples were collected at site NC-02 because no surface water was observed at this location in 2020.
- Water quality samples were collected at STC-02 following three storm events (with total rainfall including day of sample collection and up to 5 days prior at the Beaumont NOAA climate station) occurring on:
 - January 17, 2020 (0.14 inches of rainfall from January 16 to 17)
 - March 2, 2020 (0.13 inches of rainfall from March 1 to 2)
 - March 14, 2020 (4.28 inches of rainfall from March 10 to 14)
- The Historical measurements of stream flow measured at surface water monitoring stations CC-01, CC-03 and STC-01 are included in Appendix J. Scanned copies of the calibration records and field forms completed during the surface water monitoring events in 2019 are included in Appendix K. Copies of the analytical laboratory reports with Chain-of-Custody forms are also included in Appendix L.

4.3.2 Groundwater Monitoring Program

The groundwater monitoring program in the Beaumont GMZ comprises both water level monitoring and water quality monitoring. One hundred-sixteen (116) wells in the Beaumont GMZ were identified in the 2015 Work Plan to be monitored for groundwater levels and/or water quality (Table 3). Of these wells, 33 were monitored by the San Geronio Pass Water Agency, 32 were monitored by Beaumont, 24 were monitored by Beaumont Cherry Valley Water District, 6 monitored by Banning, and the remaining 21 wells were monitored independently by their respective owners.

Water level data that meets the groundwater monitoring requirements established in the MBMR Work Plan were collected from 60 of 103, or 58% of the wells designated for water level data collection in 2020 (Table 3). Reasons for why some wells did not meet the water level measurement requirement are discussed in Section 5 and included in Table 3. Historical water level data including 2020 data are presented in hydrographs for each well in Appendix M.

Per the MBMR Work Plan, and to ensure that the wells identified for water quality monitoring will continuously qualify for the ambient water quality analysis, water quality samples shall be collected from each well at a minimum frequency of once every three years. Water quality data that met this requirement were collected from 40 of 56, or 71%, of the wells designated for water quality data collection in 2020 (Table 3).

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Water quality samples were collected and analyzed for concentrations of TDS, nitrate-nitrogen, and other constituents per the MBMR Work Plan. If a well was not sampled for water quality, the reason is provided in Table 3 and discussed in Section 4.3.9. Historical water quality data is presented in Appendix N. Scanned copies of the calibration records, field forms, and analytical laboratory reports with chain-of-custody forms for groundwater sample collection are included in Appendix O.

4.3.3 YVWD Wastewater and/or Groundwater Desalter(s) and Brine Disposal Facilities

YVWD anticipated that demineralization of groundwater or recycled water would be necessary in the future to protect the Beaumont GMZ. Under the 2014 Basin Plan amendment, these facilities were required to be operational by June 30, 2015. The District has obtained the required permits to operate these facilities and continues to purchase additional brine line capacity as needed to provide for future expansion of the desalting facilities. These facilities were put into operation on July 25, 2016. Consequently, the mean monthly TDS concentration of the WRWRF effluent beginning August 2016 has ranged from 210 to 480 mg/L with a mean monthly TDS concentration of 285 mg/L (Appendix H).

4.3.4 City of Beaumont Wastewater and/or Groundwater Desalter(s) and Brine Disposal Facilities

In order to improve the quality of recycled water and other non-potable sources of water, the 2014 Basin Plan Amendment mandated that Beaumont construct and operate desalting and brine disposal facilities. Beaumont completed the design of a Wastewater Treatment Plant Renovation and Expansion Project and submitted the design to the Santa Ana Regional Water Quality Control Board on December 29, 2017. The project includes reverse osmosis (RO) and a brine line to connect to the Inland Empire Brine Line. Beaumont started construction of the new plant and brine line in the Fall of 2018, completing construction of the brine line and phase 1 of the new plant in 2020. Operation of the desalter commenced in November 2020.

4.3.5 City of Banning, Wastewater and/or Groundwater Salt Mitigation Plan

Banning does not currently utilize recycled water in the Beaumont GMZ. Banning submitted a Salt Management Plan in 2016 to the Regional Board. The Plan stated that Banning is “in the design phase for tertiary treatment upgrades which will provide Title 22 tertiary treated effluent for irrigation and for groundwater recharge,” (City of Banning, 2016). Banning will amend the Salt Management Plan and resubmit to the Regional Board six months prior to discharging tertiary treated effluent for irrigation and groundwater recharge purposes.

4.3.6 Non-Potable Recycled Water Supply

Currently, there is no non-potable water supply distribution system in the Beaumont Groundwater Management Zone. Therefore, there is no data to include in this annual report. Beaumont's wastewater treatment plant produces tertiary treated and disinfected recycled water. A Title 22 Engineering Report must be developed and approved by the State Water Resources Control Board, Division of Drinking Water, prior to Beaumont distributing recycled water for surface irrigation or other similar uses. Beaumont is currently working with BCVWD to distribute Title 22 recycled water as well as to conduct long-term planning for future distribution and growth in Title 22 production.

Beaumont completed phase 1 of constructing an upgrade/expansion of the water reclamation facility. The project has expanded capacity from 4 million gallons per day (mgd) to 6 mgd and can now produce Title 22 compliant recycled water. The treatment process includes membrane bioreactor technology followed by partial reverse osmosis for the removal of excess salts in the recycled water and plant effluent. Disinfection will be provided by ultraviolet light disinfection. BCVWD is working on a Title 22 Engineering Report for the distribution of Title 22 water. Beaumont has begun working with the Regional Board regarding an updated NPDES permit for the new water reclamation facility. Once the new water reclamation facility is completed and final permits are received from California's Division of Drinking Water (DDW) and the Regional Board, Beaumont will be ready to deliver recycled water in order to meet Basin Plan Maximum Benefit requirements.

4.3.7 Recycled Water Recharge

Beaumont operates Wastewater Treatment Plant No. 1, from which there are two stream discharges: DP-001 to Cooper's Creek and DP-007 to an unnamed tributary to Marshall Creek (Figure 23). Daily live-stream discharge volumes and water quality sample results were collected in compliance with Beaumont's NPDES waste discharge permit. No recycled water was discharged at DP-007 in 2020.

Per Basin Plan Amendment R8-2014-0005, "the use and recharge of recycled water within the Beaumont Groundwater Management Zone are necessary to maximize the use of the water resources of the Beaumont area. The demonstration of 'maximum benefit' and the continued application of the 'maximum benefit' objectives are contingent on the recharge of recycled water...of a 10-year volume-weighted annual running average TDS concentration of 330 mg/L and nitrate-nitrogen concentration of 6.7 mg/L (taking the 25% nitrogen loss coefficient into account to assure that the 'maximum benefit' objective of 5 mg/L will be met)."

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The 10-year volume-weighted running average concentration of TDS for recycled water discharged to Cooper's Creek at discharge point DP-001 from 2011 to 2020 was 433 mg/L (Figure 33, Appendix P). The 10-year running average concentration of nitrate-nitrogen for recycled water discharged to Cooper's Creek (DP-001) from 2011 to 2020 was 3.63 mg/L (Figure 34, Appendix Q). No 10-year running average concentrations for TDS and nitrate-nitrogen were calculated for recycled water discharges to the unnamed tributary to Marshall Creek (DP-007) because no recycled water was discharged at this location in 2020.

Currently, there are no recycled water discharges to recharge basins in the Beaumont GMZ. Any future recycled water recharge projects in the Beaumont GMZ will also be subject to the Title 22 Groundwater Recharge Regulations and additional monitoring beyond the parameters shown in Table 3-2 of the 2015 Work Plan will be required.

4.3.8 Anti-Degradation Salt Mitigation Plan

YVWD submitted a Salinity and Nutrient Management Plan (SNMP) on October 29, 2015 that provides a conceptual framework for mitigation projects in the event that the Regional Board finds that the maximum benefit is no longer being achieved in the Yucaipa, San Timoteo and Beaumont GMZs (Appendix S).

4.3.9 Ambient Groundwater Quality Determination

As specified in the 2014 Basin Plan Amendment, the ambient groundwater quality must be recalculated every three years. The most recent recalculation was completed in 2020 for water quality data collected from 1999 to 2018 (WSC, 2020). The next recalculation will occur in 2023 and cover the period from 2002 to 2021. Therefore, water quality data collected from January 1, 2019 to December 31, 2021 will be needed to complete the 2002 to 2021 calculation of ambient water quality.

The ambient groundwater quality calculation includes water level and/or water quality data from 116 wells in the Beaumont GMZ. In 2020, water quality samples were collected from 40 of 56, or 71%, of the wells designated for water quality data collection (Table 3). Of the 16 wells with no water quality data from 2018-2020, six of the wells (Almo, M.C.; BCVWD-18, Oak Valley #1; Singleton Ranch 5; USGS 335834116582101; and USGS 335834116582102) were either dry, had inoperable pumps, were abandoned, or were offline for repairs. Data collectors were unable to contact the owner of the Jorge Magallon well and, thus, could not collect a water quality sample in 2020. Water quality data for the remaining nine wells was not obtained by the responsible parties.

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The maximum concentrations of TDS in groundwater from 2018 to 2020 are shown in Figure 35. The maximum concentrations of nitrate-nitrogen are shown in Figure 36.

5 ASSESSMENT OF MONITORING ACTIVITIES

5.1 Yucaipa Groundwater Management Zone

5.1.1 Groundwater Levels

The seven wells that did not meet the monitoring requirements for water level data collection in 2020 have not been monitored since December 2016 or earlier. YVWD noted “can’t sound” at wells SBVMWD Wilson B and YVWD-50. It is not anticipated that water level data will be collected at these wells or the other five wells in the future. Other existing wells in the basin have been identified as replacements for these wells in Section 5.4.1 if they are required to maintain or enhance the spatial distribution of data collection to appropriately characterize water quality in the Santa Ana River Basin as per the 2004 Basin Plan Amendment and the methodology used to calculate ambient water quality concentrations by the Nitrogen/TDS Task Force. If a replacement well is not required to maintain the spatial data distribution due to the presence of a program-monitored well located within a half-mile of the well in question, this well is recommended for removal from the program without replacement.

5.1.2 Groundwater Quality

Seventeen of the 20 wells that did not meet the monitoring requirements for water quality data collection in 2020 were owned by the USGS. These wells still exist, but there is no current program employing the services of the USGS to collect water quality samples. Only the three shallowest wells set at the 6th Street and Ave E well cluster were sampled for TDS concentrations between 2018 and 2020. These wells will remain on the MBMP schedule in the likelihood that these wells will be monitored or sampled in the future. The Sierra Nursery well has not been sampled since July 2013. This well will be investigated in Spring 2021 to confirm its existence and accessibility for sample collection. Wells YVWD-25 and YVWD-26 were last sampled in 2016 and 2014, respectively.

5.2 San Timoteo Groundwater Management Zone

5.2.1 Groundwater Levels

Twelve of the 32 wells scheduled for water level data collection in 2020 did not meet the MBMP requirements for the following reasons:

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- Depths-to-water were not measured at the Agri-Empire wells #427 and #428 because they were artesian.
- Access to wells GL-6 and Fisherman's Retreat 2 was denied by their respective owners.
- Wells OW-1T, OW-2P, OW-3T, ST-11 and Chester F. Hildebrand no longer exist.
- No water levels were measured in 2020 at wells BH-20, BH-21 nor BH-24. Well BH-21 was reported as dry in May and July 2019. Well BH-20 has had issues with well integrity since 2008.

Other existing wells in the basin have been identified as replacements for these wells in Section 5.4.2 if they are required to maintain or enhance the spatial distribution of data collection to appropriately characterize water quality in the Santa Ana River Basin as per the 2004 Basin Plan Amendment and the methodology used to calculate ambient water quality concentrations by the Nitrogen/TDS Task Force. If a replacement well is not required to maintain the spatial data distribution due to the presence of a program-monitored well located within a half-mile of the well in question, this well is recommended for removal from the program without replacement.

5.2.2 Groundwater Quality

Six of the 28 wells scheduled for water quality data collection did not meet the MBMP requirements for the following reasons:

- Wells ST-01 and ST-07 were abandoned in 2005. Well ST-11 was abandoned in 2016.
- Well BH-20 is only accessible to collect water level data. No water quality data has been collected from this well since 2008 because of concerns of the well's integrity.
- Well BH-21 was reported to be dry in May and July 2019. The last water quality data for this well is from 2017.
- Access has been denied by the owner of the GL-6 well.

The ST-01, ST-07, ST-11, BH-20, BH-21 and BH-24 wells are located at landfill sites where other wells included in this monitoring program exist. No replacement wells will be considered for the ST-01, ST-07, and ST-11 wells since other program wells will satisfy the spatial requirement for the ambient water quality recalculations. At the Badlands landfill, multiple (BD-04, BH-11, BH-22 and BL-3) wells are available as alternatives to replace wells BH-20, BH-21 and BH-24 for water level and water quality monitoring. A replacement well may be identified for the GL-6 well.

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5.3 Beaumont Groundwater Management Zone

5.3.1 Groundwater Levels

Forty-three (43) of the 103 wells scheduled for water level data collection in 2020 did not meet the MBMP requirements for the following reasons:

- Only dynamic (i.e., pumping) water levels were reported at two wells. The MBMP requirement is for the collection of two static water levels every year.
- Only one static water level was measured at six wells.
- Nine wells were dry in 2020.
- Thirteen wells were destroyed or were located on abandoned property.
- No water level data was collected at the other 13 wells because either no access was granted by the well owner, no contact was made with the individual well owner, or no depth-to-water measurements were reported in 2020.

5.3.2 Groundwater Quality

Sixteen (16) of the 56 wells scheduled for water quality data collection did not meet the MBMP requirements for the following reasons:

- The M.C. Almo well is located on property that has been abandoned. The well is not operational.
- The pump at the Singleton Ranch 5 well was inoperable.
- The Oak Valley #1 and USGS wells (335834116582101 and 335834116582102) were dry.
- Ten wells have not been sampled since at least 2016.
- The field crew was unable to contact the owner of the Jorge Magallon well.

5.4 Revised Groundwater Monitoring Schedule

Over the last three years, a number of wells included in the monitoring program have either been destroyed, abandoned, reside on property that has been abandoned, or the well owners have denied further access to the well. The following list identifies wells that YVWD recommends be removed from the monitoring program, the reasons why, and where possible, identifies potential

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replacement wells to provide the spatial coverage required for the three-year recalculation of ambient water quality for each GMZ.

5.4.1 Yucaipa Groundwater Management Zone

Of the 91 wells included in the water level monitoring program, YVWD recommends the removal of two of these wells:

- SBVMWD Wilson B: The last water level measured at this well was in December 2016. YVWD has noted, “can’t sound” at this well. Two wells, however, within a half-mile are currently monitored for groundwater levels (YVWD-44 and YVWD-53). The water level data collected at these wells satisfies the spatial data coverage required when conducting the triennial recalculation of ambient water quality in the Yucaipa GMZ.
- YVWD-50: The last water level measured at this well was in July 2015. YVWD has noted, “can’t sound,” at this well. However, there is one well that is currently monitored for groundwater levels in the program (YVWD-6), and another well that could be added to the program (Yucaipa 2nd St.), both located within a half-mile of the well. The water level data at these wells would satisfy the spatial data coverage required in the Yucaipa GMZ.

Additionally, contact with the owners of four wells in the Yucaipa GMZ shall be attempted in 2021. Should the well owners deny access to these wells, these wells will be removed from the monitoring program in 2021.

- GL-1 (Mentone): This well, located on E. Highland Avenue in the community of Mentone and assigned to the field tasks of YVWD, has not been monitored since 2016. Previously, the owner of this private agricultural well denied permission for water quality sampling. Contact with the owner will be re-attempted in 2021.
- GL-5: This well, located north of Live Oak Canyon Road and assigned to the field tasks of YVWD, has not been monitored since 2014. Previously, this well was listed as “capped well – no pump.” This well shall be located and contact with its owners attempted in 2021 to determine if the well is accessible to measure a depth-to-water.
- Covington: A water level at this well was last measured in 2012. Access to this well will be attempted in 2021.
- Sierra Nursery (GL-3): Water levels were regularly monitored at this well by YVWD until 2015. Contact with the well owners of the Sierra Nursery well will be attempted in 2021.

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Of the 72 wells included in the water quality monitoring program, YVWD does not recommend the removal of any wells at this time. As the 17 USGS wells and 2 YVWD wells with insufficient water quality data have been sampled for at least one water quality parameter recently, these wells will be reevaluated in the 2021 Annual Report. Contact will also be attempted with the owners of the Sierra Nursery Well in 2021.

5.4.2 San Timoteo Groundwater Management Zone

Of the 32 wells included in the water level monitoring program, YVWD recommends the removal of 5 of these wells for the following reasons:

- ST-11 – This well was abandoned in May 2016. No replacement well is proposed because water level data continues to be collected at other monitoring wells installed at the San Timoteo Sanitary Landfill on a quarterly basis. The water level data collected at these wells satisfies the spatial data coverage required when conducting the triennial recalculation of ambient water quality in the San Timoteo GMZ.
- YVWD OW-1T: This well no longer exists. The well was destroyed in January 2017. Well OW-1P is located near the former location of OW-1T and will function as the monitoring point in this area of the San Timoteo GMZ. No replacement well is planned for OW-1T.
- YVWD OW-2P: This well no longer exist. It was destroyed in March 2018. Well GMWM-1 is located near the former location of OW-2P and will function as the monitoring point in this area of the San Timoteo GMZ. No replacement well is planned for OW-2P.
- YVWD OW-3T: This well no longer exists. Well OW-3T was destroyed in March 2014. No replacement well is planned for OW-3T.
- BH-21: This well, located at the Badlands Landfill, was last monitored for water levels in July 2019. In May and July 2019, this well was reported to be dry. While wells BL-03, BH-11 and BH-23 are all located within a half-mile radius of the well, BH-11 would serve as the most suitable replacement well based on similar groundwater levels and screened intervals.

Additionally, contact with the owners and/or resumed monitoring of seven wells in the San Timoteo GMZ shall be attempted in 2021. Should the well owners deny access to these wells, or should it be found that groundwater levels may no longer be measured, these wells will be removed from the monitoring program in 2021.

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- Hildebrand, Chester – The last water level measured at this well was in September 2010. Water level sounding was attempted in November 2016 but the sounding tube appeared to have collapsed. This property has recently been redeveloped; contact with the new owners will be attempted in 2021 to determine the possibility of well access.
- Hudson, O. (GL-6) – The last water level measured by YVWD at this well, located on the south side of Live Oak Canyon Road, was in December 2014 when the owner of the well denied subsequent access to the well. Contact with the well owner will be re-attempted in 2021.
- BH-20: This well, located at the Badlands Landfill, was last monitored for water levels in October 2019. Although water quality data from 2020 and 2021 are listed for other wells at the site, no more recent groundwater level data has been reported. This well will continue to be monitored to determine if this lack of data is due merely to reporting delays. However, no water quality samples have been collected from this well since 2008 due to reported issues of well integrity.
- BH-24: This well, located at the Badlands Landfill, was last monitored for water levels in October 2019. Although water quality data from 2020 and 2021 are listed for this well, no more recent groundwater level data has been reported. This well will continue to be monitored to determine if this lack of data is due merely to reporting delays.
- Fisherman’s Retreat 2: Although the well owner of this well permitted access twice in 2019, no access was granted from 2010-2018, nor in 2020. Access will be re-attempted in 2021. The El Casco Lake Ranch #1 well, monitored as part of this program, is located approximately 0.7 miles down-gradient from this well. Additionally, a well that is not part of this program has been identified at the San Timoteo Canyon Historic Schoolhouse, located approximately 0.65 miles down-gradient from the well. However, there are no alternative wells that have been identified within a half-mile radius.
- Agri Empire: This well was previously sampled by the USGS for water quality and water levels but has not been monitored since 2009. It has since been labeled as “Artesian”. This well is supposedly located near the intersection of Palmer Avenue and Oak Valley Parkway. In 2021, this well will be located to confirm its status as artesian.
- Agri Empire #2: This well was previously sampled by the USGS for water quality and water levels but has not been monitored since 2008. It has since been labeled as “Artesian”. This well is supposedly located near the intersection of Palmer Avenue and Oak Valley Parkway. In 2021, this well will be located to confirm its status as artesian.

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Of the 28 wells included in the water quality monitoring program, five wells are proposed to be removed from the monitoring schedule:

- ST-01: This well was abandoned by at least 2005. No replacement well is proposed for this well because other monitoring wells at the San Timoteo Sanitary Landfill continue to be sampled for water quality. Data from the other ST monitoring wells will meet the spatial data requirement for the triennial recalculation of ambient water quality in the San Timoteo GMZ.
- ST-07: This well was abandoned by at least 2005. No replacement well is proposed for this well for the same reasons provided for ST-01.
- ST-11: This well was abandoned in May 2016. No replacement well is proposed for this well for the same reasons provided for ST-01.
- BH-20: No water quality samples have been collected from this well since 2008 due to reported issues of well integrity. Other wells located at the Badlands Landfill with water quality data reported in 2020 and 2021 include BD-04, BD-11, BD-22, BD-23, BD-25 and BL-03. While BH-23, BL-03 and BH-25 might serve as potential replacements based on spatial coverage (<0.5 miles from well BH-20), BH-22, located approximately 0.8 miles south of BH-20 has the most similar depth to water and screened interval.
- BH-21: This well was listed as dry in May and July 2019. While wells BL-03, BH-11 and BH-23 are all located within a half-mile radius of the well, BH-11 would serve as the most suitable replacement well based on similar groundwater levels and screened interval.

Additionally, contact with the owner of the Hudson, O (GL-6) well will be reattempted in 2021. Should access to this well be re-denied, a suitable replacement well, if any, will be proposed in the 2021 Annual Report.

5.4.3 Beaumont Groundwater Management Zone

Of the 103 wells included in the water level monitoring program, YVWD proposes that 27 wells be removed for the following reasons:

- Almo, M. C.: This well resides on property that has been abandoned. There is no access to this well. Within a half-mile radius of the well, however, there are 3 wells that are currently monitored for groundwater elevation (Joe Pistilli, Ruth Cunningham and Maureen Polack). Therefore, there is sufficient spatial data coverage to remove this well from the program.

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- Bonita Vista #1: This well was listed as dry from November 2016 to November 2017. In April 2019, it was indicated that this well was no longer being measured. As wells Bonita Vista MWD #3, BVM-2, and USGS 335903116580902 currently monitored as part of this program and all located within a half-mile radius of the well, there is sufficient spatial data coverage to remove this well from the program.
- Beckman, Walt: Water level data is no longer collected by SGPWA, which noted that the well was “discontinued” in 2017. As the Michelle Delph well is currently monitored as part of this program and is located less than half a mile from the well, there is sufficient spatial data coverage to remove this well from the program.
- Ban M2: The water level at this well is “no longer measured by the City of Banning.” This well resides in the same lot as M9, which is also included in the maximum benefits monitoring program. There is sufficient spatial coverage to meet the Beaumont GMZ requirements to remove this well from the program.
- Hewitt, Patricia: The private well owner has denied further access to the well. As this well is located on the same property as the Frank Hewitt well, there is sufficient spatial data coverage to remove this well from the program.
- Pardee Well (No. of Wilson): This well was destroyed in 2018. As Banning well C-4 is located less than a half-mile from the previous location of this well, there is sufficient spatial data coverage to remove this well from the program.
- Wells RCWMD MW-1 to MW-9: These wells were abandoned in April 2017. The Joe Pistilli and Ruth Cunningham wells are both located approximately 0.5 miles from this well group, therefore there is sufficient spatial data coverage to remove these wells from the program.
- Sunny-Cal Egg & Poultry Company wells 1 and 2: these wells reside on property that has been abandoned and are no longer accessible. Wells 37101 Cherry and BCVWD 29 which are monitored as part of this program are located less than a half-mile from these wells. Therefore the spatial data coverage requirement is met and the Sunny-Cal wells are proposed for removal from the program.
- NA_1221611: This well is located on abandoned property and is no longer accessible. Wells 37101 Cherry and BCVWD 29 which are monitored as part of this program are located less than a half-mile from this well. Therefore the spatial data coverage requirement is met and this well is proposed for removal from the program..

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- Hallana Equities: This well appeared to run dry in early 2018. As there are no program wells currently being monitored within a half-mile of this well, attempts will be made in 2021 to locate a suitable replacement well.
- Hallana Equities No. 1: This well has been listed as “Dry” since November 2009. As there are no program wells currently being monitored within a half-mile of this well, attempts will be made in 2021 to locate a suitable replacement well.
- Don Kramer: This well, located at 35011 Mesa Grande Drive, was monitored regularly until July 2013. In 2017 and 2018, groundwater level measurements were attempted but the well appeared to be dry. Wells YVWD-34, SMWC-03, SMWC-04, #362 Paul Bryan, and Wilman Garnar are all currently monitored as part of this program and are located less than a half-mile from the well. Therefore, the spatial data coverage requirement is met and this well may be removed from the program.
- #106 Bo Un Kim (Gary Posey): This well, located at the end of Beckwith Avenue, was reported to be dry in November 2017. The Suzy Q Ranch Moreno 6 well and the Rancho Calimesa #3 well are both currently monitored as part of this program and are located less than a half-mile from the well. Therefore the spatial data coverage requirement is met and this well may be removed from the program.
- Sharondale Mesa 1: Water level at this well, located in the Sharondale Senior Community, was last reported in April 2015. The Suzy Q Ranch Moreno 6 well, the Rancho Calimesa #3 well, the Frank Hewitt well and YVWD well 48 are all currently monitored as part of this program and are located less than a half-mile from the well. Therefore, the spatial data coverage requirement is met and this well may be removed from the program.
- Sharondale Mesa 2: Water level at this well, located in the Sharondale Senior Community, was last reported in December 2014. The Suzy Q Ranch Moreno 6 well, the Rancho Calimesa #3 well, the Frank Hewitt well and YVWD well 48 are all currently monitored as part of this program and are located less than a half-mile from the well. Therefore, the spatial data coverage requirement is met and this well may be removed from the program.
- USGS 2101: This well has been listed as dry since May 2017. Well SGPWA TW-1 is located a half-mile from this well and is currently monitored as part of this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.
- USGS 2102: This well has been listed as dry since May 2017. Well SGPWA TW-1 is located a half-mile from this well and is currently monitored as part of this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.

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- USGS 2504: This well has been listed as dry since August 2016. Well BVM-2 is located a half-mile from this well and is currently monitored as part of this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.
- The location of the Jorge Magallon well has yet to be confirmed. Although previous Google Earth images appear to place this well along Selrocco Drive in Calimesa, the data used to create Figure 3 appear to locate this well on the property adjacent to the Randy Downing well. While the owners of the property have indicated their willingness to participate in the program, it is unclear whether this well can be sounded or sampled. Monitoring of this well will be attempted in 2021.

Of the 56 wells included in the water quality monitoring program, YVWD proposes to remove ten wells for the following reason:

- Almo, M. C.: This well resides on property that has been abandoned. There is no access to this well. Within a half-mile radius of the well, however, there are 2 wells that are currently monitored for groundwater quality (Joe Pistilli and George Witter). Therefore, there is sufficient spatial data coverage to remove this well from the program.
- BCVWD-1: This well was last monitored for water quality in 2012. Well BCVWD-22, located less than a half-mile from the well, is currently monitored for water quality under this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.
- BCVWD-3: This well was last monitored for water quality in 2013. Well BCVWD-22, located approximately 0.55 miles from the well, is currently monitored for water quality under this program. As there is not sufficient spatial data coverage to remove this well from the program, a suitable replacement well will be investigated in 2021.
- BCVWD-25: This well was last monitored for water quality in 2013. Well BCVWD-22, located approximately 0.78 miles from the well, is currently monitored for water quality under this program. As there is not sufficient spatial data coverage to remove this well from the program, a suitable replacement well will be investigated in 2021.
- BCVWD-26: This well was last monitored for water quality in 2014. Well BCVWD-22, located approximately 0.72 miles from the well, is currently monitored for water quality under this program. As there is not sufficient spatial data coverage to remove this well from the program, a suitable replacement well will be investigated in 2021.

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- CVMWC 1: This well was last monitored for water quality in 2013. Well BCVWD-04A, located approximately 0.90 miles from the well, is currently monitored for water quality under this program. As there is not sufficient spatial data coverage to remove this well from the program, a suitable replacement well will be investigated in 2021.
- Stefan Illy #2: This well was last monitored for water quality in 2013. CVMWC Well 1, located approximately 0.84 miles from the well, is currently monitored for water quality under this program. As there is not sufficient spatial data coverage to remove this well from the program, a suitable replacement well will be investigated in 2021
- Singleton Ranch 5: The turbine pump at this well is no longer operational and only groundwater elevation may be recorded. This well, however, is located less than a half-mile from two wells that are currently monitored for groundwater quality, Singleton Ranch 7 and the Oak Valley Office Well. Therefore, there is sufficient spatial data coverage to remove this well from the program.
- USGS 2101: This well has been listed as dry since May 2017. Well BCVWD-16 is located less than a half-mile from this well and is currently monitored as part of this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.
- USGS 2102: This well has been listed as dry since May 2017. Well BCVWD-16 is located less than a half-mile from this well and is currently monitored as part of this program. Therefore, there is sufficient spatial data coverage to remove this well from the program.

Additionally, it is unclear whether the Randy Downing and Jorge Magallon wells may be located and if they are still operational for water quality sampling. The exact location of these two wells will be determined in 2021 and water quality sampling will be attempted.

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6 REFERENCES

- California Regional Water Quality Control Board, Santa Ana Region, 2004. Resolution No. R8-2004-0001 Resolution Amending the Water Quality Control Plan for the Santa Ana River Basin to Incorporate an Updated total Dissolved Solids (TDS) and Nitrogen Management Plan for the Santa Ana Region.
- California Regional Water Quality Control Board, Santa Ana Region, 2014. Resolution R8-2014-0005 Resolution Amending the Water Quality Control Plan for the Santa Ana River Basin to Incorporate Updates to the Salt Management Plan for the Santa Ana Region.
- California Regional Water Quality Control Board, Santa Ana Region, 2015. Approval of Maximum Benefit Monitoring Report Workplan. Letter to Alan Kapanicas, Joe Zoba, Jeff Davis, Eric Fraser, and Duane Burk, from Kurt Berchtold. January 6, 2015.
- City of Banning (Banning), 2016. Salinity Management Plan for the Beaumont Management Zone. Prepared by the City of Banning Public Work Department. November 23.
- Water Systems Consulting, Inc. (WSC), 2020. Draft *Recomputation of Ambient Water Quality for the Period 1999 to 2018*. Prepared for Santa Ana Watershed Project Authority, Basin Monitoring Program Task Force. April 15.
- Wildermuth Environmental Inc., 2014. Maximum Benefit Monitoring Report, 2015 Work Plan. Prepared for: City of Beaumont, Yucaipa Valley Water District, San Gorgonio Pass Water Agency, Beaumont Cheery Valley Water District, and City of Banning. Original Submittal September 30. Updated on December 22.
- YVWD, 2015. Salinity and Nutrient Management Plan for the Beaumont Management Zone, San Timoteo Management Zone and the Yucaipa Manage Zone. Prepared by Yucaipa Valley Water District, Yucaipa, California. Submitted to California Regional Water Quality Control Board Santa Ana Region. October 29.