

2016 -2018
Resource Summary Report
San Luis Obispo County General Plan
Volume II of II – Supporting Data and Analysis
Adopted by the Board of Supervisors March 12, 2019

PUBLIC REVIEW DRAFT
District 2 Addition
Los Osos Water Supply Section

Introduction

On March 12, 2019, the Board of Supervisors approved the 2016-2018 Resource Summary Report. The Board's approval included the removal of all references to resources within Board of Supervisor District 2 due to concerns about the water supply sections. On December 15, 2020, the Board of Supervisors will consider revisions to this 2016-2018 Resource Summary Report to add District 2 information back into the report. Updated information from the 2019 annual monitoring report for the Los Osos Groundwater Basin is also included for consideration in evaluating the Recommended Level of Severity Designation for Los Osos water supply.

[Changes to the original public review draft made in response to public comments received during Planning Commissions hearings for the Los Osos Community Plan are shown in tracked changes.](#)

Level of Severity Criteria

WATER SUPPLY

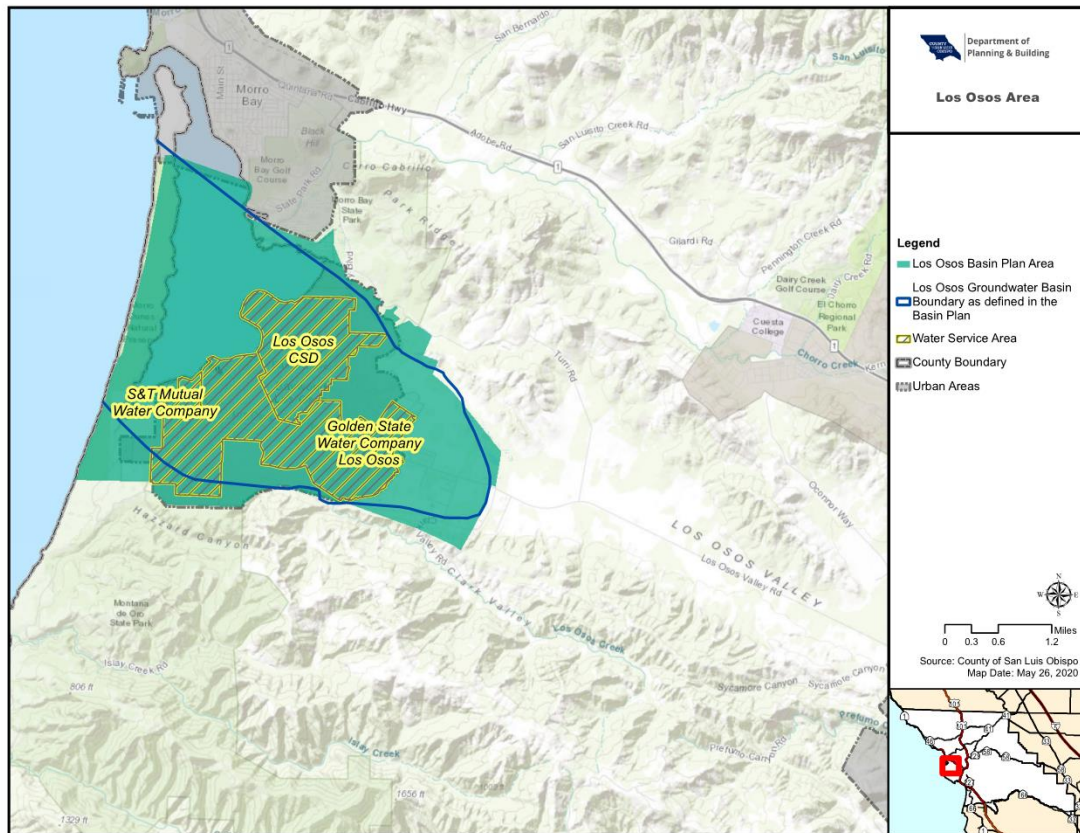
Level of Severity	Water Supply Criteria*	
	Coastal Zone	Inland Areas
I	Timeframe for remaining dependable water supply is 9 years	Water demand projected over 20 years equals or exceeds the estimated dependable supply. LOS I provides five years for preparation of resource capacity studies and evaluation of alternative courses of action.
II	Timeframe for remaining dependable water supply is 7 years	Water demand projected over 15-20 years (or other lead time determined by a resource capacity study) equals or exceeds the estimated dependable supply.
III	Demand equals or exceeds estimated dependable supply	Water demand projected over 15 years (or other lead time determined by a resource capacity study) equals or exceeds the estimated dependable supply, OR The time required to correct the problem is longer than the time available before the dependable supply is reached.

*These criteria do not consider the cyclical effects of drought or above-average rainfall.

Recommended Levels of Severity

Los Osos Area

Figure II-10 –Water Purveyors Serving the Los Osos Area



The Los Osos Valley Groundwater Basin (DWR Bulletin 118 No. 3-008)¹ is the primary source of water supply in the Los Osos area and is affected by nitrate contamination and seawater intrusion. Groundwater extractors are the three water purveyors in the urban area – Golden State Water Company, S&T Mutual Water Company, and the Los Osos Community Services District -- and overlying private well owners, including rural residents, community facilities and agricultural operations. The 2015 Updated Basin Plan for the Los Osos Groundwater Basin (“Basin Plan”) was prepared by the three water purveyors, along with the County, as a part of the settlement of groundwater rights litigation, which was approved by the San Luis Obispo Superior Court in October 2015. The purveyor boundaries, Basin Plan management area, and the locally defined groundwater basin boundary used in the Basin Plan are shown in the figure above.

¹ A map of the DWR Bulletin 118 boundary may be found in the 2019 annual monitoring report prepared for the Los Osos Basin Management Committee. The Final 2018 Basin Boundary Modifications were released by the California Department of Water Resources on February 11, 2019, which identified two subbasins of the Los Osos Valley Groundwater Basin: the Los Osos Area Subbasin (No. 3-008.01) and the Warden Creek Subbasin (No. 3-008.02).

The section of the groundwater basin assessed by the Basin Plan consists of five layered coastal aquifers. Historically the urban area relied on septic systems, which resulted in nitrate contamination in the Upper Aquifer. Overpumping in the Lower Aquifer contributed to seawater intrusion. The Basin Plan recommends programs to address nitrate contamination and seawater intrusion. The Basin Management Committee, composed of the three water purveyor and the County, is responsible for implementing the Basin Plan programs and preparing annual reports summarizing monitoring data and program implementation status.

Nitrate Contamination

The Los Osos Water Recycling Facility (LOWRF) community sewer/recycled water system became operational in 2016. This facility allowed the community to move off of individual septic systems in the majority of the urban area, reducing the nitrate loading on the basin, and also providing tertiary-treated effluent to offset basin uses and recharge the basin, which is projected to push back the seawater intrusion front over time. Nearly 100% of the community within the sewer service area are now connected to the community wastewater system, which is discussed in greater detail in Chapter III -- Wastewater. With the point source of contamination significantly reduced, the nitrate contamination in the Upper Aquifer is expected to degrade over time. Groundwater production wells with nitrate concentrations exceeding the State drinking water limit use nitrate removal systems or blending with other sources with lower nitrate levels.

A technical memo prepared for the Basin Management Committee in November 2019 indicated increasing nitrate concentration measurements in some groundwater production wells the Lower Aquifer, resulting from leakage from the Upper Aquifer, that could cause exceedance of nitrate drinking water standards for groundwater production wells that do not currently have nitrate removal systems in place, such as S&T Mutual Water Company's main water supply well. S&T is concerned that the nitrate contamination in the Lower Aquifer threatens the sustainability of their water supply for existing users. The Basin Plan does not include programs to address nitrate contamination in the Lower Aquifer. The Basin Management Committee is considering further studies of this issue and potential adaptive management provisions.

Seawater Intrusion

The annual reports prepared by the Basin Management Committee map the seawater intrusion front based on monitoring well measurements and hydrologic modeling. The 2019 annual reports show the seawater intrusion front retreated from 2016 to 2018 but moved inland from 2018 to 2019 and recommends 1) improving monitoring procedures for more reliable chloride concentration data, 2) re-evaluating the Water Level Metric, including adding monitoring wells in Zone E and water level

transducer, 3) further reduction of pumping from the Lower Aquifer to mitigate seawater intrusion, and 4) continuing to monitor the effectiveness of the Broderson leach field that recharges treated wastewater into the aquifer, which is anticipated to take 5-7 years to create a mounding effect to begin to push back the seawater intrusion front. The Basin Plan analyzed the impacts of implementing various combinations of programs through use of a groundwater model for the multiple aquifers and recommended programs for immediate implementation to increase the sustainable basin yield to accommodate the existing demand and halt and reverse seawater intrusion over time. The Basin Plan also identified possible combinations of programs to be implemented to accommodate buildout demand. The annual monitoring reports prepared for the Basin Management Committee provide updates on the program implementation status and program modifications made through the Plan's adaptive management provision. The 2017, 2018, and 2019 annual reports show the seawater intrusion front moving back towards the coast from its position in 2016.

Annual Monitoring of Basin Metrics

The 2016-2019 annual monitoring reports prepared for the Basin Management Committee include metrics that indicate the status of seawater intrusion and nitrate contamination in the basin, calculated from monitoring data and hydrologic modeling. The Basin Management Committee uses these metrics to gauge the effectiveness of the implemented Basin Plan programs and inform adaptive management decisions. The metrics in the reports are summarized as follows:

- **Basin Yield Metric.** Indicates if the annual pumping volume is sustainable.
 - Definition: Annual groundwater extraction volume divided by annual estimated sustainable basin yield * 100
 - Target Goal: 80 or less
 - 2019 value: 69
 - 2018 value: 74
 - 2017 value: 75
 - 2016 value: 78
 - Trend: Meeting target goal since 2016.
 - 2019 Recommendation: Consider changes to Basin Programs per adaptive management and monitoring of program effectiveness in estimating the annual sustainable basin yield.

- **Water Level Metric.** Indicates seawater intrusion.
 - Definition: Average groundwater elevation measured at five key wells in the Lower Aquifer.
 - Target Goal: 8 feet above mean sea level or higher
 - 2019 value: 1.8 feet above mean sea level
 - 2018 value: 2.0 feet above mean sea level

- 2017 value: 1.5 feet above mean sea level
- 2016 value: 1.0 feet above mean sea level
- Trend: Improvement from 2016 to 2018. Deterioration from 2018 to 2019 based on inclusion of data from a new monitoring well. A technical memo prepared in June 2020 projects the metric to not reach the target goal until 2033 (CHG, 2020).
- 2019 Recommendation: Re-evaluate the Water Level Metric, including adding monitoring wells in Zone E and water level transducers to help identify and interpret trends in the metric.

- **Chloride Metric.** Indicates seawater intrusion.
 - Definition: Weighted average chloride concentration measured at four key wells in Lower Aquifer.
 - Target Goal: 100 mg/L or less
 - 2019 value: 162 mg/L
 - 2018 value: 145 mg/L
 - 2017 value: 132 mg/L
 - 2016 value: 225 mg/L
 - Trend: Improvement from 2016 to 2018. Deterioration from 2018 to 2019. A technical memo prepared in June 2020 projects the metric to rise for 10 years and then decline to meet the target goal by 2046, 30 years from when the Basin Yield Metric target goal was met (CHG, 2020).
 - 2019 Recommendation: Improve monitoring procedures for more reliable data.

- **Nitrate Metric.** Indicates nitrate contamination.
 - Definition: Average nitrate concentration measured at five key wells in the Upper Aquifer.
 - Target Goal: 10 mg/L or lower (State drinking water standard)
 - 2019 value: 22 mg/L
 - 2018 value: 24 mg/L
 - 2017 value: 32 mg/L
 - 2016 value: 26 mg/L
 - Trend: The Basin Plan projects the target goal will be met in 2050.
 - 2019 Recommendation: Monitor leakage of nitrate contamination from the Upper Aquifer to the Lower Aquifer.

The Basin Management Committee is considering developing additional metrics and a contingency plan if the metric tends fail to demonstrate progress towards Basin Plan target goals.

Los Osos Groundwater Basin – Sustainable Yield Basin Plan Programs

The sustainable basin yield refers to the volume of groundwater that can be extracted while halting and reversing seawater intrusion. The Basin Plan estimated the sustainable basin yield as 2,450 acre-feet per year (AFY) for a “No Programs” scenario without implementation of any of the recommended programs in the Basin Plan. The Basin Plan recommends two phases of programs for implementation to increase the sustainable basin yield: 1) programs to halt and reverse seawater intrusion and provide a sustainable supply for existing development, and 2) programs to accommodate buildout demand, if new development is allowed by adoption of the Los Osos Community Plan (LOCP) and Community-Wide Habitat Conservation Plan (HCP). The Basin Plan requires ongoing monitoring to verify the effectiveness of the programs once they are implemented and iterative adaptive management. six (6) programs for immediate implementation. These programs are modeled to increase sustainable basin yield to 3,000 AFY. The 2017 annual report estimates sustainable yield as 2,760 AFY accounting for the two incomplete Program C wells with the rest of the immediate programs complete. The Basin Plan identifies four (4) additional programs that could be implemented to increase the sustainable yield to accommodate buildout demand and buffer for uncertainties of climate change.

Phase 1 Basin Plan Programs for Immediate Implementation (increase basin yield to 3,000 AFY)

~~The Basin Plan recommends the following programs for immediate implementation.~~ The goal and status of each of the six Phase 1 Basin Plan Programs are summarized below, based on information from the 2017, 2018, and 2019 annual monitoring reports.

- Program “M” – Groundwater Monitoring
- Program “E” – Urban Water Use Efficiency
- Program “U” – Urban Water Reinvestment
- Program “A” – Infrastructure Program A
- Program “C” – Infrastructure Program C
- Program “P” – Wellhead Protection

Program “M” – Groundwater Monitoring (Complete). The groundwater monitoring program includes annual reporting on metrics to measure nitrate impacts to the Upper Aquifer, seawater intrusion within the Lower Aquifer, and the effect of implemented Basin Plan programs and adaptive management efforts, with flexibility to adapt over time. This program is complete-operational and subject to ongoing adaptive management. In 2019 an additional monitoring well was constructed in Cuesta by the Sea to improve assessment of the seawater intrusion front. The 2019 annual report

recommends re-evaluating the Water Level and Chloride Metrics and creating additional metrics.

Program “E” – Urban Water Use Efficiency (99% Complete). This program retrofits commercial and institutional uses and requires residential properties to retrofit existing fixtures to be water efficient before connecting to the LOWRF and also provides rebate programs to incentivize further conservation efforts. At the end of 2017, only 177 properties remained to be retrofitted within the sewer service area. As of April 2020, only 44 properties remained to be retrofitted and connected to the sewer (CHG, 2018, 2020). More efficient urban water use allows purveyors and well users to decrease the amount of groundwater extracted from the Basin to stabilize the freshwater-seawater interface. The 2019 annual report recommends expanding the water efficiency program to continue to reduce pumping volumes and estimates at least 160 AFY of available water savings potential from identified retrofit projects for existing uses.

Program “U” – Urban Water Reinvestment. This program reinvests treated wastewater from the LOWRF back into the hydrologic cycle to reduce extraction volumes and reverse seawater intrusion over time. In 2017, this program came online and 452 AFY of recycled water from the LOWRF was reinvested to the Broderon (445 AFY) and Bayridge Estates (7 AFY) leach fields. The average wastewater flows were 200 AFY less than the anticipated volume of 780 AFY (CHG, 2018). In 2018, 505 AFY of recycled water was reinvested to the Broderon (486 AFY) and Bayridge Estates (20 AFY) leach fields (CHG, 2019). In 2019, 516 AFY of recycled water was reinvested to the Broderon (431 AFY) and Bayridge Estates (14 AFY) leach fields and 71 AFY to the Sea Pines Golf Course. The mounding at the leach fields is being monitored and is projected to take 5-7 years to form before it begins to push through the 50-foot thick clay layer and raise water levels in the Lower Aquifer to help halt and reverse seawater intrusion; however, preliminary signs of a small mound were detected hydraulically downgradient of the Broderon leach field beginning in June 2017 (CHG, 2020). As part of Basin Plan adaptive management, as of 2019, the Basin Management Committee approved a contract for a Creek Discharge Program for recycled water from the LOWRF and approved funding for an urban storm water recovery project (CHG, 2020).

Program “A” – Basin Infrastructure Program A. Program A supports the mitigation of seawater intrusion by shifting groundwater production from the Lower Aquifer to the Upper Aquifer to the greatest extent practicable without construction of large-scale nitrate removal facilities. One Upper Aquifer well on 8th Street remains to be complete, although it is fully funded and the design is complete (CHG, 2020).

Program “C” – Basin Infrastructure Program C. Program C shifts groundwater production within the Lower Aquifer from the Western Area to the Central Area with three expansion wells and purveyor interconnection to mitigate seawater intrusion. The first expansion well at Los Olivos was completed, resulting in an estimated increase in basin yield of 110 AFY (CHG, 2017). ~~Two more~~ One well remains to be completed and is fully funded, although it still needs environmental permitting and to identify a site. One well ~~may be~~ has been deferred per the adaptive management process (CHG, 2020).

Program “P” – Wellhead Protection. This program manages activities within a delineated source area or protection zone around drinking water wells to protect water quality. This program consists primarily of the purveyors conducting Drinking Water Source Assessment and Protection surveys for each of their wells. ~~Some of t~~ The purveyors have deferred performing the surveys (CHG, 2020).

~~The status of the Basin Plan Programs recommended for immediate implementation is as follows:~~

- ~~• Program E - 177 properties remained to be retrofitted and connected to the LOWRF at the end of 2017 and 44 properties as of April 2020.~~
- ~~• Program U – Reinvestment volume from the LOWRF was 200 AFY less than projected in 2017 and 264 AFY less than projected in 2019. Adaptive management efforts include a creek discharge program and storm water recovery project.~~
- ~~• Program A – One well (8th Street) needed to be completed at the end of 2017. The well still remained to be completed and was fully funded and designed at the end of 2019. The well is anticipated to be complete by 2021.~~
- ~~• Program C – Two wells needed to be completed at the end of 2017 and 2019. One well may be deferred through the adaptive management.~~
- ~~• Program P - Surveys still needed to be completed at the end of 2017 and 2019.~~

Additional Phase 2 Basin Plan Programs (increase basin yield to meet buildout)

The Basin Plan identifies the following Phase 2 programs that could be implemented to increase the sustainable basin yield to accommodate buildout demand and buffer for uncertainties such as climate change. The goal and status of each are summarized below, based on information from the 2017, 2018, and 2019 annual monitoring reports.

- Program “B” – Basin Infrastructure Program B
- Program “D” – Basin Infrastructure Program D
- Program “G” – Agricultural Water Reinvestment
- Program “S” – Supplemental Water

Program “B” – Basin Infrastructure Program B. Program B is the construction of a community nitrate removal facility and additional purveyor wells to maximize production from the Upper Aquifer. This program is not complete. Completion of Program B is estimated to contribute 350 AFY and achieve a sustainable basin yield of 3,350 AFY.

Program “D” – Basin Infrastructure Program D. Program D is constructing additional purveyor wells to shift groundwater production within the Lower Aquifer from the Western Area to the Central and Eastern Areas to induce less seawater intrusion and increase the sustainable basin yield. This program is currently deferred. Completion of Program D is estimated to contribute 150 AFY and achieve a sustainable basin yield of 3,500 AFY.

Program “G” – Agricultural Water Reinvestment. Program G is to reinvest treated wastewater from the LOWRF or recycled water for agricultural purposes to reduce agricultural groundwater pumping. This program is not complete. Program G would not increase the sustainable yield of the basin.

Program “S” – Supplemental Water. Potential sources of supplemental water include rainwater harvesting, stormwater capture, greywater reuse, and groundwater desalination. Program S is not recommended in the Basin Plan but is estimated to decrease basin demand by 250 AFY or 750 AFY, although proposed updates to the urban water use efficiency program include offering rebates for rainwater harvesting and greywater reuse.

Climate Change Impacts

The Basin Plan recommends that total annual groundwater extraction not exceed 80% of the estimated sustainable annual basin yield to account for uncertainties in the projected basin yield and demand over time, such as reduced basin yield due to climate change or an increase in agricultural water demand. A 2013 study funded by the US EPA’s Climate Ready Water Utilities Project determined that reduced precipitation would have the most significant effect on basin yield, compared to increased temperature and sea-level rise. The sea-level rise projections that CHG considered correspond with the 5% probability scenario appropriate for medium risk adverse decisions per the 2018 California Ocean Protection Council (OPC) Sea-Level Rise Guidance. The study projected the basin yield may reduce to 2,325 AFY by 2050 due to climate change with basin infrastructure improvements in place. The planning horizon for the draft Estero Area Plan Los Osos Urban Area (commonly known as the “Los Osos Community Plan”) is 2040. If the programs needed to achieve buildout as identified in the Basin Plan are implemented by 2040, the climate change study estimates that keeping groundwater extraction within 80% of the estimated basin yield is enough buffer for the potential reduction in yield due to climate change.

Planning Document Updates

The County is in the process of updating the Los Osos Community Plan (LOCP) and and adopting a Community-Wide Habitat Conservation Plan (HCP). The Coastal Development Permit for the LOWRF prohibits undeveloped/vacant lots within the service area from connecting to the sewer until the Los Osos Community Plan and Community-Wide Habitat Conservation PlanLOCP and HCP are adopted. Undeveloped/Vacant parcels within the sewer service area are also prohibited from using septic systems, so they are unable to develop until the two planning documentsLOCP and HCP are adopted. The County maintains a waitlist for vacant undeveloped properties within this prohibition zonethe sewer service area until they can apply for construction permits. As of May 14, 2020, there were 215 requests for single family dwellings and 130 requests for multi-family dwellings on the waitlist. In addition, the County Construction Ordinance (Title 19) requires new development to offset its water use at a 2:1 ratio by completing retrofit projects on existing uses within the groundwater basin. An average of two dwelling units are constructed each year, but the new development decreases overall demand.

The LOCP must include sufficient standards to ensure that new development does not exceed the available sustainable water supply. The draft Los Osos Community Plan requires new dwelling units to be limited with the Growth Management Ordinance (Title 26) based on the available sustainable basin yield as determined by the status of Basin Plan program implementation and annual monitoring of Basin Plan program effectiveness and water usage trends.

Basin Boundary Modification

In June 2017, the County, acting as the GSA, initiated a hydrogeological basin characterization study of the fringe areas, to support a Basin Boundary Modification Request to the CA Department of Water Resources (DWR). In September 2018, the County submitted a Basin Boundary Modification Request to DWR, which included: (1) a jurisdictional basin subdivision to create two proposed subbasins (i.e., Los Osos Area subbasin and Warden Creek subbasin), and (2) a scientific basin exclusion to remove two non-basin areas from Bulletin 118 basin boundary. The proposed Los Osos Area subbasin underlies the adjudicated area, except for a minor northern fringe area, and is covered under the court approved Basin Plan. DWR approved the boundary modification in its 2019 Basin Prioritization. The Los Osos Area subbasin (3-008.01) and the Warden Creek subbasin (3-008.02) are classified as very low priority and are no longer subject to the Sustainable Groundwater Management Act (SGMA) requirements. Therefore, the Level of Severity for water supply is assigned to the Los Osos Basin Plan Area to align with the annual reporting data from the Basin Management Committee.

Table II-14 – Los Osos Basin Plan Area¹: Existing and Forecasted Water Supply and Demand Based on the 1996 Coastal RMS Criteria					
Demand	Los Osos CSD	S&T Mutual Water Co.	Golden State Water Co.	Agriculture	Rural
FY 2017/2018 Demand (AFY) ²	470.0	32.6	443	(2)	(2)
2017 Demand (AFY) ³	568	32	450	670	350
2018 Demand (AFY) ³	522	32	464	670	340
2019 Demand (AFY) ³	506	31	454	630	280
Forecast Demand in 7 Years (AFY) ⁵	(4)			270-750	290
Forecast Demand in 9 Years (AFY) ⁵	(4)			270-750	290
Buildout Demand (30 or More Years) (AFY) ⁵	1,840			270-750	290
Supply					
Los Osos Basin Plan Area ¹	2,048 AFY ⁶ 2,208 AFY when Program A 8 th Street expansion well is complete ⁶				
Water Supply Versus Forecasted Demand	<p>In 2017, the total water demand (2,070 AFY) exceeded the estimated supply. In 2018 and 2019, the water demand (2,030 AFY and 1,900 AFY) did not exceed the estimated supply. However, the estimated water supply is based on the Basin Plan modeling and is being verified with ongoing monitoring, and the Basin Plan programs recommended to meet existing demand have not been completed. The forecasted demand in 7 and 9 years may exceed the water supply if existing usage rates increase or if the estimated water supply is adjusted. For these reasons, the RSR conservatively recommends LOS III for the Los Osos Basin. The LOS may be reduced as Basin Plan programs are completed and depending on monitoring results.</p>				

Sources: ¹Water System Usage forms: July 2016 – June 2017 and July 2017 – June 2018, 2015 Basin Plan, 2017, 2018, and 2019 Annual Monitoring Reports prepared for the Basin Management Committee, 2012 Basin Model Results for Los Osos Climate Ready Water Utilities Project.

Notes:

1. As defined locally in the 2015 updated Basin Plan for the Los Osos Groundwater Basin.
2. Based on water purveyor reported data. See Table II-1. Fiscal year data is not available for non-purveyor usage rates.
3. Based on 2017, 2018, and 2019 annual monitoring reports prepared for the Basin Management Committee based on a calendar year reporting period rather than fiscal year. Rural water demand is extraction from private wells, listed as "domestic" and "community" usage in the annual monitoring reports.
4. Subject to authorization of new development through approval of the Los Osos Community Plan and Community-Wide Habitat Conservation Plan. The Los Osos Community Plan must include standards that ensure new development does not exceed available sustainable basin yield, which depends Basin Plan programs implementation and monitoring.
- ~~4. Subject to changes in water usage rates for existing development and timing of Basin Plan programs implementation, which is not forecasted. The majority (75%) of urban water use is residential. The draft Los Osos Community Plan requires new dwelling units to be limited with the Growth Management Ordinance (Tile 26) based on the available sustainable basin yield as determined by the status of Basin Plan program implementation and annual monitoring of Basin Plan program effectiveness and non-residential water usage trends.~~
5. Based on the 2015 Basin Plan, Table 44. Summary of Water Demand Program Combinations with Programs E+U or E+UG implemented. Of 2,060 AFY for urban and 70 AFY for community usage, 220 AFY of "urban" use is considered domestic private wells, listed under "rural" for this report.
6. Water supply is considered 80% of the sustainable basin yield estimated in the Basin Plan, per the Basin Plan goal of extraction not exceeding 80% of estimated yield to account for uncertainty. The annual reports indicate 2,760 AFY as the sustainable yield, but the Program A 8th Street expansion well is not yet completed. Until the well is complete, the sustainable basin yield estimate for the Basin Plan "No Programs" scenario is used, with a 110 AFY increase in yield estimated for completion of first Program C expansion well (CHG, 2017). The estimated sustainable basin yield may be adjusted based on ongoing monitoring of Basin Plan program effectiveness.

Key observations for the area include:

- A coastal aquifer subject to seawater intrusion that has been contaminated with nitrate is the sole water supply source for the community of Los Osos.
- Completion of the LOWRF and decommissioning of septic systems within the sewer service area reduced the point source of nitrate contamination. The nitrate contamination is expected to degrade over time. Recharged water from the LOWRF is projected to help reverse seawater intrusion over time.
- A Habitat Conservation Plan will be adopted before significant increase in new development to address water supply availability for ecological needs.
- The Basin Management Committee has almost completed the programs recommended for immediate implementation, which are projected to halt seawater intrusion based on the existing development scenario with marginal population growth.
- Los Osos participated in the US EPA Climate Ready Water Utilities Project to identify potential reductions in basin yield due to reduced precipitation, sea-

level rise, and increased temperature through the rest of the century. Implementation of additional Basin Plan programs is projected to increase sustainable basin yield and reduce demand to accommodate buildout demand and potential reductions in basin yield due to climate change.

- The 2016 - 2019 annual monitoring reports prepared for the Basin Management Committee have shown the annual groundwater production to be below 80% of the sustainable basin yield (2,760 AFY) estimated assuming the Basin Plan programs recommended for immediate implementation are complete, except for two Program C expansion wells (CHG, 2017). However, one Program A expansion well remains to be completed. The 2017 estimated production (2,070 AFY) was 75% of this estimated sustainable basin yield. The 2018 estimated production (2,030 AFY) was 74% of this sustainable basin yield. The 2019 estimated production (1,900 AFY) was 69% of this estimated sustainable basin yield.
- The estimated groundwater production in 2017 (2,070 AFY) was 81% of the estimated sustainable basin yield for a "No Programs" scenario in the Basin Plan (2,450 AFY). However, one well for Program C was completed, which increased the estimated sustainable basin yield by 110 AFY (2,560 AFY). Assuming 2,560 AFY sustainable basin yield, the 2017 production was 81% of the sustainable basin yield.
- The estimated groundwater production in 2019 (1,900 AFY) was 78% of the estimated sustainable basin yield for a "No Programs" scenario in the Basin Plan (2,450 AFY). However, one well for Program C was completed, which increased the estimated sustainable basin yield by 110 AFY (2,560 AFY). Assuming 2,560 AFY sustainable basin yield, the 2019 production was 74% of the sustainable basin yield.
- The Basin Management Committee maintains a groundwater monitoring network, releases annual monitoring reports with updates on program status and effectiveness, and practices adaptive management. The estimated sustainable basin yield may be re-evaluated based on the Basin Plan programs' effectiveness, especially considering halting and reversing seawater intrusion.

Based on the 1996 Coastal RMS Criteria, **Recommended Level of Severity III**. While in 2018 and 2019 water supply was estimated as sufficient to meet demand, the RSR conservatively estimates LOS III for the Los Osos Basin since the Basin Plan programs for immediate implementation were not completed as of the end of the 2016-2018 RSR reporting period. The LOS may be revised down as the Basin Plan programs are completed and depending on basin monitoring results.

Sources:

Cleath-Harris Geologists, Inc. (CHG). 2012. *Model Results for Los Osos Climate Ready Water Utilities Project.*

_____ 2017. *Basin Yield Metric response to reduced long-term precipitation in the Los Osos Groundwater Basin.*

_____ 2018. *Los Osos Basin Plan Groundwater Monitoring Program 2017 Annual Monitoring Report.*

_____ 2019. *Los Osos Basin Plan Groundwater Monitoring Program 2018 Annual Monitoring Report.*

_____ *2019. Technical Memorandum: Lower Aquifer nitrate concentrations trends review and LA11 seawater intrusion evaluation.*

_____ 2020. *Los Osos Basin Plan Groundwater Monitoring Program 2019 Annual Monitoring Report.*

_____ *2020. Technical Memorandum: Update of Los Osos Basin Plan Programs U and C with respect to Basin Sustainable Yield.*