



November 17, 2021

TO: Utilities Advisory Committee

FROM: Ron Munds, General Manager

**SUBJECT: Agenda Item 3 - 11/17/2021 Utilities Updates
Basin Management Committee Update**

The following are the action items from the Basin Management Committee's October 27, 2021 meeting:

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Vice President

Matthew D. Fourcroy

Directors

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Sustainable Yieldx Methodology Review and Recommendations

Recommendation: BMC Staff recommends that the BMC: 1) receive information on the updated Sustainable Yield_x calculations and approve the proposed Sustainable Yield estimate of 2,380 AFY for Calendar Year 2022 based on the findings provided; or 2) provide alternate direction to staff.

Recycled Water Funding Program Grant Application and County Funding Request

Recommendation: BMC Staff recommends that the BMC: 1) authorize the use of Grant Pursuit Contingency funding to prepare the Water Recycling Funding Program (WRFP) Grant Application; and 2) submit a request to the County to access the \$150,000 in County funding budgeted for the development of a Transient Groundwater Model; or 3) provide alternate direction to staff.

BMC Funding Options Consulting Services

Recommendation: BMC Staff recommends that the BMC: 1) review and approve the proposal for SCI Consulting Group to provide an updated funding options analysis and assessment evaluation; or 2) provide alternate direction to staff.

Wellhead Survey Authorization

Recommendation: BMC Staff recommends that the BMC: 1) Authorize Twin Cities Survey and Cleath-Harris Geologist to complete a survey of additional wells in the Los Osos Basin to improve monitoring program data; and 2) request that the County survey the wells in their monitoring program; or 3) provide alternate direction to staff.

Lower Aquifer Monitoring Evaluation

Recommendation: BMC Staff recommends that the BMC: 1) authorize the use of Contingency funds for Cleath-Harris Geologists to evaluate the feasibility and cost of modifying existing wells to improve monitoring of Zone E water quality; or 2) provide alternate direction to staff.

TO: Los Osos Basin Management Committee

FROM: Dan Heimel, Executive Director

DATE: October 27, 2021

SUBJECT: Item 8a – Sustainable Yield_x Methodology Review and Recommendations

Recommendations

BMC Staff recommends that the BMC: 1) receive information on the updated Sustainable Yield_x calculations and approve the proposed Sustainable Yield estimate of 2,380 AFY for Calendar Year 2022 based on the findings provided below; or 2) provide alternate direction to staff.

BMC Staff proposes establishing the Sustainable Yield estimate for Calendar Year 2022 (Sustainable Yield₂₀₂₂) as 2,380 AFY, based on the following justification:

1. Seawater Intrusion Threshold - Utilizing the Adaptive Method for limiting the extent of seawater intrusion does not allow seawater to intrude farther inland during the calculation of the Sustainable Yield for the Basin. This approach establishes that further degradation of the Basin is an undesirable affect and basin pumping should be managed to, at a minimum, not further degrade the basin and with the goal (Basin Yield Metric 80 pumping target) of reversing seawater intrusion and pushing the seawater intrusion front back toward the Bay.
2. Broderson Mound - Sustainable Yield calculations for 2022 should be performed using the assumption that the Broderson Mound is only 50% developed. Based on the best available information that we have, it is estimated that the Broderson Mound is approximately 50% developed and incorporating this assumption into the Sustainable Yield calculation helps identify the amount of pumping that can be sustainably achieved under anticipated conditions in 2022.
3. Available Infrastructure – The calculation of Sustainable Yield₂₀₂₂ accounts for currently available infrastructure and infrastructure that is anticipated to be available for the majority of 2022.
4. Precipitation – BMC Staff reviewed the rainfall assumptions in the Sustainable Yield calculation and recommends utilizing 17.3 inches per year as the long-term average rainfall for the basin. This recommendation is based on an evaluation of two different datasets using the latest available rainfall data for the basin. Additional information on the rainfall evaluation is provided in Item 8b of the 9/29/2021 BMC Agenda Packet.

Discussion

Background

In the Stipulated Judgement (SJ) and the Basin Plan, the BMC Parties agreed on a framework and methodology for estimating and updating the Sustainable Yield for the Los Osos Basin (Basin), referred

to as Sustainable Yield_x, where “X” represents the Sustainable Yield estimate for that year. The SJ and Basin Plan require the BMC to annually evaluate, confirm and set the Sustainable Yield_x based on the best available data and evidence. At the July 21, 2021 BMC Meeting, the BMC directed staff to review the Sustainable Yield estimate and to bring back recommendations for how to calculate the Sustainable Yield_x. At the September 29th BMC Meeting, the BMC directed staff to calculate Sustainable Yield₂₀₂₂ estimates using the Historic Method threshold for seawater intrusion—which allows seawater to intrude farther inland before stabilizing—and proposed Adaptive Method threshold for seawater intrusion—which limits seawater intrusion in the Sustainable Yield calculations to current extents—and provide them to the BMC for consideration. Additional information on the seawater intrusion threshold criteria and other key assumptions in the Sustainable Yield calculations are provided in Item 8b of the 9/29/2021 BMC Agenda Packet.

Based on the direction provide by the BMC, BMC Staff developed updated Sustainable Yield calculations, which are described below. During the development of the updated Sustainable Yield calculations, BMC Staff identified a methodology that allows for a more accurate representation of the development of the Broderson Mound, a critical component of the Basin Plan strategy for stopping and pushing back seawater intrusion in the basin. To help illustrate the impact that the Broderson Mound has on the Sustainable Yield estimate, multiple scenarios were run that represent a Broderson Mound that is 50% (current estimated level of development), 75% and 100% developed. The table below provides a summary of the Sustainable Yield scenarios and the Sustainable Yield estimates and Basin Yield Metric values associated with each scenario.

Table 1. Sustainable Yield Scenario Summary

Scenario	Seawater Intrusion Front ¹	Rainfall ²	Broderson Mound	Available Infrastructure ³	Sustainable Yield (AFY)	Basin Yield Metric ⁴
1	Historic Method	17.3 inches per year	100% Developed	2022 Infrastructure	2,650	0.76
2	Adaptive Method	17.3 inches per year	100% Developed	2022 Infrastructure	2,510	0.80
3	Adaptive Method	17.3 inches per year	75% Developed	2022 Infrastructure	2,450	0.82
4	Adaptive Method	17.3 inches per year	50% Developed	2022 Infrastructure	2,380	0.84

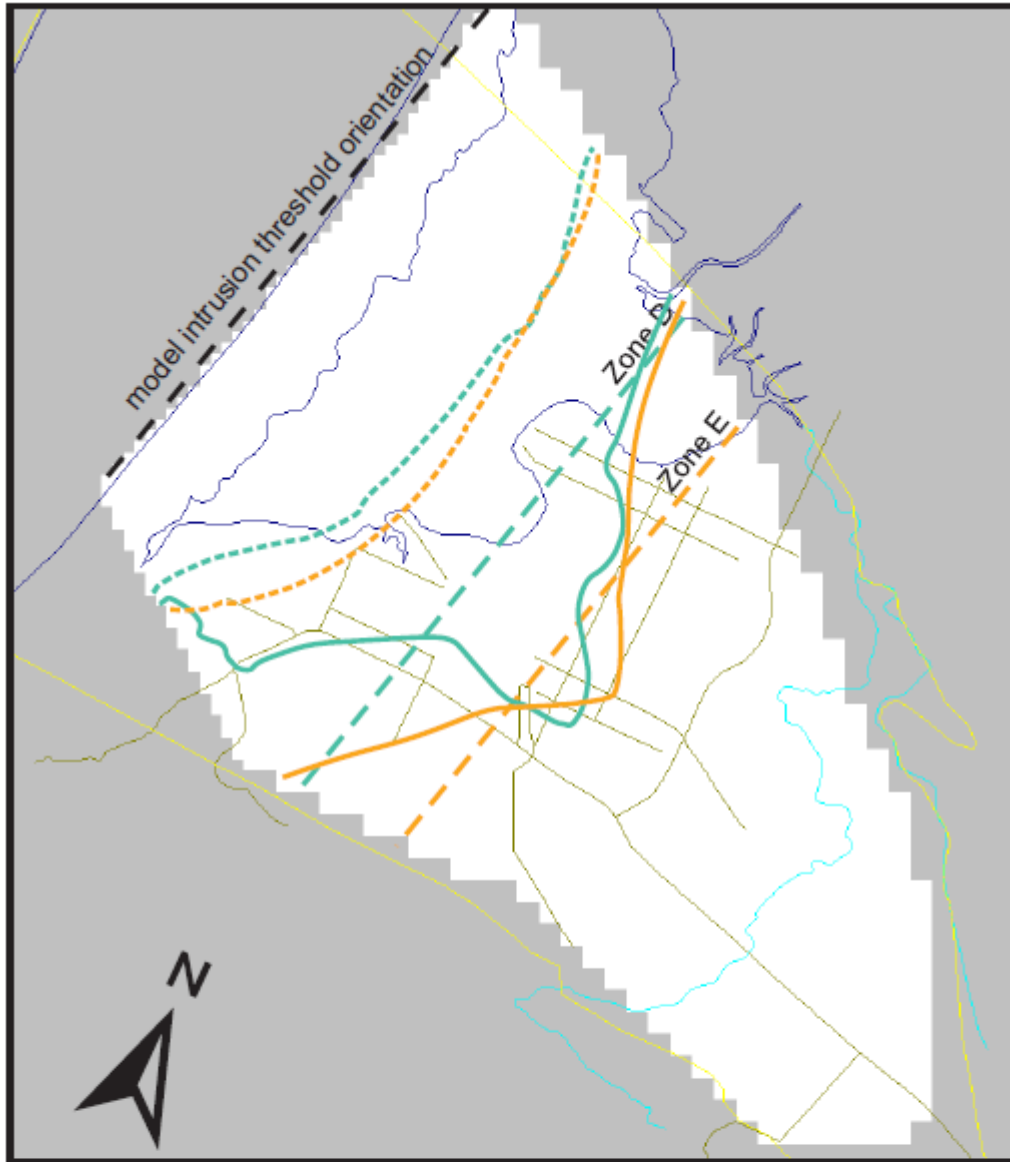
¹Historic Method allows seawater to intrude farther inland before stabilizing. Adaptive Method restricts the intrusion of seawater in the basin to current extents for purposes of calculating the Sustainable Yield

²Rainfall assumption based an updated evaluation of rainfall for the Los Osos Basin, additional information is provided in Item 8b of the 9/29/2021 BMC Agenda Packet.

³Available infrastructure represents the infrastructure anticipated to be available in Calendar Year 2022 (e.g. the Los Osos Community Services District’s 8th Street Upper Well is assumed to be available in 2022 as it is anticipated to be online in Q1 2022).

⁴Basin Yield Metric calculated using basin production estimate of 2,010 AFY (2020 Annual Monitoring Report)

Additionally provided are figures that illustrate the modeled location of the seawater intrusion front under the various scenarios. Figure 1 illustrates the estimated location of the seawater intrusion front, using the Historic Method threshold for seawater intrusion (i.e. allowing seawater to intrude farther inland than current extents) for Zones D and E, as well as the anticipate location of the seawater intrusion front if pumping within the Basin was limited to 80% of the Sustainable Yield estimate (i.e. BYM 80). It should be noted that when pumping is limited to 80% of the Sustainable Yield the model predicts the seawater intrusion front will be pushed back toward the Bay.



Scale 1" = 4000 feet

- Zone D 250 mg/L isochlor
- Intrusion Front Threshold
 - BYM100 (2,650 AFY)
 - ... BYM80 (2,120 AFY)
- Zone E 250 mg/L isochlor
- Intrusion Front Threshold
 - BYM100 (2,650 AFY)
 - ... BYM80 (2,120 AFY)

Figure 1

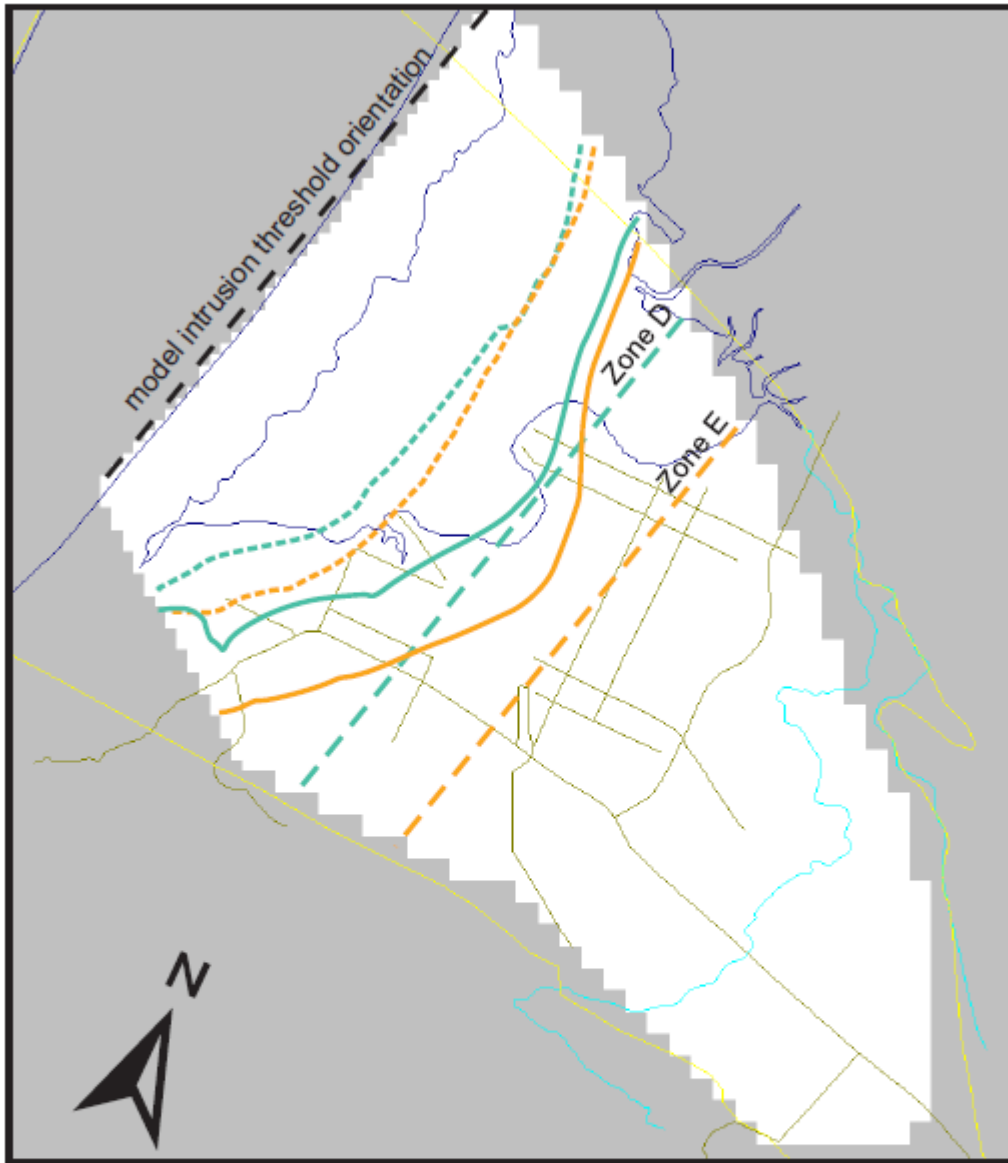
Seawater Intrusion
2022 Sustainable Yield
Historical Method
Broderson 100%

Cleath-Harris Geologists

Figure 1. Historic Method Sustainable Yield Calculation (100% Broderson Mound development)

Figure 2 illustrates the estimated location of the seawater intrusion front, using the Adaptive Method threshold for seawater intrusion (i.e. limiting intrusion to current extents) for Zones D and E, as well as

the anticipate location of the seawater intrusion front if pumping within the Basin was limited to 80% of the Sustainable Yield estimate (i.e. BYM 80).



Scale 1" = 4000 feet

- Zone D 250 mg/L isochlor
- Intrusion Front Threshold
 - BYM100 (2,380 AFY)
 - ... BYM80 (1,904 AFY)
- Zone E 250 mg/L isochlor
- Intrusion Front Threshold
 - BYM100 (2,380 AFY)
 - ... BYM80 (1,904 AFY)

Figure 2

Seawater Intrusion
2022 Sustainable Yield
Adaptive Method
Broderson 50%

Cleath-Harris Geologists

Figure 2. Adaptive Method Sustainable Yield Calculation (50% Broderson Mound development)

Based on review of these results and extensive discussion with BMC Party Staff, BMC Staff recommends that the BMC establish the Sustainable Yield for the year 2022 (Sustainable Yield₂₀₂₂) as 2,380 AFY (Scenario 4), based on the following reasons:

1. Seawater Intrusion Threshold - Utilizing the Adaptive Method for limiting the extent of seawater intrusion does not allow seawater to intrude further inland during the calculation of the Sustainable Yield for the Basin. This approach establishes that further degradation of the Basin is an undesirable affect and basin pumping should be managed to at a minimum not further degrade the basin and with the goal (Basin Yield Metric 80 pumping target) of reversing seawater intrusion and pushing the seawater intrusion front back toward the Bay.
2. Broderson Mound - Sustainable Yield calculations for 2022 should be performed using the assumption that the Broderson Mound is only 50% developed. Based on the best available information that we have, it is estimated that the Broderson Mound is approximately 50% developed and incorporating this assumption into the Sustainable Yield calculation helps identify the amount of pumping that can be sustainably achieved under anticipated conditions in 2022.
3. Available Infrastructure – The calculation of Sustainable Yield₂₀₂₂ accounts for currently available infrastructure and infrastructure that is anticipated to be available for the majority of 2022.
4. Precipitation – BMC Staff reviewed the rainfall assumptions in the Sustainable Yield calculation and recommends utilizing 17.3 inches per year as the long-term average rainfall for the basin. This recommendation is based on an evaluation of two different datasets using the latest available rainfall data for the basin. Additional information on the rainfall evaluation is provided in Item 8b of the 9/29/2021 BMC Agenda Packet.

Proposed Sustainable Yield Update Process

To meet the requirements of the SJ to determine the Sustainable Yield_x on an annual basis the following process is proposed for updating the Sustainable Yield.

1. Beginning in July of a given year, BMC Staff will evaluate the Sustainable Yield_x for the upcoming year based on changes in Basin Plan infrastructure, groundwater inflow or outflow parameters, the understanding of hydrogeologic or geologic features in the basin or other factors.
2. BMC Staff will then provide a recommendation to the BMC on Sustainable Yield_x for the upcoming year and the reasoning for that recommendation.
 - a. If the recommendation is to modify the Sustainable Yield_x, then recommendations for which parameters to modify from the previous Sustainable Yield_x will be provided.
 - i. If the BMC approves the recommended modifications to the Sustainable Yield_x, BMC Staff will perform the updated Sustainable Yield_x calculations and bring the results back to the BMC for consideration and approval.
 - ii. If the updated Sustainable Yield_x results are unanimously approved by the BMC then the updated Sustainable Yield_x will be documented in the Annual Report for that Year and used for calculation of the Basin Yield Metric, Basin Development Metric and Purveyor Pool for the upcoming year.

- b. If the recommendation is to not modify the Sustainable Yield_x and the BMC agrees, then the Sustainable Yield_x will remain the same as the previously approved Sustainable Yield_x by the BMC.
- c. If the BMC cannot come to unanimous agreement of whether or not to modify the Sustainable Yield_x then the Sustainable Yield_x will remain the same as the previously approved Sustainable Yield_x and the BMC will provide direction to Staff on how to proceed.

An example timeline for the envisioned process of updating the Sustainable Yield_x and incorporating it into the BMC monitoring, management and Annual Monitoring Report processes is outlined below:

1. July 2021 BMC Staff begins evaluation of Sustainable Yield₂₀₂₂
2. BMC Staff presents recommendations for Sustainable Yield₂₀₂₂
3. Before January 2022 BMC approves Sustainable Yield₂₀₂₂
4. Sustainable Yield₂₀₂₂ used to establish Purveyor Pool for 2022
5. Sustainable Yield₂₀₂₂ incorporated into Basin Yield and Basin Development Metric calculations for 2022 Annual Monitoring Report (AMR)
6. Sustainable Yield₂₀₂₂ described in 2021 AMR

It is additionally recommended that, if the BMC agrees upon a Sustainable Yield₂₀₂₂ estimate, that a Sustainable Yield₂₀₂₁ estimate be calculated utilizing the same methodology and key assumptions for use in the 2021 AMR Basin Yield Metric and Basin Development Metric calculations.