June 25, 2025

Board of Directors
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, CA 93009-1600

SUBJECT: Las Posas Valley Basin Optimization Yield Study Preferred Modeling Alternative Approach [LPV Watermaster] – *(Returning Item)*

RECOMMENDATIONS: (1) Receive a presentation from Agency staff on the Las Posas Valley Basin Optimization Yield Study preferred modeling alternative, preparation schedule, related Committee Recommendation Reports, and related Watermaster Response Reports; and **(2)** Provide direction to staff on preferred modeling alternative, schedule, and response reports.

BACKGROUND:
The Judgment requires Watermaster to prepare a Basin Optimization Yield Study. (Judgment, §§ 3.3, 4.10, 5.1.) The Basin Optimization Yield Study will establish the operating yield, and in turn the amount and rate of rampdown in each water year (WY) through WY 2039 so that the operating yield and sustainable yield for the Las Posas Valley (LPV) Basin match by WY 2040 and thus result in the LPV Basin being managed sustainably in accordance with the Sustainable Groundwater Management Act (SGMA) (Judgment, § 4.10.2.).

Under the Judgment, the Basin Optimization Yield Study was to be completed, with consultation with the LPV Policy Advisory Committee (PAC) and the LPV Technical Advisory Committee (TAC), by January 29, 2025. (Judgment, Exh. A, § 2.10.1.) In a December 23, 2024, memorandum to both the PAC and TAC, Watermaster explained that the Basin Optimization Yield Study could not be completed according to this original schedule and instead proposed completing the Study by the end of December 2025; however, Watermaster's memoranda explained that this schedule assumed it would obtain access to United Water Conservation (UWCD) model(s) and/or modeling services. If Watermaster was unable to obtain access to UWCD model files(s) and/or modeling services, then Watermaster explained that it must develop alternative approaches to using UWCD model(s) and/or modeling services to complete the Basin Optimization Yield Study (attached as Exhibit 13A). These alternative approaches included (i) estimating the Basin Optimization Yield and Rampdown using GSP periodic evaluation model simulations; (ii) estimating the Basin Optimization Yield and Rampdown using historical

groundwater elevation measurements and extraction reports; and (iii) developing a new numerical groundwater flow model for the West Las Posas Management Area. These alternatives would add approximately three to six months, three to six months, and 18 to 24 months, respectively, to the schedule for completing the Basin Optimization Yield Study (Exhibit 13A).

In early 2025, Agency staff working with their consultant, Dudek, developed an additional alternative approach, estimating the Basin Optimization Yield using the UWCD Periodic Evaluation model files to run new scenarios. At the January 22, 2025, meeting, Agency staff gave your Board a presentation on the schedule for preparing the Basin Optimization Yield Study. At that meeting your Board approved extending the initial operating yield of the basin set by the Judgment for one water year. Your Board also directed Agency staff and Dudek to omit the development of a new numerical flow groundwater model alternative approach from further consideration due to associated impacts on the schedule and also to review and select a preferred model approach to be submitted to PAC and TAC for consultation. On April 03, 2025, Agency staff sent memoranda to PAC and TAC requesting additional consultation on an updated Basin Optimization Yield Study – Preferred Modeling Alternative and impacts on schedule (Exhibit 13B). At the April 23, 2025, meeting, Agency staff provided your Board an update on the preferred model alternative approach and its potential impact on the Basin Optimization Yield Study schedule. Under this preferred alternative approach, Watermaster anticipates the Basin Optimization Yield Study (including necessary committee consultation) will be completed in April 2026 and ready for adoption by your Board at the May 2026 meeting. Adoption in May 2026 would allow your Board to make decisions regarding allocations and rampdown well in advance (approximately four months) of the start of the 2027 Water Year.

The PAC discussed and developed its May 15, 2025, recommendation report on Watermaster's preferred modeling alternative and schedule at its April 17, May 1, and May 15 PAC meetings (Exhibit 13C). The TAC discussed and developed its May 09, 2025, recommendation report at its April 15, May 16, and May 9 TAC meetings (attached as Exhibit 13D).

DISCUSSION:
In general, both PAC and TAC appreciated the efforts of Agency staff and Dudek to prepare and provide a preferred alternative approach that maintains the original technical methodology employed in past evaluations of the basin and acknowledge that, under the circumstances, the preferred alternative is the best approach. Specifically, the PAC's May 15, 2025, recommendation report concurs with the recommended approach: "[T]he PAC concurs with the Watermaster and Dudek that the alternative providing for the use of the Estimation of the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios is the most favorable approach." Similarly, the TAC acknowledges Watermasters efforts to engage UWCD and developing the preferred alternative approach stating, "The TAC would also like to express gratitude to the Watermaster for working diligently to develop an agreement with UWCD to access and use the current version of the Coastal Plain groundwater model and to Watermaster staff and Dudek for identifying this alternative. The proposed approach preserves the original technical methodology for basin optimization and maintains consistency with the GSP and other

analyses that also employed the two models representing the LPVB." However, both PAC and TAC raised additional concerns and included recommendations on the preferred model alternative in their recommendation reports, attached as Exhibits 13C and 13D, respectively.

Watermaster and Dudek have prepared Response Repots that respond in detail to each of the concerns and/or recommendations raised by the two advisory committees. These Response Reports are attached as Exhibits 13E and 13F, respectively. Specifically, the PAC recommended the preferred modeling alternative be updated to include data through WY 2024; recalibrate the model and update model sensitivity analyses; and obtain documentation for the model. (See Exhibit 13C.) As explained in more detail, the historical model files used for Periodic Evaluation model files were last extended to simulate groundwater conditions in the West Las Posas Management Area through the end of Water Year 2022; Watermaster believes that the historical model files do not need to be updated further to conduct the simulations needed to prepare the BOY Study. Similarly, Watermaster does not believe the model needs to be recalibrated because it was last done by UWCD in preparation for the 2024 Periodic Evaluations. Watermaster cannot conduct additional sensitivity and uncertainty analysis without UWCD's cooperation. Finally, UWCD has not provided the Agency with documentation on the model files, including any documentation regarding the change of the Somis fault boundary from a NO FLOW to a GENERAL HEAD BOUNDARY. In its response report, Watermaster and Dudek explain that this boundary change is a known issue but continues to recommend use of the Periodic Evaluation model files as the preferred model alternative to complete the BOY Study. (See Exhibit 13E.)

The TAC raised similar concerns with the model changes to the Somis fault boundary. (See Exhibit 13D.) In the attached Response Reports, Watermaster and Dudek explain that while model simulations may be less accurate due to the changed Somis fault boundaries, management decisions will be made on observed conditions (rather than model simulations). Also, under the circumstances, Watermaster and Dudek explained that the UWCD Periodic Evaluation model files are the best option available to estimate the basin optimization yield and prepare the BOY Study. TAC also requested Watermaster clarify what criteria will be used to assess undesirable results and whether certain data points and estimates produced from model simulations will be available for TAC review. The Response Report explains that Watermaster will use groundwater elevations to evaluate basin conditions and identifies the specific data that will and cannot be made available to the TAC from the UWCD Periodic Evaluation model files. (Exhibit 13F.)

The purposes of the advisory committees is to "establish a specific and formal process to obtain policy and technical recommendations from stakeholders" (Judgment § 6.2). Watermaster requested review of the preferred approach to completing the BOY Study from both PAC and TAC. PAC "concur[ed] with Watermaster and Dudek that the alternative providing for the use of the Estimation for the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios is the most favorable approach." TAC agrees that "the proposed approach preserves the original technical methodology for basin optimization and maintains consistency with the GSP and other analyses."

Therefore, Watermaster has engaged with stakeholders, via the PAC and TAC consultation processes, to "ensure that decisions by Watermaster are made following full consideration of diverse policy and technical views," consistent with the Judgment (Judgment § 6.2). Agency staff believe Watermaster has complied with the committee consultation requirements of the Judgment.

The Basin Optimization Yield study is also an iterative process scheduled to coincide with the Groundwater Sustainability Plan (GSP) Updates at five-year intervals (Wat. Code, §10728.2) or at Watermaster's discretion in response to material changing or changed Basin Conditions" (Judgment § 1.22). The Basin Optimization Yield Study schedule has already been delayed by five months. Further delaying the completion of the first BOY Study beyond spring 2026 jeopardizes Watermaster's ability to implement management actions to ensure Sustainable Groundwater Management by 2040 (Judgment § 4.10.2). Furthermore, absent additional material changes to groundwater conditions, Watermaster anticipates that preparation of the second Basin Optimization Yield Study would begin in 2028, only two years after completion of this first BOY Study, in order to be completed prior to January 2030 in coordination with the GSP Periodic Evaluation, as required by the Judgment. Changes to the modeling approach can be considered for the 2030 Basin Optimization Yield Study.

CONCLUSION:
Staff recommends that your Board (1) receive a presentation from Agency staff on the Las Posas Valley Basin Optimization Yield Study preferred modeling alternative, preparation schedule, related Committee Recommendation Reports, and related Watermaster Response Reports; and (2) Provide direction to staff on the preferred modeling alternative, schedule, and completion of response reports.

This letter has been reviewed by Agency Counsel. If you have any questions, please call me at (805) 654 2954.

Sincerely,

Kudzai Farai Kaseke (PhD, PH, PMP, CSM)
Assistant Groundwater Manager

Attachments:

Exhibit 13A – Watermaster BOY Schedule Memo to PAC and TAC, December 23, 2024
Exhibit 13B – Watermaster Preferred Modeling Approach Memo to PAC and TAC, April 03, 2025
Exhibit 13C – PAC Recommendation Report, May 15, 2025
Exhibit 13D – TAC Recommendation Report, May 09, 2025
Exhibit 13E – Watermaster Response Report to PAC, June 09, 2025
Exhibit 13F – Watermaster Response Report to TAC, June 09, 2025

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Policy Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: December 23, 2024

RE: Basin Optimization Yield Study Schedule

Dear Las Posas Valley Policy Advisory Committee Members:

Section 4.10 of the judgment entered in *Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al.*, Santa Barbara Sup. Ct. Case No. VENCI000509700 (Judgment) requires the Watermaster to prepare a Basin Optimization Yield Study (BOYS), which will set the Basin Optimization Yield for the Las Posas Valley Basin (LPV Basin), and in turn the Operating Yield and the Rampdown Rate for Water Years through Water Year 2039. (Judgment, § 4.10.1.4.)

Exigent circumstances necessitate an extension of the schedule included in the Judgment, originally and as amended, for preparation of the BOYS. Currently, Watermaster estimates completion of the BOYS, consistent with the committee consultation required by the Judgment and inclusive of additional consultation requested by the LPV Technical Advisory Committee, by the end of December 2025. Watermaster's revised schedule for completion of the BOYS, including dates for completion of specific tasks and work, is attached as Exhibit A. Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with the Las Posas Valley Policy Advisory Committee (PAC), including specifically PAC's policy recommendations and comments, on the revised schedule for preparation of the BOYS as set forth in Exhibit A.

The revised schedule for preparation of the BOYS assumes United Water Conservation District (UWCD) provides Watermaster access to certain model(s) and/or modeling services. If Watermaster is unable to obtain access to UWCD's model(s) and/or modeling services, Watermaster must rely on alternative model(s) and/or technical services to characterize future groundwater conditions within the West Las Posas Management Area (WLPMA) and complete preparation of the BOYS. Watermaster has asked its professional consultant, Dudek, to identify options for developing or obtaining replacement model(s) and/or modeling services. Dudek has prepared the following alternatives to obtaining UWCD model(s) and/or modeling services:

Las Posas Valley Policy Advisory Committee
December 23, 2024

1. **Estimation of Basin Optimization Yield and Rampdown Using GSP Evaluation Model Simulations**
    a. This alternative would utilize model results presented in the LPV Groundwater Sustainability Plan (GSP) Periodic Evaluation and may require additional technical analyses to characterize the impacts of allocation distributions on the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

2. **Estimation of Basin Optimization Yield and Rampdown Using Historical Groundwater Elevation Measurements and Extraction Reports**
    a. This alternative would consider the relationship between groundwater levels and pumping to estimate the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

3. **Development of a New Numerical Groundwater Flow Model for the West Las Posas Management Area**
    a. This approach would cover the development of a new model for the WLPMA that is distinct from UWCD's Updated Coastal Plain Model. The model would be developed and maintained by FCGMA.
    b. Estimated Schedule Impacts: Additional 18 to 24 months to the schedule set forth in Exhibit A.

Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with PAC, including specifically PAC's policy recommendations and comments, on each of the above alternatives and the additional amounts of time to be added to the revised schedule for preparation of the BOYS as set forth in Exhibit A.

Watermaster requests PAC's Recommendation Report, including its policy recommendations and comments, on the Committee Consultation requests discussed in this memorandum by January 31, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Technical Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: December 23, 2024

RE: Basin Optimization Yield Study Schedule

Dear Las Posas Valley Technical Advisory Committee Members:

Section 4.10 of the judgment entered in *Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al.*, Santa Barbara Sup. Ct. Case No. VENCI000509700 (Judgment) requires the Watermaster to prepare a Basin Optimization Yield Study (BOYS), which will set the Basin Optimization Yield for the Las Posas Valley Basin (LPV Basin), and in turn the Operating Yield and the Rampdown Rate for Water Years through Water Year 2039. (Judgment, § 4.10.1.4.)

Exigent circumstances necessitate an extension of the schedule included in the Judgment, originally and as amended, for preparation of the BOYS. Currently, Watermaster estimates completion of the BOYS, consistent with the committee consultation required by the Judgment and inclusive of additional consultation requested by the LPV Technical Advisory Committee, by the end of December 2025. Watermaster's revised schedule for completion of the BOYS, including dates for completion of specific tasks and work, is attached as Exhibit A. Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with the Las Posas Valley Technical Advisory Committee (TAC), including specifically TAC's technical recommendations and comments, on the revised schedule for preparation of the BOYS as set forth in Exhibit A.

The revised schedule for preparation of the BOYS assumes United Water Conservation District (UWCD) provides Watermaster access to certain model(s) and/or modeling services. If Watermaster is unable to obtain access to UWCD's model(s) and/or modeling services, Watermaster must rely on alternative model(s) and/or technical services to characterize future groundwater conditions within the West Las Posas Management Area (WLPMA) and complete preparation of the BOYS. Watermaster has asked its professional consultant, Dudek, to identify options for developing or obtaining replacement model(s) and/or modeling services. Dudek has prepared the following alternatives to obtaining UWCD model(s) and/or modeling services:

Las Posas Valley Technical Advisory Committee
December 23, 2024

1. **Estimation of Basin Optimization Yield and Rampdown Using GSP Evaluation Model Simulations**
    a. This alternative would utilize model results presented in the LPV Groundwater Sustainability Plan (GSP) Periodic Evaluation and may require additional technical analyses to characterize the impacts of allocation distributions on the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

2. **Estimation of Basin Optimization Yield and Rampdown Using Historical Groundwater Elevation Measurements and Extraction Reports**
    a. This alternative would consider the relationship between groundwater levels and pumping to estimate the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

3. **Development of a New Numerical Groundwater Flow Model for the West Las Posas Management Area**
    a. This approach would cover the development of a new model for the WLPMA that is distinct from UWCD's Updated Coastal Plain Model. The model would be developed and maintained by FCGMA.
    b. Estimated Schedule Impacts: Additional 18 to 24 months to the schedule set forth in Exhibit A.

Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with TAC, including specifically TAC's technical recommendations and comments, on each of the above alternatives and the additional amounts of time to be added to the revised schedule for preparation of the BOYS as set forth in Exhibit A.

Watermaster requests TAC's Recommendation Report, including its technical recommendations and comments, on the Committee Consultation requests discussed in this memorandum by January 31, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

FOX CANYON GROUNDWATER MANAGEMENT AGENCY
LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Policy Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: April 03, 2025

RE: Basin Optimization Yield Study – Preferred Modeling Alternative and Impacts to Schedule

Dear Las Posas Valley Policy Advisory Committee Members:

The LPV Adjudication judgment requires preparation of a Basin Optimization Yield Study, which will set the Basin Optimization Yield, and in turn set the Operating Yield and Rampdown Rate, so that by Water Year 2040 the LPV Basin's Operating Yield is equal to its Sustainable Yield and Sustainable Groundwater Management is achieved. (Judgment, §§ 1.22, 4.10.)

In a December 23, 2024 memorandum to this committee, Watermaster explained that the Basin Optimization Yield Study could be completed by the end of December 2025; this schedule assumed Watermaster would obtain access to UWCD model(s) and/or modeling services. However, if it was unable to obtain access to UWCD model files(s) and/or modeling services, then Watermaster explained that it must develop alternatives to using UWCD model(s) and/or modeling services to complete the Basin Optimization Yield Study. (Exhibit A.) Those alternatives included (i) estimating the Basin Optimization Yield and Rampdown using GSP periodic evaluation model simulations; (ii) estimating the Basin Optimization Yield and Rampdown using historical groundwater elevation measurements and extraction reports; and (iii) developing a new numerical groundwater flow model for the West Las Posas Management Area. These alternatives would add approximately three to six months, three to six months, and 18 to 24 months, respectively, to the schedule for completing the Basin Optimization Yield Study. (Exhibit A.)

Since December 2024, Watermaster and its consultant, Dudek, have identified an additional alternative: estimating the Basin Optimization Yield using the UWCD Periodic Evaluation model files to run new scenarios. Watermaster and Dudek estimate that this alternative would result in the Basin Optimization Yield Study being completed in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting.

The Watermaster Board of Directors asked Dudek to review and select its preferred modeling alternative, after removing from consideration the alternative of developing a new numerical groundwater flow model for the West Las Posas Management Area (which would

add 18 to 24 months to the schedule) and submit its analysis to the LPV Policy Advisory Committee (PAC) and Technical Advisory Committee (TAC) for consultation. Dudek's analysis of modeling alternatives, and their respective impacts to the schedule, for preparing the Basin Optimization Yield Study is attached as Exhibit B.

CONSULTATION REQUEST

Pursuant to Section 6.3 of the LPV Adjudication judgment, Watermaster requests the PAC provide its recommendations on the following:

1. Preferred Alternative. Whether Watermaster should use the UWCD Periodic Evaluation model files to run scenarios for preparation of the Basin Optimization Yield Study rather than estimating the Basin Optimization Yield and Rampdown (i) using GSP periodic evaluation model simulations or (ii) using historical groundwater elevation measurements and extraction reports?

2. Schedule Impact. Whether using the UWCD Periodic Evaluation model files to complete the Basin Optimization Yield Study in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting, approximately four months before the start of Water Year 2026 (October 1, 2026 through September 30, 2027), is a reasonable alternative for timely completion of the Basin Optimization Yield Study?

Watermaster requests PAC's Recommendation Report, including its policy recommendations and comments, on the consultation requests discussed in this memorandum by May 09, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

FOX CANYON GROUNDWATER MANAGEMENT AGENCY

LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Policy Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: December 23, 2024

RE: Basin Optimization Yield Study Schedule

Dear Las Posas Valley Policy Advisory Committee Members:

Section 4.10 of the judgment entered in *Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al.*, Santa Barbara Sup. Ct. Case No. VENCI000509700 (Judgment) requires the Watermaster to prepare a Basin Optimization Yield Study (BOYS), which will set the Basin Optimization Yield for the Las Posas Valley Basin (LPV Basin), and in turn the Operating Yield and the Rampdown Rate for Water Years through Water Year 2039. (Judgment, § 4.10.1.4.)

Exigent circumstances necessitate an extension of the schedule included in the Judgment, originally and as amended, for preparation of the BOYS. Currently, Watermaster estimates completion of the BOYS, consistent with the committee consultation required by the Judgment and inclusive of additional consultation requested by the LPV Technical Advisory Committee, by the end of December 2025. Watermaster's revised schedule for completion of the BOYS, including dates for completion of specific tasks and work, is attached as Exhibit A. Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with the Las Posas Valley Policy Advisory Committee (PAC), including specifically PAC's policy recommendations and comments, on the revised schedule for preparation of the BOYS as set forth in Exhibit A.

The revised schedule for preparation of the BOYS assumes United Water Conservation District (UWCD) provides Watermaster access to certain model(s) and/or modeling services. If Watermaster is unable to obtain access to UWCD's model(s) and/or modeling services, Watermaster must rely on alternative model(s) and/or technical services to characterize future groundwater conditions within the West Las Posas Management Area (WLPMA) and complete preparation of the BOYS. Watermaster has asked its professional consultant, Dudek, to identify options for developing or obtaining replacement model(s) and/or modeling services. Dudek has prepared the following alternatives to obtaining UWCD model(s) and/or modeling services:

Las Posas Valley Policy Advisory Committee
December 23, 2024

1. **Estimation of Basin Optimization Yield and Rampdown Using GSP Evaluation Model Simulations**
    a. This alternative would utilize model results presented in the LPV Groundwater Sustainability Plan (GSP) Periodic Evaluation and may require additional technical analyses to characterize the impacts of allocation distributions on the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

2. **Estimation of Basin Optimization Yield and Rampdown Using Historical Groundwater Elevation Measurements and Extraction Reports**
    a. This alternative would consider the relationship between groundwater levels and pumping to estimate the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

3. **Development of a New Numerical Groundwater Flow Model for the West Las Posas Management Area**
    a. This approach would cover the development of a new model for the WLPMA that is distinct from UWCD's Updated Coastal Plain Model. The model would be developed and maintained by FCGMA.
    b. Estimated Schedule Impacts: Additional 18 to 24 months to the schedule set forth in Exhibit A.

Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with PAC, including specifically PAC's policy recommendations and comments, on each of the above alternatives and the additional amounts of time to be added to the revised schedule for preparation of the BOYS as set forth in Exhibit A.

Watermaster requests PAC's Recommendation Report, including its policy recommendations and comments, on the Committee Consultation requests discussed in this memorandum by January 31, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

DUDEK

March 31, 2025

Dr. Farai Kaseke, Ph.D., P.H., PMP, CSM
Assistant Groundwater Manager
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, California

Subject: Basin Optimization Yield Study Alternative Approach, Scope, and Schedule Impacts

Dear Dr. Kaseke:

In October 2024, the Fox Canyon Groundwater Management Agency (FCGMA) Board of Directors, acting in their role as Watermaster for the Las Posas Valley (LPV) Basin, contracted Dudek to prepare the 2025 Basin Optimization Yield (BOY) Study for the LPV Basin. The purpose of this study, which is a requirement under the Judgment[1], is to quantify the BOY and determine the Rampdown Rate. The definitions of and requirements for determining the BOY and the Rampdown Rate are listed in the Judgment. Dudek's original scope of work assumed that the numerical groundwater models that cover the East Las Posas Management Area (ELPMA) and the West Las Posas Management Area (WLPMA) would be used to determine the BOY. Dudek used the model that covers the ELPMA during development of the Periodic Evaluation of the LPV Basin Groundwater Sustainability Plan and proposed using this model to conduct the required analyses for the BOY Study. In contrast, the model that covers the WLPMA was constructed by and has been operated by United Water Conservation District (UWCD) staff. Consequently, Dudek and the Watermaster assumed that the Watermaster would contract with UWCD separately to conduct the numerical model analyses of the WLPMA for the BOY Study.

Since October, the Watermaster has been unable to reach an agreement with UWCD to conduct the numerical model analyses of the WLPMA for the BOY Study. In December 2024, Watermaster staff requested that Dudek prepare potential alternative approaches to calculating the BOY for the WLPMA if UWCD were unable to perform the numerical model analyses under the approved schedule. The alternatives Dudek developed are:

- Estimation of the BOY using the GSP evaluation model simulations.
- Estimation of the BOY using historical groundwater elevation measurements and extraction reporting.
- Development of a new numerical groundwater flow model for the WLPMA.

[1] *Las Posas Valley Water Rights Coalition v. Fox Canyon Groundwater Management Agency. Case No. VENCI00509700* (Judgment) defines the Basin Optimization Yield as, "the estimated yield that is projected to be available to achieve sustainable groundwater management by 2040.[…] The Basin Optimization Yield will take into account: (i) water available from native groundwater inflows; (ii) Return Flows; (iii) reasonably anticipated enhanced yield (*i.e.,* managed replenishment excluding water stored and dedicated to the Calleguas ASR Project) projected to be available by Water Year 2040 consistent with the projected Basin Optimization Plan; and (iv) opportunities for optimization of the Sustainable Yield achieved by relocating Extraction and transmission of water to avoid Undesirable Results. The Basin Optimization Yield will also, through Adaptive Management, take into account circumstances including: (a) improved understanding of Basin conditions and hydrogeologic parameters as a result of new data over time; (b) the current status of Basin Optimization Projects; and (c) changing hydrological conditions".

The first two alternate approaches were estimated to have a 3- to 6-month impact on the schedule, resulting in a completion date for the BOY Study in spring or summer of 2026. The third alternative was estimated to impact the study completion by 18- to 24-months. These potential alternatives were reviewed by the Technical Advisory Committee (TAC), which agreed with the general estimates of the schedule impacts for each alternative. TAC noted that the third alternative would cost the most and that the schedule impact was likely conservative. However, TAC communicated to the Watermaster that additional information regarding the three alternatives was necessary to provide recommendations regarding the preferred alternative.

The Watermaster requested additional information on the alternatives outlined above, as well as a recommendation from Dudek on the preferred approach to completing the BOY Study. The Watermaster also requested a revised schedule based on the preferred approach. This memo provides the information requested by the Watermaster, with one notable substitution. Dudek does not recommend further pursuit of constructing a new model for this BOY Study because of the high cost and substantial impacts to the schedule. Therefore, construction of a new model has been replaced by an alternative in which Dudek conducts the numerical groundwater modeling of the WLPMA using model files provided to the Watermaster by UWCD. These model files were used to evaluate future conditions in the LPV Basin as part of the Periodic Evaluation of the LPV Basin Groundwater Sustainability Plan and submitted to Watermaster by UWCD as a deliverable in accordance with the contract between Watermaster and UWCD.

The alternative approaches, the preferred approach, and the revised schedule are discussed below.

Alternative Approaches

Alternative 1: Estimation of the BOY Using the GSP Evaluation Model Runs

The Periodic Evaluation of the GSP included five model scenarios that used UWCD's Updated Coastal Plain Model that covers the entirety of the WLPMA, Oxnard Subbasin, and Pleasant Valley Basin. These model scenarios provide a range of estimates of the sustainable yield. UWCD provided the Watermaster with the output files from the model scenarios. These files contain the detailed information on the calculated water budget components and change in storage during the model run. They also contain the simulated groundwater elevations at each model cell for each stress period of the model run.

Under this alternative, Dudek would use the output files provided by UWCD to develop correlations between the water budget components and the groundwater elevations simulated in the various scenarios. These correlations would then be used to estimate the anticipated groundwater elevations at individual wells in the WLPMA under the Operating Yield of 40,000 AFY, based on the distribution of groundwater production in the allocation schedule. The impact of projects would be evaluated by changing the pumping distribution in the WLPMA from the Future Baseline with Projects Scenario modeled in the Periodic Evaluation of the LPV Basin GSP. The correlations would be mapped onto the spatial change in pumping distribution and the resulting predicted groundwater elevations would be compared to those in the baseline analysis. If the estimated groundwater elevations in the project pumping scenario are below the minimum threshold groundwater elevations, up to three additional reduced pumping scenarios would be evaluated using this method, with the goal of estimating the BOY through predicted final groundwater levels that remain above the minimum thresholds. The difference between the operating yield and the highest estimated groundwater production rate that avoids undesirable results will be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

We note that this alternative does not involve running the UWCD model. The intent of this alternative was to provide a method of estimating the BOY if UWCD did not contract with the Watermaster to run the model and did not provide the model files to the Watermaster under its contract with the FCGMA for the GSP evaluation. There are several notable limitations of this proposed alternative, three of which are listed below:

- There is no guarantee that the variables would be correlated well enough to allow for estimation of the BOY beyond what was already done for the Periodic Evaluation of the LPV Basin GSP. Therefore, this analysis may not yield results that the Watermaster would be able to use to calculate the Rampdown Rate with certainty.
- Even if the correlations are strong, these correlations of the model outputs are farther removed from the actual groundwater conditions than the numerical model.
- This method is not well suited to capturing spatial variability in groundwater conditions, particularly when projects are implemented because the correlations include built in assumptions on groundwater flow direction and storage change from the specific numerical model runs on which they are based. The basis for the correlations with projects, would be the Future Baseline with Projects Scenario. However, changing the pumping distribution will impact groundwater flow in ways that may not be captured in this alternative.

Because UWCD, under its contract with the FCGMA for the GSP evaluation, provided the Watermaster with the model files necessary to run scenarios with UWCD's Updated Coastal Plain Model and because of the limitations listed above, Dudek does not recommend that the Watermaster use this alternative to proceed with development of the BOY and the determination of the Rampdown Rate.

Alternative 2: Estimation of the BOY Using Historical Groundwater Elevation Measurements and Extraction Reports

Similar to Alternative 1, this alternative involves correlating groundwater elevations to components of the water budget. The primary difference between these two alternatives, however, is that this alternative would use observed historical data to develop these correlations, not the results of the numerical groundwater model simulations. Under this alternative, Dudek would review historical changes in groundwater elevations across the monitoring network of groundwater wells in the WLPMA. Observed groundwater elevation changes would be compared to historical water budget inputs (e.g., precipitation, UWCD diversions and recharge operations) and outputs (e.g., groundwater production, and subsurface flows estimated by groundwater gradient) quantified in the GSP for the LPV Basin. Depending on the complexity of the observed relationships, additional statistical reduction of the number of controlling factors may be applied via principal component analysis.

As with Alternative 1, the correlations developed from the historical data would be used to estimate the groundwater elevations at individual wells in the WLPMA under the Operating Yield of 40,000 AFY, based on the distribution of groundwater production in the allocation schedule, and the impact of projects would be evaluated by changing the pumping distribution in the WLPMA. Up to three additional reduced pumping scenarios would be evaluated, with the goal of estimating the BOY through predicted final groundwater levels that remain above the minimum thresholds. The difference between the operating yield and the highest estimated groundwater production rate that avoids undesirable results will be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

The benefit of this alternative relative to alternative 1 is that the correlations are developed from observed data, rather than simulated data. This means there is one less step in the abstraction from the actual groundwater conditions. However, in addition to the limitations listed in alternative 1, which this alternative shares, the distribution of wells with historical observations that can be used to develop correlations is likely to be sparser in this alternative. Consequently, estimating the impacts of projects on groundwater elevations throughout the WLPMA would be challenging.

Because the Watermaster now has the model files necessary to run scenarios with UWCD's Updated Coastal Plain Model and the limitations listed above, Dudek does not recommend that the Watermaster use this alternative to proceed with development of the BOY and the determination of the Rampdown Rate.

Alternative 3: Estimation of the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios

UWCD provided the Watermaster with the numerical groundwater model files developed for the Periodic Evaluation as a deliverable under the contract between FCGMA and UWCD to conduct the numerical modeling for the Periodic Evaluation of the LPV Basin GSP. Under this alternative, Dudek would use those files to prepare, run, and analyze up to five model scenarios for the WLPMA using the version of UWCD's Updated Coastal Plain Model used for the Periodic Evaluation. The five model scenarios are:

1. A baseline scenario
2. A projects scenario
3. Up to three alternative pumping scenarios

The baseline scenario would simulate groundwater conditions in the WLPMA through water year 2069 using the hydrologic period from 1930-1979, modified by DWR's 2070 central tendency climate change factors. Groundwater withdrawals in the baseline model scenario would be set equal to the allocations in the Groundwater Allocation Schedule prepared in accordance with the Water Right Holders in the WLPMA. The baseline model scenario would not include projects identified in the Basin Optimization Plan.

To evaluate the benefits of implementing basin optimization projects, the projects scenario would integrate projects that were identified in the Draft Basin Optimization Plan as being practical, reasonable, and cost-effective to implement prior to 2040 using the same hydrology and groundwater pumping as the baseline scenario. Projects would be simulated according to the schedules and scales defined in the Draft Basin Optimization Plan. Groundwater budgets, the change in groundwater in storage, and groundwater levels at key wells simulated in the projects scenario would be compared to those simulated in the baseline scenario in order to provide a quantitative estimate of Basin Optimization Project benefits.

If the Basin Optimization Projects do not avoid undesirable results in the WLPMA, up to three additional model scenarios would be evaluated to define a groundwater production rate that avoids undesirable results. These model runs would incorporate the same Basin Optimization Projects as the Projects scenario. The difference between the operating yield and the highest simulated groundwater production rate that avoids undesirable results would be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

This alternative also has several limitations that the Board, TAC, and Water Right Holders should be aware of. Four critical limitations are:

- UWCD has not yet published documentation for the Updated Coastal Plain model at this time. The last model documentation was published in 2019 at the time the LPV Basin GSP was prepared. Therefore, without updated information, Dudek is unable to assess the totality of the changes that were made to the model since the last model documentation was published in 2019. Consequently, Dudek would be able to run the model and analyze the output files but has not been provided with sufficient background information to fully understand all the model behavior with respect to the LPV Basin. There may be questions that arise from the results of the model simulations that Dudek is unable to answer without additional information.
- UWCD's Surface Water Distribution Model is not publicly available. Therefore, Dudek would not be able to update the representation of conjunctive use and groundwater pumping within the Oxnard Subbasin and Pleasant Valley Basin. If UWCD were running the Updated Coastal Plain model directly, it would be able to update the Surface Water Distribution Model.
- During development of the Periodic Evaluation of the LPV Basin GSP, Dudek identified that UWCD had changed the representation of the Somis Fault on the eastern boundary of the WLPMA from a no-flow boundary to a general head boundary. As a result, the Updated Coastal Plain Model simulated subsurface flows from the WLPMA to the ELPMA in the Periodic Evaluation of the LPV Basin GSP. These flows may increase as projects are implemented or groundwater production is reduced in the model. However, changes to this model boundary would require a re-calibration of the model. Without the complete model documentation and given the timeframe for completing the BOY Study before the start of the LPVB 2026 Water Year in October 2026, Dudek would be unable to change any parameters that would result in the need to recalibrate the Updated Coastal Plain model.
- Without the complete model documentation for changes made since 2019, andp given the timeframe for completing the BOY Study before the start of the LPVB 2026 Water Year in October 2026, Dudek would also be unable to conduct a model validation or uncertainty quantification for the BOY Study.

Although the limitations of this alternative are serious, and Dudek would have preferred that the UWCD staff who built and calibrated Updated Coastal Plain Model conduct the modeling for the BOY, Dudek believes that this alternative uses the best available tool for evaluating the impact of changes to groundwater production rates on groundwater conditions in the WLPMA. Therefore, this is Dudek's recommended alternative.

Revised Schedule

Watermaster Board approved Dudek's scope and schedule for the preparation of the BOY Study at its October 23, 2024, meeting. The schedule, which ended with completion of the BOY Study in December 2025, assumed that UWCD would conduct the numerical groundwater modeling for the WLPMA. The initial tasks that did not rely on UWCD modeling are well underway or have been completed. However, modeling of the baseline scenario was supposed to begin on February 25, 2025, and be completed by March 25, 2025. This modeling has not yet begun because of the ongoing uncertainty surrounding the numerical groundwater modeling of the WLPMA.

The delay in starting the baseline model impacts the entire BOY Study schedule, as the remaining tasks depend on completion of this task. Dudek has prepared a revised schedule (Table 1) that assumes PAC and TAC will require time to review the proposed alternatives and prepare recommendation reports. Under this schedule, the recommendation reports and the Watermaster response report will be presented to the Watermaster Board for consideration at the May 28, 2025 meeting. If the Watermaster Board approves the recommended approach for Dudek to conduct the numerical groundwater analysis of the WLPMA using UWCD's Updated Coastal Plain model,

Dudek will begin the baseline modeling beginning on June 2, 2025, the Monday following the May 28 Board meeting. This schedule is longer than the previously approved schedule primarily because of the timing of consultations with the TAC and the Watermaster Board. Under this schedule, the BOY Study will be completed in May 2026, assuming that the data needed to conduct each task in the study are provided by the start date of the task and that the meeting dates for committee consultation and Board review are met. Changes to the consultation dates or the length of time required for committee review will impact the schedule.

Table 1. Revised Schedule for Preparation of the BOY Study

Description	Duration	Original Schedule Date	Revised Schedule Date
Task 1 - Model Scenario Development			
Presentation of Proposed Model Scenarios to TAC	6	1/7/2025	-
TAC Recommendation Report	14	1/21/2025	-
Watermaster Response Report	14	2/4/2025	-
Recommendation & Response Reports discussed by WM Board at special meeting.	10	2/14/2025	-
Task 2 - Numerical Modeling[1]			
Task 2.1 - Baseline Scenario	21	2/25/2025	6/2/2025 (s)
Task 2.2 - Projects Scenario	28	3/25/2025	6/23/2025 (s)
TAC review of Baseline and Projects	7	4/1/2025	8/5/2025 (m)
TAC Recommendation Report	21	4/22/2025	8/26/2025 (d)
Watermaster Response Report	21	5/13/2025	9/16/2025 (d)
Recommendation & Response Reports discussed by WM Board	15	5/28/2025	9/24/2025 (m)
Task 2.3 - Model Alternative Pumping Scenarios	30	6/27/2025	10/25/2025 (d)
Task 4 - Basin Optimization Yield Study			
Task 4.1 - Draft BOY Study	45	8/11/2025	12/9/2025 (d)
PAC & TAC Recommendation Reports	60	10/10/2025	2/7/2026 (d)
Watermaster Response Report & revised draft BOY Study	21	10/31/2025	2/28/2026 (d)
Recommendation & Response Reports discussed by Watermaster Board; Board provides direction on revised draft BOY Study	26	11/8/2025	3/25/2026 (m)
Task 4.2 - Final BOY Study development following Watermaster Board review	28	12/6/2025	4/22/2026 (d)
Watermaster Board Approval of Final BOY Study	28	12/12/2025	5/27/2026 (m)

1) Task 3 is now part of Task 2 since UWCD declined to conduct WLPMA modeling under contract with the Watermaster.
2) '-' No need for revised schedule because the event has already occurred.
3) Gray text dates can no longer be achieved under the delayed schedule.
4) (s) Start date
5) (d) Deliverable date
6) (m) Meeting date

Dudek understands that Water Right Holders in the LPV Basin require as much advance notice as possible to prepare for allocation rampdowns. This schedule provides the final Rampdown Rate calculation to the Watermaster Board for approval four months before the start of the LPVB 2026 water year.

Conclusions

UWCD's inability to conduct the numerical model simulations for the WLPMA has forced the Watermaster to explore alternative methods for calculating the BOY and has impacted the schedule for calculating the Rampdown Rate and completing the BOY Study. Of the three alternatives discussed in this memo, Dudek recommends running the UWCD Updated Coastal Plain model using the model files used for the Periodic Evaluation of the GSP provided by UWCD as deliverable required under the contract with FCGMA. While this approach has limitations that are discussed above, it will provide the most quantitative estimate of the BOY and uses the best available tool for investigating impacts to groundwater conditions under different groundwater production scenarios. If the Watermaster chooses to proceed with this alternative, and the deadlines provided in Table 1 for task completion and committee consultation are met, the BOY Study should be completed by May 2026, four months before the start of the LPVB 2026 water year.

Please do not hesitate to contact me (760-479-4116) if you have questions or would like to discuss Dudek's recommended approach further.

Sincerely,

Jill Weinberger, PhD, PG
Principal Hydrogeologist

FOX CANYON GROUNDWATER MANAGEMENT AGENCY
LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Technical Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: April 03, 2025

RE: Basin Optimization Yield Study – Preferred Modeling Alternative and Impacts to Schedule

Dear Las Posas Valley Policy Advisory Committee Members:

The LPV Adjudication judgment requires preparation of a Basin Optimization Yield Study, which will set the Basin Optimization Yield, and in turn set the Operating Yield and Rampdown Rate, so that by Water Year 2040 the LPV Basin's Operating Yield is equal to its Sustainable Yield and Sustainable Groundwater Management is achieved. (Judgment, §§ 1.22, 4.10.)

In a December 23, 2024 memorandum to this committee, Watermaster explained that the Basin Optimization Yield Study could be completed by the end of December 2025; this schedule assumed Watermaster would obtain access to UWCD model(s) and/or modeling services. However, if it was unable to obtain access to UWCD model files(s) and/or modeling services, then Watermaster explained that it must develop alternatives to using UWCD model(s) and/or modeling services to complete the Basin Optimization Yield Study. (Exhibit A.) Those alternatives included (i) estimating the Basin Optimization Yield and Rampdown using GSP periodic evaluation model simulations; (ii) estimating the Basin Optimization Yield and Rampdown using historical groundwater elevation measurements and extraction reports; and (iii) developing a new numerical groundwater flow model for the West Las Posas Management Area. These alternatives would add approximately three to six months, three to six months, and 18 to 24 months, respectively, to the schedule for completing the Basin Optimization Yield Study. (Exhibit A.)

Since December 2024, Watermaster and its consultant, Dudek, have identified an additional alternative: estimating the Basin Optimization Yield using the UWCD Periodic Evaluation model files to run new scenarios. Watermaster and Dudek estimate that this alternative would result in the Basin Optimization Yield Study being completed in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting.

The Watermaster Board of Directors asked Dudek to review and select its preferred modeling alternative, after removing from consideration the alternative of developing a new numerical groundwater flow model for the West Las Posas Management Area (which would

add 18 to 24 months to the schedule), and submit its analysis to the LPV Policy Advisory Committee (PAC) and Technical Advisory Committee (TAC) for consultation. Dudek's analysis of modeling alternatives, and their respective impacts to the schedule, for preparing the Basin Optimization Yield Study is attached as Exhibit B.

CONSULTATION REQUEST

Pursuant to Section 6.3 of the LPV Adjudication judgment, Watermaster requests the TAC provide its recommendations on the following:

1. Preferred Alternative. Whether Watermaster should use the UWCD Periodic Evaluation model files to run scenarios for preparation of the Basin Optimization Yield Study rather than estimating the Basin Optimization Yield and Rampdown (i) using GSP periodic evaluation model simulations or (ii) using historical groundwater elevation measurements and extraction reports?

2. Schedule Impact. Whether using the UWCD Periodic Evaluation model files to complete the Basin Optimization Yield Study in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting, approximately four months before the start of Water Year 2026 (October 1, 2026 through September 30, 2027), is a reasonable alternative for timely completion of the Basin Optimization Yield Study?

Watermaster requests TAC's Recommendation Report, including its technical recommendations and comments, on the consultation requests discussed in this memorandum by May 09, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

FOX CANYON GROUNDWATER MANAGEMENT AGENCY
LAS POSAS VALLEY WATERMASTER

MEMORANDUM

To: Las Posas Valley Technical Advisory Committee

From: Kudzai F. Kaseke, Assistant Groundwater Manager

Date: December 23, 2024

RE: Basin Optimization Yield Study Schedule

Dear Las Posas Valley Technical Advisory Committee Members:

Section 4.10 of the judgment entered in *Las Posas Valley Water Rights Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al.*, Santa Barbara Sup. Ct. Case No. VENCI000509700 (Judgment) requires the Watermaster to prepare a Basin Optimization Yield Study (BOYS), which will set the Basin Optimization Yield for the Las Posas Valley Basin (LPV Basin), and in turn the Operating Yield and the Rampdown Rate for Water Years through Water Year 2039. (Judgment, § 4.10.1.4.)

Exigent circumstances necessitate an extension of the schedule included in the Judgment, originally and as amended, for preparation of the BOYS. Currently, Watermaster estimates completion of the BOYS, consistent with the committee consultation required by the Judgment and inclusive of additional consultation requested by the LPV Technical Advisory Committee, by the end of December 2025. Watermaster's revised schedule for completion of the BOYS, including dates for completion of specific tasks and work, is attached as Exhibit A. Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with the Las Posas Valley Technical Advisory Committee (TAC), including specifically TAC's technical recommendations and comments, on the revised schedule for preparation of the BOYS as set forth in Exhibit A.

The revised schedule for preparation of the BOYS assumes United Water Conservation District (UWCD) provides Watermaster access to certain model(s) and/or modeling services. If Watermaster is unable to obtain access to UWCD's model(s) and/or modeling services, Watermaster must rely on alternative model(s) and/or technical services to characterize future groundwater conditions within the West Las Posas Management Area (WLPMA) and complete preparation of the BOYS. Watermaster has asked its professional consultant, Dudek, to identify options for developing or obtaining replacement model(s) and/or modeling services. Dudek has prepared the following alternatives to obtaining UWCD model(s) and/or modeling services:

Las Posas Valley Technical Advisory Committee
December 23, 2024

1. **Estimation of Basin Optimization Yield and Rampdown Using GSP Evaluation Model Simulations**
    a. This alternative would utilize model results presented in the LPV Groundwater Sustainability Plan (GSP) Periodic Evaluation and may require additional technical analyses to characterize the impacts of allocation distributions on the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

2. **Estimation of Basin Optimization Yield and Rampdown Using Historical Groundwater Elevation Measurements and Extraction Reports**
    a. This alternative would consider the relationship between groundwater levels and pumping to estimate the WLPMA yield.
    b. Estimated Schedule Impacts: Additional 3 to 6 months to the schedule set forth in Exhibit A.

3. **Development of a New Numerical Groundwater Flow Model for the West Las Posas Management Area**
    a. This approach would cover the development of a new model for the WLPMA that is distinct from UWCD's Updated Coastal Plain Model. The model would be developed and maintained by FCGMA.
    b. Estimated Schedule Impacts: Additional 18 to 24 months to the schedule set forth in Exhibit A.

Pursuant to Section 6.3 of the Judgment, Watermaster requests Committee Consultation with TAC, including specifically TAC's technical recommendations and comments, on each of the above alternatives and the additional amounts of time to be added to the revised schedule for preparation of the BOYS as set forth in Exhibit A.

Watermaster requests TAC's Recommendation Report, including its technical recommendations and comments, on the Committee Consultation requests discussed in this memorandum by January 31, 2025.

Please contact me at (805) 654-2010 or LPV.Watermaster@ventura.org with any questions or concerns.

Basin Optimization Yield Study Schedule

Description	Duration (days)	Date
Draft scope of work & budget for study referred to TAC		7/16/2024
PAC & TAC Recommendation Reports to Watermaster	42	8/27/2024
Watermaster Board direction on TAC recommendations / response reports & approval of SOW and budget	57	10/23/2024
Draft Basin Optimization Plan completed	47	12/9/2024
Development of the draft BOY Study[1]		
UWCD Model File Submittal[2]		1/1/2025
Task 1 - Model Scenario Development[3]	29	1/7/2025
TAC Recommendation Report	14	1/21/2025
Watermaster Response Report	14	2/4/2025
Recommendation & Response Reports discussed by WM Board at special meeting.	10	2/14/2025
Task 2 - Numerical Modeling		
Task 2.1 - Baseline Scenario	21	2/25/2025
Task 2.2 - Projects Scenario	28	3/25/2025
TAC review of Baseline and Projects for 4/1/25 TAC meeting	7	4/1/2025
TAC Recommendation Report	21	4/22/2025
Watermaster Response Report	21	5/13/2025
Recommendation & Response Reports discussed by WM Board	15	5/28/2025
Task 2.3 - Model Alternative Pumping Scenarios	30	6/27/2025
Task 4 - Basin Optimization Yield Study		
Task 4.1 - Draft BOY Study	45	8/11/2025
PAC & TAC Recommendation Reports	60	10/10/2025
Watermaster Response Report & revised draft BOY Study	21	10/31/2025
Recommendation & Response Reports discussed by WM Board, Board provides direction on revised draft BOY Study	8	11/8/2025
Task 4.2 - Final BOY Study development following Watermaster Board review	28	12/6/2025
Watermaster Board approval of final BOY Study	6	12/12/2025
Total Days from Authorization to Proceed:	415	

DUDEK

March 31, 2025

Dr. Farai Kaseke, Ph.D., P.H., PMP, CSM
Assistant Groundwater Manager
Fox Canyon Groundwater Management Agency
800 South Victoria Avenue
Ventura, California

Subject: Basin Optimization Yield Study Alternative Approach, Scope, and Schedule Impacts

Dear Dr. Kaseke:

In October 2024, the Fox Canyon Groundwater Management Agency (FCGMA) Board of Directors, acting in their role as Watermaster for the Las Posas Valley (LPV) Basin, contracted Dudek to prepare the 2025 Basin Optimization Yield (BOY) Study for the LPV Basin. The purpose of this study, which is a requirement under the Judgment[1], is to quantify the BOY and determine the Rampdown Rate. The definitions of and requirements for determining the BOY and the Rampdown Rate are listed in the Judgment. Dudek's original scope of work assumed that the numerical groundwater models that cover the East Las Posas Management Area (ELPMA) and the West Las Posas Management Area (WLPMA) would be used to determine the BOY. Dudek used the model that covers the ELPMA during development of the Periodic Evaluation of the LPV Basin Groundwater Sustainability Plan and proposed using this model to conduct the required analyses for the BOY Study. In contrast, the model that covers the WLPMA was constructed by and has been operated by United Water Conservation District (UWCD) staff. Consequently, Dudek and the Watermaster assumed that the Watermaster would contract with UWCD separately to conduct the numerical model analyses of the WLPMA for the BOY Study.

Since October, the Watermaster has been unable to reach an agreement with UWCD to conduct the numerical model analyses of the WLPMA for the BOY Study. In December 2024, Watermaster staff requested that Dudek prepare potential alternative approaches to calculating the BOY for the WLPMA if UWCD were unable to perform the numerical model analyses under the approved schedule. The alternatives Dudek developed are:

- Estimation of the BOY using the GSP evaluation model simulations.
- Estimation of the BOY using historical groundwater elevation measurements and extraction reporting.
- Development of a new numerical groundwater flow model for the WLPMA.

[1] *Las Posas Valley Water Rights Coalition v. Fox Canyon Groundwater Management Agency. Case No. VENCI00509700* (Judgment) defines the Basin Optimization Yield as, "the estimated yield that is projected to be available to achieve sustainable groundwater management by 2040.[…] The Basin Optimization Yield will take into account: (i) water available from native groundwater inflows; (ii) Return Flows; (iii) reasonably anticipated enhanced yield (*i.e.,* managed replenishment excluding water stored and dedicated to the Calleguas ASR Project) projected to be available by Water Year 2040 consistent with the projected Basin Optimization Plan; and (iv) opportunities for optimization of the Sustainable Yield achieved by relocating Extraction and transmission of water to avoid Undesirable Results. The Basin Optimization Yield will also, through Adaptive Management, take into account circumstances including: (a) improved understanding of Basin conditions and hydrogeologic parameters as a result of new data over time; (b) the current status of Basin Optimization Projects; and (c) changing hydrological conditions".

The first two alternate approaches were estimated to have a 3- to 6-month impact on the schedule, resulting in a completion date for the BOY Study in spring or summer of 2026. The third alternative was estimated to impact the study completion by 18- to 24-months. These potential alternatives were reviewed by the Technical Advisory Committee (TAC), which agreed with the general estimates of the schedule impacts for each alternative. TAC noted that the third alternative would cost the most and that the schedule impact was likely conservative. However, TAC communicated to the Watermaster that additional information regarding the three alternatives was necessary to provide recommendations regarding the preferred alternative.

The Watermaster requested additional information on the alternatives outlined above, as well as a recommendation from Dudek on the preferred approach to completing the BOY Study. The Watermaster also requested a revised schedule based on the preferred approach. This memo provides the information requested by the Watermaster, with one notable substitution. Dudek does not recommend further pursuit of constructing a new model for this BOY Study because of the high cost and substantial impacts to the schedule. Therefore, construction of a new model has been replaced by an alternative in which Dudek conducts the numerical groundwater modeling of the WLPMA using model files provided to the Watermaster by UWCD. These model files were used to evaluate future conditions in the LPV Basin as part of the Periodic Evaluation of the LPV Basin Groundwater Sustainability Plan and submitted to Watermaster by UWCD as a deliverable in accordance with the contract between Watermaster and UWCD.

The alternative approaches, the preferred approach, and the revised schedule are discussed below.

Alternative Approaches

Alternative 1: Estimation of the BOY Using the GSP Evaluation Model Runs

The Periodic Evaluation of the GSP included five model scenarios that used UWCD's Updated Coastal Plain Model that covers the entirety of the WLPMA, Oxnard Subbasin, and Pleasant Valley Basin. These model scenarios provide a range of estimates of the sustainable yield. UWCD provided the Watermaster with the output files from the model scenarios. These files contain the detailed information on the calculated water budget components and change in storage during the model run. They also contain the simulated groundwater elevations at each model cell for each stress period of the model run.

Under this alternative, Dudek would use the output files provided by UWCD to develop correlations between the water budget components and the groundwater elevations simulated in the various scenarios. These correlations would then be used to estimate the anticipated groundwater elevations at individual wells in the WLPMA under the Operating Yield of 40,000 AFY, based on the distribution of groundwater production in the allocation schedule. The impact of projects would be evaluated by changing the pumping distribution in the WLPMA from the Future Baseline with Projects Scenario modeled in the Periodic Evaluation of the LPV Basin GSP. The correlations would be mapped onto the spatial change in pumping distribution and the resulting predicted groundwater elevations would be compared to those in the baseline analysis. If the estimated groundwater elevations in the project pumping scenario are below the minimum threshold groundwater elevations, up to three additional reduced pumping scenarios would be evaluated using this method, with the goal of estimating the BOY through predicted final groundwater levels that remain above the minimum thresholds. The difference between the operating yield and the highest estimated groundwater production rate that avoids undesirable results will be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

We note that this alternative does not involve running the UWCD model. The intent of this alternative was to provide a method of estimating the BOY if UWCD did not contract with the Watermaster to run the model and did not provide the model files to the Watermaster under its contract with the FCGMA for the GSP evaluation. There are several notable limitations of this proposed alternative, three of which are listed below:

- There is no guarantee that the variables would be correlated well enough to allow for estimation of the BOY beyond what was already done for the Periodic Evaluation of the LPV Basin GSP. Therefore, this analysis may not yield results that the Watermaster would be able to use to calculate the Rampdown Rate with certainty.
- Even if the correlations are strong, these correlations of the model outputs are farther removed from the actual groundwater conditions than the numerical model.
- This method is not well suited to capturing spatial variability in groundwater conditions, particularly when projects are implemented because the correlations include built in assumptions on groundwater flow direction and storage change from the specific numerical model runs on which they are based. The basis for the correlations with projects, would be the Future Baseline with Projects Scenario. However, changing the pumping distribution will impact groundwater flow in ways that may not be captured in this alternative.

Because UWCD, under its contract with the FCGMA for the GSP evaluation, provided the Watermaster with the model files necessary to run scenarios with UWCD's Updated Coastal Plain Model and because of the limitations listed above, Dudek does not recommend that the Watermaster use this alternative to proceed with development of the BOY and the determination of the Rampdown Rate.

Alternative 2: Estimation of the BOY Using Historical Groundwater Elevation Measurements and Extraction Reports

Similar to Alternative 1, this alternative involves correlating groundwater elevations to components of the water budget. The primary difference between these two alternatives, however, is that this alternative would use observed historical data to develop these correlations, not the results of the numerical groundwater model simulations. Under this alternative, Dudek would review historical changes in groundwater elevations across the monitoring network of groundwater wells in the WLPMA. Observed groundwater elevation changes would be compared to historical water budget inputs (e.g., precipitation, UWCD diversions and recharge operations) and outputs (e.g., groundwater production, and subsurface flows estimated by groundwater gradient) quantified in the GSP for the LPV Basin. Depending on the complexity of the observed relationships, additional statistical reduction of the number of controlling factors may be applied via principal component analysis.

As with Alternative 1, the correlations developed from the historical data would be used to estimate the groundwater elevations at individual wells in the WLPMA under the Operating Yield of 40,000 AFY, based on the distribution of groundwater production in the allocation schedule, and the impact of projects would be evaluated by changing the pumping distribution in the WLPMA. Up to three additional reduced pumping scenarios would be evaluated, with the goal of estimating the BOY through predicted final groundwater levels that remain above the minimum thresholds. The difference between the operating yield and the highest estimated groundwater production rate that avoids undesirable results will be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

The benefit of this alternative relative to alternative 1 is that the correlations are developed from observed data, rather than simulated data. This means there is one less step in the abstraction from the actual groundwater conditions. However, in addition to the limitations listed in alternative 1, which this alternative shares, the distribution of wells with historical observations that can be used to develop correlations is likely to be sparser in this alternative. Consequently, estimating the impacts of projects on groundwater elevations throughout the WLPMA would be challenging.

Because the Watermaster now has the model files necessary to run scenarios with UWCD's Updated Coastal Plain Model and the limitations listed above, Dudek does not recommend that the Watermaster use this alternative to proceed with development of the BOY and the determination of the Rampdown Rate.

Alternative 3: Estimation of the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios

UWCD provided the Watermaster with the numerical groundwater model files developed for the Periodic Evaluation as a deliverable under the contract between FCGMA and UWCD to conduct the numerical modeling for the Periodic Evaluation of the LPV Basin GSP. Under this alternative, Dudek would use those files to prepare, run, and analyze up to five model scenarios for the WLPMA using the version of UWCD's Updated Coastal Plain Model used for the Periodic Evaluation. The five model scenarios are:

1. A baseline scenario
2. A projects scenario
3. Up to three alternative pumping scenarios

The baseline scenario would simulate groundwater conditions in the WLPMA through water year 2069 using the hydrologic period from 1930-1979, modified by DWR's 2070 central tendency climate change factors. Groundwater withdrawals in the baseline model scenario would be set equal to the allocations in the Groundwater Allocation Schedule prepared in accordance with the Water Right Holders in the WLPMA. The baseline model scenario would not include projects identified in the Basin Optimization Plan.

To evaluate the benefits of implementing basin optimization projects, the projects scenario would integrate projects that were identified in the Draft Basin Optimization Plan as being practical, reasonable, and cost-effective to implement prior to 2040 using the same hydrology and groundwater pumping as the baseline scenario. Projects would be simulated according to the schedules and scales defined in the Draft Basin Optimization Plan. Groundwater budgets, the change in groundwater in storage, and groundwater levels at key wells simulated in the projects scenario would be compared to those simulated in the baseline scenario in order to provide a quantitative estimate of Basin Optimization Project benefits.

If the Basin Optimization Projects do not avoid undesirable results in the WLPMA, up to three additional model scenarios would be evaluated to define a groundwater production rate that avoids undesirable results. These model runs would incorporate the same Basin Optimization Projects as the Projects scenario. The difference between the operating yield and the highest simulated groundwater production rate that avoids undesirable results would be used as the basis for the Rampdown Rate calculation set forth in the Judgment.

This alternative also has several limitations that the Board, TAC, and Water Right Holders should be aware of. Four critical limitations are:

- UWCD has not yet published documentation for the Updated Coastal Plain model at this time. The last model documentation was published in 2019 at the time the LPV Basin GSP was prepared. Therefore, without updated information, Dudek is unable to assess the totality of the changes that were made to the model since the last model documentation was published in 2019. Consequently, Dudek would be able to run the model and analyze the output files but has not been provided with sufficient background information to fully understand all the model behavior with respect to the LPV Basin. There may be questions that arise from the results of the model simulations that Dudek is unable to answer without additional information.
- UWCD's Surface Water Distribution Model is not publicly available. Therefore, Dudek would not be able to update the representation of conjunctive use and groundwater pumping within the Oxnard Subbasin and Pleasant Valley Basin. If UWCD were running the Updated Coastal Plain model directly, it would be able to update the Surface Water Distribution Model.
- During development of the Periodic Evaluation of the LPV Basin GSP, Dudek identified that UWCD had changed the representation of the Somis Fault on the eastern boundary of the WLPMA from a no-flow boundary to a general head boundary. As a result, the Updated Coastal Plain Model simulated subsurface flows from the WLPMA to the ELPMA in the Periodic Evaluation of the LPV Basin GSP. These flows may increase as projects are implemented or groundwater production is reduced in the model. However, changes to this model boundary would require a re-calibration of the model. Without the complete model documentation and given the timeframe for completing the BOY Study before the start of the LPVB 2026 Water Year in October 2026, Dudek would be unable to change any parameters that would result in the need to recalibrate the Updated Coastal Plain model.
- Without the complete model documentation for changes made since 2019, andp given the timeframe for completing the BOY Study before the start of the LPVB 2026 Water Year in October 2026, Dudek would also be unable to conduct a model validation or uncertainty quantification for the BOY Study.

Although the limitations of this alternative are serious, and Dudek would have preferred that the UWCD staff who built and calibrated Updated Coastal Plain Model conduct the modeling for the BOY, Dudek believes that this alternative uses the best available tool for evaluating the impact of changes to groundwater production rates on groundwater conditions in the WLPMA. Therefore, this is Dudek's recommended alternative.

Revised Schedule

Watermaster Board approved Dudek's scope and schedule for the preparation of the BOY Study at its October 23, 2024, meeting. The schedule, which ended with completion of the BOY Study in December 2025, assumed that UWCD would conduct the numerical groundwater modeling for the WLPMA. The initial tasks that did not rely on UWCD modeling are well underway or have been completed. However, modeling of the baseline scenario was supposed to begin on February 25, 2025, and be completed by March 25, 2025. This modeling has not yet begun because of the ongoing uncertainty surrounding the numerical groundwater modeling of the WLPMA.

The delay in starting the baseline model impacts the entire BOY Study schedule, as the remaining tasks depend on completion of this task. Dudek has prepared a revised schedule (Table 1) that assumes PAC and TAC will require time to review the proposed alternatives and prepare recommendation reports. Under this schedule, the recommendation reports and the Watermaster response report will be presented to the Watermaster Board for consideration at the May 28, 2025 meeting. If the Watermaster Board approves the recommended approach for Dudek to conduct the numerical groundwater analysis of the WLPMA using UWCD's Updated Coastal Plain model,

Dudek will begin the baseline modeling beginning on June 2, 2025, the Monday following the May 28 Board meeting. This schedule is longer than the previously approved schedule primarily because of the timing of consultations with the TAC and the Watermaster Board. Under this schedule, the BOY Study will be completed in May 2026, assuming that the data needed to conduct each task in the study are provided by the start date of the task and that the meeting dates for committee consultation and Board review are met. Changes to the consultation dates or the length of time required for committee review will impact the schedule.

Table 1. Revised Schedule for Preparation of the BOY Study

Description	Duration	Original Schedule Date	Revised Schedule Date
Task 1 - Model Scenario Development			
Presentation of Proposed Model Scenarios to TAC	6	1/7/2025	-
TAC Recommendation Report	14	1/21/2025	-
Watermaster Response Report	14	2/4/2025	-
Recommendation & Response Reports discussed by WM Board at special meeting.	10	2/14/2025	-
Task 2 - Numerical Modeling[1]			
Task 2.1 - Baseline Scenario	21	2/25/2025	6/2/2025 (s)
Task 2.2 - Projects Scenario	28	3/25/2025	6/23/2025 (s)
TAC review of Baseline and Projects	7	4/1/2025	8/5/2025 (m)
TAC Recommendation Report	21	4/22/2025	8/26/2025 (d)
Watermaster Response Report	21	5/13/2025	9/16/2025 (d)
Recommendation & Response Reports discussed by WM Board	15	5/28/2025	9/24/2025 (m)
Task 2.3 - Model Alternative Pumping Scenarios	30	6/27/2025	10/25/2025 (d)
Task 4 - Basin Optimization Yield Study			
Task 4.1 - Draft BOY Study	45	8/11/2025	12/9/2025 (d)
PAC & TAC Recommendation Reports	60	10/10/2025	2/7/2026 (d)
Watermaster Response Report & revised draft BOY Study	21	10/31/2025	2/28/2026 (d)
Recommendation & Response Reports discussed by Watermaster Board; Board provides direction on revised draft BOY Study	26	11/8/2025	3/25/2026 (m)
Task 4.2 - Final BOY Study development following Watermaster Board review	28	12/6/2025	4/22/2026 (d)
Watermaster Board Approval of Final BOY Study	28	12/12/2025	5/27/2026 (m)

1) Task 3 is now part of Task 2 since UWCD declined to conduct WLPMA modeling under contract with the Watermaster.
2) '-' No need for revised schedule because the event has already occurred.
3) Gray text dates can no longer be achieved under the delayed schedule.
4) (s) Start date
5) (d) Deliverable date
6) (m) Meeting date

Dudek understands that Water Right Holders in the LPV Basin require as much advance notice as possible to prepare for allocation rampdowns. This schedule provides the final Rampdown Rate calculation to the Watermaster Board for approval four months before the start of the LPVB 2026 water year.

Conclusions

UWCD's inability to conduct the numerical model simulations for the WLPMA has forced the Watermaster to explore alternative methods for calculating the BOY and has impacted the schedule for calculating the Rampdown Rate and completing the BOY Study. Of the three alternatives discussed in this memo, Dudek recommends running the UWCD Updated Coastal Plain model using the model files used for the Periodic Evaluation of the GSP provided by UWCD as deliverable required under the contract with FCGMA. While this approach has limitations that are discussed above, it will provide the most quantitative estimate of the BOY and uses the best available tool for investigating impacts to groundwater conditions under different groundwater production scenarios. If the Watermaster chooses to proceed with this alternative, and the deadlines provided in Table 1 for task completion and committee consultation are met, the BOY Study should be completed by May 2026, four months before the start of the LPVB 2026 water year.

Please do not hesitate to contact me (760-479-4116) if you have questions or would like to discuss Dudek's recommended approach further.

Sincerely,

Jill Weinberger, PhD, PG
Principal Hydrogeologist

TO: Las Posas Valley Watermaster

FROM: Las Posas Valley Watermaster Policy Advisory Committee

RE: Recommendation Report – BOYS Preferred Modeling Alternative and Impacts to Schedule

DATE: May 15, 2025

Dear Las Posas Valley Watermaster,

The Las Posas Valley Watermaster Policy Advisory Committee (PAC) provides this Recommendation Report on the **Basin Optimization Yield Study (BOYS) Preferred Modeling Alternative and Impacts to Schedule**.

Recommendation:
See memo below for recommended course of action**.**

Policy Rationale for Recommendation:
See memo below for rationale.

Summary of Facts in Support of Recommendation:
See memo below for complete summary of facts.

Tally of Committee Member Votes:

	YES	NO	ABSTAIN	ABSENT
Ian Prichard, Calleguas MWD	X			
Jeff Palmer, VC WWD No. 1 & 19				X
John Menne, Zone MWC	X			
Rob Grether, West LPV Large Ag	X			
David Schwabauer, East LPV Large Ag	X			
Josh Waters, East LPV Small Ag	X			
Richard Cavaletto, West LPV Small Ag	X			
Laurel Servin, East LPV MWC	X			
Steven Murata, West LPV MWC	X			
Arturo Aseo, Commercial				X

Report of Bases for Majority and Minority Committee Member Positions:

PAC Recommendation Report Regarding the BOYS Preferred Modeling Alternative and Impacts to Schedule

Regarding the Watermaster's April 3, 2025 memo on preferred modeling alternative and impacts to schedule of the Basin Optimization Yield Study, the PAC concurs with the Watermaster and Dudek that the alternative providing for the use of the *Estimation of the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios* is the most favorable approach.

The PAC recognizes that the BOYS will be an important management tool for the Watermaster and will aid in the development of a groundwater extractions ramp-down scheme that has the potential to impact all stakeholders in the basin. With that understanding, the PAC would prefer the model used for the BOYS not be just "good enough" or what's most expedient but rather be based on the latest understanding of the hydrogeologic conditions in the basin.

The PAC has considered the pros and cons of using the *UWCD Periodic Evaluation Model Files* in the BOYS and would like to explore the potential of augmenting that approach to better address the key policy questions facing the PAC and Watermaster. Committee members debated the merits of using the periodic evaluation model files without modification and alternatively augmenting those model files to address key concerns recognized during the preparation of the 5-Year Periodic Evaluation.

The creation of a completely new groundwater model for the WLPMA was determined to be a costly alternative and had unacceptable impacts to the timeline for completion of the BOYS. However, using the pre-existing model files provides a major jumpstart to the modeling effort. The PAC would like to explore the cost and schedule impacts to upgrading the periodic model to address the following topics:

- Extension of the modeling period to 2024 (instead of 1979)
- The Somis fault was changed from a NO FLOW to GENERAL HEAD BOUNDARY for the periodic evaluation, but the model was not recalibrated. In-lieu water delivery projects are proposed in the vicinity of that fault and a more refined understanding of how the water levels would respond with these revised assumptions about the fault are important.
- Perform the model recalibration, as well as the model validation, sensitivity, and uncertainty analyses needed to support the model. The Dudek memorandum dated March 31, 2025 reported that the necessary documentation of the periodic evaluation model was not available. The PAC recommends that this deficiency be eliminated for any model used in the BOYS. These technical evaluations of the model can make the process of fostering stakeholder acceptance a more straightforward endeavor.

Receiving this additional information will help the Watermaster make a more informed decision about the tradeoffs between advancing the study with Dudek and waiting for United to contract to do the modeling.

LAS POSAS VALLEY TECHNICAL ADVISORY COMMITTEE

May 9, 2025

REVISED RECOMMENDATION REPORT

To: Las Posas Valley Watermaster

From: Las Posas Valley Watermaster Technical Advisory Committee, prepared by Chad Taylor, Administrator and Chair

Re: Recommendation Report – Preferred Modeling Alternatives and Impacts to Schedule, Basin Optimization Yield Study

The Las Posas Valley Watermaster Technical Advisory Committee (TAC) provides this Recommendation Report regarding the Basin Optimization Yield Study Preferred Modeling Alternatives and Impacts to Schedule. This Recommendation Report was prepared in response to the Las Posas Valley Basin Watermaster (Watermaster) committee consultation request transmitted to the TAC on April 3, 2025.

BACKGROUND

The Watermaster requested TAC consultation on a preferred alternative method to assess basin yield optimization in the BOYS. The Las Posas Valley Adjudication judgment requires preparation of a Basin Optimization Yield Study (BOYS) to evaluate Basin Optimization Yield, set the Operating Yield, and identify the need for and quantification of the rate of pumping rampdown to achieve sustainable groundwater management by 2040. The Watermaster originally planned to use the two groundwater models to simulate conditions related to optimization in the east and west management areas of the Las Posas Valley Basin (LPVB). However, the model for the West Las Posas Management Area (WLPMA) was developed and is maintained by United Water Conservation District (UWCD). The Watermaster attempted to develop an agreement with UWCD to facilitate UWCD's services in applying their model to simulate yield optimization scenarios. The Watermaster has reported that an agreement for this purpose could not be reached and alternatives to the original approach must be implemented.

The Watermaster informed the TAC in a December 23, 2024 memorandum that another technical approach may be required. That memorandum also identified three potential alternatives, which were:

(i) Estimating the Basin Optimization Yield and Rampdown using Groundwater Sustainability Plan (GSP) periodic evaluation model simulations

(ii) Estimating the Basin Optimization Yield and Rampdown using historical groundwater elevation measurements and extraction reports
(iii) Developing a new numerical groundwater flow model for the WLPMA.

In early 2025, the Watermaster removed the new numerical model development alternative (iii above) from consideration due to the associated schedule impacts. The Watermaster and its consultant, Dudek, have also identified an additional alternative, described as estimating the Basin Optimization Yield using the model provided by UWCD as part of the LPVB GSP Periodic Evaluation completed in 2025.

The Watermaster Board of Directors asked Dudek to review and select its preferred modeling alternative and submit its analysis to the LPV Policy Advisory Committee (PAC) and TAC for consultation. Dudek analyzed the modeling alternatives and their respective impacts to the BOYS schedule and identified the recently developed alternative that would use the model scenario provided by UWCD as part of the Periodic Evaluation as the preferred alternative. Dudek has estimated inclusion of this alternative would result in the BOYS being completed in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting. Dudek presented the alternative BOYS approaches and their preferred alternative in a letter titled *Basin Optimization Yield Study Alternative Approach, Scope, and Schedule Impacts* dated March 31, 2025.

The Watermaster requested the TAC specifically consider and provide consultation on the following topics:

1. Should the Watermaster use the UWCD Periodic Evaluation model files to run scenarios for preparation of the Basin Optimization Yield Study rather than estimating the Basin Optimization Yield and Rampdown (i) using GSP periodic evaluation model simulations or (ii) using historical groundwater elevation measurements and extraction reports?
2. Is the schedule to implement the alternative in (1) and complete the Basin Optimization Yield Study in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting, approximately four months before the start of Water Year 2026 (October 1, 2026 through September 30, 2027), a reasonable alternative for timely completion of the Basin Optimization Yield Study?

The TAC considered the BOYS preferred modeling alternative and schedule impacts in a regular TAC meeting on April 15, 2025 and again on May 6, 2025. TAC comments on the BOYS preferred modeling alternative and schedule were discussed in those meetings and are summarized in this Recommendation Report.

The TAC reviewed this Recommendation Report and voted to approve it in a special meeting on May 9, 2025.

COMMENTS

The TAC would also like to express gratitude to the Watermaster for working diligently to develop an agreement with UWCD to access and use the current version of the Coastal Plain groundwater model and to Watermaster staff and Dudek for identifying this alternative. The proposed approach preserves the original technical methodology for basin optimization and maintains consistency with the GSP and other analyses that also employed the two models representing the LPVB.

However, the TAC has concerns that the model scenario provided by UWCD as part of the Periodic Evaluation does not accurately represent the conceptual model of the boundary between the WLPMA and East Las Posas Management Area (ELPMA). The TAC is also concerned that criteria for evaluating the project and/or alternative model scenarios have not been described for review by the TAC. The TAC views resolution of the recommendations presented below as critical requirements that should be addressed before BOYS simulations are undertaken.

TAC RECOMMENDATIONS

1. RECOMMENDATION 1: CONSIDER ADDRESSING THE SOMIS FAULT REPRESENTATION IN THE COASTAL PLAIN MODEL BEFORE PERFORMING BASIN OPTIMIZATION YIELD MODEL SIMULATIONS

As described in TAC comments and recommendations on the Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin (Draft GSP Evaluation) (*TAC Consultation Recommendation Report, Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin*, dated October 10, 2024), modifications to the version of the Coastal Plain model used in the GSP Evaluation to simulate conditions in the WLPMA included a significant change to the boundary condition used to represent the Somis Fault. This fault, which separates the WLPMA from the ELPMA, was changed from a no-flow boundary condition to a partial general head boundary condition. This change means the Coastal Plain Model used for the Draft GSP Evaluation and proposed for use in the BOYS optimization simulations allows flow from the WLPMA to the ELPMA. The average annual flow rate from the WLPMA to the ELPMA from 2016 to 2022 presented in the GSP Evaluation was 832 acre feet per year, which represents slightly less than 17 percent of the change in groundwater storage in the WLPMA during the period.

As the TAC has noted in our October 10, 2024 Recommendation Report, the Draft GSP Evaluation indicates that the limited groundwater elevation information in this area of the LPVB implies there is little groundwater flow across the Somis Fault. In addition, local groundwater gradients suggest that if flow occurs it would be from ELPMA to WLPMA. In response to this comment, the Watermaster indicated the TAC recommendations were forwarded to UWCD and that:

> "UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this response report was prepared, UWCD had not yet provided a date when the supplemental documentation will be made available."

Unfortunately, such supplemental documentation is still not available.

The TAC further recommended in October 2024 that the Watermaster

> "Advance the coordination with UWCD and the TAC to develop agreement on the representation of this boundary in the two models. The coordination of this boundary between the two models should not wait until after the GSP is amended. The analyses in the amended GSP should be consistent with the Basin Optimization Yield Study."

While use of the GSP periodic evaluation model simulations as suggested in the preferred alternative for yield optimization in the WLPMA is consistent with the GSP periodic evaluation, the TAC has significant concerns over the representation of the Somis Fault in that model. The TAC is specifically concerned that the apparent conflict between the groundwater flow direction and magnitude of average annual flow in the GSP periodic evaluation model simulations and the observed water levels and groundwater gradients in this area indicate the model is an inappropriate tool for simulating future conditions with changed management and the addition of projects designed to increase groundwater storage and elevations in the WLPMA.

1.1 Recommendations:

The TAC recommends that Watermaster and their consultant Dudek evaluate and report back to the TAC if the GSP periodic evaluation model simulation files currently in their possession could be used to assess and quantify the potential impacts to available water supply in the WLPMA given the apparent groundwater flow direction discrepancy between the Coastal Plain model and observed local groundwater conditions around the Somis Fault boundary between the WLPMA and ELPMA.

1.2 Technical Rationale for Recommendation:

As stated above, the TAC is concerned that groundwater flow direction in the GSP periodic evaluation model simulations is from the WLPMA to the ELPMA and the observed water levels and groundwater gradients in this area indicate the actual flow, if it occurs, would be from the ELPMA to the WLMPA. Simulating future conditions with projects in the WLPMA intended to increase groundwater elevations and storage in that management area would likely simulate increased flow across the Somis Fault in the model. This would mean that the simulated conditions would show less benefit to water levels and storage in the WLPMA than would be expected in reality. Given the conceptual model and local observations relating to the effect of the Somis Fault on groundwater flow it is likely that increased groundwater elevations and storage in the WLPMA would have little effect on flow between the WLPMA and ELPMA. In fact, if the Somis Fault does present a barrier to horizontal flow

of groundwater it would cause groundwater to mound higher on the western side of the Fault in response to WLPMA projects that increase groundwater elevations and storage.

1.3 Summary of Facts in Support of Recommendation:

- The GSP periodic evaluation model simulations appear to misrepresent the direction of groundwater flow across the Somis Fault at the boundary between the WLPMA and ELPMA.
- Using a model that misrepresents boundary conditions for predictive simulations, optimization of yield, and reduction in pumping allocations is likely to result in significant errors that risk either over or underestimating the effectiveness of projects and changes in groundwater pumping, especially close to the boundary in question.

2. RECOMMENDATION 2: CLARIFY WHAT CRITERIA WILL BE USED TO ASSESS UNDESIRABLE RESULTS IN THE WLPMA WHEN COMPARING BASIN OPTIMIZATION YIELD STUDY PROJECT AND ALTERNATIVE PUMPING SCENARIOS TO THE BASELINE SCENARIO

In the October 10, 2024 Recommendation Report on the Draft GSP Periodic Evaluation, the TAC also commented on the relationship between the Oxnard Subbasin and sustainability in the WLPMA. In that comment, the TAC expressed concern that the methodology used to assess the effects of pumping in the WLPMA on seawater intrusion in the Oxnard Subbasin did not effectively isolate the effects of changes in pumping in WLPMA on conditions in the Oxnard Subbasin. As pointed out in our October 10, 2024 Recommendation Report:

> "The Draft GSP Evaluation presented model scenarios that included simultaneous changes in pumping volumes in the WLPMA, both Oxnard aquifers, and the Pleasant Valley Basin. The results of these simulations were then compared to a baseline scenario and the changes to simulated seawater intrusion in the Oxnard Subbasin were used to evaluate effects on sustainable yield in the WLPMA. However, the changes to pumping volumes in the scenarios appeared to be relatively arbitrary and the TAC is concerned that the resulting sustainable yield estimates for the WLPMA are similarly arbitrary."

The TAC recommended development of model scenarios designed to limit changes between compared simulations to single variables to isolate the impacts of those variables on sustainability. To the TAC's knowledge isolated variable model simulations for this purpose have not been completed to date.

Given this uncertainty, the TAC recommends the Watermaster and Dudek clarify what criteria will be used to assess the presence of undesirable results in the WLPMA when comparing the projects and alternative pumping scenarios to the baseline scenario.

2.1 Recommendations:

Clarify what criteria will be used to assess undesirable results conditions in the WLPMA when comparing the projects and alternative pumping scenarios to the baseline scenario. The TAC is specifically interested in understanding if simulated effects on seawater intrusion conditions in the Oxnard Subbasin will be used as a component of the criteria for assessing undesirable results, or if comparisons of simulated conditions within the WLPMA will be the sole criteria.

2.2 Technical Rationale for Recommendation:

The presentation of the preferred alternative for basin optimization yield estimation indicated:

> "Groundwater budgets, the change in groundwater storage, and groundwater levels at key wells simulated in the projects scenario would be compared to those simulated in the baseline scenario in order to provide a quantitative estimate of Basin Optimization Project benefits."

And

> "If the Basin Optimization Projects do not avoid undesirable results in the WLPMA, up to three additional model scenarios would be evaluated to define a groundwater production rate that avoids undesirable results"

While these statements appear to indicate that the assessment of undesirable results will be limited to conditions in the WLPMA the specific metrics that will be used for assessing undesirable results have not been presented.

2.3 Summary of Facts in Support of Recommendation:

- Previous model scenarios used to estimate available yield in the WLPMA have used simulated seawater intrusion conditions in the Oxnard Subbasin as the metric for assessment of undesirable results and these simulations combined variables making it impossible to evaluate the effects of changes in management of the WLPMA in isolation.
- The presentation of the proposed approach to estimating basin optimization yield in the WLPMA to date has not included details of the proposed methodology for assessing undesirable results.

3. RECOMMENDATION 3: PREEMPTIVELY CONSIDER WHAT INFORMATION FROM THE BASIN OPTIMIZATION MODEL SCENARIOS CAN BE SHARED WITH THE TAC AND OTHER INTERESTED PARTIES

The Watermaster informed the TAC that some information from the model that they and Dudek plan to use for the basin optimization assessments of the West Las Posas Management Area (WLPMA) are subject to a protective order in the Oxnard Subbasin and Pleasant Valley Subbasin (OPV) Adjudication. Specifically:

> Some of the model files that Watermaster will use to prepare the LPV basin optimization yield study (specifically in the West Las Posas Management Area) include files received from United Water Conservation District. These files and the information embedded in them may be subject to a protective order in the OPV Adjudication. Requests for access to or disclosure of those files will be reviewed against that protective order by FCGMA [Fox Canyon Groundwater Management Agency] counsel on a case-by-case basis.

In reviewing the scope of work for the BOYS, the TAC requested additional time and consultation to allow opportunities to receive and review information from the optimization model scenarios. The uncertainty regarding the TAC's ability to review information from the WLPMA optimization modelling concerns the TAC. As a means of avoiding this uncertainty and delays associated with legal review of requests for model information, the TAC proposes to provide test case requests for types of information for Watermaster counsel to review before the optimization modeling of the WLPMA is complete.

3.1 Recommendations:

The TAC specifically recommends that Watermaster staff and legal counsel consider whether information including but not limited to those listed below can be provided from the Coastal Plain model simulations planned for assessing basin optimization yield from the WLPMA.

- Time series datasets showing comparison of model inputs representing simulation of project and alternative pumping scenarios to the baseline scenario.
- Time series of simulated head data at key wells and other important locations for baseline, project, and alternative pumping scenarios.
- Total and zonal water budgets for the entire model area, portions of the model area, boundaries at the edges of the model, and boundaries between specific portions of the model for the baseline, projects, and alternative pumping scenarios.
- Total and zonal water budgets for the WLPMA portion of the model area, zones within the WLPMA portion of the model area, boundaries at the edges of the WLPMA within the model, and boundaries between specific portions of the WLPMA model for the baseline, projects, and alternative pumping scenarios.

3.2 Technical Rationale for Recommendation:

The schedule for completion of the BOYS does not allow for delays and the TAC may require specific technical information from the model scenario simulations planned and completed for testing optimal yield from the WLPMA. Given that some of the information within the Coastal Plain model that includes the WLPMA may be protected under the OPV Adjudication, it is appropriate for Watermaster legal counsel to consider what specific information can and cannot be shared with the TAC before the request for committee consultation is sent to the TAC.

3.3 Summary of Facts in Support of Recommendation:

- The TAC is the technical representative of the Watermaster providing expertise in evaluation of technical and scientific assessments relating to the LPVB.

- Review of comparative groundwater management scenarios simulated using numerical groundwater models typically includes detailed evaluation of model inputs, results, outputs, and statistics.
- In order to provide appropriate technical review and recommendations to the Watermaster, the TAC should know what information it can expect to have access to with as much advanced notice as possible.

TALLY OF COMMITTEE MEMBER VOTES

The TAC voted to approve the content of this Recommendation Report and authorize the TAC Administrator to submit it to the Watermaster in a meeting held May 9, 2025. The vote was unanimous, as shown below.

	Vote			
TAC Member	**Yes**	**No**	**Abstain**	**Absent**
Chad Taylor, Chair	X			
Tony Morgan, East LPV Representative	X			
Bob Abrams, West LPV Representative	X			

REPORT OF BASES FOR MAJORITY AND MINORITY COMMITTEE MEMBER POSITIONS

The TAC vote to present the recommendations above to the Watermaster was unanimous, as indicated above. The bases for the unanimous positions are described for each recommendation above. No minority positions were expressed by voting or non-voting TAC members.

LAS POSAS VALLEY WATERMASTER RESPONSE REPORT

Date: June 9, 2025

To: Las Posas Valley Watermaster Board of Directors

From: Kudzai Farai Kaseke, Assistant Groundwater Manager (FCGMA)

Re: Response Report to PAC Consultation Recommendation Report, BOYS Preferred Modeling Alternative and Impacts to Schedule

In a March 31, 2025, memo, the Las Posas Valley Watermaster (Watermaster) consultant outlined three potential approaches to calculating the Basin Optimization Yield (BOY) and described the anticipated schedule impacts for each approach. Of the three approaches outlined in the March 31 memo, Watermaster's consultant recommended calculation of the BOY using the United Water Conservation District (UWCD) model files developed for the Periodic Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin (Periodic Evaluation). Under the schedule proposed in the memo, the development of the Draft BOY Study is anticipated to be completed by December 2025 and the final BOY Study is anticipated to be completed by May 2026.

On April 3, 2025, Watermaster requested consultation from the Las Posas Valley Policy Advisory Committee (PAC) on:

1) Preferred Alternative. Whether Watermaster should use the UWCD Periodic Evaluation model files to run scenarios for preparation of the Basin Optimization Yield Study rather than estimating the Basin Optimization Yield and Rampdown (i) using GSP periodic evaluation model simulations or (ii) using historical groundwater elevation measurements and extraction reports?

2) Schedule Impact. Whether using the UWCD Periodic Evaluation model files to complete the Basin Optimization Yield Study in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting, approximately four months before the start of Water Year 2026 (October 1, 2026, through September 30, 2027), is a reasonable alternative for timely completion of the Basin Optimization Yield Study?

The PAC discussed Watermaster's requests for consultation and the March 31 Preferred Modeling Approach Memorandum at its April 17, 2025, May 1, 2025, and May 15, 2025, meetings.

PAC's May 15, 2025, recommendation report concurs with the recommended approach in the March 31 memo: "the PAC concurs with the Watermaster and Dudek that the alternative providing for the use of the *Estimation of the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios* is the most favorable approach." But PAC's recommendation

report also requests additional information on the cost and schedule impacts to "upgrading the periodic model" to address three specific topics. These topics are:

1) Extending the model period to 2024.
2) Understanding the impacts of UWCD's change to the model boundary conditions on simulated water levels in the eastern part of the WLPMA.
3) Recalibrating, validating, and performing sensitivity and uncertainty analyses to support the model.

The PAC recommendation report concludes, "receiving this additional information will help the Watermaster make a more informed decision about the tradeoffs between advancing the study with Dudek and waiting for United to contract to do the modeling." The response to each of PAC's request for more information on potential modifications, or "upgrades," to the UWCD Periodic Evaluation model is discussed below.

Request for Information 1: Extend the model period to 2024 (instead of 1979)
Response to Request for Information 1:
In this request for information, PAC appears to be confusing the period used to simulate future hydrology in the model (1930-1979) with extension of the historical model (1985-2022). UWCD updated the historical Coastal Plain Model period between 2018, when it was used for the Groundwater Sustainability Plan (GSP), and 2024, when it was used for the Periodic Evaluation. The updated historical model was extended to simulate groundwater conditions in the WLPMA through the end of water year 2022 (FCGMA 2025). The simulated groundwater elevations in the historical model can be compared to measured groundwater elevations over the same time period in order to calibrate and validate the model. Watermaster believes that extension of the historical model through 2022 is a reasonable update to the model that captures recent trends in LPV groundwater conditions. Watermaster does not believe that the historical model requires updating through 2024 to be able to conduct the model simulations to assess the BOY.

The Periodic Evaluation simulated potential future groundwater conditions under differing groundwater management frameworks. As required by the Sustainable Groundwater Management Act (SGMA), the future simulations evaluated conditions over a 50-year planning and implementation horizon. Consequently, these simulations must include estimates of future hydrologic parameters, such as precipitation and streamflow. These future estimates can be based on past historical periods or can be constructed from hydrologic modeling, statistical methods, or climate projections. During development of the Groundwater Sustainability Plan (GSP), the FCGMA GSP Technical Advisory Group (TAG) reviewed multiple potential 50-year hydrology options and recommended that the period from 1930 through 1979 should be adopted as the 50-year future hydrology. The Periodic Evaluation adopted the same approach. Watermaster believes that this remains a

reasonable approach for incorporating hydrologic parameters into the future groundwater management scenarios.

Request for Information 2: Refine the understanding of groundwater level responses to simulated projects in the eastern WLPMA.
The Somis fault was changed from a NO FLOW to GENERAL HEAD BOUNDARY for the periodic evaluation, but the model was not recalibrated. In-lieu water delivery projects are proposed in the vicinity of that fault and a more refined understanding of how the water levels would respond with these revised assumptions about the fault are important.

Response to Request for Information 2:
Although UWCD has not yet published updated model documentation detailing the specific changes made to the model between the version used in the GSP and the version used in the Periodic Evaluation, Watermaster understands that the updated model was recalibrated by UWCD before it was used in the Periodic Evaluation (FCGMA 2024). Therefore, Watermaster does not believe that additional calibration is required for use of this model to determine the BOY.

The Periodic Evaluation included a Projects Scenario that is similar to the Projects Scenario that will be conducted for the BOY Study (FCGMA 2024; See Section 5.2.2.1.5). In this scenario, 1,762 AFY of imported water was purchased and delivered to Zone Mutual Water Company and Wateworks District No. 19 in the eastern WLPMA, in lieu of groundwater extraction. In this scenario, simulated water levels at Well 02N20W06R01, which is a key well adjacent to the Somis Fault, rose above the minimum threshold groundwater elevation within the planning and implementation horizon and remained above the minimum threshold groundwater elevation for the remainder of the 50-year predictive model run. Watermaster notes that groundwater elevations at well 02N20W06R01simulated for the Periodic Evaluation Projects Scenario were consistently lower than simulated groundwater elevations at the same well for the GSP Projects Scenario. This difference indicates that simulated groundwater level recoveries are impacted by the modification to the model boundary conditions, but it does not necessarily indicate that the groundwater elevations simulated for the GSP are more accurate than those simulated for the Periodic Evaluation. The discrepancy between the simulated groundwater elevations in the two projects scenarios is a known consequence of the changed boundary condition in the Periodic Evaluation model. Nevertheless, Dudek identified use of the Periodic Evaluation model files to calculate the BOY in the WLPMA as the preferred alternative.

Request for Information 3: Perform the model recalibration, as well as the model validation, sensitivity, and uncertainty analyses needed to support the model. The Dudek memorandum dated March 31, 2025, reported that the necessary documentation of the periodic evaluation model was not available. The PAC recommends that this deficiency be

eliminated for any model used in the BOYS. These technical evaluations of the model can make the process of fostering stakeholder acceptance a more straightforward endeavor.

Response to Request for Information 3:

As noted in Response to Request for Information 2, Watermaster understands that the updated model was recalibrated by UWCD before it was used in the Periodic Evaluation. In order to conduct a model calibration, validation, sensitivity, or uncertainty analysis, Watermaster would need access to the historical model files. After completing the modeling for the Periodic Evaluation, UWCD provided Watermaster with the model files used to simulate potential future groundwater conditions under differing groundwater management frameworks. These files differ from the historical model files, which cover the period from 1985 to 2022. Therefore, Watermaster cannot conduct the additional analyses requested by the PAC.

Conclusion

Under the Judgment, the purpose of the PAC and the Technical Advisory Committee is to "establish a specific and formal process to obtain policy and technical recommendations from stakeholders" (Judgment § 6.2). Watermaster requested review of the preferred approach to completing the BOY Study from both PAC and TAC. PAC "concurs with Watermaster and Dudek that the alternative providing for the use of the Estimation for the BOY Using the UWCD Periodic Evaluation Model Files to Run New Scenarios is the most favorable approach." TAC agrees that "the proposed approach preserves the original technical methodology for basin optimization and maintains consistency with the GSP and other analyses." Therefore, Watermaster has engaged with stakeholders, via the PAC and TAC, to "ensure that decisions by Watermaster are made following full consideration of diverse policy and technical views," consistent with the Judgment (Judgment § 6.2).

Finally, Watermaster must prepare a BOY Study "every five years in coordination with the GSP Updates (Wat. Code, §10728.2) or at Watermaster's discretion in response to material changing or changed Basin Conditions" (Judgment § 1.22). This first BOY Study to be prepared under the Judgment is projected to be completed by spring 2026. The BOY Study schedule has already been delayed five months. Further delaying the completion of the first BOY Study beyond spring 2026 jeopardizes Watermaster's ability to implement management actions to ensure Sustainable Groundwater Management by 2040 (Judgment § 4.10.2).

In the absence of additional material changes to groundwater conditions, Watermaster anticipates that preparation of the second BOY Study would begin in 2028, only two years after completion of the first BOY Study, in order to be completed prior to January 2030 in coordination with the GSP Periodic Evaluation, as required by the Judgment. Changes to the modeling approach can be considered for the 2030 BOY Study.

Completion of the first BOY Study in spring 2026 will allow stakeholders and Watermaster to review the management actions undertaken as part of that study and make any necessary adjustments prior to the second BOY Study. Because the Judgment requires Watermaster to prepare the second BOY Study by January 2030 and allows Watermaster to prepare a BOY Study more frequently, if necessary, Watermaster recommends advancing the first BOY Study using the recommended approach provided in the March 31 memo.

LAS POSAS VALLEY WATERMASTER RESPONSE REPORT

Date: June 9, 2025

To: Las Posas Valley Watermaster Board of Directors

From: Kudzai Farai Kaseke, Assistant Groundwater Manager (FCGMA)

Re: Response Report to TAC Consultation Recommendation Report, BOYS Preferred Modeling Alternative and Impacts to Schedule

In a March 31, 2025, memo, the Las Posas Valley Watermaster (Watermaster) consultant outlined three potential approaches to calculating the Basin Optimization Yield (BOY) and described the anticipated schedule impacts for each approach. Of the three approaches outlined in the March 31 memo, Watermaster's consultant recommended calculation of the BOY using the United Water Conservation District (UWCD) model files developed for the Periodic Evaluation of the Groundwater Sustainability Plan for the Las Posas Valley Basin (Periodic Evaluation). Under the schedule proposed in the memo, the development of the Draft BOY Study is anticipated to be completed by December 2025 and the final BOY Study is anticipated to be completed by May 2026.

On April 3, 2025, Watermaster requested consultation from the Las Posas Valley Policy Advisory Committee (PAC) on two topics:

1) Should the Watermaster use the UWCD Periodic Evaluation model files to run scenarios for preparation of the Basin Optimization Yield Study rather than estimating the Basin Optimization Yield and Rampdown (i) using GSP periodic evaluation model simulations or (ii) using historical groundwater elevation measurements and extraction reports?
2) Is the schedule to implement the alternative in (1) and complete the Basin Optimization Yield Study in April 2026 for adoption at the May 2026 Watermaster Board of Directors meeting, approximately four months before the start of Water Year 2026 (October 1, 2026 through September 30, 2027), a reasonable alternative for timely completion of the Basin Optimization Yield Study?

The TAC discussed and developed its recommendation report at April 15, May 6, and May 9, 2025, meetings. TAC's May 9, 2025, recommendation report included three recommendations. Each of these recommendations is listed below followed by Watermaster's response.

Recommendation 1: CONSIDER ADDRESSING THE SOMIS FAULT REPRESENTATION IN THE COASTAL PLAIN MODEL BEFORE PERFORMING BASIN OPTIMIZATION YIELD MODEL SIMULATIONS

As described in TAC comments and recommendations on the Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin (Draft GSP Evaluation) (*TAC Consultation Recommendation Report, Draft First Periodic Evaluation, Groundwater Sustainability Plan for the Las Posas Valley Basin*, dated October 10, 2024), modifications to the version of the Coastal Plain model used in the GSP Evaluation to simulate conditions in the WLPMA included a significant change to the boundary condition used to represent the Somis Fault. This fault, which separates the WLPMA from the ELPMA, was changed from a no-flow boundary condition to a partial general head boundary condition. This change means the Coastal Plain Model used for the Draft GSP Evaluation and proposed for use in the BOYS optimization simulations allows flow from the WLPMA to the ELPMA. The average annual flow rate from the WLPMA to the ELPMA from 2016 to 2022 presented in the GSP Evaluation was 832 acre-feet per year, which represents slightly less than 17 percent of the change in groundwater storage in the WLPMA during the period.

As the TAC has noted in our October 10, 2024 Recommendation Report, the Draft GSP Evaluation indicates that the limited groundwater elevation information in this area of the LPVB implies there is little groundwater flow across the Somis Fault. In addition, local groundwater gradients suggest that if flow occurs it would be from ELPMA to WLPMA. In response to this comment, the Watermaster indicated the TAC recommendations were forwarded to UWCD and that:

> "UWCD is currently working on the supplemental documentation to cover the changes made since the GSP. As of the time this response report was prepared, UWCD had not yet provided a date when the supplemental documentation will be made available."

Unfortunately, such supplemental documentation is still not available.

The TAC further recommended in October 2024 that the Watermaster

> "Advance the coordination with UWCD and the TAC to develop agreement on the representation of this boundary in the two models. The coordination of this boundary between the two models should not wait until after the GSP is amended. The analyses in the amended GSP should be consistent with the Basin Optimization Yield Study."

While use of the GSP periodic evaluation model simulations as suggested in the preferred alternative for yield optimization in the WLPMA is consistent with the GSP periodic evaluation, the TAC has significant concerns over the representation of the Somis Fault in

that model. The TAC is specifically concerned that the apparent conflict between the groundwater flow direction and magnitude of average annual flow in the GSP periodic evaluation model simulations and the observed water levels and groundwater gradients in this area indicate the model is an inappropriate tool for simulating future conditions with changed management and the addition of projects designed to increase groundwater storage and elevations in the WLPMA.

1.1 Recommendations:
The TAC recommends that Watermaster and their consultant Dudek evaluate and report back to the TAC if the GSP periodic evaluation model simulation files currently in their possession could be used to assess and quantify the potential impacts to available water supply in the WLPMA given the apparent groundwater flow direction discrepancy between the Coastal Plain model and observed local groundwater conditions around the Somis Fault boundary between the WLPMA and ELPMA.

Response to Recommendation 1:
Compliance with SGMA and the need to implement management actions that may impact water supply will be determined by measured groundwater elevations at key wells in the Las Posas Valley Basin. As discussed in the GSP, measured groundwater elevations that remain above the minimum threshold groundwater elevations defined at key wells in the eastern WLPMA are sufficient to avoid undesirable results in this portion of the WLPMA. If groundwater elevations fall below the minimum threshold groundwater elevations, additional management actions, including the potential for demand reduction, may be required. Consistent with historical groundwater measurements, both the Groundwater Sustainability Plan (GSP) and the Periodic Evaluation modeling efforts found that implementation of in-lieu surface water delivery projects in the eastern WLPMA is likely sufficient to avoid undesirable results.

The primary difference between the Project model scenarios in the GSP and the Periodic Evaluation is the change in the model boundary condition in the eastern WLPMA. In order to evaluate the potential impact of the model boundary change on water supplies and the potential need to implement additional management actions in the WLPMA, Watermaster compared the groundwater elevation responses simulated in the GSP to those simulated in the Periodic Evaluation.

Simulated groundwater levels for the GSP and Periodic Evaluation Projects scenarios at Well 02N20W06R01, a key well adjacent to the Somis Fault, are indicative of the influence of the model boundary change on the potential simulated influence of projects in the WLPMA. The two Projects scenarios simulated similar reductions in groundwater production in the WLPMA. In both Projects scenarios, groundwater levels rose above the minimum threshold groundwater elevation prior to 2040 and remained above the minimum threshold groundwater elevation for the remainder of the GSP implementation horizon. Watermaster

notes that groundwater elevations at well 02N20W06R01simulated for the Periodic Evaluation Projects Scenario were consistently lower than simulated groundwater elevations at the same well for the GSP Projects Scenario. This difference indicates that simulated groundwater level recoveries are impacted by the modification to the model boundary conditions, but it does not necessarily indicate that the groundwater elevations simulated for the GSP are more accurate than those simulated for the Periodic Evaluation.

Watermaster also compared the simulated flow across the eastern WLPMA model boundary between the Periodic Evaluation Baseline and Projects model scenarios to better understand the magnitude of change in the simulated flow that would result from Project implementation in the model. As expected, the average annual flow leaving the model boundary to the east increased between the Baseline and Projects scenarios in the Periodic Evaluation. The average annual flow leaving the model domain on the eastern boundary of the WLPMA over the 47-year model period, was 885 AFY in the Baseline simulation that incorporated the 2070 DWR climate factors. In the Projects scenario, the average annual flow across the eastern boundary of the WLPMA increased to 1,920 AFY over the 47-year model period. This increase in flow occurred in response to rising groundwater elevations that resulted from: (1) the simulated delivery of surface water to Ventura County Waterworks District 1, in the eastern portion of the WLPMA in lieu of groundwater extraction, and (2) a simulated reduction in groundwater demands for Zone Mutual Water District. The average annual simulated reduction in groundwater production between the Periodic Evaluation Baseline and Projects scenarios is 1,983 AFY.

Watermaster agrees with TAC that this simulated flow is not consistent with the hydrogeologic conceptual model, but notes that groundwater management decisions will be based on observed water levels. Because the Periodic Evaluation model simulates groundwater elevations in the eastern portion of the WLPMA that rise above the minimum threshold prior to 2040 and remain above the minimum threshold for the duration of the model scenario, use of the UWCD model files developed for the Periodic Evaluation remains the best available option to evaluate the BOY and complete this first BOY study prior to the beginning of the 2027 water year (October 1 2026 – September 30, 2027).

Recommendation 2: CLARIFY WHAT CRITERIA WILL BE USED TO ASSESS UNDESIRABLE RESULTS IN THE WLPMA WHEN COMPARING BASIN OPTIMIZATION YIELD STUDY PROJECT AND ALTERNATIVE PUMPING SCENARIOS TO THE BASELINE SCENARIO

In the October 10, 2024 Recommendation Report on the Draft GSP Periodic Evaluation, the TAC also commented on the relationship between the Oxnard Subbasin and sustainability in the WLPMA. In that comment, the TAC expressed concern that the methodology used to assess the effects of pumping in the WLPMA on seawater intrusion in the Oxnard Subbasin did not effectively isolate the effects of changes in pumping in WLPMA on conditions in the Oxnard Subbasin. As pointed out in our October 10, 2024 Recommendation Report:

> "The Draft GSP Evaluation presented model scenarios that included simultaneous changes in pumping volumes in the WLPMA, both Oxnard aquifers, and the Pleasant Valley Basin. The results of these simulations were then compared to a baseline scenario and the changes to simulated seawater intrusion in the Oxnard Subbasin were used to evaluate effects on sustainable yield in the WLPMA. However, the changes to pumping volumes in the scenarios appeared to be relatively arbitrary and the TAC is concerned that the resulting sustainable yield estimates for the WLPMA are similarly arbitrary."

The TAC recommended development of model scenarios designed to limit changes between compared simulations to single variables to isolate the impacts of those variables on sustainability. To the TAC's knowledge isolated variable model simulations for this purpose have not been completed to date.

Given this uncertainty, the TAC recommends the Watermaster and Dudek clarify what criteria will be used to assess the presence of undesirable results in the WLPMA when comparing the projects and alternative pumping scenarios to the baseline scenario.

2.1 Recommendations:

Clarify what criteria will be used to assess undesirable results conditions in the WLPMA when comparing the projects and alternative pumping scenarios to the baseline scenario. The TAC is specifically interested in understanding if simulated effects on seawater intrusion conditions in the Oxnard Subbasin will be used as a component of the criteria for assessing undesirable results, or if comparisons of simulated conditions within the WLPMA will be the sole criteria.

Response to Recommendation 2:
Consistent with the GSP, Watermaster will use groundwater elevations in the WLPMA to assess whether the WLPMA is meeting the sustainability goal. The minimum threshold and measurable objective groundwater elevations defined in the GSP were found to represent elevations that would not impair the ability of the Oxnard Subbasin to eliminate net seawater intrusion over the SGMA planning and implementation horizon. The simulated groundwater elevations in the model scenarios developed for the Periodic Evaluation were above the minimum threshold groundwater elevations at all the key wells in the WLPMA after 2040. Furthermore, at the majority of the key wells in the WLPMA, the simulated groundwater elevations were above the measurable objectives after 2040. This is the same model that will be used to evaluate groundwater conditions for the BOY Study.

Recommendation 3: PREEMPTIVELY CONSIDER WHAT INFORMATION FROM THE BASIN OPTIMIZATION MODEL SCENARIOS CAN BE SHARED WITH THE TAC AND OTHER INTERESTED PARTIES

The Watermaster informed the TAC that some information from the model that they and Dudek plan to use for the basin optimization assessments of the West Las Posas Management Area (WLPMA) are subject to a protective order in the Oxnard Subbasin and Pleasant Valley Subbasin (OPV) Adjudication. Specifically:

> Some of the model files that Watermaster will use to prepare the LPV basin optimization yield study (specifically in the West Las Posas Management Area) includes files received from United Water Conservation District. These files and the information embedded in them may be subject to a protective order in the OPV Adjudication. Requests for access to or disclosure of those files will be reviewed against that protective order by FCGMA [Fox Canyon Groundwater Management Agency] counsel on a case-by-case basis.

In reviewing the scope of work for the BOYS, the TAC requested additional time and consultation to allow opportunities to receive and review information from the optimization model scenarios. The uncertainty regarding the TAC's ability to review information from the WLPMA optimization modelling concerns the TAC. As a means of avoiding this uncertainty and delays associated with legal review of requests for model information, the TAC proposes to provide test case requests for types of information for Watermaster counsel to review before the optimization modeling of the WLPMA is complete.

3.1 Recommendations:

The TAC specifically recommends that Watermaster staff and legal counsel consider whether information including but not limited to those listed below can be provided from the Coastal Plain model simulations planned for assessing basin optimization yield from the WLPMA.

- Time series datasets showing comparison of model inputs representing simulation of project and alternative pumping scenarios to the baseline scenario.
- Time series of simulated head data at key wells and other important locations for baseline, project, and alternative pumping scenarios.
- Total and zonal water budgets for the entire model area, portions of the model area, boundaries at the edges of the model, and boundaries between specific portions of the model for the baseline, projects, and alternative pumping scenarios.
- Total and zonal water budgets for the WLPMA portion of the model area, zones within the WLPMA portion of the model area, boundaries at the edges of the WLPMA within

the model, and boundaries between specific portions of the WLPMA model for the baseline, projects, and alternative pumping scenarios

Response to Recommendation 3:
Watermaster understands TAC's request to be able to review specific inputs to and outputs from the numerical model simulations to be conducted for the BOY Study. The UWCD model files, including those used to conduct simulations for the Periodic Evaluation, may be subject to a protective order in *OPV Coalition, et al. v. Fox Canyon Groundwater Management Agency, et al.*, Santa Barbara Sup. Ct. Case No. VENCI00555357. To date, UWCD has not agreed to conduct the model simulations for preparation of the BOY Study.

Although Watermaster and legal counsel will review each TAC request prior to providing data to TAC, Watermaster currently understands that:

- Watermaster will be able to provide TAC with groundwater production at each well for the baseline, project, and alternative pumping scenarios. This data was developed by Dudek, after consultation with the TAC, and is based on the allocation tables in the Judgment.
- Watermaster will be able to provide TAC with timeseries of simulated head data at key wells and other locations for baseline, project, and alternative pumping scenarios.
- Watermaster will not be able to provide total and zonal water budgets for the entire model area, portions of the model area, boundaries at the edges of the model, and boundaries between specific portions of the model for the baseline, projects, and alternative pumping scenarios because these areas are outside the Las Posas Valley Basin and, therefore, are outside the scope of the BOY Study for the Las Posas Valley Basin.
- Watermaster will be able to provide total water budgets for the WLPMA portion of the model, including boundaries at the edges of the WLPMA within the model for the baseline, projects, and alternative pumping scenarios. Watermaster will also be able to provide, within reason, zonal water budgets for zones within the WLPMA portion of the model area and boundaries between specific portions of the WLPMA model for the baseline, projects, and alternative pumping scenarios.

Conclusion
Watermaster agrees with TAC that the modeled increase in flow across the eastern boundary of the WLPMA is inconsistent with the hydrogeologic conceptual model. However, Watermaster notes that the model simulations conducted for the Periodic Evaluation generated multiple sustainable groundwater management scenarios in which groundwater elevations rose to and remained above the minimum thresholds during the GSP planning and implementation horizon. After noting the change in the model boundary conditions in both the Periodic Evaluation and the March 31, 2025, memo, Dudek concluded that running

the UWCD Updated Coastal Plain Model used during development of the Periodic Evaluation was the recommended approach to complete this first BOY Study.

Watermaster must prepare a BOY Study "every five years in coordination with the GSP Updates (Wat. Code, §10728.2) or at Watermaster's discretion in response to material changing or changed Basin Conditions" (Judgment § 1.22). This first BOY Study to be prepared under the Judgment is projected to be completed by spring 2026. The BOY Study schedule has already been delayed five months. Further delaying the completion of the first BOY Study beyond spring 2026 jeopardizes Watermaster's ability to implement management actions to ensure Sustainable Groundwater Management by 2040 (Judgment § 4.10.2).

In the absence of additional material changes to groundwater conditions, Watermaster anticipates that preparation of the second BOY Study would begin in 2028, only two years after completion of the first BOY Study, in order to be completed prior to January 2030 in coordination with the GSP Periodic Evaluation, as required by the Judgment. Changes to the modeling approach can be considered for the 2030 BOY Study.

Completion of the first BOY Study in spring 2026 will allow stakeholders and Watermaster to review the management actions undertaken as part of that study and make any necessary adjustments prior to the second BOY Study. Because the Judgment requires Watermaster to prepare the second BOY Study by January 2030 and allows Watermaster to prepare a BOY Study more frequently, if necessary, Watermaster recommends advancing the first BOY Study using the recommended approach provided in the March 31 memo.