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MEMORANDUM

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TO: Board of Directors of Borrego Springs Watermaster

FROM: James L. Markman, General Counsel

DATE: July 20, 2026

SUBJECT: Legal Standards Which Apply to Determine Whether the Mesquite Bosque May Validly be Characterized as a Groundwater Dependent Ecosystem; Consequences of such a Determination

A. Introduction

This firm has been directed by the Watermaster Board to provide our opinion identifying standards which would be applied to determine in a legal proceeding, whether the Mesquite Bosque, an area which is within the adjudicated basin¹ notably containing honey mesquite bosque, and other water loving plants is a Groundwater Dependent Ecosystem (“GDE”). The legal core question is whether that area must legally be characterized as a GDE based upon the best available science, an action which possibly could trigger a Watermaster duty to protect the GDE against harm caused by Watermaster actions taken to implement its Basin plan to reach sustainability. We have determined that our response should also delineate applicable legal steps necessary to make the GDE determination. We have responded to the Board's direction by reviewing the materials generated during the drafting of the Basin plan (now exhibit 1 to the Judgment), the grant funded UCI study completed in 2025 and the Watermaster’s Technical Consultants’ response to the study, all of which are discussed below. Quotes from those processes are from persons who performed the studies, which are technical in nature. This firm asserts no technical or scientific position in this memorandum. Materials generated in all three

¹ The adjudicated Basin is the Borrego Springs Subbasin of the Borrego Valley Groundwater Basin, referred to herein as (“the Basin”). The Basin was adjudicated in Orange County Superior Court Case no. 37-2020-00005776. Judgment therein was entered on April 8, 2021.

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processes and the scientific positions taken are presented to demonstrate the legal conflicts under discussion.

In addition to cases cited and quoted in this memorandum, we reviewed the relevant provisions of the Sustainable Groundwater Management Act ("SGMA") (California Water Code Sections 10600, et seq.) which has been in effect since January 1, 2015.² We also reviewed the Department of Water Resources regulations adopted to aid in implementing SGMA (California Code of Regulations, Title 25. Waters, Division 2, Department of Water Resources, Chapter 1.5 Groundwater Management, subchapter 2, Groundwater Sustainability Plans) hereinafter referred to as "DWR Regulations."

B. Impact of statutory and regulatory references to GDEs.³

The following references to GDEs, contained in SGMA, can be argued to empower a groundwater authority, to protect GDEs against further deteriorizing. The first (Water Code Section 10723.2) requires the Watermaster to consider the interest of environmental users of groundwater. This language alone can be presented as a legitimate claim of any party, that the Watermaster should have water allocated to it, or other appropriate actions taken to protect the GDE. Similarly, Water Code Section 10727.4 requires an implementation plan to include a discussion and recognition of GDEs. It is our view that these two code sections, taken together, require an agency to note its recognition of the inclusion of a GDE in the Basin and to determine which proposed actions to reach sustainability might harm GDEs. However, those code sections also appear to relieve the Watermaster from any duty to rehabilitate any GDE, in order to eliminate harm it incurred in the past prior to plan implementation.

The Department of Water Resources has adopted regulations which include definitions which in part apply to this discussion. The first is a definition of "best available science" which refers to the use of sufficient and credible information and data specific to the decision being made in the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice (See DWR Regulations Section 351(h).) Accordingly, while a study may accurately collect and specify data using the best available methods, that process also must adequately support conclusions reached applying that data. The studies discussed below differ in considering whether the data generated in studying the

² SGMA applies to the Watermaster because the Watermaster is seeking a determination that its plan is an alternate SGMA plan.

³ There is no case law reported which applies to many of the issues discussed in this memorandum. This creates the necessity to rely more heavily on statutory language.

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Mesquite Bosque adequately support the conclusion that it uses and is dependent on groundwater and, therefore, is a GDE.

Similarly, the definition of a groundwater dependent ecosystem “...refers to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.” This subsection makes it clear that a GDE must access Basin water in an amount which constitutes some substantial dependence on that water even if other sources of water are used by the GDE (See DWR Regulations Section 351(m).) Accordingly, the amount of the Basin water available to the subject plant life is an issue in any process in which a party is seeking support for a GDE which has multiple sources of water. Again, there has been no case law which clarifies what portion of all the water a GDE receives from a groundwater basin is necessary to characterize it as being “dependent” on that basin. If it is determined that Basin water is being used by the GDE and that without that source, the GDE would be damaged, the GDE could more clearly be classified as “dependent” on the Basin.

C. Studies considering whether the mesquite bosque is a GDE have reached different conclusions

The Judgment considers a number of potential GDEs, emphasizing the Mesquite Bosque. Following are excerpts from the Judgment, including text in the Judgment and exhibit 1 thereto, the Sustainability Plan. That plan includes Appendix D4, which contains a 180 page technical memorandum covering the proposed GDE. The following excerpts from exhibit 1 to the Judgment constitute conclusions reached by Dudek, an engineering consultant provided through Borrego Water District, which are part of the core of this discussion. We include the original language contained in the Judgment to avoid any ambiguity which could occur due to an attempt to paraphrase the language. The first excerpt states as follows:

The honey mesquite bosque, shown as purple on Figure 2.2-20 north of the Borrego Sink, is considered a pre-2015 impact. Groundwater levels have long since declined below a level which can support the estimated rooting depth of the habitat, which is estimated to be approximately 20 feet, based on observation of honey mesquite root depth at Harper's Well, located 20 miles to the southeast (Appendix D4). Natural discharge determined from the BVHM attributable to evapotranspiration was approximately 6,500 AFY prior to development, but has been virtually zero in the last several decades (1990-2010) (USGS 2015). The green area on Figure 2.2-20 depicts the pre-pumping mapped historical extent of phreatophytes in the Subbasin by USGS (USGS 2015). The pink area depicts the mapped pre-January 1, 2015, extent of potential GDEs;

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(SANGIS 2017) and the orange area depicts the extent of mapped GDEs by the natural communities dataset (DWR 2018).

Pumping in the Subbasin has resulted in a groundwater level decline of about 44.1 feet over the last 65 years in the vicinity of the Borrego Sink. The average rate of decline over this 65-year period is approximately 0.67 feet per year. Because of the long-term imbalance of pumping with available natural recharge, an irreversible impact has occurred to the honey mesquite bosque, which was mostly desiccated prior to January 1, 2015. MW-5 is a multicompletion well that was constructed with BWD and DWR oversight. MW-5B is screened from 45 to 155 feet below ground surface and appears to sufficiently represent the depth of the groundwater table in the vicinity of the Borrego Sink, though it is possible that it represents a semi-confined potentiometric surface rather than the unconfined groundwater table. MW-5A is screened from 200 to 340 feet and has a similar groundwater level to the shallower MW-5B suggesting potentially unconfined conditions in this part of the Subbasin; however, it is uncertain whether a good well seal was obtained during installation of the multicompletion monitoring well. The "Sink" wells shown on Figure 2.2-20 (i.e., 12GI and 7NI) have become dry based on measurements recently performed by DWR. The overlap of a groundwater level measurement in 2009 of Sink Well 12GI with MW-5B, which has a similar groundwater level elevation suggests that well MW-5B is sufficiently representative of depth to the groundwater table in the area of the Borrego Sink.

As indicated earlier, Old Borrego Spring located about 1 mile east of the Borrego Sink historically provided water to cattle prior to 1963. The Borrego Spring was located in the vicinity of the Desert Lodge anticline, which is evidenced by fold axes running perpendicular to the Veggie Line fault, the Coyote Creek fault and the Yaqui Ridge/San Felipe anticline associated with the San Jacinto fault zone (Steely et al. 2009). The faulting and folding effectively compartmentalize the deep sediments of the Borrego Springs Groundwater Subbasin and likely once resulted in "daylighting" of groundwater at the Borrego Sink prior to interception of groundwater flow by pumping.

As described in Appendix D4, evaluation of trends in satellite-derived vegetation metrics indicated that there have been no significant changes in the health of the GDE since 1985. Small fluctuations in vegetation metrics were determined to be moderately correlated to precipitation and not correlated to declining groundwater levels (Appendix D4.) The precipitous drop in groundwater levels in the subbasin following the onset of pumping in the Subbasin has significantly reduced the extent and health of the ecosystem, as it eliminated a readily available source of water for seedlings and

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immature plants, leaving the regeneration process dependent on brief and highly intermittent surface water flows.

The statement made by Dudek, at page 3.2.7 of exhibit 1 to the Judgment concludes with the following summary:

3.2.7 Groundwater Dependent Ecosystems - Undesirable Results

Appendix D4 provides a complete review of available pertinent spatial datasets, historical data (e.g., stream flow and groundwater levels), satellite-derived vegetation metrics, and geology to develop a robust hydrogeological conceptual model to evaluate nexus of mapped GDEs with regional groundwater levels within the Subbasin. As described in Section 2.2.2.7, Identification of Groundwater Dependent Ecosystems, and Appendix D4, because of the long-term imbalance of pumping with available natural recharge, an irreversible impact has likely occurred on the honey mesquite community from a decline in groundwater levels, an impact which, based on the best available science, was completed and likely became permanent sometime prior to 1985. The comprehensive assessment revealed potential GDEs identified within the Subbasin no longer have direct reliance on groundwater emerging from aquifers or on groundwater occurring near the ground surface, and instead are sustained by periodic stormwater flows, soil moisture and potentially perched groundwater where present. These findings indicate that based on best available data, undesirable results on GDEs occurred prior to 1985 and are not presently occurring or anticipated to occur in the future. Therefore, this GMP does not propose minimum thresholds or measurable objectives related to this sustainability indicator.

The potential characterization of the Mesquite Bosque as a GDE was also studied during 2025 supported by a Proposition 68 grant. The study was prepared by UC Irvine, Tubb Canyon Desert Conservancy, and San Diego Natural History Museum. The study consists of 243 pages, including 128 pages of text.

The following are the executive summary of and conclusions reached in the report.

Executive Summary

The 2014 Sustainable Groundwater Management Act (SGMA) mandates that all beneficial users of groundwater, including environmental users such as Groundwater Dependent Ecosystems (GDEs), be considered in Groundwater Sustainability Plans

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(GSPs) with management strategies to avoid undesirable outcomes given continued groundwater extraction. The GDE Project addressed substantial data gaps which led to the exclusion of the mesquite bosque near the Borrego Sink as a Groundwater Dependent Ecosystem (GDE) in the Borrego Springs Subbasin Groundwater Management Plan (GMP). Through multiple lines of evidence, including field measurements, advanced sensor technologies, and remote sensing datasets, this study confirms that the mesquite bosque is connected to groundwater and functions as a beneficial user of groundwater.

Key Findings

- Groundwater is present within the rooting depth of mesquite trees near the Borrego Sink, with isotope analyses confirming groundwater use.
- Water potential data show that mesquite experience lower water stress compared to nearby non-phreatophytic vegetation.
- Remote sensing analyses show consistent vegetation greenness and productivity during dry periods, further supporting mesquite's dependence on groundwater.
- Evapotranspiration (ET) monitoring and water balance models reveal that mesquite trees use water at rates exceeding annual precipitation, further validating their classification as a GDE.
- There is significant GDE reliant biodiversity associated with the mesquite bosque habitat in the Subbasin.

Using the best available science, the Borrego Springs mesquite bosque represents approximately 1,850 acres of SGMA-relevant GDE. Although in decline from groundwater level decreases, the mesquite bosque remains a highly productive ecosystem that provides valuable ecosystem services and critical habitat for unique flora and fauna. Immediate action is required to ensure its protection, including groundwater allocation in Subbasin water management decision making, hydrological and biological monitoring, and conservation measures. The findings of this study underscore the importance of integrating the mesquite bosque into sustainable groundwater management efforts for long-term ecological and hydrological resilience.

6. Conclusions

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Through multiple lines of evidence using the best available scientific methods and datasets, the GDE Project has demonstrated that the Borrego Springs mesquite bosque is actively using groundwater (thus a GDE by SGMA definition). While the mesquite bosque is indeed in declining health, we have demonstrated that a significant portion of the mesquite bosque is still considered a highly productive habitat that hosts unique flora and fauna that are dependent on the mesquite trees and the benefits they provide. Importantly, declines in mesquite bosque health are largely attributable to declines in groundwater depths. We urge the Borrego Springs Watermaster and other relevant management and conservation groups to take immediate actions to protect and conserve the mesquite bosque and its reliant biodiversity. As a beneficial user of groundwater, we recommend allocation of 645 acre feet of groundwater in the Subbasin water budget, the establishment of data-based minimum thresholds in key monitoring wells near the mesquite bosque, and additional conservation actions to protect high quality habitat.

A review of the small portion of the report shows the adversity of the two studies referred to above. The two studies were presented to Watermaster's Technical Advisory Committee and Environmental Working Group for input on the question of whether the best available science disclosed that the Mesquite Bosque is, in fact, a GDE subject to protection against harm caused by implementation of the sustainability plan. In response, the Watermaster received statements by committee members who supported, and those who opposed the conclusions reached in the UCI report. Finally, the determination by Watermaster in response to the reports was to refer the matter to its Technical Consultant, Andrew Malone, who made the following recommendation:

TC Recommendation Report

In summary, we identified several data gaps and/or gaps in understanding that call into question UCI's ability to interpret the data and arrive at its definitive conclusions that the current Mesquite Bosque is a GDE and the extent and health of the Mesquite Bosque will experience degradation caused by the pumping Rampdown, which allows for a gradual stabilization of groundwater levels from 2020 through 2040. The most important of the identified gaps in understanding is the role of deep soil moisture within the vadose zone as a potential water source that supports the Mesquite Bosque. In our assessment of the UCI GDE Study Report, and all available data and information on this topic, it remains an open and important question whether what remains of the Mesquite Bosque today is dependent on:

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- Soil moisture in the vadose zone, which is periodically replenished by infiltrating precipitation and stormwater runoff that accumulates in the vicinity of the Borrego Sink.
- The deeper saturated zone of the regional aquifer system.
- Or both of the above in different areas of the Bosque and to different degrees.

Therefore, we believe it is premature of the UCI GDE Study Report to: (i) conclusively identify the Mesquite Bosque as a GDE; (ii) to recommend allocation of 645 acre-feet per year of Basin groundwater to the Mesquite Bosque; (iii) to conclude that future declines in groundwater levels caused by the pumping Rampdown will degrade the Mesquite Bosque; and (iv) to recommend establishing specific sustainable management criteria to protect the Mesquite Bosque.

To elaborate, the UCI GDE Study Report did not sufficiently recognize the gaps and limitations in the currently available data and did not appropriately consider/analyze the alternative sources of water that could be satisfying the current ET demands of the Mesquite Bosque. Therefore, the unqualified and definitive conclusions of the UCI Study Report, and the accompanying management recommendations, are not consistent with scientific and engineering professional standards of practice; and hence, should not be considered BAS that, by itself, should be relied upon by the Watermaster to take action or make policy decisions.

While it does not meet the BAS standard of the Watermaster's policy, the UCI GDE Study Report is an advancement in the scientific understanding of the Mesquite Bosque. In our opinion, the report presents evidence that indicates the current Mesquite Bosque could be, at least in part, a GDE, particularly in areas surrounding the Borrego Sink where depth to groundwater is presumably the shallowest and where the healthiest stands of Mesquite exist. Based on this potential, we recommend the Watermaster consider the Mesquite Bosque a "potential GDE" and implement an adaptive management framework to first determine if declining groundwater levels caused by the pumping Rampdown are causing or could cause significant and unreasonable degradation of the Mesquite Bosque, and if shown to be necessary, implement adaptive management actions to protect the environmental beneficial uses in the Basin.

It should be emphasized here that the Watermaster is already implementing a significant management action to Rampdown pumping to stop the chronic lowering of

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groundwater levels that has been occurring since the 1940s. The Rampdown requires an incremental annual reduction in pumping over a 20-year period such that aggregate pumping by all BPA parties is equal to the Sustainable Yield by 2040. The reduction in pumping through WY 2025 is significantly ahead of schedule and has resulted in a gradual stabilization of groundwater levels, which should be beneficial to the Mesquite Bosque, if and where it is a GDE.

D. Applicable legal standard for judicial review.

With technical differences of opinions having herein been stated, we will delineate the legal path and constraints which would apply to any parties who wish to move this issue forward through the legal process. Paragraph VII A of the Judgment establishes the procedures for a Watermaster or any other party to the Judgment, to file a noticed motion with the Court⁴, seeking amendment of the Judgment to designate the Mesquite Bosque as a GDE and, at the moving party's discretion, to adopt a proposed protection program for that area. So, either a direct motion from the Watermaster or an appeal from a Watermaster denial of the designation of the Mesquite Bosque would bring the matter forward to the Court.

The Judgment provides that the Court consider the issue de novo. This means that the Judgment does not favor or treat a Watermaster decision appeal to the Court with any deference. In most situations in which a Court reviews a technical decision of an administrative agency, the question before the Court is whether substantial evidence was presented in the administrative process to support the agency's decision. If the evidentiary record contains substantial evidence that supported the decision, the Court's duty would be to affirm the action of the administrative agency. This would be so even though substantive technical evidence was presented by both parties. This typical level of deference recognizes that the administrative agency is better equipped through technical expertise to make a sound decision. The substantial evidence test is applied in numerous situations. The cases cited immediately below contain reasoning for providing deference to agency decisions on scientific issues by courts. They also indicate that deference may be accorded even without application of the substantial evidence standard.

“The spectrum of judicial review of administrative action ranges from independent judgment on the basis of a trial de novo, to complete nonreviewability.” (*California*

⁴ Any activity meant to designate the Mesquite Bosque as a GDE and assign duties to Watermaster to protect the area would require the Court to amend the Judgment to do so together with a repeal of the present Judgment language denying that the GDE exists.

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Hotel & Motel Assn. v. Industrial Welfare Com. (1979) 25 Cal.3d 200, 213.)

Administrative agencies' factual findings and decisions are at that point of the continuum at which judicial review is more deferential, and are generally reviewed to determine whether they are "arbitrary, capricious, [or] entirely lacking in evidentiary support. (*Carrancho v. California Air Resources Board* (2003) 111 Cal.App.4th 1255, 1265.) Courts defer and do "not interfere with the discretionary judgments made by the agency" because the administrative agency has "technical expertise to aid it in arriving at its decision." (*Dore v. County of Ventura* (1994) 23 Cal.App.4th 320, 326.) Courts recognize that they "have neither the resources nor scientific expertise to engage in such analysis, even if the statutorily prescribed standard of review permitted [them] to do so." (*Laurel Heights Improvement Assn. v. Regents of University of California* (1988) 47 Cal.3d 376, 393, as modified on denial of reh'g (Jan. 26, 1989).) As a result, "courts will permit administrative agencies to work out their problems with as little judicial interference as possible." (*Western States Petroleum Assn. v. South Coast Air Quality Management Dist.* (2006) 136 Cal.App.4th 1012, 1018.)

The California Supreme Court has explained:

The precise formulation of the standard may be less important than what courts actually do in exercising deferential but not perfunctory review: What matters is that judges generally understand that they may not properly substitute their judgment for administrative judgment *except on questions of law on which they are the experts*, but that something like reasonableness, rational basis, substantial evidence, or clearly erroneous guides what they do on other questions, and that in most cases other factors have a much stronger influence than the words of the formula that is supposed to apply.

(*California Hotel & Motel Assn. v. Industrial Welfare Com.* (1979) 25 Cal.3d 200, 213, emphasis added.)

In the end, in this matter, while the Court may be deferential in reviewing scientific evidence, the Court is not required to do so, and will have the final say in the matter with its own de novo reasoning.

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- E. Watermaster also is afforded discretion in deciding what protection to provide to an identified GDE to prevent harm which may be caused by Sustainability Plan implementation.

No statute or other authority has been identified which compels a Groundwater Authority formed under SGMA or a Watermaster administering a physical solution as an alternative SGMA plan to remediate or rehabilitate a GDE from damages incurred by overdraft prior to the Plan or judicial physical solution being adopted. However, going forward in implementing the Basin Sustainability Plan, the references to GDEs and SGMA, Water Code Sections 10723.2(e) require the Watermaster to consider a GDE located in Basin while Section 10724.4 requires an implementation plan to more specifically consider its impacts on a GDE. Accordingly, after finishing its inquiries, if the Watermaster concludes that the Mesquite Bosque is a GDE, it needs to consider managing the Basin in a manner which will not contribute to further harm to the GDE. SGMA states the authority may use its power, "... to provide the maximum degree of local control and flexibility consistent with the sustainability goals of Water Code Section 10725."

The Judgment independently provides a flexible palate of powers to employ in bringing water sustainability to Borrego through a physical solution. Judgment, section II F states the following:

"... such physical solution will accelerate water saving actions and provide flexibility and adaptability in order to maximize the reasonable and beneficial use of the basin's groundwater and protect against undue economic harm to the Borrego Springs Community."

In our opinion, Watermaster's exercise of its discretion extends to any decision whether or not to allocate its limited funds (paid by water producers through production fees) to stave off damages to a GDE. Its discretion also allows Watermaster to decide whether to allow continued mining of the Basin through a rampdown period. Decisions on allowed production, can protect or harm different property and interests. The most common exercise of discretion is to allow continued production over safe yield to provide the economic community an opportunity to in part survive through the use of water markets (transfers of water rights) and carryover pumping for a period of years. But, during that period, shallow wells and GDEs could be damaged or lost. Nothing in applicable statutes impairs Watermaster's exercise of that discretion.

In summary, Watermaster's mandated objective is to timely reach Basin sustainability. In addition, the legislature and, the Court through the Judgment, have afforded the Watermaster

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discretion to implement a plan to make the Basin sustainable, with broad discretion to decide whether or not to also protect the local economy, the health of a recognized basin GDE, and other identified values.

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