

State of California  
Department of Water Resources  
Sustainable Groundwater Management Program  
Alternative Assessment Staff Report

Groundwater Basin Name: Ojai Valley (Basin No. 4-002)  
Submitting Agency: Ojai Basin Groundwater Management Agency  
Recommendation: Do Not Approve  
Date Issued: July 17, 2019

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## I. Summary

The Ojai Basin Groundwater Management Agency (Agency) submitted an alternative (Ojai Basin Alternative or Alternative) to the Department of Water Resources (Department) for evaluation and assessment as provided by the Sustainable Groundwater Management Act (SGMA).<sup>1</sup> The Ojai Basin Alternative is based on an analysis of basin conditions that demonstrates the basin has operated within its sustainable yield over a period of at least 10 years.<sup>2</sup> Based on evaluation of the Ojai Basin Alternative and consideration of public comments, Department staff believes the Alternative has not satisfied the objectives of SGMA and recommends that the Alternative not be approved.

An alternative based on an analysis of basin conditions requires that the basin has operated within its sustainable yield, which SGMA defines with reference to the absence of undesirable results.<sup>3</sup> A submitting agency may demonstrate that groundwater use in the basin has historically been managed to quantitative criteria or standards over a period of at least 10 years or demonstrate that undesirable results related to sustainability indicators are not present and are not likely to occur in the basin.<sup>4</sup>

The Agency attempts to demonstrate that, from the standpoint of meeting municipal and agricultural irrigation demands, the combination of groundwater pumping and importation of water from Lake Casitas has provided an adequate water supply over the past 10 years, at least. The Agency claims that groundwater use during the past several decades has been sufficient to maintain “average groundwater elevations and the groundwater in

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<sup>1</sup> Water Code § 10720 et seq.

<sup>2</sup> Water Code § 10733.6(b)(3)

<sup>3</sup> Water Code § 10721(w)

<sup>4</sup> 23 CCR § 354.26(d)

storage” and concludes from this that the Ojai Valley Basin (Ojai Basin or Basin) has been managed sustainably.<sup>5</sup>

The Alternative describes a “safe yield” for maintaining average groundwater elevations throughout the Basin, while acknowledging that the safe yield value does not consider the desired minimum groundwater discharge rate to the main surface water system in the basin (San Antonio Creek),<sup>6</sup> and that groundwater production has exceeded the safe yield defined in the Alternative for several of the past ten years.<sup>7</sup> In addition, the groundwater model associates groundwater production with a decrease in basin outflow to the San Antonio Creek, but does not evaluate possible impacts to beneficial uses and users of this system. Even assuming that safe yield were an appropriate substitute for sustainable yield, the Alternative indicates that the safe yield has been exceeded for more than half of the period from 1985 to 2016,<sup>8</sup> with the Agency reporting near historical-low groundwater levels in 2016 for the representative monitoring well of the Basin.<sup>9</sup> The Agency has not established any other quantitative standards or criteria for managing groundwater that would objectively demonstrate sustainable groundwater management. Rather, the Agency states that undesirable results are not present and relies on the exemption from the requirement to establish such criteria if undesirable results related to those sustainability indicators are not present and are not likely to occur in the basin.

The Agency relies on “key wells” although the Alternative does not provide detailed information about the wells or the data derived from them. The Agency relies on the historical maintenance of average groundwater elevations as the proxy for all sustainability indicators other than seawater intrusion, but the Alternative does not define the relationship between average groundwater elevations and potential undesirable results related to all other sustainability indicators. Demonstrating that operation of the Basin in the recent past has been sufficient to maintain average groundwater levels and storage is not, by itself, sufficient to demonstrate 10 years of operation within a sustainable yield that avoids undesirable results for all of the applicable sustainability indicators. In fact, data and analysis provided by the Agency suggests that groundwater levels and storage were near historical lows when the Alternative was submitted, and that groundwater is the primary contributor of flow, for much of the year, to San Antonio Creek, which contains sensitive beneficial users (e.g., endangered species).

While the Agency asserts that the abovementioned conditions are not significant and unreasonable for the Ojai Basin, that assertion was not accompanied by sufficient and

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<sup>5</sup> Alternative Report, p. 3

<sup>6</sup> Groundwater Model Report, p. 36

<sup>7</sup> Alternative Report, p. 22

<sup>8</sup> Alternative Report, p. 22

<sup>9</sup> Alternative Report, p. 24

reasonable evidence. The Department cannot assume undesirable results have not occurred in the absence of a compelling argument and adequate supporting data. The data provided in the Alternative to show groundwater levels and groundwater in storage in the Basin is from only one of six key wells, and a discussion regarding the suitability of the one key well to represent the overall conditions of the entire Ojai Basin is absent. The Ojai Basin Alternative does not demonstrate that undesirable results are not present and are not likely to occur in the Basin. Therefore, Department staff recommend that the Alternative not be approved.

The remainder of this assessment is organized as follows:

- **Section II. Review Principles** describes the legal and other considerations regarding the Department's assessment and evaluation of alternatives.
- **Section III. Alternative Materials** describes materials (i.e., reports, data, and other information) submitted by the Agency that collectively, the Department staff considered as the Alternative.
- **Section IV. Required Conditions** describes whether the Alternative satisfies each of the four conditions required for the Department to review an alternative.
- **Section V. Alternative Contents** briefly describes the information contained in the Alternative submittal.
- **Section VI. Assessment** describes the Department staff's evaluation of the Alternative, whether it satisfies the objectives of SGMA, and, if applicable, describes recommended actions proposed for the first five-year update.

## II. Review Principles

The Agency submitted an alternative based on an analysis of basin conditions to the Department for evaluation and assessment to determine whether it satisfies the objectives of SGMA for the Ojai Basin. To satisfy the objectives of SGMA, an alternative based on an analysis of basin conditions must demonstrate that the basin has been operated within its sustainable yield for a period of at least 10 years.<sup>10</sup> The SGMA definition of sustainable yield requires the avoidance of undesirable results.<sup>11</sup> As a result, an alternative based on an analysis of basin conditions must demonstrate that the submitting agency has an understanding of groundwater conditions that would cause undesirable results, as well as analysis in the alternative demonstrating the absence of undesirable results over a 10-year period.

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<sup>10</sup> Water Code § 10733.6(b)(3)

<sup>11</sup> Water Code § 10721(w)

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water Code.<sup>12</sup> The submitted alternative must also be complete and must cover the entire basin.<sup>13</sup> The GSP Regulations<sup>14</sup> require the Department to evaluate an Alternative “in accordance with Sections 355.2, 355.4(b), and Section 355.6, as applicable, to determine whether the Alternative complies with the objectives of the Act”.<sup>15</sup> The elements of the cited sections are not all applicable to alternatives. Some provisions apply to GSPs and alternatives alike, to alternatives only prospectively, or do not apply to alternatives at all.<sup>16</sup> Ultimately, the purpose of the evaluation is to determine whether an alternative satisfies the objectives of SGMA.<sup>17</sup> The agency must explain how the elements of an alternative are “functionally equivalent” to the elements of a GSP required by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of an alternative to achieve the objectives of SGMA.<sup>18</sup> The explanation by the agency that elements of an alternative are functionally equivalent to elements of a GSP furthers the objective of demonstrating that an alternative satisfies the objectives of SGMA. Alternatives based on groundwater management plans or historical basin management practices that predate the passage of SGMA or adoption of GSP Regulations, although required to satisfy the objectives of SGMA, are not necessarily expected to conform to the precise format and content of a GSP. The Department’s assessment is thus focused on the ability of an alternative to satisfy the objectives of SGMA as demonstrated by information provided by the agency; it is not a determination of the degree to which an alternative matched the specific requirements of the GSP Regulations.

When evaluating whether an alternative satisfies the objectives of SGMA and thus is likely to achieve the sustainability goal for the basin, staff reviews the information provided by

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<sup>12</sup> Water Code § 10733.6(c)-(d)

<sup>13</sup> 23 CCR § 358.4(a)

<sup>14</sup> 23 CCR § 350 *et seq.*

<sup>15</sup> 23 CCR § 358.4(b) (emphasis added)

<sup>16</sup> Procedural requirements, including submissions by the agency, posting by the Department, and the public comment period, apply equally to plans and alternatives (23 CCR § 355.2(a)-(c)). The periodic review of Plans (23 CCR § 355.6(a)) applies to alternatives prospectively but does not apply to initial submissions. Other regulatory provisions are inapplicable to alternatives, including the two-year review period (23 CCR § 355.2(e)), which is based on the statutory time-frame that applies to Plans but not alternatives (Water Code § 10733.4(d)); the “incomplete” status that allows the agency to address “one or more deficiencies that preclude approval, but which may be capable of being corrected by the Agency in a timely manner” (23 CCR § 355.2(e)(2)), which applies to plans undergoing development, but not alternatives that purportedly satisfy the objectives of SGMA at the time of their submission (Water Code § 10733.6(a)); and, for the same reason, corrective actions to address deficiencies in plans (23 CCR § 355.4(a)(4)), which applies to plans developed after the adoption of SGMA, but is inapplicable to alternatives that predate SGMA.

<sup>17</sup> Water Code § 10733.6(a). The Department considers the regulatory language in 23 CCR § 358.2(d) (“complies with the objectives of [SGMA]”) to be equivalent to the statutory threshold upon which it is based.

<sup>18</sup> 23 CCR § 358.2(d)

and relied upon by the agency for sufficiency, credibility, and consistency with scientific and engineering professional standards of practice.<sup>19</sup> The Department's review considers whether there is a reasonable relationship between the information provided and the assumptions and conclusions made by the agency, whether sustainable management criteria and projects and management actions described in an alternative are commensurate with the level of understanding of the basin setting, and whether those projects and management actions are feasible and likely to prevent undesirable results.<sup>20</sup> Staff will recommend that an alternative be approved if staff believe, in light of these factors, that alternative has achieved or is likely to achieve the sustainability goal for the basin.<sup>21</sup>

An alternative based on a demonstration that the basin has operated within its sustainable yield over a period of at least 10 years may be approved based on information that demonstrates that objective criteria defining operating standards that governed groundwater management for the basin were established and consistently achieved. Even when staff review indicates that an alternative will satisfy the objective of SGMA, the Department may recommend actions to facilitate future evaluation of that alternative and to allow the Department to better evaluate whether an alternative adversely affects adjacent basins. DWR proposes that recommended actions be addressed by the submission date for the first periodic evaluation.

Staff assessment of an alternative involves the review of information presented by the agency, including models and assumptions, and an evaluation of that information based on scientific reasonableness. The assessment does not require Department staff to recalculate or reevaluate technical information provided in an alternative or to perform its own geologic or engineering analysis of that information. The staff recommendation to approve an alternative does not signify that Department staff, were they to exercise the professional judgment required to develop a plan for the basin, would make the same assumptions and interpretations as those contained in an alternative, but simply that Department staff has determined that the assumptions and interpretations relied upon by the submitting agency are supported by adequate, credible evidence, and are scientifically reasonable.

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<sup>19</sup> 23 CCR § 351(h)

<sup>20</sup> 23 CCR § 355.4(b)(1), (3), and (5).

<sup>21</sup> 23 CCR § 355.4(b)

### III. Alternative Materials

The Agency submitted an alternative based on an analysis demonstrating the basin has operated within its sustainable yield over a period of at least 10 years, pursuant to Water Code Section 10733.6(b)(3). The Ojai Basin Alternative includes the following documents:

- Report Supporting Alternative Demonstration of Groundwater Sustainability Made Pursuant to Water Code Section 10733.6(b)(3), 2016 (Alternative Report *or* Report). The Alternative Report was prepared by the Agency to provide information about the Ojai Basin and to demonstrate that the Basin has not experienced undesirable results in the past 10 years.
- Groundwater Model Development, Ojai Basin, Ventura County, California, 2011 (Groundwater Model Report). The Groundwater Model Report considers the water inputs and outputs of the Ojai Basin and summarizes the groundwater model developed to improve the understanding of the Basin and to simulate the Basin's response to extended droughts and wet periods.
- Groundwater Management Plan Update, Ojai Basin Groundwater Management Agency, 2007 (Groundwater Management Plan). This document discusses the authority of the Agency, the mission statement, management actions, the need for data and an understanding of the Basin, and the goals of the Agency for the Basin.

The Agency also submitted an Alternative Elements Guide and a notice of exemption from the requirements of the California Environmental Quality Act (CEQA). Other material submitted by the Agency, public comments, Annual Reports,<sup>22</sup> other documents submitted by third parties, correspondence, and other information provided to or relied upon by the Department have been posted on the Department's web site.<sup>23</sup>

### IV. Required Conditions

An alternative, to be evaluated by the Department, must be submitted by the statutory deadline and be within a basin that complies with Part 2.11 of Division 6 of the Water Code.<sup>24</sup> The submitted alternative must also be complete and must cover the entire basin.<sup>25</sup>

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<sup>22</sup> The Annual Report is not part of the Alternative and was not reviewed by the Department for the purpose of approving the Alternative.

<sup>23</sup> <https://sgma.water.ca.gov/portal/#alt>

<sup>24</sup> Water Code § 10733.6

<sup>25</sup> 23 CCR § 358.6

## A. Submission Deadline

SGMA requires that an alternative for a basin categorized as high- or medium-priority as of January 31, 2015, be submitted no later than January 1, 2017.<sup>26</sup>

The Agency submitted the Alternative on December 27, 2016, before the statutory deadline.

## B. Part 2.11 (CASGEM) Compliance

SGMA requires that the Department assess whether an alternative is within a basin that is in compliance with Part 2.11 of Division 6 of the Water Code,<sup>27</sup> which requires that groundwater elevations in all groundwater basins be regularly and systematically monitored and that groundwater elevation reports be submitted to the Department.<sup>28</sup> To manage its obligations under this law, the Department established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The acronym CASGEM is used in this document to denote both the program and the groundwater monitoring law.<sup>29</sup> SGMA specifies that an alternative does not satisfy the objectives of SGMA if the basin is not in compliance with the requirements of CASGEM.<sup>30</sup> The Department confirmed that the Ojai Basin was in compliance with the requirements of CASGEM and confirmed that the Basin remained in compliance with CASGEM through the last reporting deadline, prior to issuing this assessment.

## C. Completeness

GSP Regulations specify that the Department shall evaluate an alternative if that alternative is complete and includes the information required by SGMA and the GSP Regulations.<sup>31</sup> An alternative submitted pursuant to Water Code Section 10733.6(b)(3) must include an analysis demonstrating the basin has operated within its sustainable yield over a period of at least 10 years. That analysis must include a report prepared by a registered professional engineer or geologist who is licensed by the state, and that report must be submitted under that engineer's or geologist's seal. The alternative must include an explanation of how the elements of the alternative are functionally equivalent to the

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<sup>26</sup> Water Code § 10733.6(c). Pursuant to Water Code § 10722.4(d), a different deadline applies to a basin that has been elevated from low- or very low-priority to high- or medium-priority after January 31, 2015.

<sup>27</sup> Water Code § 10733.6(d)

<sup>28</sup> Water Code § 10920 *et seq.*

<sup>29</sup> Stats.2009-2010, 7th Ex.Sess., c. 1 (S.B.6), § 1

<sup>30</sup> Water Code § 10733.6(d)

<sup>31</sup> 23 CCR § 358.4(a)(3)

elements of a GSP required by Articles 5 and 7 of the GSP Regulations and are sufficient to demonstrate the ability of the alternative to achieve the objectives of SGMA.<sup>32</sup>

The Agency submitted an analysis of basin conditions under the seal of a licensed Professional Geologist along with an Alternative Elements Guide, which includes the Agency's explanation of how the elements of the Alternative are functionally equivalent to the elements of a GSP. The Department found the Alternative to be complete and containing the required information, sufficient to warrant an evaluation by the Department.

## D. Basin Coverage

An alternative must cover the entire basin.<sup>33</sup> An alternative is presumed to cover the entire basin if the basin is contained within the jurisdictional boundaries of the submitting agency. However, an alternative submitted by an agency whose jurisdictional boundaries do not include all areas of the basin may be found to effectively cover the entire basin. Because the intent of SGMA is to provide for the sustainable management of groundwater basins,<sup>34</sup> with sustainability defined as the management and use of groundwater that does not cause undesirable results,<sup>35</sup> an alternative effectively covers the entire basin if it results in groundwater management that avoids undesirable results. An alternative that does not demonstrate an avoidance of undesirable results is not sustainably managing the basin even if the entire basin is within the jurisdiction of the managing agency.

The Agency states that the Alternative Report is submitted to the Department "...for the purpose of demonstrating that the entire Ojai Groundwater Basin has operated within its 'sustainable yield' for a period of over 10 years with no 'undesirable results'..."<sup>36</sup> The Department understands that the intent of the Alternative is to effectively cover the entire Ojai Basin.

As shown in Figure 1, nearly the entire Ojai Basin (shown in black) is contained within the jurisdictional boundaries of the Ojai Basin Groundwater Management Agency (shown in red), which also includes area beyond the boundaries of the Basin.<sup>37</sup> However, small areas of the Basin extend beyond the Agency's jurisdictional boundary to the north and west.

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<sup>32</sup> 23 CCR § 358.4(c)-(d)

<sup>33</sup> 23 CCR § 358.4(a)(4)

<sup>34</sup> Water Code § 10720.1(a)

<sup>35</sup> Water Code § 10721(v)

<sup>36</sup> Alternative Report, pp. 3, 7, 41

<sup>37</sup> Alternative Report, Figures 1 and 3. Note that these figures appear to use an older version of the Ojai Valley Groundwater Basin Boundary that was not current at the time the Alternative was submitted. Use of the correct, current boundary would show a slight increase in area outside of the Agency's jurisdictional boundary



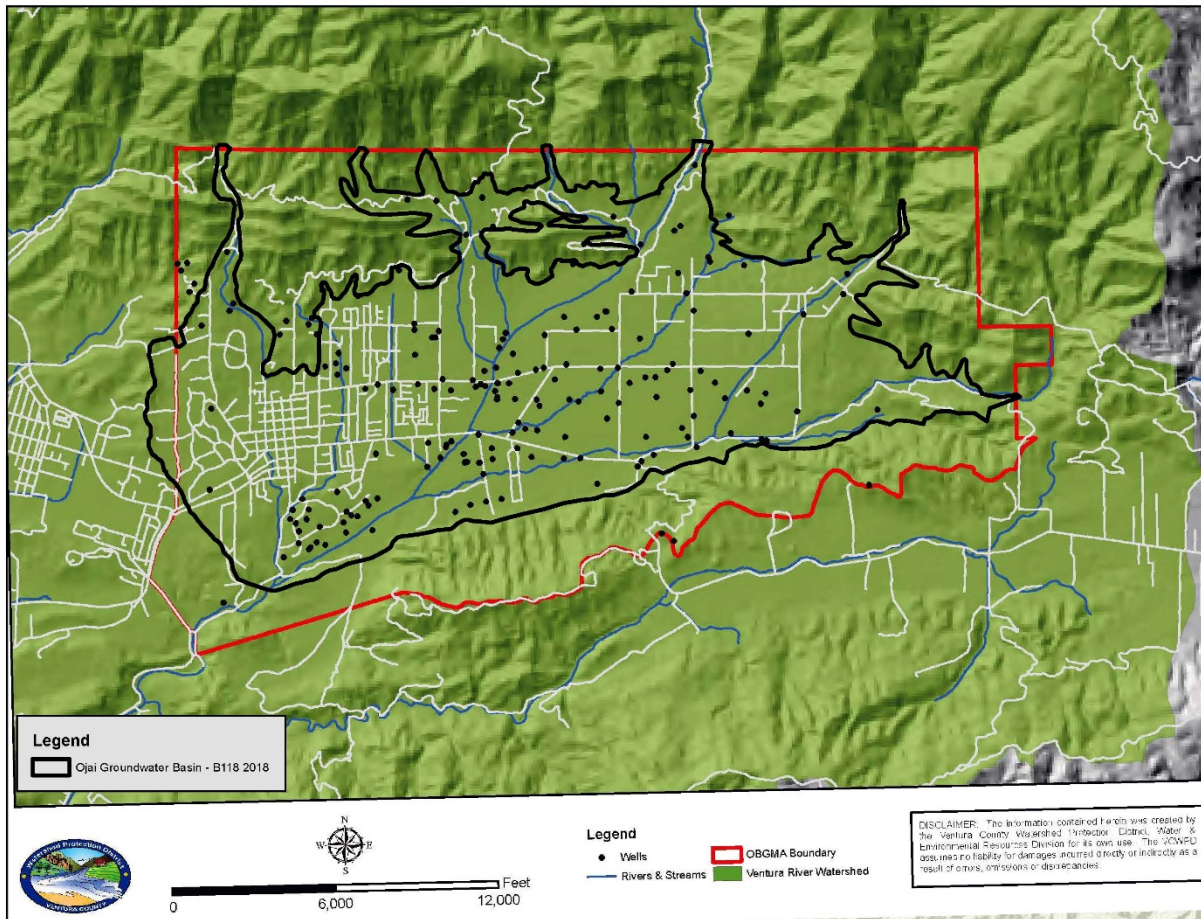


Figure 1. Ojai Groundwater Basin<sup>38</sup>

To determine whether the alternative effectively covers the entire basin, the Department was required to determine whether groundwater management pursuant to the alternative has avoided undesirable results for at least 10 years. Because Department staff has determined that the analysis of basin conditions does not demonstrate that undesirable results have been absent for at least 10 years, the Department staff are unable to determine the Ojai Basin has reached sustainability. As a result, Department staff cannot conclude that the Alternative effectively covers the entire Basin. Although the failure to cover the entire basin precludes an alternative from approval, Department staff note that the failure to cover the entire basin is a consequence of the alternative not demonstrating sustainability in the area within the Agency’s jurisdiction. Department staff do not express

<sup>38</sup> Original figure was downloaded from <http://obgma.com/wp-content/uploads/2015/06/OBGMA-Ven-Rvr-Watershed.pdf> and georeferenced using street lines visible in the original figure. The 2018 Bulletin 118 groundwater basin boundary was then overlaid to create the modified figure provided; the 2018 Bulletin 118 boundary is the same as the 2016 Bulletin 118 boundary in place at the time the Alternative was submitted to the Department.

an opinion as to whether the area managed by the Agency would be sufficient to effectively manage the entire Ojai Basin if sustainable groundwater management had been demonstrated.

## V. Alternative Contents

GSP Regulations require the submitting agency to explain how the elements of an alternative are functionally equivalent to the elements of a GSP as required by Article 5 of the GSP regulations<sup>39</sup> and are sufficient to demonstrate the ability of the alternative to achieve the objectives of SGMA.<sup>40</sup>

As stated previously, alternatives based on historical basin management practices that predate the passage of SGMA or adoption of GSP Regulations, although required to satisfy the objectives of SGMA, are not necessarily expected to conform to the precise format and content of a GSP, and the criteria for adequacy of an alternative is whether the Department is able to determine that an alternative satisfies the objectives of SGMA. Department staff rely on the submitting agency's determination of functional equivalence of alternative elements to facilitate its evaluation and assessment of an alternative (see Assessment, below). Although the exact components of a GSP are not required for an alternative, for organizational purposes the discussion of information contained in the Alternative Report and related documents provided by the Agency generally follows the elements of a GSP provided in Article 5 of the GSP Regulations. The reference to requirements of the GSP Regulations at the beginning of each section is to provide context regarding the nature of the element discussed but is not meant to define a strict standard applicable to alternatives.

### A. Administrative Information

GSP Regulations require information identifying the submitting agency, describing the plan area, and demonstrating the legal authority and ability of the submitting agency to develop and implement a plan for that area.<sup>41</sup>

The Alternative Report provides an executive summary, a description of the Agency, the general funding structure of the Agency, and the legal authority of the Agency to implement projects and management actions. The Agency was created in 1991 by a special act of the Legislature to manage groundwater within the Agency's jurisdictional

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<sup>39</sup> 23 CCR § 354-354.44

<sup>40</sup> 23 CCR § 358.2(d). The requirements pertaining to Article 7 of the GSP Regulations (23 CCR § 356-356.4) relate to annual reports and periodic evaluation and are not applicable to review of the initial alternative.

<sup>41</sup> 23 CCR § 354.2 et seq.

boundaries. The Ojai Basin Groundwater Management Agency Act (Agency Act)<sup>42</sup> is contained within the Alternative Report.<sup>43</sup> The Agency Act specifies the powers and duties of the Agency and provides for the management and financing of the Agency. The Alternative Report describes that the Agency is funded by extraction charges, which have a legislative ceiling of 25 dollars per acre-foot.<sup>44</sup> The Alternative Report also notes other functions and activities of the Agency, including monitoring groundwater conditions in the Basin, well permitting and registration of extraction facilities, groundwater extraction, computer modeling of groundwater and hydrologic conditions, annual reporting, public outreach, control of groundwater exports, encouraging water conservation, participation in artificial recharge projects such as supporting rehabilitation of the San Antonio Creek Spreading Grounds Rehabilitation Project, and participation in the Ventura River Watershed Management Plan.

In accordance with the Agency Act, an initial Groundwater Management Plan was prepared in 1995, and the plan was updated in 2007. The Groundwater Management Plan consists of five broad goals with supporting action elements. The Groundwater Management Plan notes that the Agency will establish thresholds related to groundwater conditions, including groundwater levels and groundwater in storage, and that exceedance of those thresholds would trigger special action by the Agency.<sup>45</sup> The Groundwater Management Plan notes that those thresholds were scheduled to be developed in 2008, but nothing in the Alternative indicates that they were developed.

The Alternative Report notes that the Agency presented elements of the Alternative Report and received verbal comments at four of the six public forums between October and December 2016, including the Association of Water Agencies of Ventura County, the Agency's board meetings, the Ventura Watershed Council, and City of Ojai City Council meetings. The Alternative Report did not describe the nature of the public comments received during the public forums.<sup>46</sup>

## B. Basin Setting

GSP Regulations require information about the physical setting and characteristics of the basin and current conditions of the basin, including a hydrogeologic conceptual model, a

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<sup>42</sup> Water Code § App. § 131-101 *et seq.* (Stats.1991, Chapter 750, § 1)

<sup>43</sup> Alternative Report, Appendix A

<sup>44</sup> Alternative Report, p. 13

<sup>45</sup> Groundwater Management Plan, Section 3.2.2; the plan mentions thresholds or action levels for groundwater elevations, streamflow, and storage

<sup>46</sup> Alternative Report, pp. 6-7

description of historical and current groundwater conditions, and an assessment of the water budget.<sup>47</sup>

## 1. Hydrogeologic Conceptual Model

The GSP Regulations require a descriptive hydrogeologic conceptual model of the basin that includes a written description supported by cross sections and maps.<sup>48</sup>

The Alternative Report describes the Ojai Basin as a relatively deep, bowl-shaped basin bounded by non-water-bearing rocks, mountains, and the Santa Ana Fault.<sup>49</sup> San Antonio Creek and other tributary streams enter the Basin from the north and east and drain to the west. Those streams and creeks are the source of alluvial material that filled the Basin over time and formed the primary water-bearing units. Alluvial fill in the Basin is reportedly up to 715 feet thick with four, 100-foot thick primary groundwater storage zones composed of sand and gravel<sup>50</sup> separated by finer-grained semi-confining and confining units.<sup>51</sup> The Alternative Report notes that faults and bedrock folds in the Basin caused by regional deformation can act as no-flow boundaries and that fracture zones associated with faults can also act as flow pathways for wells completed in consolidated rocks.<sup>52</sup> The Groundwater Model Report provides additional description of the hydrogeologic conceptual model and notes prior studies upon which the conceptual model is based.<sup>53</sup> The most recent of those studies, a 2005 Master's thesis partially funded by the Agency to describe geologic and groundwater conditions in the Basin,<sup>54</sup> contained detailed geologic cross-sections and described aquifer testing conducted to derive important hydraulic characteristics of the aquifer materials (e.g., storativity and transmissivity). The Groundwater Modeling Report describes that information from the Master's thesis was foundational to development of the groundwater model (e.g., in developing the 10 layers of the groundwater model which represent the aquifers and aquitards of the Basin<sup>55</sup> and for assignment of hydraulic properties to the model).<sup>56</sup>

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<sup>47</sup> 23 CCR § 354.12 et seq.

<sup>48</sup> 23 CCR § 354.14(a)

<sup>49</sup> Alternative Report, p. 14

<sup>50</sup> Alternative Report, p. 15

<sup>51</sup> Groundwater Model Report, p. 3, 5, 23

<sup>52</sup> Alternative Report, p. 16

<sup>53</sup> Groundwater Model Report, Section 2.1, p. 3

<sup>54</sup> Kear, J.L. 2005. Hydrogeology of the Ojai groundwater basin: Storativity and confinement, Ventura County, California. Master's thesis, California State University, Northridge. December 2005.

<sup>55</sup> Groundwater Model Report, Section 2.2, p. 5

<sup>56</sup> Groundwater Model Report, Section 3.1, pp. 23-24

## 2. Groundwater Conditions

The GSP Regulations require a description of historical and current groundwater conditions in the basin that includes information related to groundwater elevations, groundwater storage, seawater intrusion, groundwater quality, subsidence, and interconnected surface water, as applicable. The GSP Regulations also require an identification of groundwater dependent ecosystems.<sup>57</sup>

The Alternative Report describes groundwater level information based on a single depth-to-groundwater hydrograph from a well described as the “key observation well” for the Basin.<sup>58</sup> Data from that well,<sup>59</sup> collected from before 1950 through 2016, shows that depth to groundwater has fluctuated over a range of greater than 250 feet, with a maximum depth to water of 312 feet (1951) and a minimum depth to groundwater of 38.2 feet (1978). The most recent measurement, from August 2016, indicates the depth to water was 265 feet, corresponding to the lowest levels since approximately 1965.<sup>60</sup> The Groundwater Model Report contains additional groundwater elevation hydrographs with data ranging from 1970 to 2009, which the Report presents as showing agreement between simulated and observed groundwater levels.<sup>61</sup> The Alternative Report states that the direction of groundwater flow is generally to the southwest except in the vicinity of municipal wells extracting water from the central portion of the Basin, although the Report does not present the grounds upon which that determination was made.<sup>62</sup> In addition to the “key observation well” mentioned above, the Alternative Report refers to six wells, described as “key wells”, that are apparently privately owned and monitored by permission of the landowners.<sup>63</sup> As with the “key observation well” the Alternative Report does not describe the location of the other “key wells” or provide an explanation of why those wells are representative of Basin conditions. No data regarding any of the other “key wells” were provided in the Alternative.

The Alternative Report provides estimated annual groundwater storage volumes for the Basin, determined by the Ventura County Watershed Protection District, based on groundwater levels measured at the “key observation well” from 1975 through 2010.<sup>64</sup> Subsequent estimates were calculated using the groundwater model and measured data.<sup>65</sup> Estimates of groundwater in storage range from a high of 83,785 acre-feet (in

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<sup>57</sup> 23 CCR § 354.16

<sup>58</sup> Alternative Report, p. 22 and Figure 9

<sup>59</sup> State Well Number 04N/22W-05L08S.

<sup>60</sup> Alternative Report, Figure 9 and p. 26

<sup>61</sup> Groundwater Model Report, Appendix B

<sup>62</sup> Alternative Report, p. 15

<sup>63</sup> Alternative Report, p. 9

<sup>64</sup> Alternative Report, p. 25

<sup>65</sup> Alternative Report, p. 25-25

1983, representing a 99 percent full condition) to a low of 41,310 acre-feet (in 2016, representing a 49 percent full condition).<sup>66</sup> The Alternative Report shows that the 2015 groundwater level and groundwater in storage are both at their lowest points since 1975.<sup>67</sup>

The Alternative Report estimates the maximum groundwater storage capacity of the Basin to be 85,000 acre-feet, but acknowledges that this is greater than the amount of recoverable or usable fresh water because not all of the groundwater is of acceptable quality.<sup>68</sup> The Alternative Report states that the historic low for basin storage was 33,741 acre-feet in September 1951, which corresponds with a groundwater level of 580 feet above mean sea level.<sup>69</sup>

The Alternative Report states that seawater intrusion does not present management issues for the Basin because of the Basin's elevation relative to mean sea level and because of the separation of the Basin from the ocean by several fault systems and bedrock formations.<sup>70</sup>

The Alternative Report states that the groundwater quality is important because groundwater serves as the primary source of supply for irrigation and drinking water, and is the primary source of streamflow for most of the year.<sup>71</sup> The Alternative Report describes groundwater quality as generally good enough for drinking and irrigating, but notes that blending is sometimes required to meet drinking water standards.<sup>72</sup> The Alternative Report states that groundwater quality in the Basin is influenced by the quantity and quality of surface water runoff, interactions of water with rocks in and surrounding the Basin, overlying land uses, septic systems, and the depth and age of the groundwater. The deep aquifers, which are in the central and southwestern portion of the Basin, contain the poorest water quality and have a higher chloride concentration than the shallow aquifers. The deep aquifers are isolated to a small portion of the Basin and are penetrated by few wells; data associated with the deep aquifers were not provided in the Alternative Report.<sup>73</sup> The Report claims there is no evidence to suggest groundwater

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<sup>66</sup> Alternative Report, Table 1: 1975-2016 Storage, water level, and precipitation, p. 25

<sup>67</sup> Alternative Report, p. 26

<sup>68</sup> Alternative Report, pp. 14-15

<sup>69</sup> Alternative Report, Figure 10. Relationship between Basin Storage and Springtime-High Water Level at Key Well, p. 26. The Report graphs but does not explain the relationship between the two values. Both 2015 groundwater level and groundwater in storage are depicted as being at their lowest points since 1975. In contrast, an Annual Report cited in the Alternative Report, claims that Basin storage was at a historic low of 43,741 acre-feet in 1951 (see Ojai Basin Groundwater Management Agency, 2011 & 2012 Annual Report (Annual Report), (available online at [http://obgma.com/wp-content/uploads/2015/05/OBGMA\\_Annual\\_Report\\_2012.pdf](http://obgma.com/wp-content/uploads/2015/05/OBGMA_Annual_Report_2012.pdf))

<sup>70</sup> Alternative Report, p. 39

<sup>71</sup> Alternative Report, p. 34

<sup>72</sup> Alternative Report, p. 34

<sup>73</sup> Alternative Report, p. 36

extraction is causing significant and unreasonable degradation of groundwater quality and, in support of that claim, provides a chart of measured water quality from a supply well in the Basin that shows stable water quality trends over a period from 2004 to 2016, when groundwater levels in the Basin fluctuated over a range of approximately 200 feet.<sup>74</sup>

The Alternative Report claims variously that no surface or subsurface evidence of land subsidence or decrease in storage capacity has been observed in the Ojai Basin<sup>75</sup> and that subsidence is unlikely to occur because coarse grained sands, gravel, and cobbles form the bulk of the aquifer skeleton and that no evidence suggests that current groundwater extraction levels are causing significant and unreasonable land subsidence.<sup>76</sup> The Alternative Report cites a tectonic study that evaluated subsidence in the Transverse Ranges of southern California, which showed up to about four millimeters (about 0.16 inches) of subsidence per year in the central portion of the Ojai Basin from 2005 to 2010.<sup>77</sup> The Alternative Report notes that the referenced study showed similar amounts of subsidence in the mountains north and south of the Basin, and thus attributes the cause of subsidence in the Ojai Basin to tectonic motion, rather than groundwater extraction.<sup>78</sup> The authors of the tectonic study concluded that subsidence near Ojai was due to groundwater extraction for agricultural and domestic purposes, but the authors provided no evidence for their conclusion.<sup>79</sup>

As mentioned above, the Annual Report notes that groundwater in storage was at a historic low of 43,741 acre-feet in 1951 and describes that value as a “significant threshold” below which compaction of the confined aquifer could result in subsidence and irrecoverable loss of storage capacity.<sup>80</sup> The 2016 groundwater in storage value of 41,310 acre-feet,<sup>81</sup> dropped below the 1951 value of 43,741 acre-feet, but the Alternative Report states that no evidence of land subsidence has been observed. However, the Alternative Report did not describe what monitoring was conducted to determine the presence or absence of land subsidence generally, or specifically related to the low groundwater storage in 2016 that exceeded the “significant threshold” of 43,741 acre-feet in 1951. In fact, land subsidence is not among basin conditions for which an active monitoring program is identified by the Alternative Report.<sup>82</sup>

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<sup>74</sup> Alternative Report, Figure 18

<sup>75</sup> Alternative Report, p.26

<sup>76</sup> Alternative Report, pp. 39

<sup>77</sup> Scott T. Marshall, Gareth J. Funning, Susan E. Owen (2013) Fault slip rates and interseismic deformation in the western Transverse Ranges, California, *J. Geophys. Res. Solid Earth*, 118, doi:10.1002/jgrb.50312.

<sup>78</sup> Alternative Report, p. 38-39

<sup>79</sup> Marshall, *op. cit.*, see Figure 4 and accompanying caption.

<sup>80</sup> Annual Report, p. 26

<sup>81</sup> Alternative Report, Table 1

<sup>82</sup> Alternative Report, p. 9

The Alternative Report states that groundwater and surface water are interconnected in the Basin, and that for much of the year, including almost all of the dry-season, all of the water in the Ventura River and its tributaries is from groundwater and springs.<sup>83</sup> The Alternative Report estimates that discharge to surface streams, as simulated by the groundwater model, averages approximately 2,280 acre-feet per year. The Groundwater Model Report states that “during extended drought periods, groundwater discharge to San Antonio Creek decreases dramatically, and groundwater extraction during the drought periods contributes to this decline.”<sup>84</sup> The Alternative Report and Groundwater Model Report do not quantify the depletion of interconnected surface water due to groundwater use, and the Agency has not declared any limit of depletion to be unacceptable or subject to management actions. (see Depletions of Interconnected Surface Water, below). The Alternative Report describes surface water flow information as sporadic and notes that complete data is not available, and utilizes results of steelhead surveys conducted between 2008 and 2016 by either the Casitas Municipal Water District or the Department of Fish and Wildlife as a proxy for “beneficial uses” of surface water.<sup>85</sup> According to the Alternative Report, the fish surveys demonstrate the capacity of the fish “to maintain and sustain in keeping with climatic driven historic conditions,” and from that, conclude that no evidence exists to suggest that current groundwater extraction levels are causing significant or unreasonable adverse impacts on instream beneficial uses.<sup>86</sup>

### 3. Water Budget

GSP Regulations require a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored, as applicable.<sup>87</sup>

The Groundwater Model Report provides a water budget for the Basin. Water-inflow components include upgradient stream flows, alluvial channels, the San Antonio Creek Spreading Grounds (which operated from 1970 to 1985 and was re-constructed in 2014), septic systems, precipitation, and infiltration of irrigation water. Outflow components include groundwater extraction (i.e., pumping), groundwater discharge to streams, evapotranspiration, and outflow to underlying bedrock and downgradient alluvium.<sup>88</sup> The water budget components and the groundwater model were calibrated using data from

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<sup>83</sup> Alternative Report, p. 30

<sup>84</sup> Alternative Report, p. 34

<sup>85</sup> Alternative Report, p. 31

<sup>86</sup> Alternative Report, p. 33

<sup>87</sup> 23 CCR § 354.18

<sup>88</sup> Alternative Report, p. 19



1970 to 2009 collected from wells throughout the Basin<sup>89</sup> and underwent a sensitivity analysis.<sup>90</sup> As noted above, the Alternative Report includes a table of estimated annual total groundwater storage (see Groundwater Conditions). The groundwater model was also used to simulate the Basin response to drought, extended wet periods, and replenishment.

The Groundwater Model Report also included an analysis of the Basin's safe yield, which it defines as approximately 5,000 acre-feet per year.<sup>91</sup> The Groundwater Model Report qualified that the safe yield was primarily based on maintaining groundwater elevations and the median value of recharge to the Basin<sup>92</sup> and that a full understanding of the safe yield should consider the desired minimum discharge rates to San Antonio Creek, which was described as being beyond the scope of the study.<sup>93</sup>

#### 4. Management Areas

GSP Regulations authorize, but do not require, an agency to define one or more management areas within a basin if the agency has determined that creation of management areas will facilitate implementation of the GSP.<sup>94</sup>

The Agency has not identified management areas or defined management strategies that are functionally equivalent to management areas within the Ojai Basin.

### C. Sustainable Management Criteria

GSP Regulations require a sustainability goal that defines conditions that constitute sustainable groundwater management for the basin, the characterization of undesirable results, and establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator, as appropriate.<sup>95</sup>

#### 1. Sustainability Goal

GSP Regulations require that sustainable management criteria include a sustainability goal that culminates in the absence of undesirable results within the appropriate timeframe, and includes a description of the sustainability goal, describes information used to establish the goal for the basin, describes measures that will be implemented to ensure the basin operates within its sustainable yield, and contains an explanation of how

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<sup>89</sup> Groundwater Model Report, Section 3, p. 21

<sup>90</sup> Groundwater Model Report, p. 28-29

<sup>91</sup> Groundwater Model Report, p. 35

<sup>92</sup> Groundwater Model Report, p. ES2, 35

<sup>93</sup> Groundwater Model Report, p. 36

<sup>94</sup> 23 CCR § 354.20

<sup>95</sup> 23 CCR § 354.22

the sustainability goal will be met.<sup>96</sup> The sustainability goal for an alternative based on an analysis of basin conditions represents the criteria that allowed the basin to be operated within its sustainable yield for a period of at least 10 years, which includes the avoidance of undesirable results.<sup>97</sup>

Although the Alternative Elements Guide states that the requirement of establishing a sustainability goal is not applicable because “the Ojai Basin is already being sustainably managed[,]”<sup>98</sup> the Alternative Report does address the sustainability goal of the Basin.<sup>99</sup> The Alternative Report states that the mission of the Agency, which is derived from the Legislative findings of the Agency Act, is “...to preserve the quantity and quality of groundwater in the Ojai Basin in order to protect and maintain the long-term water supply for the common benefit of the water users in the Basin.”<sup>100</sup>

## 2. Sustainability Indicators

The GSP Regulations specify that an agency define conditions that constitute sustainable groundwater management for a basin, including the characterization of undesirable results and the establishment of minimum thresholds and measurable objectives for each applicable sustainability indicator.<sup>101</sup>

Sustainability indicators are defined as any of the effects caused by groundwater conditions occurring throughout the basin that, *when significant and unreasonable*, cause undesirable results.<sup>102</sup> Sustainability indicators thus correspond with the six undesirable results – chronic lowering of groundwater levels indicating a depletion of supply if continued over the planning and implementation horizon, reduction of groundwater storage, seawater intrusion, degraded water quality, including the migration of contaminant plumes that impair water supplies, land subsidence that substantially interferes with surface land uses, and depletions of interconnected surface water that have adverse impacts on beneficial uses of the surface water<sup>103</sup> – but refer to groundwater conditions that are not, in and of themselves, significant and unreasonable. Rather, sustainability indicators refer to the effects caused by changing groundwater conditions that are monitored, and for which criteria in the form of minimum thresholds

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<sup>96</sup> 23 CCR § 354.24. For an alternative based on a demonstration of 10 years of sustainable management, the sustainability goal, or its functional equivalent, would have been developed at some previous time during basin management, and its goals met by the time the Alternative was submitted to the Department.

<sup>97</sup> Water Code § 10721(w)

<sup>98</sup> Alternative Elements Guide, see Comments to § 354.24 entry.

<sup>99</sup> Alternative Report, p. 6

<sup>100</sup> Alternative Report, p. 7 (see Wat. Code, § App. § 131-101)

<sup>101</sup> 23 CCR § 354.22

<sup>102</sup> 23 CCR § 351(ah)

<sup>103</sup> Water Code § 10721(x)

are established by the agency to define when the effect becomes significant and unreasonable, producing an undesirable result.

The sustainability indicators section thus conflates three requirements of the sustainable management criteria set out in the GSP Regulations: undesirable results, minimum thresholds, and measurable objectives. Information pertaining to the processes and criteria relied upon to define undesirable results applicable to the basin as quantified through the establishment of minimum thresholds are discussed for each sustainability indicator. However, a submitting agency is not required to establish criteria for an undesirable result when the agency can demonstrate that an undesirable result for that sustainability indicator is not present and is not likely to occur in the basin.<sup>104</sup>

The Agency, in its Alternative Elements Guide, states that the need to establish undesirable results, minimum thresholds, and interim milestones is not applicable for the Ojai Basin because it is already being sustainably managed. The Elements Guide further states that an environmental baseline has been established for each sustainability indicator and that any significant or unreasonable deviation from the baseline would be considered undesirable. As described below, the Alternative Report states that undesirable results for each of the six sustainability indicators are not present in the Ojai Basin.

#### *a. Chronic Lowering of Groundwater Levels*

GSP Regulations specify that the minimum threshold for chronic lowering of groundwater levels be based on groundwater elevations indicating a depletion of supply that may lead to undesirable results.<sup>105</sup>

The Alternative Report claims that no evidence exists of undesirable results associated with chronic lowering of groundwater levels, and points instead to the fact that historical lowering of groundwater levels has occurred in association with periods of low precipitation, and that the historical lowering of groundwater levels is reversed following wet periods.<sup>106</sup> The Alternative Report concludes that groundwater extraction rates throughout the Ojai Basin have been sustainable "...from the standpoint of maintaining average groundwater elevations and the groundwater in storage..."<sup>107</sup> The Alternative Report does not describe the relationship between average groundwater elevations and the associated storage values and sustainability. The Alternative Report describes the historically low groundwater level of 580 feet above mean sea level, or 312 feet below

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<sup>104</sup> 23 CCR § 354.26(d)

<sup>105</sup> 23 CCR § 354.28(c)(1)

<sup>106</sup> Alternative Report, p. 4-5, 40-41

<sup>107</sup> Alternative Report, p. 40

ground surface, encountered in 1951 as a significant threshold because the confined aquifer would have been maximally compacted.<sup>108</sup> The Alternative Report does not indicate how this value was used to define minimum standards for groundwater management, or in some other way serve as a functional equivalent for undesirable results for this sustainability indicator. At any rate, the Agency claims that establishing criteria for undesirable results is not necessary based on the contention that the Basin is already being sustainably managed.<sup>109</sup> As a result, the Agency claims that the absence of minimum thresholds for groundwater levels is immaterial because such thresholds are not required.<sup>110</sup>

### *b. Reduction of Groundwater Storage*

GSP Regulations specify that the minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results, supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.<sup>111</sup>

The Alternative Report states there is no evidence of significant and unreasonable reduction of groundwater storage in the Basin and supports that claim using similar arguments as those described above for the Chronic Lowering of Groundwater Levels sustainability indicator. The Report states that there has been no evidence of undesirable results over the “long-term basin management period (1991 to present)” to suggest that extractions are exceeding the Basin’s sustainable yield.<sup>112</sup> The Agency claims that establishing criteria for undesirable results is not necessary.<sup>113</sup> As a result, the Agency did not develop minimum thresholds for groundwater storage and claims that they are not required.

### *c. Seawater Intrusion*

GSP Regulations specify that the minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results.<sup>114</sup>

The Alternative Report states that there is no evidence of significant and unreasonable seawater intrusion because “[t]he Ojai Basin is elevated relative to mean sea level and

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<sup>108</sup> Alternative Report, p. 26

<sup>109</sup> Alternative Elements Guide, see Comments to §§ 354.26 and 354.28 entries.

<sup>110</sup> Alternative Elements Guide, see Comments to § 354.28 entry

<sup>111</sup> 23 CCR § 354.28(c)(2)

<sup>112</sup> Alternative Report, p. 40

<sup>113</sup> Alternative Elements Guide, op. cit.

<sup>114</sup> 23 CCR § 354.28(c)(3)

separated from the ocean by several fault systems and bedrock formations which prevent seawater intrusion to the Basin.”<sup>115</sup> The Agency, in its Alternative Elements Guide, claims that establishing criteria for this sustainability indicator is not necessary. As a result, the Agency did not develop minimum thresholds for seawater intrusion and claims that they are not required.

#### *d. Degraded Water Quality*

GSP Regulations specify that the minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results.<sup>116</sup>

The Alternative Report states that there is no evidence of significant and unreasonable degraded water quality because deep aquifers with the poorest quality water are penetrated by few wells and because that poor-quality water can be blended with water of higher quality to achieve suitable quality for delivery.<sup>117</sup> The Agency claims that establishing criteria for undesirable results is not necessary.<sup>118</sup> As a result, the Agency did not develop minimum thresholds for degraded groundwater quality and claims that they are not required.

#### *e. Land Subsidence*

GSP Regulations specify that the minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results.<sup>119</sup>

The Alternative Report states that there is no evidence of significant and unreasonable land subsidence because there are no significant surface expressions of subsidence (e.g., fissures, elevated well casings, or compressed well casings). The Report states that “subsidence is prevented largely due to the support of the aquifer and basin fill by clast-supported structure...comprising the bulk of the aquifer skeleton.”<sup>120</sup> The Agency claims that establishing criteria for undesirable results is not necessary.<sup>121</sup> As a result, the Agency did not develop minimum thresholds for land subsidence and claims that they are not required. The Alternative Report describes the low storage levels observed in 1951 during a significant drought as a “significant threshold” that would have resulted in

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<sup>115</sup> Alternative Report, p. 39

<sup>116</sup> 23 CCR § 354.28(c)(4)

<sup>117</sup> Alternative Report, pp. 5, 36, 40

<sup>118</sup> Alternative Elements Guide, op. cit.

<sup>119</sup> 23 CCR § 354.28(c)(5)

<sup>120</sup> Alternative Report, p. 39

<sup>121</sup> Alternative Elements Guide, op. cit.

maximum compaction of the aquifer skeleton but has no data to evaluate the extent of land subsidence that might have occurred as a result<sup>122</sup> (see Groundwater Conditions, above).

#### *f. Depletions of Interconnected Surface Water*

GSP Regulations specify that the minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results.<sup>123</sup>

The Alternative Report states that there is no evidence of surface water depletions that have significant and unreasonable adverse impacts on beneficial uses of surface water.<sup>124</sup> The Report states that periods of reduced surface water flows in San Antonio Creek correlate with decreases in precipitation due to drought conditions. The Groundwater Model Report states that during extended droughts, groundwater extraction in the Basin contributes to the dramatic decreases of surface flow in San Antonio Creek.<sup>125</sup> The Report also reiterates that surveys for the presence or absence of fish in San Antonio Creek "...indicated both declines of the metric and rebounds during the period 2006 to 2016" and that the fish have to capacity to "maintain and sustain in keeping with climatic driven historic conditions."<sup>126</sup>

### D. Monitoring Networks

GSP Regulations require that each basin be monitored, and that a monitoring network include monitoring objectives, monitoring protocols, and data reporting requirements be developed that shall promote the collection of data of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions.<sup>127</sup>

The Alternative Report refers to a monitoring program operated in cooperation with the Ventura County Watershed Protection District to understand the hydrology of the Ojai Basin and to carry out the objectives of the Agency.<sup>128</sup> The Report states that the Agency conducts monitoring for surface water entering the Basin, recharge from rainfall, stream flow seepage, evapotranspiration, discharge from the Basin as surface flow and subsurface flow, and groundwater extractions to serve as a basis for modeling, to identify

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<sup>122</sup> Alternative Report, p. 26

<sup>123</sup> 23 CCR § 354.28(c)(6)

<sup>124</sup> Alternative Report, p. 5, 41

<sup>125</sup> Groundwater Model Report, p. 34

<sup>126</sup> Alternative Report, p. 33

<sup>127</sup> 23 CCR § 354.32

<sup>128</sup> Alternative Report, p. 9

changing conditions, and to implement management programs when needed.<sup>129</sup> The Report does not describe the monitoring program components and data or describe how monitoring data is or has been utilized by the Agency to avoid any identified adverse impacts related to the use of groundwater.

The Alternative Report states that the Ojai Basin Groundwater Management Agency, in cooperation with the Ventura County Watershed Protection District, routinely monitors key wells for water levels and water quality.<sup>130</sup> The Alternative Report shows the location of 17 wells monitored quarterly by Ventura County Watershed Protection District in compliance with CASGEM requirements and the location of six automated water level monitoring wells overseen by the Agency.<sup>131</sup> In addition to groundwater levels, the Agency routinely monitors and records annual groundwater extractions, agricultural irrigation demand, and the volume of water imports from Lake Casitas.<sup>132</sup>

The Alternative Report notes public water suppliers are required by the State to sample their wells for various constituents and that data is provided to the State Water Resources Control Board. The Report also notes that Ventura County Watershed Protection District performs annual water quality monitoring at seven to eight wells in the Ojai Basin and that property owners at environmental cleanup sites are required to conduct monitoring in coordination with the Regional Water Quality Control Board or the Ventura County Environmental Health Division; however, specific cleanup sites or contaminants in the Basin are not identified or described.

The Alternative Report states that the Agency monitors the northern and southern extent of surface water flow in the vicinity of Skunk Ranch Road Bridge, where groundwater discharges to San Antonio Creek due to the presence of a fault.<sup>133</sup> The Report states the Agency plans to build a database of the monthly extent of surface water flow in the Creek, but the Report does not specify how long this data has been collected or present results of the data collected to date. The Report states that the data are somewhat sporadic, and a complete dataset was not available during development of the Alternative Report. A diagram of this data, described as “conceptual,” is provided in the Report.<sup>134</sup>

## E. Projects and Management Actions

GSP Regulations require a description of the projects and management actions the submitting agency has determined will achieve the sustainability goal for the basin,

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<sup>129</sup> Alternative Report, p. 9

<sup>130</sup> Alternative Report, p. 9

<sup>131</sup> Alternative Report, Figure 2

<sup>132</sup> Alternative Report, Table 2 and Figure 12

<sup>133</sup> Alternative Report, p. 31

<sup>134</sup> Alternative Report, Figure 13, p. 31

including projects and management actions to respond to changing conditions in the basin.<sup>135</sup>

The Alternative Report notes actions and projects in which the Agency actively participates (e.g., recordation of groundwater extraction and water importation, controlling groundwater exports, watershed management planning) or supports for implementation (e.g., the San Antonio Creek Spreading Grounds Rehabilitation Project) that are consistent with the Agency Act.<sup>136</sup>

## VI. Assessment

The following describes the evaluation and assessment of the Alternative for the Ojai Basin as determined by Department staff. In undertaking this assessment, Department staff did not conduct geologic or engineering studies, although Department staff may have relied on publicly available geologic or engineering or other technical information to verify claims or assumptions presented in the Alternative.<sup>137</sup> As discussed above, Department staff has determined that the Ojai Basin Alternative was submitted within the statutory period, the Basin was found to be in compliance with the reporting requirements of CASGEM, and staff finds the Alternative to be complete.<sup>138</sup> Based on the evaluation and assessment of the Ojai Basin Alternative, Department staff does not believe that the Alternative satisfies the objectives of SGMA and recommends that the Alternative not be approved.<sup>139</sup>

### A. Evaluation of Alternative Contents

The Alternative Report's description of the Agency's responsibilities under its Agency Act were adequate to demonstrate the Agency's authority to submit and implement the Alternative. The administrative information provided was generally sufficient for Department staff to evaluate the Alternative for the purpose of determining whether the Basin has operated within its sustainable yield.

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<sup>135</sup> 23 CCR § 354.44

<sup>136</sup> Alternative Report, p. 3-9

<sup>137</sup> Instances where the Department review relied upon publicly available data that was not part of the Alternative are specifically noted in the assessment.

<sup>138</sup> As noted above (see Basin Coverage), because Department staff has determined that the Alternative does not effectively cover the entire basin, the Alternative cannot be assumed to "effectively" cover the entire basin. An Alternative that does not cover the entire basin cannot be approved, however the recommendation of Department staff does not rely on the lack of coverage, and staff expresses no opinion as to whether the existing coverage would otherwise be sufficient if sustainable management could be demonstrated.

<sup>139</sup> Water Code § 10733.6(a); 23 CCR § 358.4(b)



Based on information presented in the Alternative Report, the Groundwater Model Report, and other complementary documents, Department staff believes that the Agency has a reasonable understanding of the general geology and hydrology of the Basin. However, the Agency's understanding of groundwater conditions appears to be based on relatively sparse data that does not include information pertaining to several of the sustainability indicators. In particular, the Alternative Report and other documents contain little information about interconnected surface water conditions, including depletions of interconnected surface water, and land subsidence.

An alternative based on an analysis of basin conditions requires that the basin has operated within its sustainable yield, which SGMA defines with reference to the absence of undesirable results.<sup>140</sup> The Agency claims that the Basin is being sustainably managed and that undesirable results are not present.<sup>141</sup> By definition, a basin that does not experience undesirable results is sustainably managed.<sup>142</sup> However, an agency must demonstrate the lack of undesirable results, which presupposes the agency has identified conditions that would give rise to undesirable results through monitoring to be able to demonstrate that those conditions have not occurred, that the agency has managed groundwater to avoid conditions occurring throughout the basin that, if significant and unreasonable, would give rise to undesirable results, and implemented plans and management actions to address conditions that could lead to undesirable results. Department staff found no evidence that the Agency has done any of this for the Ojai Basin.

Similarly, although an agency is not required to establish criteria for undesirable results related to sustainability indicators that are not present and are not likely to occur in the basin,<sup>143</sup> the lack of undesirable results cannot be not presumed. With the exception of seawater intrusion, Department staff found no evidence that the Agency demonstrated the lack of undesirable results in the Ojai Basin, or that the Agency provided convincing technical arguments supporting their claim, as discussed below.

In lieu of evidence that the Ojai Basin has operated within its sustainable yield, the Agency emphasizes the apparent stability of groundwater levels and storage. Although this may support a claim that the Basin has operated within its safe yield,<sup>144</sup> it is not sufficient to

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<sup>140</sup> Water Code § 10721(w)

<sup>141</sup> Alternative Report, p. 4-5; Alternative Elements Guide, see Comments to §§ 354.18 (mistakenly referred to as § 354.18 in document), 354.24, 354.26, 354.28, 354.30, entries

<sup>142</sup> Water Code § 10720(v)

<sup>143</sup> 23 CCR § 354.26(d)

<sup>144</sup> Safe yield, although not mentioned in SGMA, is related to, but distinct from sustainable yield. Both legal and technical definitions tend to focus on the amount of water that can be withdrawn from a basin without causing overdraft (*City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 123 Cal. Rptr. 1, 537 P.2d 1250 (1975) (disapproved of by, *City of Barstow v. Mojave Water Agency*, on other grounds 23 Cal. 4th

demonstrate sustainable yield as required by SGMA. In particular, because the quantification of depletions of interconnected surface water due to groundwater use was not discussed in the Alternative, the Agency's claim that no undesirable results of this category occurred cannot be evaluated.

The Alternative Report describes a safe yield for the Basin as based on maintaining groundwater elevations that results from model estimates of median groundwater recharge of 5,026 acre-feet per year.<sup>145</sup> The Groundwater Model Report describes calculation of the safe yield value in greater detail, but reiterates that the average safe yield is based solely on maintaining average groundwater elevations in the Basin, and concedes that "[a] full understanding of annual [Ojai] Basin safe yield should consider the desired minimum groundwater discharge rates to San Antonio Creek, which is beyond the scope of this study."<sup>146</sup> No evidence was provided to indicate that subsequent studies of safe or sustainable yield considered impacts to stream flows, desired or optimal minimum groundwater discharge rates to San Antonio Creek, or any of the other undesirable results listed in SGMA except for those related to groundwater levels and storage. Furthermore, the Alternative did not provide a specific elevation that represented the average groundwater elevation for which the safe yield sought to maintain.

Consistent with the legislative intent of SGMA that groundwater management be undertaken locally to the greatest extent possible,<sup>147</sup> the local agency is responsible for defining what constitutes undesirable results.<sup>148</sup> The responsibility of the Department is to determine whether the assessment of the local agency is reasonable.<sup>149</sup> The Department does not expect local agencies to have anticipated and preemptively defined and identified unique management criteria for each of the undesirable results defined in SGMA. But, at a minimum, the local agency should be able to identify objective standards related to groundwater conditions that are functionally equivalent to one or more of the

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1224, 99 Cal. Rptr. 2d 294, 5 P.3d 853, 31 Env'tl. L. Rep. 20023 (2000)). Technical definitions, likewise, emphasize factors such as the maximum quantity of water that can be supplied from the aquifer during a critical period, the quantity of water that can be pumped regularly and permanently without dangerous depletion of the storage reserve, or the rate at which water can be withdrawn from an aquifer for human use without depleting the supply to the point of economically infeasible. (Alley, W.M., and Leake, S.A., 2004, *The journey from safe yield to sustainability: Ground Water*, v. 42, no. 1, p. 12–16. See also, Reilly, T.E., Dennehy, K.F., Alley, W.M., and Cunningham, W.L., 2008, *Ground-Water Availability in the United States: U.S. Geological Survey Circular 1323*, 70 p.). Whereas safe yield is normally considered from the perspective of groundwater availability, SGMA requires that groundwater management be evaluated from the perspective of its effect on other basin conditions, including the beneficial uses of the surface water.

<sup>145</sup> Groundwater Model Report, p. 22.

<sup>146</sup> Groundwater Model Report, p. 34-36

<sup>147</sup> Water Code § 10720.1

<sup>148</sup> 23 CCR § 354.26

<sup>149</sup> 23 CCR § 355.4

undesirable results, demonstrate they have managed the basin to those standards,<sup>150</sup> and be able to show how those standards can reasonably be extrapolated to factors related to other undesirable results.

Department staff believe that the Agency provided reasonable support for its conclusion that seawater intrusion is not present and not likely to occur, based on the fact that the Basin is over 10 miles inland and more than 700 feet above sea level. However, the Agency's blanket assertion that undesirable results are not present and not likely to occur for the remaining sustainability indicators appears to reflect the Agency's lack of information about those sustainability indicators. SGMA requires that basins be managed to a sustainable yield, which requires the avoidance of undesirable results. The only way to know that undesirable results have been avoided is to know what might cause them to occur in the first place and to define circumstances under which they would occur. Because the Agency has not established such standards, and because SGMA did not establish standard state criteria for undesirable results, the Department cannot conclude that undesirable results have not occurred in the Ojai Basin.

The Alternative Report states that there is no evidence of undesirable results for chronic lowering of groundwater levels or groundwater storage because declines in groundwater levels and storage during drought periods are reversed during wetter periods. Even assuming that groundwater levels and storage recover during wetter periods, as described, that notion is not a substitute for a determination by the Agency to demonstrate that undesirable results have been avoided during times when groundwater levels and the associated groundwater in storage have declined without adequate evidence. Additionally, the hydrograph in the Alternative Report shows groundwater levels declined from approximately 2005, when the Basin storage was near full,<sup>151</sup> through 2016 to near historically low levels.<sup>152</sup> Groundwater in storage similarly declined during the same time period to near historically-low levels in 2016, below the threshold identified in the Annual Report that could trigger other adverse impacts such as land subsidence.<sup>153</sup>

The Alternative Report states that there is no evidence of undesirable results for land subsidence because there are no visible land-surface effects of subsidence (e.g., ground fissures, elevated well casings). The Alternative Report cites a tectonic study indicating

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<sup>150</sup> Management need not involve the implementation of projects and management actions so long as passive management will suffice. But the establishment of quantifiable criteria, and monitoring of conditions to assure that thresholds associated with those criteria are not exceeded, and evidence that those thresholds were not in fact exceeded, would be required.

<sup>151</sup> Alternative Report, p. 24-26

<sup>152</sup> Alternative Report, p. 24, 26

<sup>153</sup> Annual Report, p. 17

subsidence may have occurred in the Basin between 2005 and 2010,<sup>154</sup> a period when groundwater levels were relatively high, according to the hydrograph for the key observation well in the Alternative Report. The Alternative Report concludes that the subsidence in the Ojai Basin was the result of tectonics, although the authors of the tectonic study came to the opposite conclusion, interpreting that subsidence in the Ojai area was due to groundwater pumping (see Groundwater Conditions, above). Despite the 2016 groundwater in storage exceeding a level that the Agency identified could trigger subsidence, the Agency did not provide evidence that any monitoring has been conducted to determine whether subsidence or the effects of subsidence were triggered. The Department does not assume that the subsidence observed in the Ojai Basin was necessarily due to groundwater extractions or that the four millimeters documented in a study of tectonically induced ground deformation amounts to significant and unreasonable land subsidence that substantially interferes with surface land uses. However, in the absence of a determination by the Agency that is supported by adequate data and analysis, it is impossible for the Department to say whether the Basin has or has not experienced undesirable results.

The Alternative Report states that there is no evidence of undesirable results for depletions of interconnected surface water and cites as evidence that the declines in streamflow are correlated with drought events and that surveys for the presence of endangered fish in San Antonio Creek indicate those fish are still present following drought periods. Department staff regard the correlation between streamflow fluctuation as a function of drought and precipitation, but do not regard that to be sufficient evidence to indicate the absence of undesirable results for streamflow depletion due to groundwater use. Similarly, the fact that some fish are present in a stream following periods of drought is not sufficient evidence to indicate that undesirable results are not present and not likely to occur. Although the Alternative Report refers to the fish presence and absence data as a proxy, it does not provide a discussion that is functionally equivalent to the requirement for a GSP to show significant correlation between the proxy metric (in this case fish presence or absence) and the sustainability indicator for which the proxy is to be used (depletion of interconnected surface water). As noted in some public comments, surveys for the mere presence or absence of fish are not, on their own, indicative of the overall health condition of the species in a given area.

The Groundwater Model Report notes that during droughts, groundwater extraction contributes to the dramatic decreases of groundwater discharge to San Antonio Creek,<sup>155</sup>

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<sup>154</sup> Scott T. Marshall, Gareth J. Funning, Susan E. Owen (2013) Fault slip rates and interseismic deformation in the western Transverse Ranges, California, *J. Geophys. Res. Solid Earth*, 118, doi:10.1002/jgrb.50312.

<sup>155</sup> Groundwater Model Development Report, p. 34

which indicates that groundwater is interconnected with surface water and that groundwater extraction has the potential to deplete the interconnected surface water system and adversely impact groundwater dependent ecosystems. Because the San Antonio Creek is tributary to the Ventura River and provides water to downgradient groundwater basins, the groundwater extraction in the Ojai Basin has the potential to adversely affect downgradient basins and their sustainability goals. The Groundwater Model Report states that “[a] full understanding of annual Basin safe yield should consider the desired minimum groundwater discharge rates to San Antonio Creek.”<sup>156</sup> In fact, SGMA requires a demonstration of sustainable yield, not simply safe yield; nevertheless Department staff were not able to find evidence in the Alternative to indicate that the Agency evaluated such factors as the minimum desired discharge rates to the creek and whether the discharge rate was within a desired or optimal minimum amount during the period of analysis. Absent that type of information, it is not possible to determine whether undesirable results related to depletion of interconnected surface water exist.

Although Department staff did not find sufficient justification for the Agency’s claim that the Ojai Basin has operated within its sustainable yield over a period of at least 10 years, even if the Agency had established objective standards of groundwater management and managed the basins to those standards, it is far from certain that the level of information provided would have supported the selection of any quantifiable thresholds. As an initial matter, the Agency claims that an alternative submitted pursuant to Water Code Section 10733.6(b)(3) is not required to demonstrate the existence of a monitoring network or projects and management actions.<sup>157</sup> To the extent an agency is able to demonstrate that it has operated a basin within its sustainable yield over a period of at least 10 years, nothing would require that agency to develop projects and management actions to achieve sustainability. However, the ability to demonstrate that the basin has been operated sustainably requires the establishment of measurable objectives, monitoring to demonstrate that those objectives have been met, and a range of projects and management actions available to the agency to respond to adverse conditions. Furthermore, Department staff notes that an approved alternative will be required to demonstrate in annual reports and five-year updates that the basin is maintaining operation within the sustainable yield and in the absence of undesirable results. To the extent that some data is being collected (e.g., to satisfy CASGEM requirements), the Alternative Report does not provide details regarding what is being monitored, what data are available to the Agency or the public, or how any of the information available to the Agency is being utilized.

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<sup>156</sup> Groundwater Model Development Report, p. 36

<sup>157</sup> Alternative Elements Guide, see Comments to §§ 354.34, 354.36, 354.38, 354.44 entries

For example, the Alternative Report presents groundwater level data and associated Basin storage values from a single well described as the “key observation well” for the Basin<sup>158</sup> (see Groundwater Conditions, above). Five other “key wells” are mentioned, but the Alternative does not provide any information about these wells, and does not provide any basis for using a single well as the proxy to represent the groundwater levels and the groundwater in storage for the entire Basin.<sup>159</sup> The Alternative Report appears to rely on data from a single “key well” to develop estimates of the changes in groundwater in storage through at least 2010, but does not describe how groundwater levels from that well were used to develop the basin-wide storage estimates or how the Agency determined that such extrapolation was reasonable.

Based on the information provided, Department staff have determined that the Agency has not demonstrated that the Ojai Basin has operated within its sustainable yield over a period of at least 10 years. The Department could find no evidence that the Agency defined basin conditions it sought to achieve or maintain, or that the Agency established objective criteria to maintain those conditions, or that it actively managed the Basin to any standards whatsoever. Without evidence that the Basin has been managed to a sustainable yield that is reasonable, Department staff are unable to conclude that the Ojai Basin has been operated within its sustainable yield for at least 10 years. In addition, the apparent lack of management to defined standards over the last 10 years do not support the Agency’s conclusion of sustainable groundwater management. As a result, Department staff are unable to determine if the Ojai Basin meets the objectives of SGMA, and therefore, recommend that the Alternative not be approved.

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<sup>158</sup> Alternative Report p. 22 and Figure 9

<sup>159</sup> 23 CCR § 354.36