

Basin Boundary Regulations Discussion Paper

Department of Water Resources - Sustainable Groundwater Management Program

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1.0 Purpose

The purpose of this paper is to provide information to advance the discussion with stakeholders and the public as the Department of Water Resources (DWR) develops regulations establishing a basin boundary revision process, as required by California Water Code (Water Code) § 10722.2. Specifically, this discussion paper serves to:

- Provide **background** on the [Sustainable Groundwater Management Act](#) of 2014 (SGMA), which establishes a process for local agencies to request that DWR revise the boundaries of a groundwater basin, including the creation of a new subbasin.
- Include a summary of **groundwater basin and subbasin definitions** and show how those definitions have changed through time with each update to Bulletin 118.
- List a **summary of basin boundary issues** collected as part of the SGMA outreach effort that could potentially create difficulties with SGMA implementation.
- Provide **DWR's goal to develop basin boundary regulations** that balance local flexibility to address potential basin boundary issues with DWR's local and state responsibility to comply with the requirements of the SGMA and achieve statewide groundwater sustainability.
- List **proposed basin boundary characteristics** intended to promote discussion on the potential approach to develop basin boundary regulations.

This document presents preliminary draft information to promote discussion and is subject to revision. Furthermore, because this discussion paper addresses a variety of issues raised by individuals and entities outside of DWR, inclusion of the issues in this document does not constitute an endorsement of any particular issue. DWR invites comment and input on the preliminary draft information and questions presented in this document. Comments should be submitted to sgmps@water.ca.gov.

2.0 Background

The SGMA established a process for local agencies to request that DWR revise the boundaries of a groundwater basin, including the creation of a new subbasin. Without a request for revision, or a technical change initiated by DWR, groundwater basin boundaries will remain as identified in DWR's [Bulletin 118 - Update 2003](#) (Bulletin 118-2003) until updated or revised in a subsequent edition of Bulletin 118. DWR plans to complete a process to develop and adopt emergency regulations (regulations) based on stakeholder input, by January 1, 2016, that includes the methodology and criteria to evaluate local agency requests to modify groundwater basin boundaries.

The specific legal requirements from the SGMA related to potential basin boundary revisions are as follows:

Water Code § 10722. Unless other basin boundaries are established pursuant to this chapter, a basin's boundaries shall be as identified in Bulletin 118.

Water Code § 10722.2. (a) A local agency may request that the department revise the boundaries of a basin, including the establishment of new subbasins. A local agency's request shall be supported by the following information:

- (1) Information demonstrating that the proposed adjusted basin can be the subject of sustainable groundwater management.*
- (2) Technical information regarding the boundaries of, and conditions in, the proposed adjusted basin.*
- (3) Information demonstrating that the entity proposing the basin boundary adjustment consulted with interested local agencies and public water systems in the affected basins before filing the proposal with the department.*
- (4) Other information the department deems necessary to justify revision of the basin's boundary.*

(b) By January 1, 2016, the department shall adopt regulations regarding the information required to comply with subdivision (a), including the methodology and criteria to be used to evaluate the proposed revision. The department shall adopt the regulations, including any amendments thereto, authored by this section as emergency regulations in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code). The adoption of these regulations is an emergency and shall be considered by the Office of Administrative Law as necessary for the immediate preservation of the public peace, health and safety, or general welfare. Notwithstanding the Administrative Procedure Act, emergency regulations adopted by the department pursuant to this section shall not be subject to review by the Office of Administrative Law and shall remain in effect until revised by the department.

(c) Methodology and criteria established pursuant to subdivision (b) shall address all of the following:

- (1) How to assess the likelihood that the proposed basin can be sustainably managed.*
- (2) How to assess whether the proposed basin would limit the sustainable management of adjacent basins.*
- (3) How to assess whether there is a history of sustainable management of groundwater levels in the proposed basin.*

(d) Prior to adopting and finalizing the regulations, the department shall conduct three public meetings to consider public comments. The department shall publish the draft regulations on its Internet Web site at least 30 days before the public meetings. One meeting shall be conducted at a location in northern California, one meeting shall be conducted at a location in the central valley of California, and one meeting shall be conducted at a location in southern California.

(e) The department shall provide a copy of its draft revision of a basin's boundaries to the California Water Commission. The California Water Commission shall hear and comment on the draft revision within 60 days after the department provides the draft revision to the commission.

3.0 Groundwater Basin Definitions

The definition of a groundwater basin and subbasin has changed over time with each update to Bulletin 118. In each update, basin boundaries were drawn using the best available information; however, DWR is aware that, in some areas, recent technical information may be available, which could be used to request a boundary revision. The definitions of a groundwater basin and subbasin from Bulletin 118-2003 and the SGMA are as follows.

DWR Bulletin 118-2003

Bulletin 118-2003 defines a **groundwater basin** as an *alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and a definable bottom*. Lateral boundaries are features that significantly impede groundwater flow, such as rock or sediments with very low permeability or a geologic structure such as a fault. Bottom boundaries would include rock or sediments of very low permeability if no aquifers occur below those sediments within the basin. In some cases, such as in the San Joaquin and Sacramento valleys, the base of fresh water is considered the bottom of the groundwater basin.

A **subbasin** is created by dividing a groundwater basin into smaller units using *geologic and hydrologic barriers and/or institutional boundaries*. Subbasins were created in previous versions of Bulletin 118 for the purpose of collecting and analyzing data, managing water resources, and managing adjudicated basins. The designation of a subbasin boundary has been flexible in the past, where the limiting rule was that a subbasin should not cross over a groundwater basin boundary. An example of a hydrologic subbasin boundary would be a river or stream that creates a groundwater divide. While hydrologic boundaries may limit groundwater flow in the shallow subsurface, in some areas data indicates significant groundwater flow may occur across the subbasin boundary at greater depths. In addition, the location of a subbasin boundary that is based upon a groundwater divide may change over time if pumping or recharge patterns change. Institutional subbasin boundaries have been formed based on political boundaries, such as a county line, water agency service area, or a legally-mandated boundary such as a court adjudicated basin boundary.

Sustainable Groundwater Management Act of 2014

A groundwater basin in the SGMA is defined as a groundwater basin or subbasin identified and defined in Bulletin 118-2003 or as modified pursuant to the basin boundary revision regulations (Water Code § 10722). The legislative intent of the SGMA, among other things, is to provide for the sustainable management of groundwater basins in California (see Water Code § 10720.1). The SGMA creates a new standard for groundwater management. Care must be taken to assure that the

modification of basin boundaries, or creation of new subbasins within existing groundwater basins, does not inadvertently undermine the clear expression of legislative intent in the law.

Section 3.0 Comments and Question:

Definition of a Groundwater Basin/Subbasin: The SGMA defines a groundwater basin or subbasin to be those identified and defined in Bulletin 118, or as modified pursuant to Water Code § 10722. DWR will use the Bulletin 118-2003 definitions until future updates to Bulletin 118 occur.

Creation of New Groundwater Basins: Potential revisions of boundaries or creation of new subbasins can only occur within existing Bulletin 118 groundwater basins. The creation of a new groundwater basin that is not adjacent to or part of an existing basin or subbasin will not occur as part of this basin boundary revision process. New basins may be defined in future updates to Bulletin 118.

Question 3-1: Prior to the regulations being finalized, the DWR is considering making a series of cleanup adjustments to exiting basin boundary lines based on updated, higher-resolution geographic information or technical information. Examples of these adjustments include: 1) minor revisions to basin boundary lines to be consistent with the original intent (and Bulletin 118 narrative documentation) of matching county and river boundaries; and 2) minor and major revisions to more closely match the extent of alluvial areas based on higher resolution maps. What are the advantages and disadvantages if DWR makes these cleanup adjustments prior to or after regulations are adopted?

4.0 Summary of Basin Boundary Issues

As part of the SGMA outreach effort, DWR continues to meet with various organizations, agencies, and individual experts to receive input on basin boundary issues that could create potential difficulties with SGMA implementation. DWR has organized and condensed the specific comments received to date into the following summary of statewide basin boundary issue types. DWR will consider these basin boundary issues and future input during the rule-making process.

Governance and Institutional Boundary Issues

- Basin boundaries are not necessarily consistent with various political and management boundaries such as county, city, water agency, and IRWM boundaries, which could require more intensive cooperation.
- It may be more difficult to manage as a coordinated unit in some areas where basins cross multiple political boundary lines (i.e. counties).
- Some adjudication, federal, and tribal boundaries do not match existing basin boundaries, which may require additional coordination by local agencies.
- Bulletin 118-2003 basins do not reflect the new role that land-use planning and water management agencies now have under the SGMA.

- In some basins there are unresolved boundary conflicts among agencies which may be an obstacle for completion of groundwater sustainability plans (GSPs).
- There may be less flexibility and less cooperation in managing groundwater where groundwater sustainability agencies (GSAs) are not able to develop a single GSP for an entire basin.

Hydrogeologic Boundary Issues

- Bulletin 118-2003 basin boundaries may not be based on the most updated technical information.
- Locally-developed subbasin definitions that have been the basis of extensive monitoring, modeling, and management may not be reflected in Bulletin 118-2003.
- Some areas are currently being managed on a watershed basis, but the areas of the watershed adjacent to the alluvial basin are not included in Bulletin 118-2003.
- Substantial groundwater production from underlying or adjacent highly-permeable non-alluvial deposits that are not currently within the defined basin may limit and significantly impact sustainable groundwater management in an existing basin.
- Basin boundaries that coincide with streams may be problematic with regards to allocation of recharge and analysis of potential impacts on connected surface water and associated beneficial uses.
- Basin boundary revisions after GSAs and GSPs are established may be problematic, but also may be needed based on improved understanding of the basin hydrogeology.
- Some basin boundaries are based on groundwater divides, which may vary over time.

SGMA Compliance Issues

- Basins identified as medium or high priority may have distinct areas included that would otherwise be low priority if looked at independently.
- Areas outside Bulletin 118-2003 basins could be included, or very-low and low priority basins could be enlarged, in order to elevate a basin's priority and gain the powers and authority identified in the SGMA.

Existing State Programs and Processes Issues

- Revising basin boundaries may result in CASGEM non-compliance and limit access to State grants.
- Basin boundary revisions may effect State Water Resources Control Board (SWRCB) and Regional Board Basin Plans, permits, and water quality objectives.
- Revising basin boundaries will require DWR to reprioritize groundwater basins.
- Some basin boundaries cross multiple Integrated Regional Water Management (IRWM) and Regional Flood Management Planning (RFMP) regions requiring coordination between future GSAs and multiple IRWM and RFMP groups for regional water management.

Section 4.0 Questions:

Question 4-1: Has DWR accurately summarized and clearly characterized the boundary issue types?

Question 4-2: Are there additional basin boundary issues types that need to be considered?

5.0 Proposed Basin Boundary Regulation Goal and Potential Characteristics

It is the policy of the State that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses. Sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science (Water Code § 113). The SGMA defines sustainable groundwater management as *the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results* (Water Code § 10721(u)). The following is DWR's draft goal and proposed basin boundary characteristics for the development of basin boundary regulations.

Proposed Basin Boundary Regulation Goal

DWR's goal is to develop basin boundary regulations that are designed to balance local flexibility to address potential basin boundary issues with DWR's local and state responsibility to comply with the requirements of the SGMA and achieve statewide groundwater sustainability.

Groundwater resources are sustainably managed within existing groundwater basin boundaries defined by Bulletin 118-2003 unless compelling reasons, which are supported by adequate technical information and broad agreement, are provided for alternative boundaries that increase the likelihood of sustainable management of the proposed and adjacent basins.

Basin Boundary Regulation Characteristics

The following basin boundary characteristics are intended to promote discussion. DWR is seeking input on the potential advantages and disadvantages of basin boundary revisions and how those revisions align with the requirements of the SGMA and the overall goal to achieve groundwater sustainability statewide. There are advantages and disadvantages for each characteristic that must be identified, considered, and then balanced from a statewide perspective. DWR will consider input to these characteristics, which may provide the basis for developing regulation criteria that can be used to evaluate requests for revisions to basin boundaries. These characteristics have been grouped into the following categories:

Size and Hydrogeologic Characteristics

- **Basin adequately sized to maximize water management opportunities** – Would it be advantageous if a groundwater basin is revised to be the largest hydrologic and hydrogeologically-contiguous alluvial area encompassing the service areas of multiple local agencies, and defined to maximize opportunities to sustainably manage groundwater, integrate surface water management activities, and limit undesirable results?
- **Basin properly sized for development and management of basin budgets** – Should an existing groundwater basin be the largest hydrologic and hydrogeologically-defined contiguous area in which local agencies are capable of leveraging resources to characterize and sustainably manage the water budget and sustainable yield over the implementation and planning horizon?
- **Fragmentation of a contiguous groundwater aquifer system** – Should fragmentation of existing groundwater basins in the same geographic area with multiple local agencies managing the same groundwater aquifer system and water budget be considered?

Governance and Jurisdictional Characteristics

- **Solely jurisdictional revisions** – To what extent should a groundwater basin or subbasin that is solely defined by a jurisdictional boundary such as, adjudication, county line, or other geopolitical boundary be considered?
- **Basin properly sized for GSP governance** – Should existing groundwater basin or subbasin boundaries be revised to match the alluvial portion of an entire county, assuming the entire redefined basin or subbasin is completely managed? Would this revision: 1) leverage the existing groundwater authority of counties; 2) maximize the new authorities provide to GSA's through SGMA; and 3) result in sustainable groundwater management in the State?
- **Scientific evidence vs. jurisdictional convenience** – Should scientific evidence be given greater consideration than proposed revisions based on jurisdictional convenience?
- **Basin boundary revision that does not create unmanaged area(s) in original basin** – Should a groundwater basin or subbasin revision only be considered if there is sufficient evidence that the entire basin will be covered by a GSA(s) and will not result in unmanaged areas?
- **Fragmentation to exclude areas experiencing undesirable results** – Should a groundwater basin be revised for the purpose of excluding areas experiencing undesirable results rather than including other regional entities to sustain a long-term regional groundwater planning effort to ensure water supply reliability, water quality, and environmental stewardship be considered?

Coordination Characteristics

- **Boundary revisions developed through multi-stakeholder process** – Should a groundwater basin be large enough to support the formation of functional GSA(s) that are

inclusive and utilize a collaborative, multi-stakeholder process to: 1) achieve broad local agreement; 2) assist disadvantaged communities; 3) monitor the basin and mitigate undesirable results; 4) address groundwater management issues; and 5) develop integrated, multi-benefit, regional solutions that result in a compliant GSP(s)?

- **Coordination agreements (Inter-basin)** – If an existing basin or subbasin is split, what requirements and content should be included in an inter-basin coordination agreement?
- **Coordination agreements as an alternative to boundary revisions (Intra-basin)** – Should local agencies be encouraged to expand existing groundwater management coordination and governance structures, through an intra-basin agreement, within existing basins to include stakeholders that manage, direct, or are involved in processes that influence regional water management rather than revising existing boundaries?

Section 5.0 Questions:

Question 5-1: Does the proposed goal 1) meet the intent of the SGMA and 2) allow for the development of methodology and criteria for fair evaluation of proposed basin boundary revisions?

Question 5-2: What are the advantages and disadvantages of the characteristics?

Question 5-3: Are there additional characteristics that need to be considered?