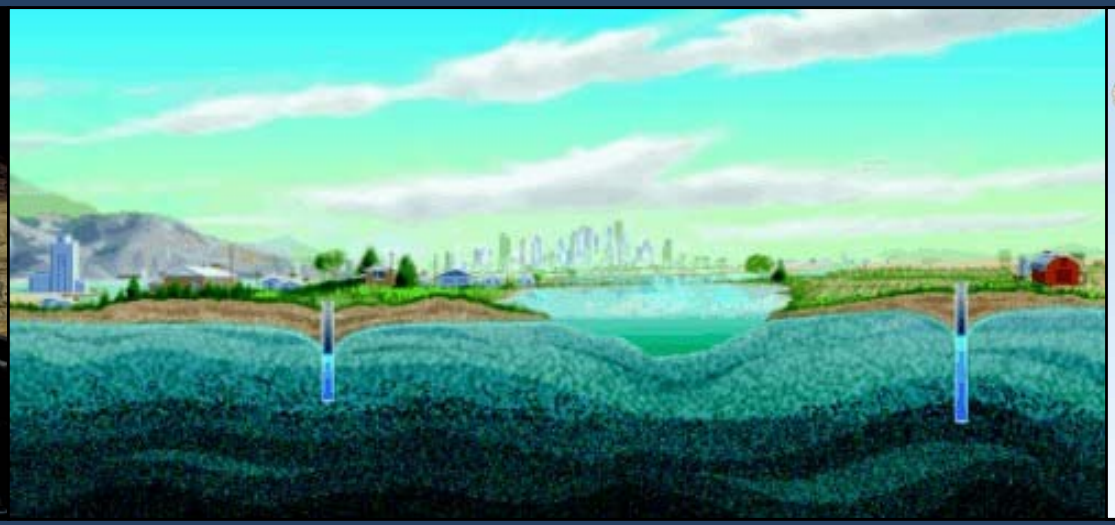
Sustainable Groundwater Management Program

Draft Groundwater Sustainability Plan

(GSP) Emergency Regulations

September 21, 2015



Information Meeting and Webcast

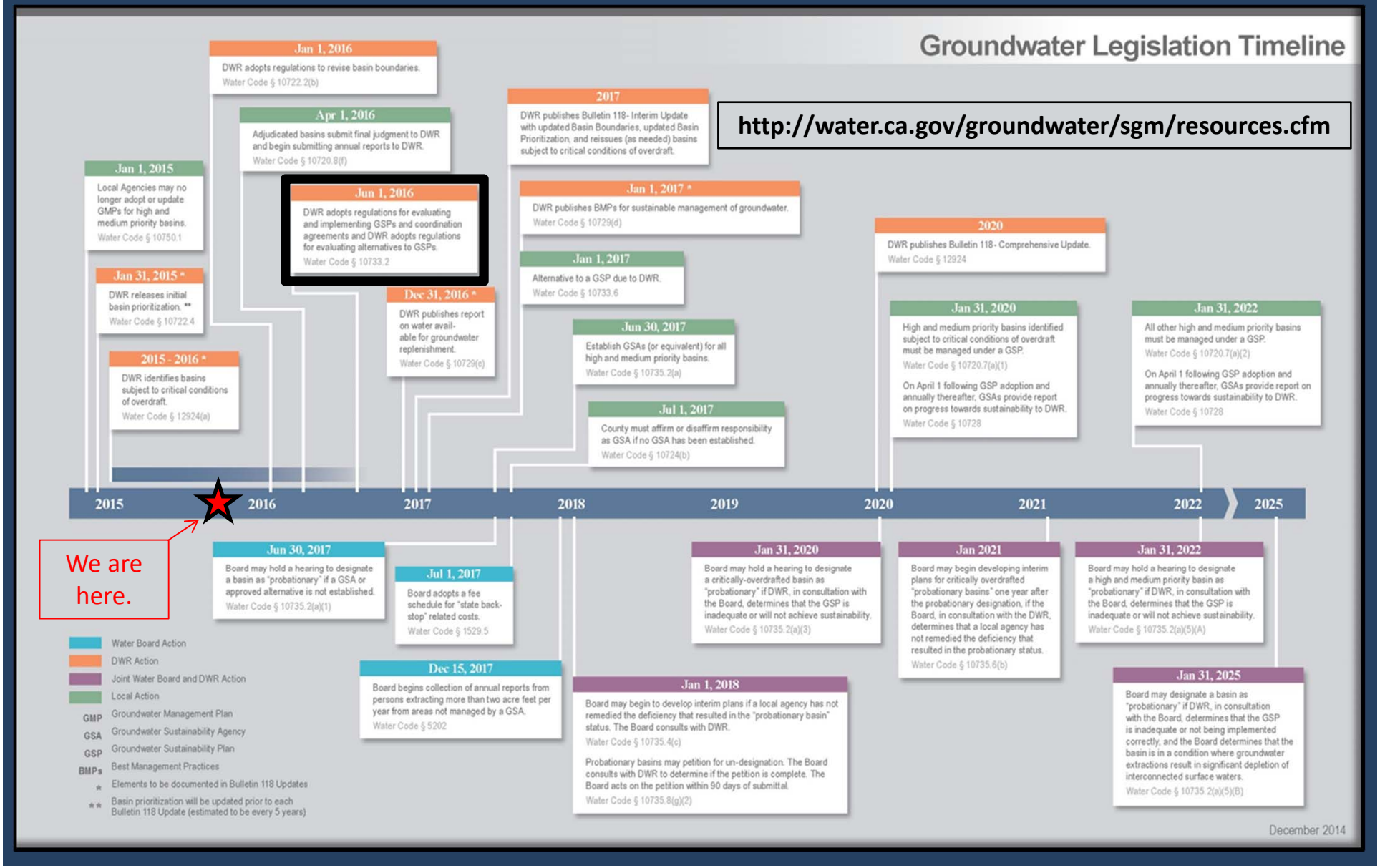
Batch 3 Issue Topics

Presentation Outline

- Meeting Purpose and Timeline
- Sustainable Groundwater Management (SGM) Act
- California's Groundwater
- DWR's SGM Program Implementation
- Outreach Approach – GSP & Alternative GSP Emergency Regulations
- Regulations – Topic Discussions
  - Topic 4: Alternative GSP Submittals (Revision)
  - Topic 7: Water Budgets and Coordination
  - Topic 8: State Agency Coordination
  - Topic 9: Data Collection, Management, and Reporting
  - Topic 10: Adaptive Management and Focus Areas

Meeting Purpose and Timeline

SGMA Timeline (2015-2025)



Sustainable Groundwater Management Act

California's Sustainable Groundwater Management Act (SGMA)

"A central feature of these bills is the recognition that groundwater management in California is best accomplished locally."

Governor Jerry Brown, September 2014

Legislative Intent of SGMA

Water Code Section 10720.1

- To provide for the sustainable management of groundwater basins
- To enhance local management
- To establish minimum management standards
- To provide local groundwater agencies with authority and the necessary technical and financial assistance
- To avoid or minimize subsidence
- To improve data collection
- To increase groundwater storage
- To manage groundwater basins through the actions of local governmental agencies while minimizing state intervention

SGMA Milestones for Success

Groundwater Sustainability Agencies

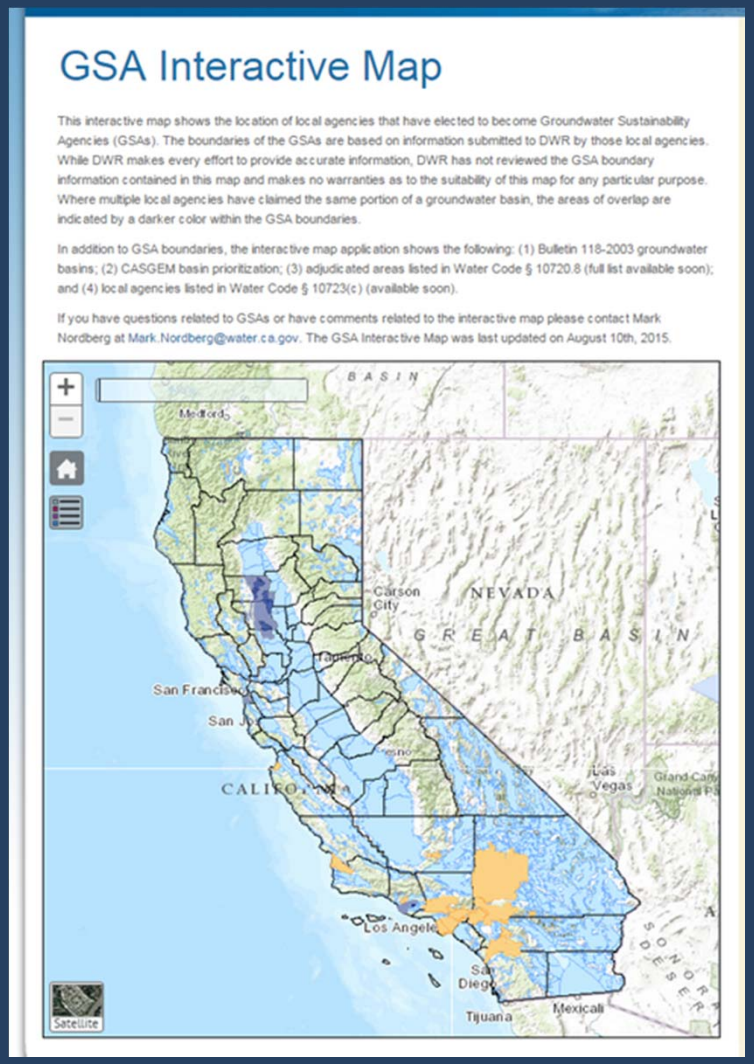
- Formation by June 30, 2017
- 20+ GSAs as of September 2015

Groundwater Sustainability Plans

- January 31, 2020 for critically overdrafted basins
- January 31, 2022 for all other high and medium priority basins

Groundwater Sustainability

- 20-year implementation period
- 50-year planning horizon



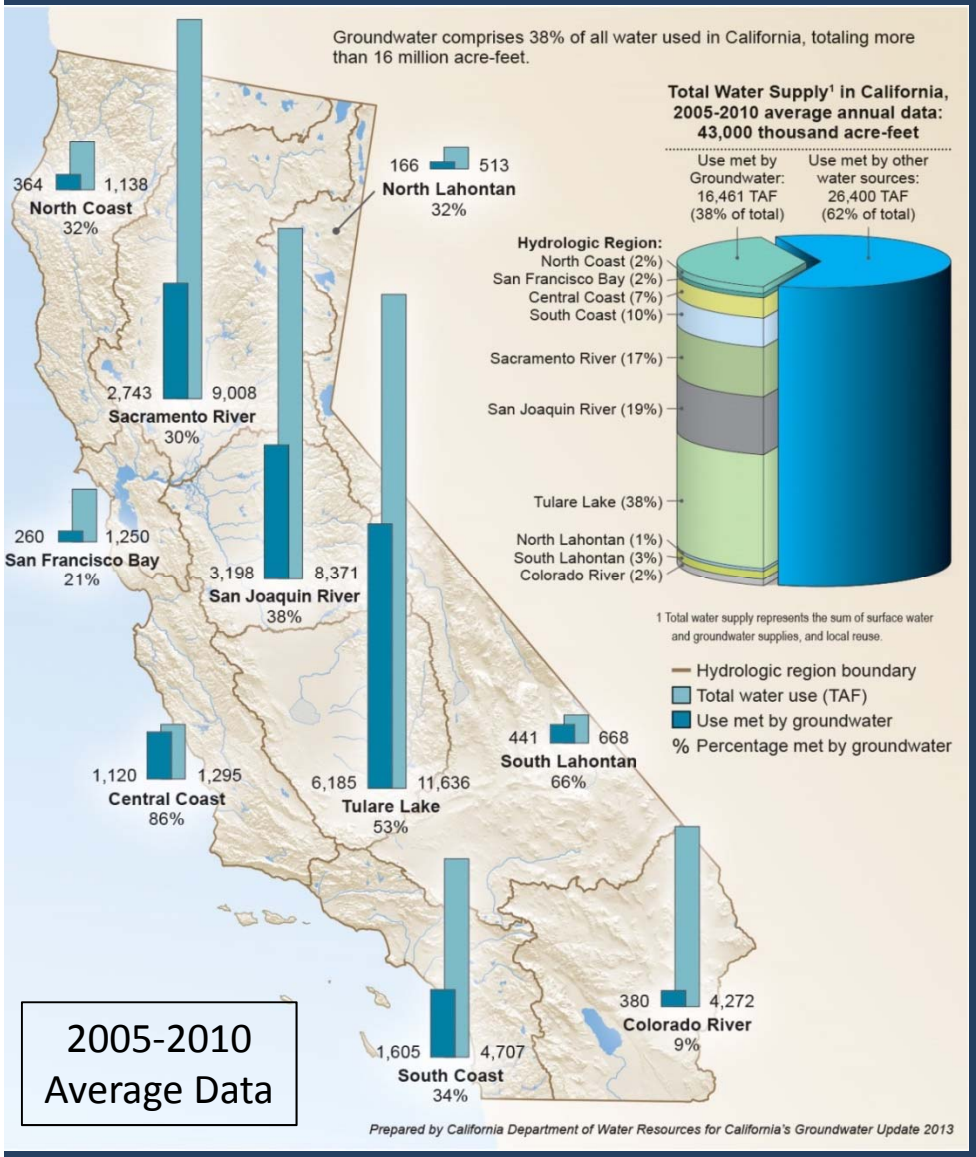
Groundwater Sustainability

Undesirable Results:
Significant and unreasonable…

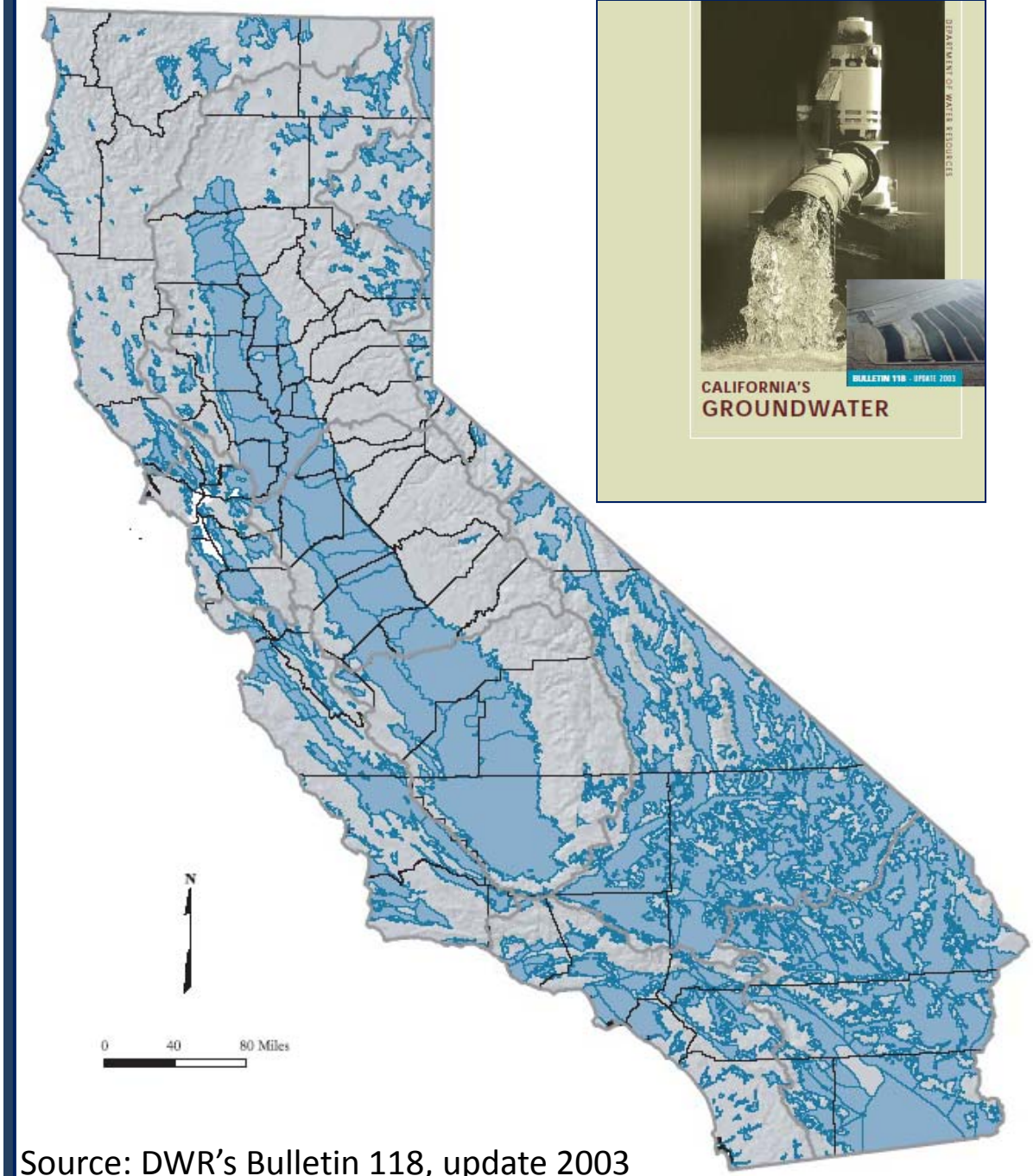
Lowering of Groundwater Levels	Reduction of Groundwater Storage	Seawater Intrusion
Water Quality Degradation	Land Subsidence	Depletions of Surface Water

California's Groundwater

Why is Groundwater Important?



- 38% of total water supply comes from GW (statewide average)
- Estimated 60% of total supply comes from GW during drought years
- Central Coast is most GW dependent
- Tulare Lake uses the most GW
- Many communities are 100% reliant upon GW



Source: DWR's Bulletin 118, update 2003

California's Groundwater Basins

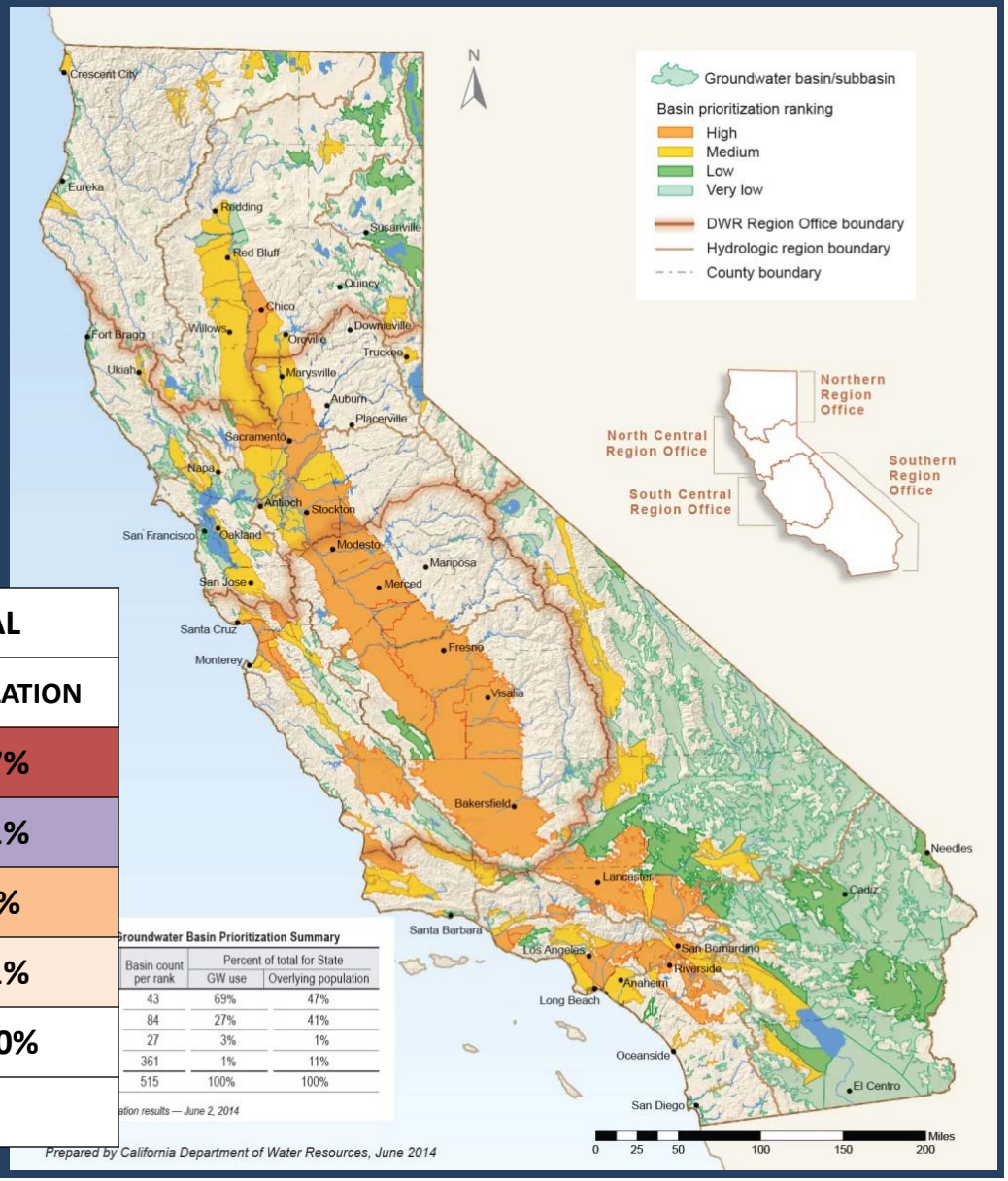
- 515 alluvial basins/subbasins

SGMA Basin Prioritization

- 127 high & medium priority basins account for:
  - 96% of average annual GW supply
  - 88% of 2010 population overlying GW basin area
  - Required to prepare GSPs

BASIN RANKING	BASIN COUNT	PERCENT OF TOTAL	
		GW USE	POPULATION
High	43	69%	47%
Medium	84	27%	41%
Low	27	3%	1%
Very Low	361	1%	11%
Totals	515	100%	100%

Basin Prioritization Results – June 2, 2014



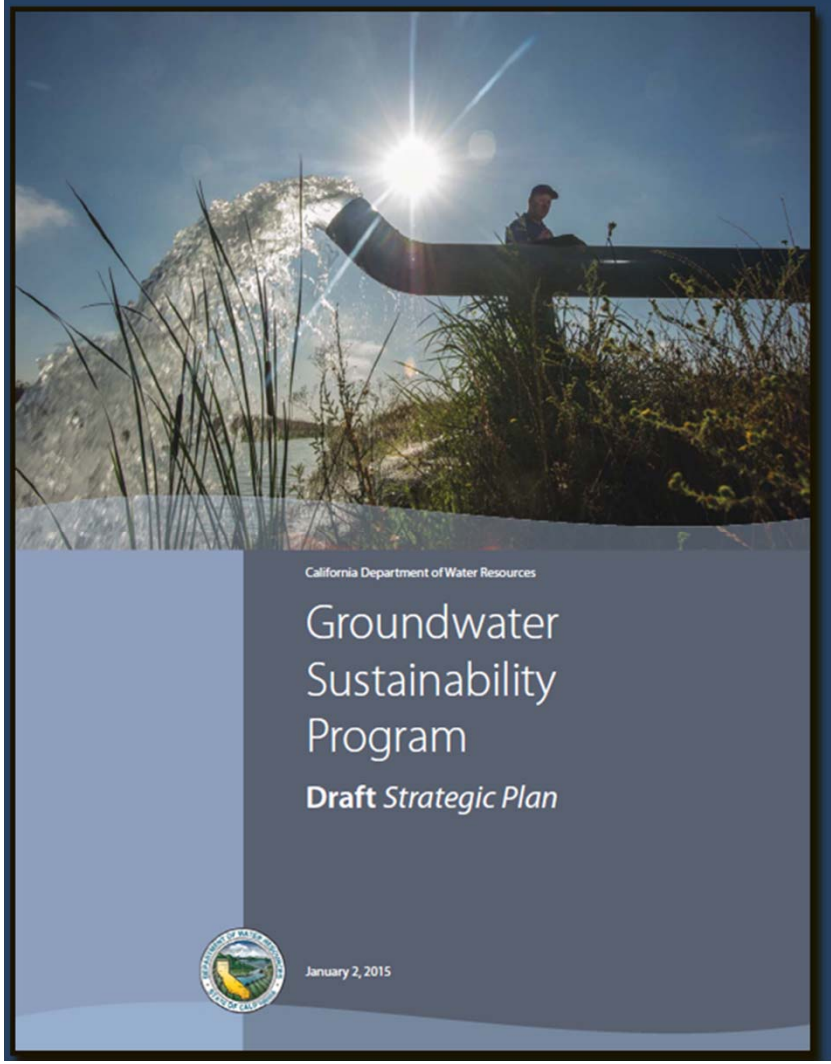
Groundwater Basin Prioritization Summary

Basin count per rank	Percent of total for State	
	GW use	Overlying population
43	69%	47%
84	27%	41%
27	3%	1%
361	1%	11%
515	100%	100%

ation results — June 2, 2014

DWR’s SGM Program Implementation

DWR's Implementation of SGMA



SUSTAINABLE GROUNDWATER MANAGEMENT (SGM) PROGRAM

- Describes DWR's roles and responsibilities
- Outlines actions from the California Water Action Plan
- Presents DWR's groundwater sustainability goals, objectives, and actions

http://water.ca.gov/groundwater/sgm/index.cfm

SGM Immediate Actions

Develop Regulations - Basin Boundary Revisions

Draft Regulations posted (July 17, 2015)

Public Comments Closes (Sept 4, 2015)

Final Regulations Due January 2016

Update Basin Prioritization

Completed January 2015

Re-prioritization following basin boundary revisions in 2017

Identify Basins Subject to Critical Conditions of Overdraft

Draft list posted (Aug 19, 2015)

Public Comments Closes (Sept 25, 2015)

Develop Regulations - Groundwater Sustainability Plans (GSPs)

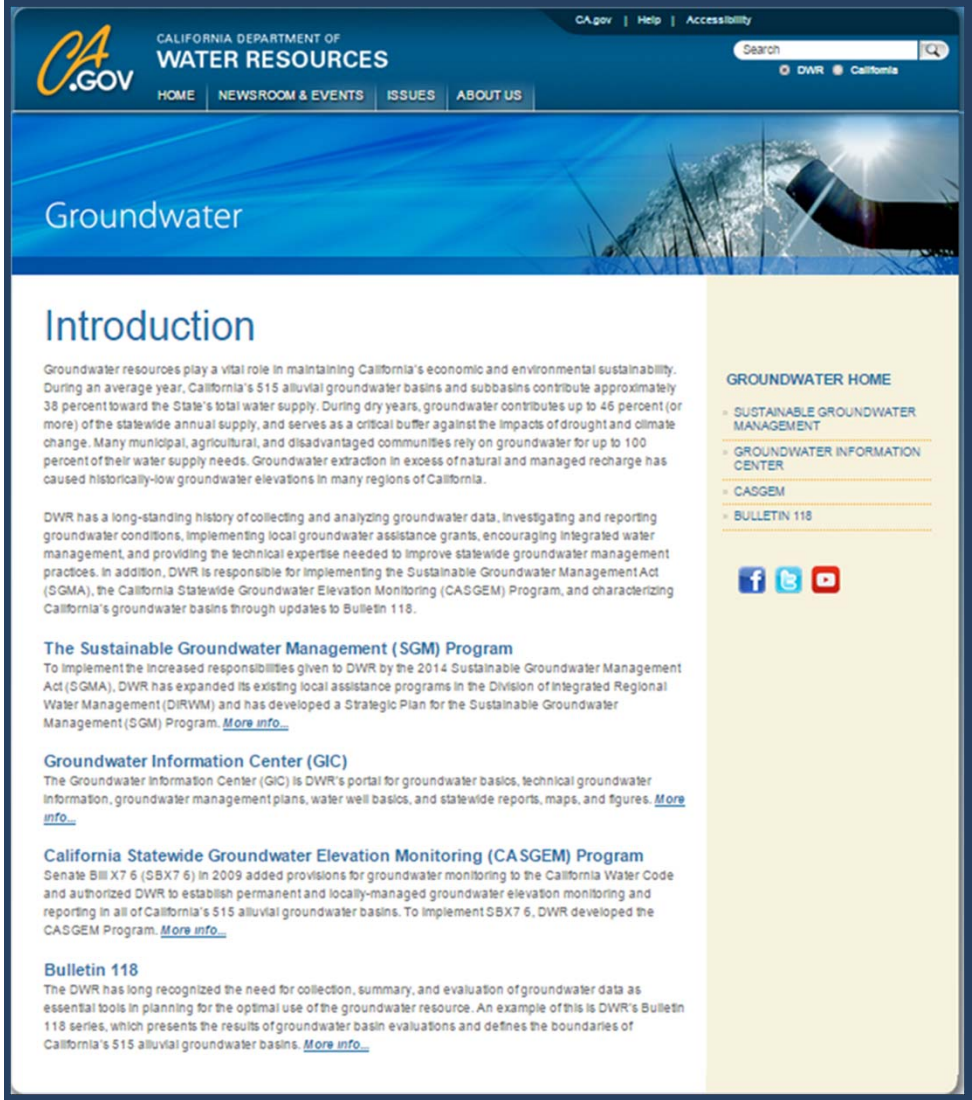
Currently working with advisory groups /public meetings

Draft Regulations Tentatively (Dec '15/Jan '16)

Final Regulations Due June 2016

DWR's Groundwater Information

http://water.ca.gov/groundwater/



DWR's GROUNDWATER WEBSITE

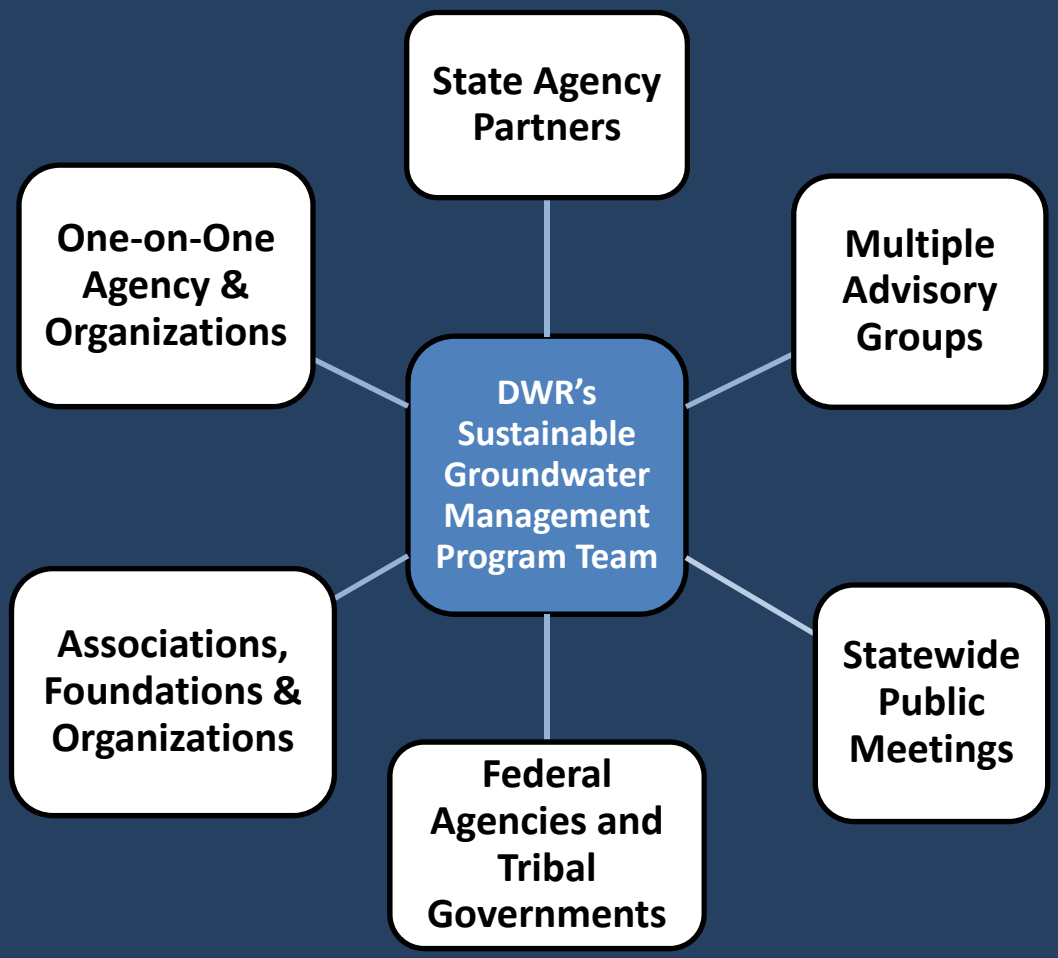
- Sustainable Groundwater Management (SGM) Program
- Groundwater Information Center
- CASGEM Program
- Bulletin 118

Sustainable Groundwater Management Act (SGMA)

- http://www.groundwater.ca.gov/

Outreach Approach – GSP & Alternative GSP Emergency Regulations

SGM Communication and Outreach



ADVISORY GROUPS

- Practitioners Advisory Panel
- Tribal Advisory Group
- Non-Governmental Organizations
- Association of California Water Agencies
- Northern California Water Association
- San Joaquin Tributaries Authority
- San Luis & Delta Mendota Water Authority
- Central Coast Area
- RCRC & CSAC
- Agricultural Community
- Tulare Lake Hydrologic Group

GSP/ALT Regulations Process

- **Phases of Implementation**

Apr – Jun 2015

Scoping

- **Notify OAL**
- **Collect Issues from Stakeholders**
- **Coordinate with SWRCB & CWC**

Jul – Sept 2015

Draft Framework (Topic Based)

- Public Listening Sessions
- Present and Receive Input from Advisory Groups and Public

Fall/Winter 2015

Draft Emergency Regulations

- **Required Public Meetings**
- **Present and Receive Input from Advisory Groups and Public**

Early/Mid 2016

Adopt Emergency Regulations

- **CWC Approval**
- **Noticing and Submittal to OAL**

Input and Feedback from the CWC and SWRCB

CWC – California Water Commission
SWRCB – State Water Resources Control Board
OAL – Office of Administrative Law

GSP Issue Topics for Regulation Development

Phase 1 – Scoping (Collection of Issues)

- All 10 Topics (May-Jun)

Phase 2 – Draft Framework (Present and Receive Input from Advisory Groups and Public)

- 1st Batch (Jun-Jul)
- 2nd Batch (Jul–Aug)
- 3rd Batch (Aug-Sep)

Comments and Questions

Email us at

sgmps@water.ca.gov

Topic 4: Alternative GSPs Discussion Paper Revisions

Topic 4: Alternative GSPs

California Water Code §10733.6

(a) If a local agency believes that an alternative described in subdivision (b) satisfies the objectives of this part, the local agency may submit the alternative to the department for evaluation and assessment of whether the alternative satisfies the objectives of this part for the basin.

(b) An alternative is any of the following:

(1) A plan developed pursuant to Part 2.75 (commencing with Section 10750) or other law authorizing groundwater management.

(2) Management pursuant to an adjudication action.

(3) An analysis of basin conditions that demonstrates that the basin has operated within its sustainable yield over a period of at least 10 years. The submission of an alternative described by this paragraph shall include a report prepared by a registered professional engineer or geologist who is licensed by the state and submitted under that engineer's or geologist's seal.

Topic 4: Alternative GSPs

Phase 1 – Scoping (Collection of Issues)

There are many complex issues associated with the development and implementation of GSPs. The topics require meaningful and focused discussions with advisory groups, stakeholders, partners, and the public. DWR has divided the issues into ten separate, though related, topics:

- Topic 1 - Pre-SGMA Conditions and Undesirable Results
- Topic 2 - Measureable Objectives and Interim Milestones
- Topic 3 - Land Use and County Involvement
- Topic 4 - Alternative GSP Submittals
- Topic 5 - Boundaries – Overlapping and Unmonitored Areas
- Topic 6 - Intra-Basin Coordination Agreements
- Topic 7 - Water Budgets and Coordination
- Topic 8 - State Agency Coordination
- Topic 9 - Data Collection, Management, and Reporting
- Topic 10 - Adaptive Management and Focus Areas

http://www.water.ca.gov/groundwater/sgm/gsp.cfm

Topic 7: Water Budgets and Coordination

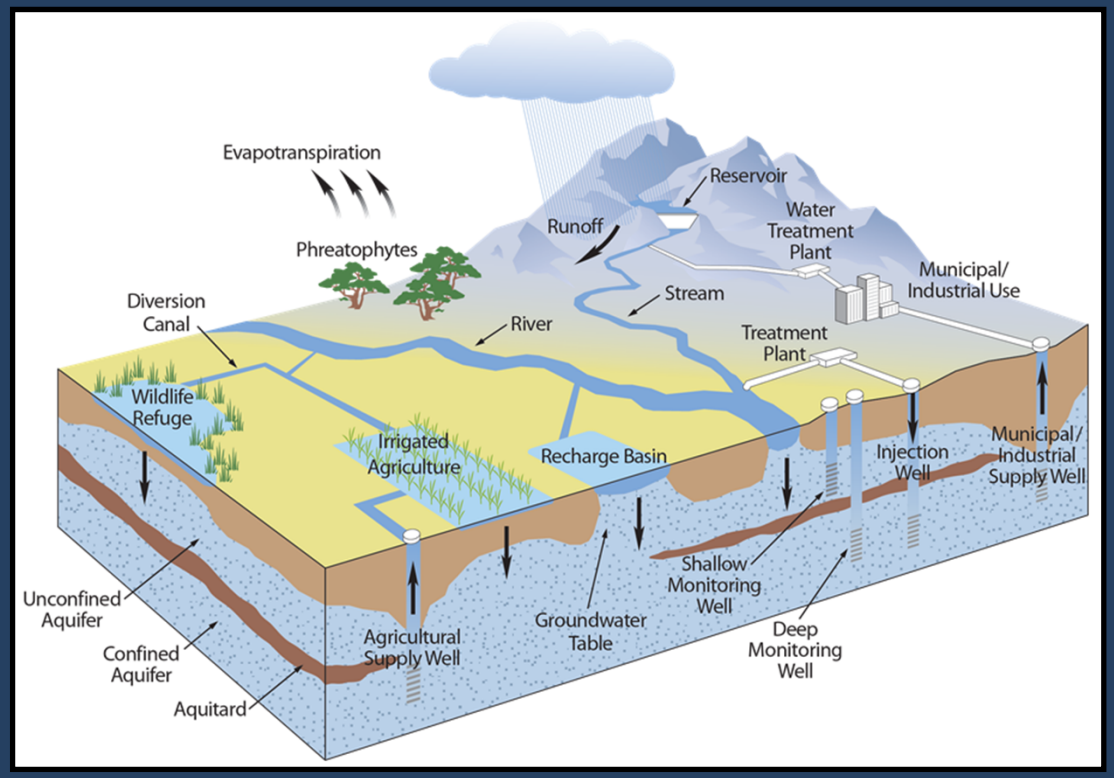
Topic Paper 7: Water Budgets and Coordination

Potential Issues and Challenges

- *Gap between SGMA requirements for GSA data collection and reporting (water budgets) and DWR requirements to evaluate if GSAs…*
  - *will achieve the sustainability goal based on GSP implementation;*
  - *will sufficiently coordinate sharing of data and methods; and*
  - *will not adversely affect the sustainability goal of an adjacent GSPs.*

- *Identifying the appropriate methods and minimum standards for water budget data collection, management, and reporting, while accounting for the variably in available data, existing aquifer conditions, water reliability, and sustainable management goals.*

Topic Paper 7: Water Budgets and Coordination



§ 10721. Definitions.

*(x) "**Water Budget**" means an accounting of the total groundwater and surface water entering and leaving a basin including the changes in the amount of water stored.*

Topic Paper 7: Water Budgets and Coordination

SGMA Uncodified Findings

(a) The Legislature finds and declares as follows:

10) *Information on the amount of groundwater extraction, natural and artificial recharge, and groundwater evaluations are critical for effective management of groundwater.*

(b) It is, therefore, the intent of the Legislature to do all the following:

3) *To require the development and reporting of those data necessary to support sustainable groundwater management, including those data that help describe the basin's geology, the short- and long-term trends of the basin's water balance, and other measures of sustainability, and those data necessary to resolve disputes regarding sustainable yield, beneficial uses, and water rights.*

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10720.1 Legislative Intent.

a) To provide for the sustainable management of groundwater basins.

c) To establish minimum standards for sustainable groundwater management.

f) To improve data collection and understanding about groundwater.

§ 10721. Definitions.

t) "Sustainability goal" means the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management

t) "Sustainable groundwater management" means the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon <u>without causing undesirable results</u>.

Groundwater Sustainability

Undesirable Results:
Significant and unreasonable…

Lowering of Groundwater Levels	Reduction of Groundwater Storage	Seawater Intrusion
Water Quality Degradation	Land Subsidence	Depletions of Surface Water

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10733.2 (a) Department to Adopt Regulations for Evaluating GSPs

(a) (2) The regulations shall identify the necessary plan components specified in Sections 10727.2, 10727.4, and 10727.6 and other information that will assist local agencies in developing and implementing groundwater sustainability plans and coordination agreements.

(b) (2) The regulations adopted pursuant to paragraph (1) of subdivision (a) shall identify appropriate methodologies and assumptions for baseline conditions concerning hydrology, water demand, regulatory restrictions that affect the availability of surface water, and unreliability of, or reductions in, surface water deliveries to the agency or water users in the basin, and the impact of those conditions on achieving sustainability. The baseline for measuring unreliability and reductions shall include the historic average reliability and deliveries of surface water to the agency or water users in the basin.

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10733. Department Review of GSPs

a) *The department shall periodically review the groundwater sustainability plans developed by groundwater sustainability agencies pursuant to this part to evaluate whether a plan conforms with Sections 10727.2 and 10727.4 and is likely to achieve the sustainability goal for the basin covered by the groundwater sustainability plan.*

b) *If a groundwater sustainability agency develops multiple groundwater sustainability plans for a basin, the department shall evaluate whether the plans conform with Sections 10727.2, 10727.4, and 10727.6 and are together likely to achieve the sustainability goal for the basin covered by the groundwater sustainability plans.*

c) *The department shall evaluate whether a groundwater sustainability plan adversely affects the ability of an adjacent basin to implement their groundwater sustainability plan or impedes achievement of sustainability goals in an adjacent basin.*

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10728 Annual Reporting Requirements:

GSA Reporting to DWR

On the April 1 following the adoption of a groundwater sustainability plan and annually thereafter, a groundwater sustainability agency shall submit a report to the department containing the following information about the basin managed in the groundwater sustainability plan:

a) Groundwater elevation data.

b) Annual aggregated data identifying groundwater extraction for the preceding water year.

c) Surface water supply used for or available for use for groundwater recharge or in-lieu use.

d) Total water use.

e) Change in groundwater storage.

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10720.6 Annual Reporting Requirements:

Adjudicated Basins Reporting to DWR

(3) By April 1, 2016, and annually thereafter, submit to the department a report containing the following information to the extent available for the portion of the basin subject to the adjudication:

- *a) Groundwater elevation data unless otherwise submitted pursuant to Section 10932.*
- *b) Annual aggregated data identifying groundwater extraction for the preceding water year.*
- *c) Surface water supply used for or available for use for groundwater recharge or in-lieu use.*
- *d) Total water use.*
- *e) Change in groundwater storage.*
- *f) The annual report submitted to the court.*

Topic Paper 7: Water Budgets and Coordination

Water Code Sections Related to Water Budgets and Coordination

§10727.6 Water Budget Coordination Requirements

Groundwater sustainability agencies intending to develop and implement multiple groundwater sustainability plans pursuant to paragraph (3) of subdivision (b) of Section 10727 shall coordinate with other agencies preparing a groundwater sustainability plan within the basin to ensure that the plans utilize the same data and methodologies for the following assumptions in developing the plan:

(a) Groundwater elevation data.

(b) Groundwater extraction data.

(c) Surface water supply.

(d) Total water use.

(e) Change in groundwater storage.

(f) Water budget.

(g) Sustainable yield.

Topic Paper 7: Water Budgets and Coordination

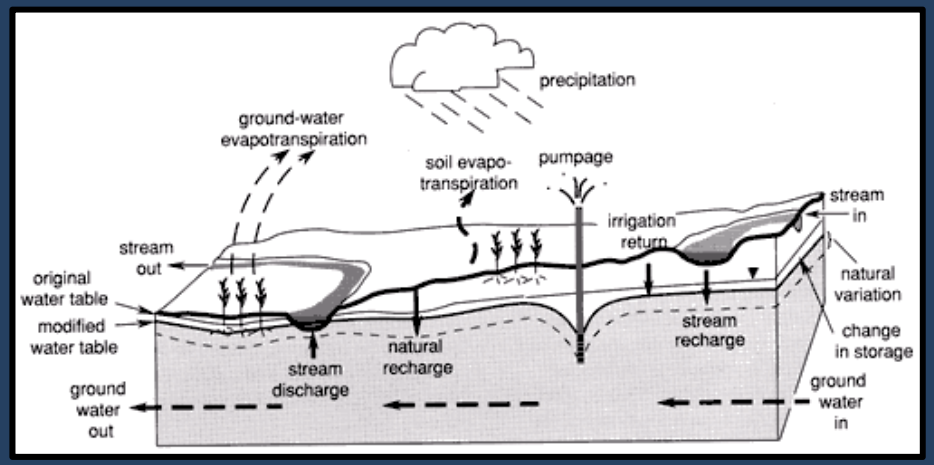
Water Budget Requirements: Basic Approach?

Inflow - **Outflow**

- Precipitation (+)
- Infiltration AW (+)
- Infiltration SW Sources (+)
- Infiltration Managed Recharge(+)
- Subsurface Inflow (+)

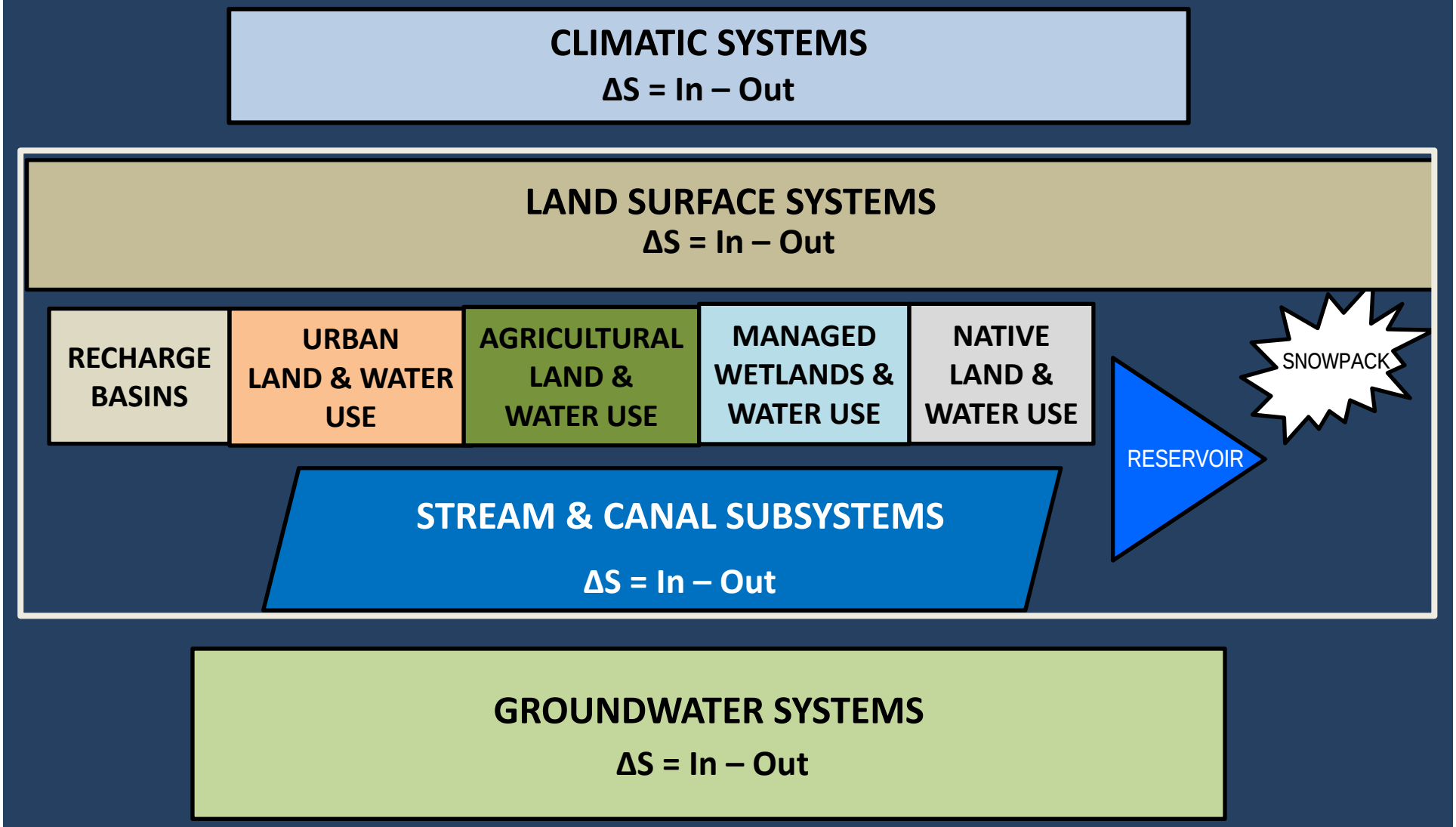
- GW Extraction (-)
- ET (-)
- Discharge to SW Sources (-)
- Subsurface Outflow (-)

= Change in Storage



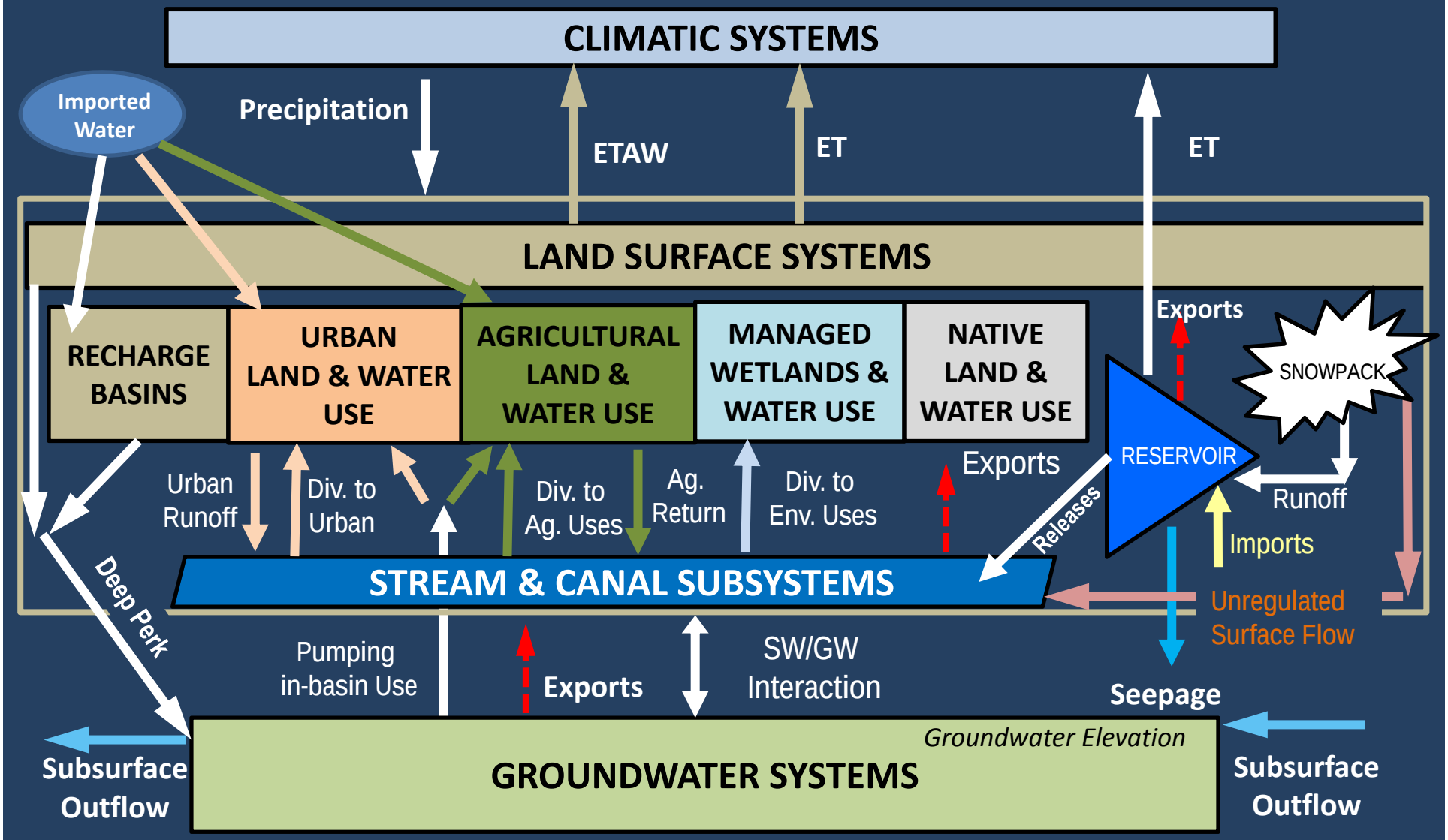
Topic Paper 7: Water Budgets and Coordination

Water Budget Requirements: A More Comprehensive Analysis



Topic Paper 7: Water Budgets and Coordination

Water Budget Requirements: A More Comprehensive Analysis



Topic 9: Data Collection, Management and Reporting

Topic Paper 9:
Data Collection Management and Reporting

Similar Water Code requirements as Water Budgets and Coordination

- *Fulfillment of Legislative Intent…sustainable management, minimum standards, improve groundwater data collection, etc…§113, §10720.1*
- *Establishing Sustainability Goals…§10721 (t)*
- *Avoiding Undesirable Results…§10721 (w)*
- *Need for Annual Reporting…§10720.6, §10728, §5203*
- *Need to Coordinate Data and Methods…§10727.6*
- *DWR Requirement to Develop Baseline Assumptions and Methods… §10733.2 (b)(2)*
- *DWR Requirement to Evaluate Implementation and Achievement of GSP Sustainability Goal and Potential for Goal to Impact sustainability of adjacent GSPs…§10733 (a)(c)*

Topic Paper 9:
Data Collection Management and Reporting

Similar Issues and Challenges as Water Budgets and Coordination

- *Gap between SGMA requirements for GSA data collection and reporting (water budgets) and the requirement for DWR to evaluate if GSAs…*
  - *will achieve the sustainability goal based on GSP implementation;*
  - *will sufficiently coordinate sharing of data and methods; and*
  - *will not adversely affect the sustainability goal of an adjacent GSPs.*

- *Identifying the appropriate methods and minimum standards for data collection, management, reporting, and exchange, while accounting for the variably in available data, existing aquifer conditions, water reliability, and sustainable management goals.*

Topic Paper 7 & 9 Questions

1. GSA Data Collection :

- What types of water budget information will GSA's need to collect?

Population
Land Use
Irrigation Methods
Applied Water Source
Precipitation
Infiltration from SW
Infiltration from Applied Water
Subsurface Inflow
Well Locations
Well Construction
Groundwater Extraction
Surface Water Diversion
Evapotranspiration
Groundwater Levels
Streamflow

Topic Paper 7 & 9 Questions

2. Data Collection:

- What is the appropriate spatial and temporal resolution of monitoring?

Feedback

- ❑ DWR should allow different resolutions depending on basin needs and challenges.
- ❑ Do not require monthly time resolution just because SWRCB will require data on a monthly basis from probationary basins (e.g., do not concede failure up front).
- ❑ Generally, monthly resolution rather than annual is very important; this may require data loggers on instruments (e.g., on well flow meters).

Topic Paper 7 & 9 Questions

3. GSA data collection, reporting, and sharing:

- What challenges will GSAs face in collecting, managing, reporting, and sharing water budget data?

Feedback:

- ❑ Standardized approaches are needed but shouldn't overwhelm or be too prescriptive. Standard units and meta-data should be strong requirements.
- ❑ Transparency of data submitted and/or collected is essential, but will take education and outreach.
- ❑ Growers will be okay with reporting extraction data if it is aggregated, but request for higher transparency at state level is likely to result in less cooperation.

Topic Paper 7 & 9 Questions

4. Water budget and data collection based on basin conditions:

- Should the requirements for water budget accounting and reporting include a tiered level of data collection and reporting, based on the occurrence and level of undesirable results within the basin or a subarea within the basin?

Feedback:

- ❑ Need to first identify significant and unreasonable, before determining the sufficient level of water budget complexity.
- ❑ Tiered water budget data reporting should consider whether the undesirable results stems from inadequate understanding of a basin, versus inadequate or ineffective management of the basin.
- ❑ A tiered approach may not be needed. Need examples of what a tiered approach may look like.

Topic Paper 7 & 9 Questions

5. Groundwater model requirement:

- Should groundwater models be required for water budget analysis and forecasting?

Feedback:

- Models would be useful for informing complex basin operations, particularly with consideration of varying climatic conditions.
- Models can take many forms. Some types of spreadsheet analysis can be considered models.
- Not all high and medium priority basins currently have models and developing effective groundwater models will take time.
- Major modeling efforts may not be the best approach in evaluating local water availability.

Topic Paper 7 & 9 Questions

6. Statewide Technical Assistance:

- What data sets should the State provide that could be used by all GSAs to supporting development of groundwater sustainability plans?

Feedback:

- ❑ Land use data
- ❑ Subsidence data
- ❑ Stream monitoring data
- ❑ Climate change futures
- ❑ Climate measurements; more expensive CIMIS
- ❑ Water levels
- ❑ ET

Topic Paper 7 & 9 Questions

7. Water budget and data collection based on basin conditions:

- Would it be helpful for GSAs to categorize and report water budget data by basin subareas relating to water demand, supply reliability, or land use?

Feedback:

- ❑ The level of detail in problematic parts of a basin can be vastly different from other areas in the same basin.
- ❑ Need to consider if reporting by smaller water use areas allow for improved understanding.

Topic 8: State Agency Coordination

DWR & SWRCB Consultation and Communication

- There are numerous references in SGMA to interagency consultation between DWR and SWRCB. In addition to the consultations specifically defined by SGMA, both agencies will need to share data and communicate effectively to ensure a consistent approach to implementation

Purpose – Highlight areas of needed State agency coordination

- DWR Review of Sustainability Plan and Implementation
  - §10733.4. Submittal of Plans to Department for Evaluation
  - §10733.6. Alternative Submittals
  - §10733.8. Department Review of Plans at Least Every Five Years
- Consultation Prior to Probationary Designation
  - §10735.2. Designation of Probationary Basins by the State Water Board

Purpose (Continued) – Highlight areas of needed State agency coordination

- Local Opportunities to Remedy Deficiencies
  - §10735.4. Opportunity For Remedy of Absence of Local Governance Before State Water Board Prepares an Interim Plan
  - §10735.6. Opportunity For Remedy of Plan Inadequacy or Lack of Plan Implementation Before State Water Board Prepares Interim Plan
  - §10735.8. Interim Plans

Questions - DWR / SWRCB Consultation and Communication

- Both DWR and SWRCB have related but different roles for evaluating and addressing GSP issues
  - What concerns might GSAs or the public have about the consultation process?

Questions – Data Consistency and Coordination

- Significant data collection, reporting, and exchange needed for both DWR and SWRCB to support SGMA implementation
  - What key data sets should be shared between DWR and SWRCB to support evaluation of GSPs?
  - What data are stakeholders already collecting and submitting to state agencies that could be included or leveraged by SGMA activities?

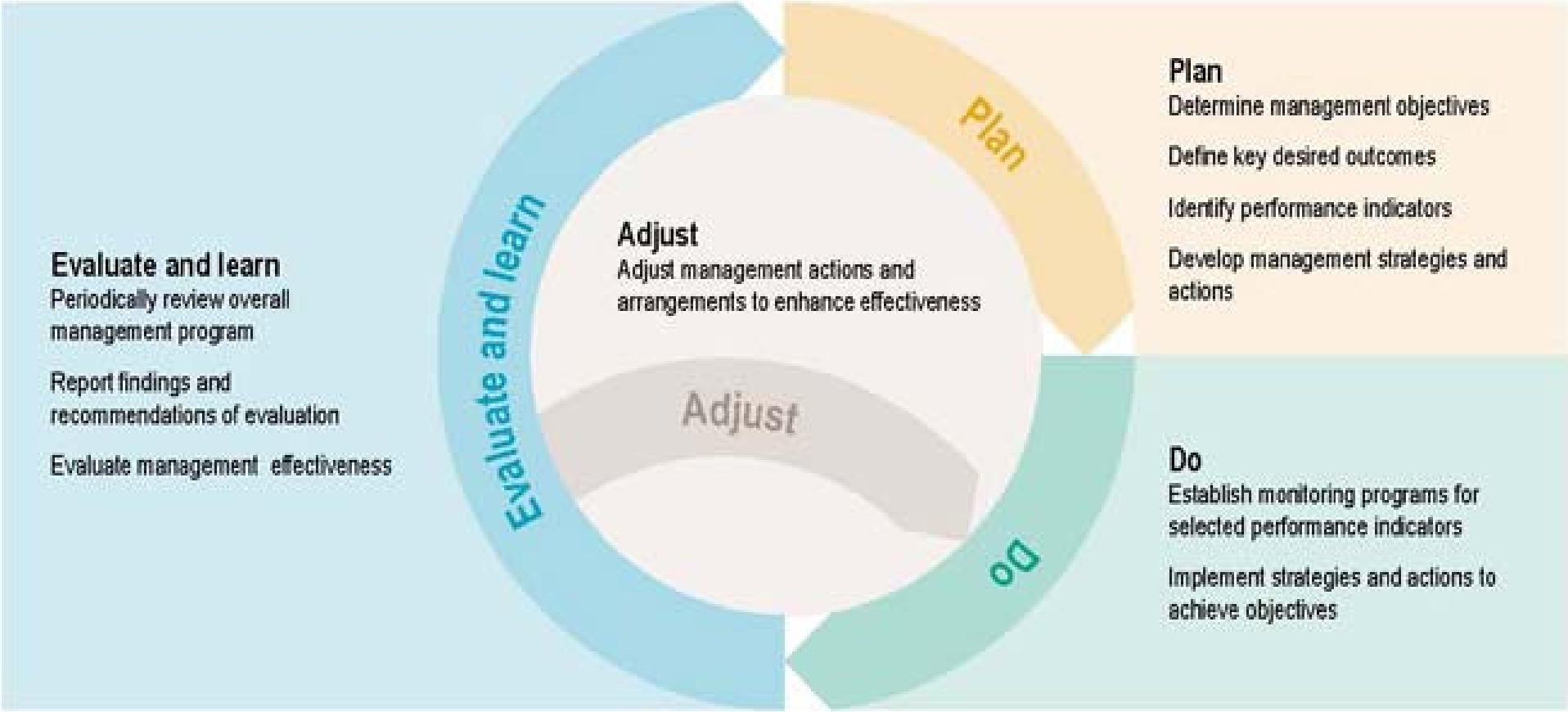
Questions - Coordination between State and Local Agencies

- State and local SGMA activities will benefit from effective coordination between federal, state, and local agencies
  - What data and other forms of technical assistance can DWR and SWRCB provide to GSAs implementing SGMA?

Topic 10: Adaptive Management and Focus Areas

- Adaptive Management – Is a process where planning goals, objectives, and/or actions may be further developed, modified, or replaced based on the discovery of new knowledge in response to changing physical conditions or reduction of uncertainty.

Adaptive Management Process



- Focus Area – Concept where groundwater managers prioritize the groundwater challenges in their GSPs and focus monitoring, management actions, projects, etc., in the geographic areas of most need.

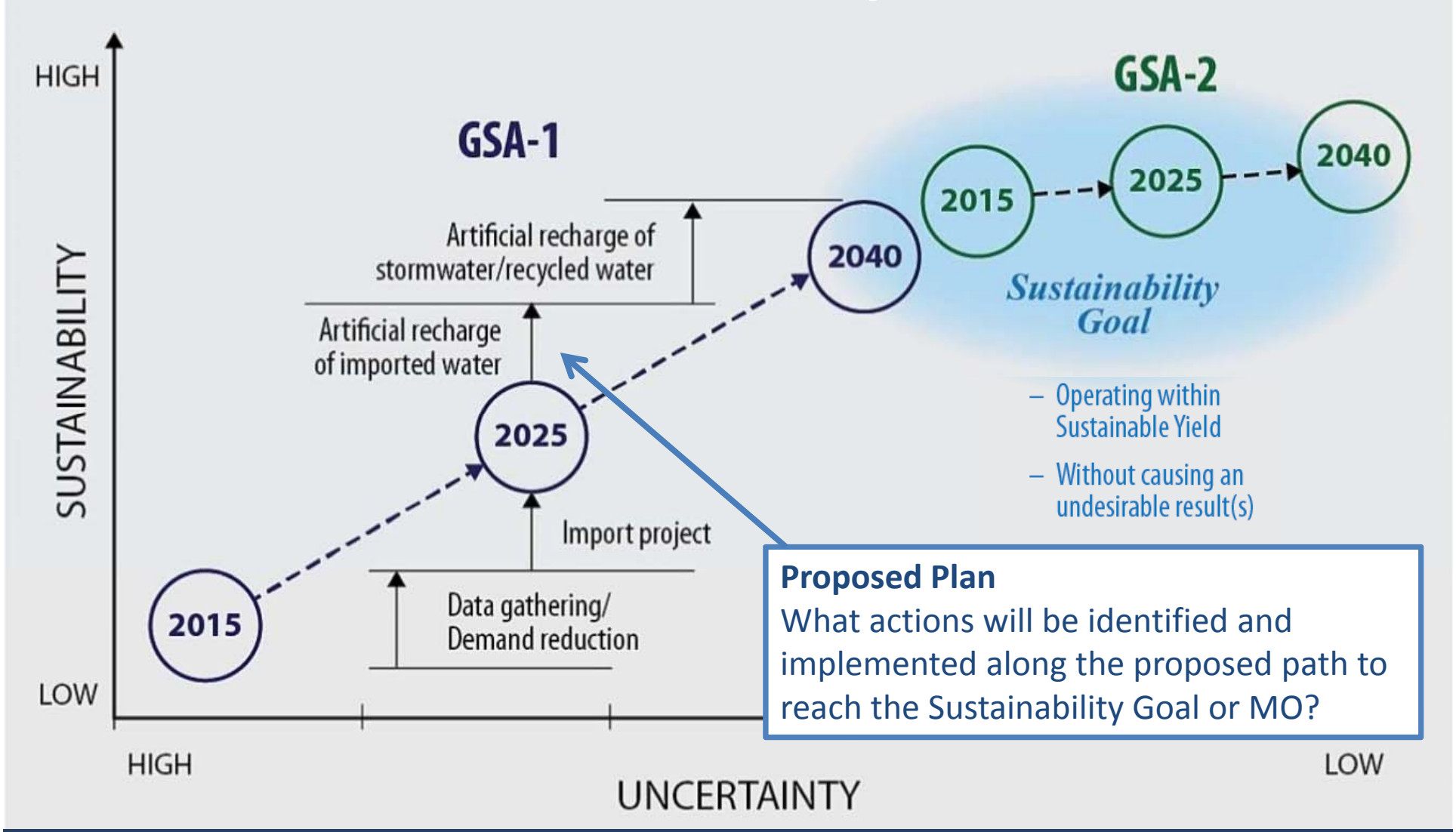
Select Water Code Sections

- **Water Code § 10728.2. Periodic Review and Assessment**
  - *A groundwater sustainability agency shall periodically evaluate its groundwater sustainability plan, assess changing conditions in the basin that may warrant modification of the plan or management objectives, and may adjust components in the plan. An evaluation of the plan shall focus on determining whether the actions under the plan are meeting the plan's management objectives and whether those objectives are meeting the sustainability goal in the basin.*
- Water Code § 10728.2 describes the review process by **GSAs** to evaluate whether the management objectives are obtainable and the interim milestones are being met in pursuit of the sustainability goal.

Select Water Code Sections (cont.)

- **Water Code § 10733.8. Dept. Review…at Least Every 5 Years**
  - *At least every five years …, [DWR] shall review any available GSP or alternative …, and the implementation of the corresponding groundwater sustainability program…including achieving the sustainability goal. [DWR] shall issue an assessment for each basin for which a plan or alternative has been submitted…with an emphasis on assessing progress in achieving the sustainability goal within the basin. The assessment may include recommended corrective actions to address any deficiencies …*
- Water Code § 10733.8 describes the review process by **DWR** to evaluate whether the management objectives are obtainable and the interim milestones are being met in pursuit of the sustainability goal. It also provides for the consideration of modification of the GSP to address disparities from the plan or changing conditions.

MOs and IMs Necessary to Reduce Uncertainty and Achieve or Maintain Basin Sustainability



Proposed Plan
What actions will be identified and implemented along the proposed path to reach the Sustainability Goal or MO?

Possible GSA Path to Sustainability

Stakeholder Collected Issues Related to Adaptive Management and Focus Areas

- Will flexibility exist in implementation of the plans or will deficiencies immediately result in Probationary Status and deferment to the Sate Board?
- What if there are not resources available to accomplish all of the necessary objectives at the same time?
- What opportunity will GSAs have to adjust plans if the regional conditions change?

Adaptive Management and Focus Area Considerations

- An iterative adaptive management approach will be necessary to address uncertainties and changing conditions during implementation of the GSP.
- Adaptive management is not intended to provide a clear pathway to changing a sustainability goal, rather it is intended to provide for modification to management objectives in light of new information.

Adaptive Management and Focus Area Considerations (cont.)

- While adaptive management and focus areas are envisioned to aid in meeting the sustainability goal, the entire basin must meet the sustainability goal.
- Focus areas provide a mechanism to address the highest priority issues with limited resources, this does not preclude the need to address all of the measureable objectives over the long term, nor does it inherently result in an extended performance period.

Questions – Adaptive Management Process

- How should GSP regulations allow for inclusion of an adaptive management process?

<u>Feedback:</u>

- *Don't formalize adaptive management, don't regulate the term "adaptive management"*
- *Adaptive management should allow for quicker adjustments to the GSP as long as they are reported in the annual report (i.e. sooner than the 5-year window).*

Questions – Adaptive Management Process (cont.)

- If, through the adaptive management process, a GSA wishes to change a measurable objective and/or action, what type of data and information may be necessary to support such a change?

Feedback:

- *The five-year interim plans should demonstrate the actions taken and how they relate to data*
- *Process needs to accommodate changes that occur due to measurements/ modeling results*

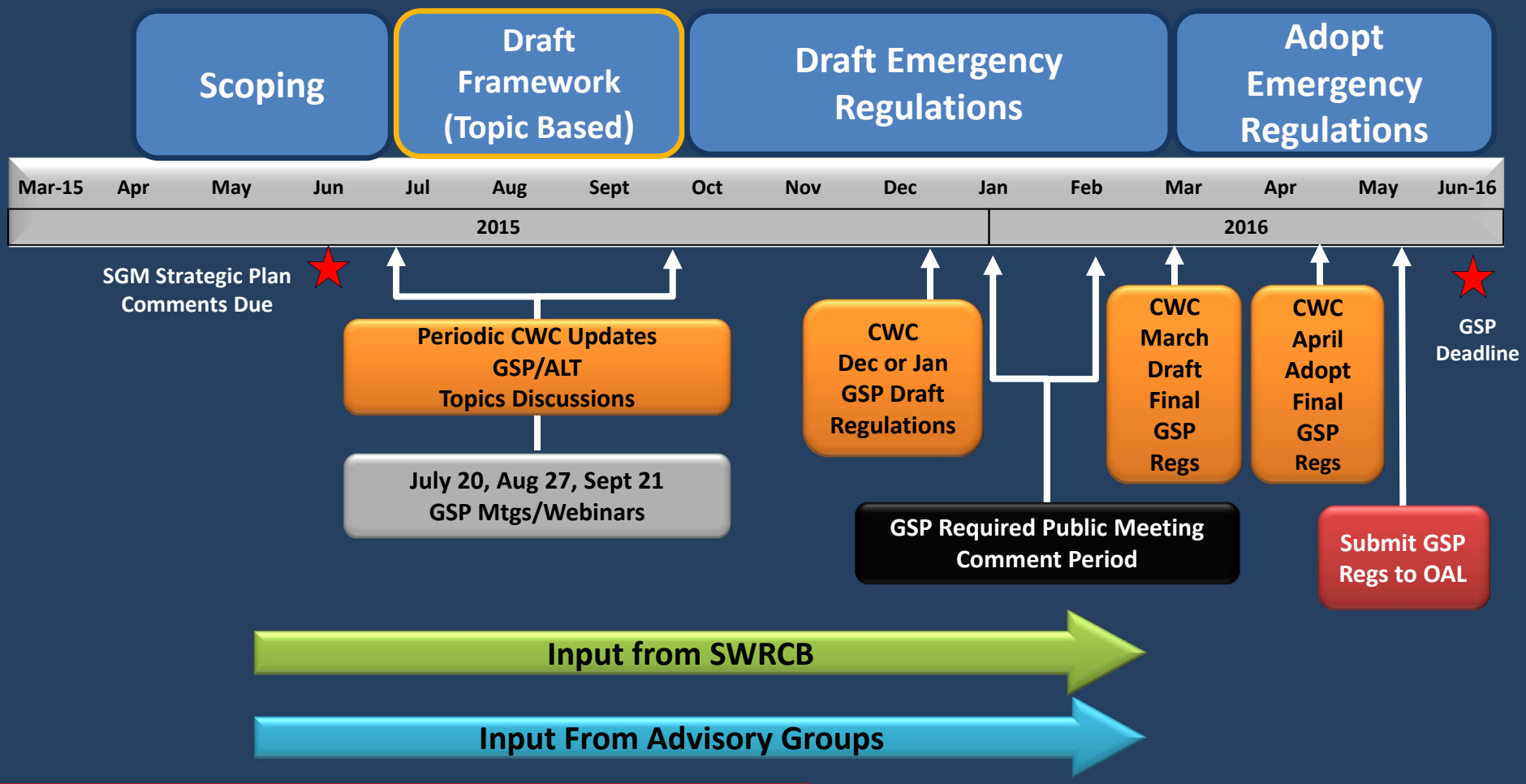
Questions – Focus Areas

- How should GSP regulations consider the concept of a focus area, if at all?

<u>Feedback:</u>

- ❑ *GSAs are likely to emphasize one or more focus areas (if such is warranted); recommend that focus area information is not lost in aggregated reporting*
- ❑ *Vulnerabilities will drive importance of greater data resolution in the focus area*

Groundwater Sustainability Plan (GSP) Emergency Regulations – Detailed Timeline



Dates and Durations are Subject to Change