Informational Public Meeting

Managing Groundwater in the Indian Wells Valley



Introductions

Dale Schafer, Facilitator



Welcome

Peggy Breeden, Mayor

Mick Gleason, County Supervisor



Presentation

David Gutierrez

Executive Program Director for Groundwater CA Department of Water Resources



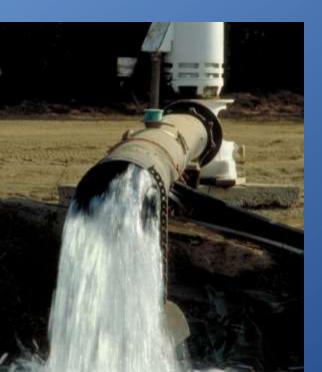
Legand Change in Groundwater Levels - Spring 2012 in Spring 2013 - Spring 2013 in Spring 2013 - Spring

Indian Wells Valley Groundwater Management Public Informational Meeting

The Sustainable Groundwater Management Act

October 23, 2015

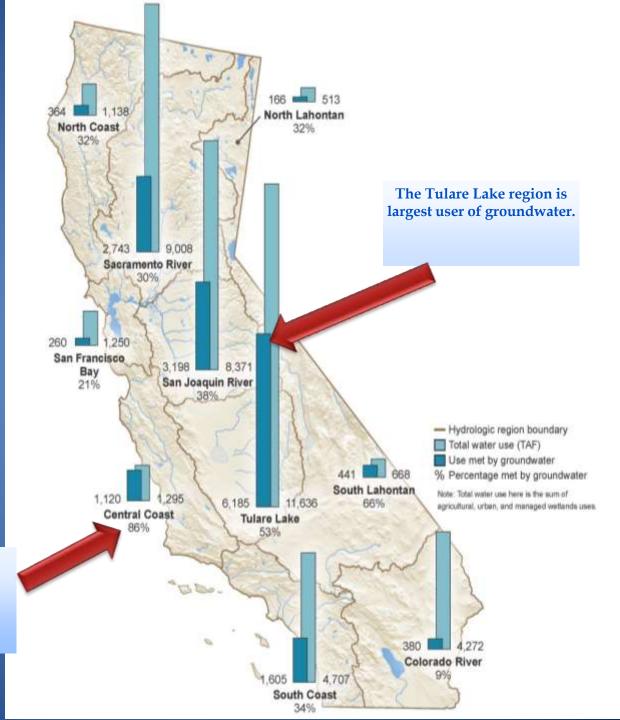
David Gutierrez and Tim Ross CA Department of Water Resources



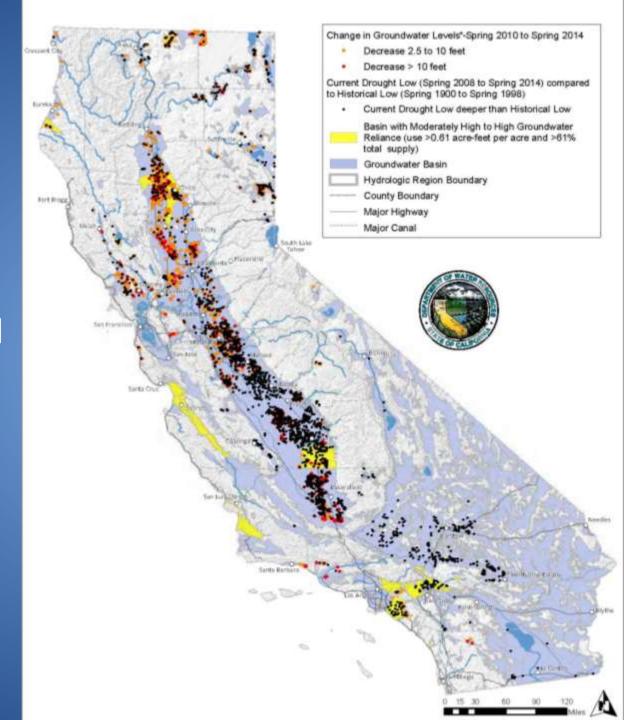
Groundwater Supply in California

2005-10 Average

The Central Coast region is the most groundwater dependent.

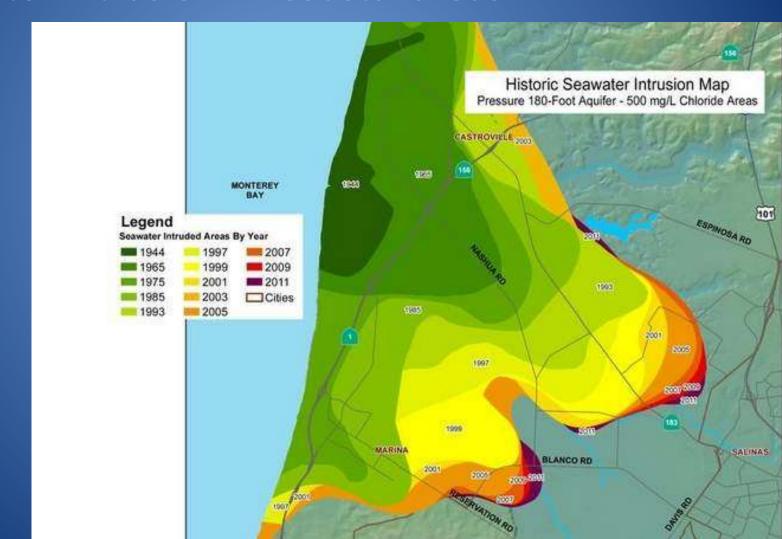


Black Dots =
Groundwater Level
at Lowest Recorded



Water Quality

Seawater intrusion in coastal areas



San Joaquin Valley Delta-Mendota Canal and Subsidence (1926-70) California Aqueduct

- Permanent loss of water storage
- Damage to infrastructure and water delivery systems

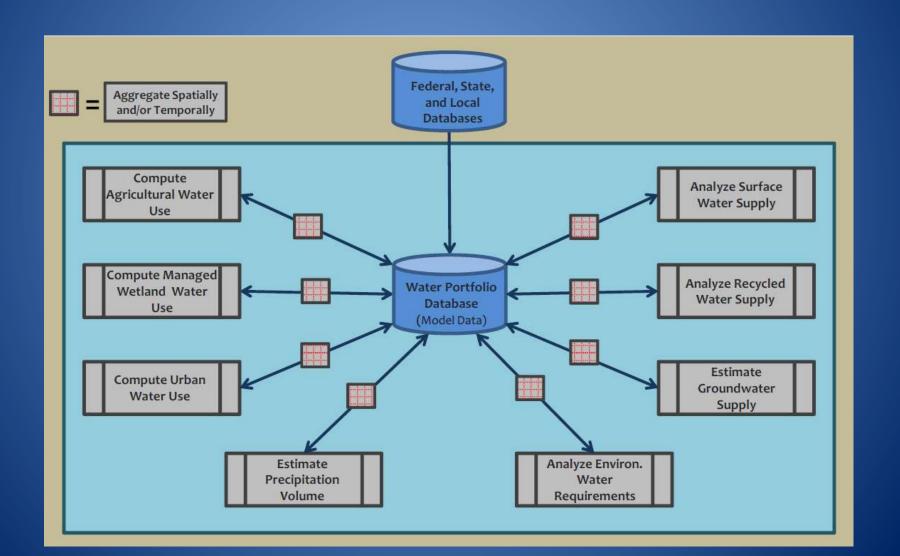
Subsidence



Ecosystem Impacts

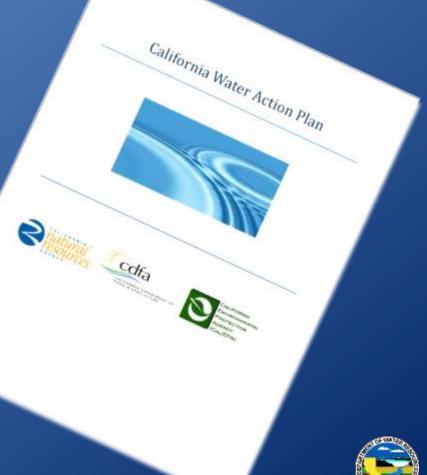


Water Balance is essential for sustainability



California Water Action Plan

Action 6: Expand water storage capacity and improve groundwater management



Sustainable Groundwater Management Act of 2014

Framework

- Applicability
- Definitions

Local's Role

- Establish GSA
- Powers & Authorities
- Sustainability Plans
- Deadlines

State's Role

- Develop guidance or rules
- Provide Technical and Planning Assistance
- State Evaluation and Assessment
- State Intervention

SGMA Milestones for Success

Groundwater Sustainability Agencies

- Formation by June 30, 2017
- Only local agencies can be GSAs

Groundwater Sustainability Plans

- January 31, 2020 for critically overdrafted basins
- January 31, 2022 for all other high and medium priority basins
- Multiple GSPs in a basin must coordinate

Groundwater Sustainability

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

GSA Interactive Map

This interactive map shows the location of local agencies that have elected to become Groundwater Sustainability Agencies (GSAs). The boundaries of the GSAs are based on information submitted to DWR by those local agencies. While DWR makes every effort to provide accurate information, DWR has not reviewed the GSA boundary information contained in this map and makes no warranties as to the suitability of this map for any particular purpose. Where multiple local agencies have claimed the same portion of a groundwater basin, the areas of overlap are indicated by a darker color within the GSA boundaries.

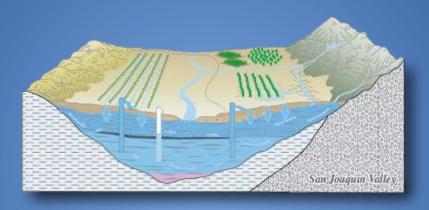
In addition to GSA boundaries, the interactive map application shows the following: (1) Bulletin 118-2003 groundwater basins; (2) CASGEM basin prioritization; (3) adjudicated areas listed in Water Code § 10720.8 (full list available soon); and (4) local agencies listed in Water Code § 10723(c) (available soon).

If you have questions related to GSAs or have comments related to the interactive map please contact Mark. Nordberg at Mark.Nordberg@water.ca.gov. The GSA Interactive Map was last updated on August 10th, 2015.

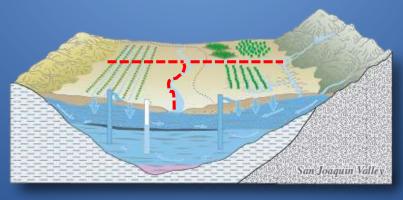


Groundwater Basins and Subbasins

Scientific

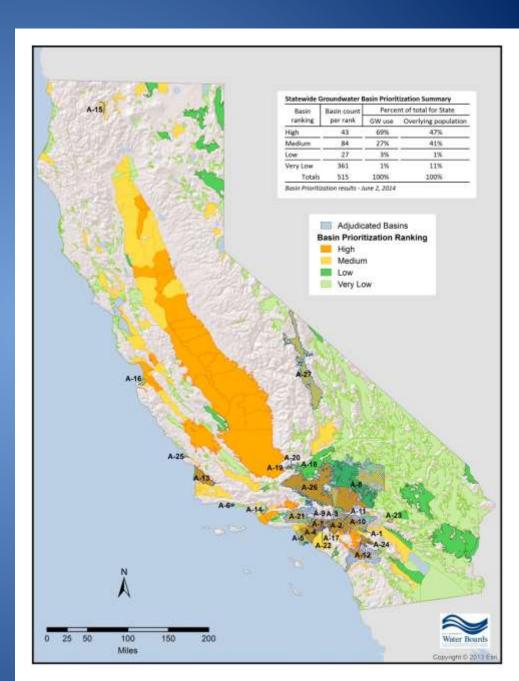


Jurisdictional



Basin Prioritization

- Requires GW
 sustainability plans in
 high- and medium priority basins
- Does not require adjudicated basins



Groundwater Sustainability

Sustainability Goal Sustainable Groundwater Management

Sustainable Yield

Undesirable Results: Significant and unreasonable...

Lowering of Groundwater Levels

Water Quality Degradation

Reduction of Groundwater Storage

Land Subsidence Seawater Intrusion

Depletions of Surface Water

Key Principles

- Groundwater is best managed at the local or regional level, and local agencies should have the tools they need to sustainably manage their resources
- When local or regional agencies cannot or will no manage their groundwater sustainably, the State will intervene until the local agencies develop and implement sustainable groundwater management plans

DWR's Sustainable Groundwater Management Program

Provide Statewide Technical Assistance Provide
Statewide
Planning
Assistance

Assist State and GSA Alignment and provide Financial Assistance

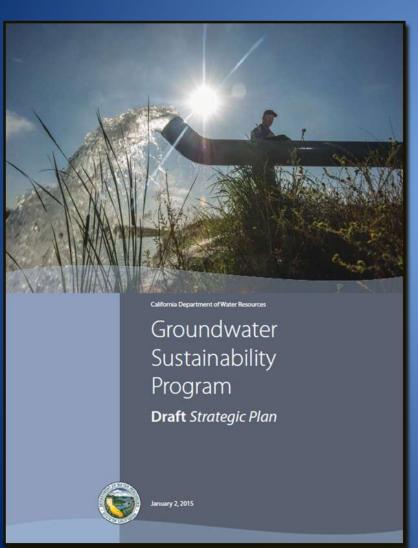
DWR's

Sustainable Groundwater Management Program

Develop a
Framework for
Sustainable
Groundwater
Management

Provide Interregional Assistance

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 Communication and Outreach

One-on-One Agency & Organizations

Associations, Foundations & Organizations

State Agency Partners

DWR's Sustainable Groundwater Management Program Team

Federal
Agencies and
Tribal
Governments

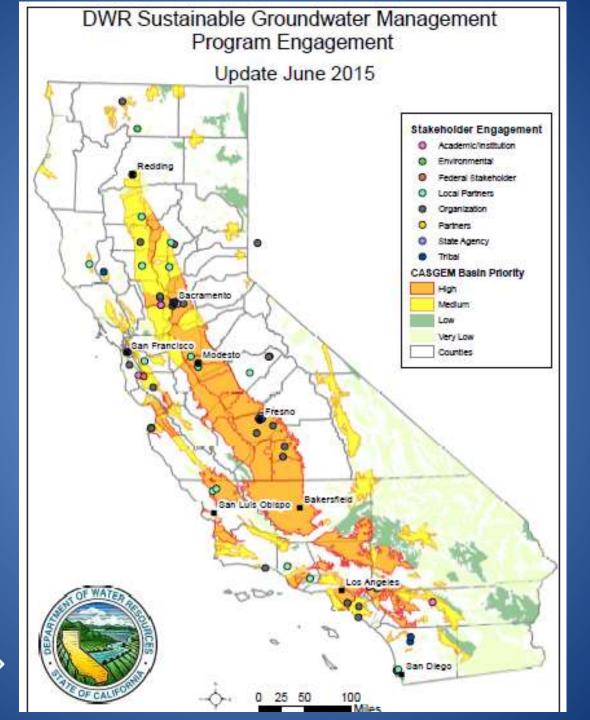
Multiple Advisory Groups

Statewide Public Meetings

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

More than 100 events



SGMA 101

Communication & Outreach Tools

Interagency Website **DWR** Website **SWRCB** Website



California **Groundwater**

ABOUT GROUNDWATER

LEGISLATION

TIMELINE

COMPLIANCE MAP

Sustainable Groundwater I

SGM Sustainable Groundwater Management



For the first time in California history, the Sustair to adopt groundwater management plans that ar groundwater management will provide a buffer a supplies regardless of weather patterns. Californ supply, and sustainable groundwater manageme Groundwater website offers links and news from

SGMA Toolbox

Introduction

The Department of Water Resources (DWR) has deve Management (SGM) Program. DWR's SGM Program identified in the 2014 Sustainable Groundwater Manag responsibilities include: (1) developing regulations to for evaluating and implementing Groundwater Sustain identifying basins subject to critical conditions of overc replenishment; and (5) publishing best management p

Announcements

Groundwater Sustainability Plan (GSP) Draft DWR has published Discussion Papers on all of the G the discussion papers can be submitted to samps@w information meetings are available here.

GSA notification received

DWR has received a notification of formation of a Grou

Sustainable Groundwater Planning Grant Program DWR has released draft Guidelines and Proposal Soli Grant Program. Find more information here.

Groundwater Sustainability Program D



CALIFORNIA DEPARTMENT OF

Groundwater

Introduction

Groundwater resources play a vital role in maintaining California's economic and environmental austamations During an average year. California's 515 alluvial proundwater basins and subbasins contribute approximately 38 percent toward the State's total water supply. During thy years, groundwater contributes up to 46 percent is: more) of the statewide annual supply, and serves as a critical buffer against the impacts of drought and climate change. Many municipal, agricultural, and disadvantaged communities lery on groundwater for up to 100 percent of their water supply needs. Groundwater extraction in excess of natural and managed recharge trascaused historically-low groundwister elevations in many regions of California.

DWR has a long-standing history of collecting and analyzing groundwater data, investigating and reporting groundwater conditions, implementing local groundwater assistance grants, encouraging integrated water management, and providing the technical expertise needed to improve statewide groundwater management practices, in addition, OWK is responsible for implementing the Sustangole Groundwater Management Act (SGMA), the California Statewide Groundwater Elevation Monitoring (CASGEM) Program, and characterizing California's groundwater basins through updates to Sulletin 118.

The Sustainable Groundwater Management (SGM) Program

To implement the micreased responsibilities given to DWR by the 2014 Sustainable Groundwater Management Act (DGMA), DWR has expanded its existing local assistance programs in the Division of integrated Registral Water Management (DIRWM) and has developed a Strategic Plan for the Sustainable Groundwater Management (SGM) Program Mare info...

GROUNDWATER HOME

BUSTAPIABLE ORDUNOWATER MANAGEMENT

GROUNDWATER INFORMATION

CASSEN

SULLETIN THE





SGM Immediate Actions

Develop Emergency Regulations -Basin Boundary Revisions

Draft Regulations Posted (July 17, 2015)

Public Comments Closed (Sept 4, 2015)

Final Regulations Due - January 2016

Identify Basins Subject to Critical Conditions of Overdraft

Draft list posted (Aug 19, 2015)
Public Comments Closed (Sept 25, 2015)

Develop Emergency Regulations - (GSPs)

Working with advisory groups /public meetings

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

Final Regulations Due - June 2016

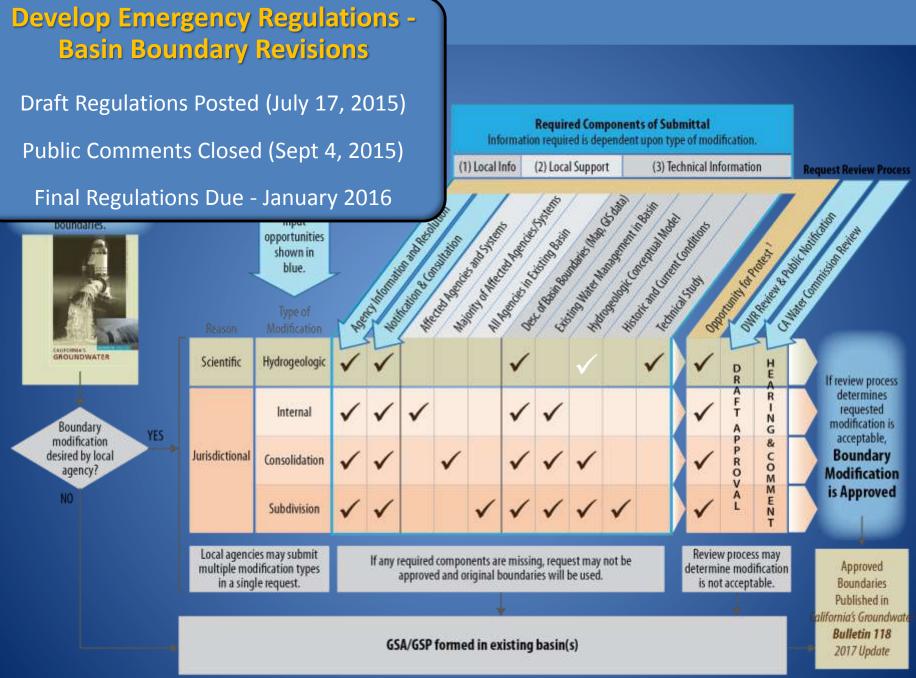
Update Basin Prioritization

Used existing - January 2015
Re-prioritization following basin boundary revisions in 2017

Groundwater Sustainability Agency Formation

26 as of September 28, 2015

Senate Bill 13 – Requires Complete Notifications and No Overlapping GSAs



25 Q1, 2017

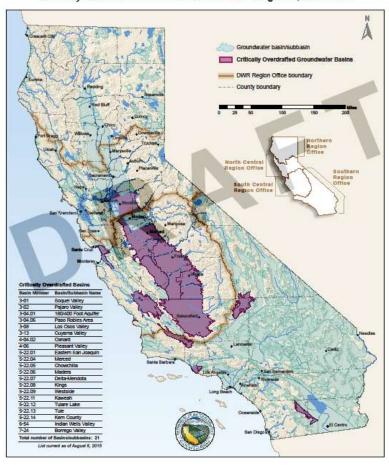
Critically Overdrafted Basins

GSPs required by 2020

Identify Basins Subject to Critical Conditions of Overdraft

Draft list posted (Aug 19, 2015)
Public Comments Closed (Sept 25, 2015)

Critically Overdrafted Groundwater Basins - August 6, 2015 Draft



SGMA Basin Prioritization

Update Basin Prioritization

Used existing - January 2015

Re-prioritization following basin boundary revisions in 2017

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 Sustainability Plans (GSPs) and Alternatives

Develop Emergency Regulations - (GSPs)

Working with advisory groups /public meetings

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

Final Regulations Due - June 2016



Facilitation Support Service

Groundwater Sustainability Agency Formation

26 as of September 28, 2015

Senate Bill 13 – Requires Complete Notifications and No Overlapping GSAs

18 applications5 initial review6 in Scoping7 contracts

The "Backstop" State Board Intervention

After	Intervention Trigger
June 30, 2017	Areas without a GSA begin reporting well locations and extraction data to SWRCB; can begin probationary basin designation 180 days later.
Jan. 31, 2020	Can begin probationary basin designation in critically overdrafted basins with no GSP or where DWR finds the GSP is inadequate
Jan. 31, 2022	Can begin probationary basin designation in other high/medium priority basins without a GSP or where DWR finds the GSP is inadequate
Jan. 31, 2025	Probationary basin designations where DWR finds GSP is inadequate and significant depletions of interconnected surface waters

In all triggering events, intervention is the result of failure by locals to create a GSA or adopt and implement a GSP

State Board Can Act as a Basin Manager

Develop fees to support basin management

Designate probationary basins

Probationary basins lead to interim sustainability plans

Interim plans manage basins until local efforts come up to speed

State Intervention Approach

- The State is required to recover costs incurred in administering the state backstop (§ 1529.5)
- The state can require technical or monitoring reports from groundwater pumpers (§10736.6); can require metering (§5203)
- The State can adopt an interim plan identifying actions that must be taken to correct conditions of long-term overdraft or significant depletions of surface water (§10735.8)

State Intervention is Not The Final Step

- State intervention is temporary, and basin water users would still be required to develop their own plan for their basin.
- State intervention would focus on "demand management" with limited options for solving overdraft problems.
- After reimbursing the state, basin water users would still be required to fund their own solution for managing the basin.
- A basin adjudication after January 1, 2015 would still be required to comply with all the requirements of SGMA.

Update Critically Overdrafted Basins

Per Water Code Section 12924:

"(a) The department, in conjunction with other public agencies, shall conduct an investigation of the state's groundwater basins. The department shall identify the state's groundwater basins on the basis of geological and hydrological conditions and consideration of political boundary lines whenever practical. The department shall also investigate existing general patterns of groundwater extraction and groundwater recharge within those basins to the extent necessary to identify basins that are subject to critical conditions of overdraft."

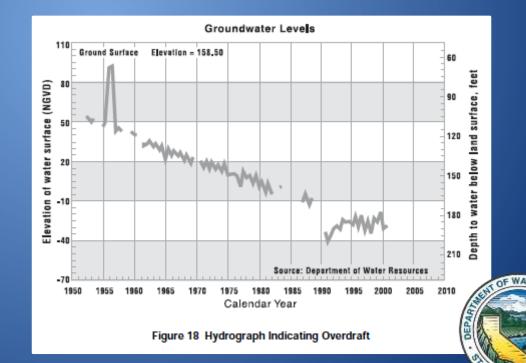
-Results are published in Bulletin 118



Bulletin 118-80 Critical Conditions of Overdraft

"A basin is subject to critical conditions of overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts."





Obvious Adverse Impacts

Chronic Lowering of Groundwater Levels

Reduction of Groundwater Storage

Seawater Intrusion

Water Quality Degradation

Land Subsidence Depletion of Surface Water



Groundwater Budget

Water_{in} - Water_{out} =
$$\Delta$$
_{storage}

Recharge

Precipitation
Surface Water In
Subsurface Water In
Recharge
Return Flow

Water_{in}

Groundwater Storage

Discharge

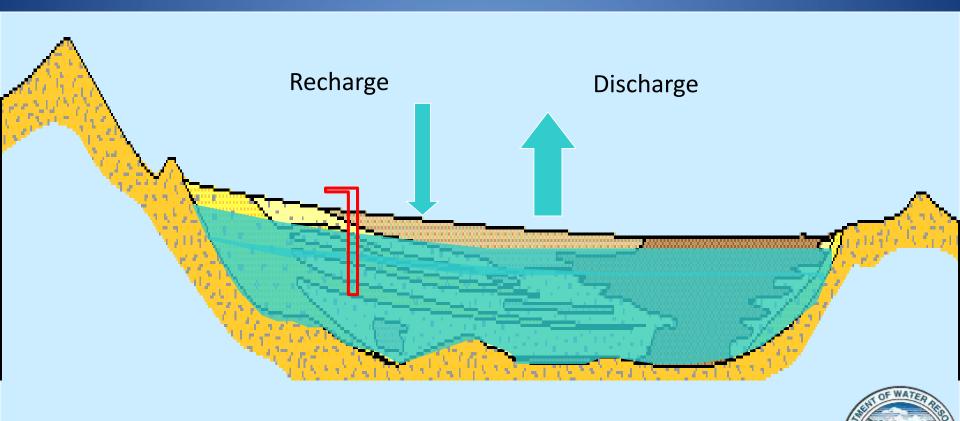
Surface Water Out Subsurface Water Out Pumping Evapotranspiration

Water_{out}

Groundwater System



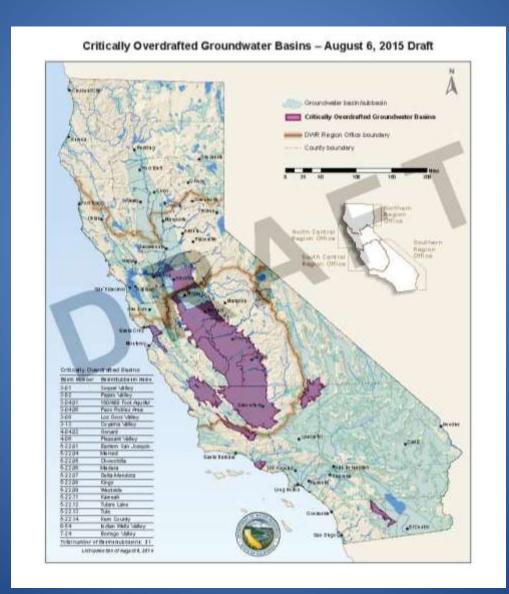
Desert Groundwater Basin



Evaluation of Groundwater Basins

- Include all Bulletin 118-80 and Update 2003 critically overdrafted basins onto the 2015 preliminary list.
- Determined Base Period to be 1989-2009
- Conducted review of DWR reports, investigations, published reports, USGS reports, and local agency reports such as GWMPs and EIRs to identify basins with obvious evidence of adverse impacts.
- Invited local agencies to provide data and information to DWR to reevaluate and assist identification of additional basins or removal of basins.

Draft Results





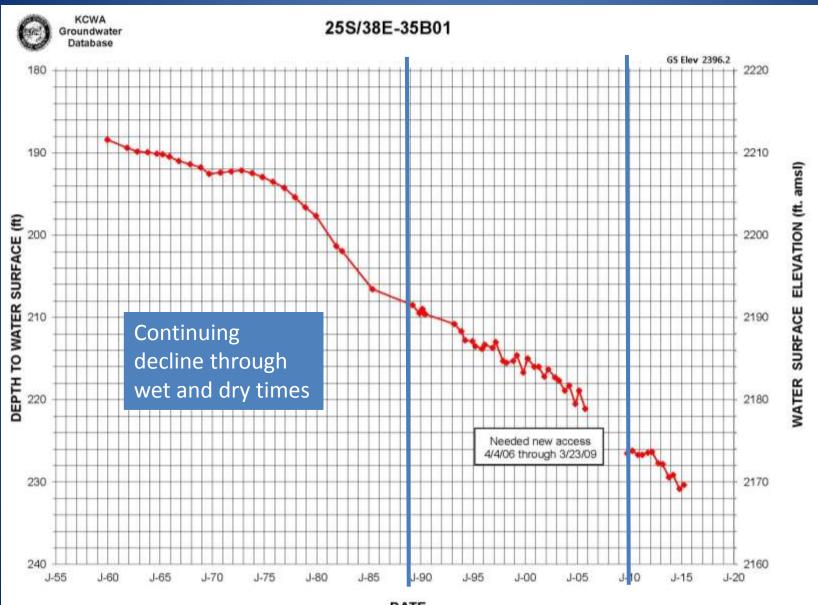
Indian Wells Valley

- Groundwater Level Hydrographs
 More than 30 hydrographs
 Evaluate for Chronic Decline
- Technical Reports
 Reviewed >20 technical reports
 Evaluate for chronic reduction
 of storage
 Evaluate for Water Quality
 Degradation





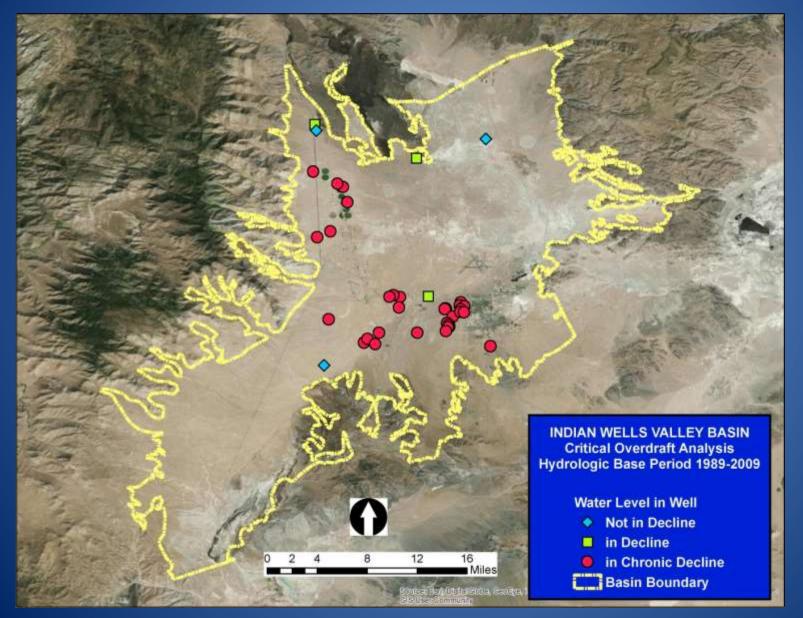
Well Showing Chronic Decline in Water Levels



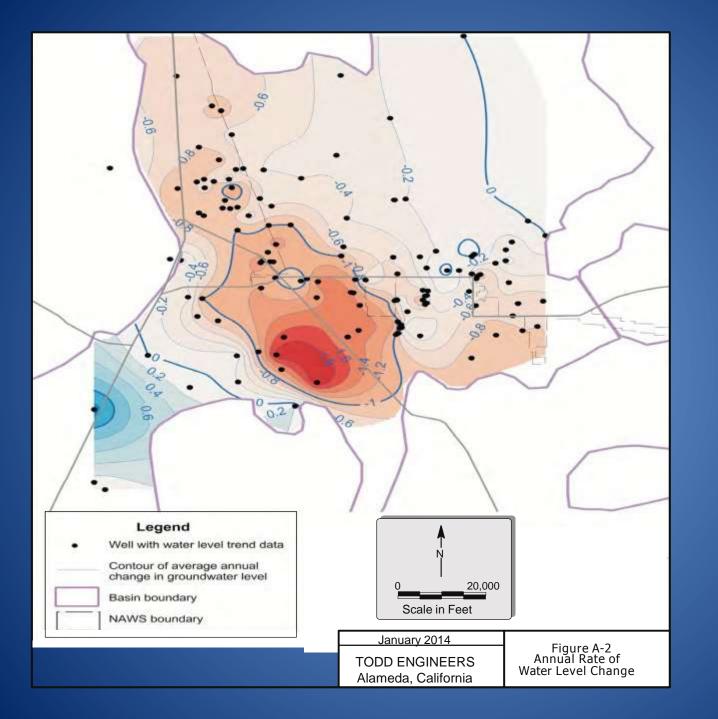


DATE

Wells in Chronic Decline









References reviewed:

Overdraft, Water Level Declines

- 2015 Kern County Draft EIR
- 2014 Todd Engineers
- 2009 Brown and Caldwell
- 2008 Geochemical Technologies Corporation
- 2003 Houghton HydroGeo-logic
- 2001 Tetra Tech
- 1995 Houghton (MS Thesis)
- 1994 Berenbrock and Schroeder
- 1993 US Bureau of Reclamation
- 1991 Berenbrock and Martin
- 1989 Bean
- 1989 Lofgren
- 1987 Berenbrock
- 1986 St. Amand
- 1979 Mallory
- 1974 Banta
- 1973 Banta
- 1969 Kunkel and Chase
- 1963 DWR Bulletin 91-9

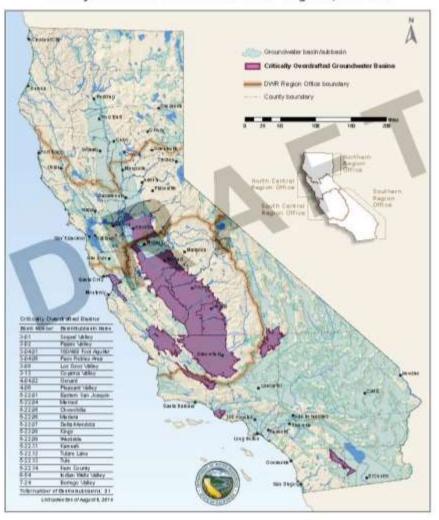
Not Overdraft

- 1999 Thyne, Gillespie, and Ostdick
- 11989 Erskine
- 1989 Whelan, Baskin, and Katzenstein
- 1988 Austin



Indian Wells Valley Groundwater Basin





Critical Overdraft Based on:

Chronic Decline of Groundwater Levels
Prior to Base Period
During Base Period
Post Base Period

Reduction of Groundwater Storage
Prior to Base Period
During Base Period
Post Base Period

Water Quality Degradation



Questions

When properly managed, groundwater resources will help protect communities, farms, and the environment against the impacts of prolonged dry periods and climate change.

California Water Action Plan 2014



State: http://groundwater.ca.gov

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

SWRCB: http://www.waterboards.ca.gov/water issues/programs/gmp/



Groundwater Sustainability Agency Formation

Plans and Next Steps

Supervisor Mick Gleason



SGMA Steps to Groundwater Sustainability

Step one

Form

Groundwater

Sustainability

Agency

June 30, 2017

Step two

Develop

Groundwater

Sustainability

Plan

January 31, 2020

Step three

Achieve

Sustainability

20 years after adoption of

plan*

 DWR may grant up to two, five-year extensions on Implementation upon showing good cause and progress

GSA-Eligible Agencies in Indian Wells Valley

- City of Ridgecrest
- County of Kern
- County of Inyo
- County of San Bernardino
- Indian Wells Valley Water District
- Inyokern Community Services District

Federal Agencies and Tribes

- Naval Air Weapons Station
- Bureau of Land Management
- Tribes

May participate voluntarily in GSA/GSP

Additional Private Interests

May join a GSA under a separate legal agreement:

- PUC regulated private water companies
 - Searles Minerals
- Mutual Water Companies
 - Many in the IWV

Note: These entities may not form a GSA

Possible GSA Governance Options

One GSA with one Plan per Basin

- Most direct, simplest form or representation
- Possible funding competition between basins
- Less efficient administration & regional issues

Centralized: One countywide GSA

- Coordinate regional issues (e.g., land use, well permitting, data)
- Maximize administration efficiencies; reduce competition between basins
- Possibly cumbersome GSA board representation
- Multiple GSAs per Basin
- Some Combination of the Above Options

Note: SGMA allows for multiple GSAs and/or multiple GSPs for each basin, but requires DWR buy-in and "coordination and agreements"

Outreach and Input

"GSA shall consider interests of all beneficial uses and users of groundwater" including:

- Agriculture users
- Domestic users
- Public & private water systems
- Local land use planning agencies

- Federal government
- Tribes
- Environmental users
- Disadvantaged communities
- Surface water users

Next Steps

- Additional GSA-eligible agencies meetings
- Develop framework of principles for formation and start discussions on policies
- Hold GSA-Notification Public Meeting in the coming months
- Prepare and sign legal documents entering into GSA



Back Up Slides

New Management Authorities Under SGMA

Groundwater Sustainability Agencies have authority to:

- Conduct studies
- Register & monitor wells
- Set well spacing requirement
- Require extraction reporting
- Implement capital projects
- Manage groundwater demand
- Assess fees to cover costs

Some exemptions for smaller private well owners

Proposed Skeleton Structure Indian Wells Valley GSA & GSP

*GSA-eligible agencies include:

- City of Ridgecrest
- County of Kern
- County of Inyo
- County of San Bernardino
- Indian Wells Valley Water District
- Inyokern Community Services
 District

Indian Wells Valley GSA*

Indian Wells Valley Advisory Committee(s)

Indian Wells Valley
Technical Committee(s)

*Other GSA interests include:

Federal/Sovereign

- Naval Air Weapons Station
- Bureau of Land Management
- Tribes

Private

- PUC-Regulated private water companies
- Mutual Water Companies

Coordination Efforts Required

- Data framework/management system
- Basin boundary adjustments
- Funding requests to external entities (such as the state)
- Any activities that impact the adjacent basin
- Communication with state and federal agencies (not always required, but often)

Other Potential Coordination Activities

- Projects that cross basin boundaries
- Regulation development: information sharing and attention to jurisdictions
- Public outreach and stakeholder engagement
- Monitoring protocols and coordination with adjacent basins (timing, consistency of data collection, etc.)
- Well permitting
- Contracts with consultants, facilitators, etc.