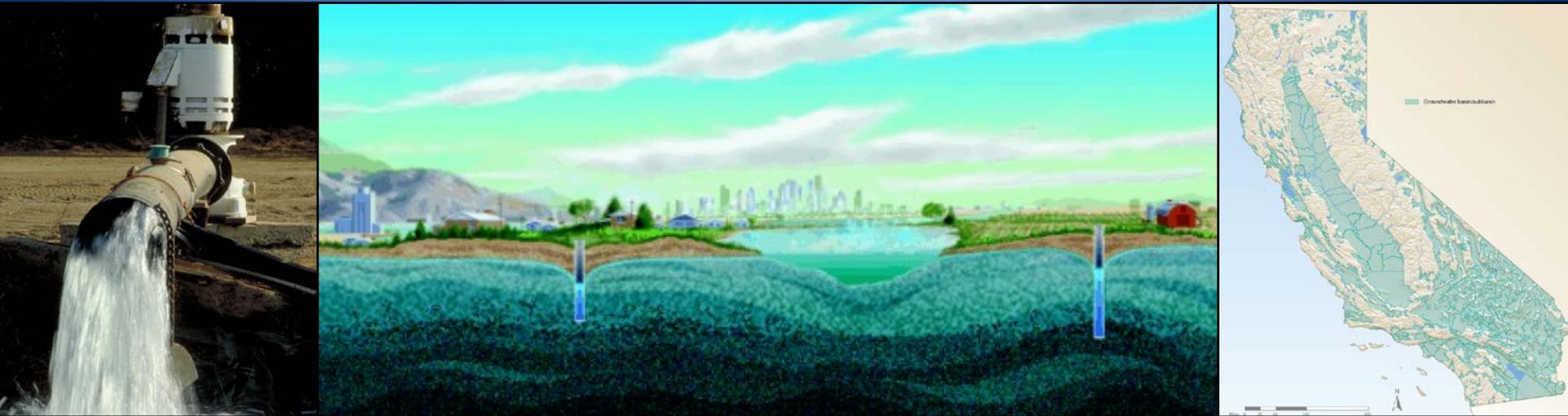


# DWR's Sustainable Groundwater Management Implementation

## Groundwater Sustainability Plan (GSP) & Alternative (Alt) Emergency Regulations



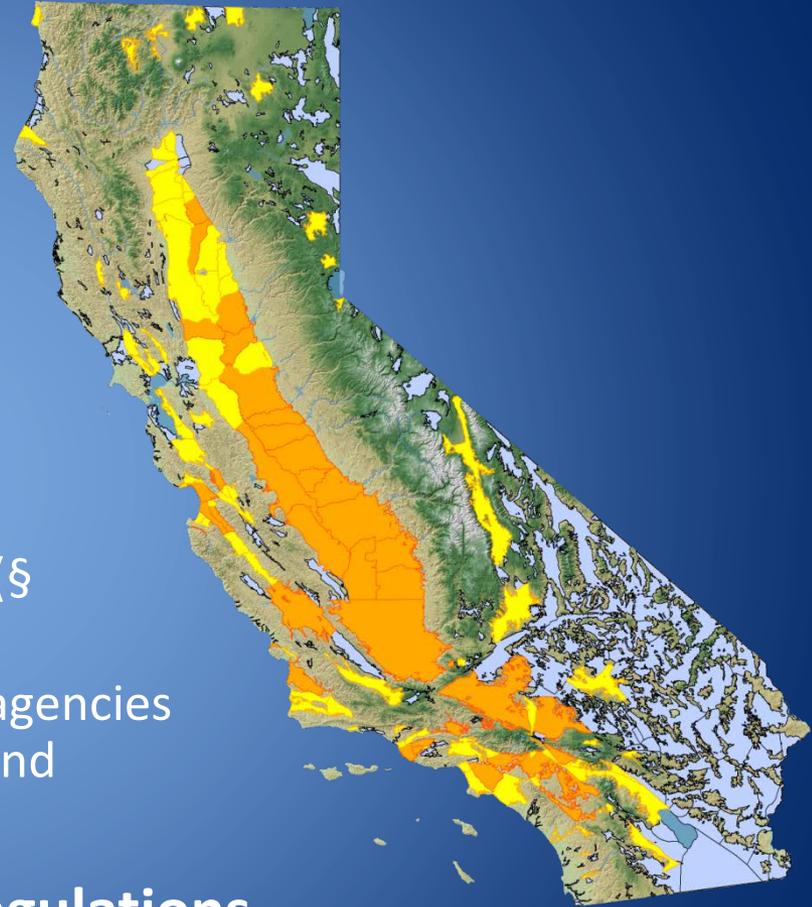
California Water Commission  
December 16, 2015

# Presentation Overview

- Background
- Regulation Considerations
- Next Steps

# SGMA GSP Requirements

- **By June 1, 2016, DWR shall adopt regulations for:**
  - Evaluating GSP
  - Implementation of GSP
  - Coordination agreements
- **The regulations shall identify:**
  - Required Plan Components (§ 10727.2)
  - Additional Plan Elements (§ 10727.4)
  - Coordination of Multiple GSPs in Basin (§ 10727.6)
  - Other information that will assist local agencies in developing and implementing GSPs and coordination agreements.
- **The department may update the regulations, including to incorporate the best management practices (§ 10729 & 10733.2 (b)(1))**



# GSP/ALT Regulations

## Sustainable Groundwater Management

Required for All High and Medium Priority Basins (127)

### GSP

- Covers Entire Basin
- Multiple GSPs Require Coordination Agreement
- Submitted by GSA(s)
- Annual Reporting
- 5 Year Evaluation
- Submitted to DWR by
  - 1/31/2020 (Critical Overdrafted)
  - 1/31/2022 (all other High/Medium Priority)

### Alternative Plan

- Covers Entire Basin
- Submitted by Local Agency or GSA
- Eligibility:
  1. Existing GMP
  2. Adjudication
  3. Basin Operated within Sustainable Yield for 10 years
- CASGEM Compliant
- Annual & 5 Year Reporting
- Submitted to DWR by 1/1/2017

# Paths To Sustainability

- Three Options (§ 10727)



One GSA  
One GSP



Many GSAs  
One GSP with a Coordination Agreement



Many GSAs  
Many GSPs with a Coordination Agreement

# Potential Regulation Components

## Overview

## Potential Regulation Content

## Stakeholder Input

### Governance & Coordination

"Who is managing & participating"

Governance  
Coordination  
Land Use

All Topics

6 - Coordination Agreements

7 - State Agency Coordination

8 - Water Budgets and Coordination

3 - Land Use & County Involvement

### Basin Setting

"What are the current conditions"

State of the Basin

2- Pre SGMA Conditions and Undesirable Results

### SGM Planning

"How will GW be managed & measured"

Sustainability Goal (Sustainable Yield, SGM)  
Measurable Objectives & Undesirable Results  
Monitoring Plan

1 - Measurable Objectives

2- Pre SGMA Conditions and UR's

8 - Water Budgets and Coordination

10 - Adaptive Mgt. and Focus Areas

1 - Measurable Objectives

2- Pre SGMA Conditions and UR's

9 - Data Collection, Mgt., & Reporting

### Evaluation

"Reporting, Evaluation, & Adaptive Management"

Implementation & Reporting

9 - Data Collection, Mgt., & Reporting

10 - Adaptive Mgt. and Focus Areas

### Equivalent GSPs

Alternative GSPs & Fringe Areas

4 - Alternative GSP

5 - Boundaries, Overlapping & Unmanaged Areas

# Governance

## GSA Formation – Chapter 4 of SGMA (§10723)

- Entire basin must be covered by a GSA(s) by June 30, 2017
  - A local agency can decide to *become* a GSA or a combination of local agencies can *form* a GSA through a JPA or other legal agreement
  - A water corporation or mutual water company may participate in a GSA through a legal agreement
  - Senate Bill (SB) 13 changed DWR's role in reviewing GSA notices and addressed overlapping service area boundaries

## GSP Governance – Chapter 6 of SGMA (§10727)

- Adoption or Amendment of Plan Following Public Hearing (§10728.4)
- Public Notification and Participation (Advisory Committee) (§10727.8)

## Considerations

- Description of proof of adoption, legal authority, roles & responsibilities
- Description of how beneficial use was considered and users of groundwater were engaged and considered in development of GSP
- Stakeholder comment letters will be considered when evaluating GSP as defined in SGMA

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Governance

Coordination

Land Use

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Sustainability  
Goal

Measurable  
Objectives &  
Undesirable  
Results

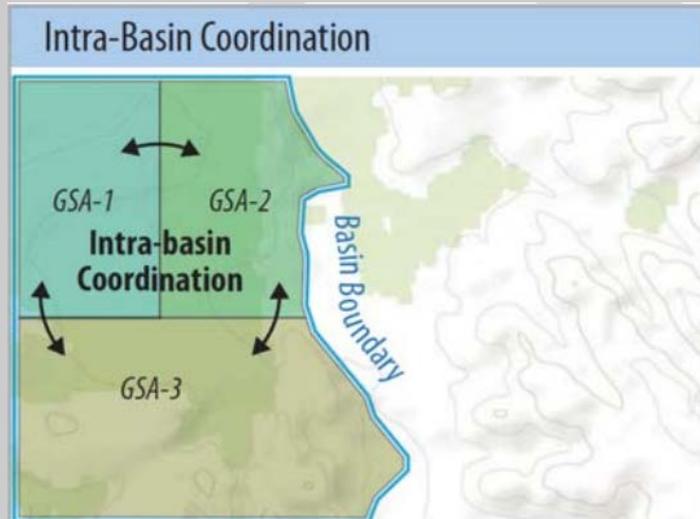
Monitoring Plan

Implementation  
& Reporting

Alternative  
Plans & Frings  
Areas

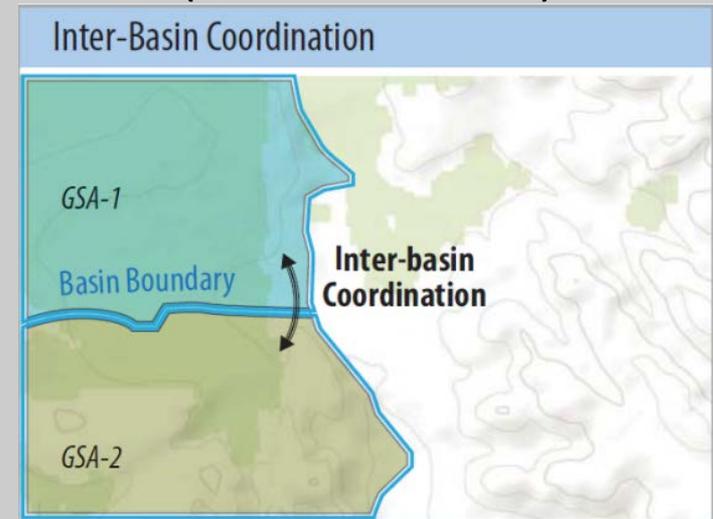
# Coordination

## Intra-Basin (Within Basin)



- Coordination Agreement is required if there are multiple GSP's in basin (§ 10726.6)

## Inter-Basin (Between Basins)

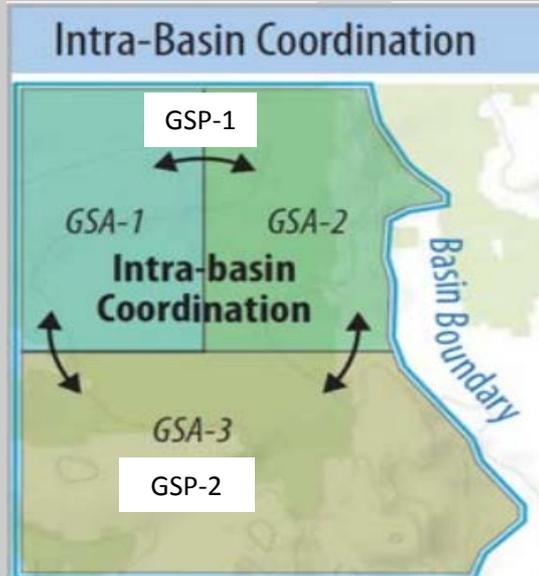


- DWR shall evaluate if one GSP adversely affects an adjacent GSP (§ 10733 (c))

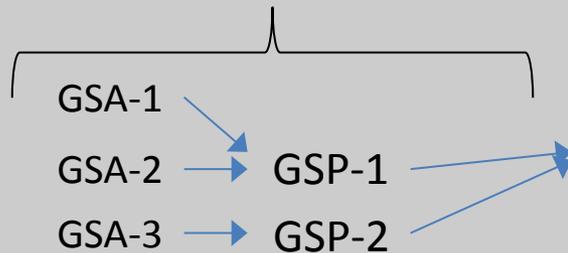
(§ 10721.)(d)“Coordination agreement” means a legal agreement adopted between two or more groundwater sustainability agencies that provides the basis for coordinating multiple agencies or groundwater sustainability plans within a basin pursuant to this part.

# Coordination (cont.)

## Intra-Basin (Within Basin)



Coordination  
Agreement



## GSP “whole basin” Requirements

1. Coordinated GSP- includes summary document submitted with multiple GSPs where multiple GSAs exist within one basin
  - a) Sustainability Goal
  - b) Sustainable Yield
    - I. Undesirable Results
  - c) State of the Basin
    - I. Hydrogeologic Conceptual Model
    - II. Water Budget/Baseline
  - d) Monitoring Plan
2. Annual Report

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# Coordination (cont.)

## Same Data and Methodologies (§10727.6)

- For **groundwater elevation, groundwater extraction, and surface water supply**
  - Monitoring Protocols
    - Spatial resolution by land use type (approx. same)
    - Temporal resolution
    - Type of monitoring
    - Standard operating procedures (SOPs)
  - Data management system
- Basin wide calculation of **total water use, change in groundwater storage, water budget, and sustainable yield**
- Agreement on hydrologic assumptions  
(do not have to use same model)

# Coordination (cont.)

Governance

Coordination

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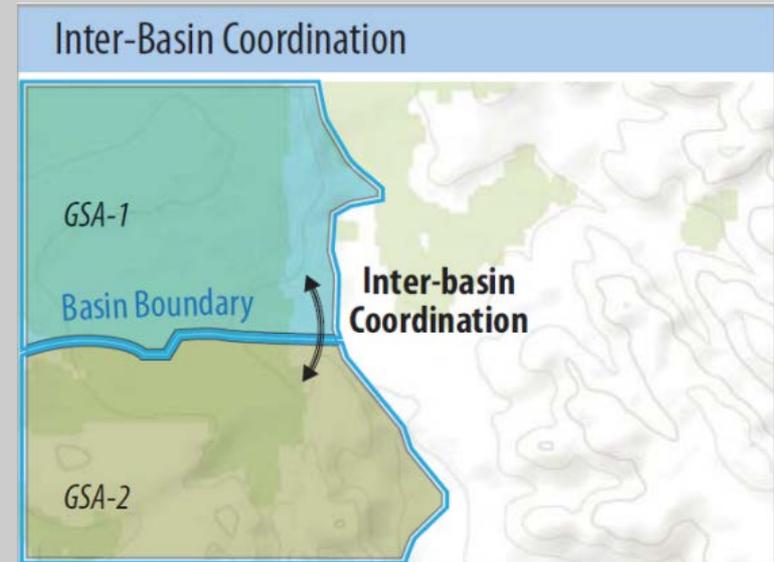
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## Inter-Basin (Between Hydraulically Connected Basins)

- Technical Requirements
  - Water budget information necessary to estimate groundwater flux across basin boundaries
  - Estimate of stream-aquifer interactions at boundaries
- Narrative Requirements
  - Description of how GSAs interact between adjacent hydraulically connected basins and how the GSAs will not adversely affect adjacent hydraulically connected basins
  - Description of how conflicts will be identified and resolved
- Not a duplication of Intra Basin Coordination requirements



Governance

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**Sustainability Goal**

Measurable Objectives & Undesirable Results

Monitoring Plan

Implementation & Reporting

Alternative Plans & Frings Areas

# Groundwater Sustainability



*Undesirable Results:  
Significant and Unreasonable...*



Surface Water Depletion



Reduction of Storage



Degraded Quality



Seawater Intrusion



Land Subsidence



Lowering GW Levels

# Measurable Objectives

## Measurable Objectives & Interim Milestones (§10727.2 (b))

- GSPs shall include Measurable Objectives, as well as Interim Milestones in increments of five years, to achieve the sustainability goal in the basin within 20 years of the implementation of the plan



## Considerations

- **Measurable Objective (MO)** – 1) Management statement and 2) Measurable metric (at Interim Milestones) for each Undesirable Results to achieve the basin-wide Sustainability Goal
- **Minimum Threshold (MT)** – The point below which Undesirable Results (significant and unreasonable) are occurring in basin

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Purposes Only  
(Subject to Change)

# Undesirable Results

## Framework Considerations

- At least one Minimum Threshold for each Undesirable Results
- Description of how beneficial use was considered and users of groundwater were engaged & considered in setting Minimum Thresholds
- Represents a quantitative value measured in terms of:



Lowering  
GW Levels

GW elevation  
from mean sea  
level



Degraded  
Quality

Extent GW extractions  
contribute to WQ  
degradation



Land  
Subsidence

Measurement of  
Land Subsidence in  
feet



Reduction  
of Storage

Change in Storage



Seawater  
Intrusion

Isocontour of  
appropriate constituent  
concentration



Surface Water  
Depletion

Base flow Calculation,  
Monitoring, & Extent of  
GW Dependent  
Ecosystems ???

★ Threshold shall not conflict with  
existing State standard

Or other appropriate  
quantitative metric

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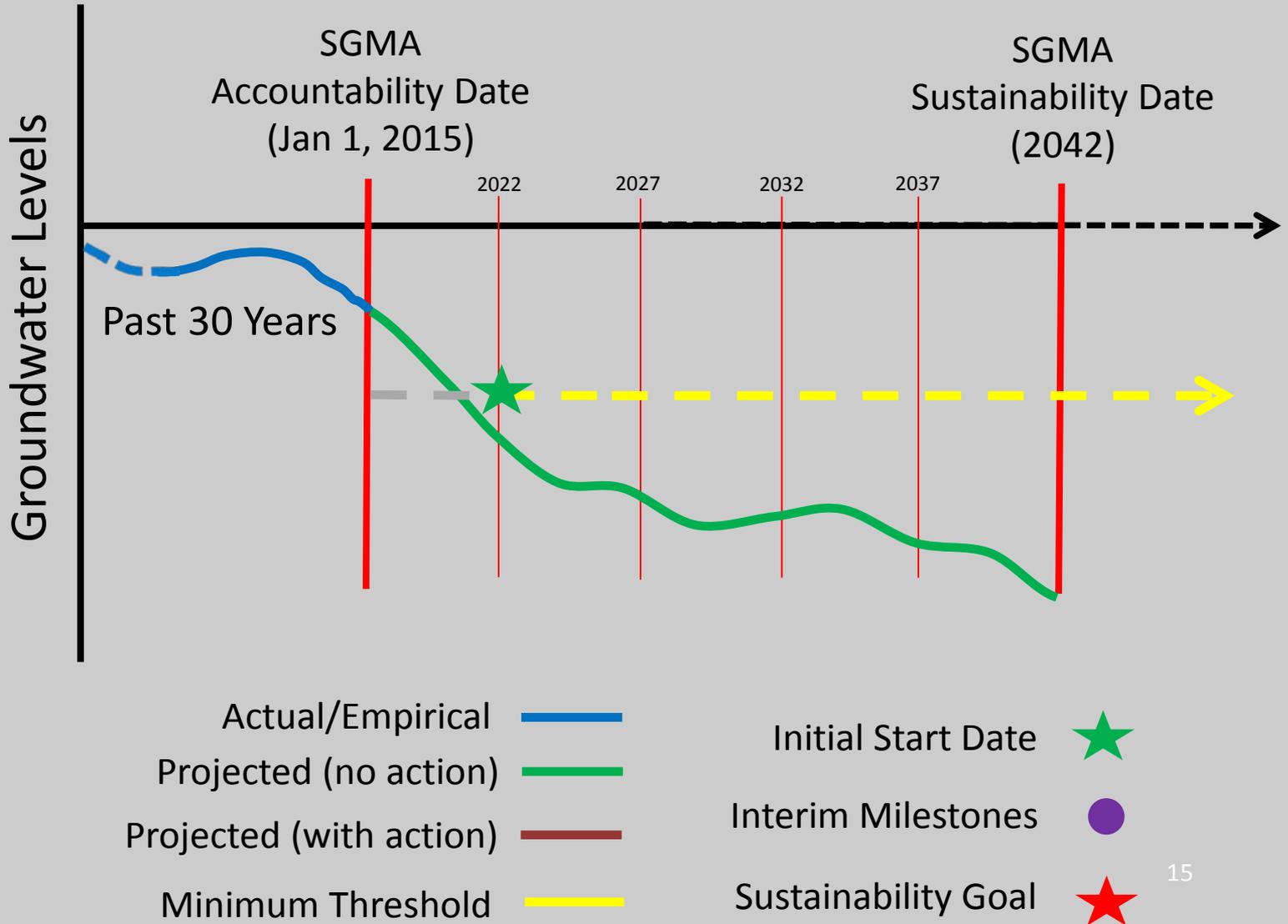
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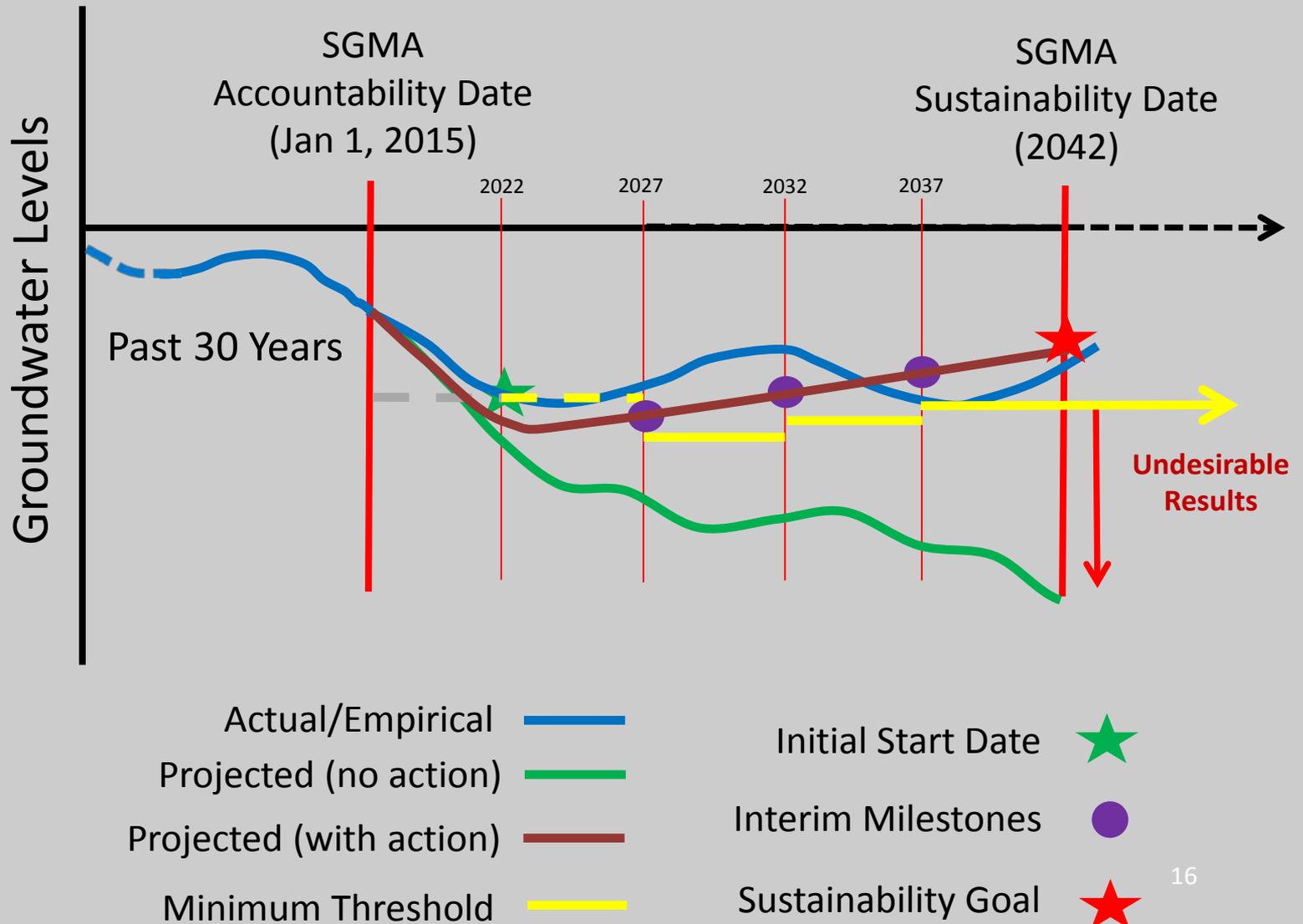
# Undesirable Results (cont.)

Initial Establishment of Minimum Threshold



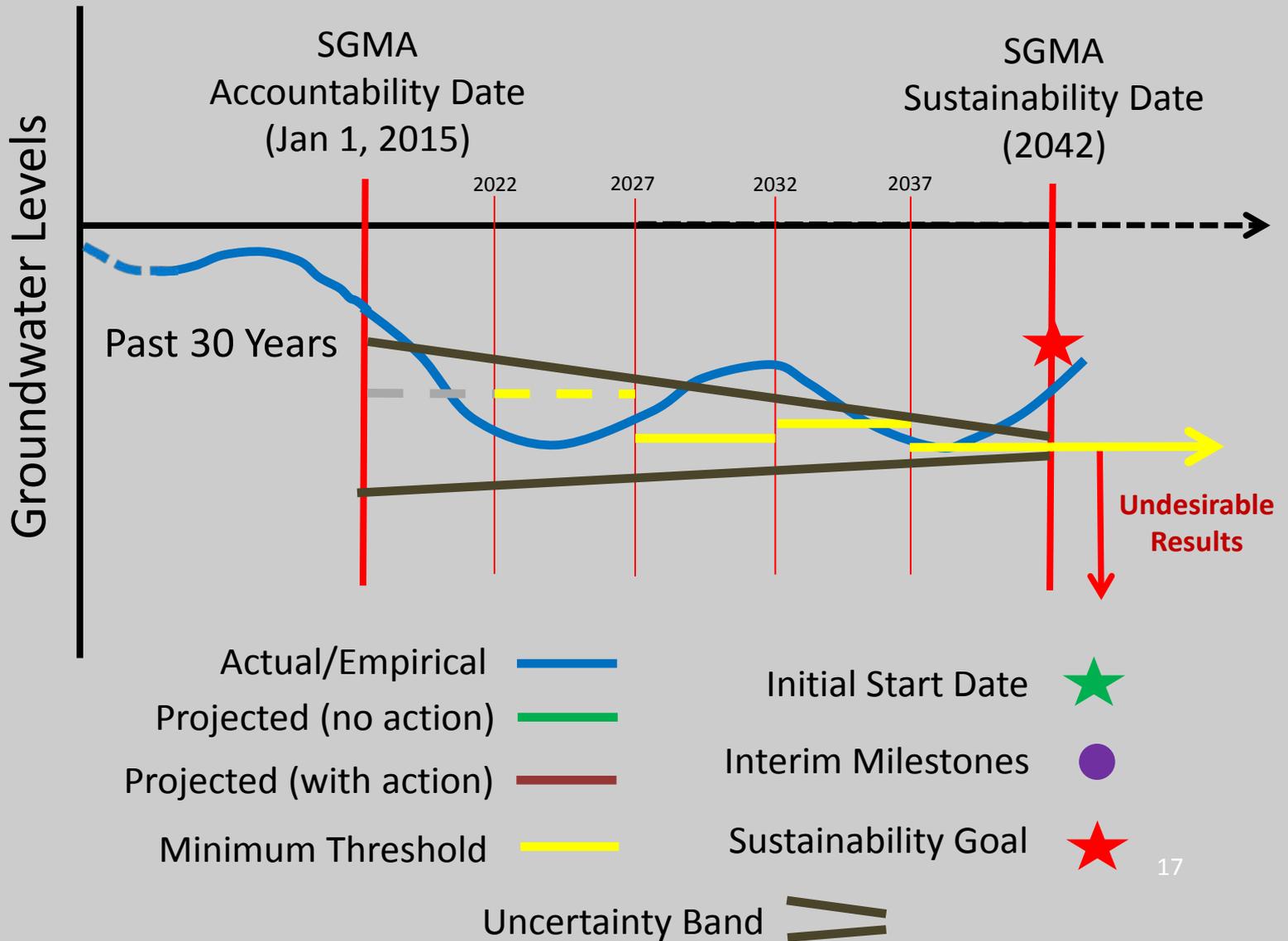
# Undesirable Results (cont.)

Identifying the Proposed Path to the Sustainability Goal



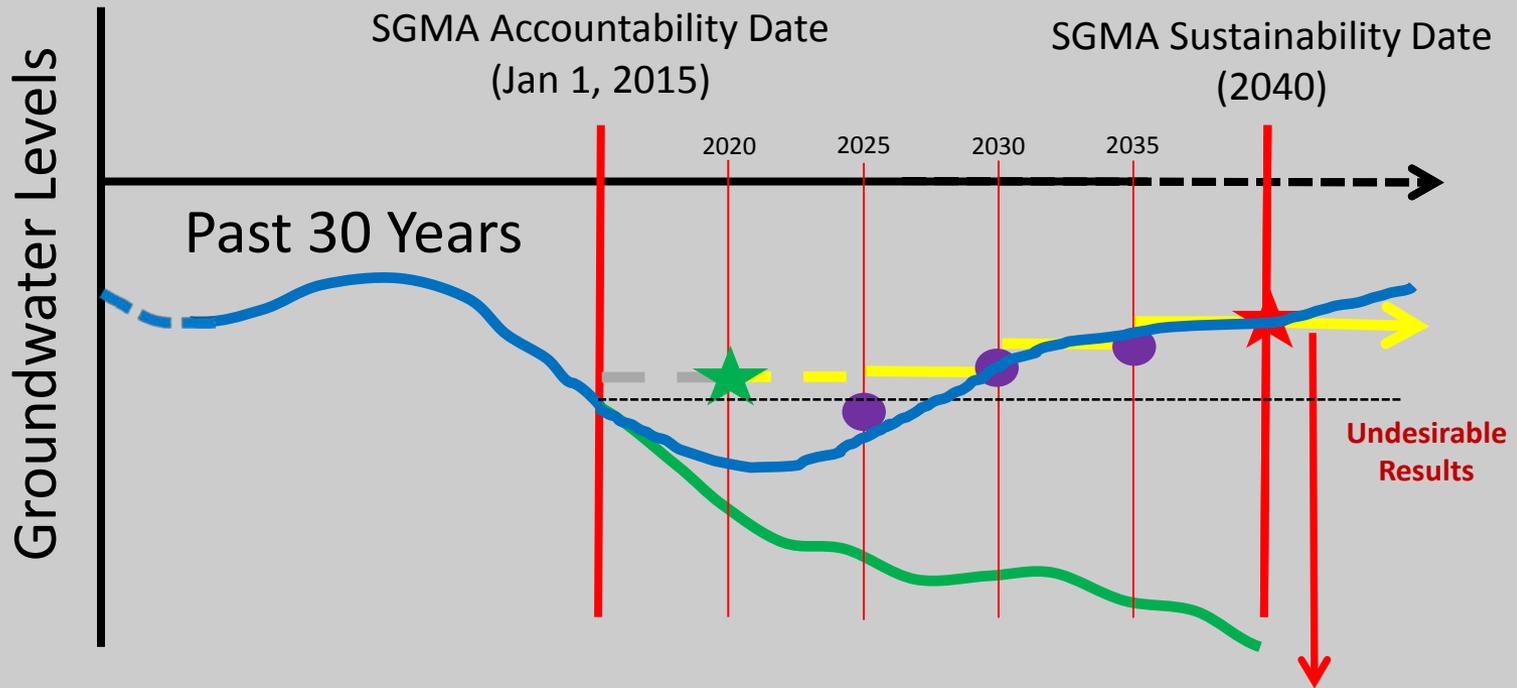
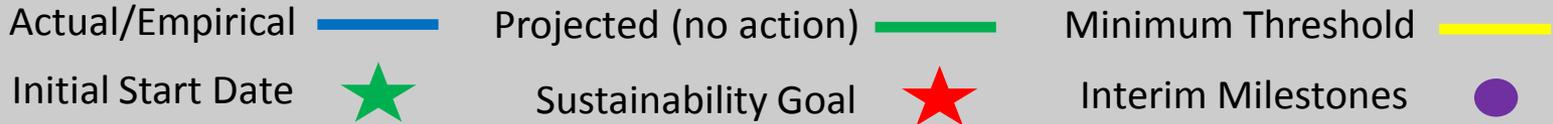
# Undesirable Results (cont.)

Addressing Uncertainty



# Undesirable Results (cont.)

## Minimum Thresholds Requirements



### Regulation Considerations

- Must adhere to framework
- Must pass reasonableness criteria

### GSA Discretion/Flexibility

- Proposed by GSA
- Locally defined
- Site specific

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Sustainability Goal

Measurable Objectives & Undesirable Results

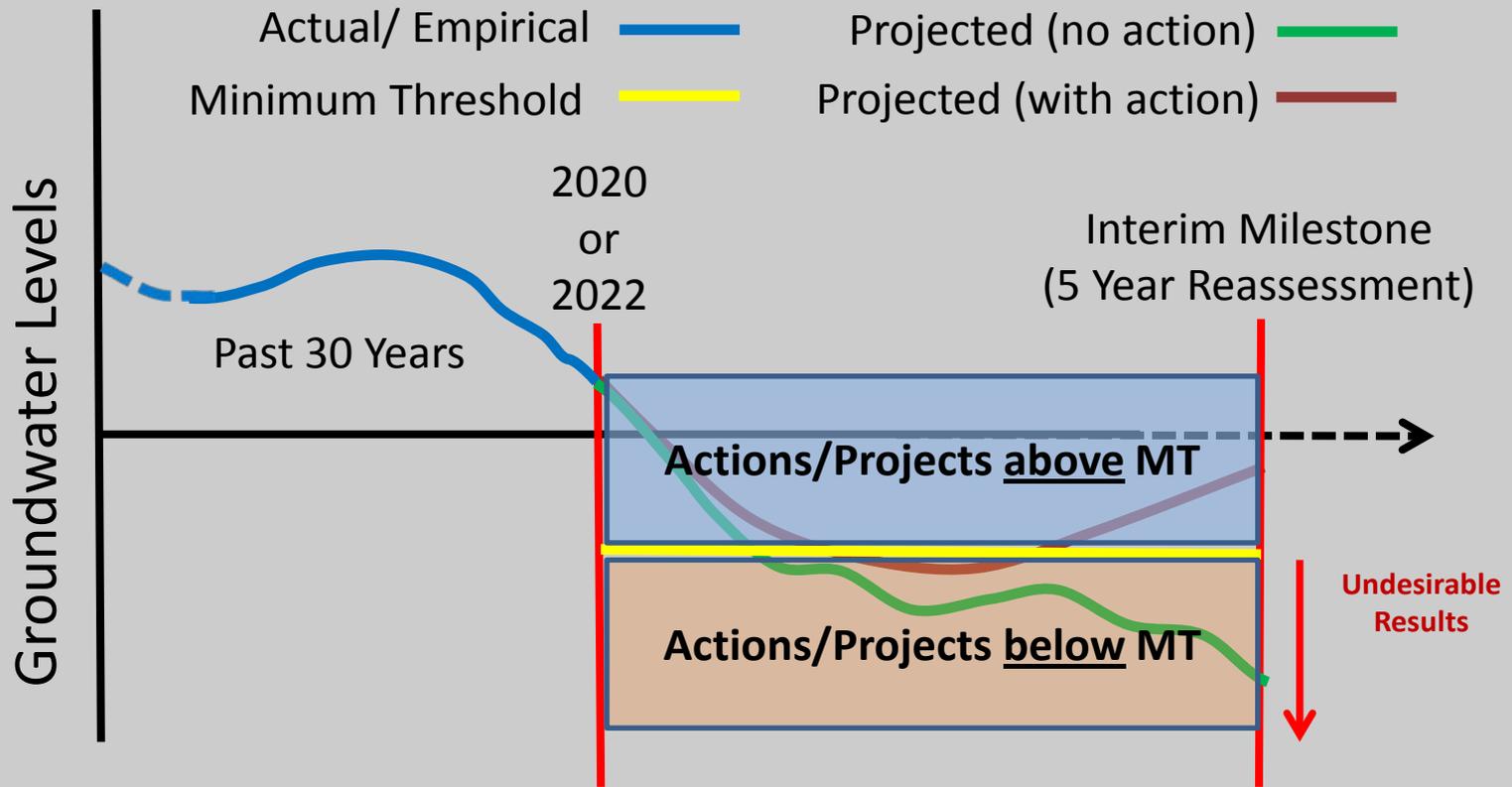
Monitoring Plan

Implementation & Reporting

Alternative Plans & Frings Areas

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# Undesirable Results (cont.)



## Regulation Considerations

- Description of Types of Actions or Projects
- Action/Projects will differ based on the severity of conditions (whether above or below MT)
- Contingency Plan Requirement (Demand Reduction Actions)

## GSA Discretion/Flexibility

- Outcome based - Up to GSA to identify effective actions or projects to avoid the minimum thresholds and reach the Sustainable Goal

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# Monitoring Plan

## Monitoring Summary (§10727.2 (e)(f))

- Existing monitoring sites (identification of data gaps)
- Types of measurements, frequency, and protocols

## Regulation Considerations

- Monitoring Plan – Adequate number of monitoring sites:
  - To evaluate and implement SGM (Measurable Objectives)
  - Characterize hydraulic gradients and boundary flux
- CASGEM monitoring well network provides foundation
- Quarterly frequency minimum standard (*seasonal trends*)
- Increased density and frequency of monitoring may be necessary based on severity of the undesirable results

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# Monitoring Plan – Existing Network

Governance

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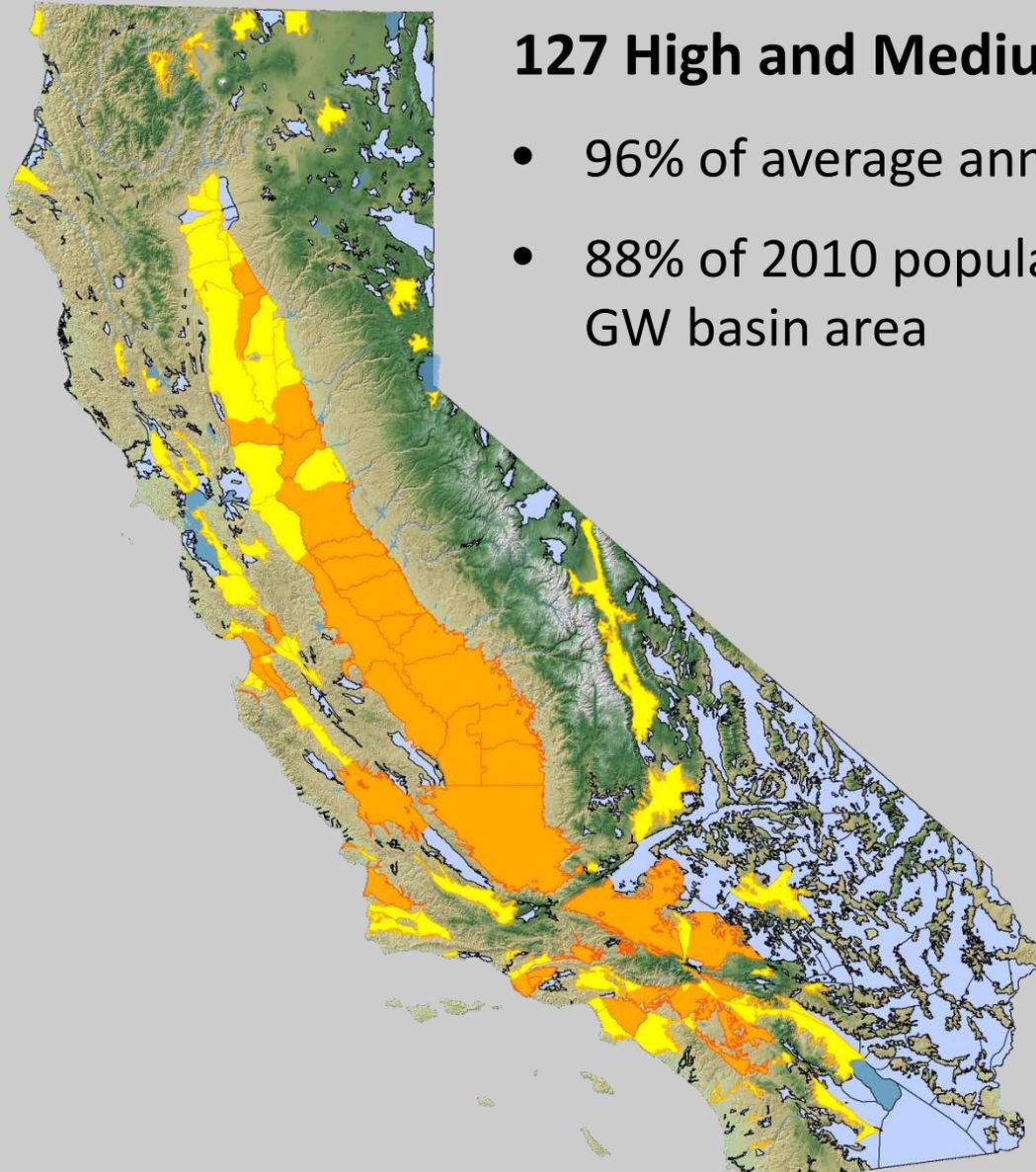
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## 127 High and Medium Priority Basins

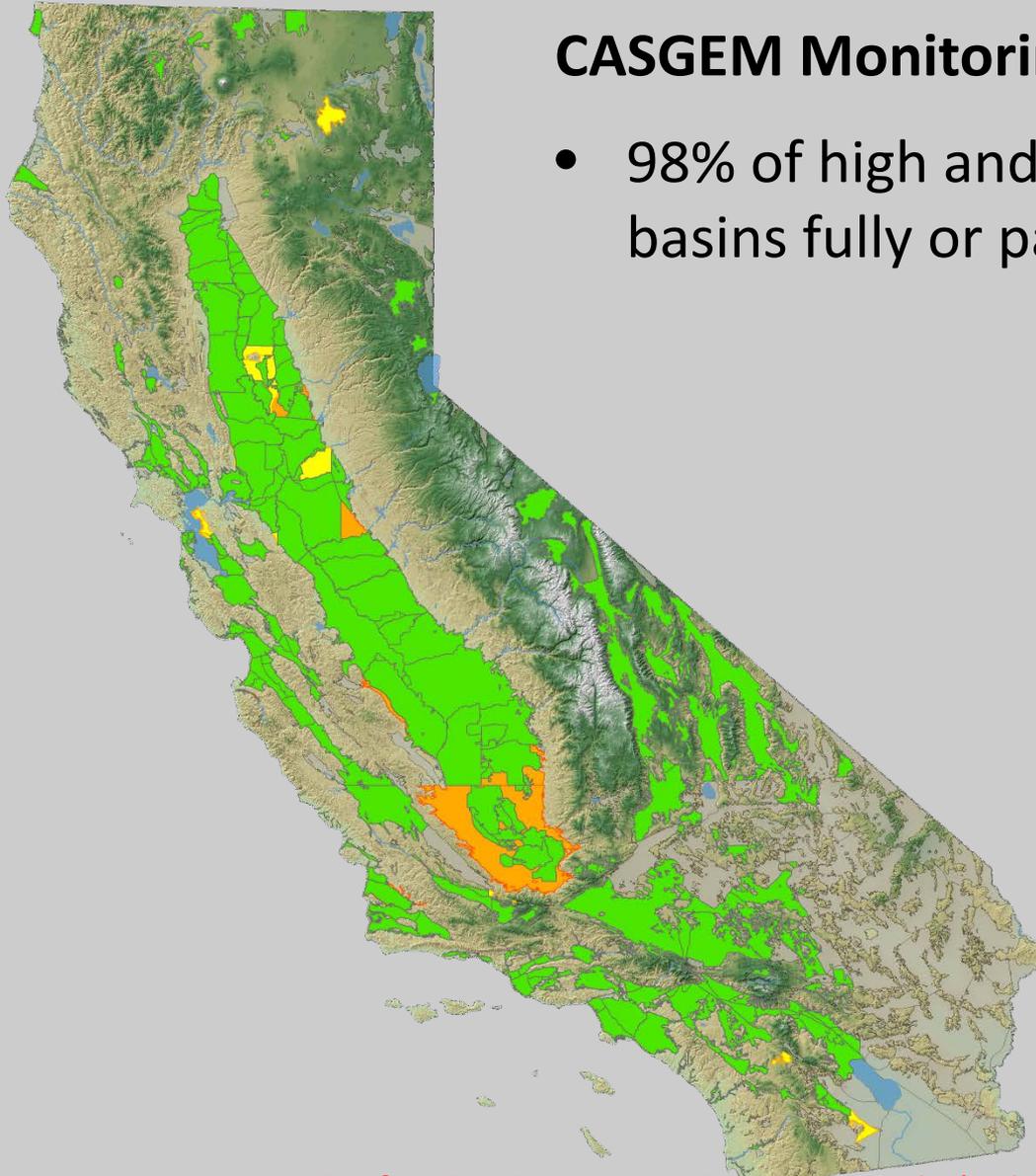
- 96% of average annual GW supply
- 88% of 2010 population overlying the GW basin area

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# Monitoring Plan – Existing Network

## CASGEM Monitoring Plans

- 98% of high and medium priority basins fully or partially designated



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**Monitoring Plan**

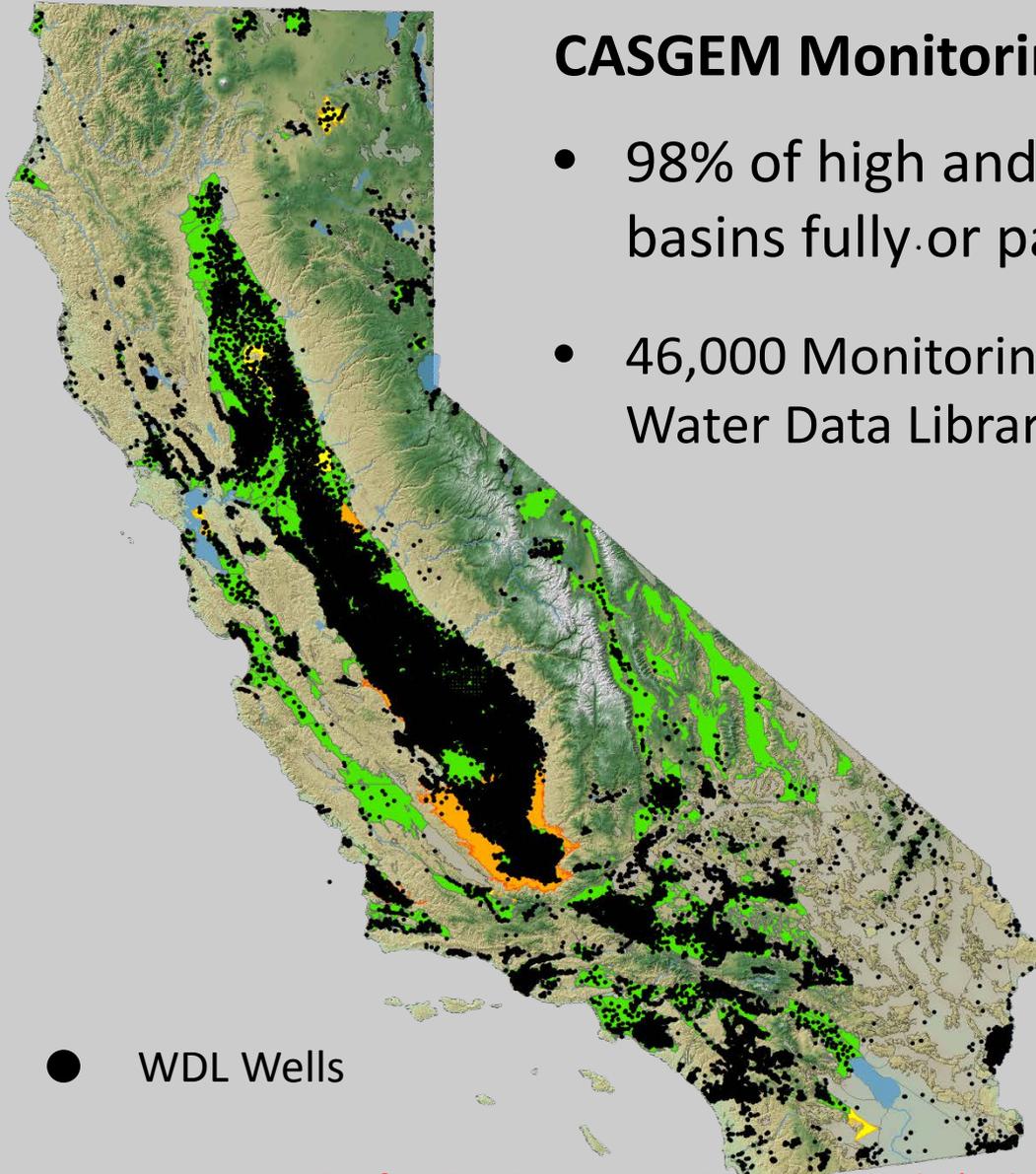
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# Monitoring Plan – Existing Network

## CASGEM Monitoring Plans

- 98% of high and medium priority basins fully or partially designated
- 46,000 Monitoring Wells in DWR Water Data Library (Past & Present)



● WDL Wells



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# Monitoring Plan – Existing Network

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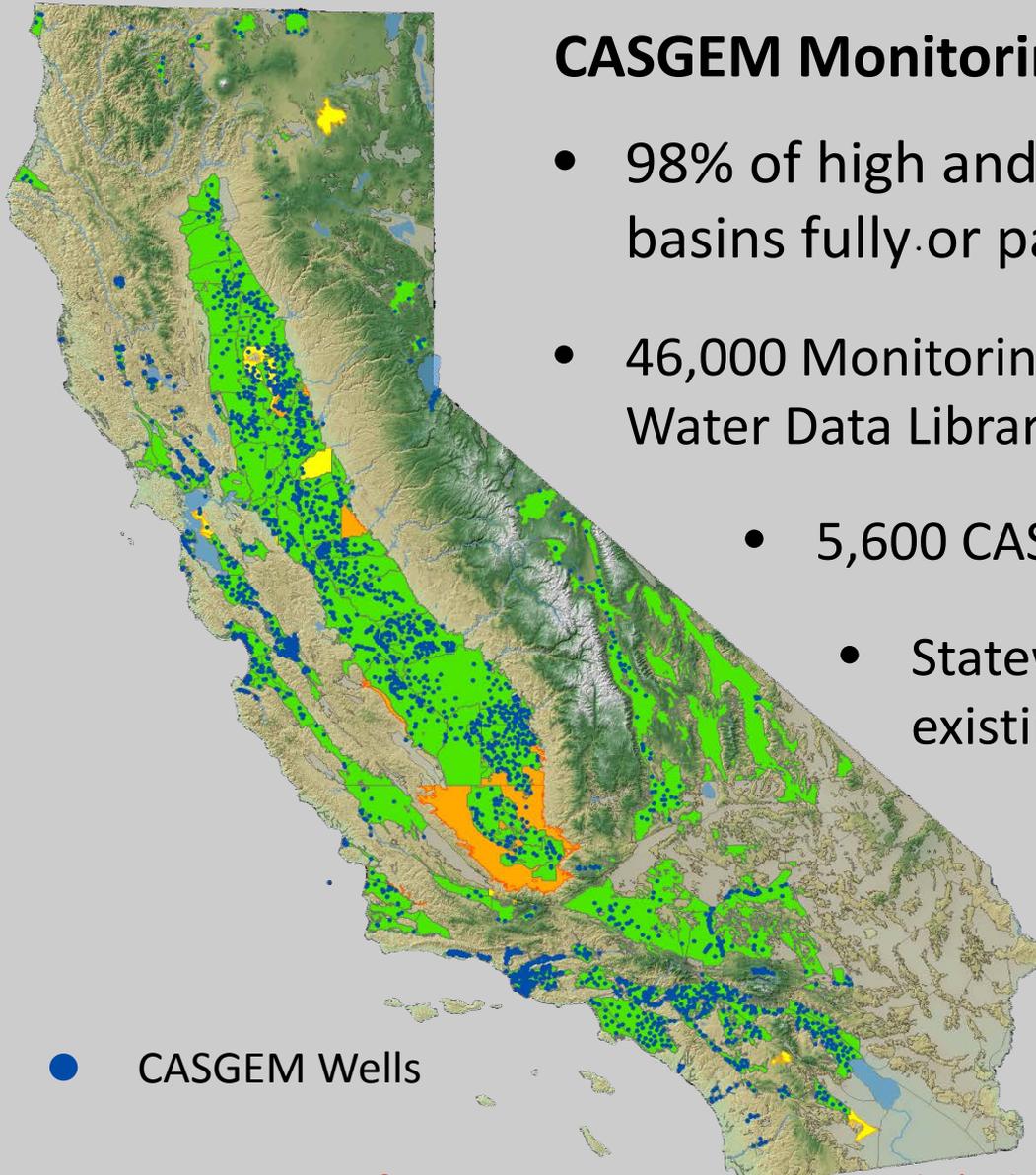
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**Monitoring Plan**

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## CASGEM Monitoring Plans

- 98% of high and medium priority basins fully or partially designated
- 46,000 Monitoring Wells in DWR Water Data Library (Past & Present)
  - 5,600 CASGEM Wells
  - Statewide Variability in existing monitoring plans



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# Monitoring Well Standards

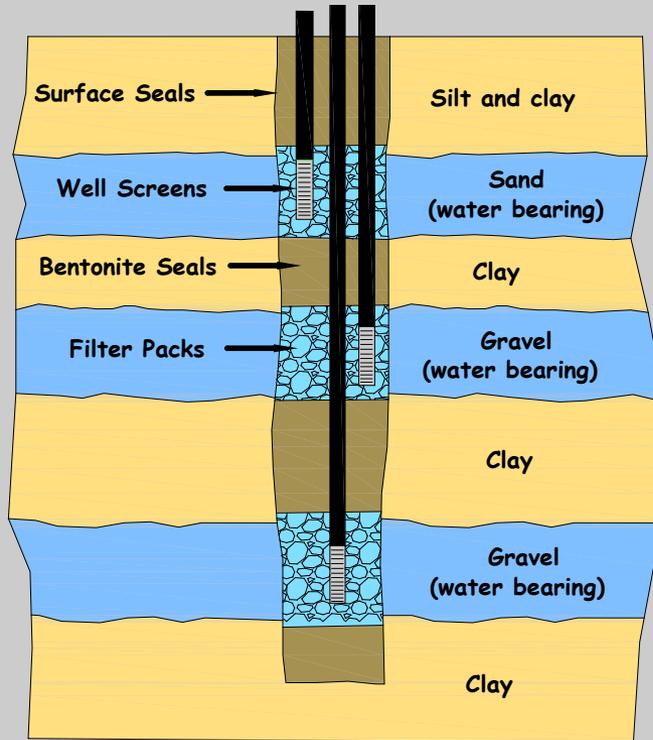
## Regulation Consideration

### Well Location (X,Y,Z)

- Reference point elevation (ft msl)
- Groundwater surface elevation

### Well Details

- Screened intervals
- Total depth
- Well type
- Well Completion Report
- Geophysical investigations and supporting data
- Aquifer Information



Governance

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# Monitoring Plan – Existing Monitoring Wells

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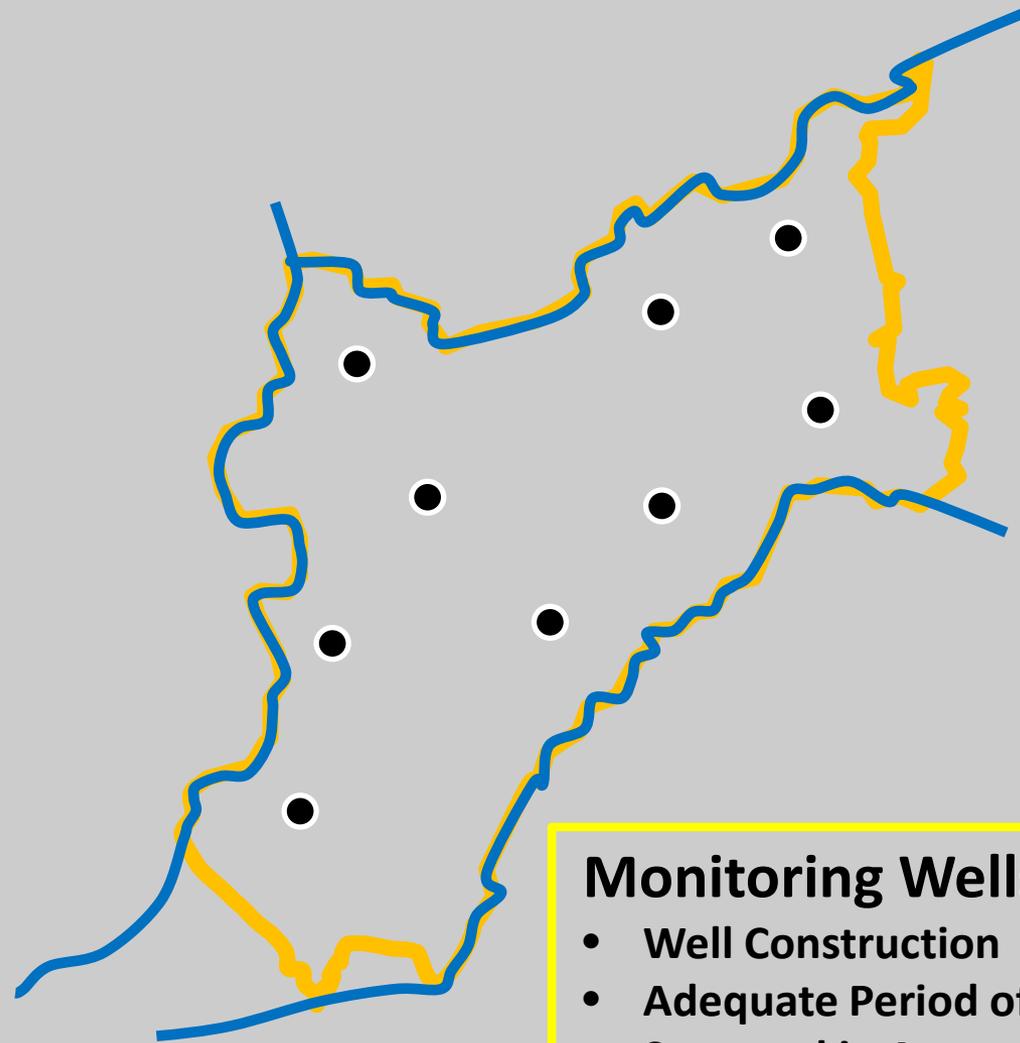
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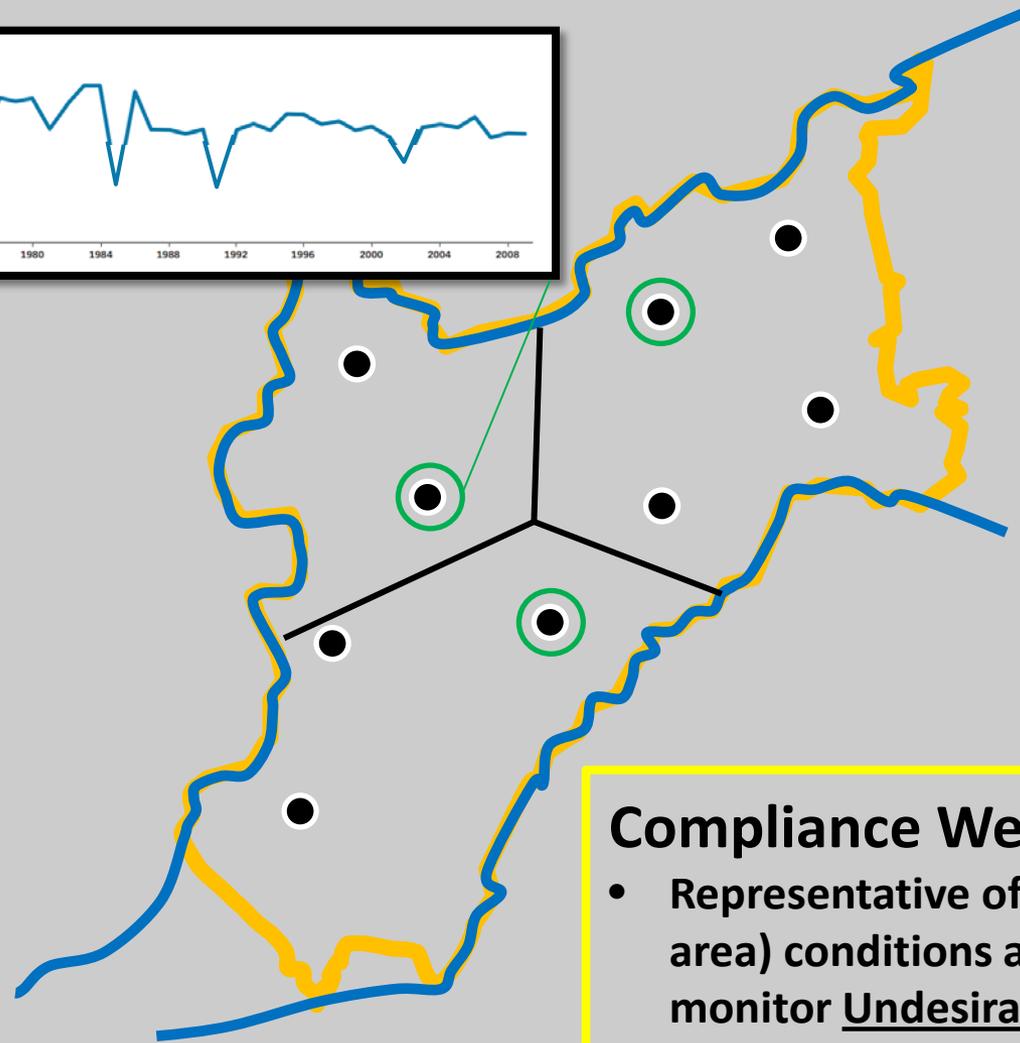
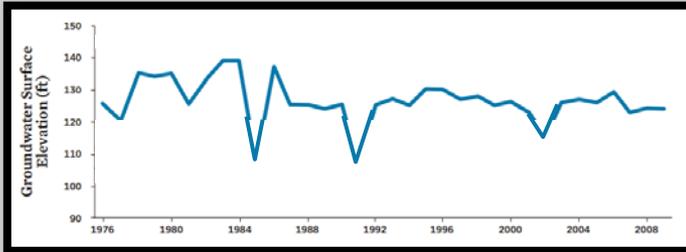


## Monitoring Wells:

- Well Construction
- Adequate Period of Record
- Screened in Appropriate Aquifer(s)

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# Monitoring Plan – Compliance Monitoring Sites



## Compliance Wells:

- Representative of Basin (or focus area) conditions and adequate to monitor Undesirable Results

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# Monitoring Plan – Compliance Monitoring Sites

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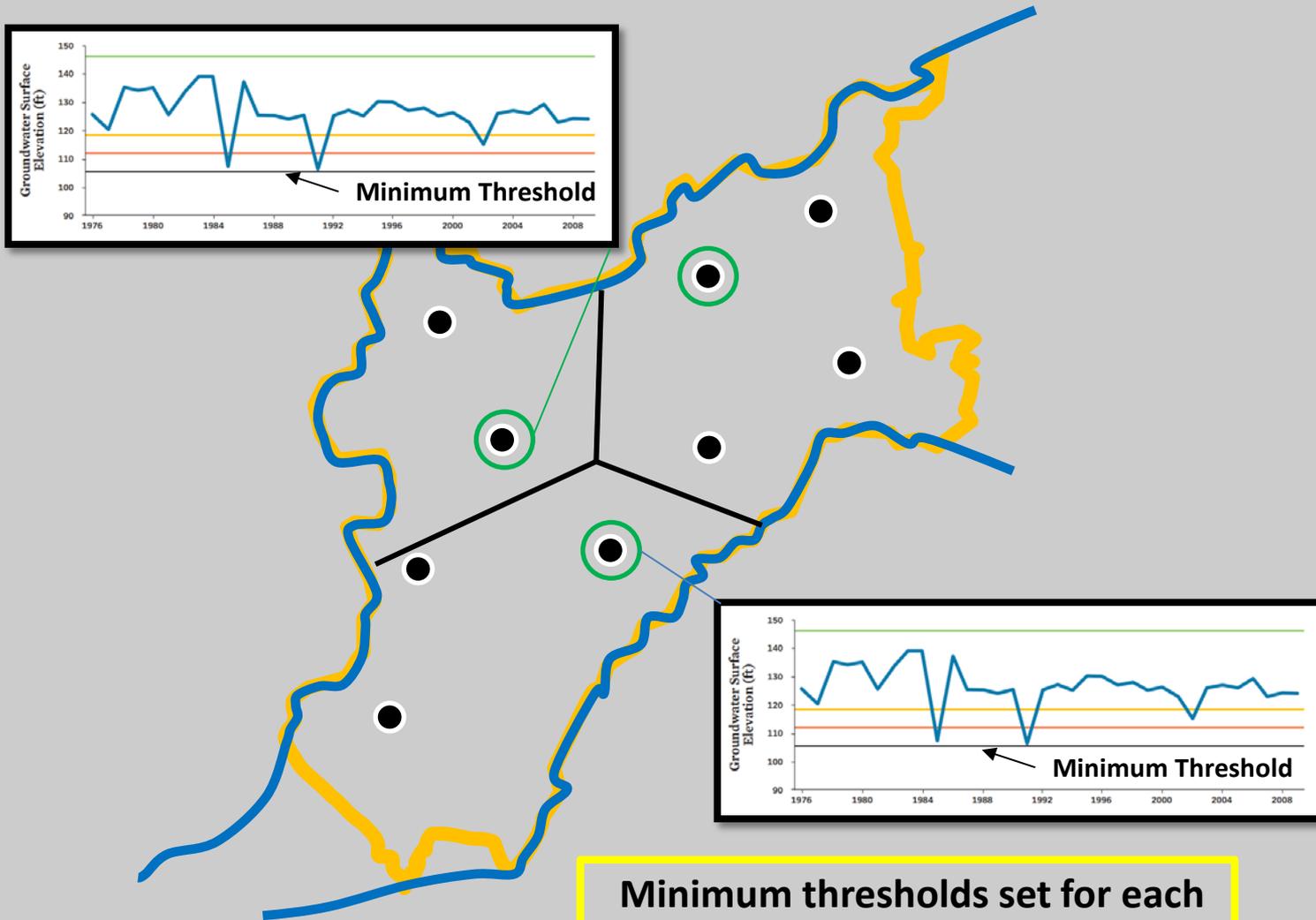
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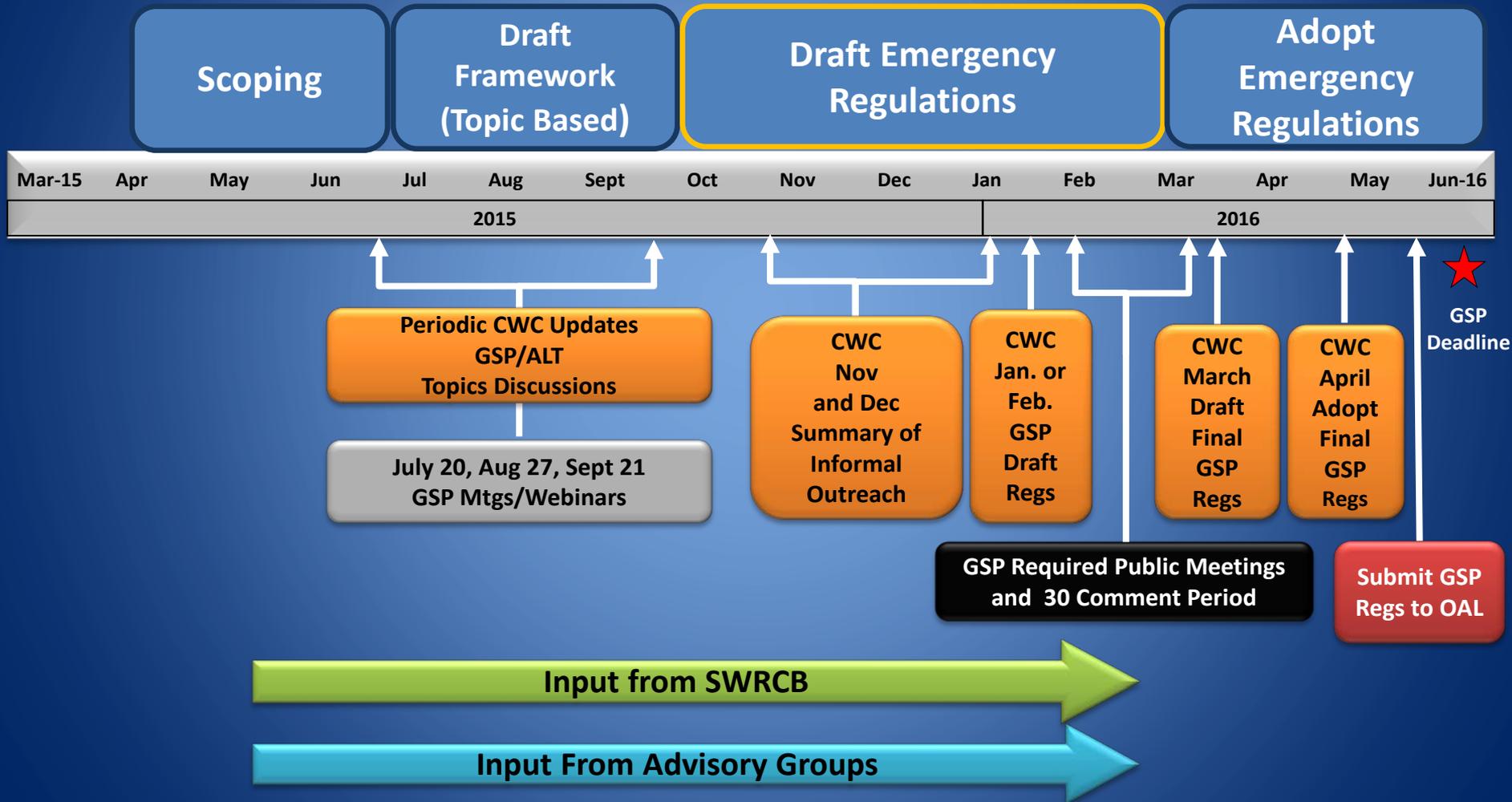
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**Minimum thresholds set for each  
compliance Site**

# Next Steps



**Dates and Durations are Subject to Change**

# Web Resources

- **DWR Sustainable Groundwater Management (SGM)**  
<http://www.water.ca.gov/groundwater/sgm/index.cfm>
- **DWR GSP Emergency Regulation Website**  
<http://www.water.ca.gov/groundwater/sgm/gsp.cfm>
- **Subscribe to DWR SGM Email List**  
<http://www.water.ca.gov/groundwater/sgm/subscribe.cfm>
- **DWR Region Office Contacts**  
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- **Questions or Comments**  
[sgmps@water.ca.gov](mailto:sgmps@water.ca.gov)