The Devil is in the Details: Moving from SGMA to Regulations

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The Big Water Supply Shift

Groundwater level change from Spring 2013 to 2014

As California faces its third year of drought, groundwater levels have dropped dramatically in many parts of the Central Valley, especially in the southern San Joaquin Valley.

Redding
Chico
Oroville
Colusa
Yuba City
Placerville
Sacramento
Sonoma
Fairfield
Rio Vista
Stockton
San Francisco
Modesto
Merced
Madera
Fresno
Coalinga
Bakersfield
San Luis Obispo
San Joaquin Valley
0 Miles 50

GROUNDWATER LEVEL CHANGE AS OF MAY 16

- 20 ft. — MORE WATER
- 10 ft.
- 0 ft. — NO CHANGE
- -10 ft.
- -20 ft.
- -30 ft.
- -40 ft.
- -50 ft.
- -60 ft. — LESS WATER

Groundwater basins

• State-monitored well location

Source: California Department of Water Resources

Union of Concerned Scientists

FACT SHEET

The Big Water Supply Shift

Groundwater Key to Water Security in California's Changing Climate

HIGHLIGHTS

For more than a century, California has relied on its snowmelt-fed reservoirs, rivers, and streams for the majority of its water, but drought and climate change are depleting those traditional supplies. Snow is already melting as many as 30 days earlier than in the mid-twentieth century, meaning less water is available during the hotter months when water demand is highest.

California is increasingly turning to groundwater to meet its water needs. Today, groundwater supplies up to 50 percent of California's water, but California's prolonged drought has led to the over-pumping of groundwater, overdrafting the Central Valley's aquifers. Sustainable groundwater management will allow the state to adapt to climate change while increasing water reliability in the future.

California's recent struggles with drought have brought state water supplies to unprecedented and dangerously low levels. As a result, Californians now see water management as a paramount issue of concern. Drought ranked as the greatest obstacle facing the state over all other issues in a 2015 survey of Californians. A record-high 70 percent of those polled said water supply is a "big problem" in their part of the state (Baldassare et al. 2015). Because this epic drought is a harbinger of what is to come, California must plan now for a different water future (Cook, Ault, and Smerdon 2015).

For more than a century, California has relied on its snowmelt-fed reservoirs, rivers, and streams for the majority of its water. Drought and climate change are depleting those traditional supplies, with California snowpack reaching a 500-year low (Belmecheri et al. 2015). The state surface-water storage system is not designed for a future in which precipitation is expected to come as rain rather than snow; it will consequently not be able to deliver adequate supplies. We must therefore change how we collect and manage our dwindling water resources. California is increasingly turning to groundwater to meet its water needs, so the focus must shift to making groundwater supplies more reliable and sustainable to ensure enough water for generations to come.

California Department of Water Resources

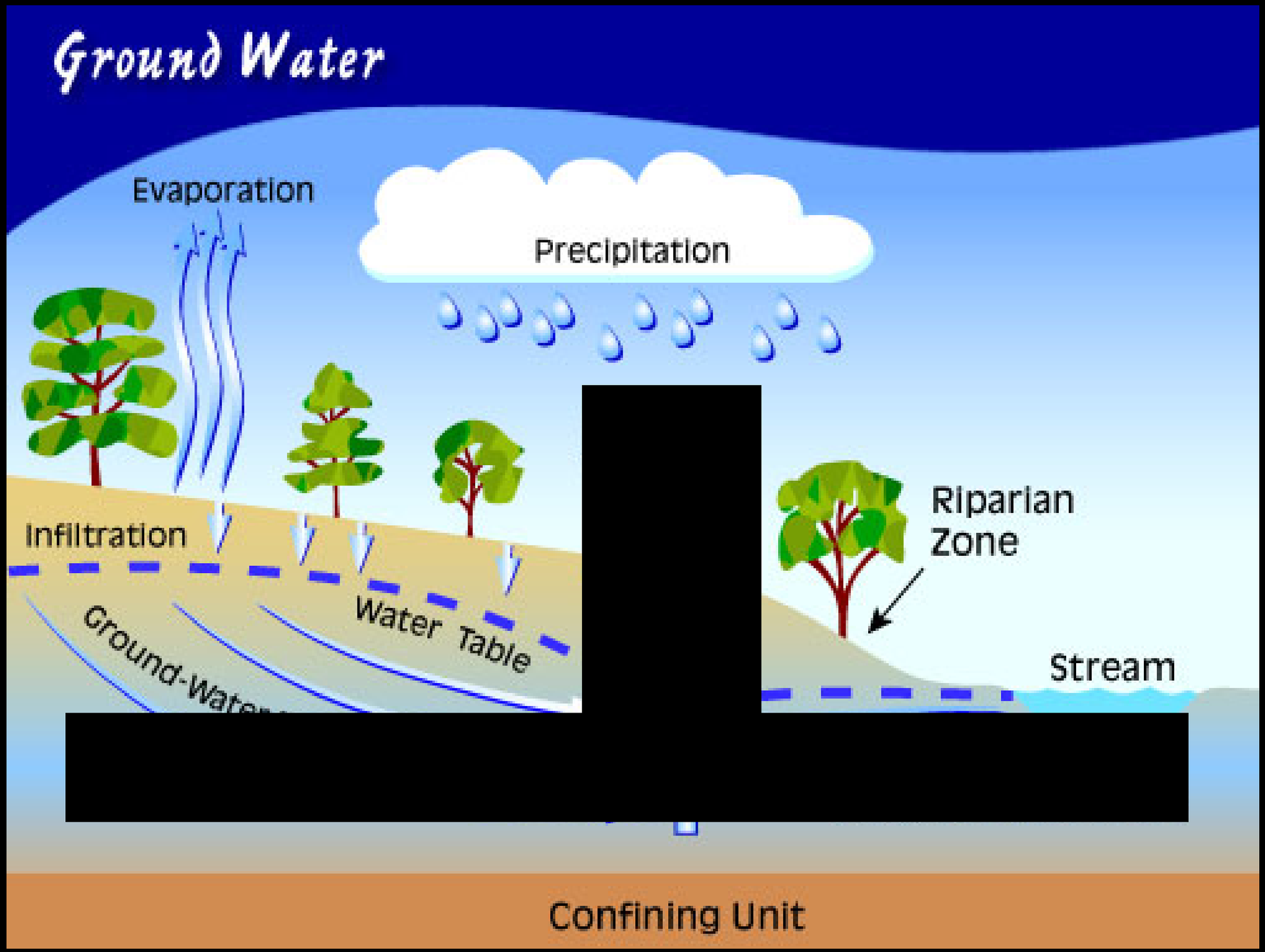
Decreased snowpack has brought less water into reservoirs (such as Lake Oroville, above, in Northern California), while increased temperatures have led to greater evaporation of surface water. Declining surface water supplies have led the state to increase its reliance on groundwater, so strong groundwater management is critical to ensuring a reliable water supply for the future.

ucsusa.org/watersupplyshift

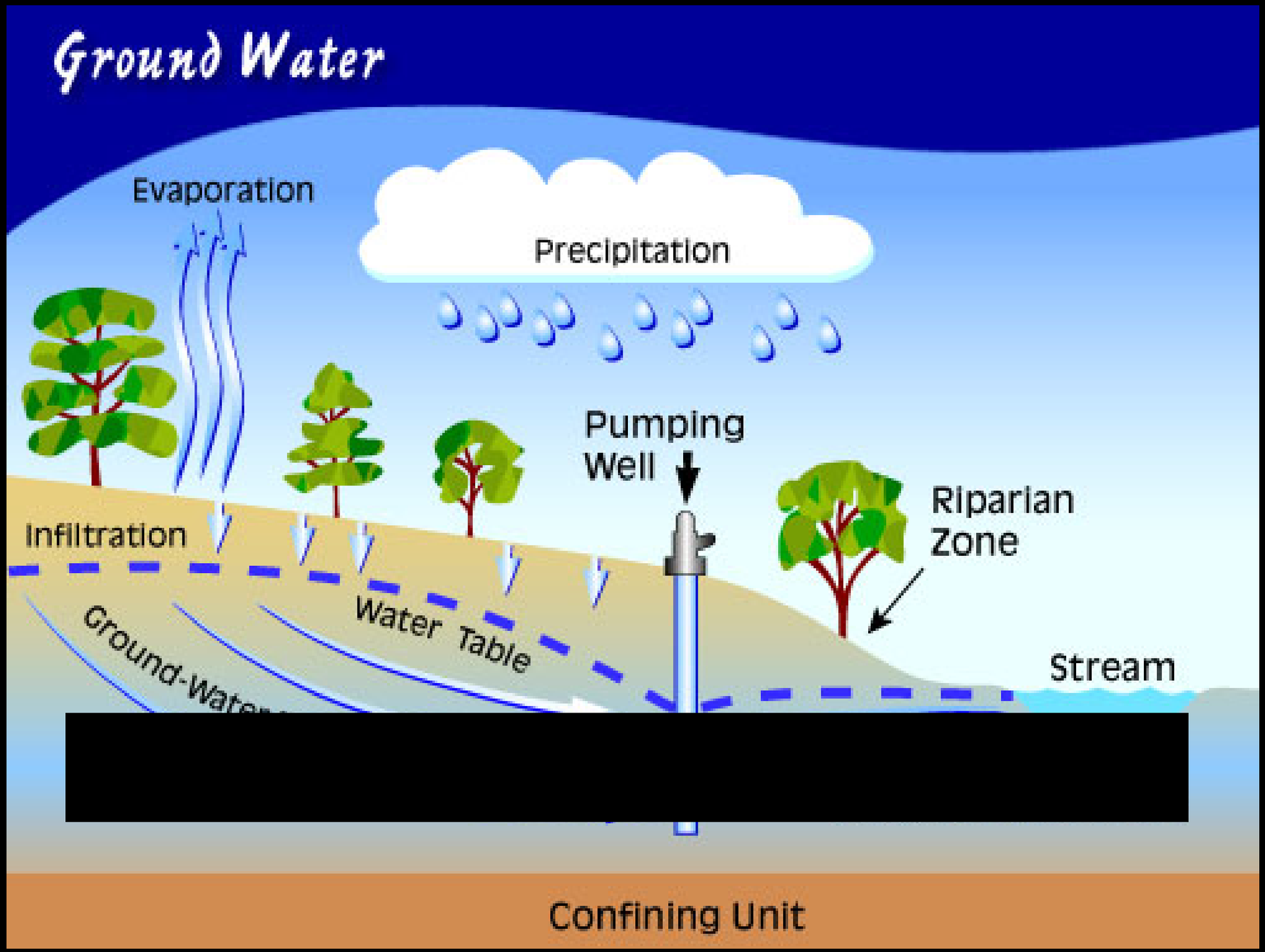
The Sustainable Groundwater Management Act

Thomas Harter

Revolution #1: Information



The “black box” is opening



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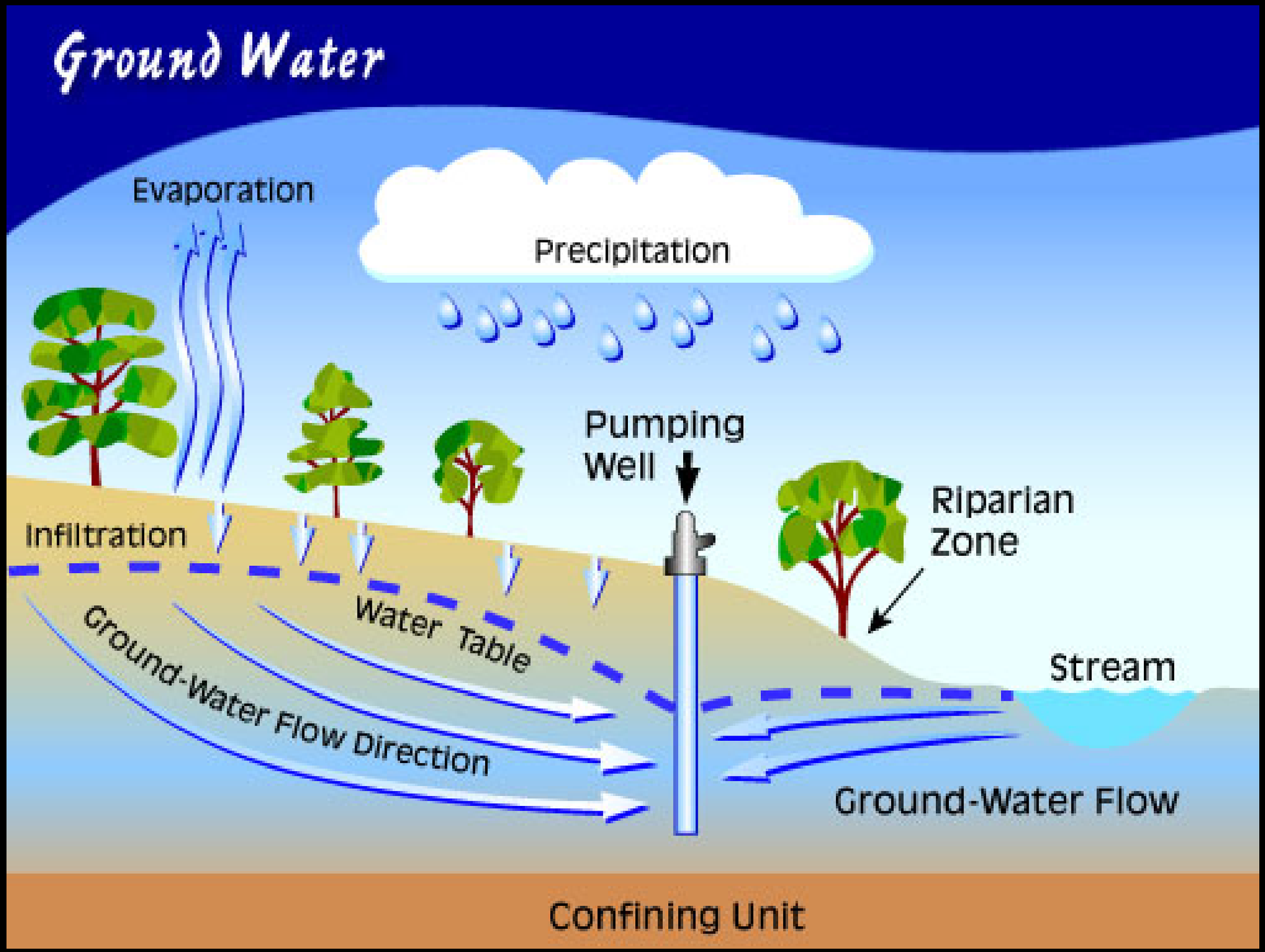

Revolution #2: Governance

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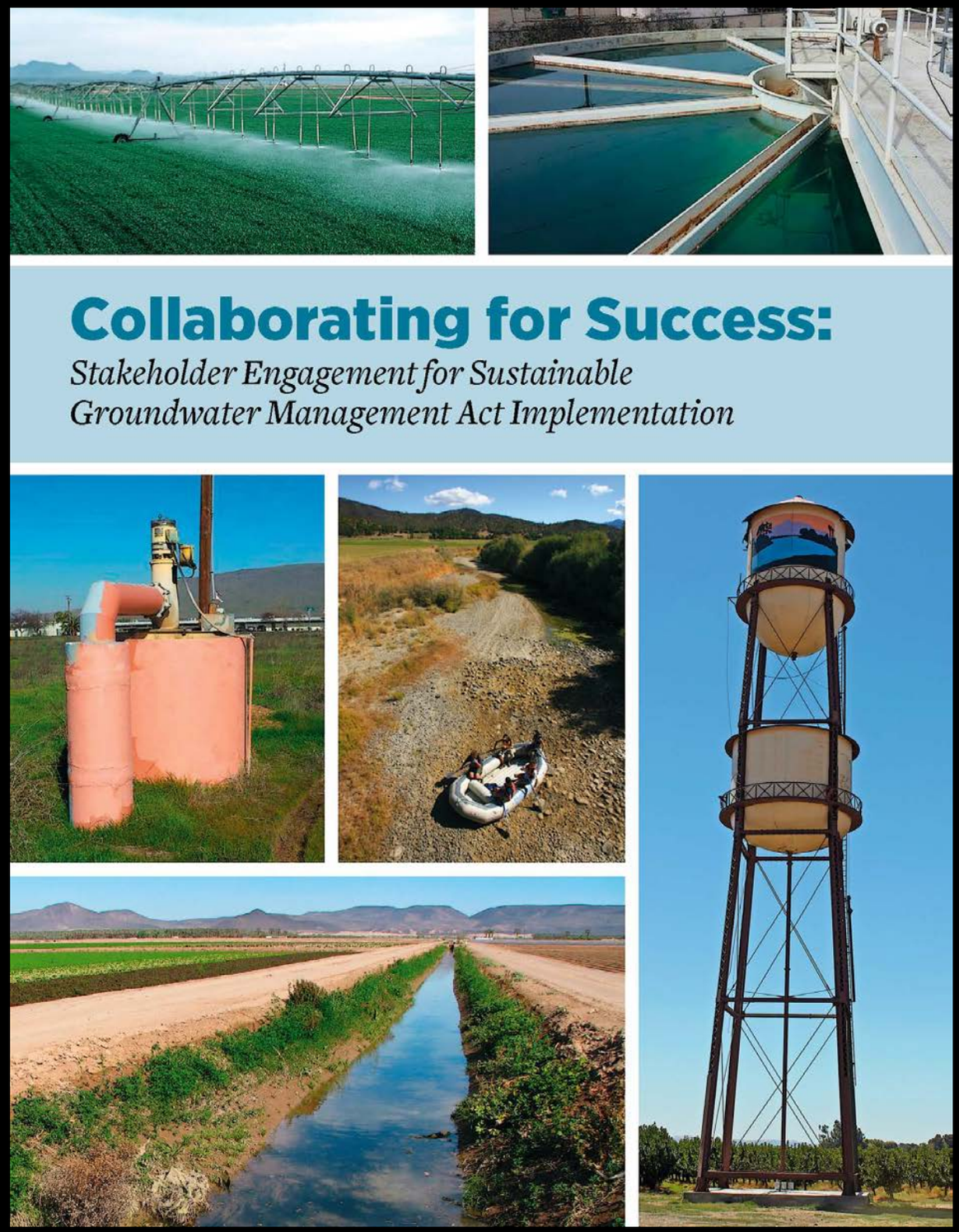
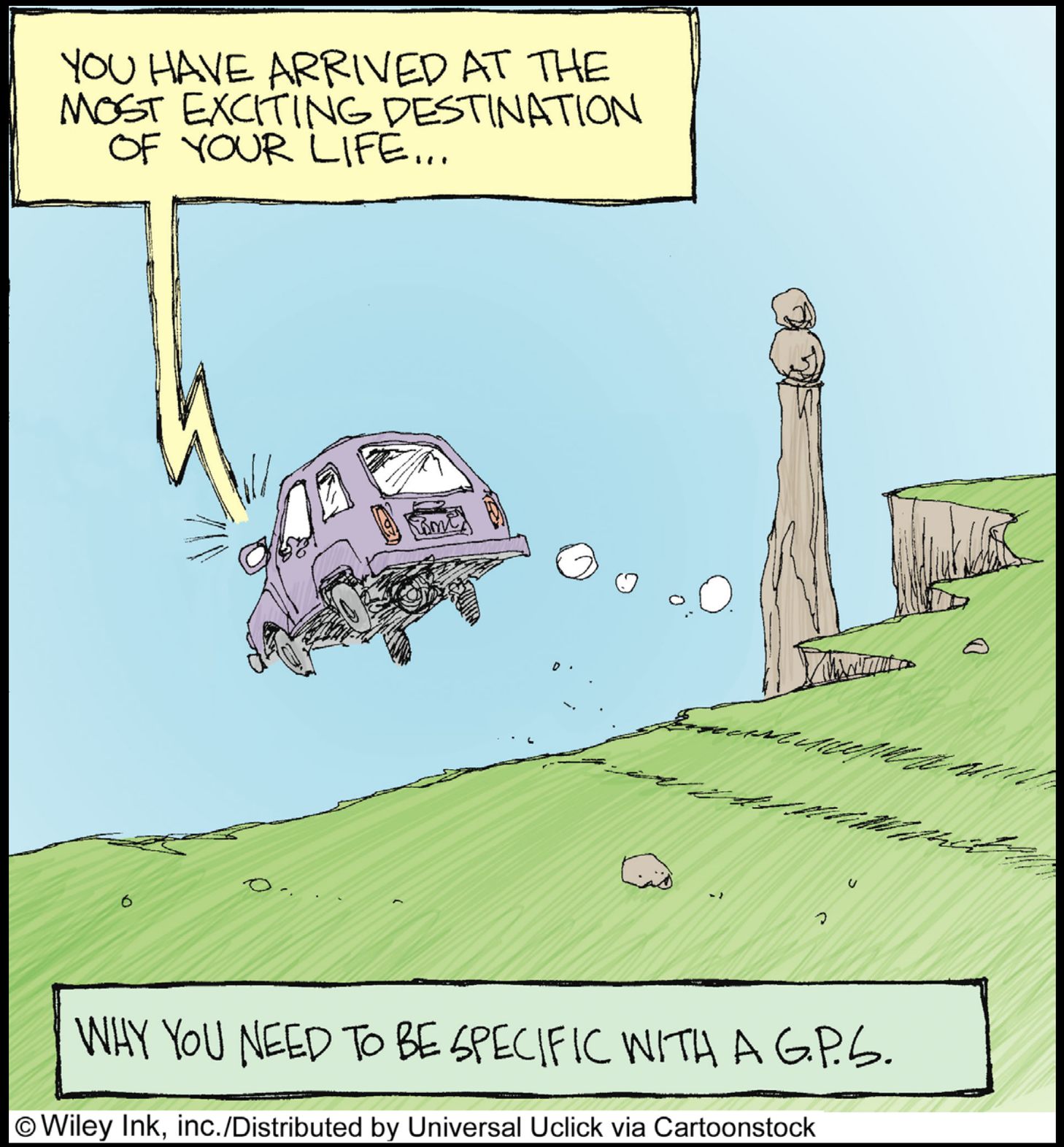


Revolution #3: Planning



Revolution #3: Planning

Past Plan Requirements

- Maps and hydrology
- **Basin Management Objectives (BMOs)**
- Monitoring of groundwater
- Plan to involve other agencies
- Documentation of public involvement

New Plan Requirements

- Physical description of the basin (water level, quality etc.)
- **Measurable Objectives and Interim Milestones**
- Description of how these will be achieved
- Monitoring and management provisions
- How the plan will affect other county/city general plans

Measuring What Matters

Setting Measurable Objectives to Achieve Sustainable Groundwater Management in California

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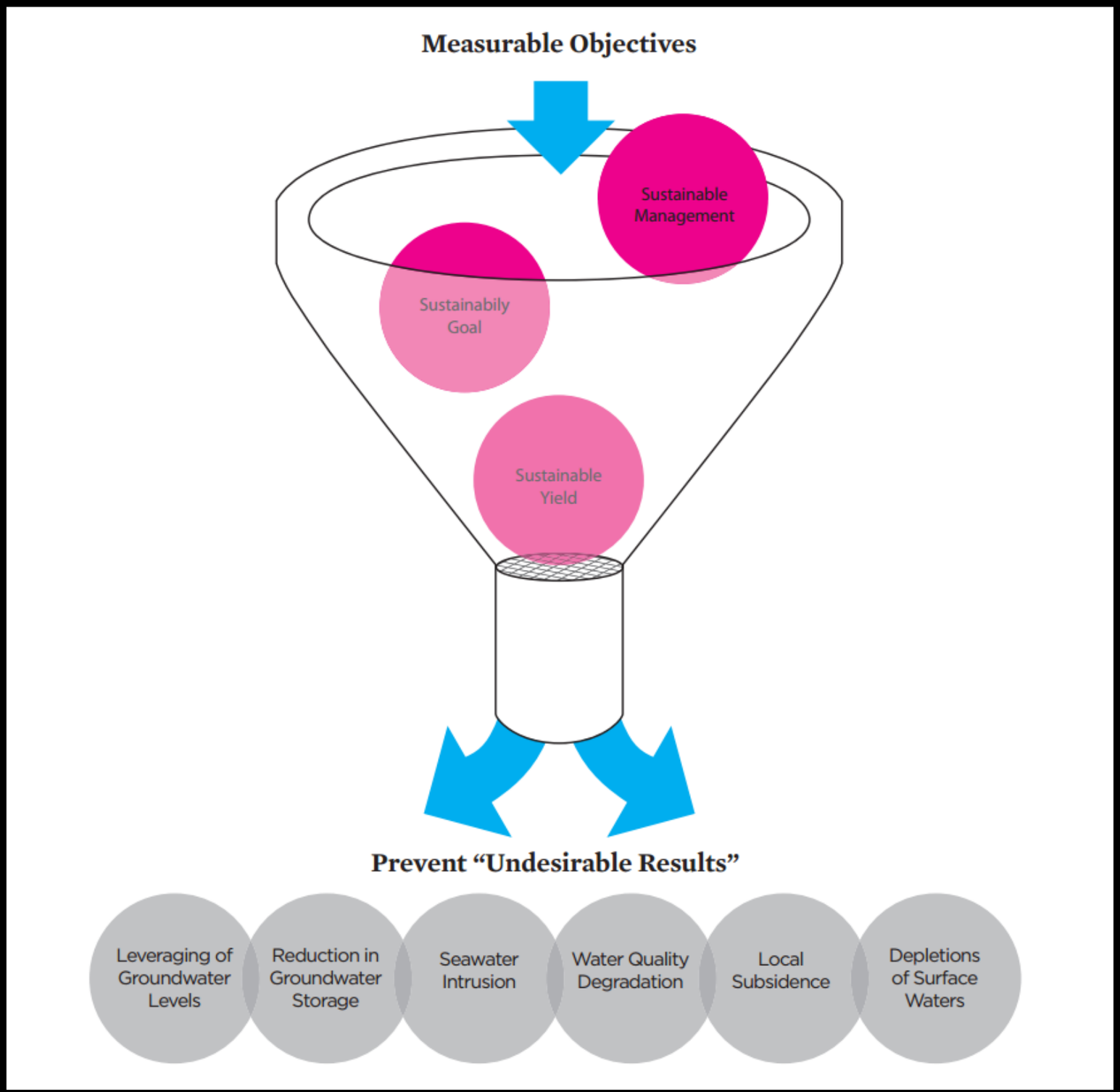
Measurable Objectives



Effective Measurable Objectives

- Define clear baselines
- Set quantitative thresholds
- Develop protective triggers
- Incorporate regular measurement and monitoring
- Account for uncertainty
- Adapt to changing conditions and new information

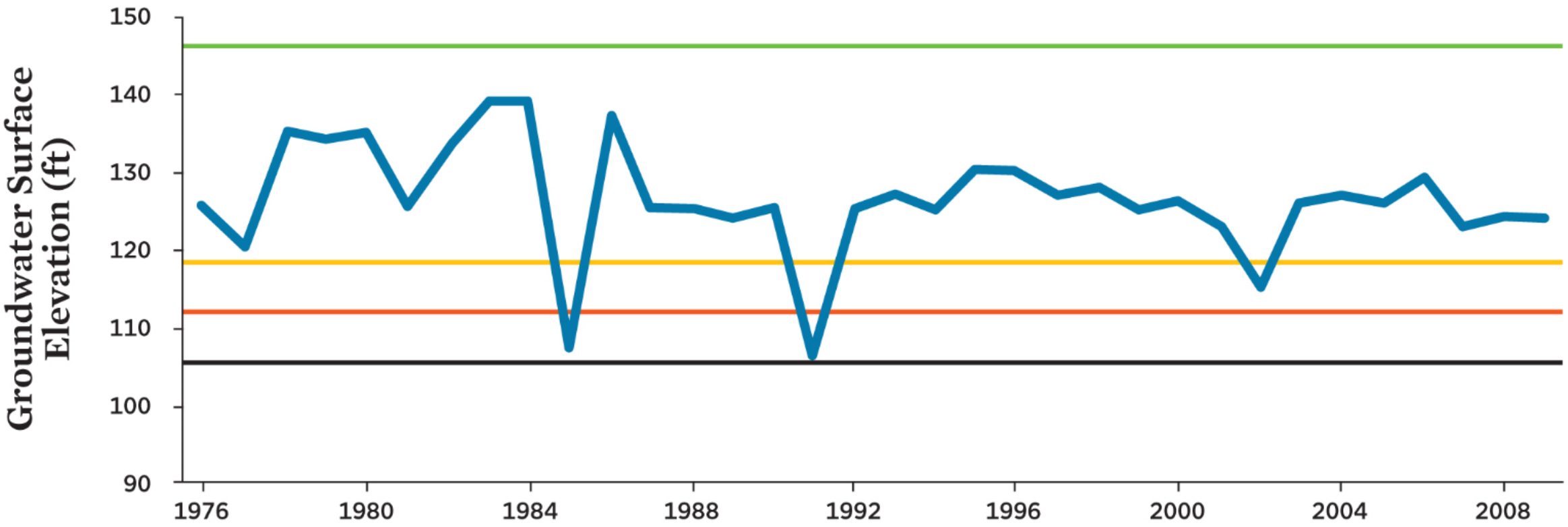
Set Quantitative Thresholds

TABLE 1. Examples of Measurable Objectives and Corresponding Thresholds in Groundwater Management

Measurable Objective	Document	Threshold Example
Groundwater Levels		
Limit groundwater extraction.	Central Sacramento County Groundwater Management Plan	The long-term average groundwater extraction rate should not exceed 273,000 acre-feet (AF)/year.
	Orange County Water District (OCWD) Groundwater Management Plan	OCWD does not have a "hard cap" on groundwater extractions, but uses economic disincentives to encourage groundwater producers to limit production to the amount established by OCWD.
	Madera Regional Groundwater Management Plan	Reduce groundwater extractions by 150,000 AF/year.
Limit the decline in groundwater elevation to provide for sustainable yield.	Groundwater Management Area 1: Desired Future Conditions (Dockum Aquifer)	Average decline in groundwater levels must not exceed 30 feet over the next 50 years.
Groundwater Storage		
Achieve a target storage volume in the future.	Monterey Peninsula Water Management District	27,360 AF of usable storage required.
	Groundwater Management Area 1: Desired Future Conditions (Blaine Aquifer)	50% of the volume in storage will remain in 50 years.
	Orange County Water District Groundwater Management Plan	Managed groundwater basin within a 500,000 AF volume with triggers when storage levels reach various points, including reducing pumping.

Develop Protective Triggers

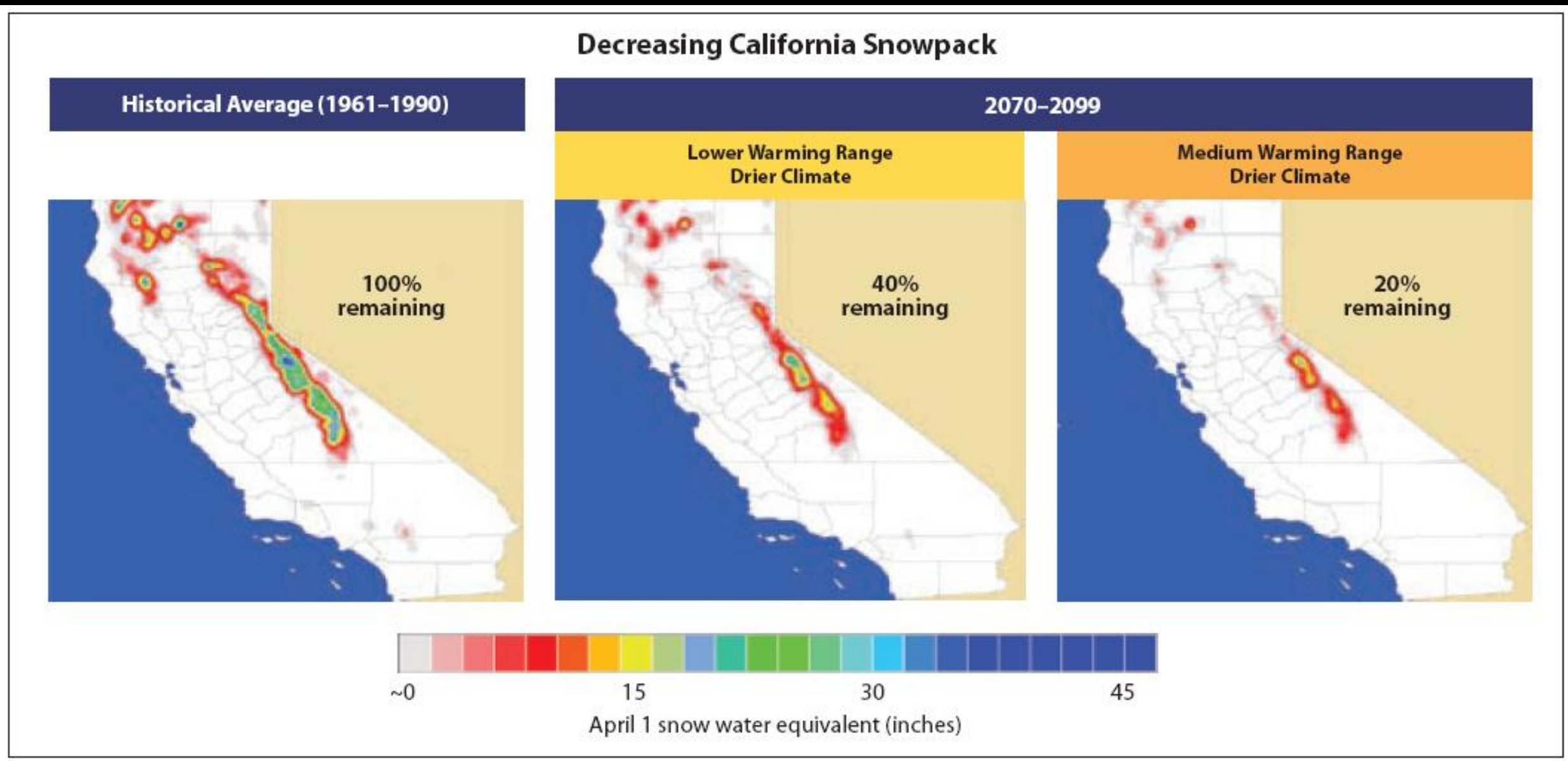
FIGURE 2. Fixed Thresholds and Triggers for Groundwater Management



In this example, the threshold for chronic lowering of groundwater levels is the lowest groundwater elevation recorded (black line). Fixed triggers have been set at one standard deviation (yellow-light trigger) and two standard deviations (red-light trigger) below the average groundwater elevation (black).

Measurement & Monitoring

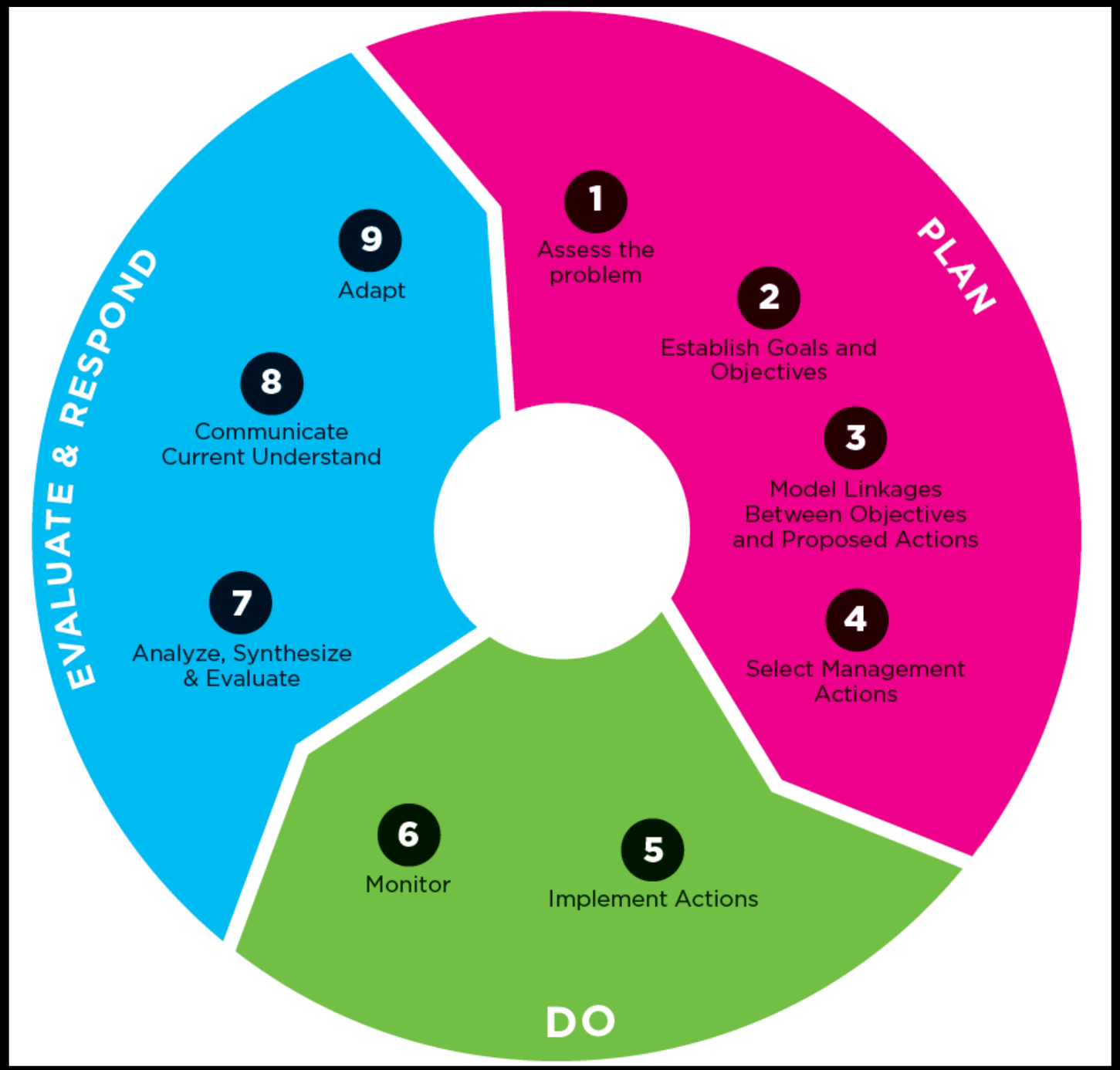
Account for Uncertainty



Luers A., Cayan D., Franco G., Hanemann M. and Croes B., California Climate Change Center (2006). Our Changing Climate: Assessing the Risks to California, p.7

“Planning and implementation horizon” means a 50-year time period over which a groundwater sustainability agency determines that plans and measures will be implemented in a basin to ensure that the basin is operated within its sustainable yield.

Adapt to Change



State water regulators at a crossroads

Regulations could help avoid chaos

…or allow chaos

UCS comments

- The maintenance of the sound technical approach to data reporting and standards;
- The deletion of the term “substantial compliance;” and
- The clarification of key concepts, including the sustainability goal and uncertainty.


UNCERTAINTY
AHEAD

For more information

www.ucsusa.org/measuringwhatmatters

www.ucsusa.org/sustainablegroundwater

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