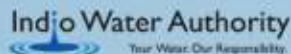




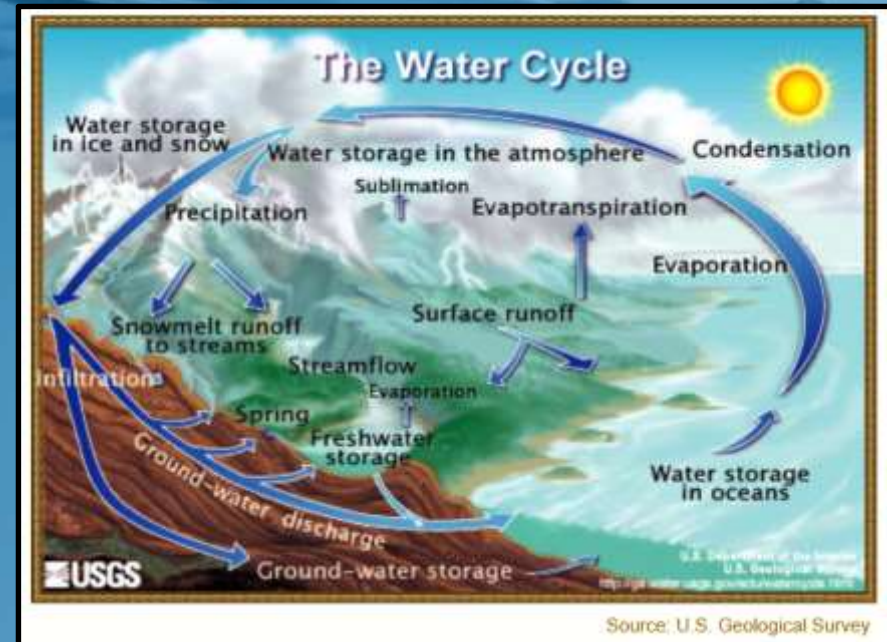
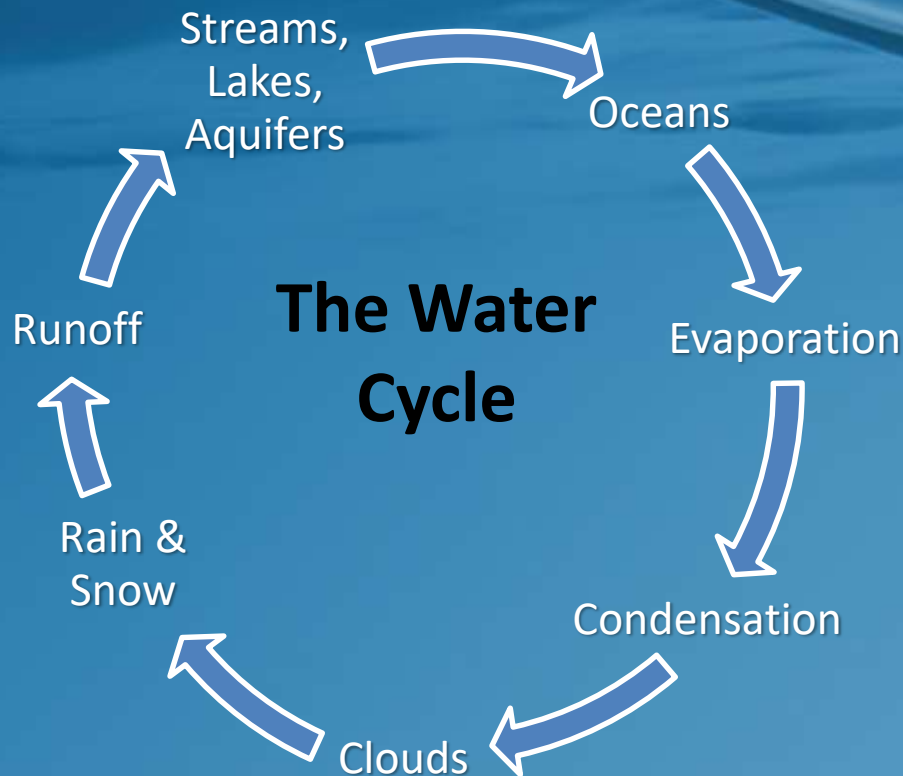
Groundwater Sustainability

Mike Nusser

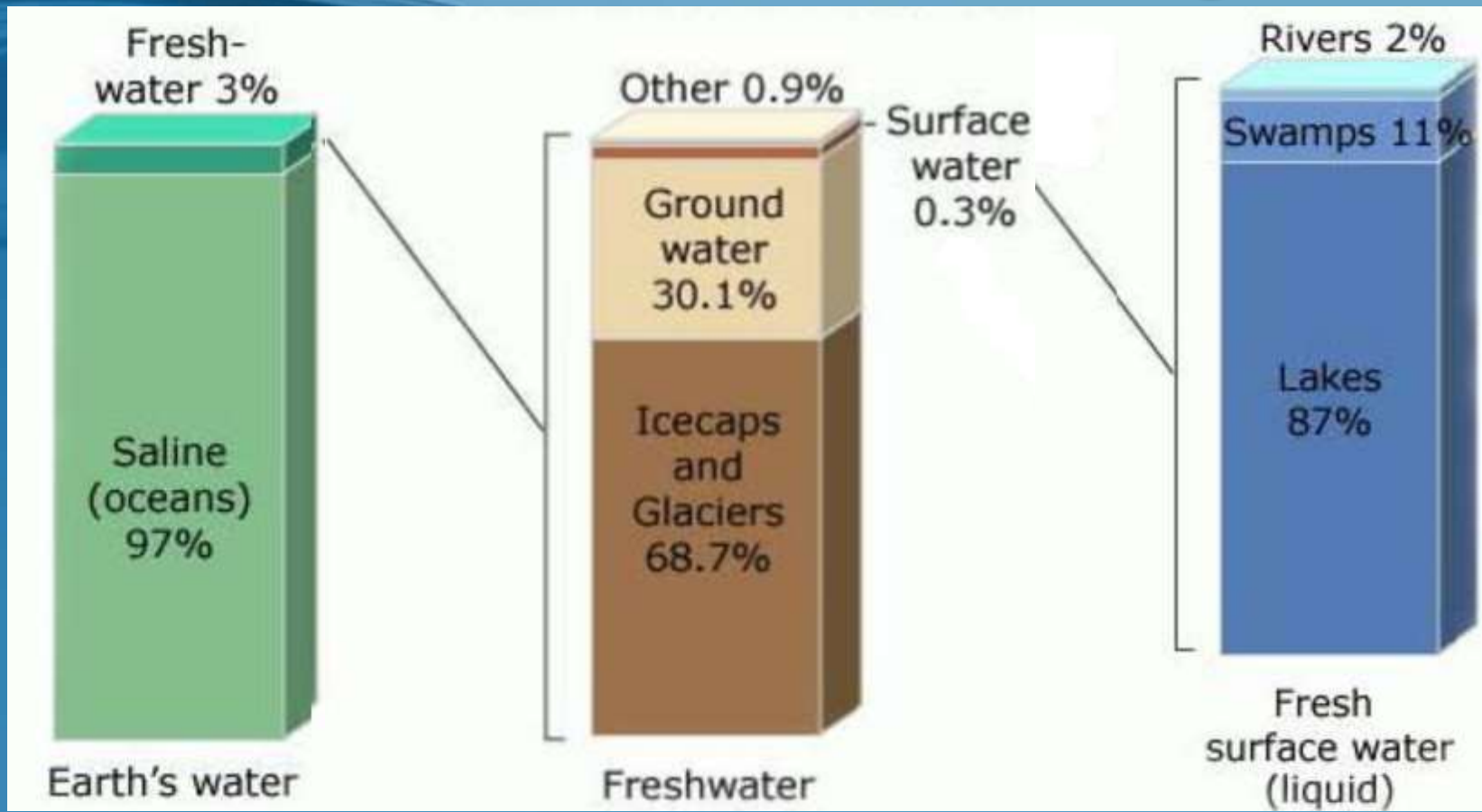
Water Resources Associate
Coachella Valley Water District



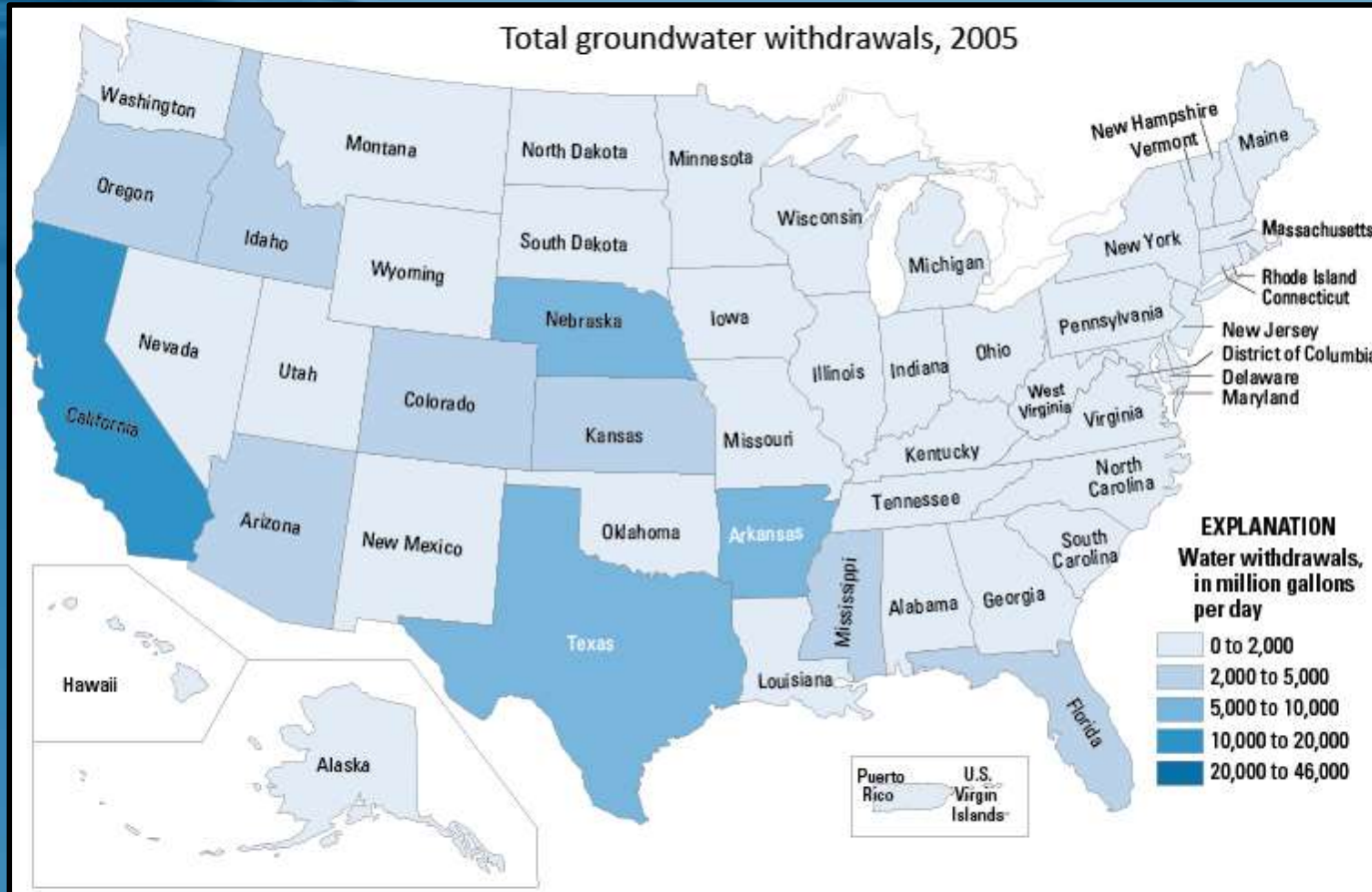
Where does water come from?



Where does all that water go?



What about California?



What about California?

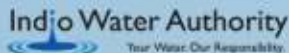
- 38% of its water supply through groundwater
- In a dry year, that value can be as much as 46%
- Groundwater unregulated until 2014





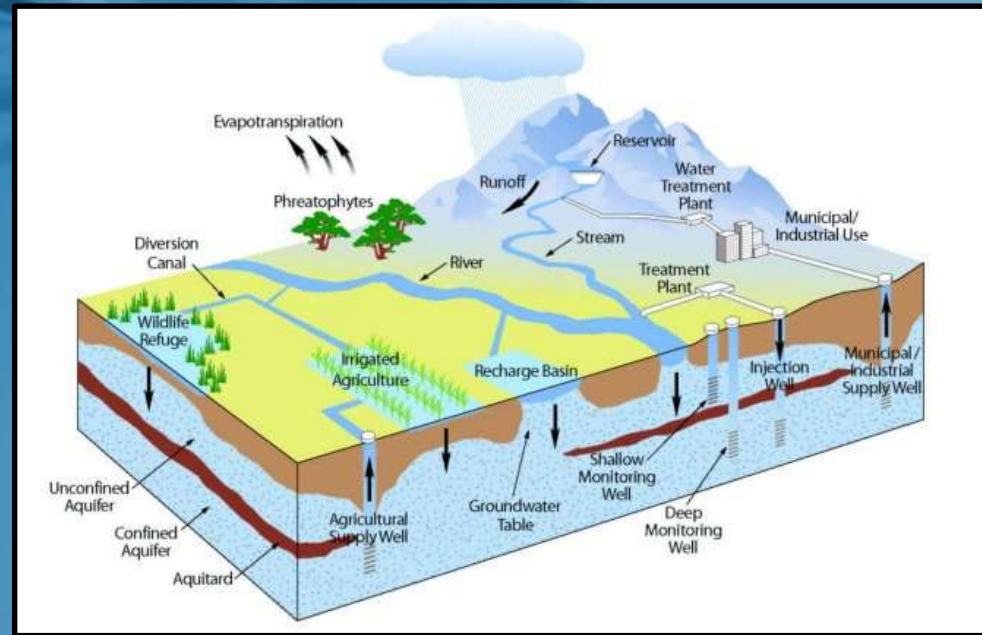
Sustainable Groundwater Management Act (SGMA) enacted in 2014

- Requires groundwater management in all high and medium priority basins by Groundwater Sustainability Agencies (GSAs)
- Only local agencies can become GSAs
- Requires collaboration of local GSAs and outreach to local stakeholders
- Requires implementation of Groundwater Sustainability Plans (GSPs) to meet groundwater sustainability goals



What is Sustainable Groundwater Management?

- The management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results

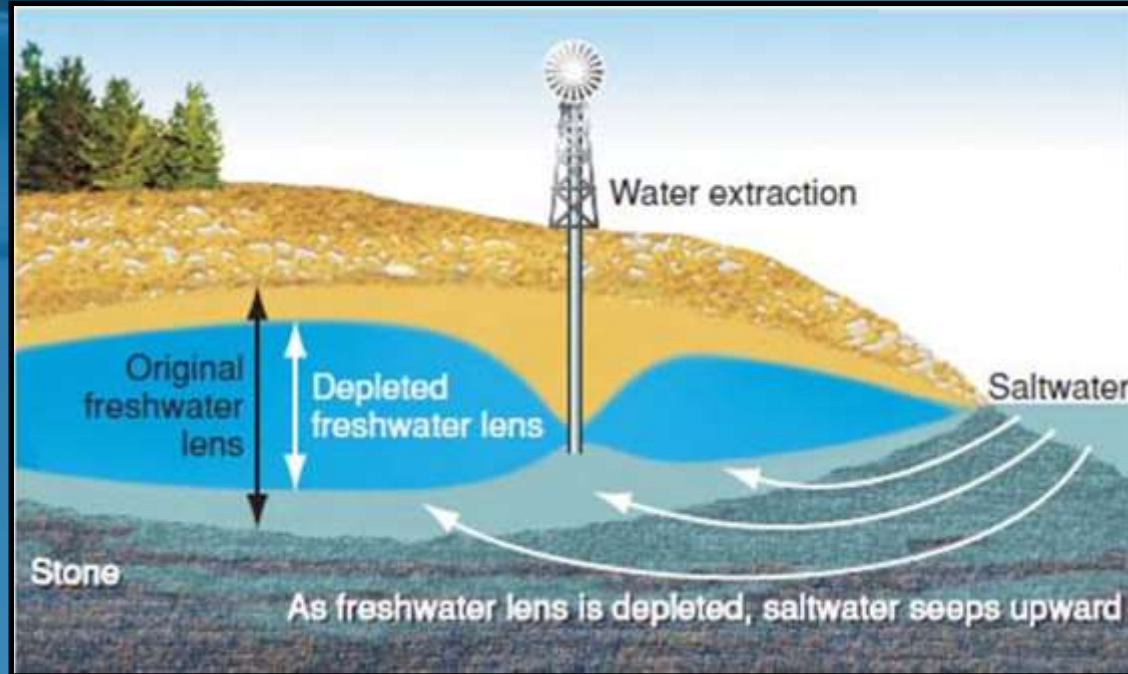


What are undesirable results?



- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply
- Significant and unreasonable reduction of groundwater storage

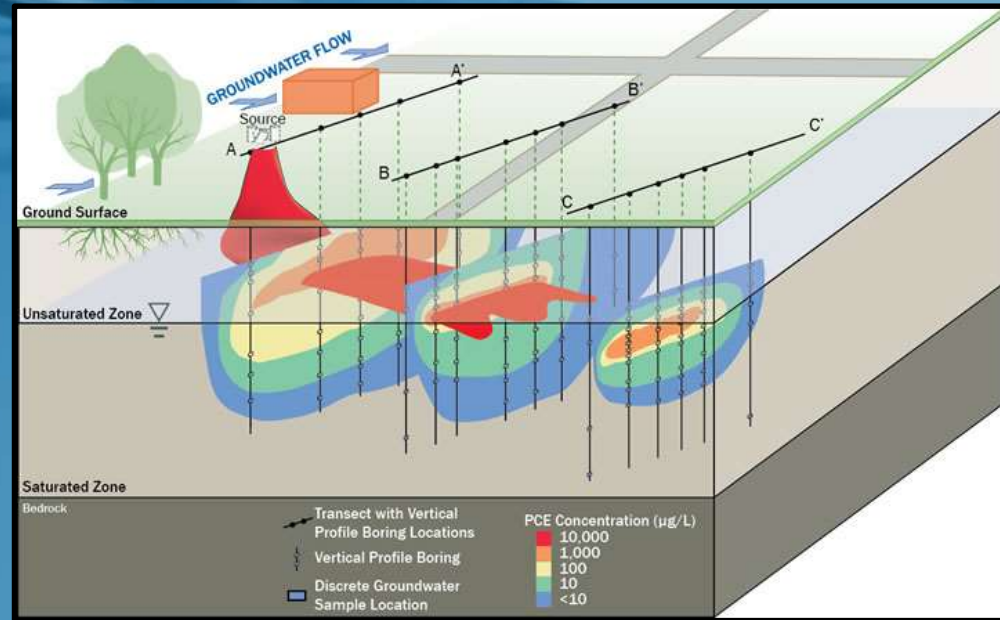
What are undesirable results?



- Significant and unreasonable seawater/brackish water intrusion

What are undesirable results?

- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies



What are undesirable results?

- Significant and unreasonable land subsidence that substantially interferes with surface land uses

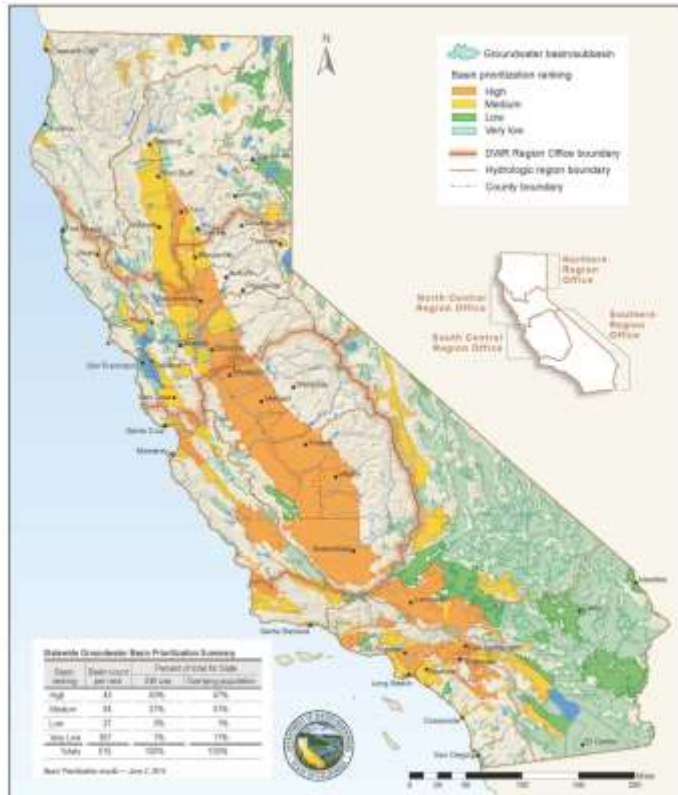


What are undesirable results?



- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

CASGEM Groundwater Basin Prioritization



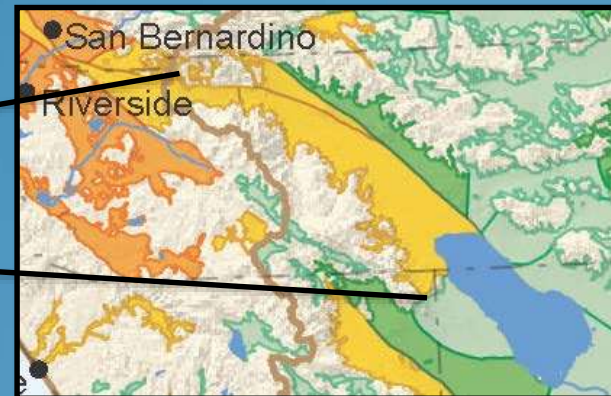
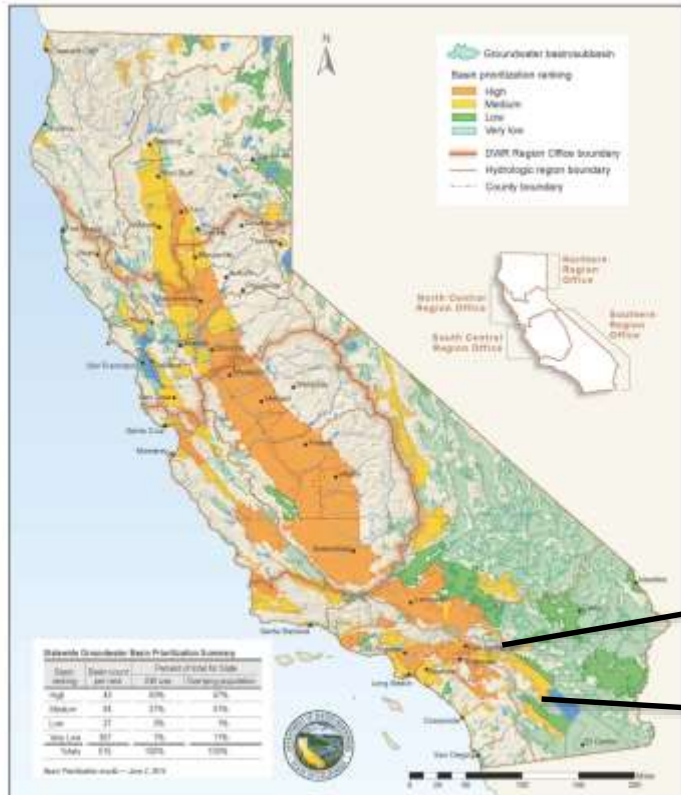
2015 DWR Groundwater Basin Prioritizations

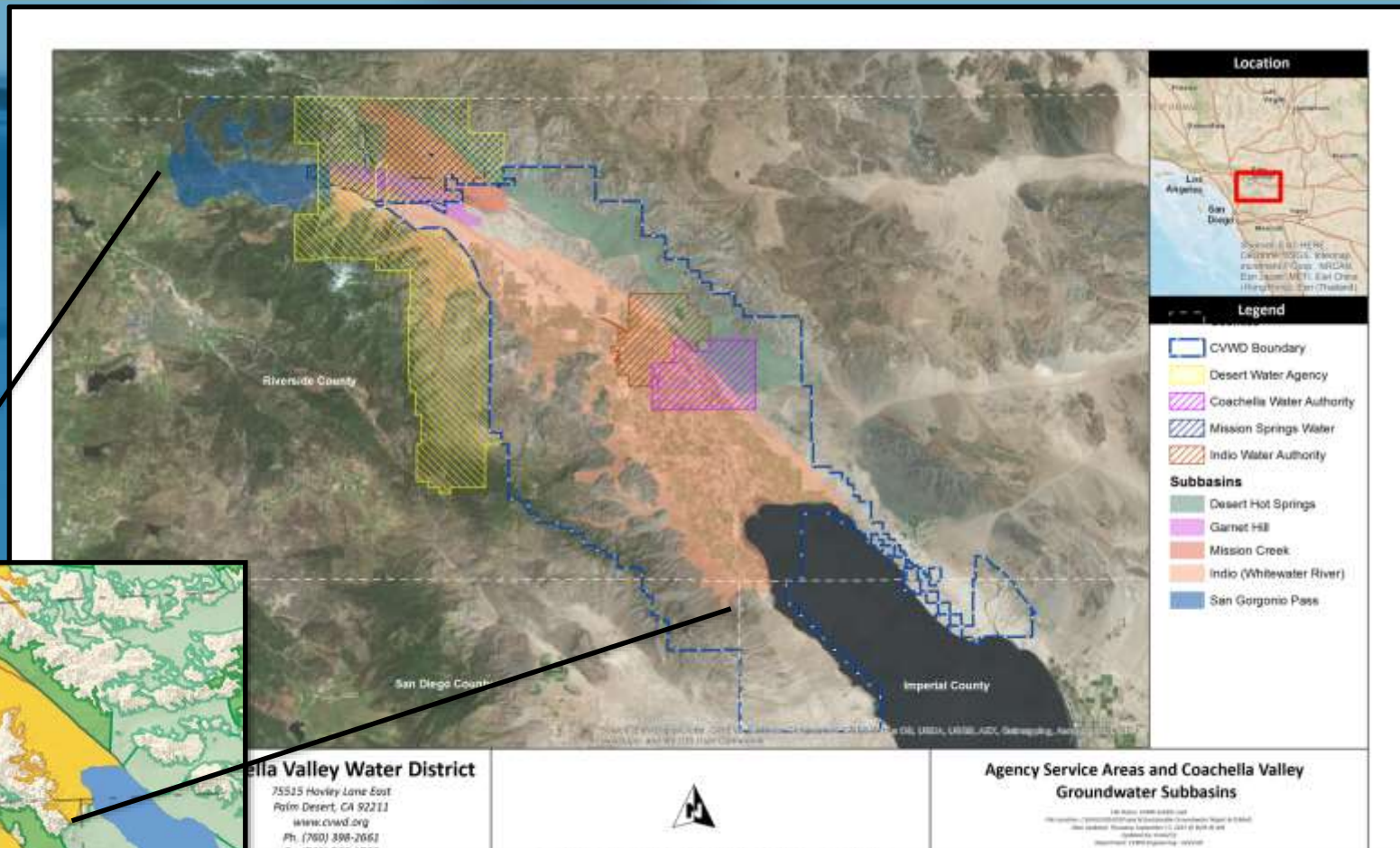
- 515 Total Groundwater Basins
- 127 High and Medium Priority
 - 43 High Priority
 - 84 Medium Priority
- Basin Priority
 - Orange = High
 - Yellow = Medium
 - Green = Low
 - Dark Green = Very Low

Coachella Valley Groundwater Basin

- Four (4) Groundwater Subbasins
 - Indio (Medium Priority)
 - Mission Creek (Medium Priority)
 - San Gorgonio Pass (Medium Priority)
 - Desert Hot Springs (Very Low Priority)

CASGEM Groundwater Basin Prioritization



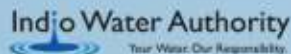


*Garnet Hill not recognized as a separate subbasin in State Bulletin 118



Coachella Valley Groundwater Basin Groundwater Sustainability Efforts

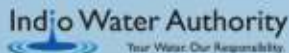
- 2002 Coachella Valley Water Management Plan
- 2010 Coachella Valley Water Management Plan Update
- 2013 Mission Creek/Garnet Hill Water Management Plan
- 2014 Sustainable Groundwater Management Act
- 2016 Local Agencies collaborated to form GSAs for the Indio, Mission Creek, and San Gorgonio Pass Subbasins
- 2017 Local Agencies collaborated to submit existing Water Management Plans as Alternatives to a GSP (Alternatives) to DWR for the Indio and Mission Creek Subbasins





Groundwater Management not new to the Coachella Valley Groundwater Basin

- Historic average of 3-4 inches of rain per year
- Imported water is needed for sustainable groundwater management
 - Direct replenishment
 - State Project Water (SWP)
 - Colorado River Water (CRW)
 - Source substitution
 - CRW and recycled water
- Water conservation



Coachella Valley Groundwater Basin Groundwater Replenishment History



1919 – Dikes and berms
for Natural Recharge at
Windy Point



Coachella Canal

1949 - Supplemental
water deliveries begin



Whitewater River GRF

1973 - State Water Project
deliveries begin at
Whitewater River GRF (west)

1984 – Whitewater River
GRF expanded



Mission Creek GRF

2002 – Mission Creek GRF
operational (west)

2009 – Thomas E. Levy
GRF operational (east)

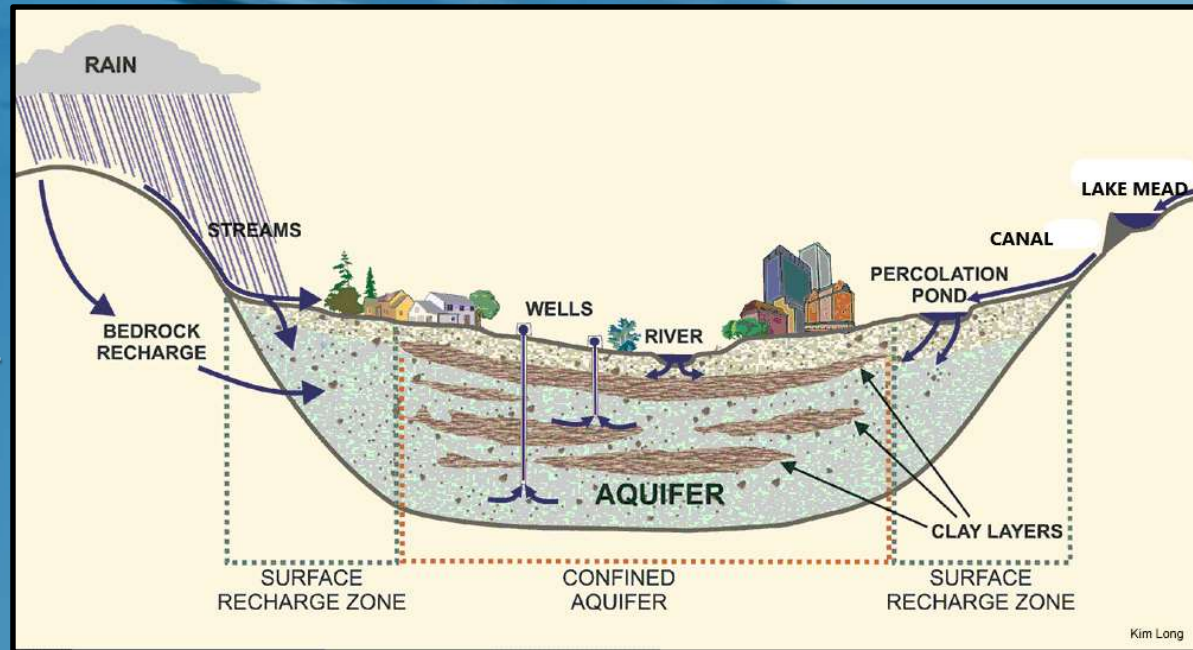


Thomas E. Levy GRF

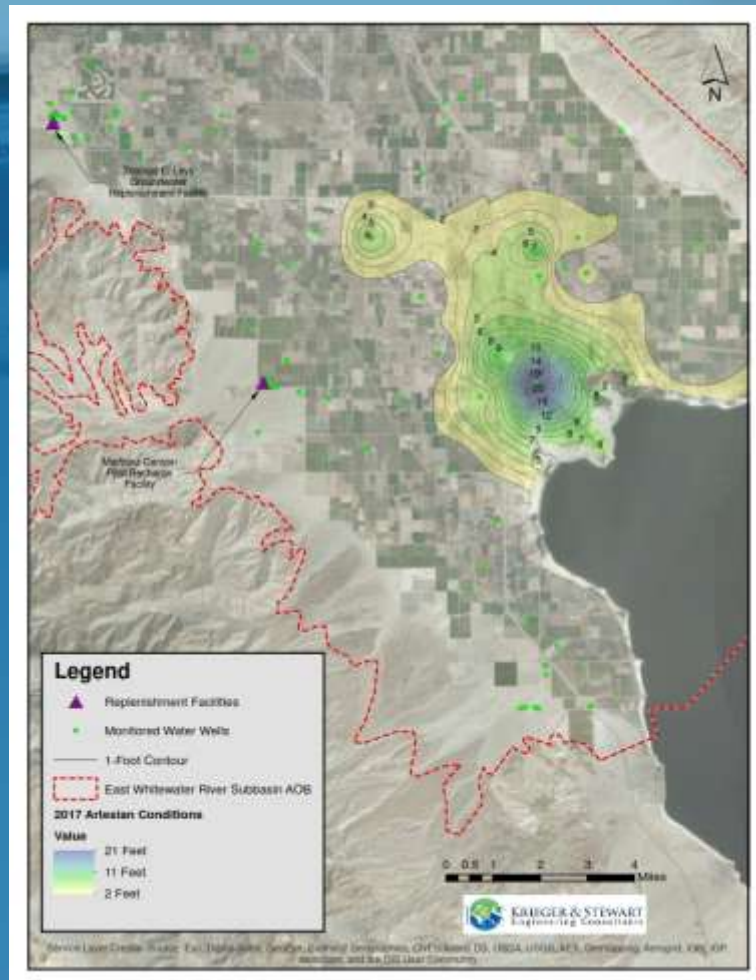
2019 – Palm Desert GRF Phase I
completed (mid-valley)

Water Travels Slowly Underground

- Depends on the type of sediment
 - Gravel
 - Sand
 - Silt
 - Clay
 - Dense rock
- Coachella Valley Groundwater Basin has two predominant aquifers
 - Shallow and Deep
 - Unconfined (west)
 - Confined (east)



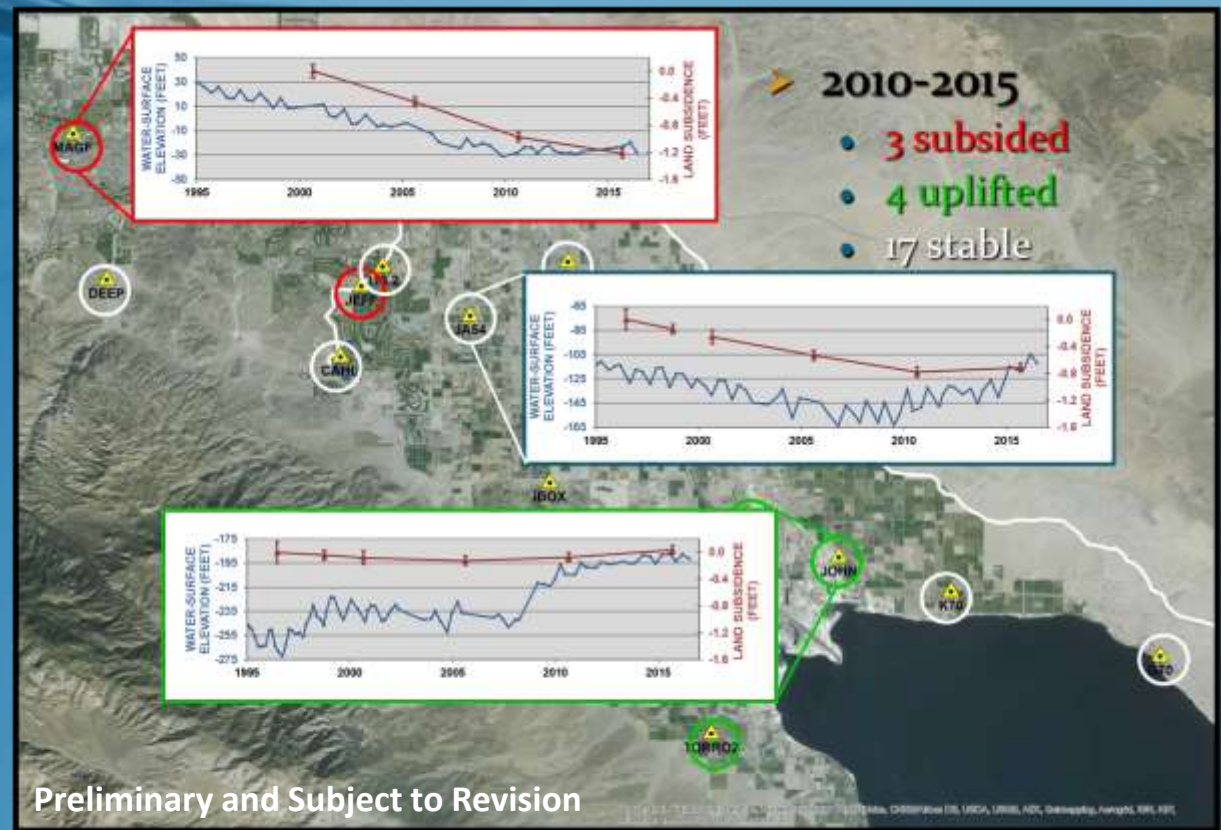
Return of Artesian Groundwater Conditions



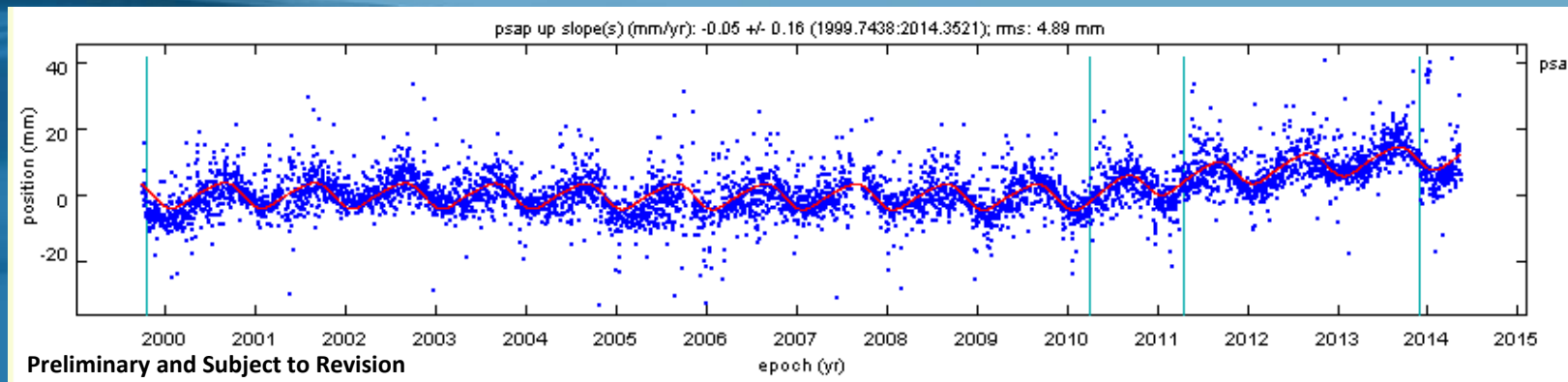
Land Subsidence

USGS collaboration
since 1996

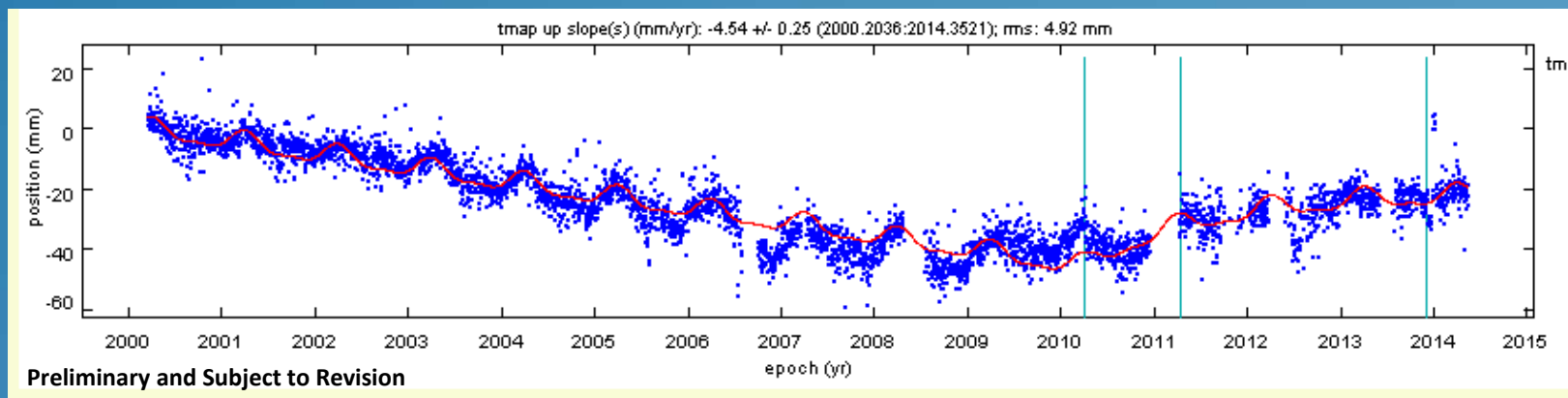
- High-Precision
GPS Surveys
- Repeated Every
5 Years



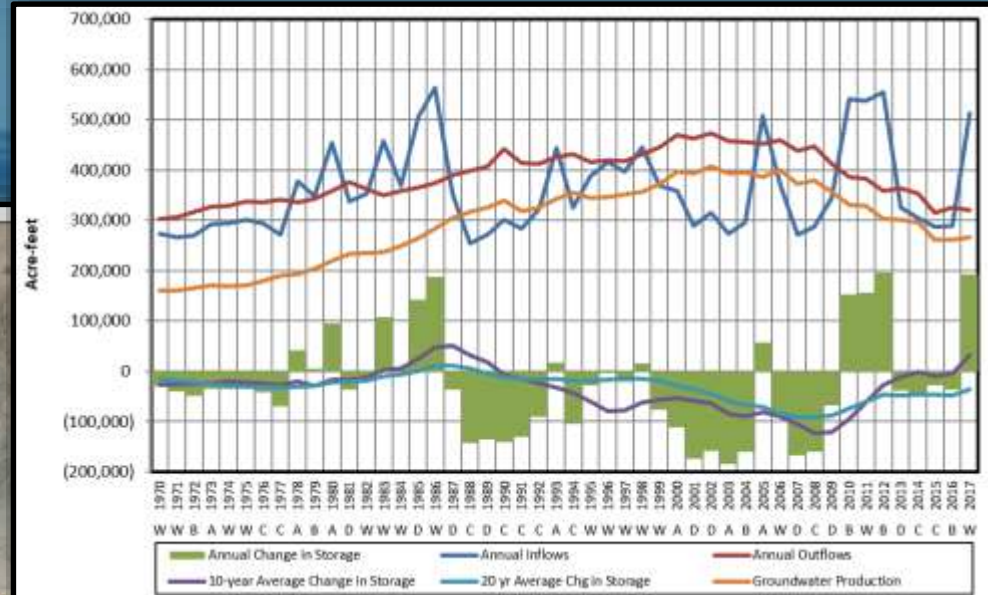
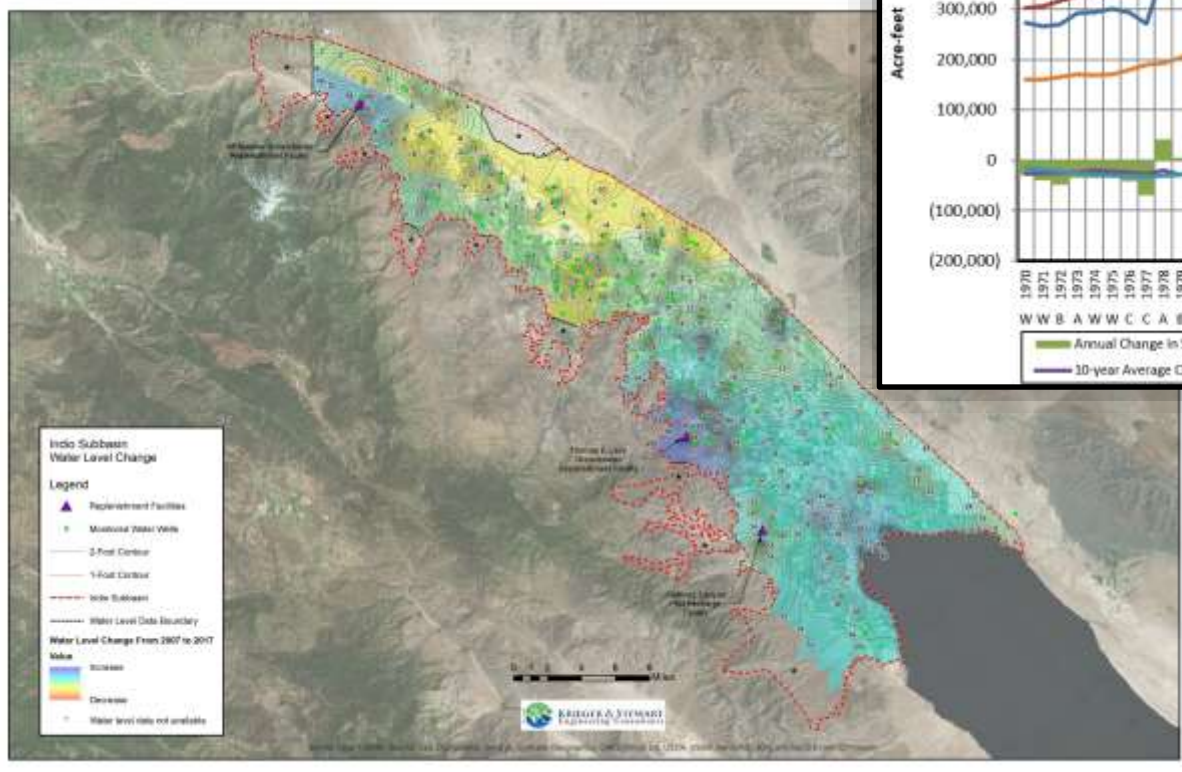
Palm Springs Airport



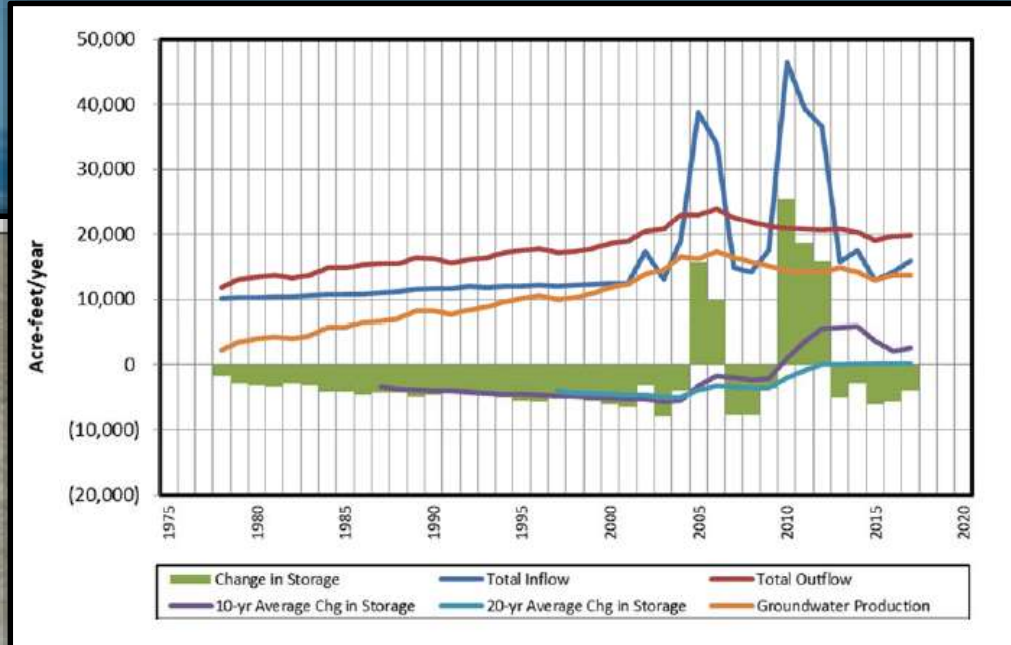
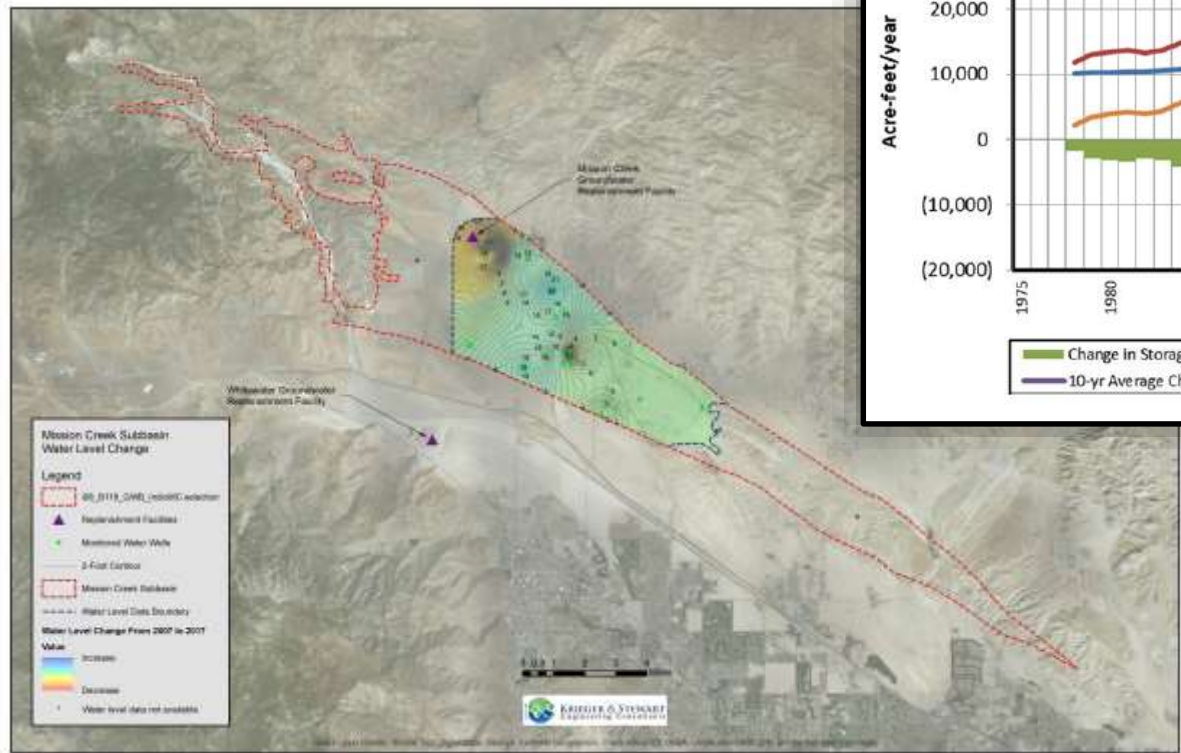
Thermal Airport



Indio Subbasin Change in Storage



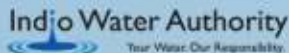
Mission Creek Subbasin Change in Storage





Coachella Valley Groundwater Basin Upcoming Groundwater Sustainability Critical Milestones

- Alternatives submitted to DWR (2017)
- DWR review and assessment of submitted Alternatives still pending
- New GSPs or updated Alternatives due to DWR (2022)
- GSPs and Alternatives evaluated and updated (every 5 years)
- Achieve sustainability goals (2042)



Coachella Valley Groundwater Sustainability

- Manage groundwater levels to achieve sustainability
- Maximize surface and groundwater resources
- Minimize adverse economic and environmental impacts





Questions?

