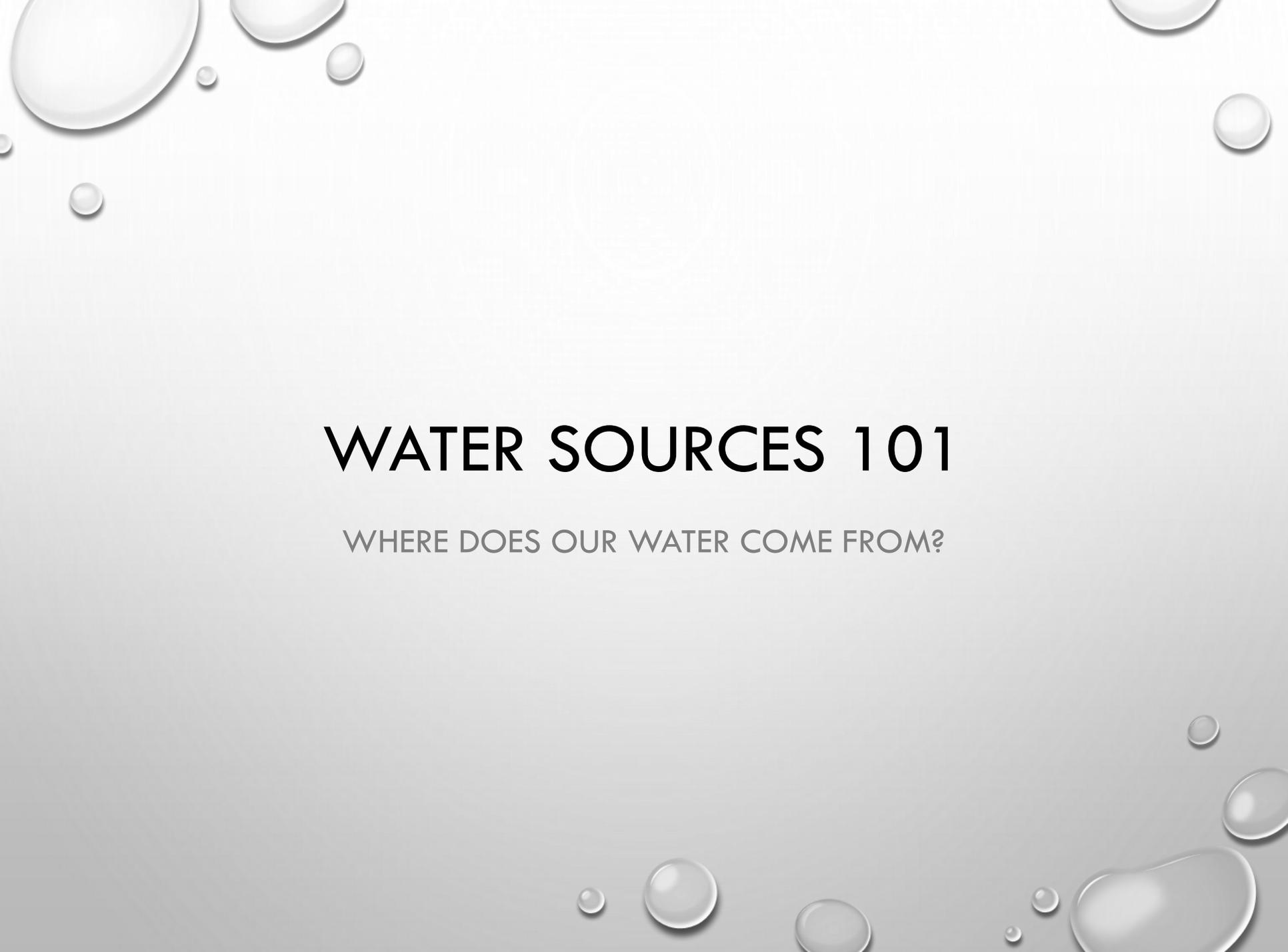




Water Resources Orientation for Santa Cruz County

March 13, 2022

Sierra Ryan, County of Santa Cruz Water Resources Manager

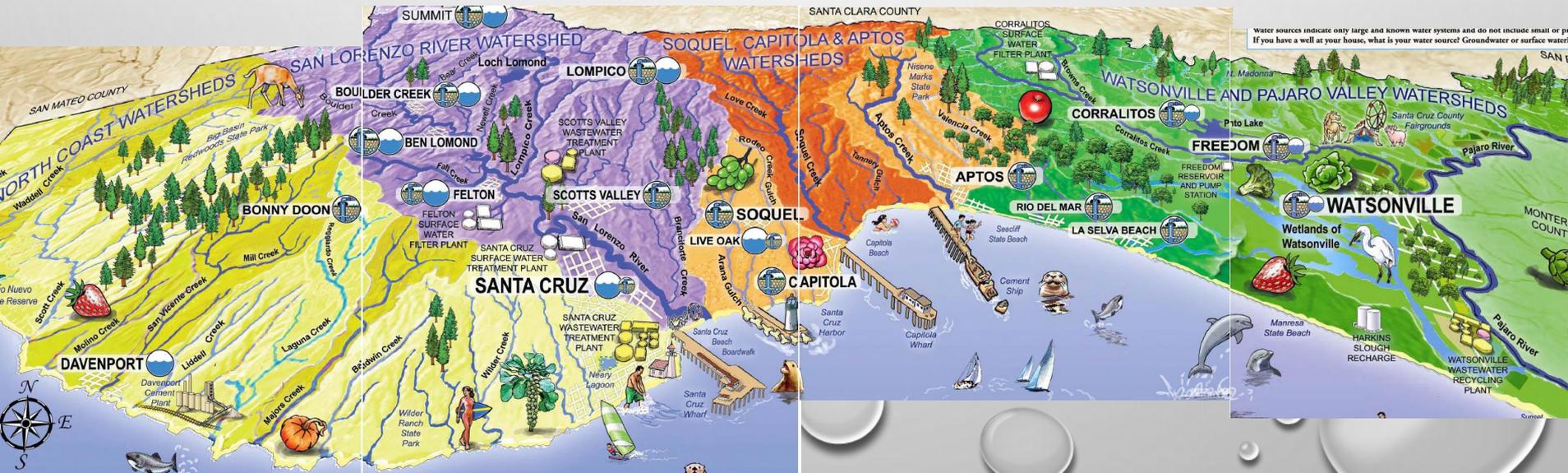
The background features a light gray gradient with several realistic water droplets of varying sizes scattered across the top and bottom edges. In the center, there is a faint, circular watermark of a globe showing the Americas.

WATER SOURCES 101

WHERE DOES OUR WATER COME FROM?

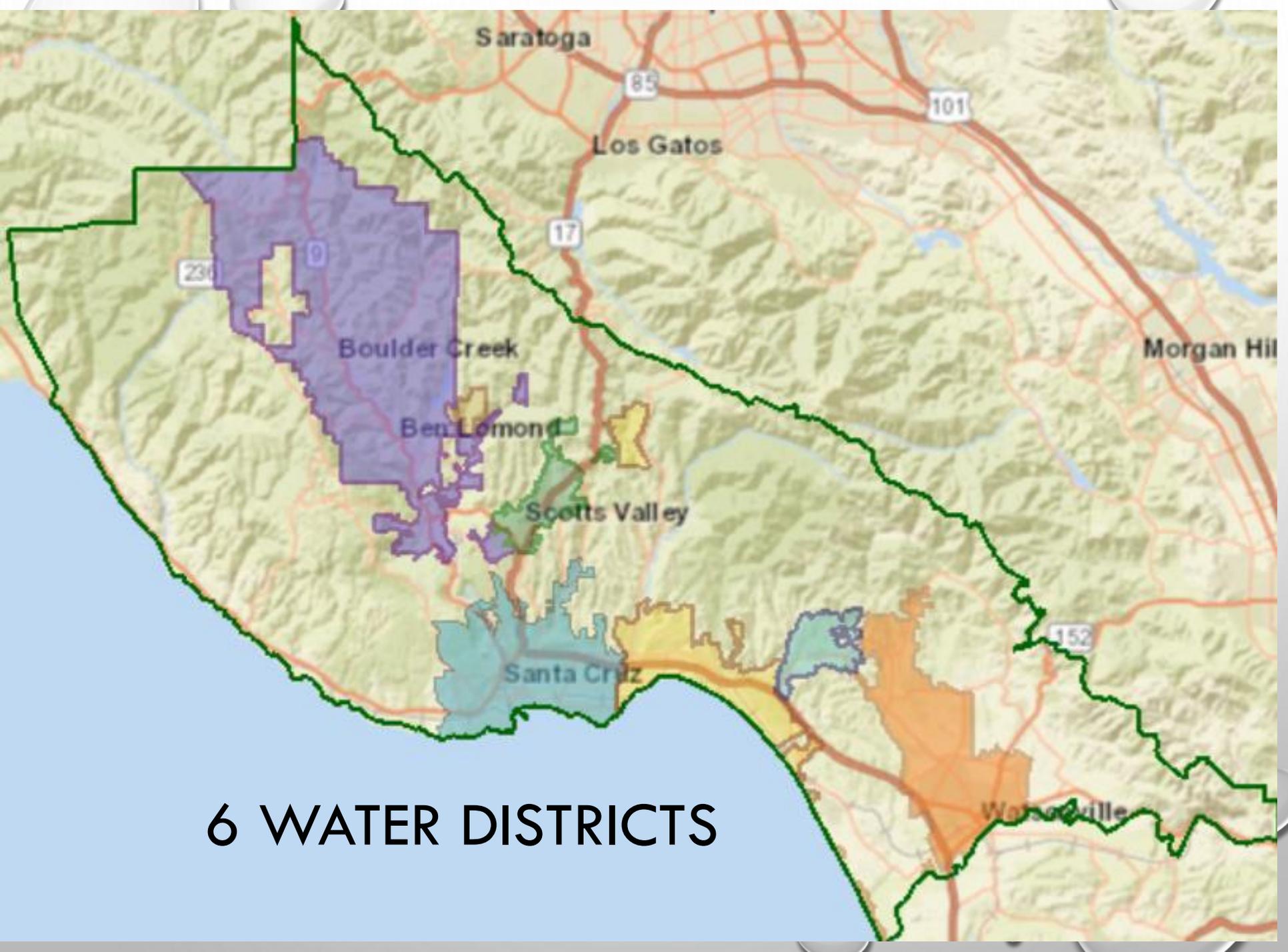
WATER SOURCES IN SANTA CRUZ

- LOCAL SURFACE WATER AND LOCAL GROUNDWATER BASINS LIMITED RECYCLED WATER (CURRENTLY IRRIGATION ONLY)
- ALL OUR SOURCES ARE OVERDRAWN
- SANTA CRUZ IS NOT ON ANY OF THE STATE WATER PROJECTS, WE MUST SOLVE OUR PROBLEMS LOCALLY



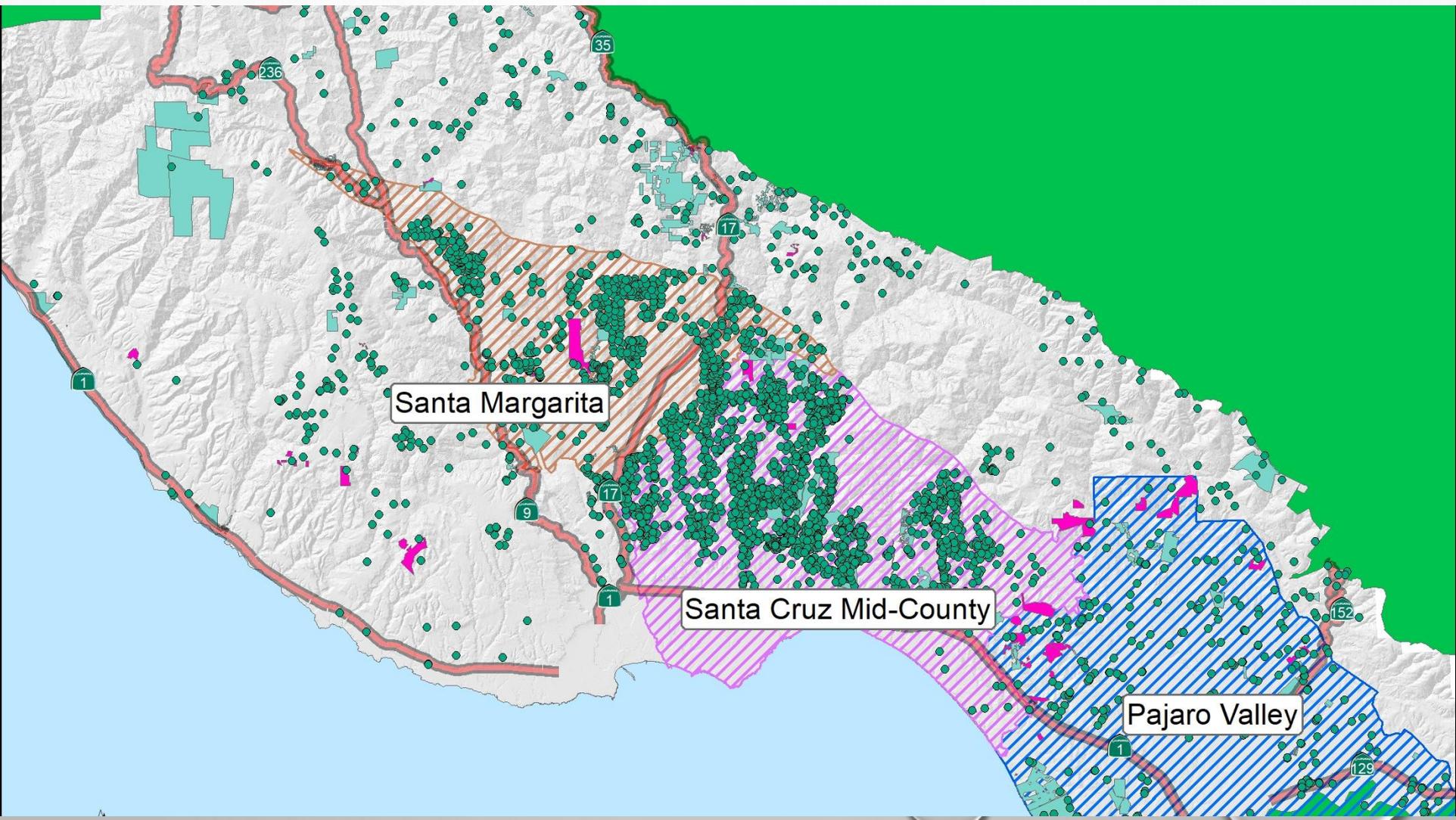
Water Supplier	Connections	Population	Water Use acre-feet/yr	Ground water	Surface Water	Recycled Water	Imported	
Santa Cruz City Water Dept.	24,589	96,168	7,914	5.0%	93.0%	2%		
Watsonville City Water Service	14,884	65,231	7,040	100.0%	0.0%			
Soquel Creek Water District	14,500	40,644	3,259	100.0%	0.0%			
San Lorenzo Valley Water District	7,900	23,700	1,961	70.0%	30.0%			
Scotts Valley Water District	3,946	10,749	1,299	84.0%		16%		
Central Water District	825	2,706	405	100.0%				
Big Basin Water Company*	482	1,120	150	100.0%				
Mount Hermon Association	494	2,850	155	100.0%				
Forest Lakes Mutual Water Company	326	1,076	42	100.0%				
Smaller Water Systems (5-199 conn.)	2,616	7,691	1,561	87.0%	6.0%		7%	
Individual Users*	8,000	21,000	2,350	95.0%	5.0%			
Pajaro Agriculture (SC Co only)**†			23,750	94.0%	1.0%	5%		
Mid- & North-County Agriculture*			2,400	90.0%	10.0%			
Totals	78,562	272,935	52,286	80%	17%	3%	0.2%	
Summary by Water Source (acre-feet/year)					41,973	8,637	1,524	109
Summary of Non-Agricultural Use (acre-feet/year)				26,136	17,488	8,160	337	109

- GROUNDWATER PROVIDES 80% OF TOTAL WATER USED IN THE COUNTY AND 67% OF NON-AGRICULTURAL WATER.

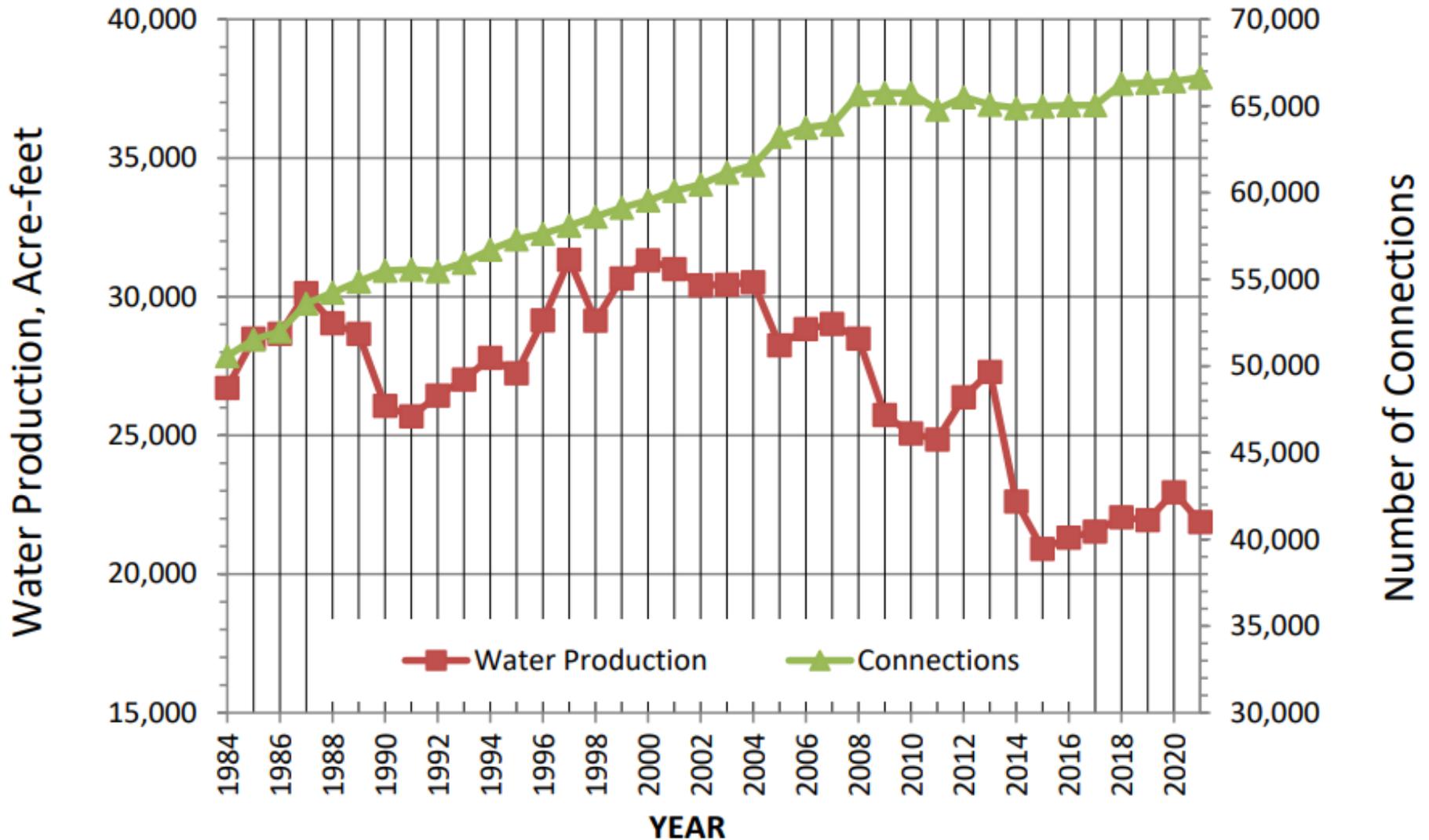


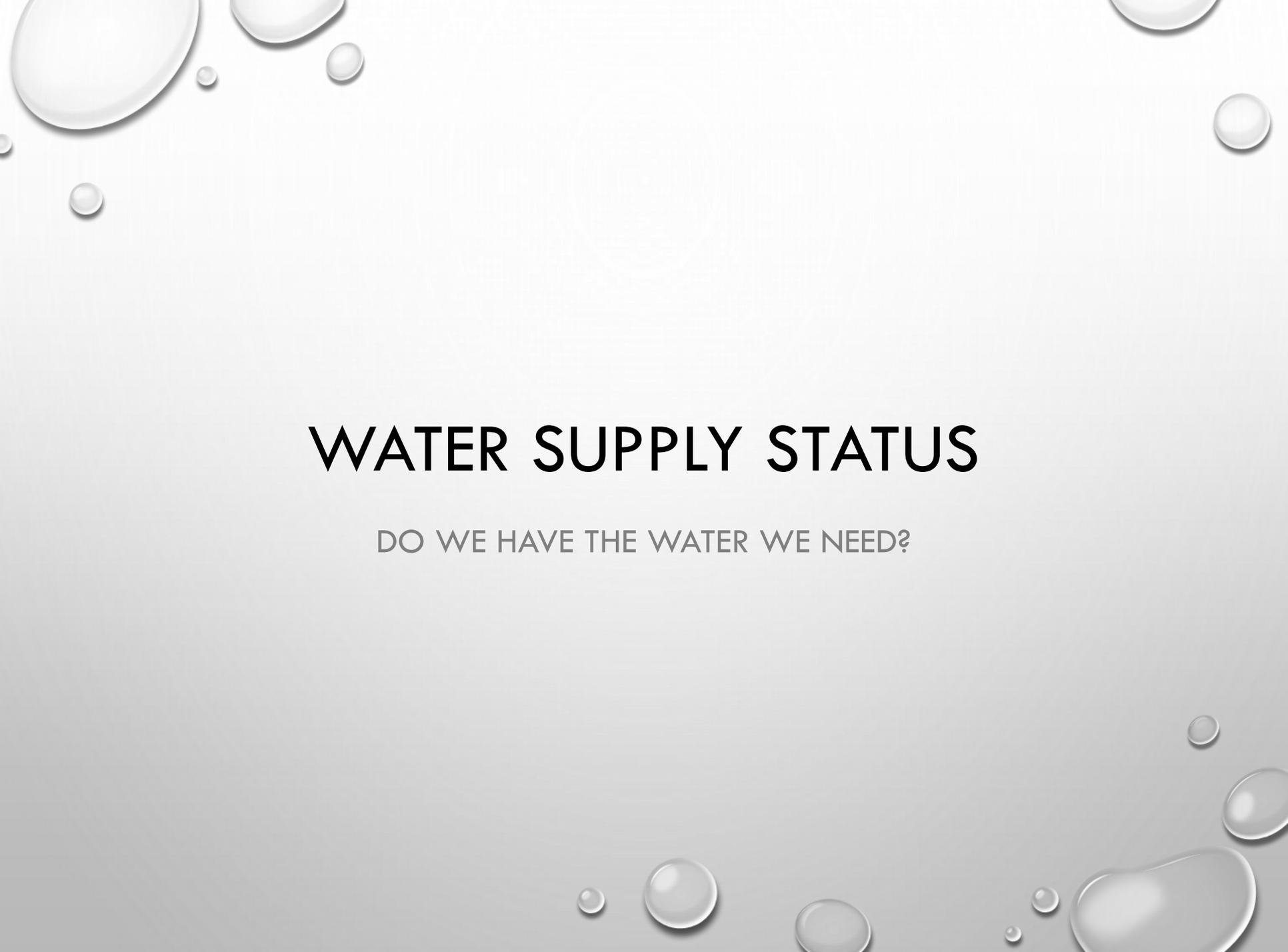
6 WATER DISTRICTS

WELLS, SMALL WATER SYSTEMS AND GROUNDWATER BASINS



WE HAVE HAD WATER NEUTRAL DEVELOPMENT



The background of the slide is a light gray gradient. In the top-left and bottom-right corners, there are several realistic water droplets of various sizes, rendered with soft shadows and highlights to give them a three-dimensional appearance. The main text is centered on the slide.

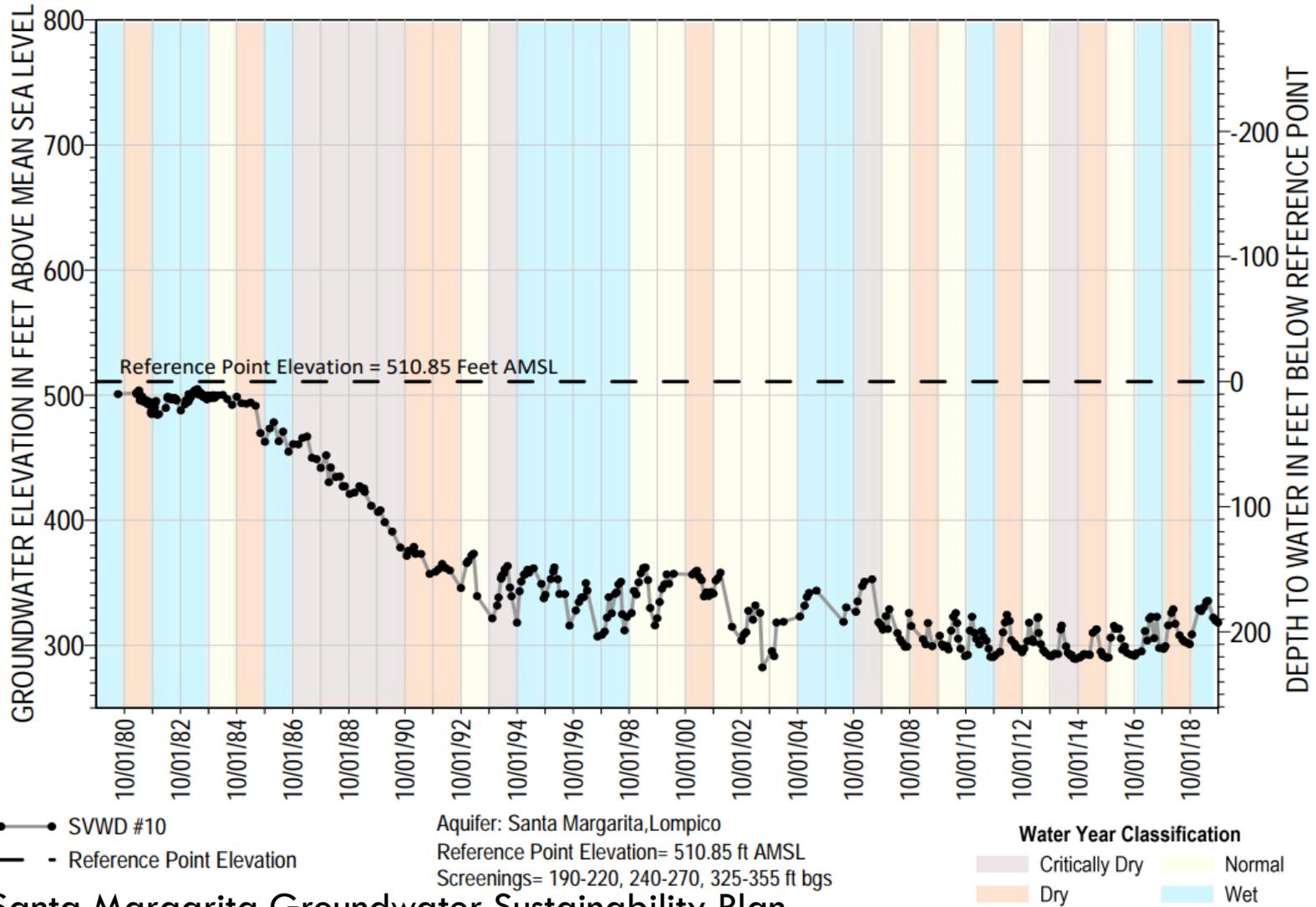
WATER SUPPLY STATUS

DO WE HAVE THE WATER WE NEED?

REGIONAL SUPPLY DEFICIENCIES

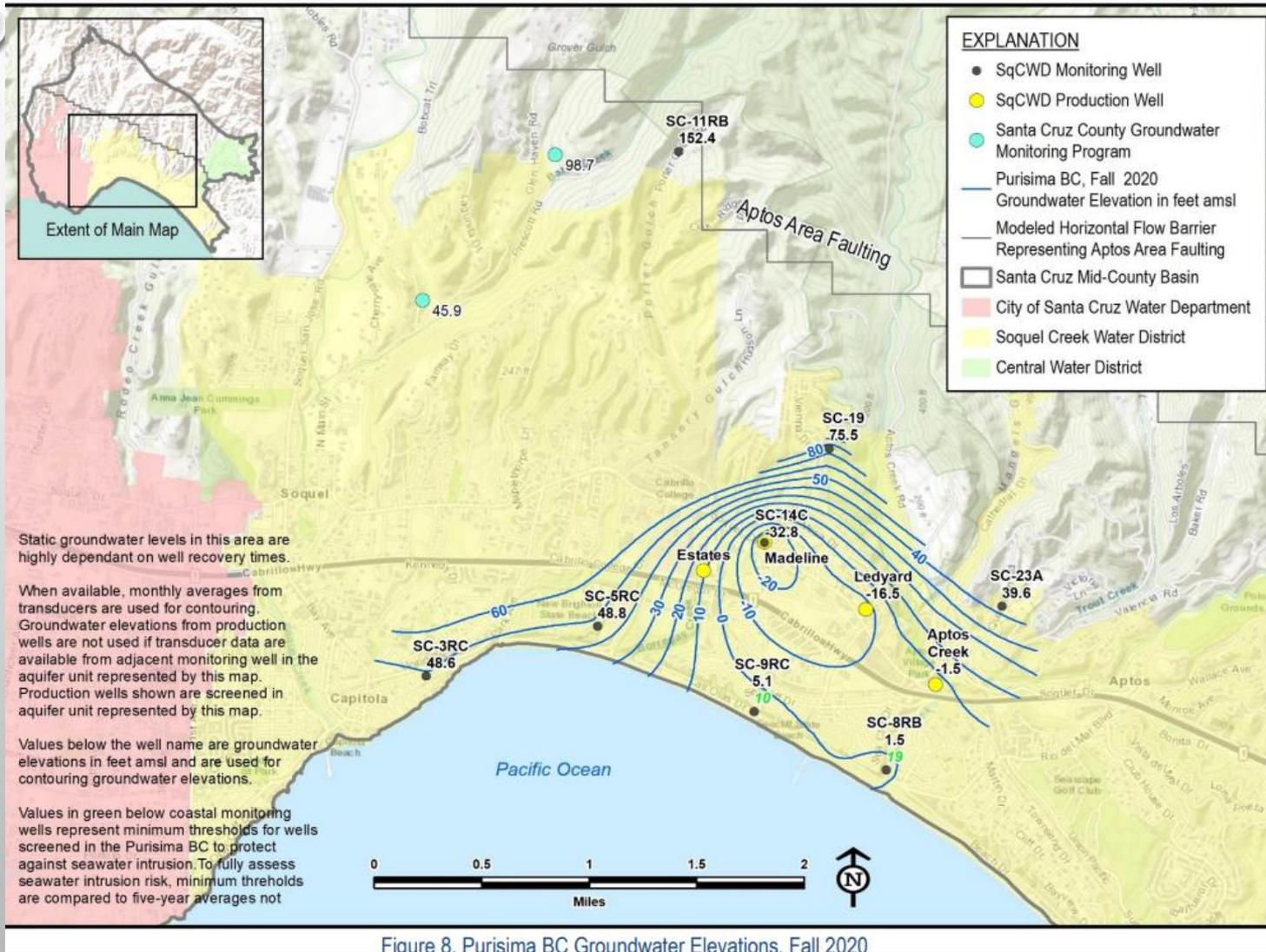
- OVERDRAFT AND SEAWATER INTRUSION IN PAJARO VALLEY
- OVERDRAFT AND THREAT OF SEAWATER INTRUSION IN SANTA CRUZ MID-COUNTY
- OVERDRAFT IN SCOTTS VALLEY IMPACTING INTERCONNECTED SURFACE WATER
- DROUGHT DEFICIENCY AND MORE WATER RESERVED FOR FISH FOR SANTA CRUZ
- INDIVIDUAL WELLS: SALT WATER AND NITRATE IN PAJARO AND SEASCAPE, DECLINING WATER TABLES IN BONNY DOON, GRANITE CREEK, SUMMIT

DEPRESSED GROUNDWATER LEVELS IN SCOTTS VALLEY

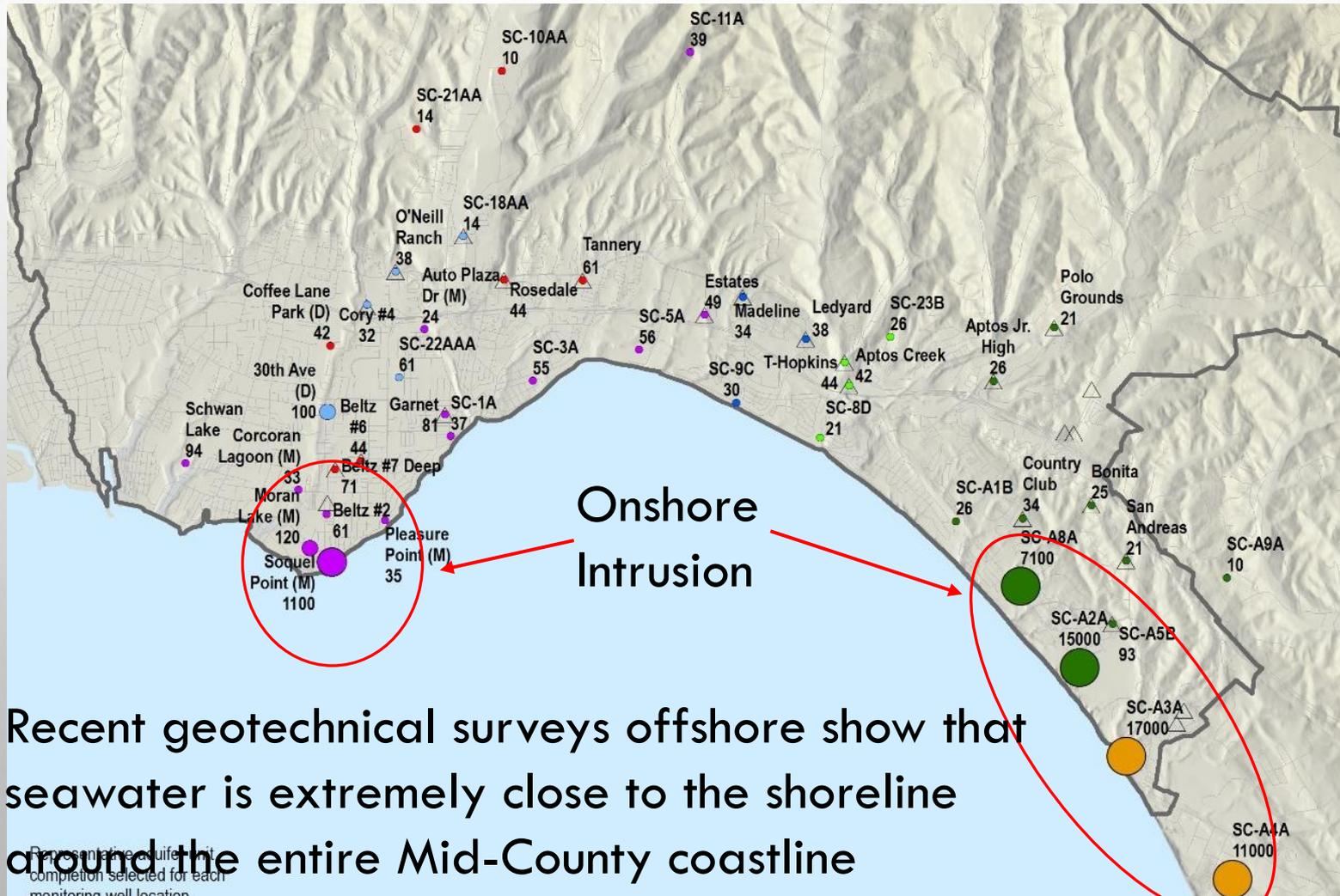


Source: Santa Margarita Groundwater Sustainability Plan

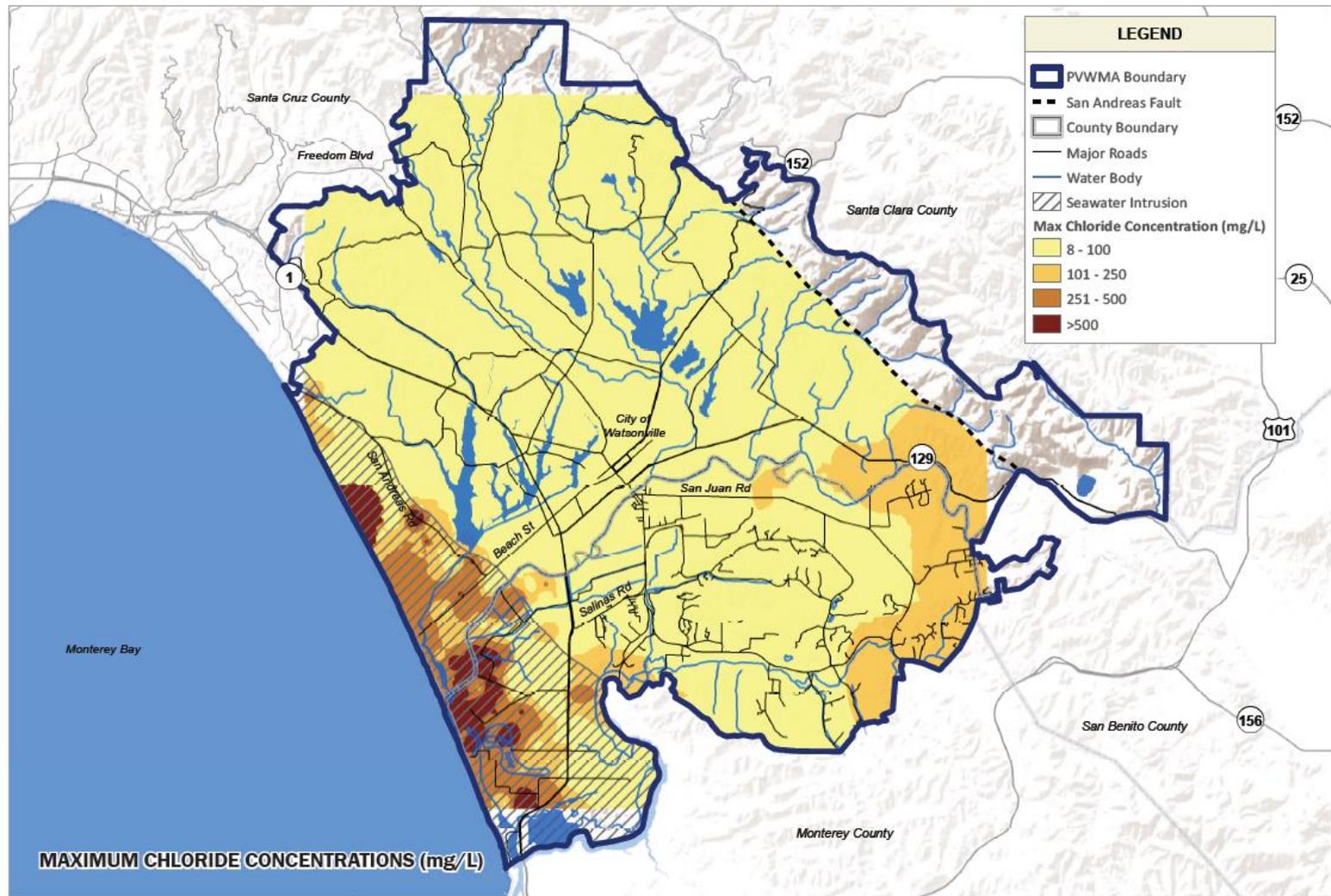
PURISIMA BC, FALL 2020



SEAWATER INTRUSION IN MID-COUNTY



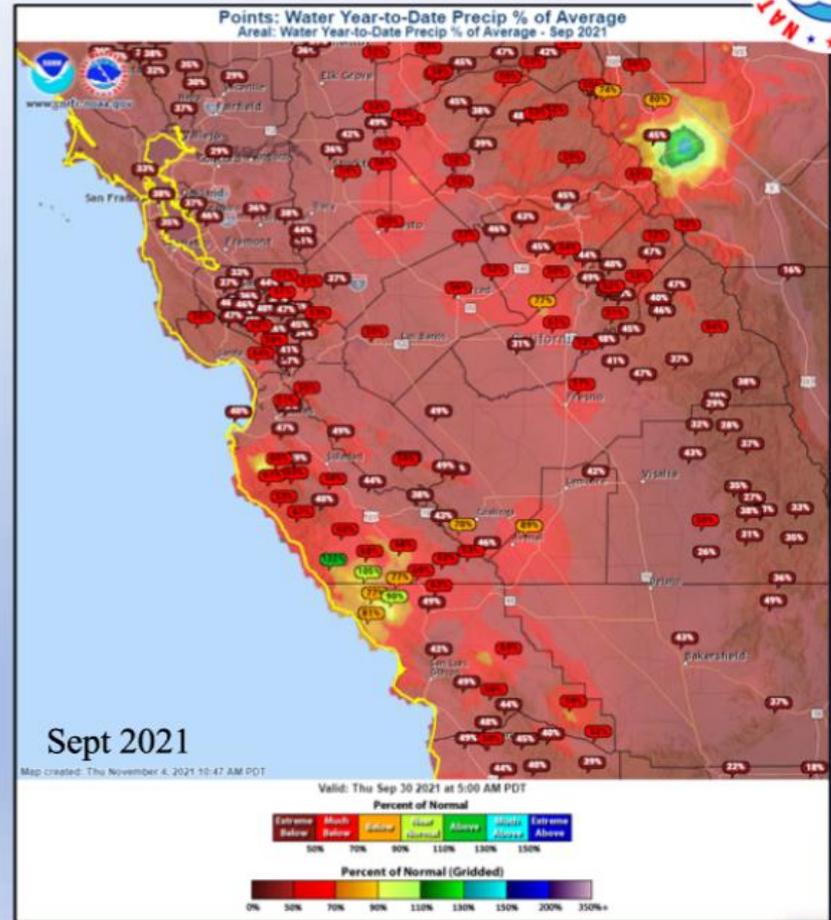
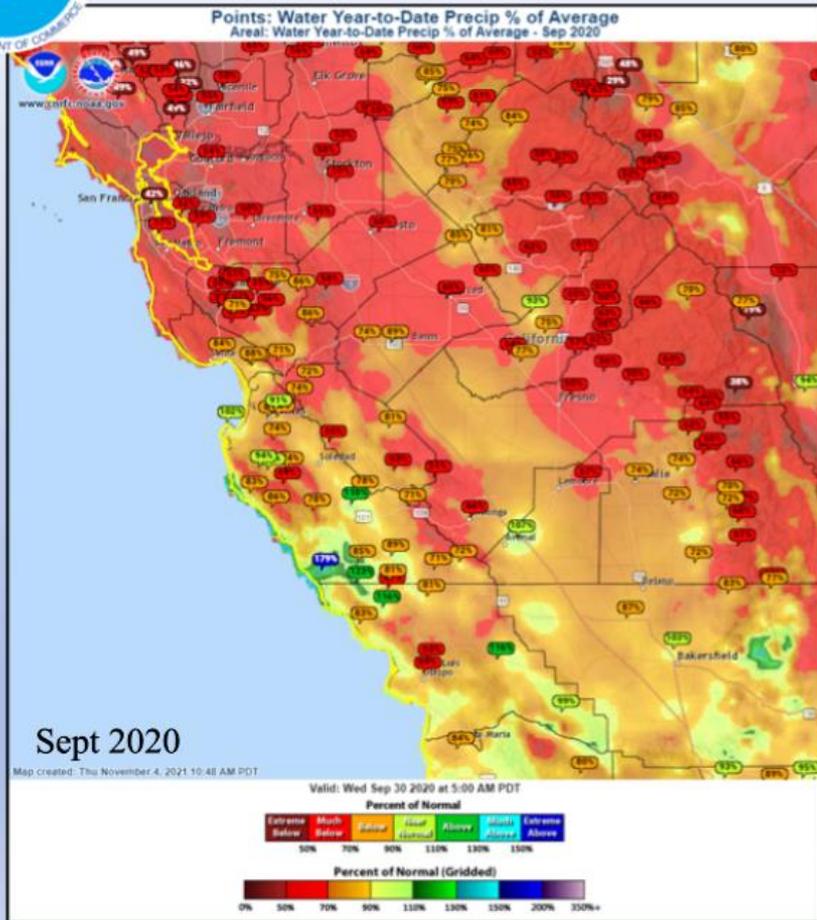
Pajaro Valley Seawater Intrusion



CURRENT DROUGHT

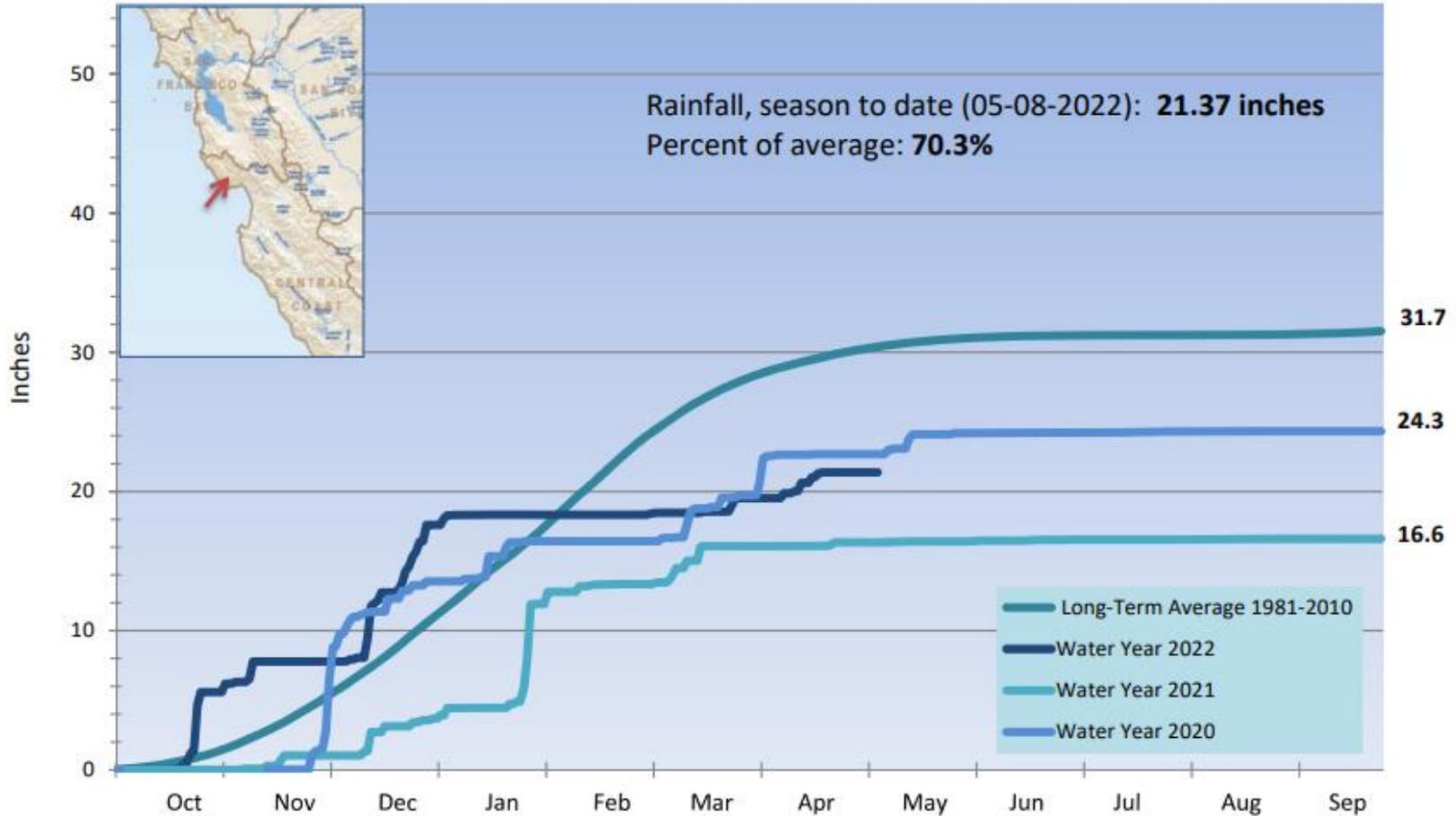


Water Year's 2020 and 2021

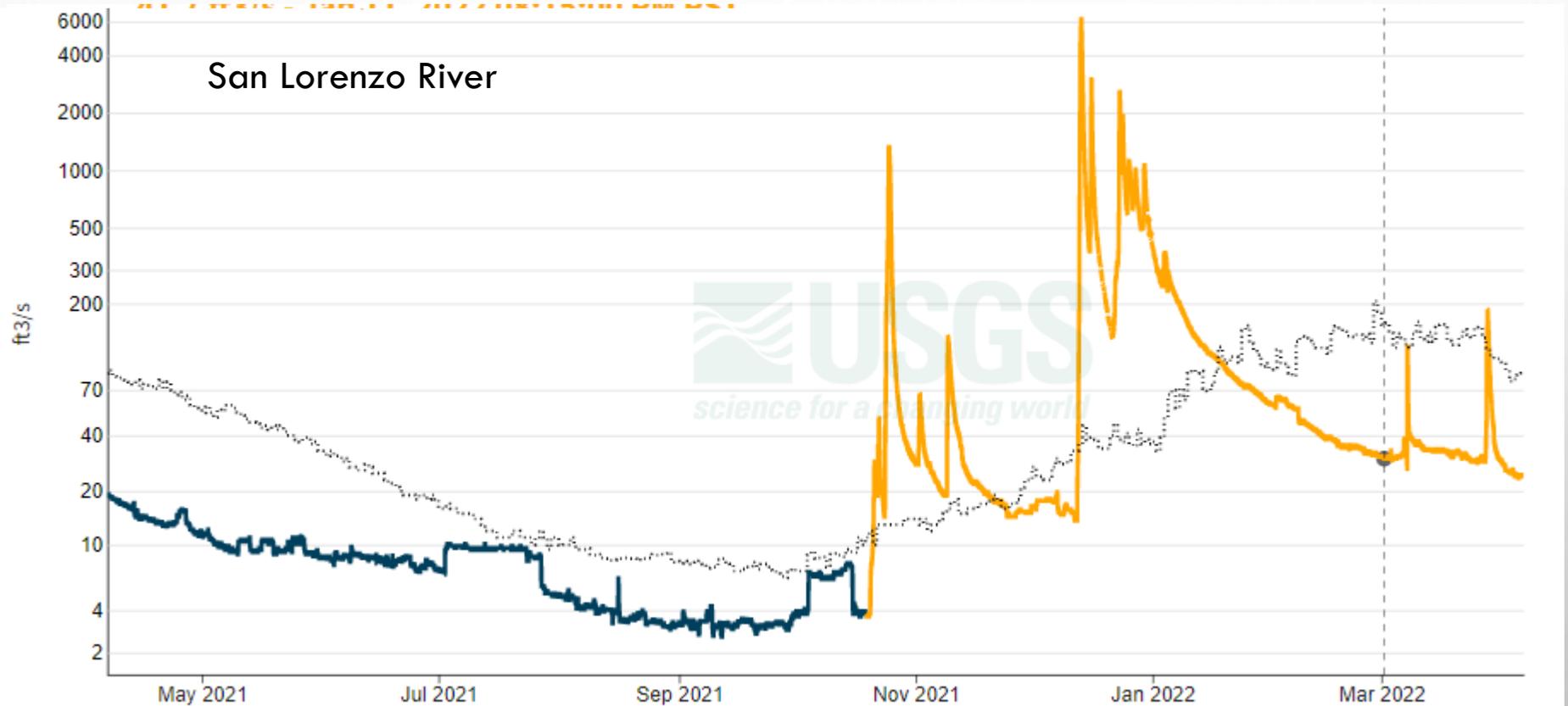


SURFACE WATER REDUCTIONS - DROUGHT

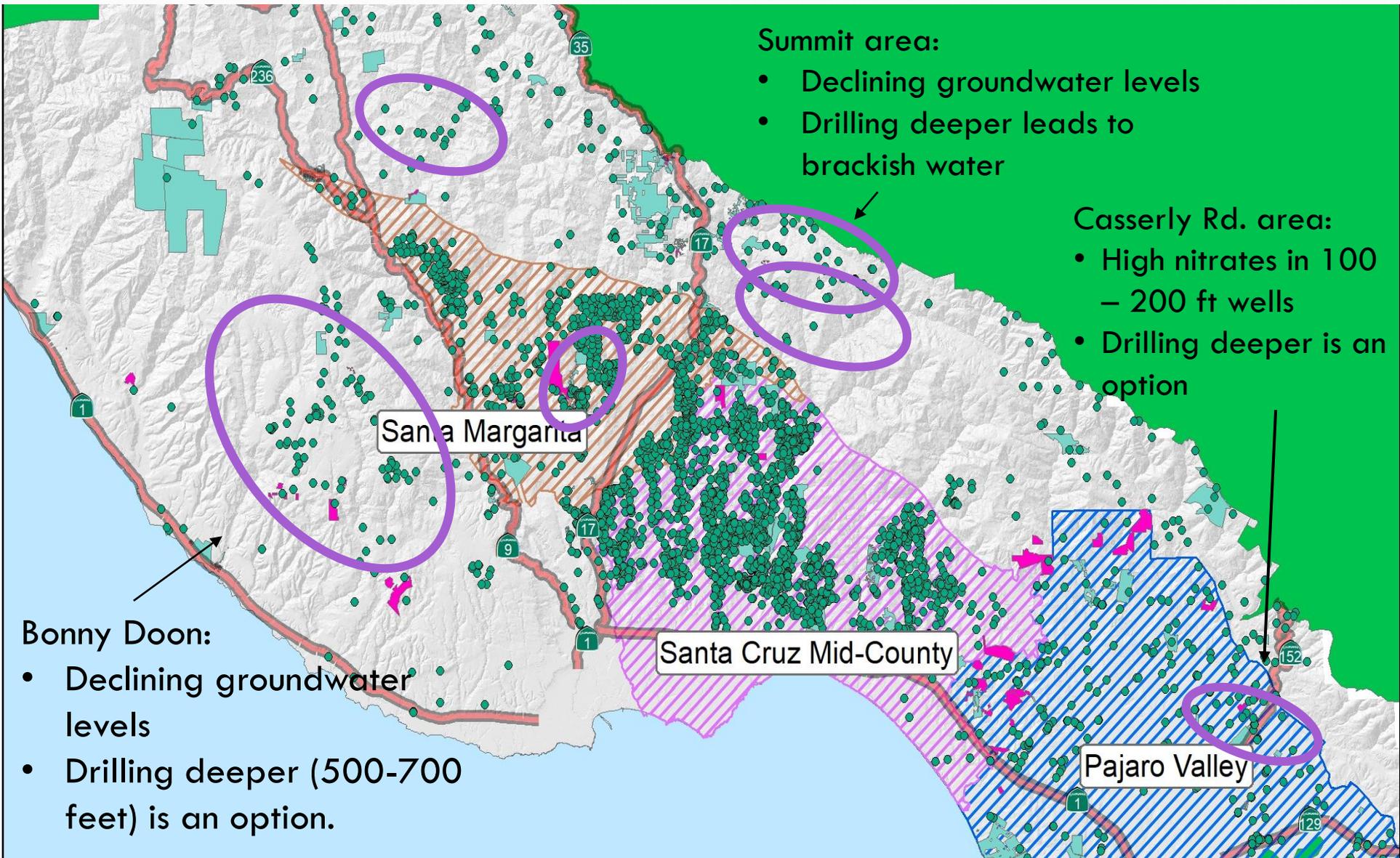
Cumulative Precipitation Santa Cruz, CA Water Year 2022



SURFACE WATER



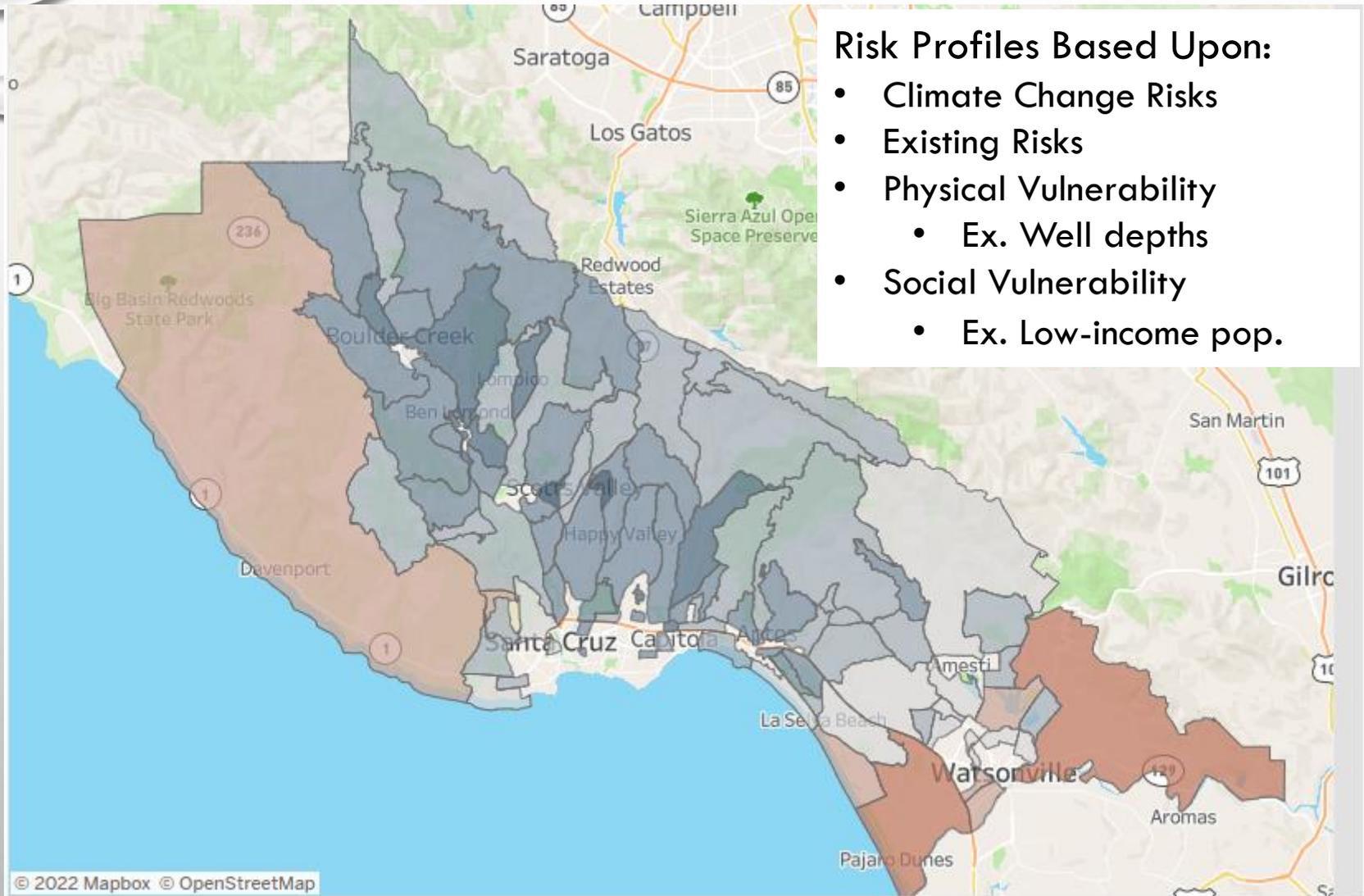
INDIVIDUAL/SMALL WATER SYSTEMS



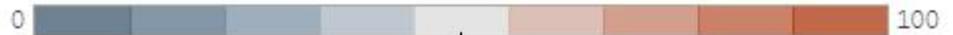
DROUGHT & WATER SHORTAGE RISK EXPLORER

- THE FOLLOWING SLIDES UTILIZE THE DEPARTMENT OF WATER RESOURCES DROUGHT RISK EXPLORER
- [DWR DROUGHT RISK EXPLORER - RURAL COMMUNITIES \(MARCH 2021\)](#)
- THE EXPLORER WAS DEVELOPED TO SUPPORT DROUGHT RESILIENCE PLANNING AMONG RURAL COMMUNITIES.
- THE RISK INDICATORS (20 TOTAL) WERE DEVELOPED THROUGH A STAKEHOLDER PARTICIPATORY PROCESS AS PART OF FULFILLING REQUIREMENTS OF AB 1668.

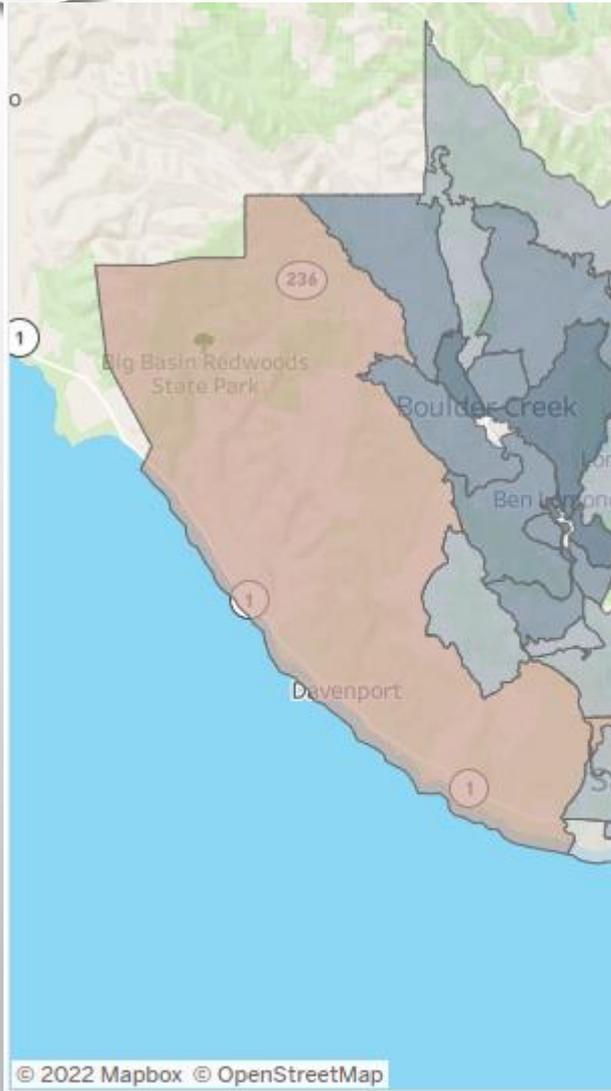
COUNTY WIDE: DROUGHT RISK MAP



Risk Score Legend Colors
0 = low risk; 100 = highest risk



HIGHEST RISK CENSUS BLOCK

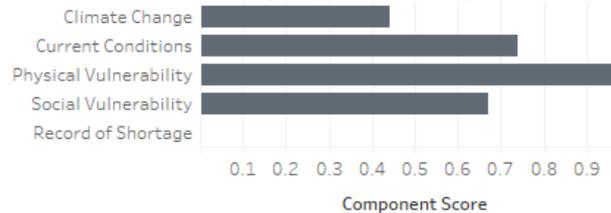


Risk Score (0-100): 72
US Census ID (Block Group):: 060871223001
Surrounding or Nearby Place: La Selva Beach
This area is located in: Santa Cruz County

Tribal Homes: 0
Domestic Well Reliance: 6%

This community has 328.0 households, according to the US Census estimates (ACS 2012-2016). State records indicate 6% of households rely on domestic wells in this area.

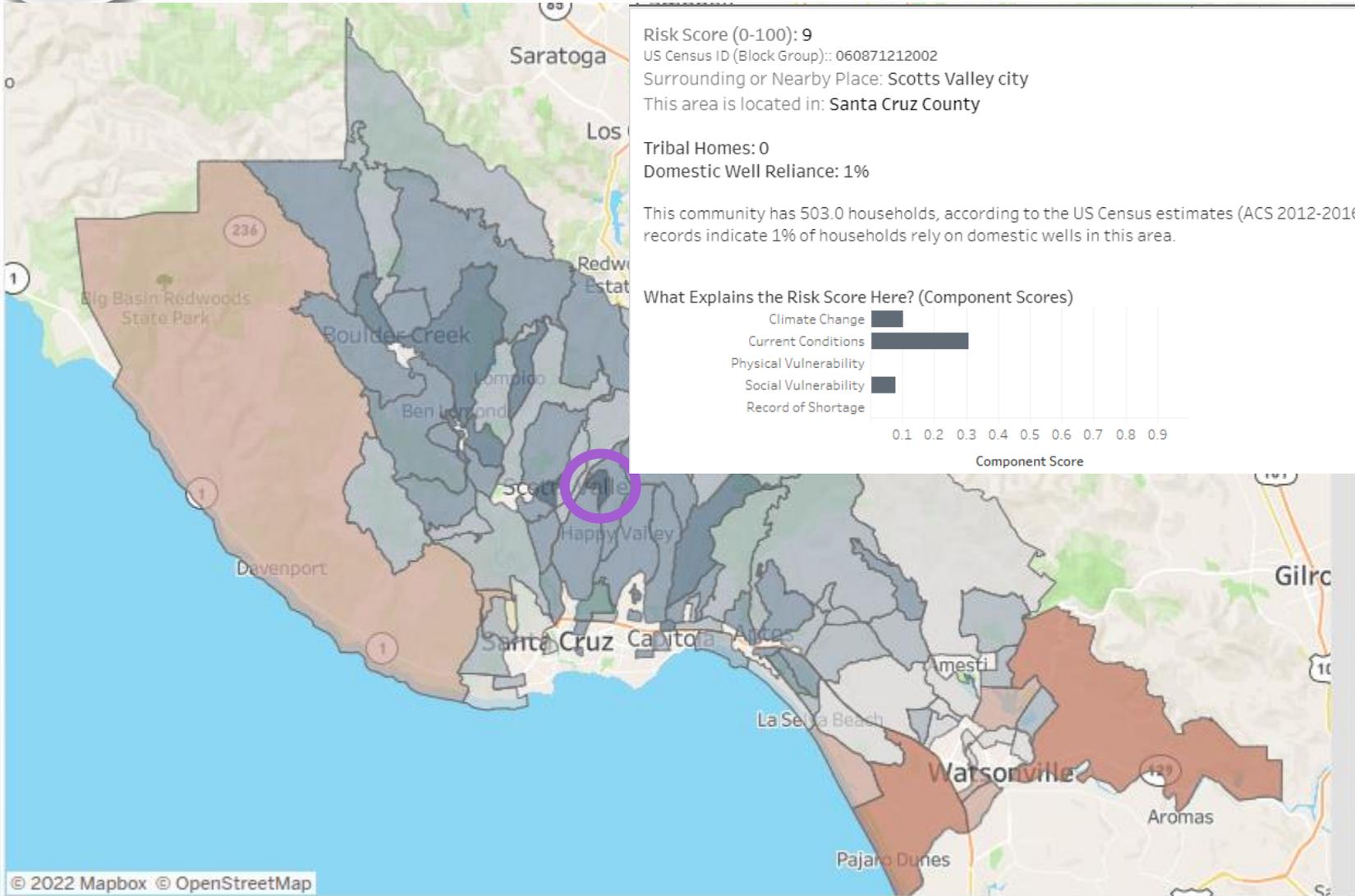
What Explains the Risk Score Here? (Component Scores)



Risk Score Legend Colors
0 = low risk; 100 = highest risk



LOWEST RISK CENSUS BLOCK



Risk Score Legend Colors

0 = low risk; 100 = highest risk



WATER QUALITY

- THE FOLLOWING SLIDES UTILIZE THE STATE WATER RESOURCES CONTROL BOARD **AQUIFER RISK MAP**

- [2022 AQUIFER RISK MAP \(CA.GOV\)](https://www.water.ca.gov/aquifer-risk-map)

- THE RISK MAP WAS DEVELOPED TO HELP PRIORITIZE AREAS WHERE DOMESTIC WELLS AND STATE SMALL WATER SYSTEMS MAY BE ACCESSING RAW SOURCE GROUNDWATER THAT DOES NOT MEET PRIMARY DRINKING WATER STANDARDS.

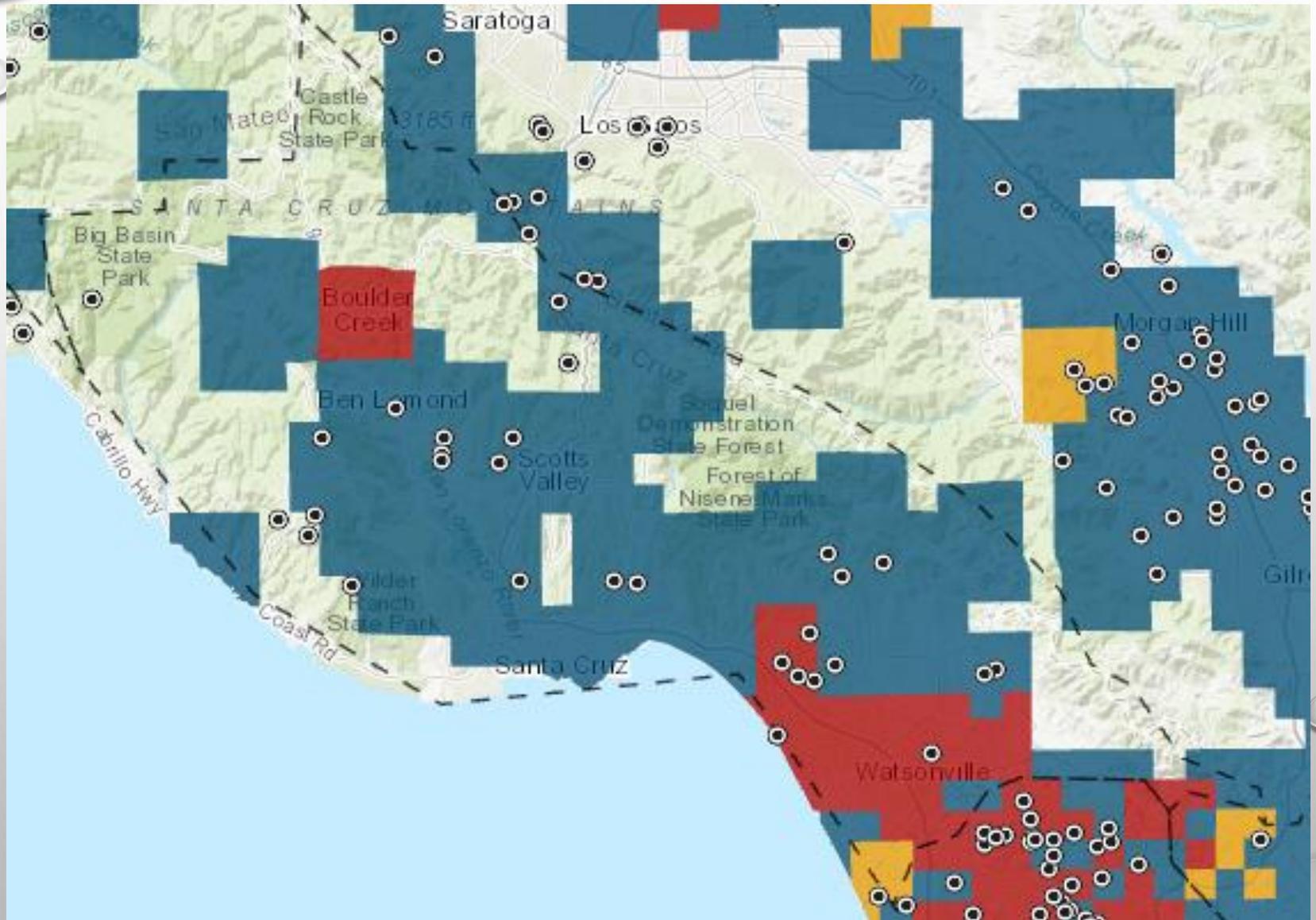
- THE DATA IS BASED ON WATER QUALITY RESULTS FROM PUBLIC AND DOMESTIC SUPPLY WELLS.

HEXAVALENT CHROMIUM

- **PROPOSED MCL:** 0.010 MG/L (10 PARTS PER BILLION)
- **SOURCES:** EROSION OF NATURAL DEPOSITS, INCLUDING AROMAS RED SANDS AQUIFER IN SANTA CRUZ COUNTY. HEXAVALENT CHROMIUM HAS ALSO BEEN USED HISTORICALLY IN THE CHROME PLATING OF METALS, AS AN INGREDIENT IN DYES AND PIGMENTS, IN THE LEATHER TANNING PROCESS, AND AS A WOOD PRESERVATIVE. IT IS OFTEN RELEASED INTO THE ENVIRONMENT FOLLOWING THE DISPOSAL OF CHROMIUM-CONTAINING MATERIALS OR AS A BY-PRODUCT OF THE PROCESSES THAT USE THIS METAL.
- **HEALTH EFFECTS:** INGESTING HEXAVALENT CHROMIUM HAS BEEN SHOWN TO CAUSE BOTH CANCER AND KIDNEY TOXICITY.

HEXAVALENT CHROMIUM RISK MAP:

SOURCE: [2022 AQUIFER RISK MAP \(CA.GOV\)](https://www.ca.gov)

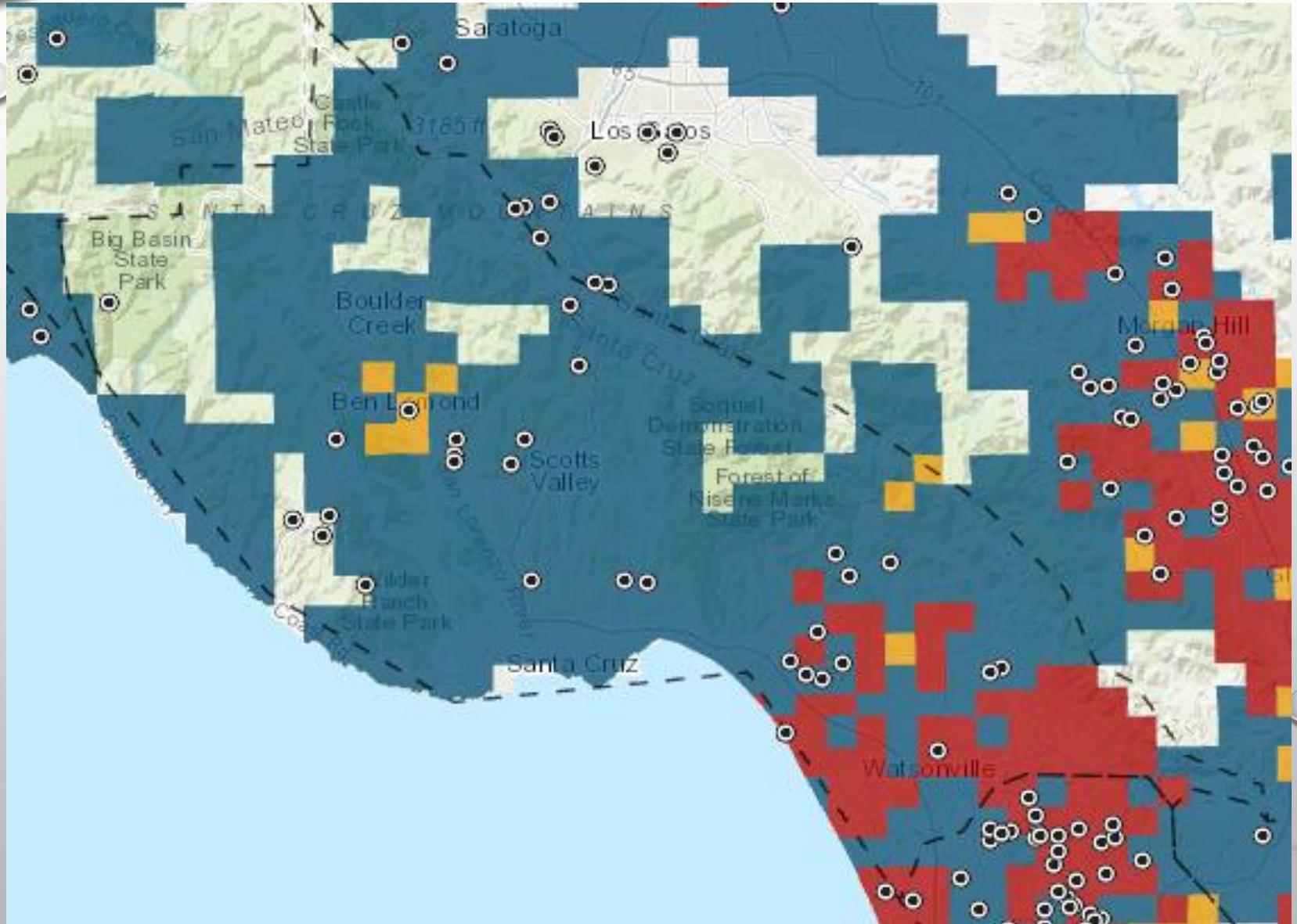


NITRATE

- **PRIMARY MCL:** 10 MG/L
- **SOURCES:** RUNOFF AND LEACHING FROM FERTILIZER USE; LEACHING FROM SEPTIC TANKS AND SEWAGE; EROSION OF NATURAL DEPOSITS
- **HEALTH EFFECTS:** INFANTS BELOW THE AGE OF SIX MONTHS WHO DRINK WATER CONTAINING NITRATE IN EXCESS OF THE MCL MAY QUICKLY BECOME SERIOUSLY ILL AND, IF UNTREATED, MAY DIE BECAUSE HIGH NITRATE LEVELS CAN INTERFERE WITH THE CAPACITY OF THE INFANT'S BLOOD TO CARRY OXYGEN. SYMPTOMS INCLUDE SHORTNESS OF BREATH AND BLUENESS OF THE SKIN. HIGH NITRATE LEVELS MAY ALSO AFFECT THE OXYGEN-CARRYING ABILITY OF THE BLOOD OF PREGNANT WOMEN.

NITRATE RISK MAP:

SOURCE: [2022 AQUIFER RISK MAP \(CA.GOV\)](https://www.ca.gov)

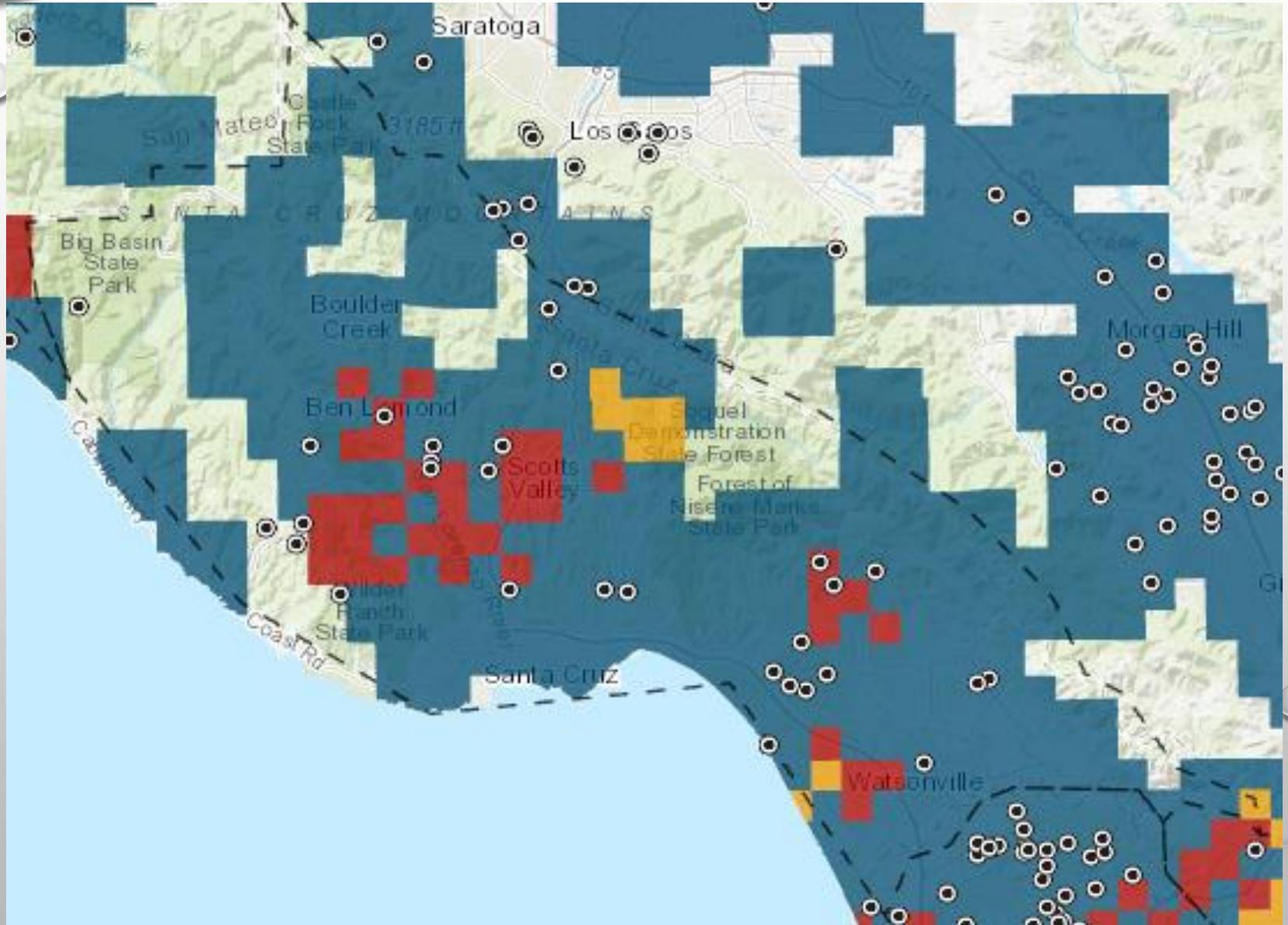


ARSENIC

- **PRIMARY MCL:** 0.010 MG/L
- **SOURCE:** EROSION OF NATURAL DEPOSITS; RUNOFF FROM ORCHARDS; GLASS AND ELECTRONICS PRODUCTION WASTES
- **HEALTH EFFECTS:** SOME PEOPLE WHO DRINK WATER CONTAINING ARSENIC IN EXCESS OF THE MCL OVER MANY YEARS MAY EXPERIENCE SKIN DAMAGE OR CIRCULATORY SYSTEM PROBLEMS AND MAY HAVE AN INCREASED RISK OF GETTING CANCER.

ARSENIC RISK MAP:

SOURCE: [2022 AQUIFER RISK MAP \(CA.GOV\)](https://www.ca.gov)

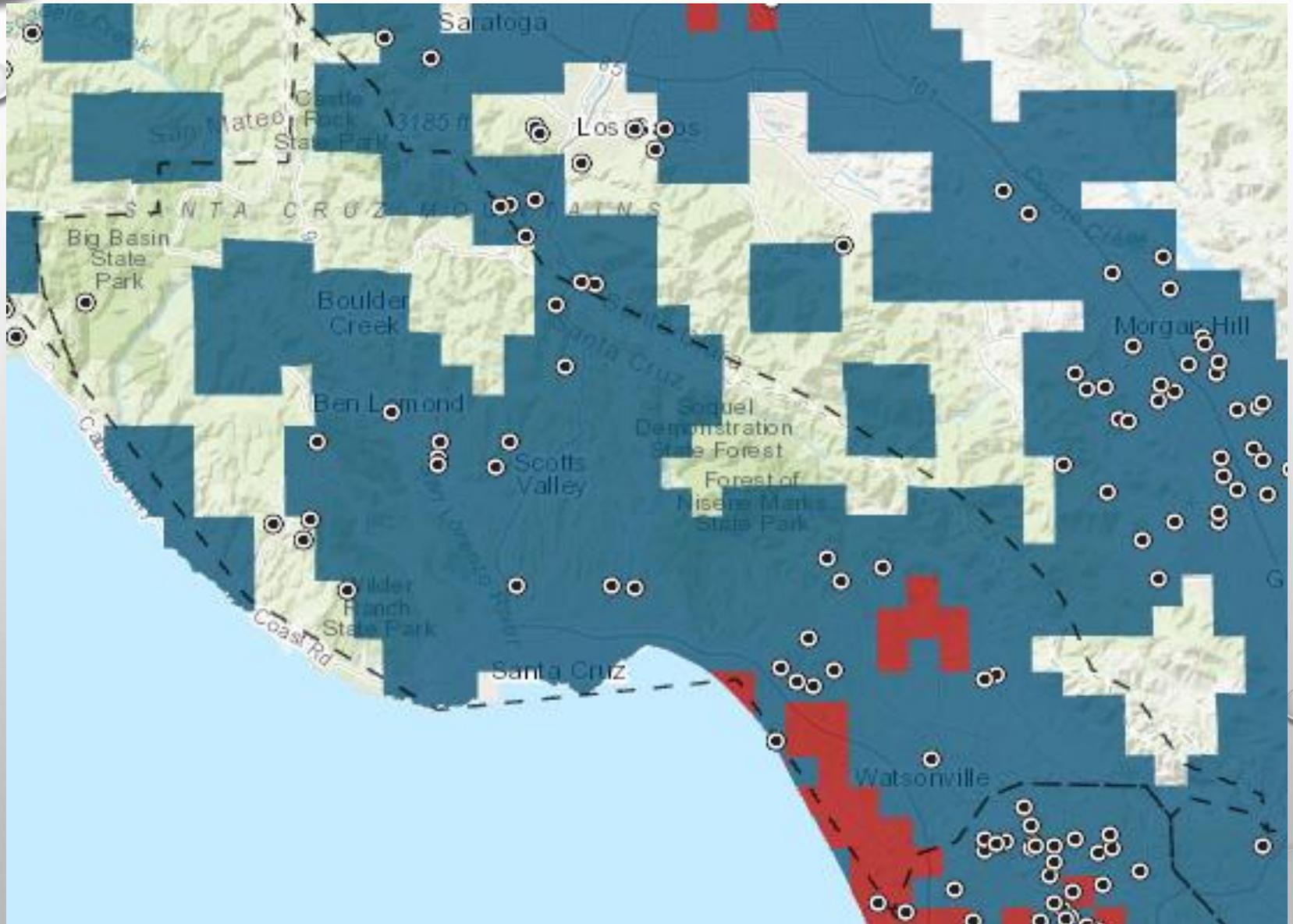


1-2-3
TRICHLOROPROPANE
(TCP)

- **PRIMARY MCL:** 0.000005 MG/L (5 PARTS PER TRILLION)
- **SOURCE:** DISCHARGE FROM INDUSTRIAL AND AGRICULTURAL CHEMICAL FACTORIES; LEACHING FROM HAZARDOUS WASTE SITES; USED AS CLEANING AND MAINTENANCE SOLVENT, PAINT AND VARNISH REMOVER, AND CLEANING AND DEGREASING AGENT; BYPRODUCT DURING THE PRODUCTION OF OTHER COMPOUNDS AND PESTICIDES.
- **HEALTH EFFECTS:** SOME PEOPLE WHO DRINK WATER CONTAINING 1,2,3-TRICHLOROPROPANE IN EXCESS OF THE MCL OVER MANY YEARS MAY HAVE AN INCREASED RISK OF GETTING CANCER.

1,2,3-TCP RISK MAP:

SOURCE: [2022 AQUIFER RISK MAP \(CA.GOV\)](https://www.ca.gov)



The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The text 'DATA COLLECTION' is centered in the middle of the slide.

DATA COLLECTION

WELL PERMITS

- WELL TYPE RECORDED: NEW, REPLACEMENT, SUPPLEMENTAL, DESTRUCTION
- REQUIRED PRIOR TO FINAL APPROVAL (WELL CONSTRUCTION):
 - WELL COMPLETION REPORT (WELL LOG, ALSO REQUIRED FOR WELL DESTRUCTIONS)
 - WATER QUALITY RESULTS FROM CERTIFIED LABORATORY:
 - BACTERIA (TOTAL COLIFORMS AND *E.COLI*)
 - NITRATE
 - TOTAL DISSOLVED SOLIDS
 - CHLORIDE
 - IRON
 - MANGANESE

WELL PERMITS

- DOCUMENTS SCANNED INTO ENVIRONMENTAL HEALTH RECORDS PORTAL (SCCEH.COM → PUBLIC RECORDS) ONCE PERMIT IS FINALIZED
- GAPS/NEEDS:
 - TRACK REASON/NEED FOR EACH WELL PERMIT
 - IDENTIFY DRY WELL CONTACT AT COUNTY LEVEL
 - IMPROVE WELL MAPPING FOR PLANNING/RESOURCE MANAGEMENT

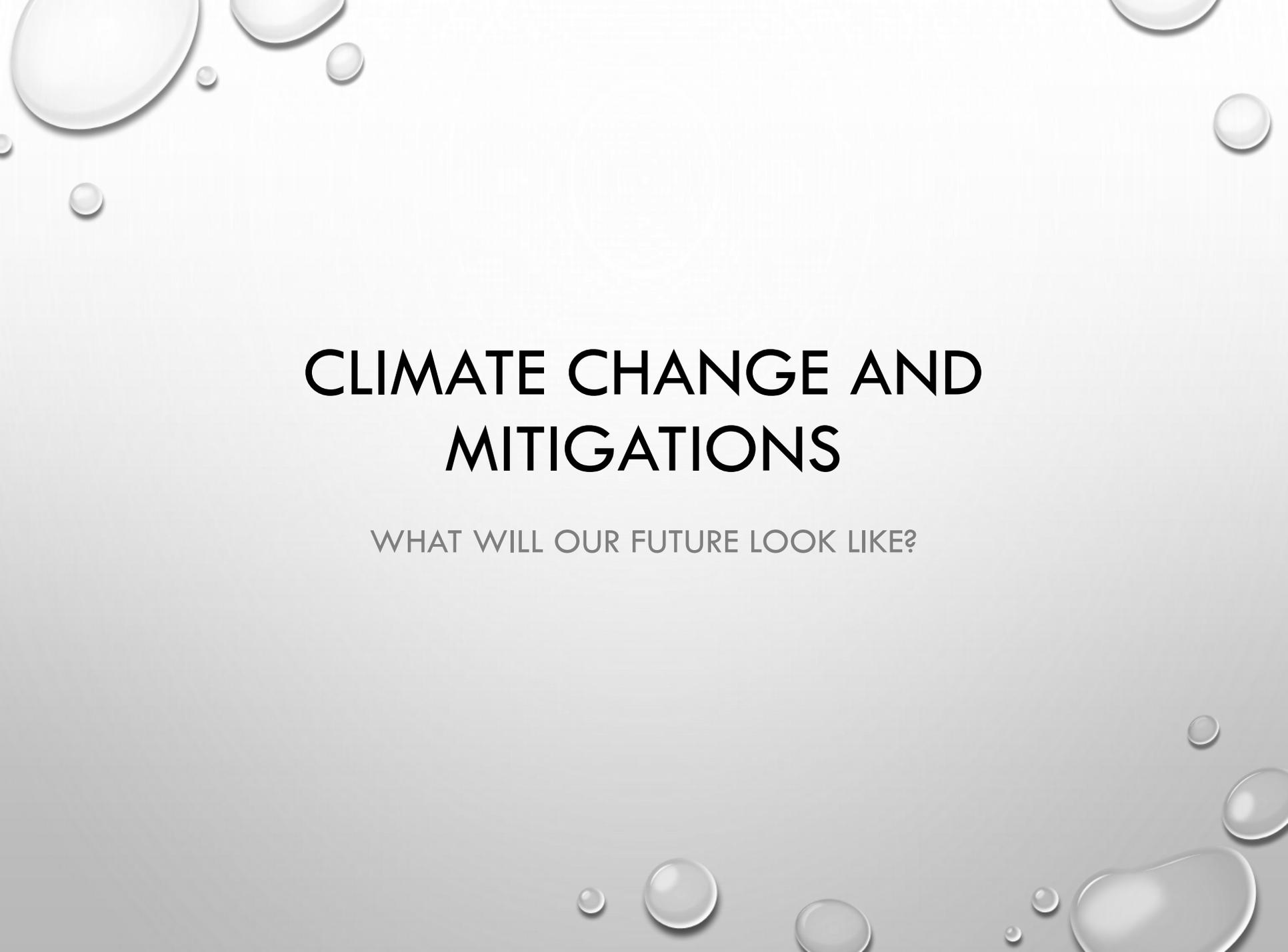


GROUNDWATER LEVEL MONITORING

- SPRING/FALL WELL SOUNDINGS:
 - SINCE 2008, SANTA CRUZ COUNTY HAS PARTNERED WITH LOCAL WELL OWNERS TO MONITOR GROUNDWATER, WITH A FOCUS ON THE MID-COUNTY BASIN. THIS HAS EXPANDED TO OTHER COUNTY BASINS AND OUTLYING AREAS.
 - TWICE PER YEAR, COUNTY STAFF MEASURE THE DEPTH TO GROUNDWATER AT THESE LOCATIONS AND PROVIDE INFORMATION TO THE OWNERS.
 - THIS DATA HAS BEEN SAVED INTERNALLY FOR ANALYSIS BUT HAS NOT BEEN MADE PUBLICLY AVAILABLE. WORK IS CURRENTLY BEING DONE TO INCLUDE THIS DATA, IN AN ANONYMIZED FORMAT, IN A PUBLIC FACING PORTAL.
- SGMA PORTAL – RMPS

WATER QUALITY

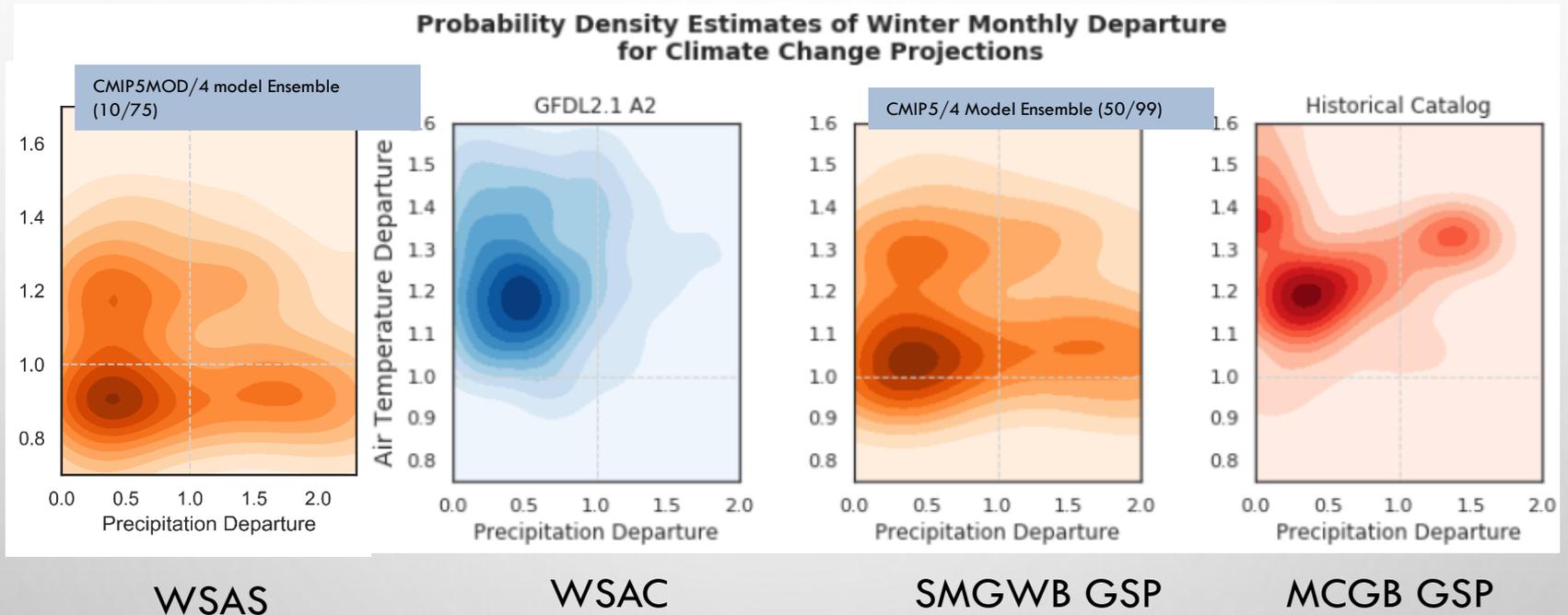
- SAMPLING CONDUCTED BY ALL PUBLIC WATER SYSTEMS:
 - MONTHLY OR QUARTERLY BACTERIA SAMPLING
 - ANNUAL NITRATE, NITRITE SAMPLED EVERY 3 YEARS
- ADDITIONAL SAMPLING REQUIRED AT VARYING FREQUENCIES FOR COMMUNITY AND NONTRANSIENT-NONCOMMUNITY (SCHOOLS, OFFICES, ETC.) SYSTEMS:
 - INORGANIC CHEMICALS (E.G. ALUMINUM, ARSENIC, FLUORIDE)
 - VOLATILE ORGANIC CHEMICALS (E.G. BENZENE)
 - SYNTHETIC ORGANIC CHEMICALS (E.G. 1,2,3-TCP)
 - RADIOLOGICAL (PRIMARILY GROSS ALPHA PARTICLE ACTIVITY AS AN INDICATOR)
 - MONTHLY PRODUCTION DATA FROM SOURCES (REPORTED ONCE PER YEAR)
 - POPULATION TYPE, SIZE, AND NUMBER OF CONNECTIONS
- DATA INCLUDED IN SGMA

The background of the slide is a light gray gradient. In the top-left and bottom-right corners, there are several realistic-looking water droplets of various sizes, some overlapping. The droplets have highlights and shadows, giving them a three-dimensional appearance.

CLIMATE CHANGE AND MITIGATIONS

WHAT WILL OUR FUTURE LOOK LIKE?

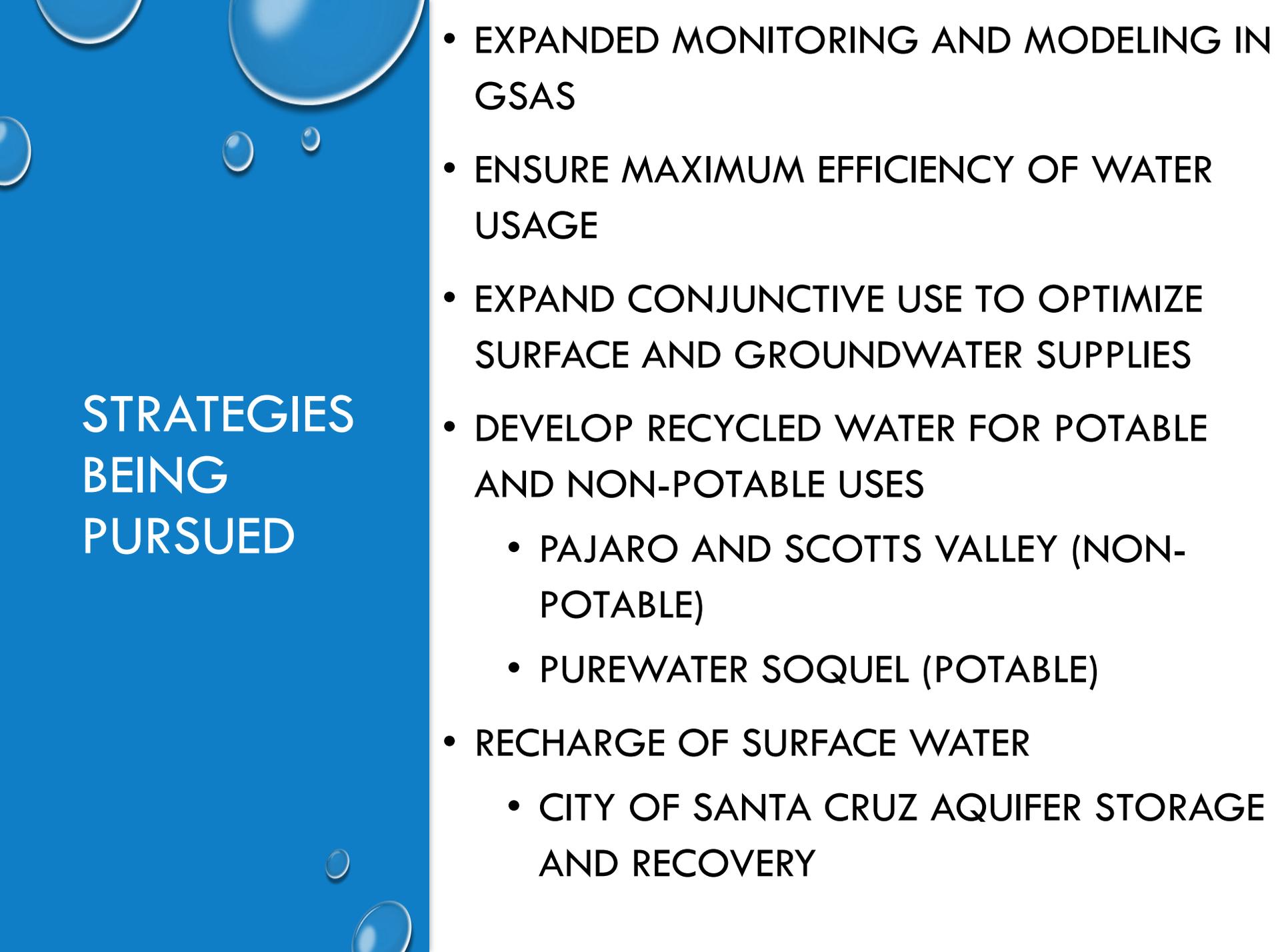
CLIMATE CHANGE PROJECTIONS



ANTICIPATED IMPACTS

REGION WIDE, POTENTIAL GENERALIZED IMPACTS OF CLIMATE CHANGE ON WATER DEMAND INCLUDE:

- DROUGHTS BECOME MORE FREQUENT AND MORE SEVERE
- RAIN COMES IN BIG EVENTS LEADING TO MORE RUNOFF
- INCREASED EVAPOTRANSPIRATION INCREASE AGRICULTURAL AND LANDSCAPE DEMANDS.
- EXTENDED GROWING SEASON AND INCREASE WATER DEMAND
- REDUCTION IN FOG LEADS TO WARMER DAYS

The background of the slide is a vibrant blue, decorated with several realistic water droplets of varying sizes. The droplets are positioned primarily in the top-left and bottom-right corners, with a few smaller ones scattered in the middle. The overall aesthetic is clean and fresh, suggesting a focus on water and environmental themes.

STRATEGIES BEING PURSUED

- EXPANDED MONITORING AND MODELING IN GSAS
- ENSURE MAXIMUM EFFICIENCY OF WATER USAGE
- EXPAND CONJUNCTIVE USE TO OPTIMIZE SURFACE AND GROUNDWATER SUPPLIES
- DEVELOP RECYCLED WATER FOR POTABLE AND NON-POTABLE USES
 - PAJARO AND SCOTTS VALLEY (NON-POTABLE)
 - PUREWATER SOQUEL (POTABLE)
- RECHARGE OF SURFACE WATER
 - CITY OF SANTA CRUZ AQUIFER STORAGE AND RECOVERY

RELATIONSHIP TO OTHER PROCESSES

Water Supply Sustainability

SGMA

- Prevents groundwater depletion
- Exempts droughts from “sustainability”
- Geographically limited to defined Basins
- Looks at levels regionally, does not protect individual wells.
- Eligibility for SGMA-related funding

Regional Supply Planning

- Provides alternatives to groundwater during drought
- Eligibility for resilience and infrastructure funding
- Fills gaps left by SGMA (drought impacts) and SB 552 (source water for emergency supplies)

SB 552

- Drought specific resiliency for small and individual systems
- Will require evaluation of secondary supplies, either interties or second wells
- A lot of emphasis on water trucks, where to get that water?
- Covers the entire County

County Water Resources Program	http://scceh.com/Home/Programs/WaterResources.aspx
County Water Quality Map	http://scceh.com/waterquality.aspx
County Steelhead Monitoring Program	http://scceh.com/steelhead.aspx
Santa Cruz County Fire Recovery	http://www.co.santa-cruz.ca.us/FireRecovery.aspx
Central Water District	https://sites.google.com/view/centralwaterdistrict
City of Santa Cruz Water Department	https://www.cityofsantacruz.com/government/city-departments/water
City of Watsonville Public Works and Utilities	https://www.cityofwatsonville.org/590/Public-Works-Utilities
San Lorenzo Valley Water District	https://www.slvwd.com/
Scotts Valley Water District	https://www.svwd.org/
Soquel Creek Water District	https://www.soquelcreekwater.org/
Pajaro Valley Water Management Agency	https://www.pvwater.org/
Santa Cruz Mid-County Groundwater Agency	https://www.midcountygroundwater.org/
Santa Margarita Groundwater Agency	https://smgwa.org/
Resource Conservation District of Santa Cruz County	http://www.rcdsantacruz.org/
Santa Cruz Integrated Regional Water Management Plan	http://www.santacruzirwmp.org/
Water Conservation Coalition of Santa Cruz County	https://watersavingtips.org/

QUESTIONS

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