Special Board of Directors Meeting
04 April 2024
Amendment of GSPs - Update

Fillmore and Piru Basins
Groundwater Sustainability Agency

Fillmore and Piru Subbasins
Minimum Threshold (MT) Analysis
for
1) Chronic Lowering of Water Levels
2) Reduction of Groundwater Storage

Water Level Minimum Threshold Rationale

What ***significant and unreasonable impacts*** are to be avoided?

- Decreasing the ability of the wells to supply the water demand of all groundwater uses/users
- Reduction of groundwater storage values to less than 5X the average annual GW extractions

This would be accomplished by:

- Avoiding wells going dry due to GW extractions
- Emphasis will be given to MUNI, DOM, and IRRIG wells
- MWs do not satisfy the water demand, so if MWs go dry this is NOT a ***significant and unreasonable impact***

Proposed Minimum Thresholds - Representative MWs

Fillmore Subbasin			
Well Name	Measurable Objective (ft amsl)	Proposed Minimum Threshold (ft amsl)	Operational Range (ft)
03N20W01C04S	375	325	50
03N20W03D03S	327	286	41
03N20W03J02S	338	290	48
03N20W05D01S	310	255	55
03N20W09D01S	320	266	54
03N21W01P02S	270	207	63
04N19W30D01S	395	348	47
04N19W32M02S	435	380	55
04N19W33D04S	475	423	52
04N20W22N01S	675	625	50
04N20W26L01S	380	322	58
04N20W36MW104[a]	401	376	25

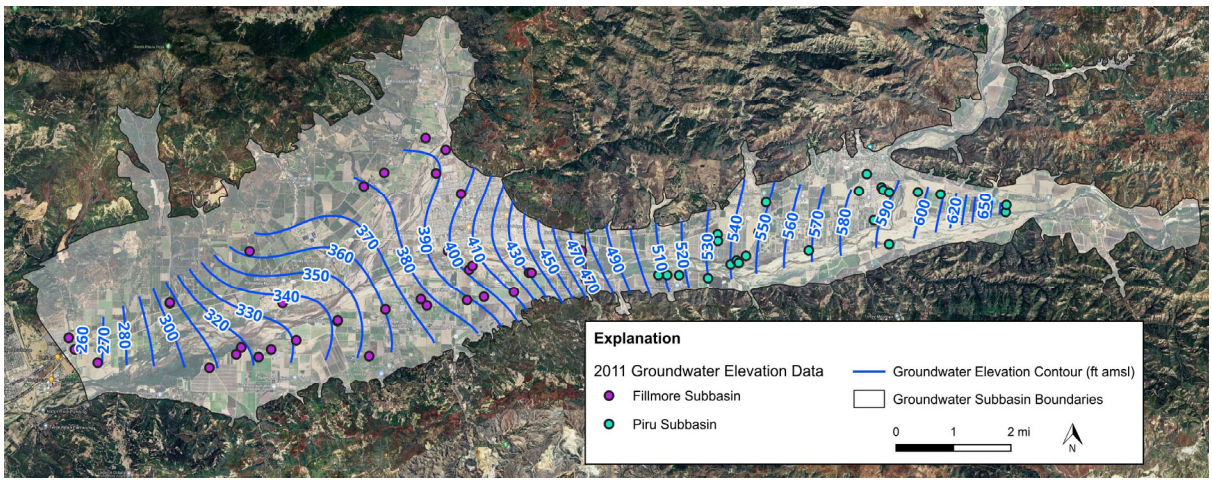
a. MT unchanged from original GSP submission.

50 ft below 2011 average water level elevation

Piru Subbasin			
Well Name	Measurable Objective (ft amsl)	Proposed Minimum Threshold (ft amsl)	Operational Range (ft)
04N19W36D01S	550	471	79
04N19W34D01S	500	423	77
04N19W34K01S	515	436	79
04N18W19R01S	595	507	88
04N18W20R01S	620	521	99
04N19W25C02S	558	474	84
04N19W26P01S	540	459	81
04N18W31D04S	580	493	87

75 ft below 2011 average water level elevation

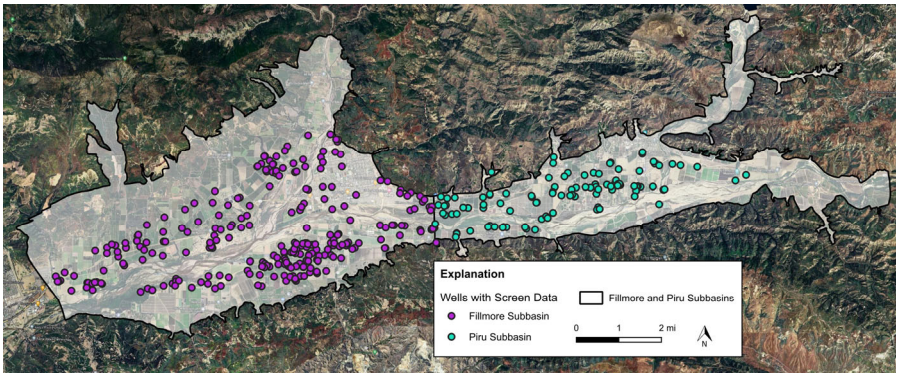
2011 water level elevations were averaged and interpolated to create a reference water table surface.



Fillmore Subbasin
176 Records at 37 Locations

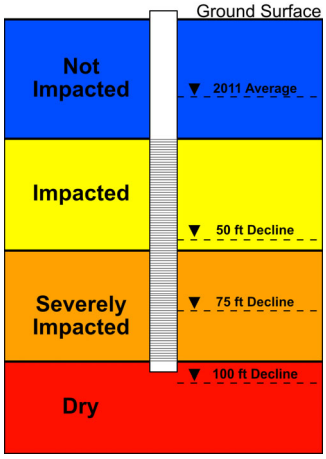
Piru Subbasin
235 Records at 26 Locations

Reference water table elevation lowered by 50, 75, and 100 ft and compared to screened intervals.



Fillmore Subbasin
280 Wells

Piru Subbasin
110 Wells

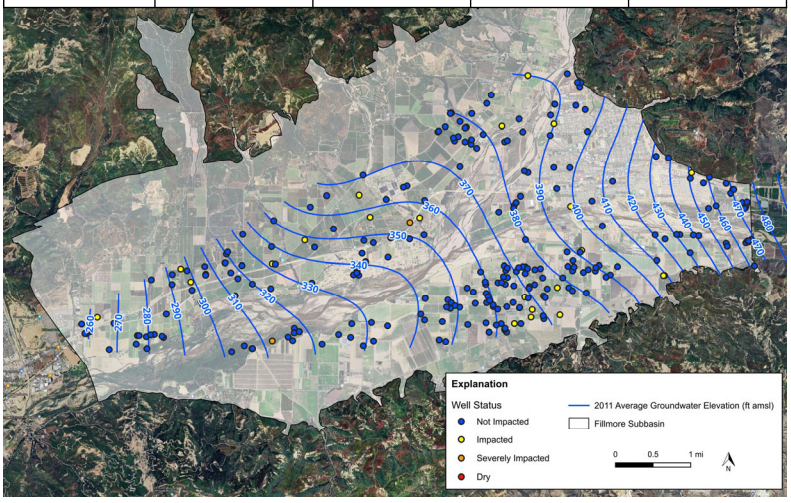


Example Designation

Fillmore Subbasin

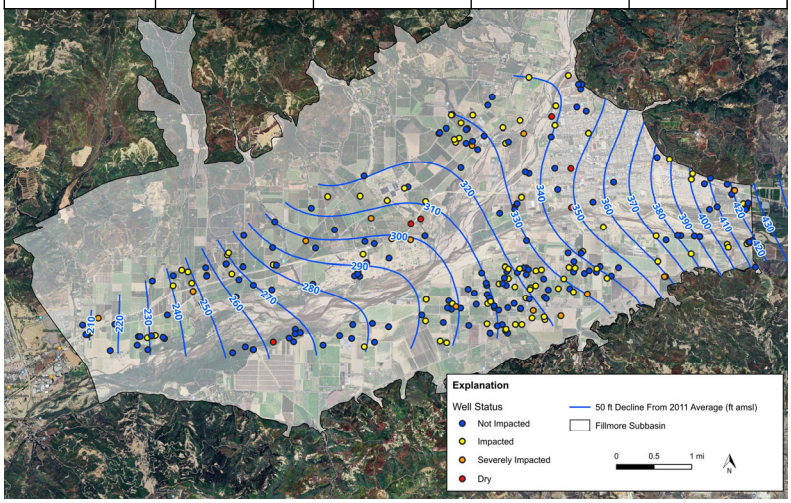
Fillmore Subbasin: Average 2011 Water Levels

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	255	23	2	0
Percentage	91.1%	8.2%	0.7%	0%



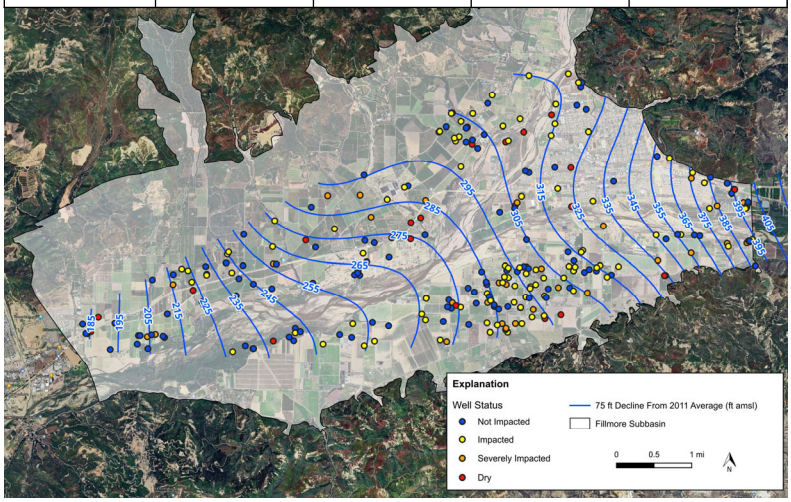
Fillmore Subbasin: 50 ft Decline from 2011 Average

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	171	85	16	8
Percentage	61.1%	30.4%	5.7%	2.9%



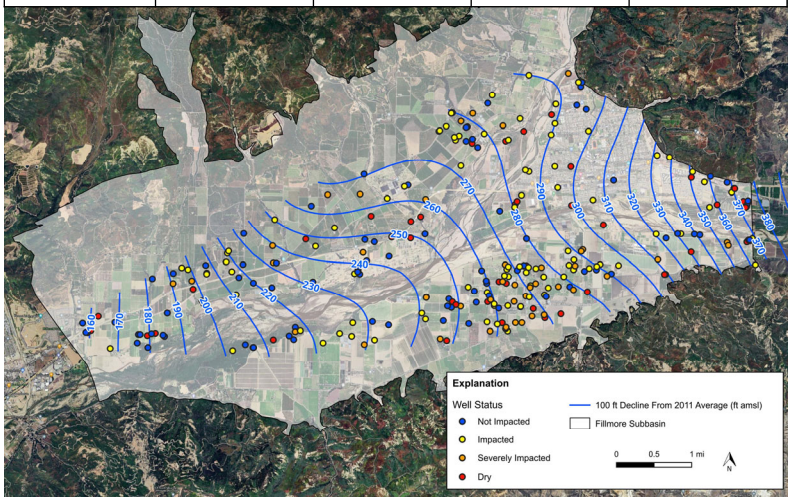
Fillmore Subbasin: 75 ft Decline from 2011 Average

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	122	101	32	25
Percentage	43.6%	36.1%	11.4%	8.9%



Fillmore Subbasin: 100 ft Decline from 2011 Average

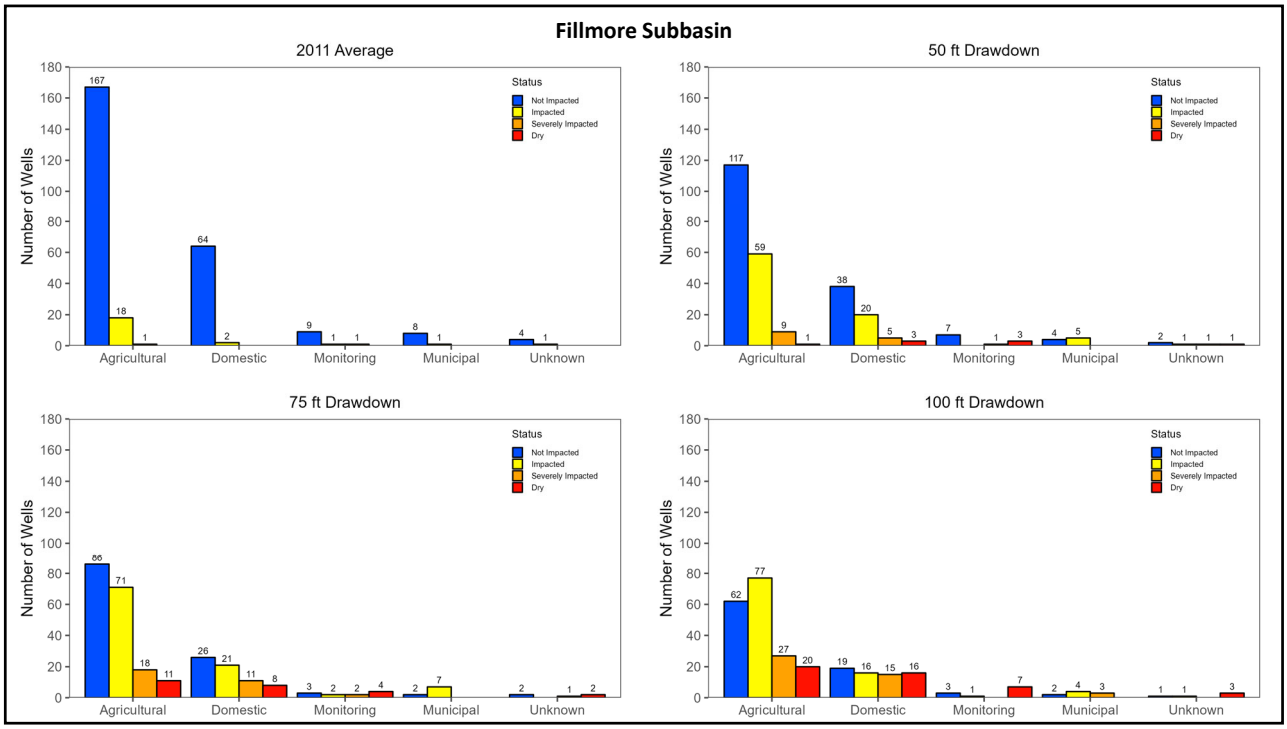
	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	90	99	45	46
Percentage	32.1%	35.4%	16.1%	16.4%

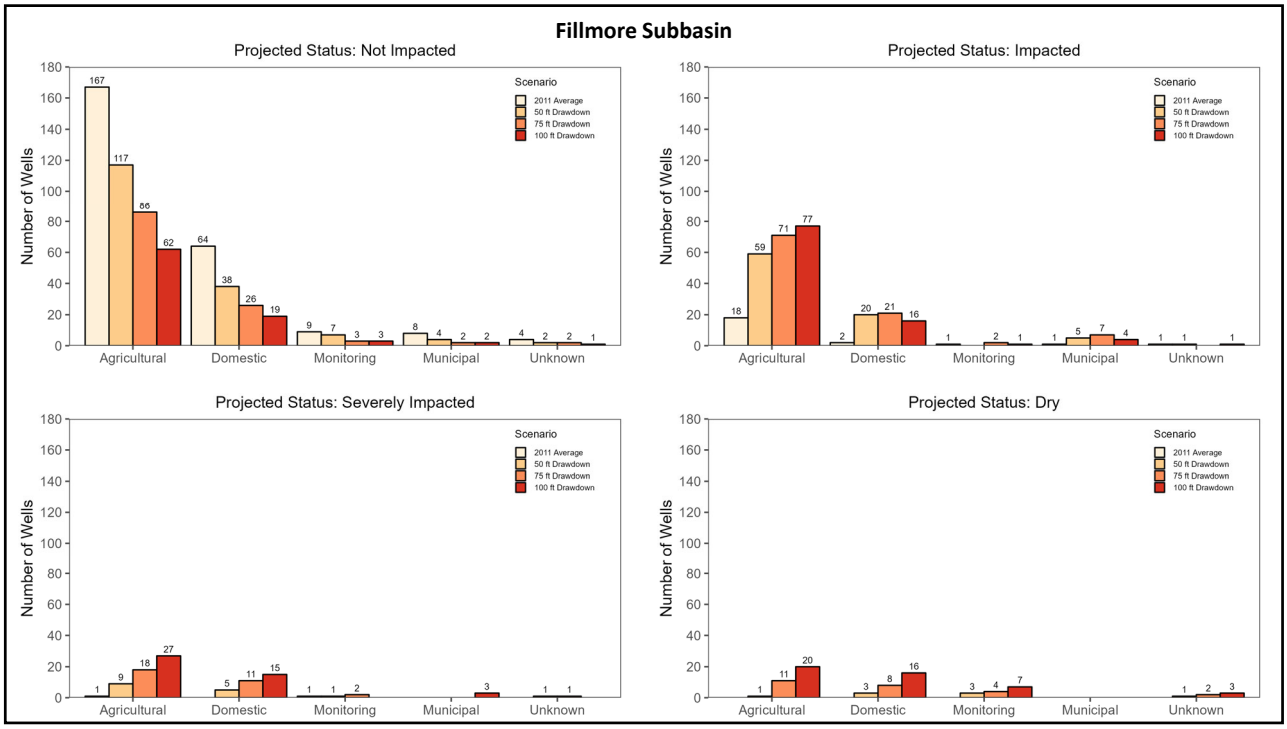


Fillmore Subbasin: Summary of projected impacts by well type

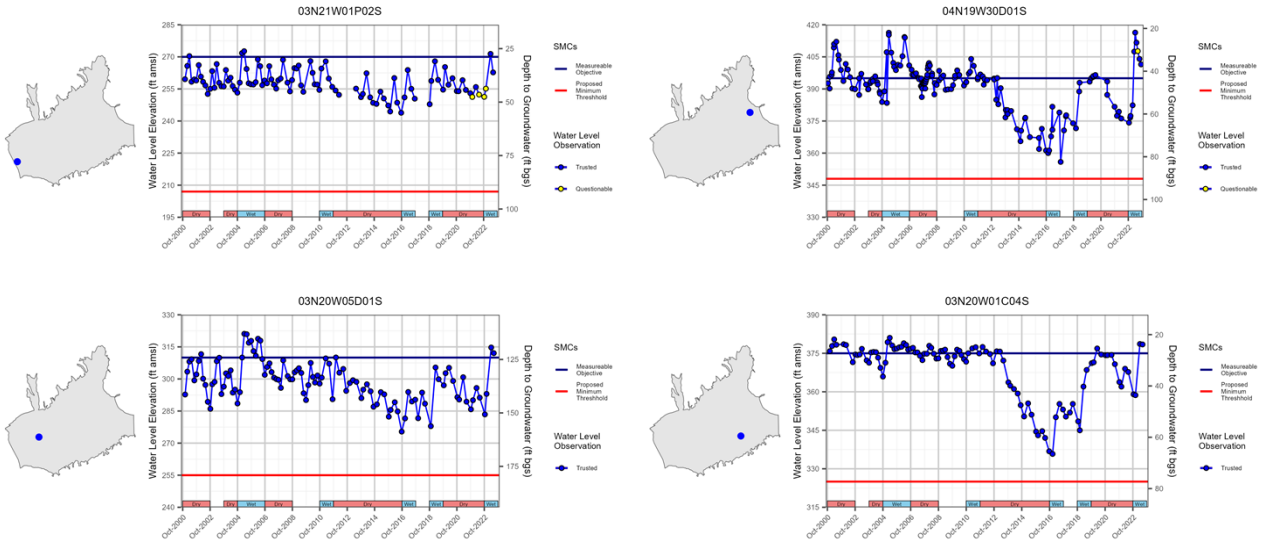
Analysis	Status	Agricultural Well	Cathodic Protection Well	Domestic Production Well	Groundwater Monitoring Well	Industrial Well	Municipal Well	Unknown	Total
Reported Wells		390	7	147	15	3	17	56	635
AIUA[1] Wells		336	7	135	15	3	11	41	548
Wells with Water Levels		25	0	7	2	0	2	1	37
Wells with Screen Data		234	2	91	12	2	10	5	356
Screened Wells Used in Analysis		186	1	66	11	2	9	5	280
2011 Average	Not Impacted	167	1	64	9	2	8	4	255
	Impacted	18	0	2	1	0	1	1	23
	Severely Impacted	1	0	0	1	0	0	0	2
	Dry	0	0	0	0	0	0	0	0
50 ft Drawdown	Not Impacted	117	1	38	7	2	4	2	171
	Impacted	59	0	20	0	0	5	1	85
	Severely Impacted	9	0	5	1	0	0	1	16
	Dry	1	0	3	3	0	0	1	8
75 ft Drawdown	Not Impacted	86	1	26	3	2	2	2	122
	Impacted	71	0	21	2	0	7	0	101
	Severely Impacted	18	0	11	2	0	0	1	32
	Dry	11	0	8	4	0	0	2	25
100 ft Drawdown	Not Impacted	62	1	19	3	2	2	1	90
	Impacted	77	0	16	1	0	4	1	99
	Severely Impacted	27	0	15	0	0	3	0	45
	Dry	20	0	16	7	0	0	3	46

1. Active + Inactive + Unknown + Abandoned Wells


Fillmore Subbasin
2011 Average
50 ft Drawdown
75 ft Drawdown
100 ft Drawdown
Number of Wells
Status
Not Impacted
Impacted
Severely Impacted
Dry
Agricultural
Domestic
Monitoring
Municipal
Unknown


Fillmore Subbasin
Projected Status: Not Impacted
Projected Status: Impacted
Projected Status: Severely Impacted
Projected Status: Dry
Number of Wells
Scenario
2011 Average
50 ft Drawdown
75 ft Drawdown
100 ft Drawdown
Agricultural
Domestic
Monitoring
Municipal
Unknown

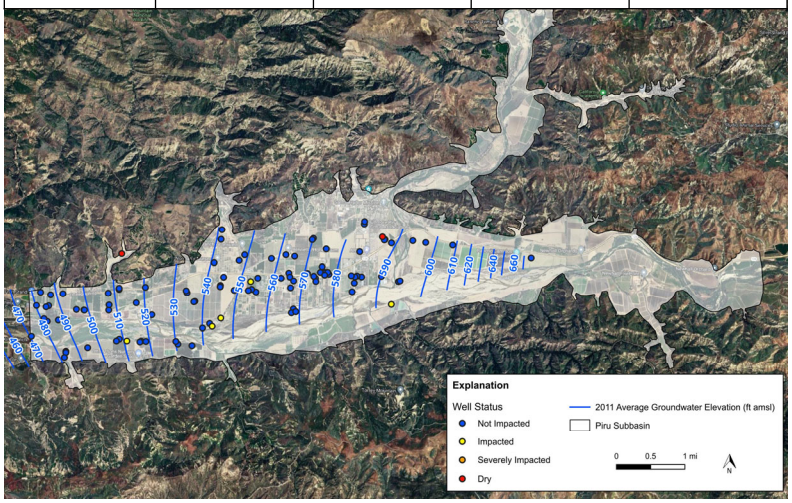
Example RMP Hydrographs with Proposed MTs



Piru Subbasin

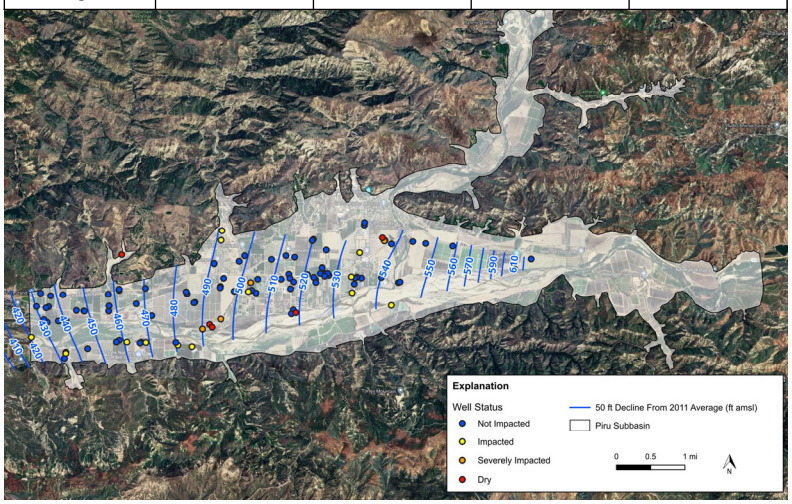
Piru Subbasin: Average 2011 Water Levels

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	102	5	0	3
Percentage	92.7%	4.5%	0%	2.7%



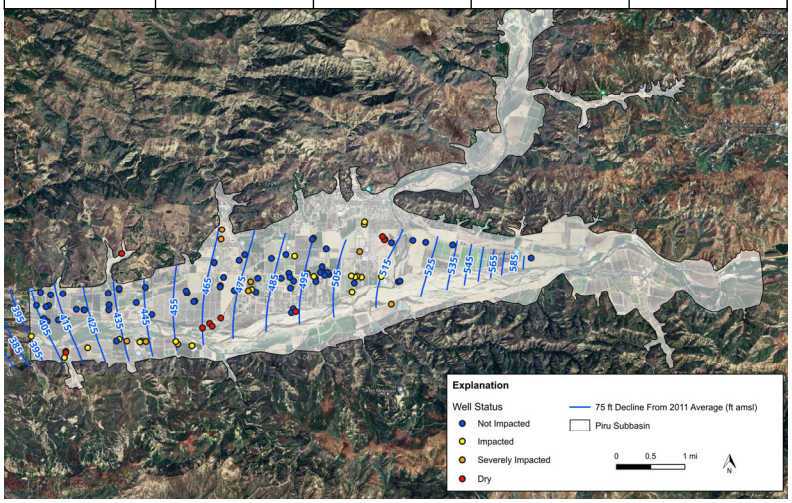
Piru Subbasin: 50 ft Decline from 2011 Average

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	87	13	4	6
Percentage	79.1%	11.8%	3.6%	5.5%



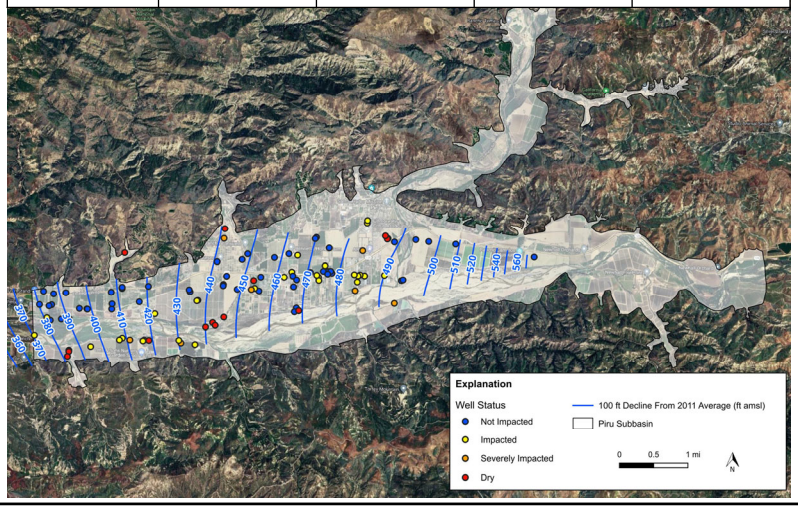
Piru Subbasin: 75 ft Decline from 2011 Average

	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	68	22	10	10
Percentage	61.8%	20%	9.1%	9.1%



Piru Subbasin: 100 ft Decline from 2011 Average

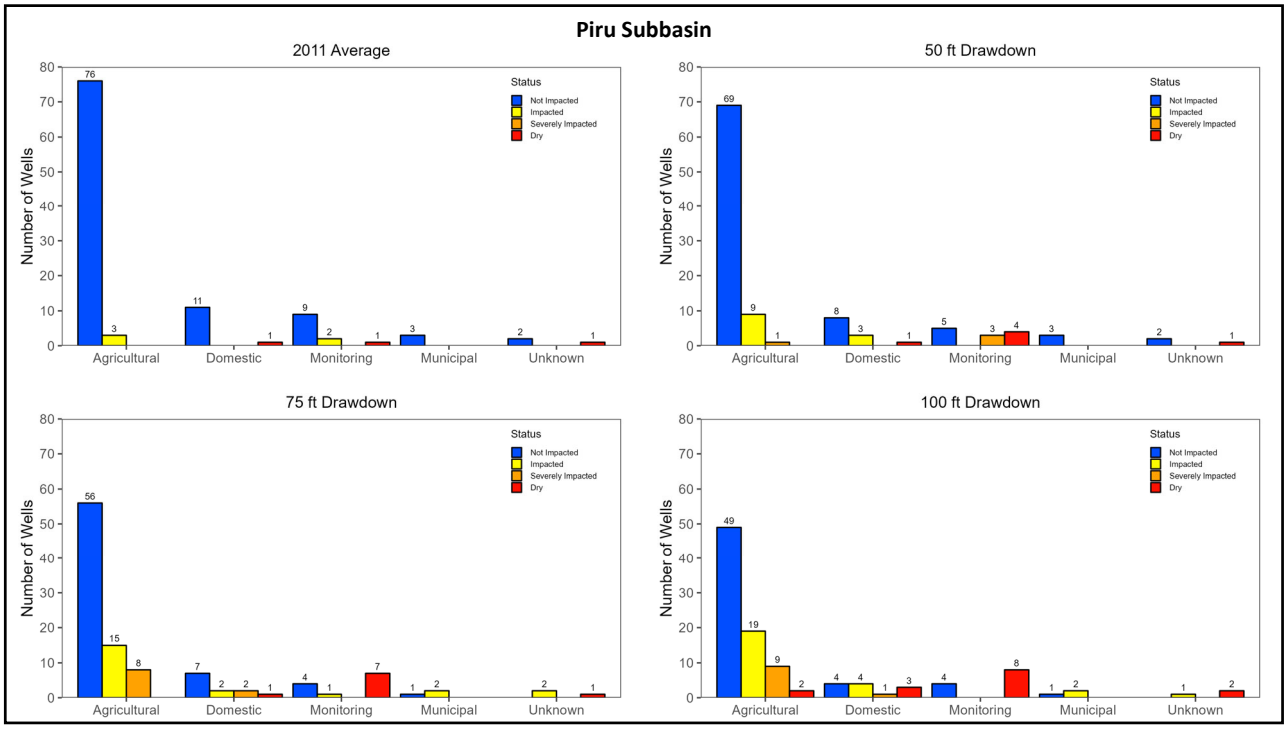
	Not Impacted	Impacted	Severely Impacted	Dry
Number of Wells	58	26	10	16
Percentage	52.7%	23.6%	9.1%	14.5%

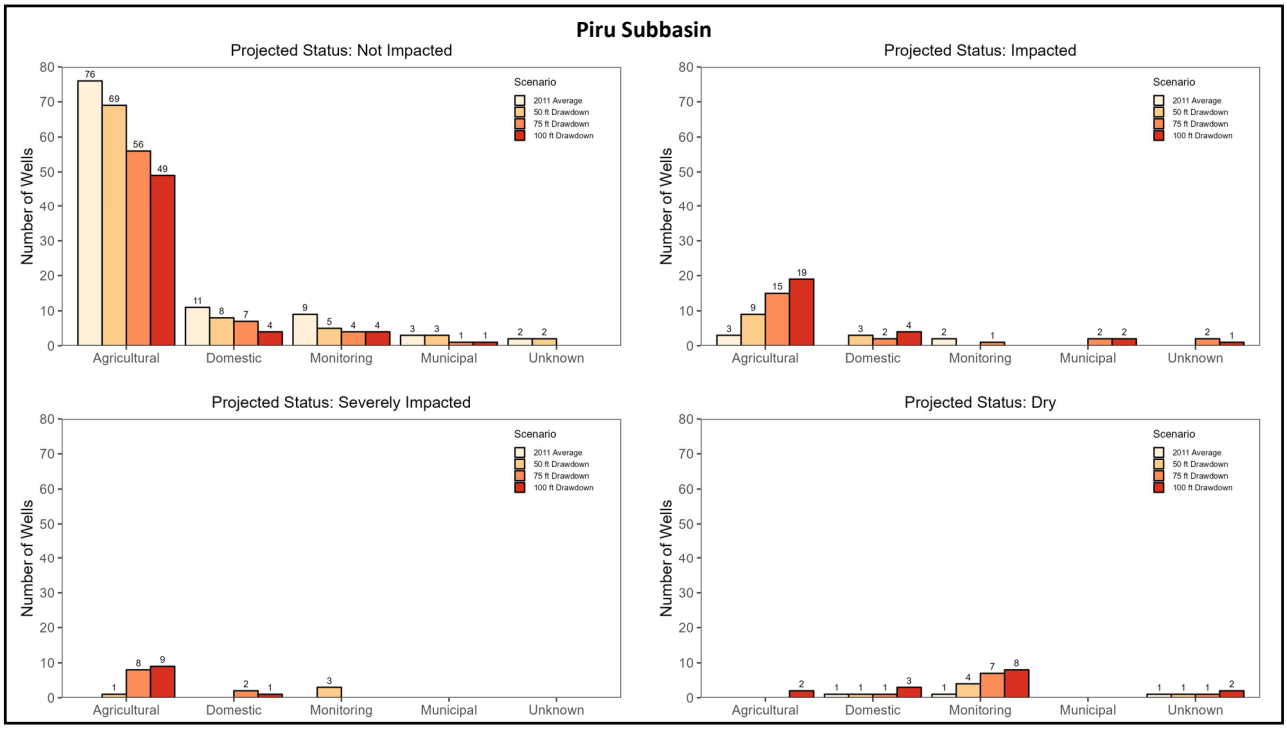


Piru Subbasin: Summary of projected impacts by well type

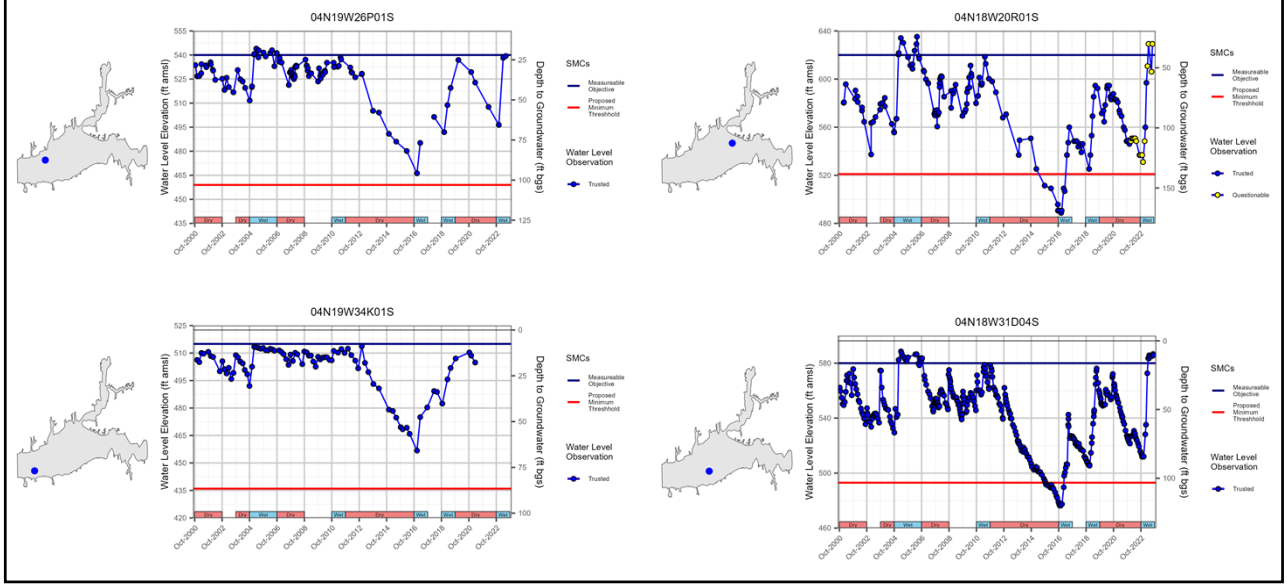
Analysis	Status	Agricultural Well	Cathodic Protection Well	Domestic Production Well	Groundwater Monitoring Well	Industrial Well	Municipal Well	Unknown	Total
Reported Wells		146	2	34	12	2	5	34	235
AIUA[1] Wells		128	2	32	12	2	4	20	200
Wells with Water Levels		17	0	2	11	0	0	0	30
Wells with Screen Data		94	0	22	12	2	3	3	136
Screened Wells Used in Analysis		79	0	12	12	1	3	3	110
2011 Average	Not Impacted	76	0	11	9	1	3	2	102
	Impacted	3	0	0	2	0	0	0	5
	Severely Impacted	0	0	0	0	0	0	0	0
	Dry	0	0	1	1	0	0	1	3
50 ft Drawdown	Not Impacted	69	0	8	5	0	3	2	87
	Impacted	9	0	3	0	1	0	0	13
	Severely Impacted	1	0	0	3	0	0	0	4
	Dry	0	0	1	4	0	0	1	6
75 ft Drawdown	Not Impacted	56	0	7	4	0	1	0	68
	Impacted	15	0	2	1	0	2	2	22
	Severely Impacted	8	0	2	0	0	0	0	10
	Dry	0	0	1	7	1	0	1	10
100 ft Drawdown	Not Impacted	49	0	4	4	0	1	0	58
	Impacted	19	0	4	0	0	2	1	26
	Severely Impacted	9	0	1	0	0	0	0	10
	Dry	2	0	3	8	1	0	2	16

1. Active + Inactive + Unknown + Abandoned Wells





Example Hydrographs with Proposed MTs



"Dry Wells" are a Major Interest to DWR

What is the GSA's Mitigation Plan IF a Well(s) Does Go Dry

- DWR will NOT take into consideration the likelihood of a well going dry (*"...what IF the basins do not recover in the next multi-year drought..."*)
- If wells could "mathematically" go dry based on the assumed MT, what would the GSA do to mitigate dry well(s)

Framework

- "...not responsible for WL declines due to the drought..."
- "...a mitigation plan should be proposed for exceedances of the MT conditions that could result in dry wells..."
- Not every GSP contains a mitigation plan for "dry wells"

DWR Mitigation Options for Domestic Well Impacts

Management Actions
- Demand reduction surrounding communities reliant on groundwater for drinking water
- Adjusting the location of demand, such as creating buffer zones for drinking water users
- Managed aquifer recharge near communities to replenish shallow aquifers, with considerations of potential water quality effects

Well Modification Projects
- Lowering pumps in existing drinking water wells
- Rehabilitating existing drinking water wells
- Deepening existing drinking water wells

Alternate Supply Projects
- Shifting drinking water well users to surface water supplies
- Consolidation of drinking water users into existing community and municipal systems
- Establishing new community water systems
- Drilling new wells for drinking water users
- Trucking water in

https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Files/Considerations-for-Identifying-and-Addressing-Drinking-Water-Well-Impacts_FINAL.pdf

Realistic Mitigation Options for Domestic Well Impacts

Well Modification Projects
- Lowering pumps in existing drinking water wells

Alternate Supply Projects
- Consolidation of drinking water users into existing community and municipal systems
- Drilling new wells for drinking water users

Management Actions
- Demand reduction surrounding communities reliant on groundwater for drinking water
- Adjusting the location of demand, such as creating buffer zones for drinking water users
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What Could a Domestic Well Mitigation Program Look Like?

1) Update well permitting requirements to include recommended minimum screen depths based on MTs and future modeled GW conditions resulting from a multi-year drought for new DOM, MUNI, IRRIG wells.
2) Creation of a mitigation fund that would be built up over time (e.g., 10 years)
3) Development of policies for:
   - **WHO** can access the mitigation fund (e.g., DOM only? any potable water supply well owner (DOM & MUNI)? should IRRIG wells be included?)
   - **HOW** the mitigation fund would be implemented (e.g, percentage cost share based on age of well, no-interest loan program, grant, etc.)
   - **WHAT** the mitigation fund could be used for (e.g., drilling a new well, lowering a pump, construction costs to connect to a nearby water system, or ??)
   - **WHEN** can the mitigation fund be accessed (e.g., only when significant and unreasonable impacts occur? anytime a well goes dry?)

SUGGESTED PATH FORWARD for MITIGATION PLAN

✓ In the updated GSPs, commit to performing a ***Domestic Well Drought Vulnerability Evaluation Study*** that would include, for example:

1) Prepare maps of each basin showing the lowest WLs simulated by the GW model and add those maps to the online database so future well applicants can take into account likely future WL conditions
2) Update the existing GW model with a finer discretization (resolution) to help with simulations of future GW conditions (UWCD)
3) Update well permitting requirements to include recommended minimum screen depths based on MTs and future modeled GW conditions resulting from a multi-year drought for new DOM, MUNI, IRRIG wells
4) For DOM wells without well construction data, contact those owners to see if they have any information about their well to add to our database
5) Consider establishing a "mitigation fund" and Agency policies for WHO, HOW, WHAT, & WHEN it can be accessed
6) Conduct outreach efforts to DOM well owners to advise them of 1), 3), 4), and 5