

Sustainable Management Criteria for the CMA

MAY 10, 2021

DUDEK

Undesirable Results and Minimum thresholds (MTs) under the SGMA

- From the SGMA Emergency GSP Regulations (§354.26):
 - “Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin”
 - Description of the Undesirable Result should include:
 - The **cause** of groundwater conditions...based on the **basin setting**, and other data or models as appropriate
 - The criteria used to define when and where the effects of groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of **minimum threshold** exceedance that cause significant and unreasonable effects in the basin.”

SUSTAINABILITY INDICATORS



Groundwater elevation

MT = Water Level



Land Subsidence

MT = *InSAR and Continuous GPS Data*



Water Quality

MT = Salt and Nutrient Concentrations



Groundwater in storage

MT = Water Level



Interconnected Surface Water

MT = Water Level



Seawater Intrusion

Not Applicable

CMA Sustainable Management Criteria (SMC)

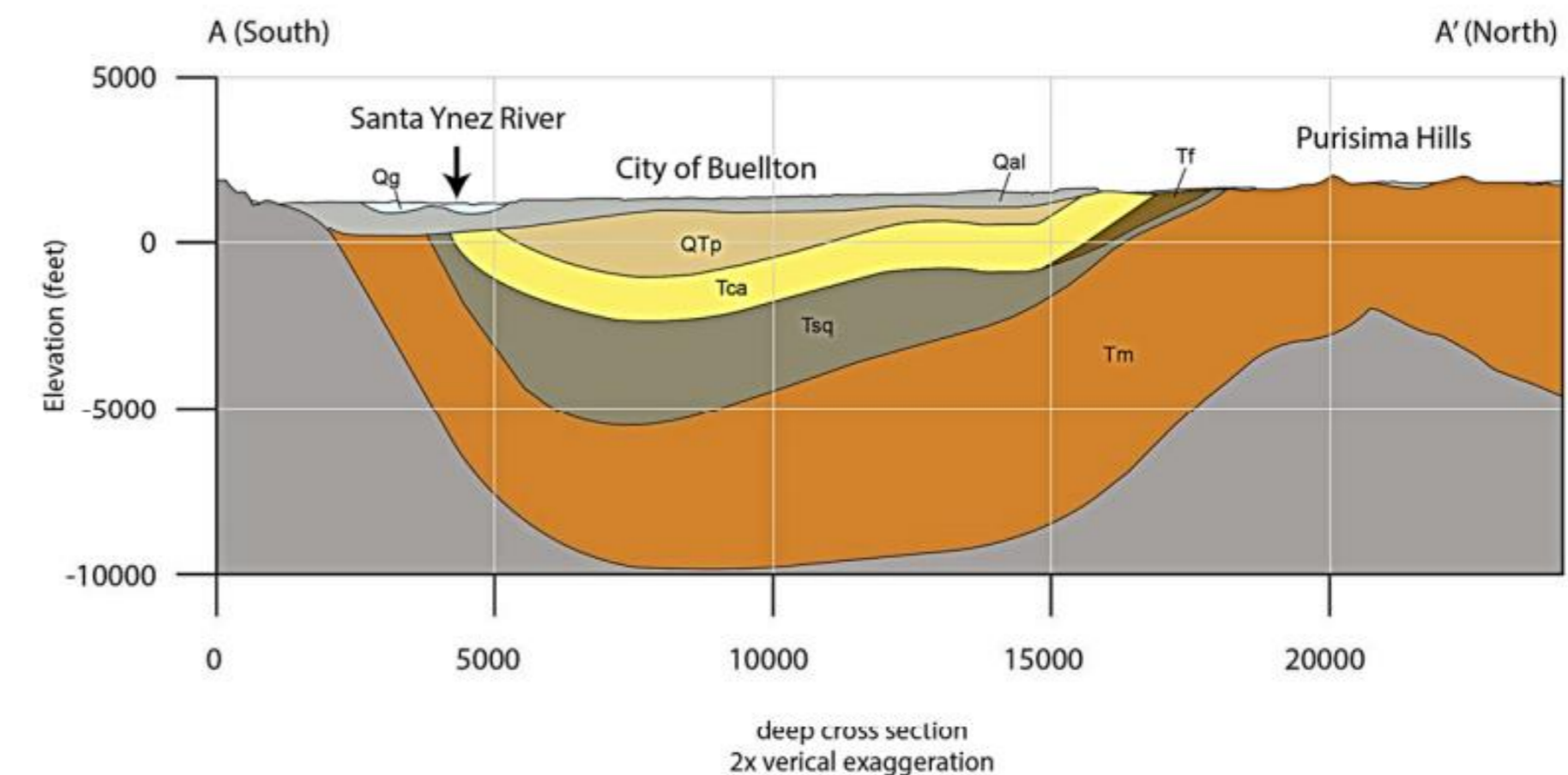
▪ Buellton Upland Subarea

- Large data gap regarding water elevations
- The GSP will propose monitoring program to fill that gap
- Seawater Intrusion **Not Applicable** in CMA

▪ Santa Ynez Alluvial Subarea

- Governed by water rights and environmental agreements
- Considered surface water not subject to SGMA
- GSA does not have authority to manage
- Will not establish SMCs for part of the Santa Ynez Alluvial Subarea
- Exception is the east part of the CMA where the aquifer underlies the Santa Ynez alluvial sediments

Undesirable results not likely occurring



Model Geology

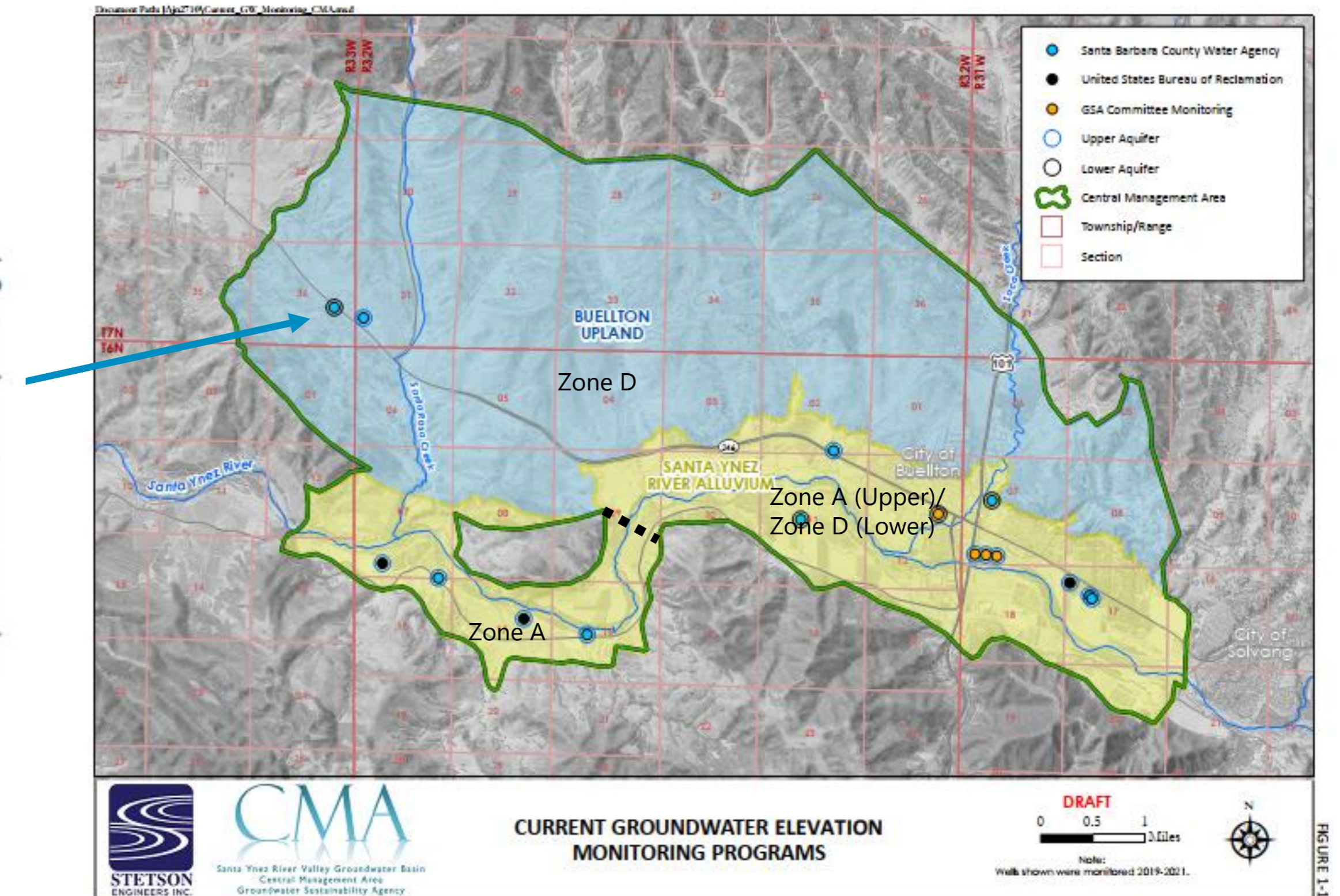
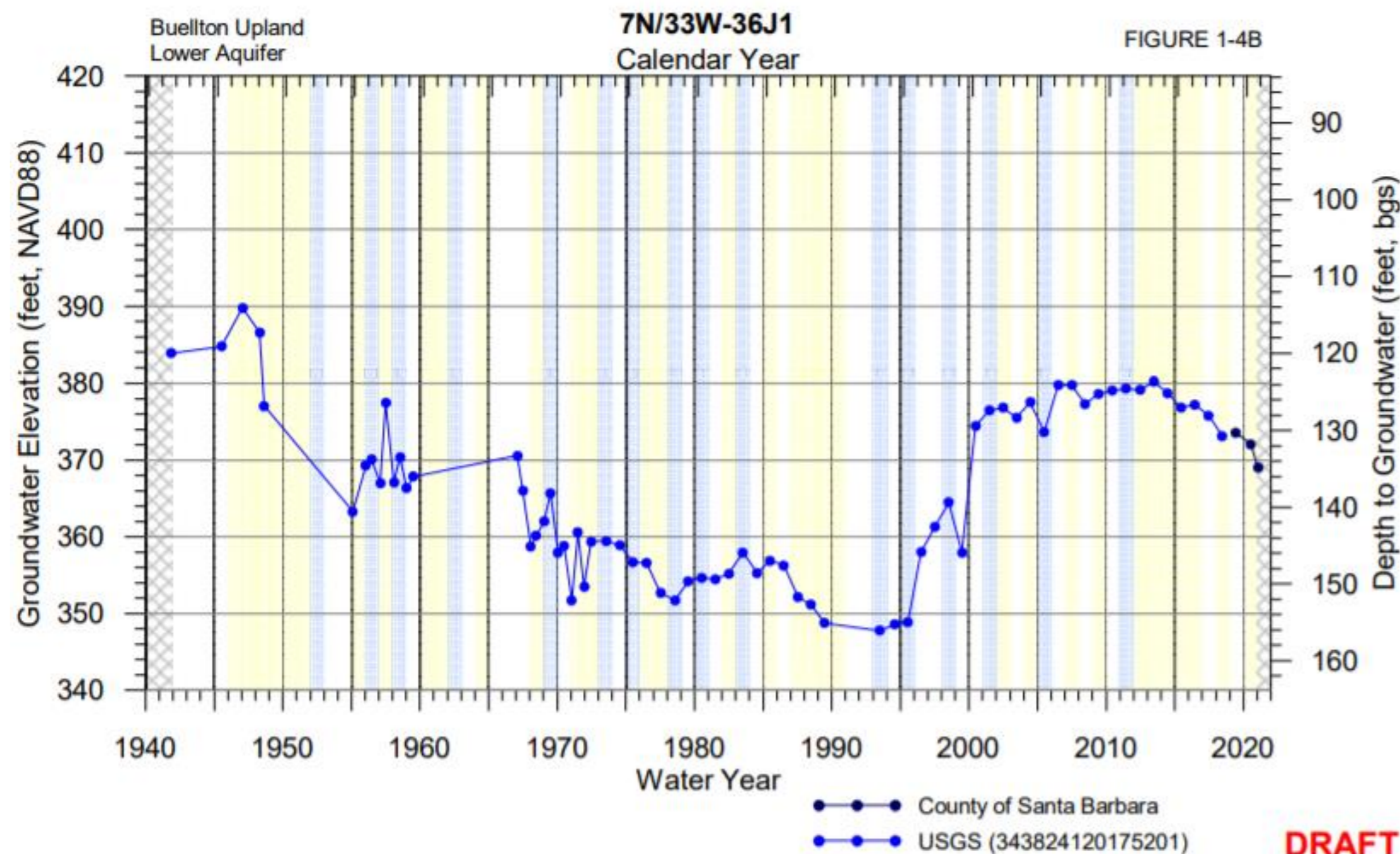
River-Channel Deposits (Qg)	Orcutt Sand (Qo)	Sisquoc Formation (Tsq)
Younger Alluvium (Qal)	Paso Robles Formation (QTP)	Monterey Formation (Tm)
Older Dune Sands (Qos)	Careaga Sandstone (Tca)	Tertiary - Older than Monterey
Older Alluvium (Qoa)	Foxen Formation (Tf)	

Cross sections based on 3D geologic model Geosyntec (2020).

Undesirable Results: Chronic Lowering of Groundwater Levels

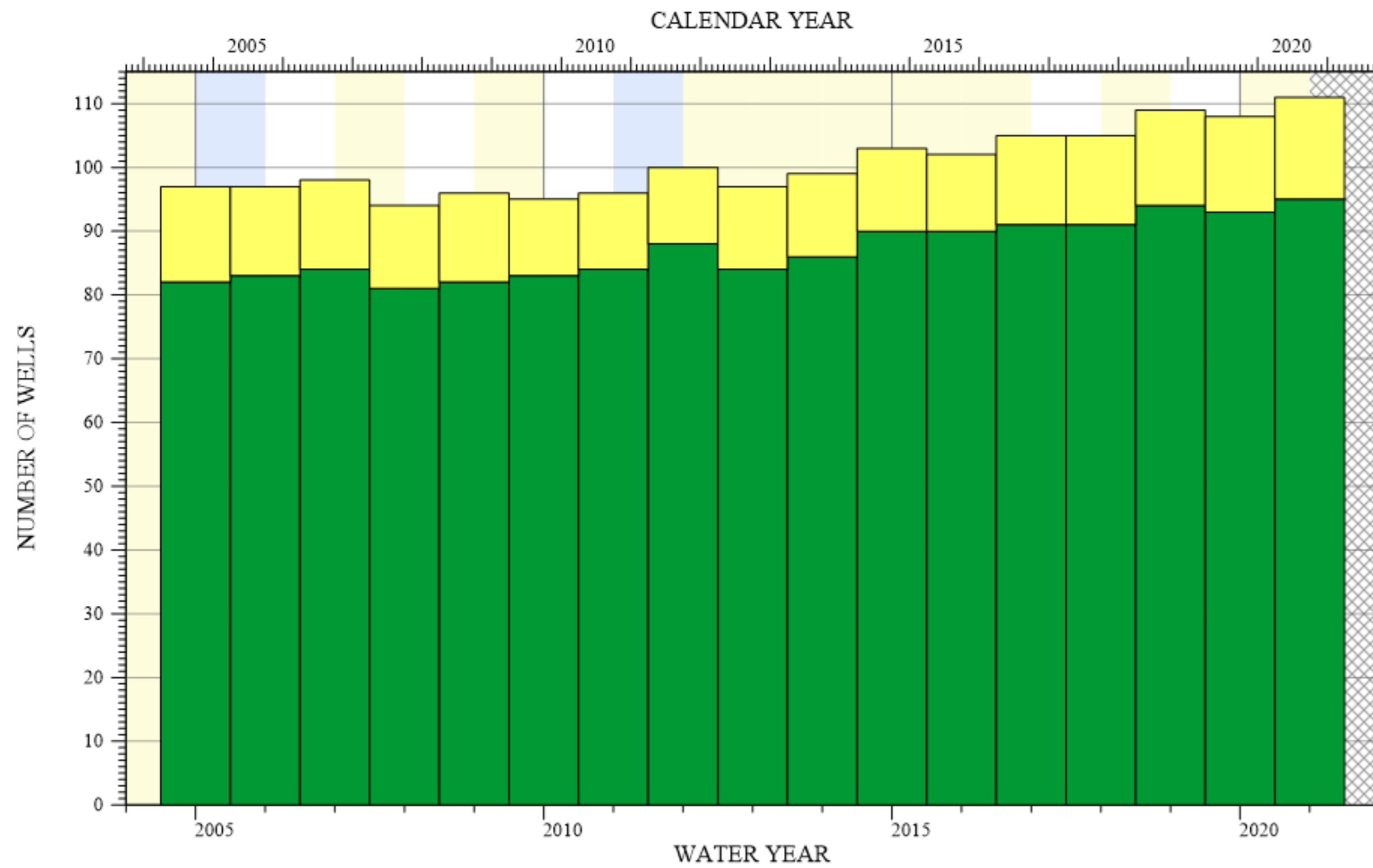
“...groundwater elevation indicating a depletion of supply at a given location that may lead to an undesirable result” (§354.28 (c) (1) – Minimum Thresholds)

Single Aquifer
Discontinuous fine-grained lenses

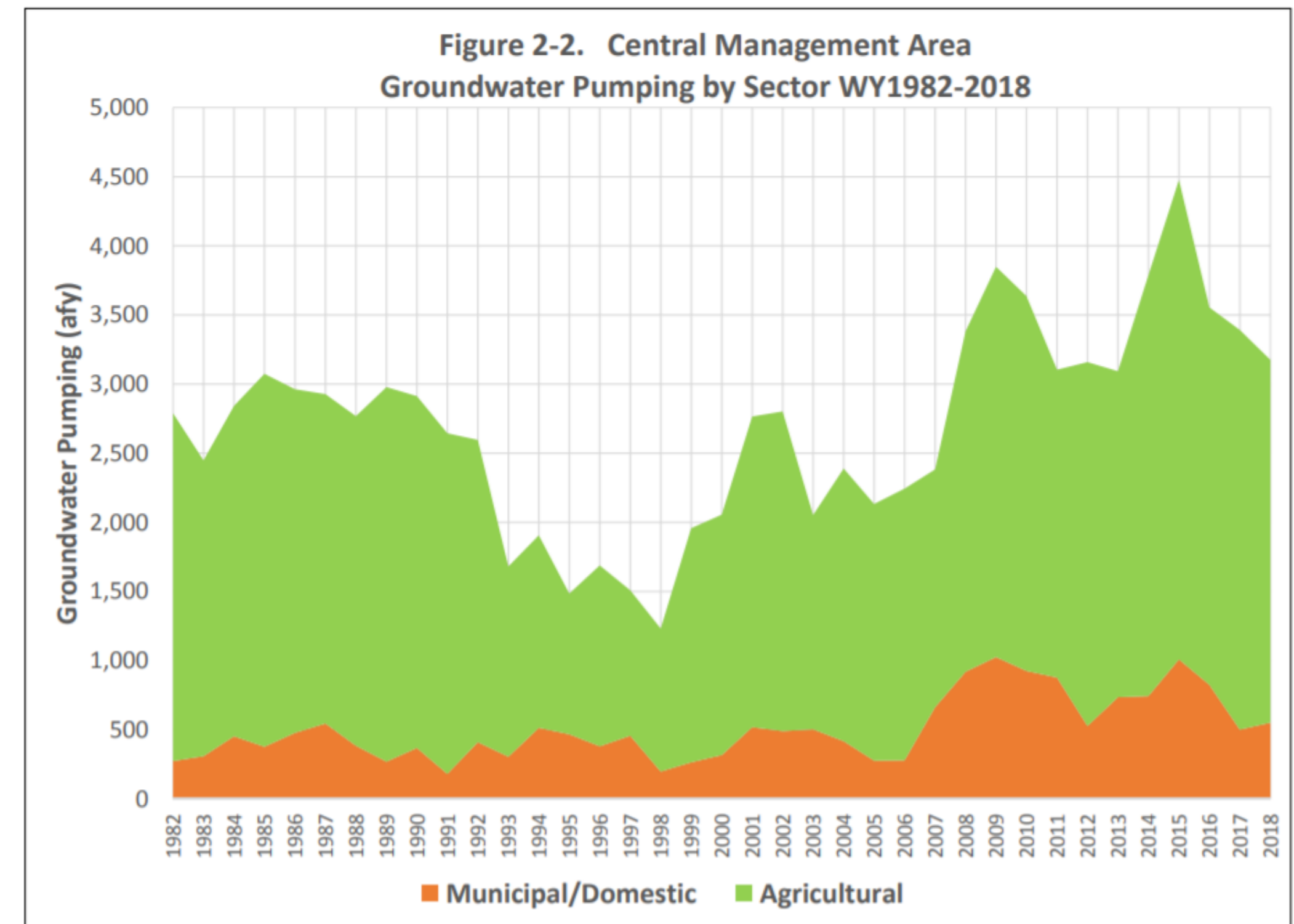
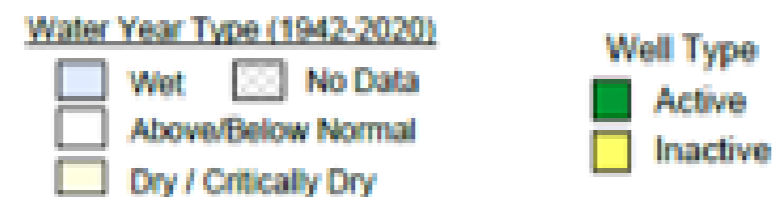


Undesirable Results: Chronic Lowering of Groundwater Levels

- No historical evidence of a depletion of supply

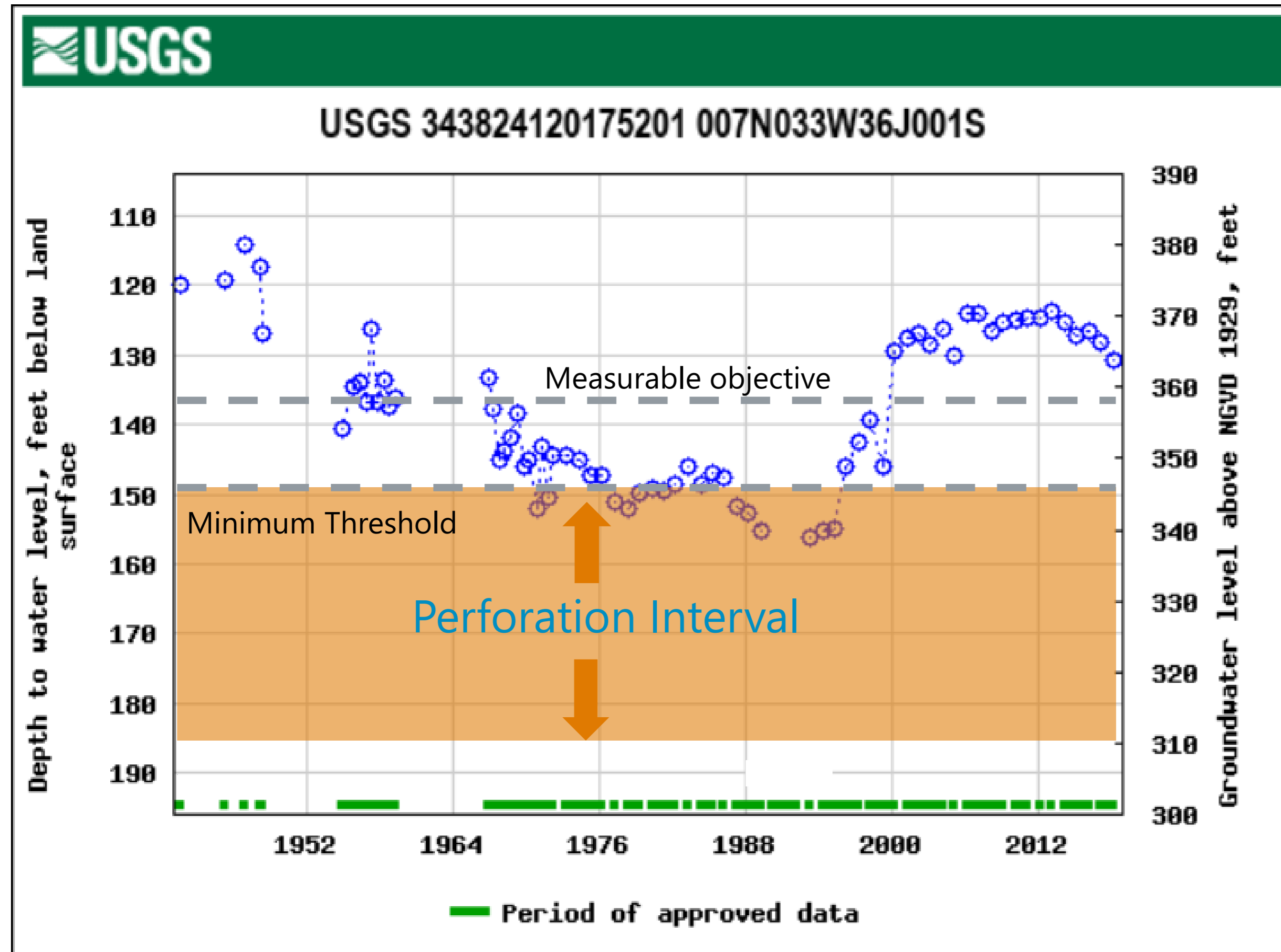


Source: Santa Ynez River Water Conservation District (2005-2021)



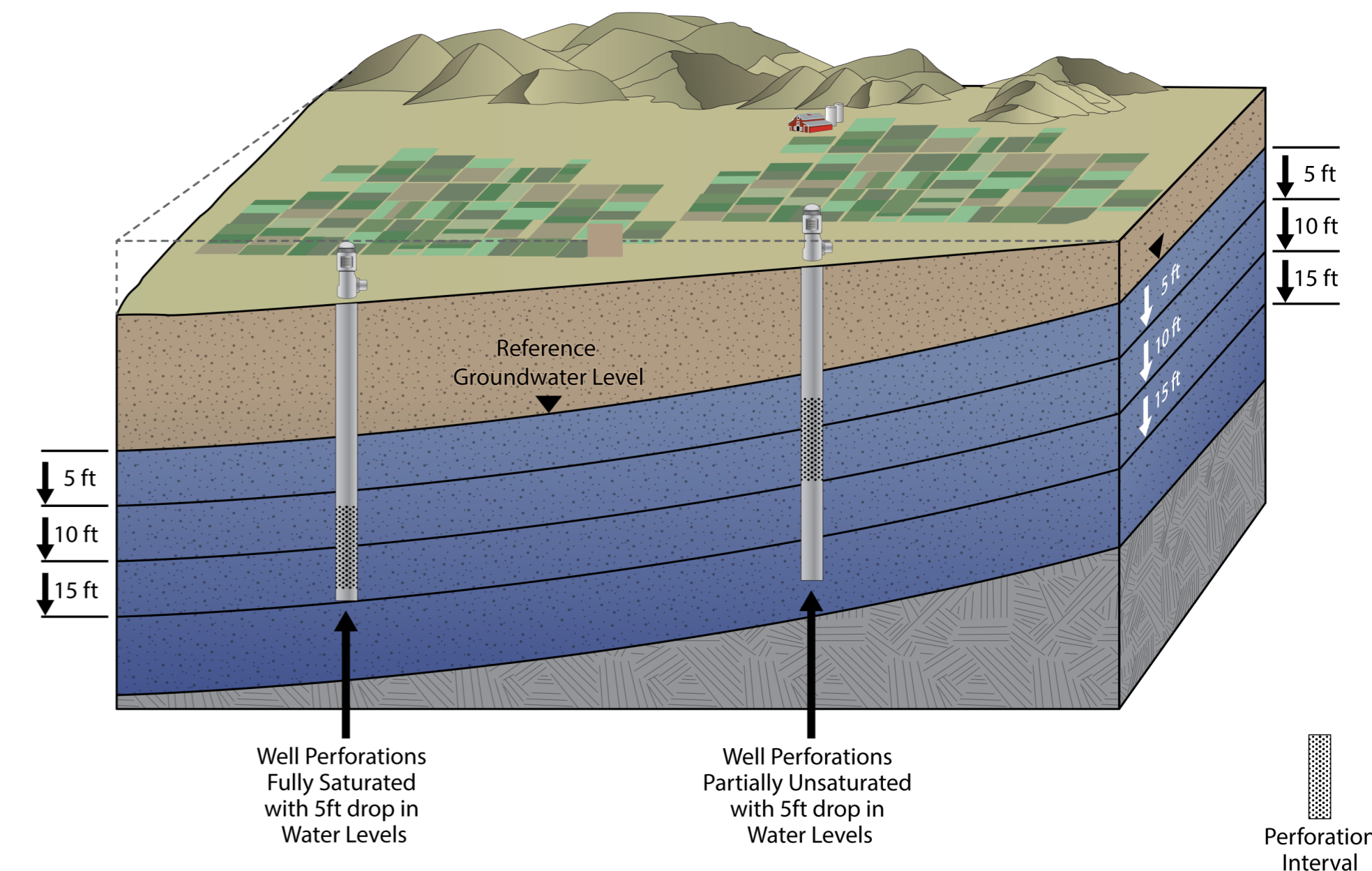
Source: Stetson Engineers Inc.

Proposed method for defining Undesirable Results associated with declining groundwater levels *and* loss of storage



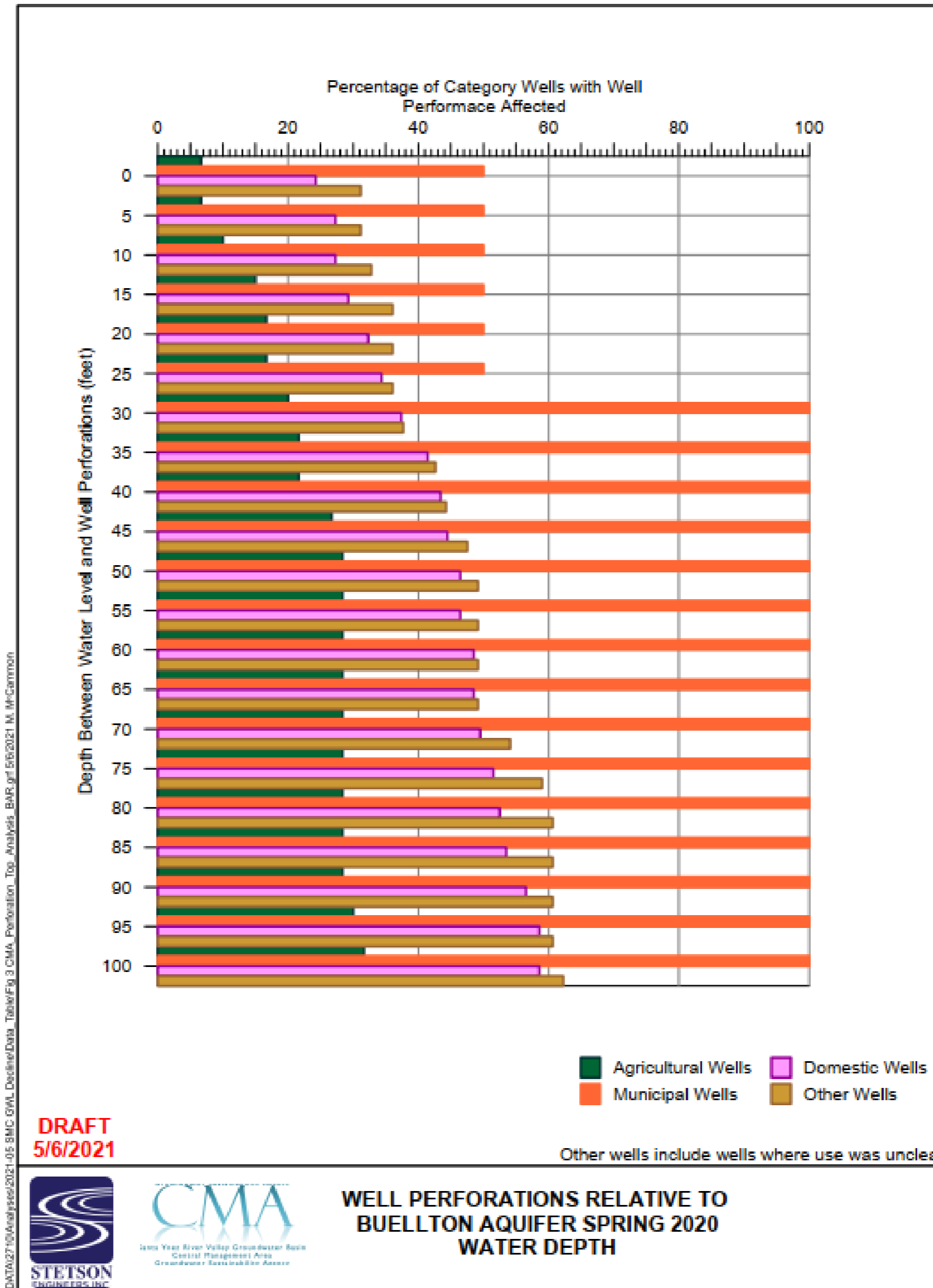
Representative Monitoring Well
Hypothetical Example

- GW elevation corresponding to % of wells with water levels below top of perforations
 - Analyzed by Domestic, Municipal, and Agricultural water uses and subarea
 - Need Committee input on percentages that constitute "significant and unreasonable"



Proposed method for defining Undesirable Results associated with declining groundwater levels *and* loss of storage

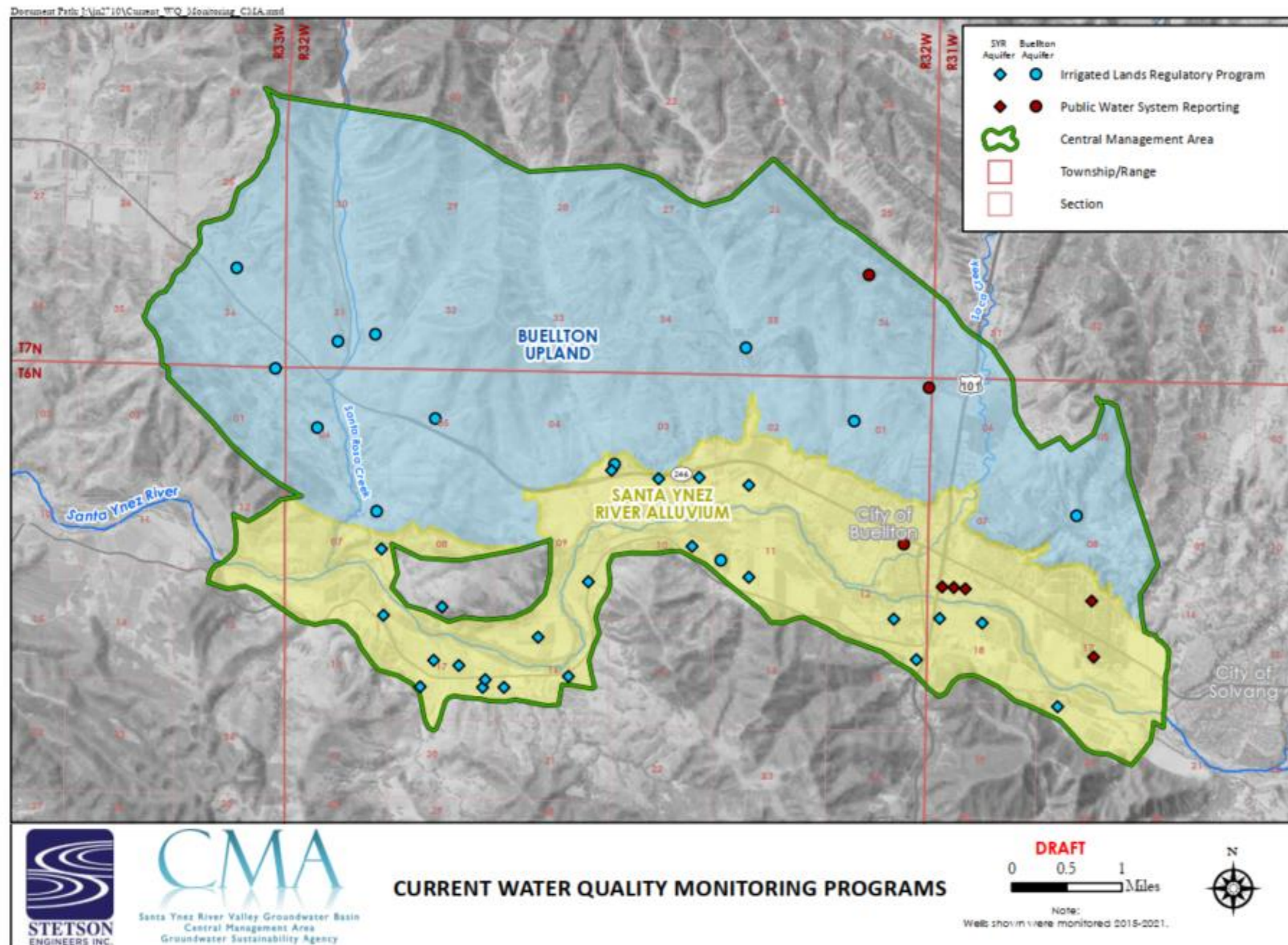
FIGURE 3



Undesirable Results: Water Quality

Table X: Median Groundwater Quality Objectives (mg/L) and average 2015-2018 salt and nutrient concentrations (mg/L) in the CMA

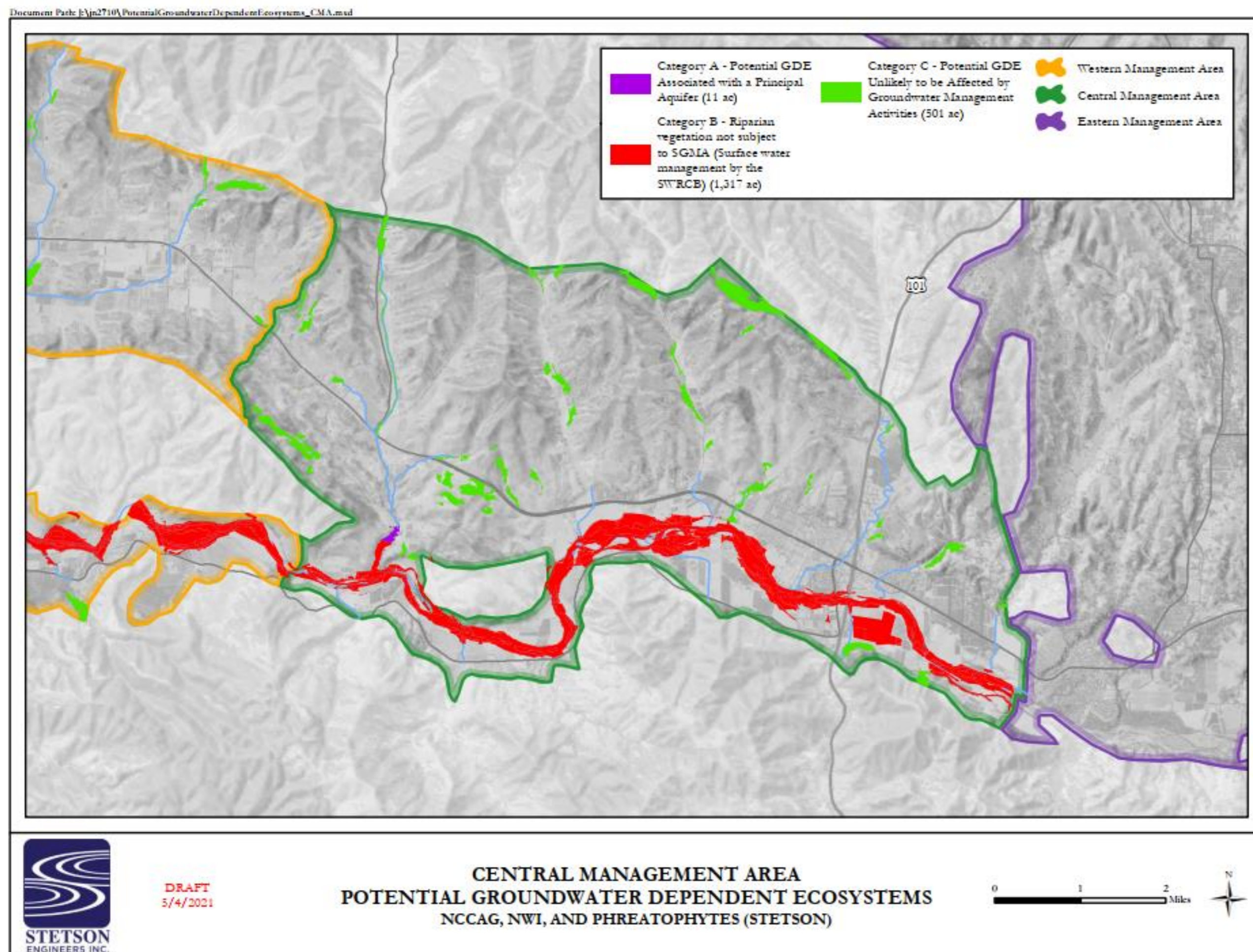
Basin/Subarea	Salinity as Total Dissolved Solids (TDS)		Chloride		Sulfate		Boron		Sodium		Nitrate as N		
	Objective (mg/L)	Avg 2015-2018	Objective (mg/L)	Avg 2015-2018	Objective (mg/L)	Avg 2015-2018	Objective (mg/L)	Avg 2015-2018	Objective (mg/L)	Avg 2015-2018	Objective (mg/L)	MCL (mg/L)	Avg 2015-2018
Buellton Upland	1,500	379	150	58	700	77	0.5	NA	100	41	1	10	3.5
SYR Alluvium	1,500	1,042	150	100	700	34	0.5	0.47	100	103	1	10	5.8



- Basin Plan Water Quality Objectives not exceeded in CMA
- Measurable Objectives for SGMA to be the Water Quality Objectives from the Basin Plan

Undesirable Results: Interconnected Surface Water

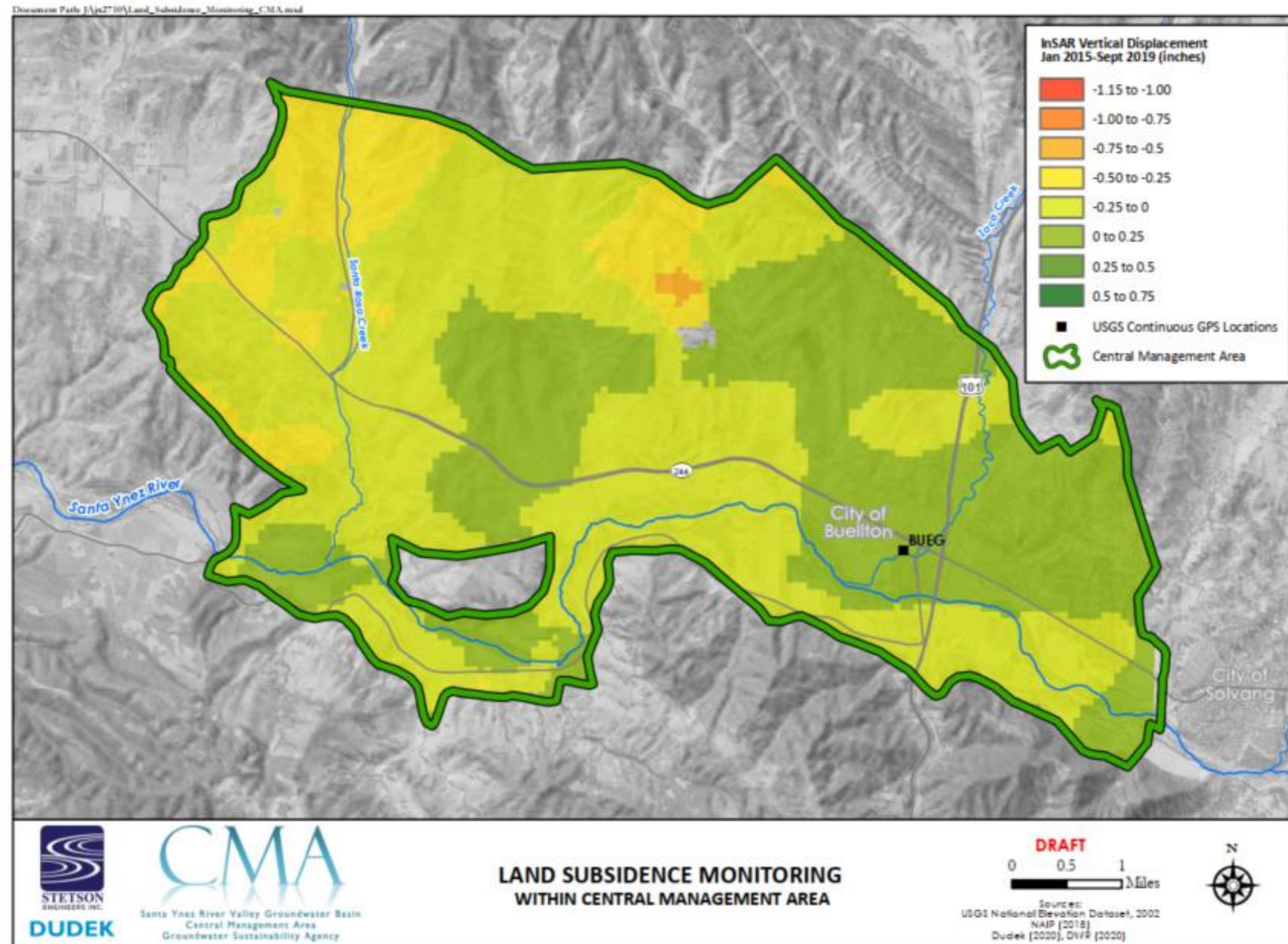
“...the rate or volume of surface water depletions *caused by groundwater use* that has adverse impacts on beneficial uses of surface water” (§354.28 (c) (1) – Minimum Thresholds)



- Depletion of interconnected surface water assessed by identifying presence of groundwater dependent ecosystems (GDEs)
- Category A (Purple) – Associated with principal aquifer and shallow groundwater
- Category B (Red) – Groundwater levels managed by releases from Cachuma Reservoir under SWRCBC Order 2019-148
- Category C (Green) – Unlikely to be impacted by groundwater management due to groundwater depth (>30 ft) or disconnection from the aquifer
 - Propose to monitor near category A with undesirable results occurring at historical low groundwater level or below a certain depth below surface

Undesirable Results: Land Subsidence

“...the rate and extent of subsidence that substantially interferes with land uses and may lead to undesirable results” (§354.28 (c) (1) – Minimum Thresholds)



- No historical evidence of groundwater-related subsidence in the CMA
 - City of Lompoc, Solvang Public Works Department, Santa Ynez River Conservation District, Central Coast Water Authority
- Undesirable Results not likely to occur
 - Thick, saturated, and extensive fine-grained materials not thought to be present
- Propose:
 - Ongoing monitoring of InSAR data, continuous GPS data, and infrastructure condition.