

White Paper

Groundwater Constituent Impacts and Trends in Domestic Wells and Public Water Systems in California

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Table of Contents

EXECUTIVE SUMMARY	i
Background	iii
Impacts to Drinking Water Beneficial Users (Section 2)	vi
Potential Increasing Risk to Drinking Water Beneficial Users (Section 3)	vii
Conclusion	ix
1 Introduction	1
1.1 Background	1
1.2 Approach	2
2 Impacts to Drinking Water Beneficial Users	4
2.1 Data Sources	4
2.2 Methodology	6
2.3 Results	7
3 Potential Increasing Risk to Drinking Water Beneficial Users	12
3.1 Data Sources	12
3.2 Methodology	13
3.3 Results	14
4 Study Limitations and Considerations	18
5 Conclusion	21
6 References	22
List of Charts, Figures, and Tables	25

EXECUTIVE SUMMARY

Per the Sustainable Groundwater Management Act (“SGMA”), it is the responsibility of a Groundwater Sustainability Agency (“GSA”) to ensure that its management of groundwater conditions in a basin and any other action taken by the GSA will not significantly and unreasonably degrade water quality (SWRCB, 2019). The GSAs are also required to evaluate “groundwater quality issues that may affect the supply and beneficial uses of groundwater” using the best available information (23 California Code of Regulations [“CCR”] § 354.16(d)). On the basis of this information, GSAs are required to develop sustainability criteria for degraded water

quality that, among other things, consider the “potential effects on the beneficial uses and users of groundwater, on land uses and property interests” (23 CCR § 354.26(b)(3)), establish a network to “monitor impacts to the beneficial uses or users of groundwater” (23 CCR § 354.34(b)(2)), and identify projects and management actions that the GSA will implement to achieve the sustainability goal for the basin 23 CCR § 354.44(a)). However, GSAs are not required by SGMA to address undesirable results that occurred before January 1, 2015 (Water Code Section 10727.2 (b) (4)).

The drinking water supply for over half a million people in groundwater basins subject to SGMA exceed drinking water standards for a variety of constituents (Table ES-1). Many more people reside in areas where aquifers show increasing concentration trends, suggesting that water quality is continuing to degrade and may further impact drinking water users (Table ES-4). Specifically, up to 367,000 people are being served water that is obtained from public water supply wells that pump source water with concentrations above MCLs (i.e., water that requires treatment prior to being served) and where concentrations are continuing to increase. Up to another 11.8 million people are being served water from wells where the source water is currently below MCLs, where increasing trends suggest concentrations could exceed MCLs and require treatment in the future.

Based on a rubric that included water quality impacts, the California Department of Water Resources (“DWR”) determined which basins are subject to SGMA requirements (DWR, 2020d). The GSAs for basins designated as “critically overdrafted” were required to develop and submit Groundwater Sustainability Plans (“GSPs”) by 31 January 2020.¹ The GSAs for basins that are prioritized as “high” and “medium,” but not critically overdrafted, must develop and submit GSPs by 31 January 2022.

Groundwater used for drinking water and other beneficial uses are subject to federal and state regulation.¹ The guidance and regulations developed by the DWR and the State Water Resources Control Board (“SWRCB”) are also clear that GSAs must evaluate existing groundwater quality conditions in their GSPs, and, as appropriate, define quantifiable and measurable sustainability criteria related to degraded water quality and take actions (i.e., projects and management actions, including policies and monitoring) that avoid occurrence of undesirable results. Specifically, GSAs must ensure that future groundwater management pursuant to GSPs does not contribute to conditions that cause undesirable results (SWRCB, 2019). That can be a challenge given that groundwater management that prevents chronic lowering of groundwater levels may not prevent undesirable results with respect to water quality (Stanford, 2019).

The findings of this White Paper highlight that water quality issues are significant and widespread in SGMA basins, and that while these issues are not new, there is evidence that conditions are continuing to degrade in many areas. The review of GSPs for critically overdraft basins by UC

¹ Basins designated as critically overdrafted are also prioritized as “high” or “medium”. However, for purposes of this White Paper, basins indicated as “high” or “medium” exclude those that are critically overdrafted.

Davis researchers have identified that many GSPs have not adequately developed sustainability criteria for key water quality constituents that affect public health, or have set criteria that are not aligned with drinking water standards (Dobbin et al., 2020a; 2020b). Given the widespread water quality impacts and the requirements under SGMA, it is incumbent upon GSAs to thoroughly consider water quality issues relevant to drinking water users in GSPs. It is also clear that GSAs would benefit from additional guidance from DWR on how to: (1) systematically evaluate water quality impacts to drinking water users, and (2) evaluate and address water quality impacts that may be associated with a GSA's groundwater management actions and decisions given the multiple complexities and the role of other regulatory agencies and programs in addressing water quality.

Background

The goal of this White Paper is to independently assess and evaluate the extent of potential water quality impacts to drinking water beneficial users in basins subject to SGMA, and to summarize the apparent extent and distribution of impacts to those beneficial users. These results begin to illuminate the challenge presented to GSAs in assessing the extent to which their groundwater management actions further may impact water quality as they implement SGMA in coordination with the many other regulatory programs and agencies that address water quality.

Water quality issues and the relationship, direct or indirect, to

Explanation of Key Drinking Water Terms

Domestic Well – A domestic well is privately-owned supply well used to provide water to private homes. Water quality testing and treatment of water supplied by domestic wells is left to the well owner, and not mandated by any state or federal regulations. Water quality data is rarely collected in from domestic wells, and is not required to be made available to the public.

Maximum Contaminant Levels (“MCLs”) – State and Federal regulatory limits for drinking water quality served to customers by public water systems. MCLs are identified as “primary MCLs” and “secondary MCLs.” Primary MCLs are health-protective concentration ceilings; water exceeding primary MCLs may not legally be served to customers by public water systems. Secondary MCLs are based on esthetics such as taste and odor rather than health effects, and are not enforced as primary MCLs. Discussion of “MCLs” in this White Paper is therefore focused solely on primary MCLs. Water produced by domestic wells is not subject to MCLs. Information on California MCLs can be found on the SWRCB website: “Comparison of MCLs and PHGs for Regulated Contaminants in Drinking Water” https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html

MCL Violation – Compliance with MCLs is enforced by the SWRCB through mandatory routine water quality sampling and reporting of results. A public water system violates an MCL when water served to customers contains a constituent concentration above an MCL. The SWRCB's regulatory authorities and obligations to enforce MCLs are provided in Title 22 of the California Code of Regulations. Additional information California drinking water statutes and regulations can be found on the SWRCB website: “California Drinking Water-Related Laws” https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html

Public Water System – A public water system is defined by Section 116275 of the California Safe Drinking Water Act, as “a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.” A public water system may be publicly or privately owned.

Source Water – Source water refers to the raw water source, prior to treatment or distribution into a water system, or use through a domestic well. It is common for source water to contain constituents above MCLs, and to be safely treated to levels below MCLs prior to being served to customers. The SWRCB permits water treatment technologies and monitors their effectiveness through the mandatory routine water quality sampling and reporting required of public water systems.

State Small Water System – State small water systems are systems that serve at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year. State small water systems are subject to regulation by “local health officers” (i.e., the county) rather than the SWRCB, and are required to do limited water quality sampling, which gets reported locally.

groundwater management are very complex and can vary substantially based on local conditions. In addition, groundwater management that prevents chronic lowering of groundwater levels may not prevent undesirable results with respect to water quality (Stanford, 2019). For example, many GSPs include plans to increase groundwater recharge as part of their management strategies. However, groundwater recharge has the potential to mobilize naturally occurring constituents, and/or to mobilize or expand contaminant plumes. In some cases, potential adverse water quality changes will be short term and local, followed by long term and regional benefits as a result of dilution (Stanford, 2019). The development of sufficient monitoring networks capable of detecting changes in groundwater quality conditions related to active management is critical to understanding these interactions (Stanford, 2019), and therefore should be an essential element of groundwater management by GSAs.

SGMA and related guidance documents and regulations developed to date by DWR and others do not provide clear guidance as to how exactly GSAs should evaluate water quality conditions with respect to drinking water beneficial users or what role GSAs have within the context of the numerous existing regulatory programs that address and regulate water quality.² The California State Water Resources Control Board (“SWRCB”) has provided a SGMA Water Quality Frequently Asked Questions (“Water Quality FAQ”) that begins to address the roles and responsibilities of GSAs with respect to water quality management (SWRCB, 2019). The Water Quality FAQ clarifies that “a GSA is not required by SGMA to address undesirable results that occurred before January 1, 2015 (Water Code Section 10727.2 (b) (4)),” but states that “A GSP must characterize historic and current water quality conditions in principal aquifers as part of the hydrogeologic conceptual model (23 CCR Section 354.14 (b) (4) (D)) and must address groundwater quality that may affect the supply and beneficial uses of groundwater (23 CCR Section 354.16 (d)). To determine water quality trends and conditions as of January 1, 2015, a GSP will need to evaluate groundwater quality conditions prior to 2015.”

The Water Quality FAQ also specifies that “SGMA requires GSAs to consider the interests of all beneficial uses and users of groundwater, including municipal well operators and public water systems” (Water Code Section 10723.2) and that “Water quality degradation that significantly and unreasonably affects the supply or suitability of groundwater for use in drinking water systems is an undesirable result.”

Two studies were recently released that can support GSAs to meet the requirements to evaluate historic groundwater quality conditions and potential impacts to drinking water users and systems. These include a study by the SWRCB that estimates water quality conditions in water

² For example, California State Water Resources Control Board (“SWRCB”) Division of Drinking Water is responsible for regulating drinking water served by public water systems, which includes requirements for water quality testing and reporting; U.S. Environmental Protection Agency (“EPA”), California Department of Toxic Substances Control (“DTSC”), SWRCB, and some local county authorities oversee and regulate point-source contamination of groundwater; and Central Valley Regional Water Quality Control Board (“CVRWQCB”) oversees the Central Valley-Salinity Alternatives for Long-Term Sustainability (“CV-SALTS”) and Irrigated Lands Regulatory Program (“ILRP”), which focus on discharges from agricultural lands that may affect groundwater and surface water.

accessed by domestic wells (SWRCB, 2020a; 2020b), and a study by the United States Geological Survey (“USGS”) to assess changing trends in groundwater quality for inorganic constituents (USGS, 2019; Jurgens, B.C. et al., 2020). It is noted that GSAs in critically overdrafted basins have already developed and submitted their GSPs (as of January 2020), and thus were not able to consider these new datasets during the development of relevant sections of their GSPs.

Objective

To begin to understand the potential scope of the water quality issue that GSAs and other regulatory agencies must consider, we have conducted a preliminary assessment of the potential effects of degraded water quality on drinking water beneficial users of groundwater.

This White Paper summarizes publicly available data provided by the SWRCB and the USGS for five constituents (i.e., nitrate as nitrogen [“nitrate”], arsenic, uranium, 1,2,3-trichloropropane [“1,2,3-TCP”], and 1,2-dibromo-3-chloropropane [“DPCP”]) that are commonly detected in groundwater in the 94 basins³ within California that are subject to SGMA (see Figure 1). An explanation of key drinking water terms is provided on the previous page. This White Paper evaluates the water quality conditions and impacts for two sets of populations:

1. **Drinking water beneficial users whose water supply does not meet drinking water standards (i.e., California Maximum Contaminant Levels [“MCLs”]).** This includes domestic well users that are, presumably, drinking untreated groundwater that the SWRCB (2020b) estimates has constituent concentrations above MCLs. This also includes public water system customers that were supplied water from a system that received an MCL violation in 2018 (SWRCB, 2018).
2. **Public water system customers whose untreated groundwater source shows increasing concentration trends (i.e., degrading water quality)** based on USGS (2019). This population is subdivided into customers with: (1) groundwater sources that have concentrations above MCLs and increasing trends, and (2) groundwater sources that have concentrations below MCLs but increasing trends. Because this analysis looks at constituent concentrations in the source water, the customers in the “above MCLs” category *are not necessarily receiving drinking water above MCLs*, because the water undergoes treatment by the public water system prior to distribution.⁴ Additionally, source water for customers in the “below MCLs” category *will not necessarily increase to levels above MCLs*. However, given the increasing concentration trends, these water

³ For purposes of this White Paper, “basin” refers to either a basin or subbasin as those designations are applied by the California Department of Water Resources (“DWR”). In 2020, 94 of the 515 groundwater basins in California are classified as medium or high priority and subject to SGMA (DWR, 2020d).

⁴ A subset of this population has received water over MCLs, based on MCL violations in 2018. It should be noted that these population numbers differ from those with identified impacts because not all wells from systems that received violations show a statistically significant increasing trend in the USGS (2019) study. The subset of population with increasing trends and MCL violations is also identified in Section 3.

systems are likely to face the need for increased water treatment in the future to address the degrading water quality conditions.

Impacts to Drinking Water Beneficial Users (Section 2)

Table ES-1, below, presents an estimate of the population within these 94 basins that are reliant on either: (1) domestic wells that produce groundwater with at least one constituent above its promulgated drinking water standard (i.e., MCL),⁵ or (2) served by public water systems that utilize groundwater and received at least one violation for a constituent above its MCL in 2018 (SWRCB, 2018a; 2020a; 2020b). Table ES-1 shows that the drinking water supply for approximately 177,600 people contains arsenic above the MCL. Nitrate, 1,2,3-TCP, and uranium have been detected above their respective MCLs in drinking water supplies for approximately 116,800, 563,200, and 22,100 people, respectively. At least 1,300 people rely on a drinking water supply that has detections of DBCP above the MCL. Depending on the constituent, these impacts to drinking water have occurred in up to 106 GSA service areas within up to 49 of the basins subject to SGMA. It should be noted, particularly with respect to public water systems, that these exposures to drinking water above MCLs may not have been sustained, and could have been corrected following detection.

Table ES-1
Estimated Populations Exposed to Drinking Water with Constituents Above MCLs

Constituent	Estimated Population			Number of GSAs	Number of Basins
	Domestic Well Users	Public Water System	Total		
Arsenic	87,433	90,240	177,673	106	46
Nitrate	107,461	9,422	116,883	83	49
1,2,3-TCP	140,369	422,833	563,202	53	23
Uranium	21,016	1,126	22,142	38	19
DBCP	n/a	1,350	1,350	1	1

Abbreviations

DBCP = 1,2-dibromo-3-chloropropane
GSA = Groundwater Sustainability Agency
MCL = California Maximum Contaminant Level
n/a = not available
1,2,3-TCP = 1,2,3-trichloropropane

Table ES-2 summarizes the data presented in Table ES-1 by DWR basin prioritization. Concentrations of nitrate and arsenic in groundwater above MCLs are fairly evenly distributed across the basins, irrespective of priority. In contrast, concentrations of 1,2,3-TCP and uranium in groundwater above MCLs are more frequently encountered in the critically overdrafted basins.

⁵ The groundwater data compared to domestic well users represents untreated source water. It is presumed that these domestic wells do not include treatment systems and therefore users are exposed to drinking water with constituents above MCLs.

Therefore, GSAs in critically overdrafted basins should carefully consider these areas and evaluate their SGMA management activities with respect to the potential to increase concentrations.

It is important to note that the available data are not uniformly distributed, and that the data sources used in this analysis rely heavily on data collected from public water systems. Thus, GSAs should carefully consider the locations of available data, and fill in data gaps necessary to monitor and ensure that their SGMA management activities do not further degrade groundwater quality and result in undesirable results.

Table ES-2
Groundwater Basins with Constituents Above MCLs

Constituent	Number of Basins by DWR Basin Priority		
	Critically Overdrafted	High Priority	Medium Priority
Arsenic	14	12	18
Nitrate	17	13	15
1,2,3-TCP	13	8	2
Uranium	12	3	4
DBCP	1	0	0

Abbreviations

DBCP = 1,2-dibromo-3-chloropropane

DWR = Department of Water Resources

MCL = California Maximum Contaminant Level

1,2,3-TCP = 1,2,3-trichloropropane

Potential Increasing Risk to Drinking Water Beneficial Users (Section 3)

The USGS recently conducted an evaluation of short- and long-term trends of arsenic, nitrate, and uranium concentrations in groundwater that is the source supply for public supply wells (USGS, 2019; Jurgens, B.C. et al., 2020). This USGS study provides an overall indication of whether a well's source water quality is improving, degrading, or generally static. Table ES-3 summarizes the number of basins (organized by DWR priority) that have at least one public supply well with a statistically significant increasing concentration trend in the source water of arsenic, nitrate, or uranium between the years 2000 and 2014. No statistically significant trends were observed in the remaining 17 basins included in the USGS Study.

Table ES-3
Groundwater Basins with Increasing Constituent Concentration Trends (2000-2014)

Constituent	Number of Basins by DWR Basin Priority		
	Critically Overdrafted	High Priority	Medium Priority
Arsenic	24	10	20
Nitrate	58	29	56
Uranium	20	4	7

Abbreviations

DWR = Department of Water Resources

Table ES-4 categorizes public supply wells with increasing trends into those that have arsenic, nitrate, or uranium concentrations in source water above and below MCLs, based on a study conducted by the USGS (2019).⁶ Concentrations above MCLs reflect detections in untreated groundwater. Public water systems are required to treat water to concentrations below MCLs prior to distributing the water to customers, and therefore the presence of constituents above MCLs does not necessarily indicate that customers are receiving water with concentrations above MCLs. Public supply wells with arsenic, nitrate, or uranium concentrations currently below MCLs but demonstrating increasing trends are vulnerable to having the source water exceed MCLs. In these instances, as the source water quality degrades, the affected public water systems may have to add or upgrade treatment systems.

Based on this assessment, depending on the constituent, up to 367,000 people are being served water that is obtained from public water supply wells that pump source water with concentrations above MCLs and where concentrations are continuing to increase. Depending on the constituent, up to another 11.8 million people are being served water from wells where the source water is currently below MCLs, but where increasing trends suggest concentrations could exceed MCLs and require treatment in the future.

⁶ Short- and long-term groundwater quality trends and recent water quality measurements from public supply wells are compiled from USGS *California GAMA-Priority Basin Project (PBP) Public-Supply Well Results: Inorganic Data and Trends, 1974–2014 Tool* (USGS, 2019). The USGS aggregated raw water quality data from public supply wells and performed Mann-Kendall rank correlation and Sen’s slope estimator calculations to identify statistically significant trends in constituent concentrations.

Table ES-4
Public Supply Wells with Increasing Constituent Concentration Trends (2000-2014)

Constituent	Number of Wells with Constituents in Source Water Above MCLs and Population Served				Number of Wells with Constituents in Source Water Below MCLs and Population Served			
	Critically Overdrafted	High Priority	Medium Priority	Population Served	Critically Overdrafted	High Priority	Medium Priority	Population Served
Arsenic	34	8	22	61,000	38	28	22	4,988,000
Nitrate	99	34	17	25,400	798	607	281	11,806,600
Uranium	3	8	1	367,300	37	19	11	2,534,200

Abbreviations

MCL = California Maximum Contaminant Level

Conclusion

Impacts to water quality are widespread across California basins, currently affecting the drinking water source for hundreds of thousands of people, with millions more experiencing increasing concentration trends and potentially vulnerable to further impacts. Groundwater used for drinking water and activities that may impact this beneficial use are subject to federal and state requirements, with oversight by numerous agencies and regulatory programs.² While SGMA does not directly address the roles of GSAs with respect to existing regulatory programs, and does not require GSAs to address undesirable results that occurred before January 1, 2015, the GSP regulations and SWRCB guidance are clear that GSAs must evaluate existing groundwater quality conditions in their GSPs, and, as applicable, define quantifiable and measurable sustainability criteria related to degraded water quality, and to take actions (i.e., projects and management actions, including policies and monitoring) to avoid undesirable results. Per the SWRCB Water Quality FAQ, water quality degradation that significantly and unreasonably affects the supply or suitability of groundwater for use in drinking water systems is an undesirable result, and it is the responsibility of a GSA to ensure that its management of groundwater will not significantly and unreasonably degrade water quality.

The findings of this White Paper highlight that water quality issues are significant and widespread in SGMA basins, and that while these issues are not new, there is evidence that conditions are continuing to degrade in many areas. The review of GSPs for critically overdraft basins by UC Davis researchers have identified that many GSPs have not adequately developed sustainability criteria for key water quality constituents that affect public health, or their criteria are not aligned with drinking water standards (Dobbin et al., 2020a; 202b). Given the widespread water quality impacts and the requirements under SGMA, it is incumbent upon GSAs to thoroughly consider water quality issues relevant to drinking water users in GSPs, including in the evaluation of basin conditions, setting of sustainability criteria, and development of projects and management actions, including policies and monitoring. It is also clear that GSAs would benefit from additional guidance from DWR on how to: (1) systematically evaluate water quality impacts to drinking water users, and (2) evaluate and address water quality impacts that may be associated with a GSA's groundwater management actions and decisions, given the multiple complexities and the role of other regulatory agencies and programs in addressing water quality.

1 INTRODUCTION

Per the Sustainable Groundwater Management Act (“SGMA”), it is the responsibility of a Groundwater Sustainability Agency (“GSA”) to ensure that its management of groundwater conditions in a basin and any other action taken by the GSA will not significantly and unreasonably degrade water quality (SWRCB, 2019). The GSAs are required to evaluate “groundwater quality issues that may affect the supply and beneficial uses of groundwater” using the best available information (23 California Code of Regulations [“CCR”] § 354.16(d)). The GSAs are also required to develop sustainability criteria for degraded water quality that, among other things, consider the “potential effects on the beneficial uses and users of groundwater, on land uses and property interests” (23 CCR § 354.26(b)(3)), to establish a network to “monitor impacts to the beneficial uses or users of groundwater” (23 CCR § 354.34(b)(2)), and to identify projects and management actions that a GSA will implement to achieve the set sustainability goal for the basin 23 CCR § 354.44(a)). However, GSAs are not required by SGMA to address undesirable results that occurred before January 1, 2015 (Water Code Section 10727.2 (b) (4)).

An explanation of key drinking water terms is provided on page iii of the Executive Summary.

The goal of this White Paper is to independently assess and evaluate the extent of potential water quality impacts to drinking water beneficial users in basins subject to SGMA, and to summarize the apparent extent and distribution of impacts to those beneficial users. These results begin to illuminate the challenge presented to GSAs as they implement SGMA in coordination with the many other regulatory programs and agencies that address water quality.

1.1 Background

Water quality issues and the relationship, direct or indirect, to groundwater management are very complex and can vary substantially based on local conditions. SGMA and related guidance documents and regulations developed to date by the California Department of Water Resources (“DWR”) do not provide clear guidance as to how exactly GSAs should evaluate water quality conditions with respect to drinking water beneficial users or what role GSAs have within the context of the numerous existing regulatory programs that address and regulate water quality.¹

In addition, although GSAs in critically overdrafted basins have already developed and submitted their GSPs, two studies were recently released that have relevance to assessment of water quality conditions for drinking water users. These include a study by the California State Water Resources Control Board (“SWRCB”) that estimates water quality conditions in water accessed by domestic wells (SWRCB, 2020a; 2020b), and a study by the United States Geological Survey (“USGS”) to

assess changing trends in groundwater quality for inorganic constituents (USGS, 2019; Jurgens, B.C. et al., 2020).

Populations that rely on either public water systems (abbreviated “PWS” in attachments) that utilize groundwater or privately-owned domestic wells for drinking water are directly affected by groundwater quality. Water served by public water systems is required to be tested regularly to ensure that water served to customers meets drinking water standards, known as Maximum Contaminant Levels (“MCLs”) (SWRCB, 2018b). Despite this requirement, public water systems do, at times, serve water that violates MCLs.

In rural areas without access to public water systems, people often rely on groundwater from privately-owned domestic wells and state small water systems (defined as a system with 14 or fewer connections) for drinking water. No requirement exists for water quality testing of domestic wells, and what testing is performed does not have to be provided to regulatory agencies. State small water systems have limited testing requirements and are regulated by local counties, not the SWRCB. Thus, little water quality data specific to domestic wells and state small water systems are publicly available. Regardless, as part of SGMA, GSAs have a responsibility to evaluate groundwater quality and evaluate impacts to domestic wells users and state small water systems as beneficial users of the resource (23 CCR § 354.26(b)(3)).

1.2 Approach

To independently assess the potential effects of degraded water quality on the beneficial uses and users of groundwater, this White Paper summarizes publicly available data for five constituents (i.e., nitrate as nitrogen [“nitrate”], arsenic, uranium, 1,2,3-trichloropropane [“1,2,3-TCP”], and 1,2-dibromo-3-chloropropane [“DBCP”]) that are commonly detected in groundwater in the 94 basins^{7,8} within California that are subject to SGMA (see Figure 1). Based on publicly available data sources, this White Paper estimates water quality conditions and potential impacts for two sets of populations:

1. **Drinking water beneficial users whose water supply does not meet drinking water standards (i.e., MCLs).** This includes domestic well users that are, presumably, drinking untreated groundwater that the SWRCB (2020b) estimates has constituent

⁷ Basins subject to SGMA are those prioritized as critically overdrafted, high, and medium by the California Department of Water Resource (“DWR”, 2020). For purposes of this White Paper, “basin” refers to either a basin or subbasin as those designations are applied by DWR. In 2020, 94 of the 515 groundwater basins in California are classified as medium or high priority and subject to SGMA (DWR, 2020d).

⁸ Basins designated as critically overdrafted are also prioritized as “high” or “medium”. However, for purposes of this White Paper, basins indicated as “high” and “medium” exclude those that are critically overdrafted.

concentrations above MCLs.⁹ This also includes public water system customers that were supplied water from a system that received an MCL violation in 2018 (SWRCB, 2018).

- 2. Public water system customers whose untreated groundwater source shows increasing concentration trends (i.e., degrading water quality)** based on USGS (2019). This population is subdivided into customers with: (1) groundwater sources that have concentrations above MCLs and increasing trends, and (2) groundwater sources that have concentrations below MCLs but increasing trends. Because this analysis looks at constituent concentrations in the source water, the customers in the "above MCLs" group *are not necessarily receiving drinking water above MCLs*, because the water undergoes treatment by the public water system prior to distribution. Additionally, source water for customers in the "below MCLs" category *will not necessarily increase to levels above MCLs*. However, given the increasing concentration trends, these water systems are likely to face the need for increased water treatment in the future to address the degrading water quality conditions.

⁹ The groundwater data compared to domestic well users represents untreated source water. It is presumed that these domestic wells do not include treatment systems and therefore users are exposed to drinking water with constituents above MCLs.

2 IMPACTS TO DRINKING WATER BENEFICIAL USERS

As noted above, domestic wells are rarely tested for water quality, and what testing is done is not typically made available publicly. Domestic wells tend to be shallower than municipal and agricultural supply wells, and thus water quality conditions can be different for the portion of the aquifer accessed by domestic wells (SWRCB, 2020a). Thus, direct information on water quality of groundwater accessed by domestic wells is rarely available. In February 2020, however, the SWRCB released the *GAMA Needs Assessment Analysis for Domestic Wells Tool* and associated study, which estimates the concentrations of certain constituents in groundwater accessed by domestic wells (SWRCB, 2020a; 2020b). Due to the timing of their release, these reports and data were not available for GSAs in critically overdrafted basins to utilize for the development of their GSPs. As such, in order to broadly assess drinking water impacts to domestic well users, these data are summarized herein by GSA and basin.

State small water systems have limited water quality monitoring requirements and are regulated by counties, not the SWRCB. While water quality for state small water systems could be similar to nearby domestic wells, they are not included in this analysis due to a lack of available data for the systems.

Unlike domestic wells, public water system wells are routinely monitored for water quality, and the data are made publicly available. The water that enters the distribution system following treatment by public water systems also is required to be tested. Although public water systems are required to comply with MCLs, public water systems do, at times, serve water that exceeds MCLs. Violations of MCLs by public water systems are reported by the SWRCB (SWRCB, 2018a). In order to broadly assess drinking water impacts to public water systems that rely on groundwater, MCL violations in 2018 are summarized herein by GSA and basin.

The sections below discuss the data sources and methodology used to estimate the basins and population (i.e., beneficial users) that are currently impacted by groundwater with constituent concentrations known or estimated to be above applicable MCLs.

2.1 Data Sources

The following data were compiled to support the assessment of current water quality impacts to domestic wells and public water systems that are reliant on groundwater:

- The study area for this White Paper consists of the 94 California groundwater basins¹⁰ that are subject to SGMA because they have been designated by DWR as critically overdrafted, high priority, or medium priority (DWR, 2020a; DWR, 2020d). The study area is shown on Figure 1. Within these basins, 270 GSAs have been established. Where

¹⁰ For purposes of this White Paper, “basin” refers to either a basin or subbasin as those designations are applied by DWR.

available, exclusive GSA boundary shapefiles were downloaded from the DWR GSA Map Viewer (DWR, 2020c). For 16 GSAs that have yet to be finalized as exclusive, the GSA boundaries were downloaded from the GSA Notice Submitted shapefiles (DWR, 2020b).

- Groundwater quality data for domestic wells were downloaded from the SWRCB *GAMA Needs Assessment Analysis for Domestic Wells Tool* (SWRCB, 2020a; 2020b). These data encompass analyses for nitrate, arsenic, 1,2,3-TCP, and uranium, but not DBCP. The SWRCB has segregated the data by domestic well depth information to determine water quality concentrations in the portions of aquifers typically accessed by domestic wells (SWRCB, 2020a). The SWRCB has also summarized the data by Public Land Survey System (“PLSS”) section and assigned an “MCL index” and “water quality grade” to each section. The MCL index is the average constituent concentration for each section divided by its MCL (SWRCB, 2020a). The water quality grade is a combination of the MCL index and the number of recent MCL exceedances from summer 2017 to summer 2019, as identified in Table 1b, below (SWRCB, 2020b). The SWRCB identified the estimated number of domestic wells located within each PLSS section based on the DWR Online System for Well Completion Reports (“OSWCR”) records.

Laboratory analyses often result in some constituents not being measured above the analytical method reporting limits. Such results are called “non-detects”. Non-detects may correspond to concentrations that are actually or virtually zero, or they may correspond to values that are considerably larger than zero. A common method for handling non-detects is to assign a constant value or constant fraction of the reporting limit to the results. The SWRCB (2020a) applied this method in two ways. First, the SWRCB assumed non-detects are present at concentrations equal to the laboratory reporting limits divided by the square root of 2. Second, the SWRCB (2020a) produced a “TCPR123_2” dataset in which non-detects of 1,2,3-TCP are assumed to be equal to zero because the laboratory reporting limit for 1,2,3-TCP is often greater than the MCL. This White Paper uses the TCPR123_2 dataset.

- Domestic well locations were identified from the dataset aggregated according to PLSS section by the University of California (“UC”) Berkeley Water Equity Science Shop (“WESS”). This dataset (UC Berkeley WESS, 2019) contains approximately 120,000 domestic wells that are located within the study area. The UC Berkeley WESS domestic well dataset is derived from the DWR OSWCR records.
- Estimates for the population that is reliant on domestic wells was obtained from UC Berkeley WESS. The population dataset is based on 2010 United States census data that identifies the estimated population located outside of the service areas of public water systems (UC Berkeley WESS, 2020). Population in areas outside of public water system boundaries, as identified by UC Berkeley WESS, are identified as dependent on domestic wells (UC Berkeley WESS, 2020).

- The MCL violations by public water systems were obtained from the 2018 SWRCB Annual Compliance Report (SWRCB, 2018a). The number of violations were combined with public water system boundary information downloaded from the Public Health Institute Tracking California Water Boundary Tool website (Public Health Institute, 2020). All water systems identified with notifications herein utilize groundwater as a supply source based on SWRCB (2020c) and the SWRCB Safe Drinking Water Information System (“SDWIS”).

2.2 Methodology

Sections 2.2.1 and 2.2.2 discuss the methodologies employed in this White Paper to assess water quality impacts to domestic wells and public water systems, respectively.

2.2.1 Impacts to Domestic Wells

A domestic well is considered “impacted” herein when the concentration of at least one of the five constituents considered in this White Paper is detected above its respective MCL. Table 1a presents the MCLs (SWRCB, 2018b) for the select constituents.

Table 1a
MCLs for Select Constituents

Constituent	MCL
Nitrate	10 mg/L
Arsenic	10 ug/L
Uranium	20 pCi/L
1,2,3-TCP	0.000005 mg/L
DBCP	0.0002 mg/L

Abbreviations

DBCP = 1,2-dibromo-3-chloropropane

MCL = California Maximum Contaminant Level

mg/L = milligrams per liter

pCi/L = picocuries per liter

1,2,3-TCP = 1,2,3-trichloropropane

ug/L = micrograms per liter

The SWRCB *GAMA Needs Assessment Analysis for Domestic Wells Tool* assigns a “water quality grade” for each PLSS section. The water quality grade is a rated representation of the average concentration (MCL index) and number of recent MCL exceedances for a constituent in domestic wells within a given PLSS section. The PLSS section detections are further represented by the MCL index, which is the constituent concentration divided by its MCL. “Recent MCL exceedances” are PLSS sections that have been flagged as having constituent concentrations above the MCL within the last two years (from summer 2017 to summer 2019). Table 1b presents the SWRCB’s water quality grade designations (SWRCB, 2020a).

Table 1b
SWRCB Water Quality Grades

Water Quality Grade	Description
0	Unknown water quality (no data available)
1	No recent MCL exceedances, average section detection <u>below</u> 50% of MCL
2	No recent MCL exceedances, average section detection <u>between</u> 50 – 80% of MCL
3	No recent MCL exceedances, average section detection <u>80 – 100%</u> of MCL
4	At least one recent MCL exceedance, average section detection <u>below</u> MCL
5	No recent MCL exceedances, average section detection <u>above</u> MCL
6	At least one recent MCL exceedances, average section detection <u>above</u> MCL

Abbreviations

MCL = California Maximum Contaminant Level
SWRCB = California State Water Resources Control Board

The SWRCB (2020b) considers domestic wells in PLSS sections that have a water quality grade of 4, 5 or 6 to be impacted. These water quality grades describe PLSS sections that have at least one recent MCL exceedance or an average section detection above the MCL. The number of people served by impacted domestic wells in a PLSS section was derived from the UC Berkeley WESS population dataset. The estimates of the number of people relying on impacted domestic wells are organized by GSA in Tables 2a, 3a, 4a, and 5a for arsenic, nitrate, 1,2,3-TCP, and uranium, respectively.

2.2.2 Impacts to Public Water Systems

The population served by public water systems that received one or more violations for the concentration of a constituent above its MCL in 2018 was calculated for the study area. The resultant impacted population estimates are organized by GSA in Tables 2a, 3a, 4a, 5a, and 6a, and listed by public water system in Tables 2b, 3b, 4b, 5b, and 6b for arsenic, nitrate, 1,2,3-TCP, uranium, and DBCP, respectively.

The public water systems with MCL violations in 2018 are shown on Figures 2b, 3b, 4b, 5b, and 6 for arsenic, nitrate, 1,2,3-TCP, uranium, and DBCP, respectively.

2.3 Results

Assessment results are summarized by constituent in Sections 2.3.1 through 2.3.5 below.

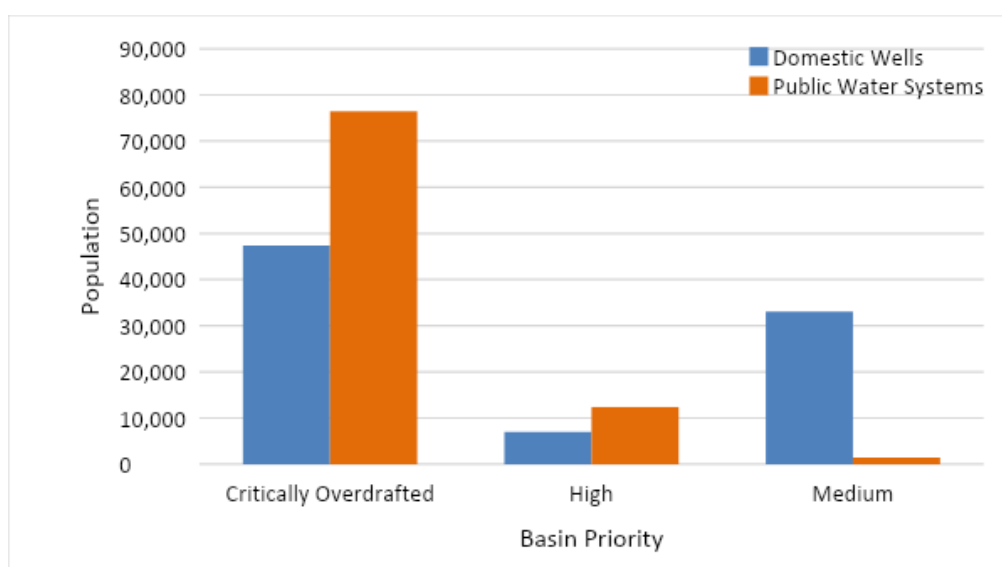
2.3.1 Arsenic

A total of approximately 178,000 people in 103 GSAs and 44 basins within the study area are estimated to be impacted by arsenic concentrations in groundwater above the MCL, including approximately 87,000 people reliant on domestic wells and approximately 90,000 people reliant on public water systems that received a violation in 2018 (Tables 2a and 2b). Arsenic impacts

occur in most regions of California, including coastal areas, the Central Valley, and Southern California (Figures 2a, and 2b).

Chart 1 summarizes the population distribution by water source and DWR basin priority. Approximately 70 percent of the population affected by arsenic impacts in groundwater are in critically overdrafted basins. A substantial proportion of the population in non-critically overdrafted basins (i.e., high priority and medium priority basins) affected by arsenic concentrations are domestic well users.

Chart 1
Estimated Population Affected by Arsenic Impacts in Drinking Water According to Basin Priority

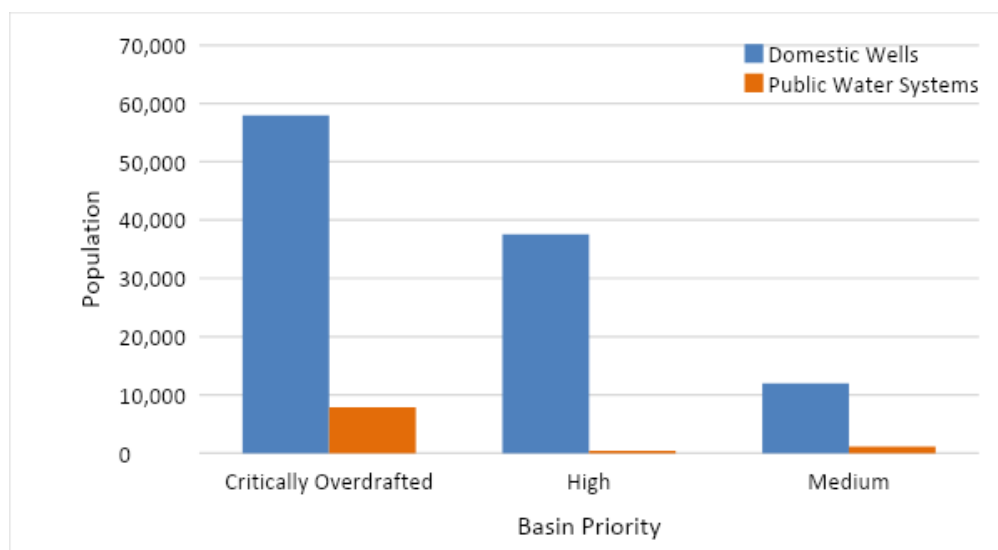


2.3.2 Nitrate

A total of approximately 117,000 people in 83 GSAs and 48 basins within the study area are estimated to be impacted by nitrate concentrations in groundwater above the MCL, including approximately 107,000 people reliant on domestic wells and approximately 9,400 people reliant on public water systems that received a violation in 2018 (Tables 3a and 3b). Nitrate impacts occur primarily in the Central Valley, Salinas Valley, and San Luis Obispo Valley (Figures 3a and 3b).

Chart 2 indicates that approximately 57 percent of the population affected by nitrate impacts in groundwater are in critically overdrafted basins. Most of the impacted population (92 percent) throughout the study area consists of domestic well users.

Chart 2
Estimated Population Affected by Nitrate Impacts in Drinking Water According to Basin Priority

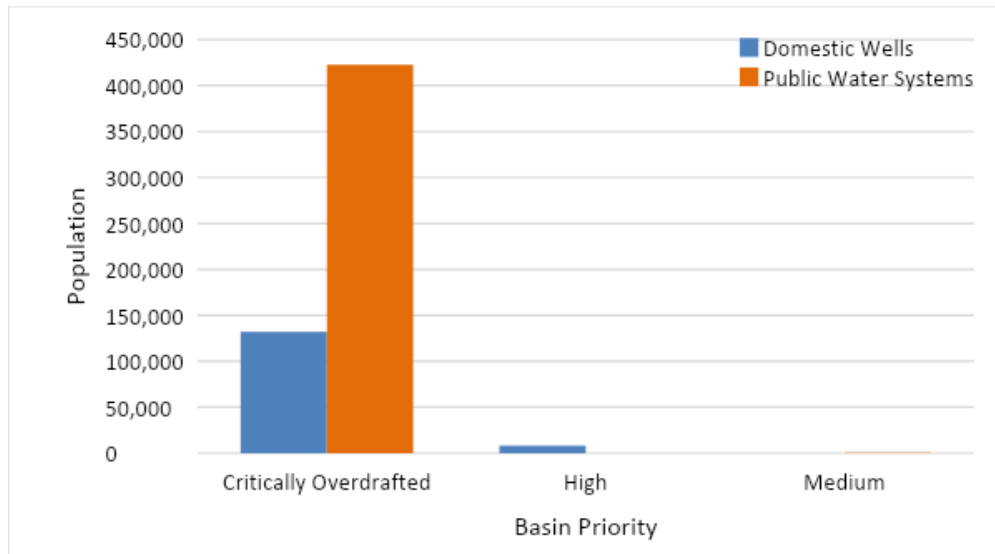


2.3.3 1,2,3-TCP

A total of approximately 563,000 people in 53 GSAs and 23 basins within the study area are estimated to be affected by 1,2,3-TCP concentrations in groundwater above the MCL, including approximately 140,000 people reliant on domestic wells and approximately 423,000 people reliant on public water systems that received a violation in 2018 (Tables 4a and 4b). Impacts associated with 1,2,3-TCP occur primarily in the San Joaquin Valley, Sacramento Valley, and Salinas Valley (Figures 4a and 4b).

Chart 3 indicates that nearly all the population affected by 1,2,3-TCP impacts in groundwater are in critically overdrafted basins. Most of this affected population is reliant on public water systems. It should be noted that due to the reporting limit issue discussed in Section 2.1, the dataset for 1,2,3-TCP has less geographic coverage than the datasets for other constituents reviewed herein.

Chart 3
Estimated Population Affected by 1,2,3-TCP Impacts in Drinking Water According to Basin Priority

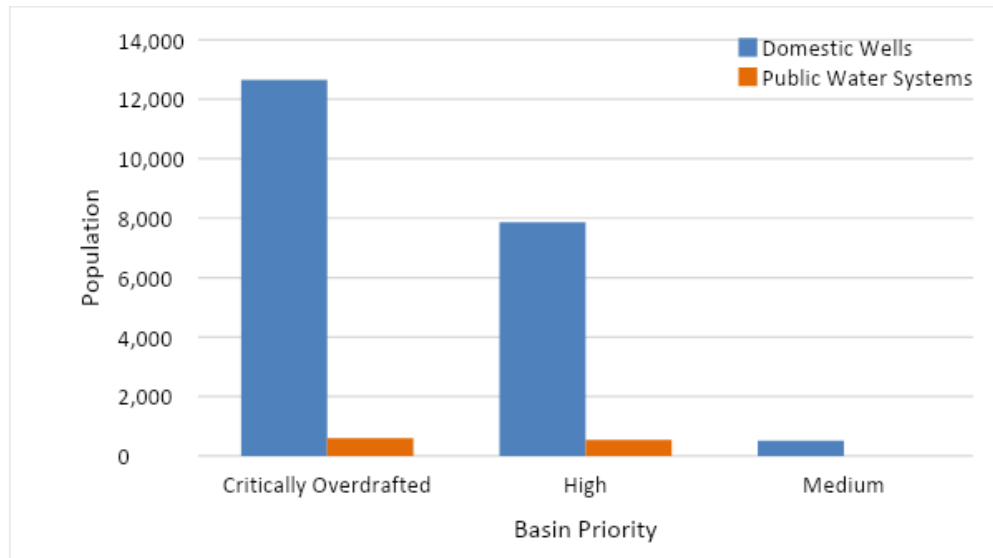


2.3.4 Uranium

Approximately 22,000 people in 38 GSAs and 19 basins within the study area are estimated to be affected by uranium concentrations in groundwater above the MCL, including approximately 21,000 people reliant on domestic wells and approximately 1,100 people reliant on public water systems that received a violation in 2018 (Tables 5a and 5b). Uranium impacts are concentrated in the San Joaquin Valley and Salinas Valley (Figures 5a and 5b).

Chart 4 shows that approximately 60 percent of the population affected by uranium impacts in groundwater are in critically overdrafted basins. Most of the affected population (95 percent) throughout the study area are domestic well users.

Chart 4
Estimated Population Affected by Uranium Impacts in Drinking Water According to Basin Priority



2.3.5 DBCP

DBCP was not included in the SWRCB (SWRCB, 2020a; 2020b) study of domestic well water quality. In 2018, only two public water systems within the study area received violations for DBCP concentrations above the MCL (Tables 6a and 6b). Both public water systems were under the jurisdiction of one GSA (North Kings GSA) for the Kings Subbasin located in the San Joaquin Valley.

3 POTENTIAL INCREASING RISK TO DRINKING WATER BENEFICIAL USERS

Concentrations of constituents in groundwater can be affected by, among other things, changes in water levels, groundwater management practices, and anthropogenic contamination (Stanford, 2019). The USGS states the composition and concentration of substances dissolved in groundwater “depend on the chemical composition of precipitation, on the biologic and chemical reactions occurring on the land surface and in the soil zone, and on the mineral composition of the aquifers and confining beds through which the water moves” (USGS, 1987). Despite this complexity, evaluation of water quality trends can be informative and used to support management strategies and decisions. The USGS recently conducted an evaluation of short- and long-term trends of inorganic constituent concentrations (including arsenic, nitrate, and uranium) in public supply wells that provide an overall indication of whether the source water quality for a given well and public water system is improving, degrading, or generally static (USGS, 2019; Jurgens, 2020).

The sections below describe the data sources and methodology used to identify statistically significant increasing constituent concentration trends in groundwater that is the source for public supply wells. It should be noted that public water systems whose wells produce groundwater with constituent concentrations above MCLs are not necessarily serving water that violates MCLs to their customers (e.g., like those identified in Section 2.3). Per Title 22 of the CCR, public water systems are required to test and treat water to concentrations below MCLs prior to serving it to customers, although such treatment systems can be costly and require time to design and construct. As acknowledged by the SWRCB (1997), “Treatment technologies are not failure proof, and insufficiently treated or untreated water may, on occasion, pass through the treatment process and into the distribution system.” Thus, the presence of constituents above MCLs in source water presents a risk, albeit minor, that water in excess of the MCLs will be served to customers. As such the “impacts” discussed below really relate to the need and potential costs associated with the provision of treatment for impacted source water.

3.1 Data Sources

In addition to the data sources identified in Section 2.1, the following data were compiled for the assessment of constituent concentration trends in the groundwater that is the source for public supply wells:

- Short- and long-term groundwater quality trends and recent water quality measurements from public supply wells are compiled from USGS *California GAMA-Priority Basin Project (PBP) Public-Supply Well Results: Inorganic Data and Trends, 1974–2014 Tool* (USGS, 2019). The USGS aggregated raw water quality data from public supply wells and

performed Mann-Kendall rank correlation and Sen's slope estimator calculations to identify statistically significant trends in constituent concentrations.¹¹

The USGS (2019) trend dataset includes 8,527 public supply wells within the study area for which trends for nitrate, arsenic, and uranium were evaluated. Approximately 89 percent of these wells could be matched to specific public water systems using the *California Open Data Portal Drinking Water Watch – Public Water System Facilities* dataset (SWRCB, 2020c). Trends in the dataset are calculated on long- and short-term bases: (1) Long-term trends are calculated based on the entire period of available data through 2014, and (2) recent trends are calculated based on water quality data collected from 2000 through 2014. The USGS (2019) trend dataset includes nitrate, arsenic, and uranium, but not 1,2,3-TCP and DBCP.

- Public water system information is from SWRCB SDWIS website (SWRCB, 2020c). This dataset was used to identify public water systems and the attributes for the public supply wells included in the USGS (2019) trend dataset.

3.2 Methodology

Public supply wells were categorized into the following six groups of “trend categories” for arsenic, nitrate, and uranium based on the USGS (2019) trend dataset:

1. Recent concentration above MCL and increasing trend
2. Recent concentration below MCL and increasing trend
3. Recent concentration above MCL and decreasing trend
4. Recent concentration below MCL and decreasing trend
5. No statistically significant trend (static)
6. Trend not tested (insufficient data)

These results were plotted on maps for both the long- and short-term trends (Figures 7a, 7b, and 7c for arsenic, nitrate, and uranium, respectively). These results are summarized by GSA and basin in Tables 7a, 7b, and 7c (arsenic, nitrate, and uranium, respectively), for all GSAs with one or more public supply well identified as having an increasing trend. Tables 7a, 7b, and 7c further categorize the GSAs into two groups:

1. GSAs with at least one public supply well with a recent detection of a constituent above the MCL (including public supply wells without identified trends).

¹¹ According to USGS (2019), trends were calculated for wells with four or more unique sets of laboratory analyses. Trends were accepted as statistically significant if Mann-Kendall rank correlation p-values were below a significance level (α) of 0.05 and the Sen's slope estimator was not zero (USGS, 2019).

2. GSAs with at least one public supply well with an increasing trend but no recent detection of a constituent above the MCL.

To evaluate whether the public supply wells depths are similar to those of domestic wells within the same GSA, the public supply wells with recent increasing trends of each constituent were identified and the median well depths of those public supply wells (50th percentile) were compared to domestic well depths within the same GSA. As illustrated by the bar charts in Tables 8a, 8b, and 8c, the public supply wells with increasing constituent concentration trends are generally much deeper than domestic wells.

Given that constituent concentrations can vary by groundwater depth (SWRCB, 2020a), constituent concentration trends in the portion of an aquifer that public supply wells draw from may not be representative of the portion of the aquifer that domestic wells draw from in the same PLSS section. Therefore, constituent concentration trends for impacted domestic wells cannot be readily discerned from the USGS trend dataset for public supply wells.

The public water systems with recent increasing trends for arsenic, nitrate, and uranium in their source water are tabulated in Tables 9a, 9b, and 9c by GSA and basin. These tables also identify whether each public water system received a violation for arsenic, nitrate, and/or uranium above their respective MCLs in 2018, and the population served by each public water system based on SDWIS information (SWRCB, 2020c).

3.3 Results

Figures 7a, 7b, and 7c show the prevalence of public supply wells with statistically significant trends in arsenic, nitrate, and uranium concentrations in their source groundwater, respectively. Tables 7a, 7b, and 7c summarize the trends in public supply wells by GSA. As shown on the figures and in the tables, GSAs that have public supply wells with recent concentrations in their source water above MCLs generally exhibit both long-term increasing trends (all available data) and recent increasing trends (2000-2014) for arsenic, nitrate, and uranium.

3.3.1 Arsenic

Within the study area, 152 public supply wells have increasing short-term (2000-2014) arsenic concentration trends in their source groundwater, of which 64 have concentrations above the MCL. As shown in Table 7a, 33 basins overseen by 54 GSAs have at least one public supply well with a recent statistically significant increasing arsenic concentration trend. Wells that produce groundwater with arsenic concentrations above the MCL (and require treatment) occur in 21 basins under the jurisdiction of 33 GSAs.

Chart 6 indicates that 47 percent of the public supply wells with increasing arsenic concentration trends in their source groundwater are in critically overdrafted basins and 53 percent are in high and medium priority basins. Additionally, 58 percent of the public supply wells with increasing

arsenic concentration trends currently have concentrations below the MCL but are vulnerable to exceeding the MCL (and requiring treatment) in the future if the increasing trends continue.

Chart 6
Public Supply Wells with Increasing Arsenic Concentration Trends (2000-2014)

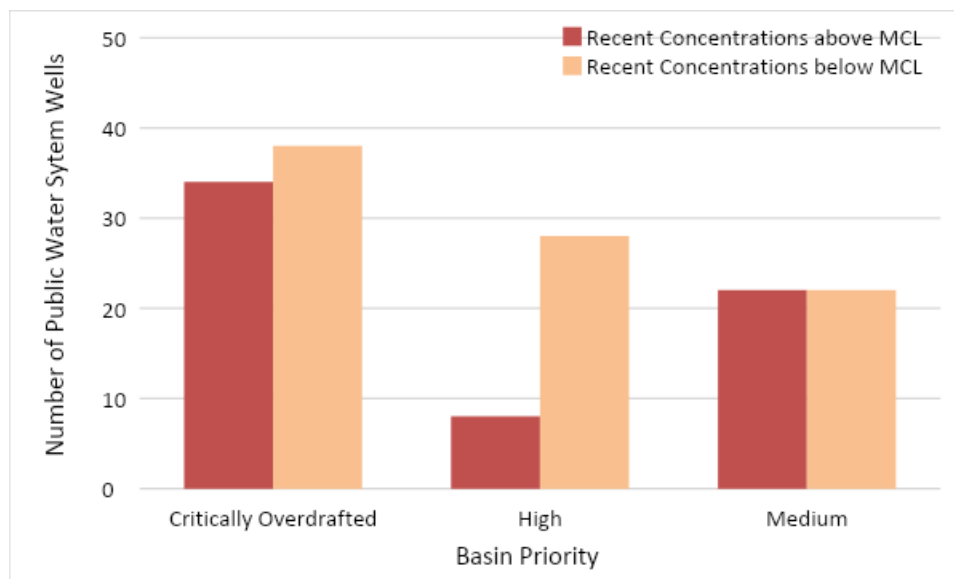


Figure 8 shows the location and population served by public water systems with increasing arsenic concentration trends in their source groundwater. Public water systems that received MCL violations in 2018 are shown in red, and those that did not receive violations in 2018 are shown in orange. Not all public water systems that received MCL violations were found to have wells with statistically significant increasing trends; these systems are not shown on Figure 8.

Approximately 61,000 people are served by public water systems with recent increasing arsenic concentration trends that have detections of arsenic in the source groundwater above the MCL. Public water systems in 7 basins overseen by 9 GSAs had arsenic MCL violations in 2018 (Table 9a). Another 4,988,000 people are served by public water systems in which arsenic concentrations are below the MCL, but are demonstrating increasing trends and could require treatment in the future.

3.3.2 Nitrate

Within the study area, 1,836 public supply wells have increasing short-term (2000-2014) nitrate concentration trends in source groundwater, of which 150 have concentrations above the MCL (and require treatment). As shown in Table 7b, 77 basins overseen by 143 GSAs have at least one public supply well with a recent statistically significant increasing nitrate concentration trend.

Wells with nitrate concentrations in source groundwater above the MCL occur in 31 basins under the jurisdiction of 46 GSAs.

Chart 7 indicates that 38 percent of the public supply wells with increasing nitrate concentration trends in source groundwater are in critically overdrafted basins and 62 percent are in high and medium priority basins. Additionally, 93 percent of the public supply wells with increasing nitrate concentration trends currently have concentrations below the MCL but are vulnerable to exceeding the MCL (and requiring treatment) in the future if the increasing trends continue.

Chart 7
Public Supply Wells with Increasing Nitrate Concentration Trends (2000-2014)

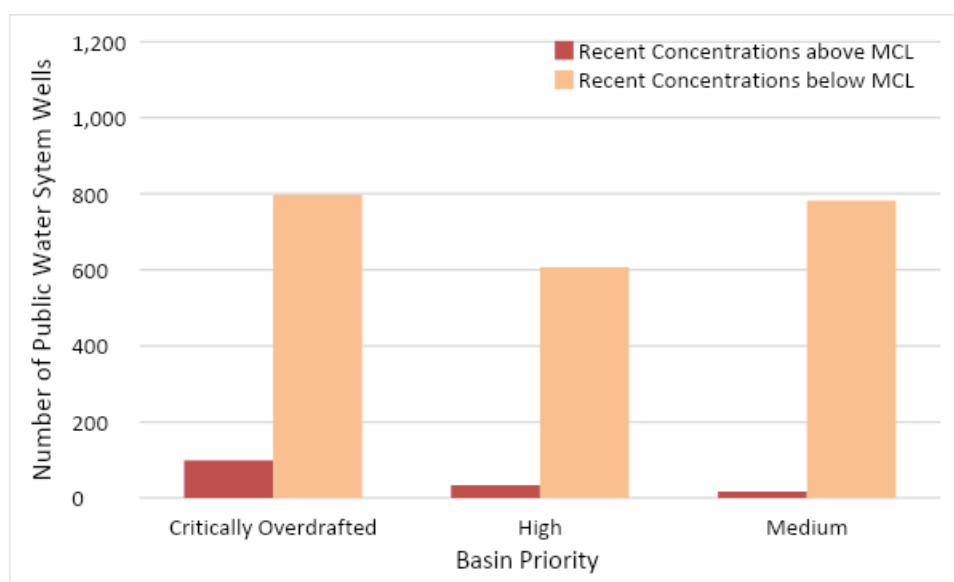


Figure 8 shows the location and population served by public water systems with increasing nitrate concentration trends. Public water systems that received MCL violations in 2018 are shown in red, and those that did not receive violations in 2018 are shown in orange. Not all public water systems that received MCL violations were found to have wells with statistically significant increasing trends; these systems are not shown on Figure 8.

Approximately 25,400 people are served by public water systems with recent increasing nitrate concentration trends that have detections of nitrate in the source groundwater above the MCL. Public water systems in 9 basins overseen by 21 GSAs had nitrate MCL violations in 2018 (Table 9b). Another 11,806,600 people are served by public water systems in which nitrate concentrations are below the MCL, but demonstrating increasing trends and could require treatment in the future.

3.3.3 Uranium

Within the study area, 79 public supply wells have increasing short-term (2000-2014) uranium concentration trends in the source groundwater, of which 12 have concentrations above the MCL. As shown in Table 7c, 21 basins overseen by 31 GSAs have at least one public supply well with a recent statistically significant increasing uranium concentration trend. Wells with uranium concentrations in groundwater above the MCL occur in 6 basins under the jurisdiction of 6 GSAs.

Chart 6 indicates that 51 percent of the public supply wells with increasing uranium concentration trends in the source groundwater are in critically overdrafted basins and 49 percent are in high and medium priority basins. Additionally, 85 percent of the public supply wells with increasing uranium concentration trends currently have concentrations below the MCL but are vulnerable to exceeding the MCL (and requiring treatment) in the future if the increasing trends continue.

Chart 8
Public Supply Wells with Increasing Uranium Concentration Trends (2000-2014)

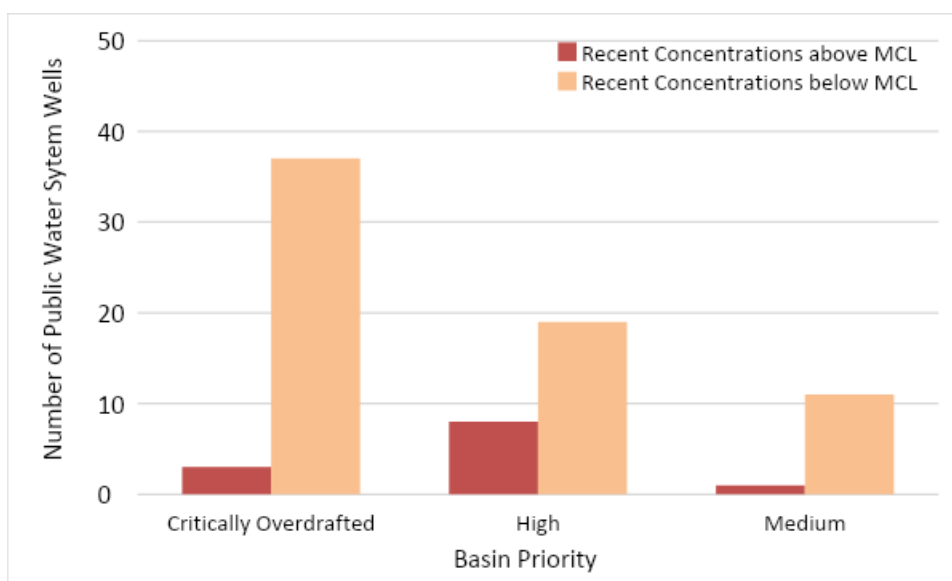


Figure 8 shows the location and population served by public water systems with increasing uranium concentration trends. No public water systems that received MCL violations in 2018 for uranium were found to have wells with statistically significant increasing trends. Public water systems with increasing uranium concentration trends in source groundwater are also identified in Table 9c. Approximately 2,611,600 people are served by public water systems in which uranium concentrations are currently below the MCL, but demonstrating increasing trends and could require treatment in the future.

4 STUDY LIMITATIONS AND CONSIDERATIONS

Below is a summary of the key considerations, uncertainties, and limitations associated with the analyses presented herein. While the assessment presented in this study is based on publicly available data, water quality issues are tremendously complex and the results presented herein should be considered in context with these limitations.

- The data presented herein are primarily based on studies by the SWRCB and USGS, each with their own inherent sets of limitations and data uncertainties, which are carried through to this White Paper. The methodologies and assumptions used for these studies are documented in Jurgens, B.C. et al. (2020) and SWRCB (2020a).
- This White Paper does not include a review or assessment of how GSAs have addressed water quality in their GSPs.
- The trend analyses presented here are based on statistical analyses of constituent concentrations over time and do not include an assessment of the causes of the concentration changes (Jurgens, B.C. et al., 2020; USGS, 2019). While in some cases, increasing constituent concentration have been associated with changing water levels (e.g., increased arsenic associated with the dewatering of Corcoran clay in some areas [Smith, Ryan et al., 2018]), the relationship between water quality concentrations and groundwater management is incredibly complex and has not been clearly established in many cases, further complicating the roles of GSAs and SGMA.
- Historically increasing concentration trends do not necessarily indicate that constituent concentrations will continue to increase into the future, or that they will increase at the same historical rate. Thus, wells with concentrations currently below MCLs and increasing trends may never reach MCL concentrations, even absent changes in groundwater management or other conditions.
- Source water with constituent concentrations above MCLs does not indicate that the water cannot be used for drinking water purposes, but rather that the water needs adequate and appropriate treatment prior to being safe for use as drinking water. For example, the SWRCB will permit the use of water defined as “extremely impaired sources”¹² when reasonable alternatives are not available, with effective monitoring and treatment (SWRCB, 1997).

¹² Per SWRCB (1997), extremely impaired sources meet one or more of the following criteria: (1) exceeds 10 times an MCL or action level (“AL”) based on chronic health effects, (2) exceeds 3 times an MCL or AL based on acute health effects, (3) is a surface water that requires more than 4 log *Giardia*/5 log virus reduction, (4) is extremely threatened with contamination due to proximity to known contaminating activities, (5) contains a mixture of contaminants of health concern, and (6) is designed to intercept known contaminants of health concern.

- As acknowledged by the SWRCB (1997), “Treatment technologies are not failure proof, and insufficiently treated or untreated water may, on occasion, pass through the treatment process and into the distribution system.” Thus, the presence of constituents above MCLs in source water still presents a risk, albeit minor, that water in excess of the MCLs will be served to customers.
- This White Paper does not evaluate costs to treat impaired water for public water systems or domestic wells.
- Nitrate, arsenic, and uranium can be both naturally occurring or anthropogenic, and 1,2,3-TCP and DBCP are anthropogenic (Agency for Toxic Substances and Disease Registry, 2011). Groundwater management activities such as pumping, which causes declining water levels (notably dewatering of Corcoran clay), and recharge, which causes increasing surface infiltration, can result in changes in groundwater quality, even with naturally occurring constituents (Stanford, 2019). Even though these groundwater management activities can affect groundwater quality, the specific effects are very difficult to predict due to complex interactions of locally specific geology and geochemical and biochemical processes.
- The UC Berkeley WESS population dataset was based on 2010 Census data. Depending on population changes that have occurred since 2010, the population dependent upon domestic wells for drinking water purposes may therefore be under- or over-estimated.
- Population was apportioned spatially within Census blocks¹³ in the UC Berkeley WESS population dataset. The estimates of population dependent on domestic wells is likely overestimated in areas around the edges of service areas for public water systems when Census block boundaries do not coincide with service area boundaries. Similarly, populations around the outside of public water system service areas may be counted as domestic well users, if the public water system service area is not accurate. Thus, the population dependent upon domestic wells for drinking water purposes may be overestimated in these areas.
- Nitrate is identified as by two different unique values in the USGS (2019) dataset, differing by only the number of spaces following the comma: “Nitrate, mg/L as N” and “Nitrate, mg/L as N” (differing by one space or two following the comma). It appears that the USGS calculated trends for nitrate for these data separately, as if they were different constituents. Based on this, the USGS (2019) trend analyses for nitrate may not include the entire available record of data.

¹³ Census blocks are the smallest geographic area for which aggregated Census data are available. Census blocks are “generally small in area. In a city, a census block looks like a city block bounded on all sides by streets. Census blocks in suburban and rural areas may be large, irregular, and bounded by a variety of features, such as roads, streams, and transmission lines. In remote areas, census blocks may encompass hundreds of square miles” (Census, 2011).

- Public water systems have a legal requirement to deliver potable water to their customers. Because of that, wells that approach or exceed an MCL may be temporarily or permanently taken out of service when an adequate treatment solution is not available, and no longer subject to water quality monitoring and reporting. This may lead to an undercount of MCL exceedances or increasing trends in public supply wells that cannot be quantified.

5 CONCLUSION

Impacts to water quality are widespread across California basins, currently affecting the drinking water source for hundreds of thousands of people, with millions more experiencing increasing concentration trends and potentially vulnerable to further impacts. Groundwater used for drinking water and activities that may impact this beneficial use are subject to federal and state requirements, with oversight by numerous agencies and regulatory programs. While SGMA does not directly address the roles of GSAs with respect to existing regulatory programs, and does not require GSAs to address undesirable results that occurred before January 1, 2015, the GSP regulations and SWRCB guidance are clear that GSAs must evaluate existing groundwater quality conditions in their GSPs, and, as applicable, define quantifiable and measurable sustainability criteria related to degraded water quality, and to take actions (i.e., projects and management actions, including policies and monitoring) to avoid undesirable results. Per the SWRCB Water Quality FAQ, water quality degradation that significantly and unreasonably affects the supply or suitability of groundwater for use in drinking water systems is an undesirable result.

The findings of this White Paper highlight that water quality issues are significant and widespread in SGMA basins, and that while these issues are not new, there is evidence that conditions are continuing to degrade in many areas. The review of GSPs for critically overdraft basins by UC Davis researchers have identified that many GSPs have not adequately developed sustainability criteria for key water quality constituents that affect public health, or their criteria are not aligned with drinking water standards (Dobbin et al., 2020a; 202b). Given the widespread water quality impacts and the requirements under SGMA, it is incumbent upon GSAs to thoroughly consider water quality issues relevant to drinking water users in GSPs, including in the evaluation of basin conditions, setting of sustainability criteria, and development of projects and management actions, including policies and monitoring.

Water quality issues and the relationship, direct or indirect, to groundwater management are very complex and can vary substantially based on local conditions. In addition, groundwater management that prevents chronic lowering of groundwater levels may not prevent undesirable results with respect to water quality (Stanford, 2019). For example, many GSPs include plans to increase groundwater recharge as part of their management strategies. However, groundwater recharge has the potential to mobilize naturally occurring constituents, and/or to mobilize or expand contaminant plumes. In some cases, potential adverse water quality changes will be short term and local, followed by long term and regional benefits as a result of dilution (Stanford, 2019).

It is clear that GSAs would benefit from additional guidance from DWR on how to: (1) systematically evaluate water quality impacts to drinking water users, and (2) evaluate and address water quality impacts that may be associated with a GSA's groundwater management actions and decisions given the multiple complexities and the role of other regulatory agencies and programs in addressing water quality.

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LIST OF CHARTS, FIGURES, AND TABLES

CHARTS

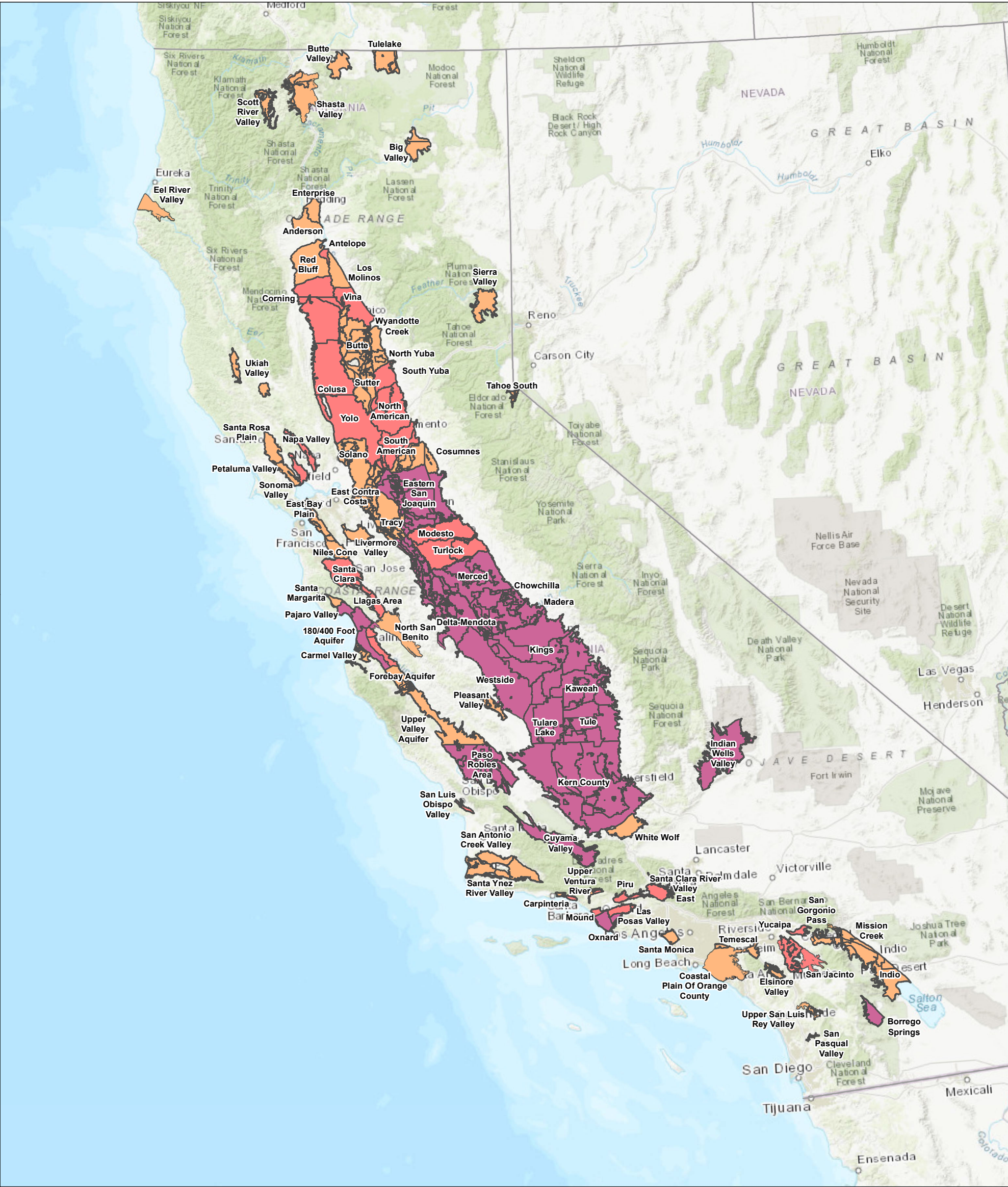
- Chart 1. Summary of Estimated Population Affected by Arsenic Impacts in Drinking Water by Basin Priority
- Chart 2. Summary of Estimated Population Affected by Nitrate Impacts in Drinking Water by Basin Priority
- Chart 3. Summary of Estimated Population Affected by 1,2,3-TCP Impacts in Drinking Water by Basin Priority
- Chart 4. Summary of Estimated Population Affected by Uranium Impacts in Drinking Water by Basin Priority
- Chart 5. Summary of Estimated Population Affected by DBCP Impacts in Drinking Water by Basin Priority
- Chart 6. Summary of Public Supply Wells with Increasing Arsenic Concentration Trends (2000 – 2014)
- Chart 7. Summary of Public Supply Wells with Increasing Nitrate Concentration Trends (2000 – 2014)
- Chart 8. Summary of Public Supply Wells with Increasing Uranium Concentration Trends (2000 – 2014)

FIGURES

- Figure 1. Study Area
- Figure 2a. Impacts to Domestic Wells from Arsenic Concentrations by PLSS Section
- Figure 2b. Public Water Systems with Arsenic MCL Violations in 2018
- Figure 3a. Impacts to Domestic Wells from Nitrate as Nitrogen Concentrations by PLSS Section
- Figure 3b. Public Water Systems with Nitrate as Nitrogen MCL Violations in 2018
- Figure 4a. Impacts to Domestic Wells from 1,2,3-TCP Concentrations by PLSS Section
- Figure 4b. Public Water Systems with 1,2,3-TCP MCL Violations in 2018
- Figure 5a. Impacts to Domestic Wells from Uranium Concentrations by PLSS Section
- Figure 5b. Public Water Systems with Uranium MCL Violations in 2018
- Figure 6. Public Water Systems with DBCP MCL Violations in 2018
- Figure 7a. Arsenic Concentration Trends in Public Supply Wells
- Figure 7b. Nitrate as Nitrogen Concentration Trends in Public Supply Wells
- Figure 7c. Uranium Concentration Trends in Public Supply Wells
- Figure 8. Public Water System Population with Recent Increasing Concentration Trends

TABLES

Table ES-1.	Summary of Drinking Water Impacts Over Drinking Water Standards
Table ES-2.	Basins with Water Quality Conditions Above Drinking Water Standards
Table ES-3.	Summary of Basins with Recent Increasing Concentration Trends
Table ES-4.	Summary of Public Supply Wells with Recent Increasing Concentration Trends (2000 – 2014)
Table 1a.	MCLs for Select Constituents
Table 1b.	SWRCB Water Quality Grades
Table 2a.	Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Table 2b.	Public Water Systems with Arsenic Impacts above MCLs in 2018
Table 3a.	Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Table 3b.	Public Water Systems with Nitrate as Nitrogen Impacts above MCLs in 2018
Table 4a.	Estimated Population with 1,2,3-TCP Impacts above MCLs in Drinking Water Supply
Table 4b.	Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Table 5a.	Estimated Population with Uranium Impacts above MCLs in Drinking Water Supply
Table 5b.	Public Water Systems with Uranium Impacts above MCLs in 2018
Table 6a.	Estimated Population with DBCP Impacts above MCLs in Drinking Water Supply
Table 6b.	Public Water Systems with DBCP Impacts above MCLs in 2018
Table 7a.	Summary of Arsenic Concentration Trends in Public Supply Wells by GSA
Table 7b.	Summary of Nitrate as Nitrogen Concentration Trends in Public Supply Wells by GSA
Table 7c.	Summary of Uranium Concentration Trends in Public Supply Wells by GSA
Table 8a.	Comparison of Public Supply Well Depths to Domestic Well Depths in GSAs With Increasing Arsenic Concentration Trends
Table 8b.	Comparison of Public Supply Well Depths to Domestic Well Depths in GSAs With Increasing Nitrate as Nitrogen Concentration Trends
Table 8c.	Comparison of Public Supply Well Depths to Domestic Well Depths in GSAs With Increasing Uranium Concentration Trends
Table 9a.	Summary of Public Water Systems that Show Increasing Trends for Arsenic
Table 9b.	Summary of Public Water Systems that Show Increasing Trends for Nitrate
Table 9c.	Summary of Public Water Systems that Show Increasing Trends for Uranium



Legend

GSA Boundaries

Basin Priority

Overdraft

High

Medium

Abbreviations

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

Notes

1. All locations are approximate.

2. Study area includes all groundwater basins subject to the Sustainable Groundwater Management Act.

Sources

1. Basemap provided by ESRI.

2. Groundwater subbasin extents as defined by DWR's Bulletin 118 Final Basin Prioritization, February 2019.

0 60 120

(Scale in Miles)

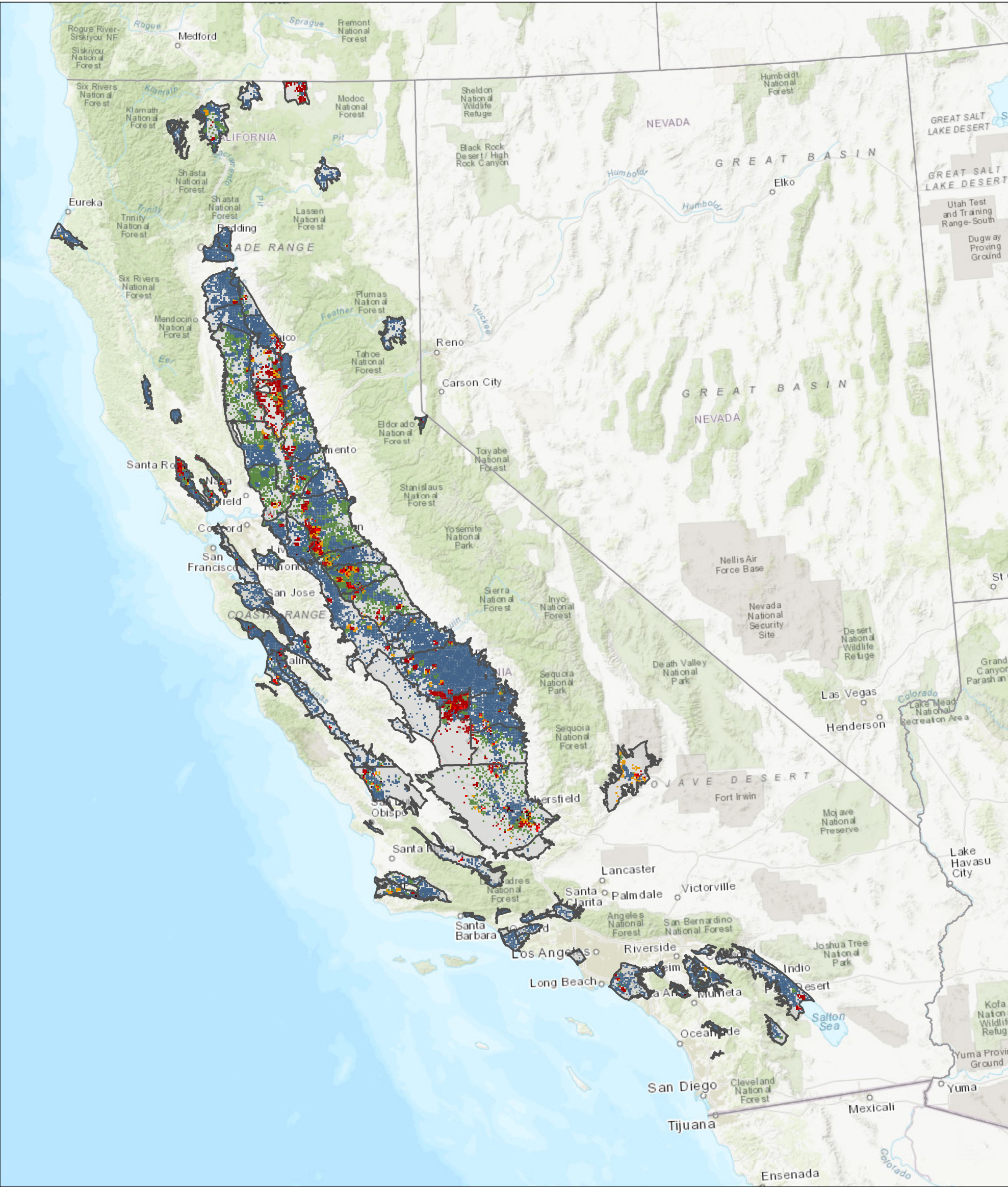
Study Area

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Figure 1



Legend

Water Quality Grade

- Unknown water quality (no data available)
- Average section detection <50% of MCL
- Average section detection between 50 – 80% of MCL
- Average section detection 80 – 100% of MCL
- Recent MCL exceedances > 0, average section detection < MCL
- Recent MCL exceedances = 0, average section detection > MCL
- Recent MCL exceedances > 0, average section detection > MCL
- DWR Groundwater Basins (High- and Medium-Priority)

Notes

- All locations are approximate.
- Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per SWRCB, 2020. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections which have been flagged as having results above the MCL within the last two years.
- The MCL for arsenic is 10 ug/L.

Sources

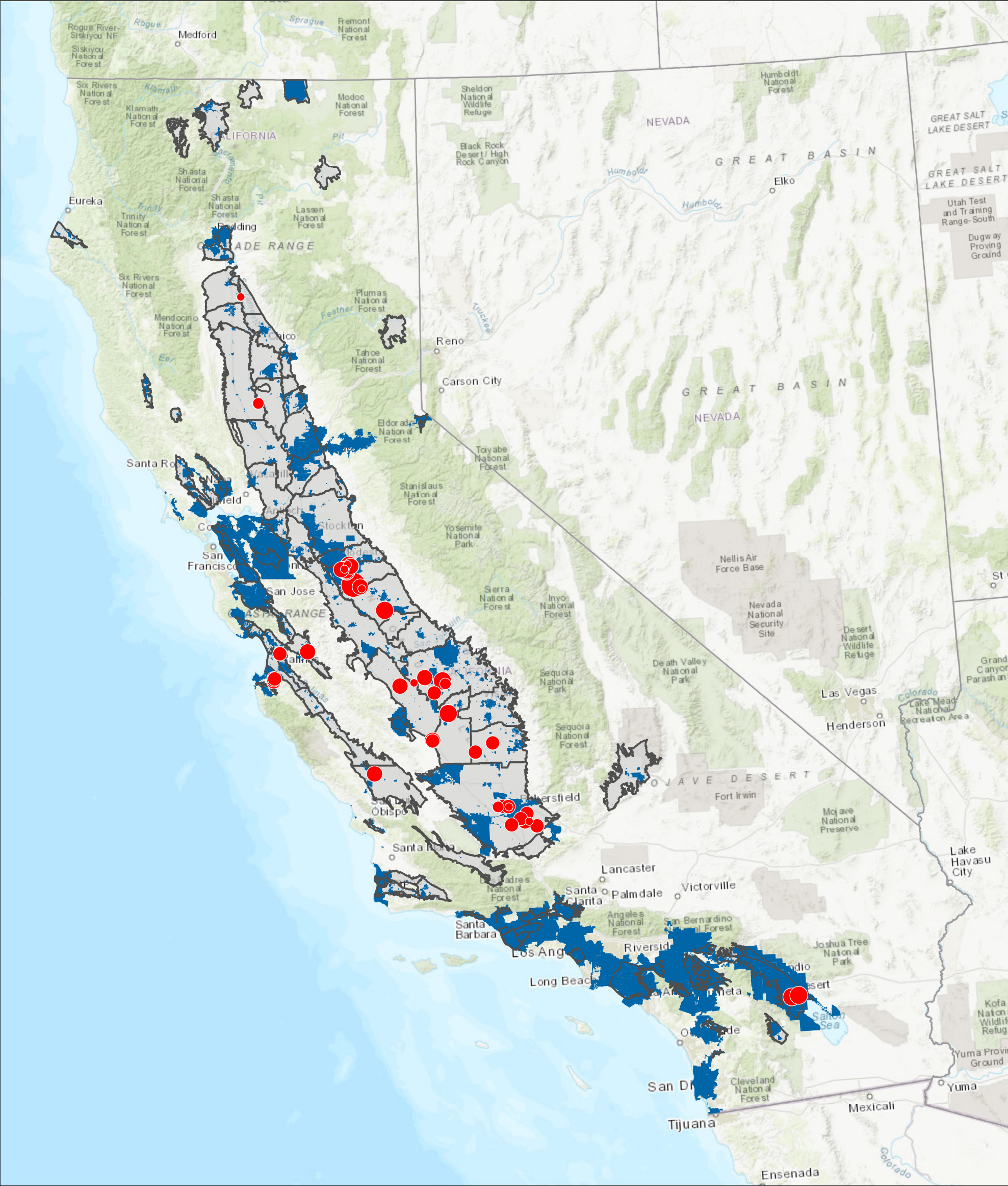
- Basemap provided by ESRI.
- SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool, <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

Abbreviations

DWR = Department of Water Resources
GAMA = Groundwater Ambient Monitoring and Assessment
MCL = maximum contaminant level
PLSS = Public Land Survey System
SMCL = secondary maximum contaminant level
SWRCB = State Water Resources Control Board
ug/L = micrograms per liter

Scale

0 60 120
(Scale in Miles)



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Public Water Systems

Number of Violations for Arsenic in 2018 (SWRCB, 2018)

1

5

10

Abbreviations

DWR = Department of Water Resources

MCL = maximum contaminant level

PWS = public water system

SWRCB = State Water Resources Control Board

ug/L = micrograms per liter

Notes

1. All locations are approximate.

2. Number of violations of the arsenic MCL of 10 ug/L by PWS are shown based on SWRCB, 2018.

Sources

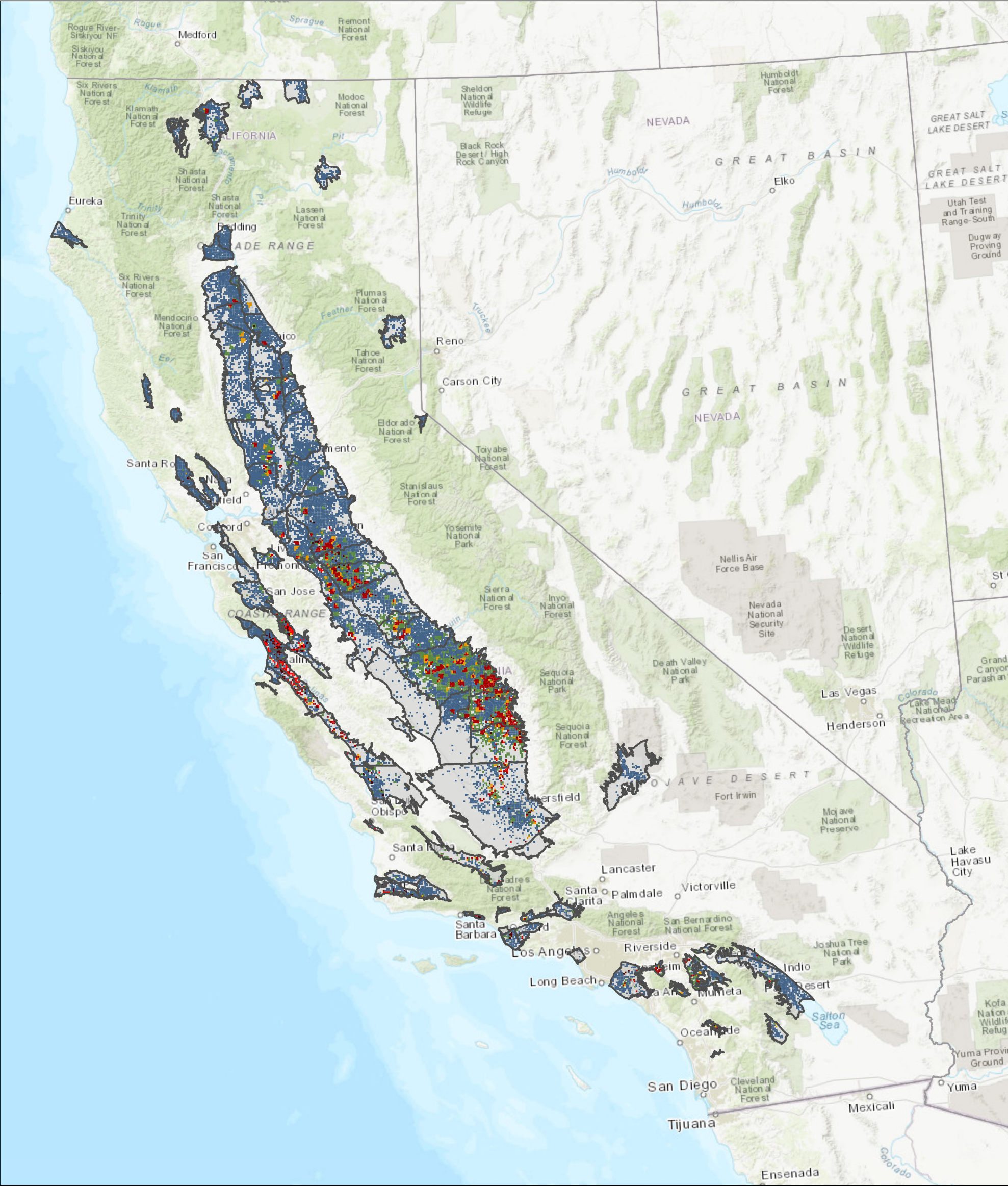
1. Basemap provided by ESRI.

2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Public Water Systems With Arsenic MCL Violations in 2018

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Figure 2b

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Legend

DWR Groundwater Basins (High- and Medium-Priority)

Water Quality Grade

Unknown water quality (no data available)

Average section detection <50% of MCL

Average section detection between 50 – 80% of MCL

Average section detection 80 – 100% of MCL

Recent MCL exceedances > 0, average section detection < MCL

Recent MCL exceedances = 0, average section detection > MCL

Recent MCL exceedances > 0, average section detection > MCL

Notes

1. All locations are approximate.

2. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per SWRCB, 2020. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections which have been flagged as having results above the MCL within the last two years.

3. The MCL for nitrate as nitrogen is 10 mg/L.

Sources

1. Basemap provided by ESRI.

2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool, <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

Abbreviations

DWR = Department of Water Resources

GAMA = Groundwater Ambient Monitoring and Assessment

MCL = maximum contaminant level

PLSS = Public Land Survey System

SMCL = secondary maximum contaminant level

SWRCB = State Water Resources Control Board

mg/L = milligrams per liter

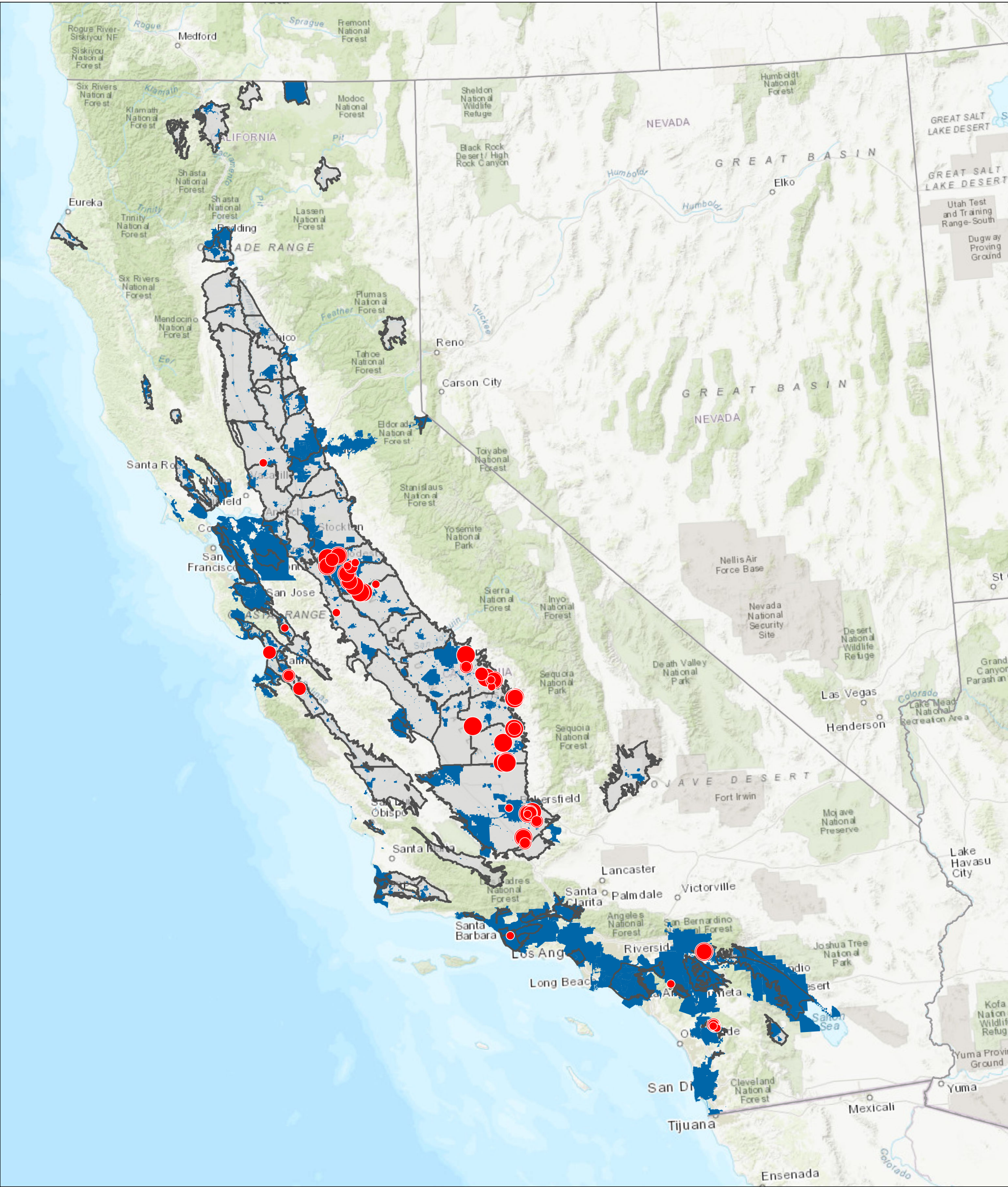
Scale

0 60 120

(Scale in Miles)

Impacts to Domestic Wells from Nitrate as Nitrogen Concentrations by PLSS Section

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Figure 3a



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Public Water Systems

Number of Violations for Nitrate as Nitrogen in 2018 (SWRCB, 2018)

1

3

5

Abbreviations

DWR = Department of Water Resources

MCL = maximum contaminant level

PWS = public water system

SWRCB = State Water Resources Control Board

mg/L = milligrams per liter

Notes

1. All locations are approximate.

2. Number of violations of the nitrate as nitrogen MCL of 10 mg/L by PWS are shown, based on SWRCB, 2018.

Sources

1. Basemap provided by ESRI.

2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

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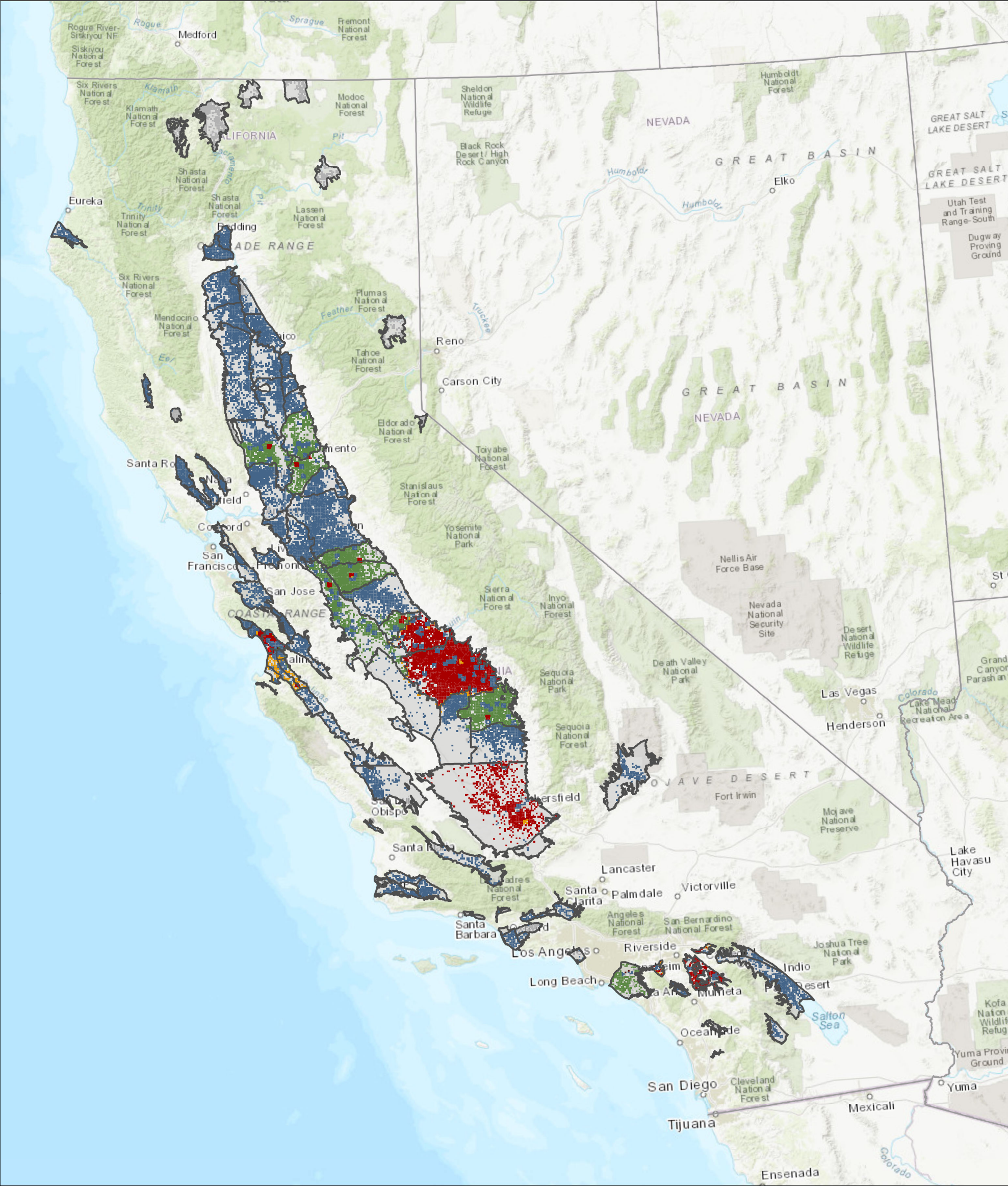
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(Scale in Miles)

Public Water Systems With Nitrate as Nitrogen MCL Violations in 2018

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Figure 3b

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Legend

DWR Groundwater Basins (High- and Medium-Priority)

Water Quality Grade

- Unknown water quality (no data available)
- Average section detection <50% of MCL
- Average section detection between 50 – 80% of MCL
- Average section detection 80 – 100% of MCL
- Recent MCL exceedances > 0, average section detection < MCL
- Recent MCL exceedances = 0, average section detection > MCL
- Recent MCL exceedances > 0, average section detection > MCL

Notes

- All locations are approximate.
- Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per SWRCB, 2020. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections which have been flagged as having results above the MCL within the last two years.
- The MCL for 1,2,3-trichloropropane is 0.005 ug/L.

Sources

- Basemap provided by ESRI.
- SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool, <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

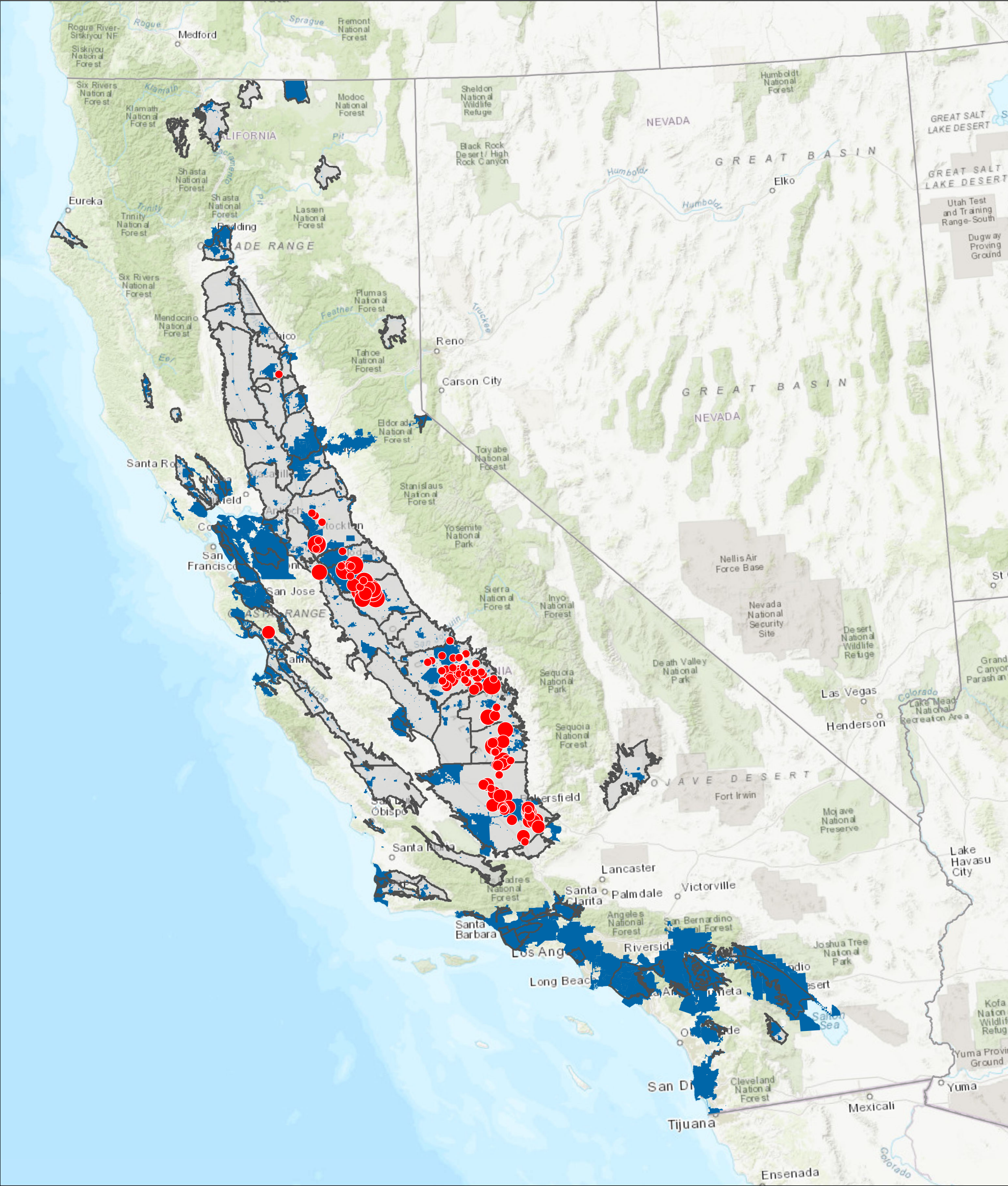
Abbreviations

DWR = Department of Water Resources
GAMA = Groundwater Ambient Monitoring and Assessment
MCL = maximum contaminant level
PLSS = Public Land Survey System
SMCL = secondary maximum contaminant level
SWRCB = State Water Resources Control Board
TCP = trichloropropane
ug/L = micrograms per liter

Scale

0 60 120
(Scale in Miles)

Impacts to Domestic Wells from 1,2,3-TCP Concentrations by PLSS Section
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Figure 4a



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Public Water Systems

Number of Violations for 1,2,3-TCP in 2018 (SWRCB, 2018)

1

3

5

Abbreviations

DWR = Department of Water Resources

MCL = maximum contaminant level

PWS = public water system

SWRCB = State Water Resources Control Board

TCP = trichloropropane

ug/L = micrograms per liter

Notes

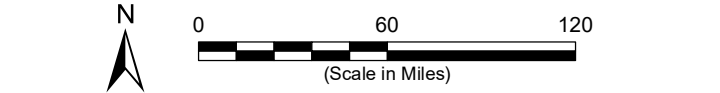
1. All locations are approximate.

2. Number of violations of the 1,2,3-TCP MCL of 0.005 ug/L by PWS are shown based on SWRCB, 2018.

Sources

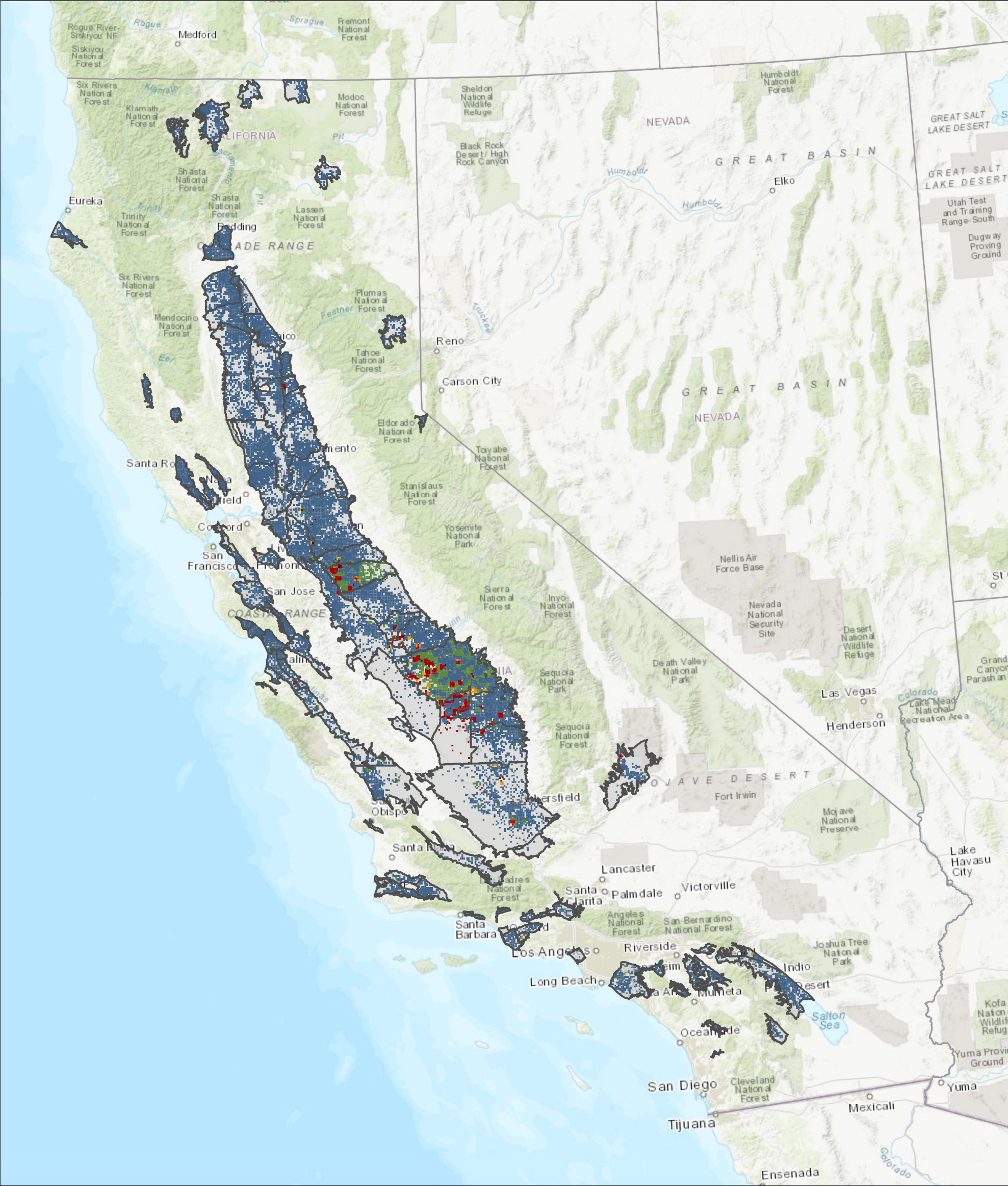
1. Basemap provided by ESRI.

2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf



Public Water Systems With
1,2,3-TCP MCL Violations in 2018

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Legend

DWR Groundwater Basins (High- and Medium-Priority)

Water Quality Grade

Unknown water quality (no data available)

Average section detection <50% of MCL

Average section detection between 50 – 80% of MCL

Average section detection 80 – 100% of MCL

Recent MCL exceedances > 0, average section detection < MCL

Recent MCL exceedances = 0, average section detection > MCL

Recent MCL exceedances > 0, average section detection > MCL

Notes

1. All locations are approximate.

2. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per SWRCB, 2020. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections which have been flagged as having results above the MCL within the last two years.

3. The MCL for uranium is 20 pCi/L.

Sources

1. Basemap provided by ESRI.

2. SWRCB 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool, <https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

Abbreviations

DWR = Department of Water Resources

GAMA = Groundwater Ambient Monitoring and Assessment

MCL = maximum contaminant level

PLSS = Public Land Survey System

SMCL = secondary maximum contaminant level

SWRCB = State Water Resources Control Board

pCi/L = picocurie per liter

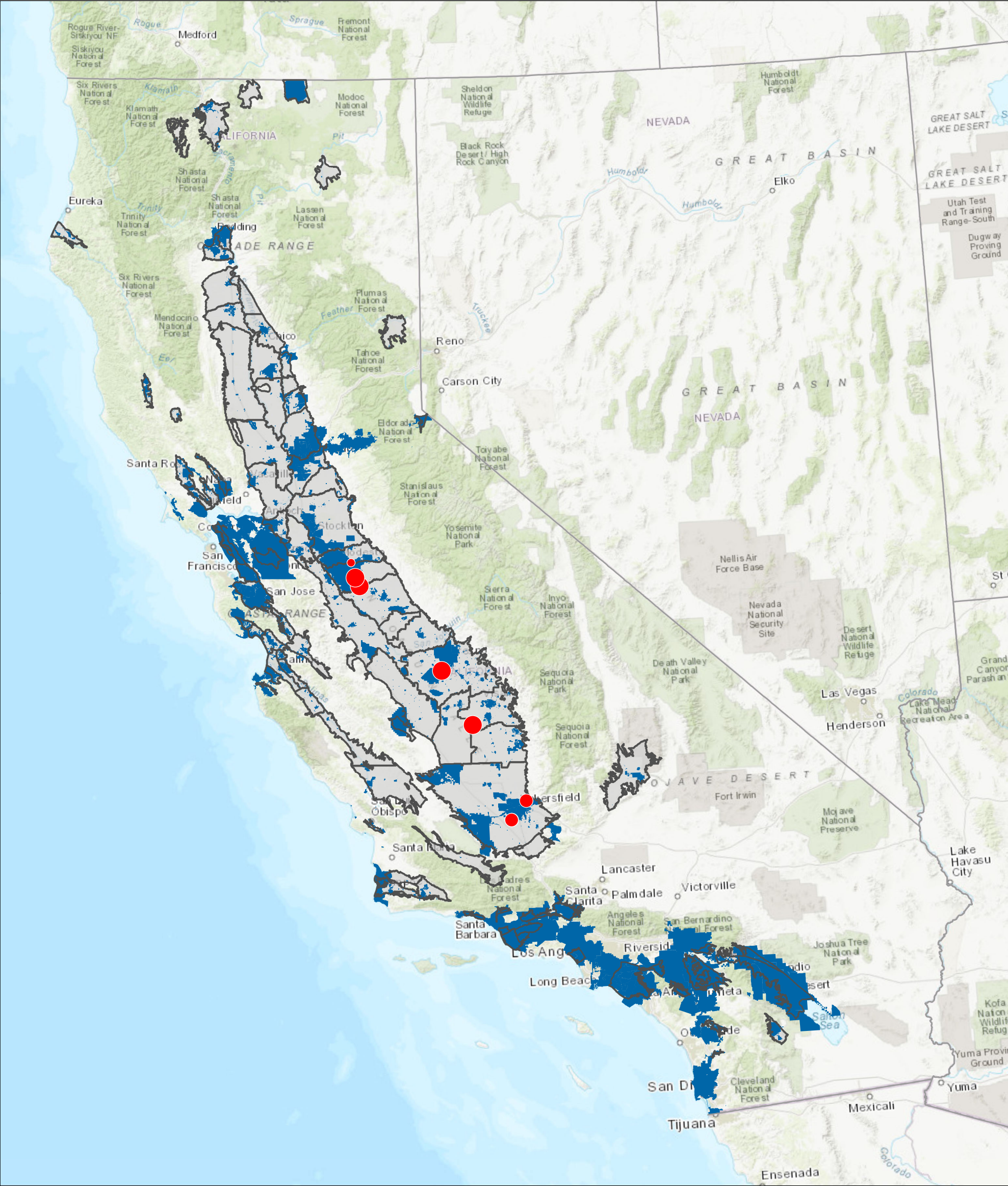
Scale

0 60 120

(Scale in Miles)

Impacts to Domestic Wells from Uranium Concentrations by PLSS Section

Water Foundation
October 2020
EKI B90087.03
Figure 5a



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Public Water Systems

Number of Violations for Uranium in 2018 (SWRCB, 2018)

1

3

5

Abbreviations

DWR = Department of Water Resources

MCL = maximum contaminant level

PWS = public water system

SWRCB = State Water Resources Control Board

pCi/L = picocurie per liter

Notes

1. All locations are approximate.

2. Number of violations of the uranium MCL of 20 pCi/L by PWS are shown, based on SWRCB, 2018.

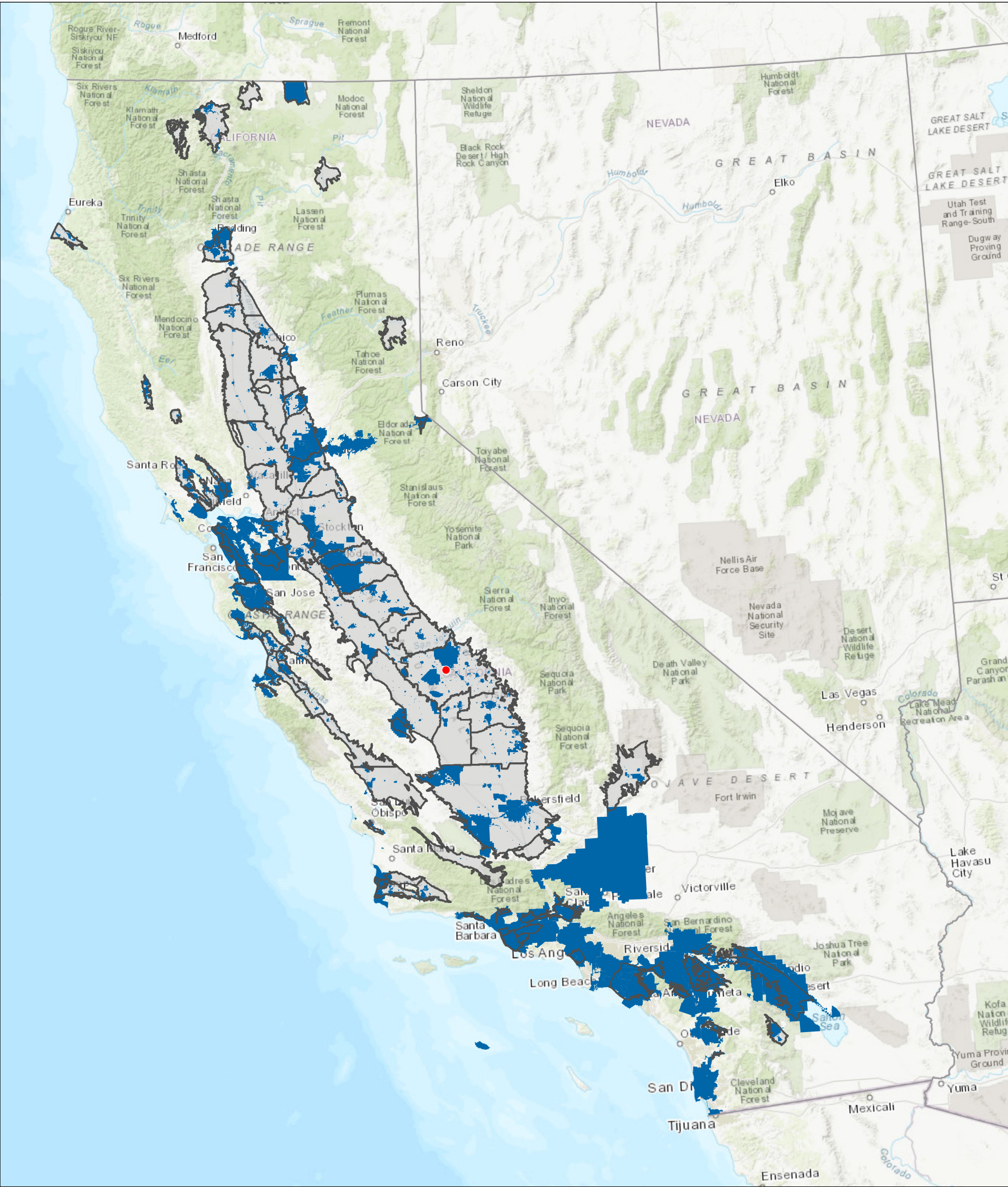
Sources

1. Basemap provided by ESRI.

2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Public Water Systems With Uranium MCL Violations in 2018

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October 2020
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Figure 5b



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Public Water Systems

Number of Violations for DBCP in 2018 (SWRCB, 2018)

1

3

5

Abbreviations

DBCP = 1,2-Dibromo-3-chloropropane

DWR = Department of Water Resources

MCL = maximum contaminant level

PWS = public water system

SWRCB = State Water Resources Control Board

ug/L = micrograms per liter

Notes

1. All locations are approximate.

2. Number of violations of the DBCP MCL of 2 ug/L by PWS are shown, based on SWRCB, 2018.

Sources

1. Basemap provided by ESRI.

2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

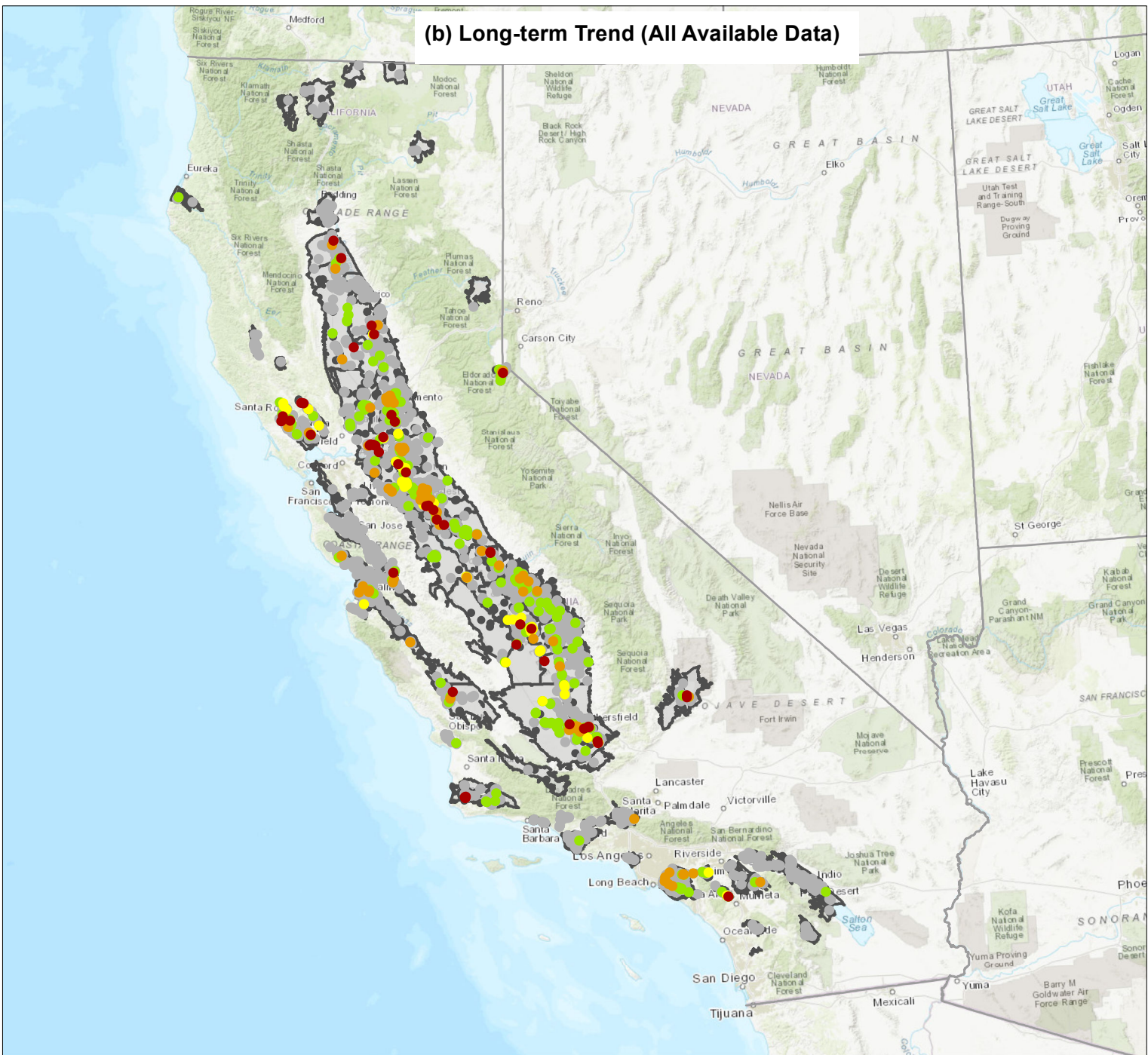
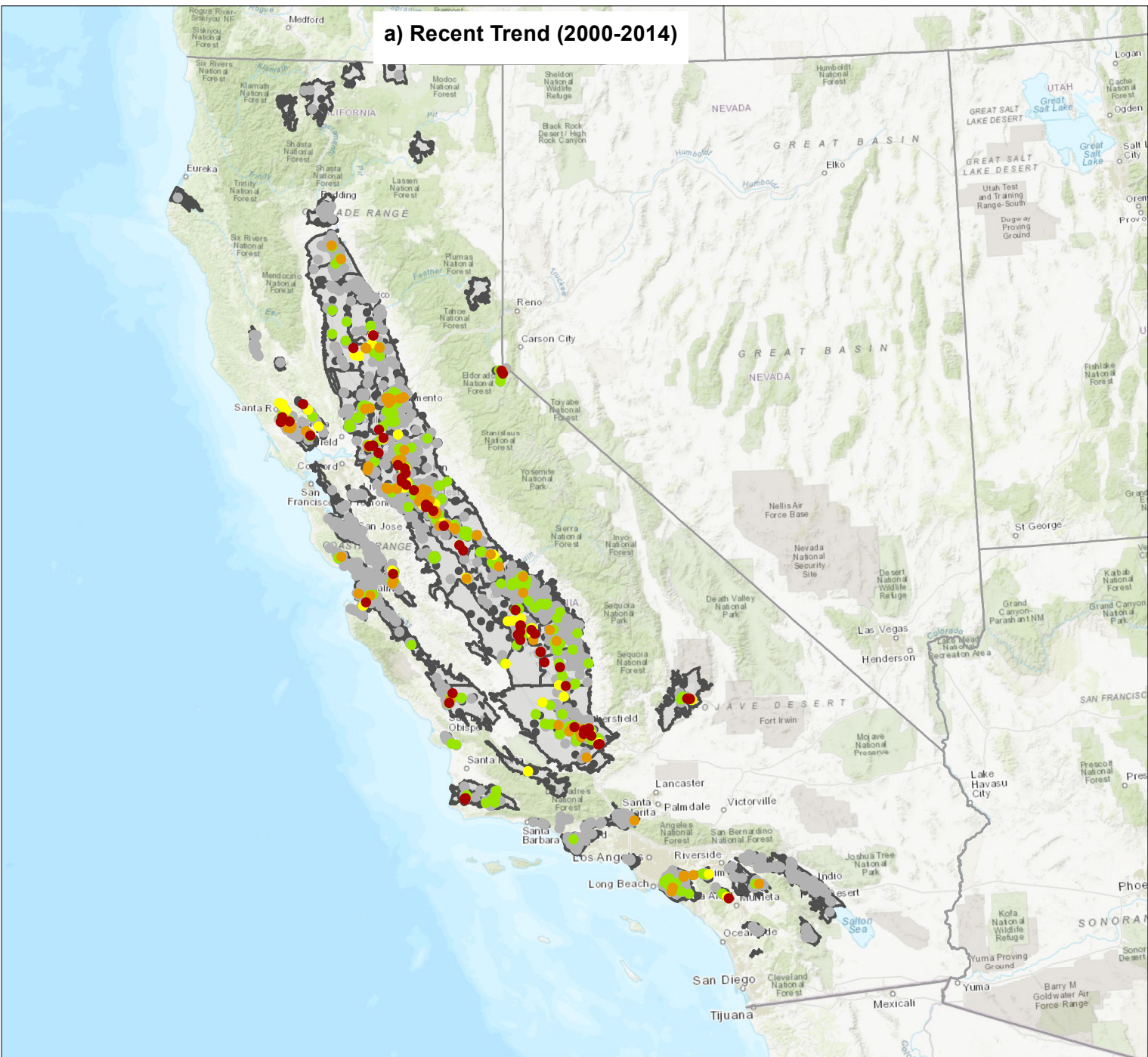
Public Water Systems With DBCP MCL Violations in 2018

Water Foundation
October 2020
EKI B90087.03
Figure 6

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Legend

 DWR Groundwater Basins (High- and Medium-Priority)

Arsenic Concentration Trend (USGS, 2019)

-  Recent concentration above MCL and Increasing Trend
-  Recent concentration below MCL and Increasing Trend
-  Recent concentration above MCL and Decreasing Trend
-  Recent concentration below MCL and Decreasing Trend
-  Not Statistically Significant
-  Not Tested (Insufficient Data)

Abbreviations

DWR = California Department of Water Resources
MCL = maximum contaminant level
ug/L = micrograms per liter

Notes

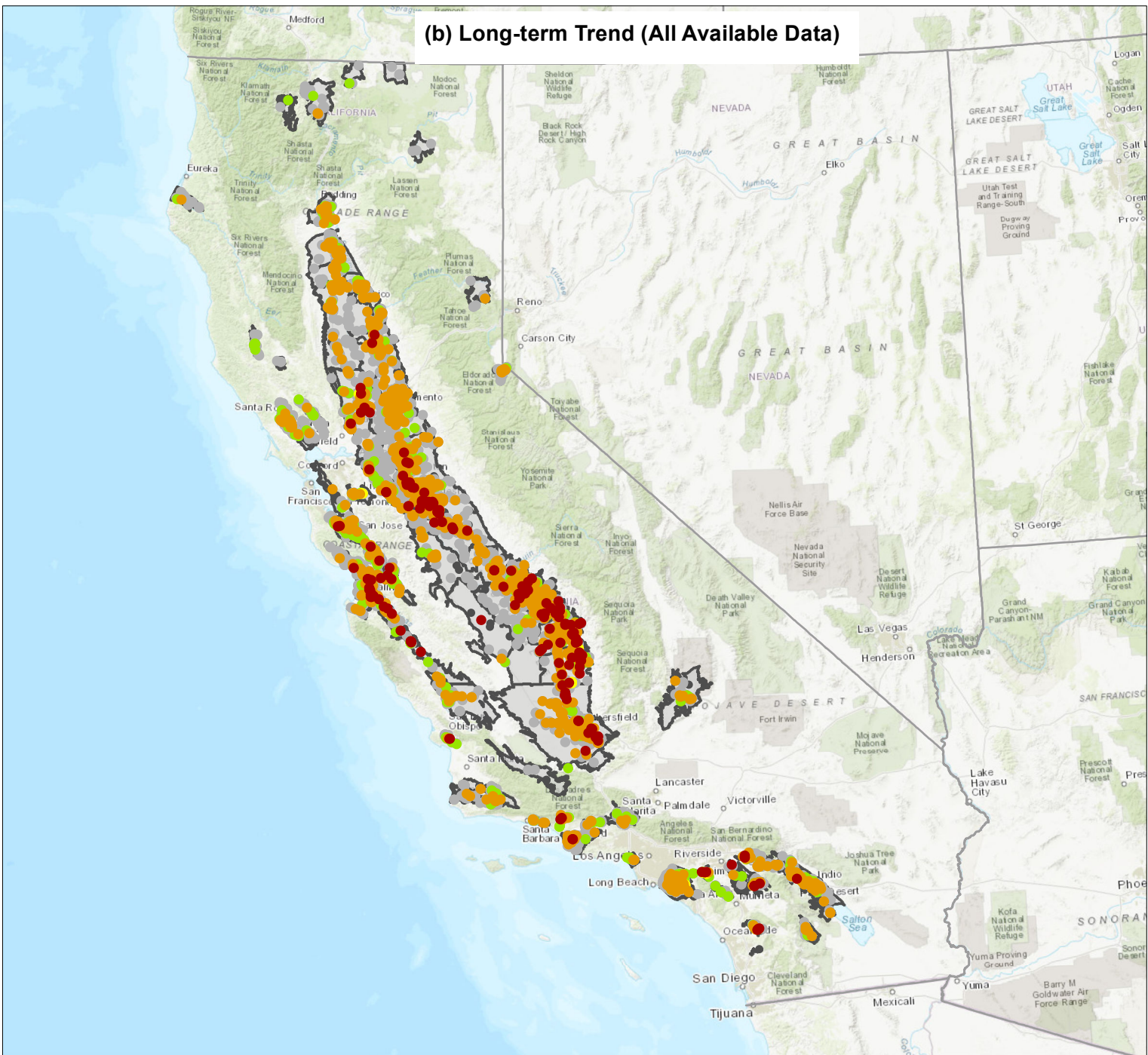
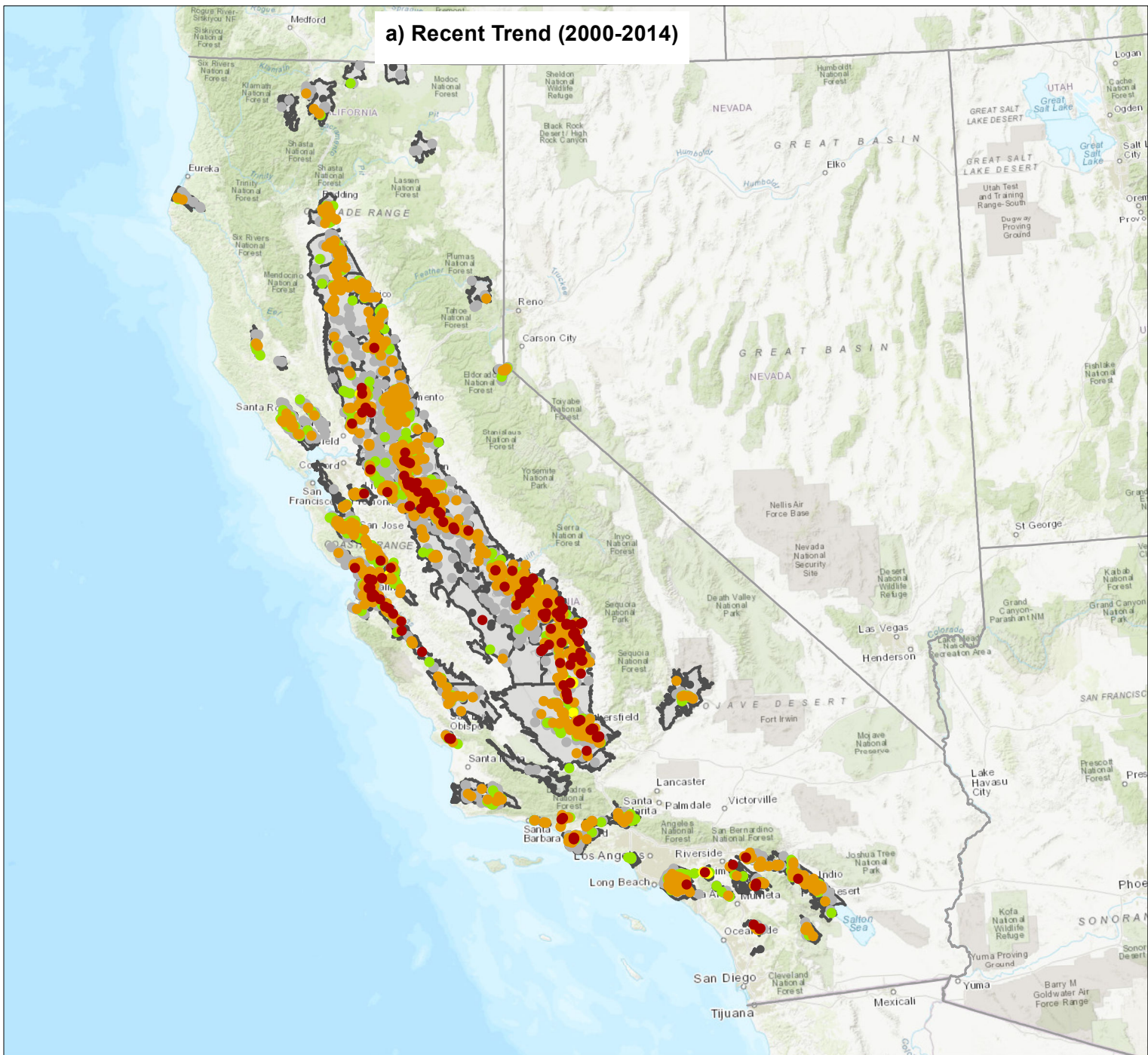
1. All locations are approximate.
2. Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
3. The MCL for arsenic is 10 ug/L.

Sources

1. Basemap provided by ESRI.
2. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.



Arsenic Concentration Trends in Public Supply Wells



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Nitrate as Nitrogen Concentration Trend (USGS, 2019)

- Recent concentration above MCL and Increasing Trend
- Recent concentration below MCL and Increasing Trend
- Recent concentration above MCL and Decreasing Trend
- Recent concentration below MCL and Decreasing Trend
- Not Statistically Significant
- Not Tested (Insufficient Data)

Abbreviations

DWR = California Department of Water Resources
MCL = maximum contaminant level
mg/L = milligrams per liter

Notes

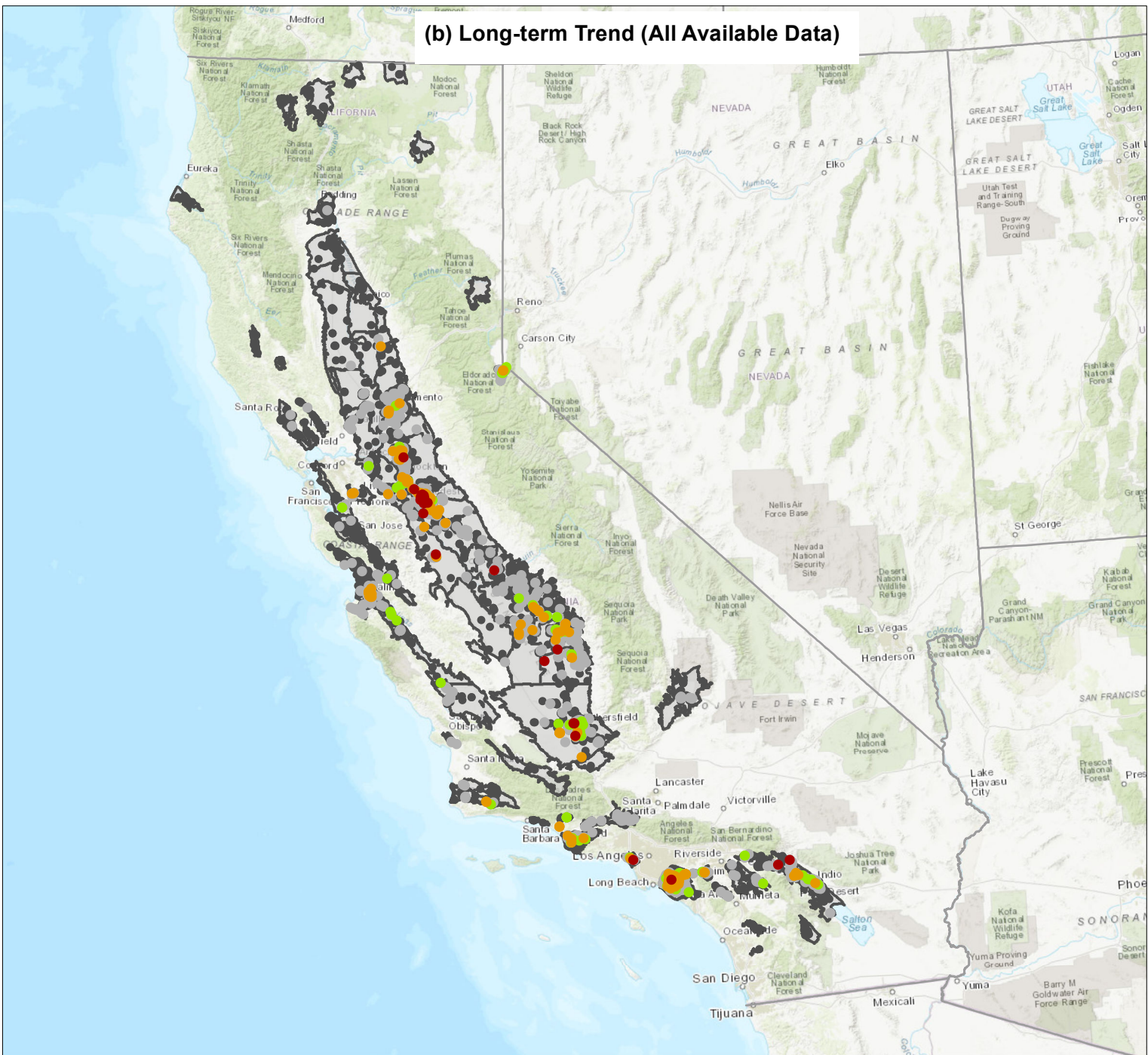
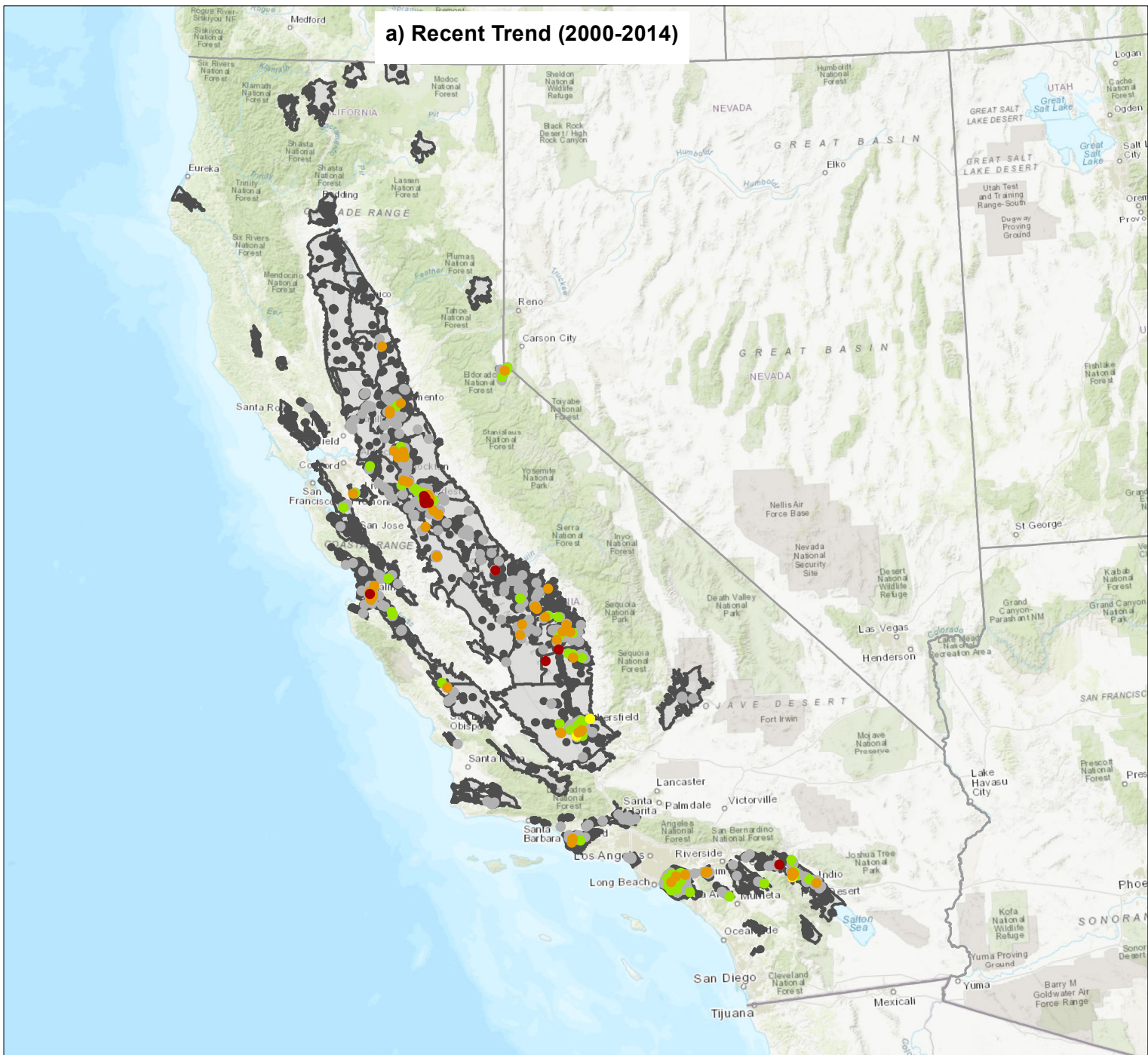
1. All locations are approximate.
2. Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
3. The MCL for nitrate as nitrogen is 10 mg/L.

Sources

1. Basemap provided by ESRI.
2. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.



Nitrate as Nitrogen Concentration Trends in Public Supply Wells



Legend

DWR Groundwater Basins (High- and Medium-Priority)

Uranium Concentration Trend (USGS, 2019)

- Recent concentration above MCL and Increasing Trend
- Recent concentration below MCL and Increasing Trend
- Recent concentration above MCL and Decreasing Trend
- Recent concentration below MCL and Decreasing Trend
- Not Statistically Significant
- Not Tested (Insufficient Data)

Abbreviations

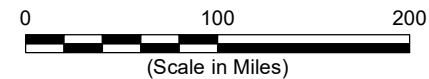
DWR = California Department of Water Resources
MCL = maximum contaminant level
ug/L = micrograms per liter

Notes

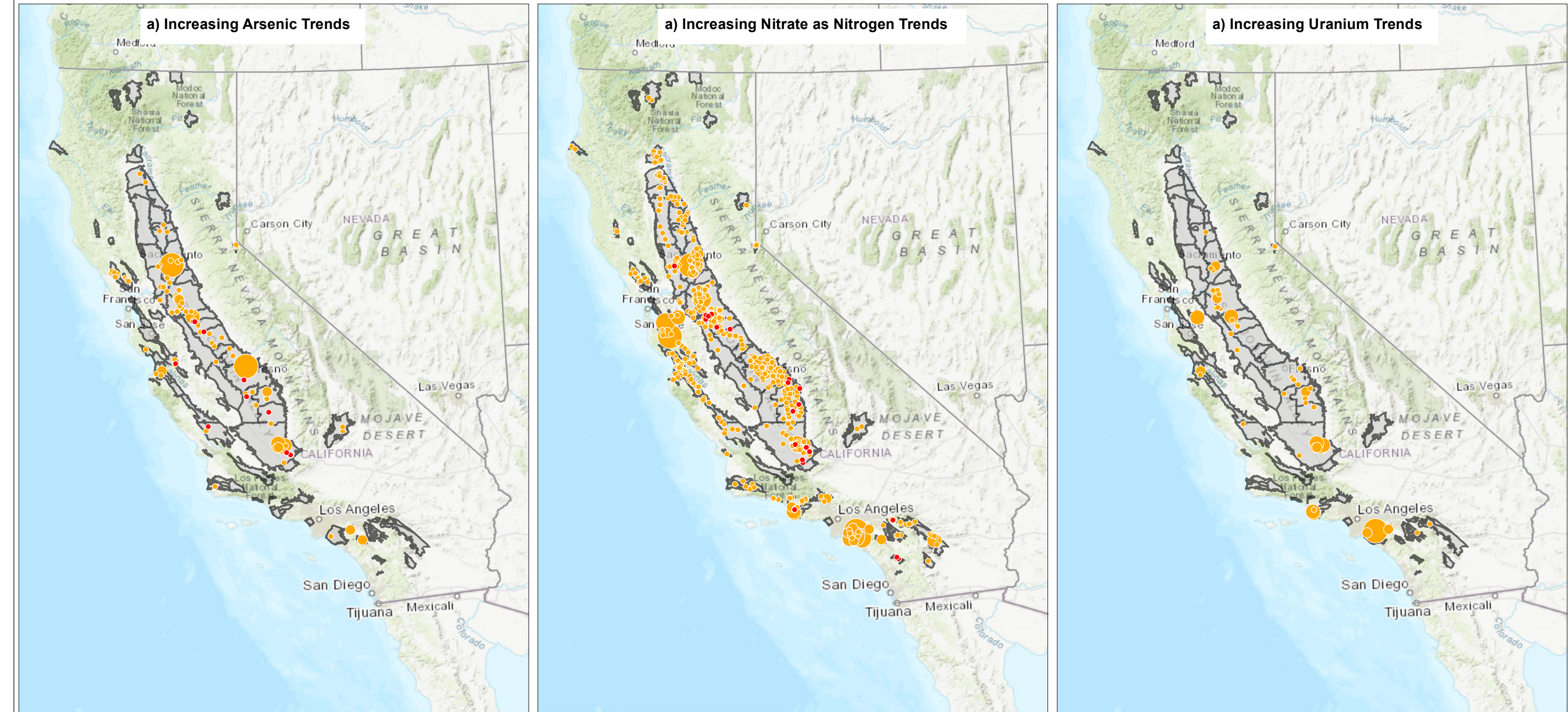
1. All locations are approximate.
2. Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
3. The MCL for uranium is 20 pCi/L.

Sources

1. Basemap provided by ESRI.
2. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.



Uranium Concentration Trends in Public Supply Wells



Legend

■ DWR Groundwater Basins (High- and Medium-Priority)

Population of PWS with Increasing Concentration Trends

PWS With MCL Violation(s) in 2018	PWS with no MCL Violations in 2018
● 1 - 100,000	● 1 - 100,000
● 100,001 - 200,000	● 100,001 - 200,000
● 200,001 - 300,000	● 200,001 - 300,000
● 300,001 - 400,000	● 300,001 - 400,000
● >400,000	● >400,000

Abbreviations

GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
PWS = public water system
SWRCB = State Water Resources Control Board
USGS = United States Geological Survey

Notes

1. All locations are approximate.
2. Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Recent trends were calculated based on water quality data collected from 2000 through 2014.
3. Public water systems that had one or more wells with an identified increasing trend are plotted. Dot size represents the population served by each public water system, per Reference 3. Wells with increasing trends include both those that have recently had concentrations above MCLs and those that are below MCLs.

Sources

1. Basemap provided by ESRI.
2. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
3. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf



Public Water System Population with Recent Increasing Concentration Trends

Path: X:\B90087.03\Maps\202010\Fig8_Trends_Population.mxd

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	9,506	21,462	30,968
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	2,466	20,157	22,623
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	1,572	14,894	16,466
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	13,737	0	13,737
City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	12,201	0	12,201
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	0	11,813	11,813
Greenfield County Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	272	9,900	10,172
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	6,814	0	6,814
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	5,475	0	5,475
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	958	2,653	3,611
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	3,568	0	3,568
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	64	3,310	3,374
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	2,122	320	2,442
Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	2,127	210	2,337
Southwest Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	1,800	1,800
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1,092	700	1,792
McMullin Area GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1,516	60	1,576
Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	704	582	1,286
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	1,125	0	1,125
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1,069	0	1,069
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	961	100	1,061
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Los Molinos	5-021.56	Medium	846	205	1,051
Alpaugh GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	9	1,026	1,035
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	1,017	0	1,017

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	949	0	949
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	882	0	882
Butte Water District GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	850	0	850
Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	830	0	830
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	812	0	812
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	804	0	804
Sutter Extension Water District GSA	Sacramento Valley - Sutter	5-021.62	Medium	713	0	713
Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	313	381	694
County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	691	0	691
County of Sacramento GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	684	0	684
Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	0	614	614
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	606	0	606
City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	571	0	571
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	509	53	562
El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	543	0	543
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	516	0	516
Reclamation District No. 70 GSA	Sacramento Valley - Sutter	5-021.62	Medium	452	0	452
Galt Irrigation District GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	440	0	440
Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	419	0	419
City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	414	0	414
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Red Bluff	5-021.50	Medium	364	0	364
Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	348	0	348
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	314	0	314
Reclamation District No. 1500 GSA	Sacramento Valley - Sutter	5-021.62	Medium	308	0	308

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	275	0	275
County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	260	0	260
County of Merced GSA - Delta-Mendota	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	240	0	240
Vina GSA	Sacramento Valley - Vina	5-021.57	High	233	0	233
East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	226	0	226
Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	219	0	219
Reclamation District No. 369 GSA	Sacramento Valley - South American	5-021.65	High	198	0	198
Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	196	0	196
South Delta Water Agency GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	190	0	190
Reclamation District No. 1001 GSA	Sacramento Valley - North American	5-021.64	High	176	0	176
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	166	0	166
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	161	0	161
City of Galt GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	151	0	151
Reclamation District No. 3 GSA	Sacramento Valley - Solano	5-021.66	Medium	137	0	137
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	133	0	133
Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	118	0	118
County of Contra Costa GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	114	0	114
Tri-County Water Authority GSA - Tule	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	109	0	109
County of Butte GSA - Butte 1	Sacramento Valley - Butte	5-021.70	Medium	108	0	108
Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	101	0	101
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	97	0	97

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Petaluma Valley GSA	Petaluma Valley	2-001	Medium	91	0	91
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	88	0	88
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	87	0	87
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	82	0	82
Cuyama Basin GSA	Cuyama Valley	3-013	High-critically overdraft	70	0	70
Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	69	0	69
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	59	0	59
Diablo Water District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	56	0	56
North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	52	0	52
South Sutter Water District GSA	Sacramento Valley - North American	5-021.64	High	52	0	52
County of Sacramento GSA - Solano	Sacramento Valley - Solano	5-021.66	Medium	45	0	45
Richvale Irrigation District GSA	Sacramento Valley - Butte	5-021.70	Medium	42	0	42
City of Firebaugh GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	41	0	41
Reclamation District No. 551 GSA	Sacramento Valley - South American	5-021.65	High	38	0	38
Reclamation District No. 2106 GSA	Sacramento Valley - Butte	5-021.70	Medium	37	0	37
City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	33	0	33
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	32	0	32
County of Modoc GSA - Tulelake	Klamath River Valley - Tulelake	1-002.01	Medium	27	0	27
Central Delta Water Agency GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	25	0	25
Buena Vista Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	25	0	25
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	25	0	25
Amador County Groundwater Management Authority GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	25	0	25
DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	22	0	22

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	21	0	21
Reclamation District No. 2110 GSA	Sacramento Valley - South American	5-021.65	High	21	0	21
County of Madera GSA - Delta-Mendota	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	20	0	20
Reclamation District No. 1002 GSA	Sacramento Valley - South American	5-021.65	High	20	0	20
Reclamation District No. 501 GSA	Sacramento Valley - Solano	5-021.66	Medium	16	0	16
Reclamation District No. 1660 GSA	Sacramento Valley - Sutter	5-021.62	Medium	12	0	12
Reclamation District No. 1004 GSA - Butte 1	Sacramento Valley - Butte	5-021.70	Medium	10	0	10
Tulelake Irrigation District GSA	Klamath River Valley - Tulelake	1-002.01	Medium	6	0	6
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	5	0	5
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	5	0	5
Biggs-West Gridley Water District GSA	Sacramento Valley - Butte	5-021.70	Medium	3	0	3
County of Madera GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	3	0	3
Cordua Irrigation District GSA	Sacramento Valley - North Yuba	5-021.60	Medium	3	0	3
County of Glenn GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	3	0	3
Tri-County Water Authority GSA - Tulare Lake	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	1	0	1
Total Estimated Affected Population				87,432	90,240	177,672

Table 2a
Estimated Population with Arsenic Impacts above MCLs in Drinking Water Supply
Water Foundation

Abbreviations:

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

SMCL = secondary maximum contaminant level

ug/L = micrograms per liter

Notes:

(a) Only GSAs with identified impacts are shown herein. The MCL for arsenic is 10 ug/L.

(b) Domestic well population estimated based on the UC Berkeley Water Equity Science Shop, per Reference 3, and estimated water quality per Reference 2. Areas with domestic wells given a water quality grade of 4 or higher, based on Reference 2, are included in the estimated domestic well population. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per Reference 2. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections that have been flagged as having results above the MCL within the last two years.

(c) Estimated population was summarized for public water systems population within each GSA for public water systems that incurred violations of the arsenic MCL in 2018, per Reference 1.

(d) Some GSAs are located within multiple DWR groundwater subbasins. For the purposes of this study, population is summarized by GSA only.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool,

<https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

3. UC Berkeley WESS, 2020. Locating Domestic Well Communities in California: A Methodological Overview, Domestic Well Layer (version 1.0), UC Berkeley Water Equity Science Shop, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch, updated 14 January 2020.

Table 2b
Public Water Systems with Arsenic Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Arsenic Violations (b)
Alpaugh GSA	ALPAUGH COMMUNITY SERVICES DISTRICT	Community	1,026	3
Central Kings GSA	CAMPOS BROS. FARMS	Non-Transient Non-Community	150	2
Central Kings GSA	CARUTHERS COMM SERV DIST	Community	2,503	5
Coachella Valley Water District GSA - Indio	SAINT ANTHONY TRAILER PARK	Community	300	5
Coachella Valley Water District GSA - Indio	OASIS GARDENS WATER CO.	Community	314	5
Colusa Groundwater Authority GSA - Colusa	COLUSA CO. WWD #1 - GRIMES	Community	381	2
County of San Luis Obispo GSA - Paso Robles Area	PLEASANT VALLEY ELEMENTARY	Non-Transient Non-Community	100	4
Greenfield County Water District GSA	GREENFIELD COUNTY WD	Community	9,900	3
Kern Groundwater Authority GSA	MAHER MUTUAL WATER COMPANY	Community	150	3
Kern Groundwater Authority GSA	BROCK MUTUAL WATER COMPANY	Community	511	1
Kern Groundwater Authority GSA	ENOS LANE PUBLIC UTILITY DISTRICT	Community	270	2
Kern Groundwater Authority GSA	NORD ROAD WATER ASSOCIATION	Community	32	3
Kern Groundwater Authority GSA	ARVIN COMMUNITY SERVICES DIST	Community	20,499	3
Kern River GSA	EL ADOBE POA, INC.	Community	200	3
Kern River GSA	OASIS PROPERTY OWNERS ASSOCIATION	Community	100	3
Kern River GSA	LAKESIDE SCHOOL	Non-Transient Non-Community	800	3
Kern River GSA	LAMONT PUBLIC UTILITY DIST	Community	19,057	1
McMullin Area GSA	JOHANN DAIRY	Non-Transient Non-Community	60	4
Merced Irrigation-Urban GSA	CITY OF LIVINGSTON	Community	14,894	1

Table 2b
Public Water Systems with Arsenic Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Arsenic Violations (b)
Merced Subbasin GSA	YOSEMITE VALLEY BEEF PACKING CO INC	Non-Transient Non-Community	53	5
North Fork Kings GSA	LANARE COMMUNITY SERVICES DIST	Community	660	3
North Fork Kings GSA	TRUE ORGANIC PRODUCTS	Non-Transient Non-Community	40	1
Pixley Irrigation District GSA	PIXLEY PUBLIC UTIL DIST	Community	3,310	3
Salinas Valley Basin GSA - Langley Area	MORO RD WS #09	Community	210	3
Salinas Valley Basin GSA - Monterey	CORRAL DE TIERRA ESTATES WC	Community	45	3
Salinas Valley Basin GSA - Monterey	VISTA DEL TORO WS	Community	87	3
Salinas Valley Basin GSA - Monterey	WASHINGTON SCHOOL WS	Non-Transient Non-Community	250	3
Salinas Valley Basin GSA - Monterey	CYPRESS COMMUNITY CHURCH WS	Non-Transient Non-Community	200	3
South Fork Kings GSA	CENTRAL UNION ELEMENTARY	Non-Transient Non-Community	320	5
Southwest Kings GSA	KETTLEMAN CITY ELEMENTARY	Non-Transient Non-Community	350	4
Southwest Kings GSA	KETTLEMAN CITY CSD	Community	1,450	3
Tehama County Flood Control and Water Conservation District GSA	NEW ORCHARD MOBILE HOME PARK LLC	Community	125	1
Tehama County Flood Control and Water Conservation District GSA	MILLSTREAM MOBILE HOME PARK	Community	80	1
West Turlock Subbasin GSA	FOSTER FARMS DELHI FEEDMILL COLLIER ROAD	Non-Transient Non-Community	135	4

Table 2b
Public Water Systems with Arsenic Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Arsenic Violations (b)
West Turlock Subbasin GSA	GEMPERLE EGG RANCH	Non-Transient Non-Community	55	9
West Turlock Subbasin GSA	COBLES CORNER	Community	50	4
West Turlock Subbasin GSA	MOBILE PLAZA PARK	Community	125	4
West Turlock Subbasin GSA	ORCHARD VILLAGE MHP	Community	75	1
West Turlock Subbasin GSA	CERES WEST MHP	Community	161	4
West Turlock Subbasin GSA	GREEN RUN MOBILE ESTATES	Community	100	4
West Turlock Subbasin GSA	COUNTRYSIDE MHP	Community	60	4
West Turlock Subbasin GSA	COUNTRY VILLA APTS	Community	30	4
West Turlock Subbasin GSA	DUARTE NURSERY INC WATER SYSTEM	Non-Transient Non-Community	75	1
West Turlock Subbasin GSA	GOLDEN STATE PFT PROPERTIES LLC	Non-Transient Non-Community	35	4
West Turlock Subbasin GSA	INTERSTATE TRUCK CENTER VALLEY PETERBILT	Non-Transient Non-Community	25	4
West Turlock Subbasin GSA	HUGHSON, CITY OF	Community	6,082	5
West Turlock Subbasin GSA	KEYES COMMUNITY SERVICES DIST.	Community	4,805	5

Abbreviations:

CSD = Community Services District
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
MHP = mobile home park
SGMA = Sustainable Groundwater Management Act
WD = water district

Table 2b
Public Water Systems with Arsenic Impacts above MCLs in 2018
Water Foundation

Notes:

(a) Only public water systems located within basins subject to SGMA (i.e, prioritized as medium or high by DWR) are shown herein.

(b) Arsenic violations by public water systems in 2018 and population supplied are based on Reference 1.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	18,619	0	18,619
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	7,551	2,002	9,553
East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	7,794	0	7,794
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	7,071	509	7,580
Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	6,466	553	7,019
Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	6,795	45	6,840
Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	5,318	200	5,518
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	4,271	25	4,296
City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	3,731	0	3,731
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	3,662	0	3,662
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	3,023	483	3,506
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	3,378	0	3,378
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	2,696	302	2,998
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	2,906	50	2,956
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	1,755	1,175	2,930
Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	2,557	0	2,557
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	2,016	350	2,366
Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	16	1,820	1,836
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	1,546	65	1,611
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	1,369	0	1,369
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	1,358	0	1,358

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	965	245	1,210
Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey Valley	9-007.01	Medium	212	930	1,142
Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	1,074	0	1,074
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	795	0	795
Byron-Bethany Irrigation District GSA - East Contra Costa	San Joaquin Valley - East Contra Costa	5-022.19	Medium	732	0	732
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	706	0	706
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	640	0	640
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	588	0	588
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	486	64	550
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	407	100	507
Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	506	0	506
McMullin Area GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	503	0	503
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	489	0	489
Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	145	304	449
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	399	0	399
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Red Bluff	5-021.50	Medium	85	0	85
	Sacramento Valley - Corning	5-021.51	High	302	0	302
Vina GSA	Sacramento Valley - Vina	5-021.57	High	379	0	379

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	307	0	307
County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	301	0	301
Sutter Extension Water District GSA	Sacramento Valley - Sutter	5-021.62	Medium	253	0	253
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	247	0	247
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	233	0	233
Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	3	200	203
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	197	0	197
West Placer GSA	Sacramento Valley - North American	5-021.64	High	191	0	191
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	185	0	185
County of Contra Costa GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	176	0	176
West Stanislaus Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	161	0	161
East Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	159	0	159
Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	125	0	125
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	117	0	117
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	110	0	110
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	107	0	107
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	104	0	104
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	103	0	103
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	99	0	99

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	99	0	99
Cuyama Basin GSA	Cuyama Valley	3-013	High-critically overdraft	89	0	89
South Delta Water Agency GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	89	0	89
Big Valley GSA	Big Valley	5-015	Medium	86	0	86
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	81	0	81
Arroyo Seco GSA - 1	Salinas Valley - Forebay Aquifer	3-004.04	Medium	57	0	57
Central Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	54	0	54
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	53	0	53
City of San Luis Obispo GSA	San Luis Obispo Valley	3-009	High	53	0	53
DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	44	0	44
Fox Canyon Groundwater Management Agency GSA - Pleasant Valley	Pleasant Valley	4-006	High-critically overdraft	33	0	33
County of Madera GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	32	0	32
Arroyo Seco GSA - 2	Salinas Valley - Forebay Aquifer	3-004.04	Medium	31	0	31
Discovery Bay Community Services District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	30	0	30
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	26	0	26
Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	22	0	22
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	18	0	18
Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	18	0	18
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	16	0	16
Siskiyou County Flood Control and Water Conservation District GS	Butte Valley, Shasta Valley, Scott River Valley	1-003, 1-004, 1-005	Medium	14	0	14

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Cawelo Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	11	0	11
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	6	0	6
Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	3	0	3
Central Delta Water Agency GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	2	0	2
Patterson Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	0	1
Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	1	0	1
Total Estimated Affected Population				107,461	9,422	116,883

Table 3a
Estimated Population with Nitrate as Nitrogen Impacts above MCLs in Drinking Water Supply
Water Foundation

Abbreviations:

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

mg/L = milligrams per liter

SMCL = secondary maximum contaminant level

Notes:

(a) Only GSAs with identified impacts are shown herein. The MCL for nitrate as nitrogen is 10 mg/L.

(b) Domestic well population estimated based on the UC Berkeley Water Equity Science Shop, per Reference 3, and estimated water quality per Reference 2. Areas with domestic wells given a water quality grade of 4 or higher, based on Reference 2, are included in the estimated domestic well population. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per Reference 2. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections that have been flagged as having results above the MCL within the last two years.

(c) Estimated population was summarized for public water systems population within each GSA for public water systems that incurred violations of the nitrate as nitrogen MCL in 2018, per Reference 1.

(d) Some GSAs are located within multiple DWR groundwater subbasins. For the purposes of this study, population is summarized by GSA only.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool,

<https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

3. UC Berkeley WESS, 2020. Locating Domestic Well Communities in California: A Methodological Overview, Domestic Well Layer (version 1.0), UC Berkeley Water Equity Science Shop, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch, updated 14 January 2020.

Table 3b
Public Water Systems with Nitrate Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Nitrate Violations (b)
Central Kings GSA	KINGS RIVER WINERY	Transient Non-Community	50	2
Delano-Earlimart Irrigation District GSA	SIERRA VISTA ASSN	Community	44	5
Delano-Earlimart Irrigation District GSA	RODRIGUEZ LABOR CAMP	Community	110	5
Delano-Earlimart Irrigation District GSA	APTCO LLC	Non-Transient Non-Community	150	5
Eastern Tule GSA	SAUCELITO ELEMENTARY SCHOOL	Non-Transient Non-Community	98	5
Eastern Tule GSA	BEVERLY GRAND MUTUAL WATER	Community	108	5
Eastern Tule GSA	DEL ORO GRANDVIEW GARDENS DISTRICT	Community	347	3
Elsinore Valley GSA	GLEN EDEN SUN CLUB	Community	200	1
Fox Canyon Groundwater Management Agency GSA - Oxnard	VINEYARD AVENUE ACRES MWC	Community	1,820	1
Greater Kaweah GSA	LEMON COVE WATER CO	Community	109	4
Greater Kaweah GSA	SEQUOIA UNION SCHOOL	Non-Transient Non-Community	400	5
Kern Groundwater Authority GSA	SAN JOAQUIN ESTATES MUTUAL WATER COMPANY	Community	165	4
Kern Groundwater Authority GSA	HECK CELLARS WATER SYSTEM	Non-Transient Non-Community	47	2
Kern Groundwater Authority GSA	WILSON ROAD WATER COMMUNITY	Community	66	3
Kern Groundwater Authority GSA	WHEELER FARMS HEADQUARTERS	Non-Transient Non-Community	25	4
Kern Groundwater Authority GSA	METTLER COUNTY WATER DISTRICT	Community	157	2
Kern Groundwater Authority GSA	ORANGE GROVE RV PARK	Transient Non-Community	204	5
Kern Groundwater Authority GSA	BROCK MUTUAL WATER COMPANY	Community	511	1

Table 3b
Public Water Systems with Nitrate Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Nitrate Violations (b)
Kern River GSA	EAST WILSON ROAD WATER COMPANY	Community	35	4
Kern River GSA	WINI MUTUAL WATER COMPANY	Community	29	1
Kings River East GSA	GOLDEN STATE VINTNERS CUTLER	Non-Transient Non-Community	46	1
Kings River East GSA	EAST OROSI CSD	Community	700	4
Kings River East GSA	DINO MART 1	Transient Non-Community	25	3
Kings River East GSA	GLEANINGS FOR THE HUNGRY	Community	31	5
Kings River East GSA	OROSI HIGH SCHOOL	Non-Transient Non-Community	1,200	1
Merced Irrigation-Urban GSA	YAGI BROTHERS PRODUCE INC.	Non-Transient Non-Community	46	5
Merced Irrigation-Urban GSA	DOREVA PRODUCE	Non-Transient Non-Community	36	5
Merced Irrigation-Urban GSA	QUAIL H FARMS WATER SYSTEM	Non-Transient Non-Community	30	5
Merced Irrigation-Urban GSA	WASHINGTON SCHOOL	Non-Transient Non-Community	190	1
Mid-Kaweah GSA	WAUKENA ELEMENTARY SCHOOL	Non-Transient Non-Community	245	5
North Kings GSA	FAIRMONT SCHOOL	Non-Transient Non-Community	483	5
Pajaro Valley Water Management Agency GSA	SPRINGFIELD WATER COMPANY	Community	200	3
Pauma Valley GSA	RANCHO ESTATES MUTUAL WATER CO.	Community	200	2
Pauma Valley GSA	PAUMA VALLEY MUTUAL WATER COMPANY	Community	120	2
Pauma Valley GSA	YUIMA MUNICIPAL WATER DISTRICT	Community	260	1
Pauma Valley GSA	RANCHO CORRIDO RV RESORT	Community	350	1

Table 3b
Public Water Systems with Nitrate Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Nitrate Violations (b)
Salinas Valley Basin GSA - 180/400 Foot Aquifer	RIVER RD WS #25	Community	65	3
Salinas Valley Basin GSA - East Side Aquifer	SPENCE RD WS #05	Non-Transient Non-Community	25	2
San Joaquin River Exchange Contractors Water Authority GSA	JOHN B. SANFILIPPO & SON, INC.	Non-Transient Non-Community	100	1
Santa Clara Valley Water District GSA - Llagas Area	VALLEY VIEW RANCHES	Community	45	1
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	STORER TRANSPORTATION	Non-Transient Non-Community	40	3
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	SHILOH SCHOOL DISTRICT	Non-Transient Non-Community	105	4
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	RATTO BROS, INC	Non-Transient Non-Community	100	5
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	FRAZIER NUT FARMS, INC.	Non-Transient Non-Community	40	1
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	LIBERTY BAPTIST CHURCH	Transient Non-Community	65	4
West Turlock Subbasin GSA	DUARTE NURSERY INC WATER SYSTEM	Non-Transient Non-Community	75	1
West Turlock Subbasin GSA	GROWERS DIRECT NUT COMPANY	Non-Transient Non-Community	25	3
West Turlock Subbasin GSA	OLIVARES FARMS WATER SYSTEM	Non-Transient Non-Community	30	5
West Turlock Subbasin GSA	OUR LADY OF ASSUMPTION CHURCH	Transient Non-Community	26	4
West Turlock Subbasin GSA	BEST WESTERN-ORCHARD INN	Transient Non-Community	26	4

Table 3b
Public Water Systems with Nitrate Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Nitrate Violations (b)
Yolo Subbasin GSA	DAVIS JUSD - FAIRFIELD SCHOOL	Non-Transient Non-Community	65	1
Yucaipa Basin GSA	HILLCREST MOBILE ESTATES	Community	900	4

Abbreviations:

CSD = Community Services District
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
MWC = mutual water company
SGMA = Sustainable Groundwater Management Act
WS = water system

Notes:

(a) Only public water systems located within basins subject to SGMA (i.e, prioritized as medium or high by DWR) are shown herein.
(b) Nitrate as nitrogen violations by public water system in 2018 and population supplied are based on Reference 1.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Table 4a
Estimated Population with 1,2,3-TCP Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	15,091	108,537	123,628
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	80,038	80,038
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	1,282	63,837	65,119
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	10,457	52,299	62,756
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	0	57,325	57,325
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	32,316	19,456	51,772
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	20,116	4,634	24,750
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	13,283	4,169	17,452
City of McFarland GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	13	14,658	14,671
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	11,441	0	11,441
Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	382	8,995	9,377
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	6,439	0	6,439
Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	6,151	42	6,193
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	5,604	0	5,604
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	4,591	25	4,616
McMullin Area GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	4,259	0	4,259
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	0	3,653	3,653
Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	36	3,498	3,534
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1,024	0	1,024
Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	931	0	931
Greenfield County Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	918	0	918
City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	896	0	896

Table 4a
Estimated Population with 1,2,3-TCP Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	870	0	870
Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	738	0	738
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	0	734	734
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	581	0	581
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	547	0	547
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	0	525	525
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	487	0	487
James GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	483	0	483
Buena Vista Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	348	0	348
Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	0	295	295
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	231	0	231
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	171	0	171
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	134	0	134
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	134	0	134
Gravelly Ford Water District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	90	0	90
Cawelo Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	79	0	79
East Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	0	65	65
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	0	48	48
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	39	0	39
Madera Water District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	37	0	37
Root Creek Water District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	33	0	33
West San Jacinto GSA	San Jacinto	8-005	High	26	0	26
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	24	0	24

Table 4a
Estimated Population with 1,2,3-TCP Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	22	0	22
County of Madera GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	16	0	16
County of Fresno GSA - Delta-Mendota Management Area B	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	16	0	16
White Wolf GSA	San Joaquin Valley - White Wolf	5-022.18	Medium	14	0	14
DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	10	0	10
Aliso Water District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	8	0	8
West Kern Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	3	0	3
Patterson Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	0	1
Total Estimated Affected Population				140,369	422,833	563,202

Table 4a
Estimated Population with 1,2,3-TCP Impacts above MCLs in Drinking Water Supply
Water Foundation

Abbreviations:

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

SMCL = secondary maximum contaminant level

ug/L = micrograms per liter

Notes:

(a) Only GSAs with identified impacts are shown herein. The MCL for 1,2,3-TCP is .005 ug/L.

(b) Domestic well population estimated based on the UC Berkeley Water Equity Science Shop, per Reference 3, and estimated water quality per Reference 2. Areas with domestic wells given a water quality grade of 4 or higher, based on Reference 2, are included in the estimated domestic well population. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per Reference 2. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections that have been flagged as having results above the MCL within the last two years.

(c) Estimated population was summarized for public water systems population within each GSA for public water systems that incurred violations of the 1,2,3-TCP MCL in 2018, per Reference 1.

(d) Some GSAs are located within multiple DWR groundwater subbasins. For the purposes of this study, population is summarized by GSA only.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool,

<https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

3. UC Berkeley WESS, 2020. Locating Domestic Well Communities in California: A Methodological Overview, Domestic Well Layer (version 1.0), UC Berkeley Water Equity Science Shop, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch, updated 14 January 2020.

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
Butte Water District GSA - Butte	MANZANITA ELEMENTARY SCHOOL	Non-Transient Non-Community	295	1
Central Kings GSA	INDIANOLA SCHOOL	Non-Transient Non-Community	511	1
Central Kings GSA	RIVERVIEW SCHOOL	Non-Transient Non-Community	469	1
Central Kings GSA	ALICE MANOR	Community	46	2
Central Kings GSA	AMERICAN UNION SCHOOL	Non-Transient Non-Community	250	1
Central Kings GSA	U.C. KEARNEY FIELD STATION	Non-Transient Non-Community	250	1
Central Kings GSA	O'NEILL VINTNERS & DISTILLERS	Non-Transient Non-Community	90	1
Central Kings GSA	LION RAISINS PACKING COMPANY	Non-Transient Non-Community	80	1
Central Kings GSA	FRESNO VALVES & CASTINGS	Non-Transient Non-Community	190	2
Central Kings GSA	FOSTER FARMS - CEDAR HATCHERY	Non-Transient Non-Community	35	2
Central Kings GSA	CAMPOS BROS. FARMS	Non-Transient Non-Community	150	1
Central Kings GSA	VIE-DEL COMPANY	Non-Transient Non-Community	60	4
Central Kings GSA	CARUTHERS COMM SERV DIST	Community	2,503	1
City of Manteca GSA	MANTECA, CITY OF	Community	80,038	5
City of McFarland GSA	MCFARLAND, CITY OF	Community	14,658	1

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
Delano-Earlimart Irrigation District GSA	DELANO GROWER S GRAPE PRODUCTS	Non-Transient Non-Community	41	2
Delano-Earlimart Irrigation District GSA	RODRIGUEZ LABOR CAMP	Community	110	2
Delano-Earlimart Irrigation District GSA	SIERRA VISTA ASSN	Community	44	5
Delano-Earlimart Irrigation District GSA	EARLIMART PUD	Community	8,800	1
East Turlock Subbasin GSA	HARRIS WOOLF ALMONDS-BALLICO	Non-Transient Non-Community	65	1
Eastern Tule GSA	SAUCELITO ELEMENTARY SCHOOL	Non-Transient Non-Community	98	3
Eastern Tule GSA	RICHGROVE COMMUNITY SERVICES DISTRICT	Community	3,400	1
Greater Kaweah GSA	TRACT 92 CSD	Community	500	1
Greater Kaweah GSA	ALI MUTUAL WATER CO	Community	25	2
Kern Groundwater Authority GSA	DEL ORO WC - COUNTRY ESTATES DIST	Community	310	3
Kern Groundwater Authority GSA	METTLER COUNTY WATER DISTRICT	Community	157	1
Kern Groundwater Authority GSA	BROCK MUTUAL WATER COMPANY	Community	511	3
Kern Groundwater Authority GSA	WILSON ROAD WATER COMMUNITY	Community	66	3
Kern Groundwater Authority GSA	HARVEST MOON MUTUAL WATER CO	Community	138	2
Kern Groundwater Authority GSA	MUSTANG MUTUAL WATER SYSTEM	Community	200	2
Kern Groundwater Authority GSA	SAN JOAQUIN ESTATES MUTUAL WATER COMPANY	Community	165	3
Kern Groundwater Authority GSA	GOOSELAKE WATER COMPANY	Community	90	1
Kern Groundwater Authority GSA	GRIMMWAY FARMS- FROZEN FOODS	Non-Transient Non-Community	300	3

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
Kern Groundwater Authority GSA	HECK CELLARS WATER SYSTEM	Non-Transient Non-Community	47	3
Kern Groundwater Authority GSA	WHEELER FARMS HEADQUARTERS	Non-Transient Non-Community	25	3
Kern Groundwater Authority GSA	TREEHOUSE CALIFORNIA ALMONDS	Non-Transient Non-Community	35	1
Kern Groundwater Authority GSA	LLANAS CAMP FOUR WATER SYSTEM	Community	54	3
Kern Groundwater Authority GSA	GRIMMWAY ENTERPRISES-MALAGA WATER SYSTEM	Non-Transient Non-Community	1,200	3
Kern Groundwater Authority GSA	THE GARLIC COMPANY	Non-Transient Non-Community	120	3
Kern Groundwater Authority GSA	WM. BOLTHOUSE FARMS, INC.	Non-Transient Non-Community	2,463	1
Kern Groundwater Authority GSA	WESTERN ACRES MUTUAL WATER COMPANY	Community	310	3
Kern Groundwater Authority GSA	NORTH KRANENBURG WS	Community	33	1
Kern Groundwater Authority GSA	DELANO, CITY OF	Community	55,459	2
Kern Groundwater Authority GSA	SHAFTER, CITY OF	Community	19,100	3
Kern Groundwater Authority GSA	WASCO, CITY OF	Community	22,690	3
Kern Groundwater Authority GSA	WASCO ST. PRISON RECEPTION CTR	Community	5,064	2
Kern River GSA	VICTORY MUTUAL WATER COMPANY	Community	740	3
Kern River GSA	ATHAL MUTUAL WATER SYSTEM	Community	150	2
Kern River GSA	ULLER ACRES MUTUAL WATER COMPAN	Community	545	2
Kern River GSA	EAST WILSON ROAD WATER COMPANY	Community	35	3
Kern River GSA	EAST NILES CSD	Community	31,772	3
Kern River GSA	LAMONT PUBLIC UTILITY DIST	Community	19,057	3

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
Kings River East GSA	ALTA ELEMENTARY SCHOOL	Non-Transient Non-Community	390	1
Kings River East GSA	KINGS CANYON HIGH SCHOOL	Non-Transient Non-Community	120	1
Kings River East GSA	FRANZIA WINERY-SANGER	Non-Transient Non-Community	41	1
Kings River East GSA	DEL ORO TRAVER DISTRICT	Community	634	2
Kings River East GSA	EAST OROSI CSD	Community	700	1
Kings River East GSA	GOLDEN STATE VINTNERS CUTLER	Non-Transient Non-Community	46	5
Kings River East GSA	BRANDT FARMS, INC	Non-Transient Non-Community	100	2
Kings River East GSA	LONDON COMMUNITY SERV DIST	Community	2138	2
Lower Tule River Irrigation District GSA	WOODVILLE FARM LABOR CENTER	Community	734	4
Merced Irrigation-Urban GSA	DOLE ATWATER PLANT	Non-Transient Non-Community	1500	5
Merced Irrigation-Urban GSA	SENSIENT NATURAL INGREDIENTS LLC	Non-Transient Non-Community	400	5
Merced Irrigation-Urban GSA	MCSWAIN ELEMENTARY SCHOOL	Non-Transient Non-Community	950	5
Merced Irrigation-Urban GSA	EVERGREEN MOBILE HOME PARK	Community	36	4
Merced Irrigation-Urban GSA	CRESSEY SCHOOL	Non-Transient Non-Community	155	5
Merced Irrigation-Urban GSA	GRACE MENNONITE SCHOOL	Non-Transient Non-Community	100	3

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
Merced Irrigation-Urban GSA	A V THOMAS PRODUCE, INC.	Non-Transient Non-Community	212	3
Merced Irrigation-Urban GSA	CLASSIC YAM WATER SYSTEM	Non-Transient Non-Community	60	5
Merced Irrigation-Urban GSA	QUAIL H FARMS WATER SYSTEM	Non-Transient Non-Community	30	5
Merced Irrigation-Urban GSA	YAGI BROTHERS PRODUCE INC.	Non-Transient Non-Community	46	5
Merced Irrigation-Urban GSA	DOREVA PRODUCE	Non-Transient Non-Community	36	5
Merced Irrigation-Urban GSA	CITY OF ATWATER	Community	30406	5
Merced Irrigation-Urban GSA	CITY OF LIVINGSTON	Community	14894	5
Merced Irrigation-Urban GSA	WINTON WATER & SANITARY DIST	Community	8500	5
Merced Subbasin GSA	FOSTER FARMS FERTILIZER PLANT	Non-Transient Non-Community	48	4
Mid-Kaweah GSA	TULARE, CITY OF	Community	63837	4
North Fork Kings GSA	SOUTHWEST TRANSPORTATION AGENCY	Non-Transient Non-Community	25	2
North Kings GSA	BELMONT WATER CORPORATION	Community	112	1
North Kings GSA	FCSA #14/BELMONT MANOR	Community	115	1
North Kings GSA	FAIRMONT SCHOOL	Non-Transient Non-Community	483	1
North Kings GSA	HOUGHTON-KEARNEY SCHOOL	Non-Transient Non-Community	310	1
North Kings GSA	WASHINGTON UNION HIGH SCHOOL	Non-Transient Non-Community	1000	1

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
North Kings GSA	DOUBLE L MOBILE RANCH PARK	Community	80	1
North Kings GSA	THREE PALMS MOBILEHOME PARK	Community	300	1
North Kings GSA	BELMONT COUNTRY CLUB	Non-Transient Non-Community	150	1
North Kings GSA	COPPER RIVER COUNTRY CLUB	Non-Transient Non-Community	125	1
North Kings GSA	THREE CROWNS INDUSTRIAL PARK WATER	Non-Transient Non-Community	25	1
North Kings GSA	BAKMAN WATER COMPANY	Community	16756	1
Pajaro Valley Water Management Agency GSA	MEADOWRIDGE MUTUAL WATER CO	Community	42	3
Pixley Irrigation District GSA	TEVISTON CSD	Community	343	5
Pixley Irrigation District GSA	PIXLEY PUBLIC UTIL DIST	Community	3310	2
South Kings GSA	GUARDIAN INDUSTRIES LLC	Non-Transient Non-Community	291	1
South Kings GSA	CITY OF FOWLER	Community	5801	1
South Kings GSA	KINGSBURG, CITY OF	Community	11504	1
South Kings GSA	CITY OF PARLIER	Community	12058	1
South Kings GSA	DEL REY COMMUNITY SERV DIST	Community	1500	1
South San Joaquin GSA	MUSD-NILE GARDEN SCHOOL	Non-Transient Non-Community	804	1
South San Joaquin GSA	SAN JOAQUIN COUNTY-RAYMUS VILLAGE	Community	1086	1
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	RIVERBANK, CITY OF	Community	23734	1
Stockton East Water District GSA	CHERRY LANE TRAILER PARK	Community	100	1
Stockton East Water District GSA	MORADA ESTATES N PWS #46	Community	180	1
West Stanislaus Irrigation District GSA	HILLSVIEW HOMES	Community	840	4

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of 1,2,3-TCP Violations (b)
West Turlock Subbasin GSA	HUGHSON NUT INC. - LIVINGSTON	Non-Transient Non-Community	120	5
West Turlock Subbasin GSA	FOSTER FARMS DELHI FEEDMILL COLLIER ROAD	Non-Transient Non-Community	135	1
West Turlock Subbasin GSA	BALLICO CSD	Community	238	5
West Turlock Subbasin GSA	GEMPERLE EGG RANCH	Non-Transient Non-Community	55	3
West Turlock Subbasin GSA	COBLES CORNER	Community	50	1
West Turlock Subbasin GSA	HUGHSON, CITY OF	Community	6082	1
West Turlock Subbasin GSA	KEYES COMMUNITY SERVICES DIST.	Community	4805	5
West Turlock Subbasin GSA	TURLOCK, CITY OF	Community	72050	1
West Turlock Subbasin GSA	CERES, CITY OF	Community	47639	1
Woodbridge Irrigation District GSA	WEST LANE MOBILE HOME PARK	Community	160	1

Table 4b
Public Water Systems with 1,2,3-TCP Impacts above MCLs in 2018
Water Foundation

Abbreviations:

CSD = Community Services District
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
SGMA = Sustainable Groundwater Management Act

Notes:

(a) Only public water systems located within basins subject to SGMA (i.e, prioritized as medium or high by DWR) are shown herein.

(b) 1,2,3-TCP violations by public water system in 2018 and population supplied are based on Reference 1.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Table 5a
Estimated Population with Uranium Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	7,651	283	7,934
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	2,969	0	2,969
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	2,862	0	2,862
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1,053	250	1,303
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1,053	0	1,053
McMullin Area GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	709	0	709
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	612	0	612
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	601	0	601
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	532	0	532
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	272	245	517
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	418	48	466
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	162	250	412
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	350	0	350
James GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	306	0	306
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	263	0	263
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	174	0	174
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	174	0	174
Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	143	0	143
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	121	0	121
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	53	50	103
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	94	0	94
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	90	0	90
Patterson Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	61	0	61
East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	61	0	61

Table 5a
Estimated Population with Uranium Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	60	0	60
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	50	0	50
County of Madera GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	39	0	39
Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	16	0	16
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	15	0	15
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	12	0	12
Aliso Water District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	11	0	11
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	11	0	11
Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	7	0	7
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	4	0	4
Gravelly Ford Water District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	3	0	3
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	2	0	2
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	2	0	2
Tri-County Water Authority GSA - Tulare Lake	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	1	0	1
Total Estimated Affected Population				21,016	1,126	22,142

Table 5a
Estimated Population with Uranium Impacts above MCLs in Drinking Water Supply
Water Foundation

Abbreviations:

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

pCi/L = picocurie per liter

SMCL = secondary maximum contaminant level

Notes:

(a) Only GSAs with identified impacts are shown herein. The MCL for uranium is 20 pCi/L.

(b) Domestic well population estimated based on the UC Berkeley Water Equity Science Shop, per Reference 3, and estimated water quality per Reference 2. Areas with domestic wells given a water quality grade of 4 or higher, based on Reference 2, are included in the estimated domestic well population. Water quality grade is a rated representation of the combined section detection and number of recent MCL exceedances, per Reference 2. Section detections are represented by an MCL index, which is the constituent concentration divided by its regulatory threshold (MCL, SMCL, etc.). Recent MCL exceedances are sections that have been flagged as having results above the MCL within the last two years.

(c) Estimated population was summarized for public water systems population within each GSA for public water systems that incurred violations of the uranium MCL in 2018, per Reference 1.

(d) Some GSAs are located within multiple DWR groundwater subbasins. For the purposes of this study, population is summarized by GSA only.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool,

<https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.

3. UC Berkeley WESS, 2020. Locating Domestic Well Communities in California: A Methodological Overview, Domestic Well Layer (version 1.0), UC Berkeley Water Equity Science Shop, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch, updated 14 January 2020.

Table 5b
Public Water Systems with Uranium Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of Uranium Violations (b)
Central Kings GSA	AMERICAN UNION SCHOOL	Non-Transient Non-Community	250	5
Kern Groundwater Authority GSA	ROUND MOUNTAIN WATER COMPANY	Community	50	3
Kern River GSA	OLD RIVER MUTUAL WATER COMPANY	Community	48	3
Mid-Kaweah GSA	WAUKENA ELEMENTARY SCHOOL	Non-Transient Non-Community	245	5
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	RIVERVIEW MOBILE HOME ESTATES	Community	250	1
West Turlock Subbasin GSA	CALIFORNIA FRESH FARMS	Non-Transient Non-Community	60	5
West Turlock Subbasin GSA	ROSELAWN HIGH SCHOOL	Non-Transient Non-Community	223	4

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
SGMA = Sustainable Groundwater Management Act

Notes:

(a) Only public water systems located within basins subject to SGMA (i.e, prioritized as medium or high by DWR) are shown herein.
(b) Uranium violations by public water system in 2018 and population supplied are based on Reference 1.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Table 6a
Estimated Population with DBCP Impacts above MCLs in Drinking Water Supply
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin (d)	DWR Basin ID	DWR Basin Prioritization	Estimated Affected Population (a)		
				Domestic Wells (b)	Public Water Systems (c)	Total
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	-	1,350	1,350
Total Estimated Affected Population				-	-	1,350

Abbreviations:

DBCP = 1,2-dibromo-3-chloropropane
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
MCL = maximum contaminant level
ug/L = micrograms per liter

Notes:

- (a) Only GSAs with identified impacts are shown herein. The MCL for DBCP is 0.2 ug/L.
(b) Per Reference 2, no domestic well data was available for DBCP.
(c) Estimated population was summarized for public water systems population within each GSA for public water systems that incurred violations of the DBCP MCL in 2018, per Reference 1.
(d) Some GSAs are located within multiple DWR groundwater subbasins. For the purposes of this study, population is summarized by GSA only.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwddocuments/acr_2018_final_20191220.pdf
2. SWRCB, 2020. GAMA Needs Assessment Analysis for Domestic Wells Tool,
<https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=292dd4434c9c4c1ab8291b94a91cee85>, accessed April 2020.
3. UC Berkeley WESS, 2020. Locating Domestic Well Communities in California: A Methodological Overview, Domestic Well Layer (version 1.0), UC Berkeley Water Equity Science Shop, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch, updated 14 January 2020.

Table 6b
Public Water Systems with DBCP Impacts above MCLs in 2018
Water Foundation

Groundwater Sustainability Agency (a)	Public Water System	State Water System Type	Population (b)	Number of DBCP Violations (b)
North Kings GSA	WASHINGTON UNION HIGH SCHOOL	Non-Transient Non-Community	1000	1
North Kings GSA	EASTON PRESBYTERIAN CHURCH	Non-Transient Non-Community	350	1

Abbreviations:

DBCP = 1,2-dibromo-3-chloropropane

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

SGMA = Sustainable Groundwater Management Act

Notes:

(a) Only public water systems located within basins subject to SGMA (i.e, prioritized as medium or high by DWR) are shown herein.

(b) DBCP violations by public water system in 2018 and population supplied are based on Reference 1.

References:

1. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program:

https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf

Table 7a
Summary of Arsenic Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
GSAs with at least one PWS well with a recent detection over the MCL (Including PWS wells without identified trends)																	
Reclamation District No. 369 GSA	Sacramento Valley - South American	5-021.65	High	1	0	0	0	0	0	100%	0	0	0	0	1	0	0%
Reclamation District No. 70 GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	0	0	0	0	1	50%	1	0	0	0	0	1	50%
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	7	1	0	1	4	6	42%	2	0	0	1	11	5	11%
City of Firebaugh GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	1	1	0	1	0	33%	0	1	1	0	1	0	33%
City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	2	0	2	0	0	4	25%	1	0	2	0	4	1	13%
County of Sacramento GSA - Solano	Sacramento Valley - Solano	5-021.66	Medium	3	0	0	0	3	6	25%	3	0	0	0	4	5	25%
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	3	0	5	0	2	3	23%	0	0	2	0	8	3	0%
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	4	0	0	1	9	5	21%	4	0	0	0	12	3	21%
Reclamation District No. 551 GSA	Sacramento Valley - South American	5-021.65	High	1	0	0	0	3	2	17%	0	0	0	0	4	2	0%
Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	1	2	3	1	7	7	14%	1	1	3	1	11	4	10%
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	0	0	0	5	2	13%	0	1	0	0	6	1	13%
City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	1	1	0	3	8	5	11%	0	1	0	2	11	4	6%
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	8	0	8	31	34	11%	1	0	2	8	51	20	1%
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	1	0	0	1	5	3	10%	0	0	0	1	6	3	0%
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	2	6	0	13	29	35	9%	1	2	0	12	42	28	4%
Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	1	0	2	2	4	4	8%	1	0	1	2	6	3	8%
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	0	1	1	1	6	4	8%	0	0	0	1	9	3	0%
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	0	0	0	5	8	7%	1	0	0	0	5	8	7%
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	1	1	1	5	12	9	7%	2	1	0	1	20	5	10%
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	4	5	5	13	73	36	7%	3	1	3	18	83	28	3%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Los Molinos	5-021.56	Medium	0	1	0	2	8	3	7%	1	1	0	0	9	3	14%
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	4	5	8	18	56	50	6%	4	3	4	8	83	39	5%
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	5	10	1	13	165	63	6%	3	8	1	12	195	38	4%
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	2	1	0	4	16	30	6%	1	2	0	5	31	14	6%
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	0	0	2	9	6	6%	1	0	0	2	9	6	6%
Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	2	1	1	3	29	29	5%	2	1	0	3	41	18	5%
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	0	6	1	8	6	5%	0	0	3	1	14	4	0%
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	2	0	5	8	13	20	4%	1	0	5	8	16	18	2%
Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	1	0	2	0	6	15	4%	0	0	1	0	10	13	0%
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	3	2	7	12	66	31	4%	3	0	4	16	77	21	2%
County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	0	3	2	11	10	4%	0	0	3	1	16	7	0%
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	1	0	0	2	13	12	4%	1	0	0	0	17	10	4%
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	0	1	0	5	12	19	3%	2	0	0	1	19	15	5%
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	0	1	4	19	13	3%	0	0	1	4	20	13	0%
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	2	1	1	5	85	27	2%	0	1	1	6	95	18	1%
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	0	0	4	20	24	2%	0	0	0	2	25	22	0%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Red Bluff	5-021.50	Medium	0	1	0	1	40	5	2%	0	1	0	1	40	5	2%
County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	1	0	2	1	18	38	2%	2	0	2	1	19	36	3%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Antelope	5-021.54	High	0	0	0	0	16	9	0%	1	0	0	0	18	6	4%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	0	0	0	1	12	8	0%	0	1	0	1	12	7	5%
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	0	3	0	7	9	0%	0	0	3	0	8	8	0%
County of Madera GSA - Delta-Mendota	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	0	2	0	0	4	0%	0	0	1	0	1	4	0%
Cuyama Basin GSA	Cuyama Valley	3-013	High-critically overdraft	0	0	2	0	0	3	0%	0	0	0	0	2	3	0%
County of Sacramento GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	0	0	1	0	1	1	0%	0	0	1	0	1	1	0%
Reclamation District No. 3 GSA	Sacramento Valley - Solano	5-021.66	Medium	0	0	1	1	1	1	0%	1	0	0	1	1	1	25%
Reclamation District No. 554 GSA	Sacramento Valley - Solano	5-021.66	Medium	0	0	1	0	1	2	0%	0	0	1	0	1	2	0%
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	0	1	2	1	1	0%	0	0	1	2	1	1	0%
Southwest Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	0	1	1	1	0	0%	0	0	1	1	1	0	0%
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	0	1	0	38	39	0%	0	0	1	2	39	36	0%
Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	0	0	1	3	13	8	0%	0	0	1	2	19	3	0%
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	0	0	0	15	94	71	0%	2	0	0	19	105	54	1%
Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	0	0	1	3	17	12	0%	0	1	0	3	19	10	3%

Table 7a
Summary of Arsenic Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	0	0	1	2	2	25	0%	0	0	0	2	6	22	0%
Reclamation District No. 1660 GSA	Sacramento Valley - Sutter	5-021.62	Medium	0	0	1	0	0	0	0%	0	0	0	0	1	0	0%
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	0	1	1	2	5	0%	0	0	0	1	3	5	0%
Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	0	0	0	1	2	1	0%	1	0	0	0	2	1	25%
City of McFarland GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	0	0	0	1	3	0%	0	0	1	0	3	0	0%
El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	0	0	0	2	1	0%	0	0	1	0	1	1	0%
Reclamation District No. 407 GSA	Sacramento Valley - Solano	5-021.66	Medium	0	0	0	0	2	1	0%	1	0	0	0	2	0	33%
GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL																	
Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	0	1	0	0	2	0	33%	0	0	0	1	2	0	0%
City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	0	2	0	0	6	0	25%	0	0	0	0	8	0	0%
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	0	2	0	2	7	4	13%	0	0	0	0	13	2	0%
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	2	0	0	9	5	13%	0	1	0	0	13	2	6%
Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	0	1	0	0	5	3	11%	0	1	0	0	6	2	11%
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	0	3	0	1	16	13	9%	0	0	0	1	19	13	0%
City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	0	1	0	0	14	1	6%	0	1	0	1	13	1	6%
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	0	8	0	19	103	49	4%	0	7	0	12	126	34	4%
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	0	9	0	18	163	70	3%	0	17	0	12	176	55	7%
Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	0	1	0	3	15	17	3%	0	1	0	2	18	15	3%
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	0	2	0	4	38	29	3%	0	1	0	3	42	27	1%
North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	0	29	15	2%	0	1	0	0	29	15	2%
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	0	2	0	16	37	39	2%	0	1	0	6	56	31	1%
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	0	1	0	1	24	25	2%	0	1	0	3	26	21	2%
Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Vall	4-004.07	High	0	1	0	0	42	28	1%	0	1	0	0	54	16	1%
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	2	0	24	255	182	0%	0	4	0	28	316	115	1%
City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	0	0	8	17	1	0%	0	3	0	6	16	1	12%
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	0	0	0	3	31	49	0%	0	2	0	0	35	46	2%
Banta-Carbona Irrigation District GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	0	0	1	3	6	0%	0	1	0	0	3	6	10%
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	0	0	0	2	5	9	0%	0	1	0	0	6	9	6%
Discovery Bay Community Services District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	0	0	0	0	3	2	0%	0	1	0	0	2	2	20%
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	0	0	0	1	7	20	0%	0	1	0	1	6	20	4%
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	0	0	2	23	15	0%	0	1	0	4	23	12	3%
Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	0	0	0	0	14	9	0%	0	1	0	0	15	7	4%

Abbreviations:
Conc. = Concentration
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level
PWS = public water system
ug/l = micrograms per liter

Notes:
(a) Only GSAs with identified impacts are shown herein. The MCL for arsenic is 10 ug/L.
(b) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
(c) For each category, trends with more PWS wells are assigned with darker color. For visualization purposes. Colors generally correspond to those used on Figure 6a.
(d) Trends are sorted by the percentage of PWS wells showing increasing trend of each GSA under the three subgroups: GSAs with at least one PWS well with a recent detection over the MCL (Including PWS wells without identified trends), GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL, and GSAs with no statistically significant increasing trends identified in PWS wells.

References:
1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.

Table 7b
Summary of Nitrate as Nitrogen Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)								Long Term Trend (All Available Data)							
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend		
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)			
GSAs with at least one PWS well with a recent detection over the MCL (Including PWS wells without identified trends)																			
City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	1	6	0	1	1	4	54%	1	6	0	1	1	4	54%		
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	4	10	0	0	3	12	48%	3	11	0	0	8	7	48%		
West Stanislaus Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	2	2	0	0	1	4	44%	2	2	0	0	1	4	44%		
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	2	63	1	17	26	50	41%	2	59	0	9	56	33	38%		
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	5	20	0	6	11	21	40%	5	20	1	4	17	16	40%		
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	10	37	1	12	27	34	39%	10	30	1	11	50	19	33%		
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	3	37	0	8	34	23	38%	2	31	0	6	47	19	31%		
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	10	44	0	15	33	47	36%	11	49	0	5	49	35	40%		
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	7	17	1	2	15	26	35%	9	21	0	1	17	20	44%		
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	11	23	0	17	17	29	35%	11	25	0	14	20	27	37%		
Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	2	7	0	3	5	9	35%	2	3	0	4	9	8	19%		
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	24	0	5	25	20	33%	1	20	0	4	31	19	28%		
City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	1	0	0	1	3	33%	0	1	0	0	3	2	17%		
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	10	0	3	6	15	31%	1	8	0	2	9	15	26%		
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	2	12	0	4	15	12	31%	2	12	0	1	18	12	31%		
East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	6	7	2	4	2	21	31%	5	6	3	2	15	11	26%		
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	9	53	2	23	37	89	29%	15	53	1	12	70	62	32%		
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	4	83	1	45	75	91	29%	4	57	0	32	156	50	20%		
Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	6	27	1	25	21	39	28%	8	20	0	20	36	35	24%		
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	14	146	1	113	94	217	27%	15	128	1	81	201	159	24%		
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	2	0	0	5	3	27%	1	2	0	0	6	2	27%		
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	3	78	0	25	72	127	27%	2	74	0	18	110	101	25%		
Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	1	9	0	8	5	15	26%	0	9	2	8	10	9	24%		
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	0	5	0	1	9	4	26%	1	4	0	0	14	0	26%		
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	3	31	0	8	37	52	26%	3	36	0	5	44	43	30%		
Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	5	18	0	3	26	39	25%	2	14	0	3	48	24	18%		
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	4	22	0	9	27	44	25%	3	21	0	4	40	38	23%		
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	5	39	1	29	54	65	23%	5	44	1	17	71	55	25%		
Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	1	16	1	6	10	41	23%	3	12	0	6	20	34	20%		
County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	2	4	0	3	9	10	21%	2	0	0	2	14	10	7%		
Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	4	16	0	5	37	35	21%	3	14	0	4	41	35	18%		
Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey Valley	9-007.01	Medium	3	7	1	6	15	17	20%	3	9	0	5	16	16	24%		
North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	11	0	12	27	10	20%	1	8	0	7	35	10	15%		
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	1	6	0	6	5	20	18%	6	4	0	5	10	13	26%		
Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	2	2	0	4	6	8	18%	2	2	0	1	12	5	18%		
Arroyo Seco GSA - 1	Salinas Valley - Forebay Aquifer	3-004.04	Medium	1	1	0	2	0	7	18%	1	0	0	2	2	6	9%		
Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	2	3	2	4	8	15%	2	4	2	0	6	6	30%		
Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	1	6	0	0	20	21	15%	1	5	0	0	26	16	13%		
Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	2	4	1	1	9	25	14%	1	4	0	1	17	19	12%		
West San Jacinto GSA	San Jacinto	8-005	High	1	1	0	3	0	9	14%	1	1	0	3	2	7	14%		
City of McFarland GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	1	0	0	0	2	5	13%	2	0	0	1	1	4	25%		
Desert Water Agency GSA - Statutory Area - Indio	Coachella Valley - Indio	7-021.01	Medium	1	5	0	7	11	25	12%	1	12	0	2	11	23	27%		
Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	1	10	1	36	17	27	12%	1	7	1	30	32	21	9%		
Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	0	48	1	113	55	219	11%	3	34	0	101	136	162	8%		
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	1	4	0	7	21	15	10%	1	8	0	2	23	14	19%		
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	1	1	0	7	3	9	10%	2	2	0	5	8	4	19%		
City of San Luis Obispo GSA	San Luis Obispo Valley	3-009	High	1	1	0	4	9	9	8%	0	1	0	6	9	8	4%		
Cawelo Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	1	1	4	6	3	7%	0	2	0	2	10	1	13%		
Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	1	1	7	3	6	23	5%	3	1	5	4	11	17	10%		

Table 7b
Summary of Nitrate as Nitrogen Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
Butte Water District GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	0	0	1	0	0	0	0%	1	0	0	0	0	0	100%
GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL																	
Desert Water Agency GSA - Statutory Area - San Geronio Pass	Coachella Valley - San Gorgonio Pass	7-021.04	Medium	0	2	0	0	0	0	100%	0	1	0	0	1	0	50%
Richvale Irrigation District GSA	Sacramento Valley - Butte	5-021.70	Medium	0	2	0	0	0	0	100%	0	1	0	0	1	0	50%
County of Merced GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	0	1	0	0	0	0	100%	0	1	0	0	0	0	100%
Sutter Extension Water District GSA	Sacramento Valley - Sutter	5-021.62	Medium	0	1	0	0	0	0	100%	0	1	0	0	0	0	100%
Corning Subbasin GSA	Sacramento Valley - Corning	5-021.51	High	0	4	0	0	1	0	80%	0	4	0	0	1	0	80%
Greenfield County Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	3	0	0	1	0	75%	0	3	0	0	1	0	75%
Linden County Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	3	0	0	1	0	75%	0	1	0	1	2	0	25%
Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	0	4	0	1	0	1	67%	0	2	0	1	2	1	33%
Tri-County Water Authority GSA - Tule	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	0	2	0	0	0	1	67%	0	1	0	0	1	1	33%
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	3	0	0	3	0	50%	0	4	0	0	2	0	67%
Carpinteria Groundwater Sustainability Agency	Carpinteria	3-018	High	0	3	0	0	1	2	50%	0	2	0	0	2	2	33%
East Contra Costa Irrigation District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	0	2	0	0	0	2	50%	0	2	0	0	0	2	50%
Vina GSA	Sacramento Valley - Vina	5-021.57	High	0	48	0	12	29	21	44%	0	29	0	9	58	14	26%
City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	9	0	1	1	10	43%	0	7	0	0	5	9	33%
City of Gustine GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	3	0	2	0	2	43%	0	4	0	0	1	2	57%
City of Patterson GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	5	0	1	3	3	42%	0	5	0	0	5	2	42%
Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	0	7	0	1	3	6	41%	0	4	0	1	9	3	24%
City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	0	10	0	5	4	6	40%	0	7	0	3	9	6	28%
Sloughhouse Resource Conservation District GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	0	2	0	1	1	1	40%	0	1	0	1	2	1	20%
City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	0	5	0	0	0	8	38%	0	6	0	0	1	6	46%
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	0	14	0	2	14	7	38%	0	12	0	2	16	7	32%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	0	10	0	5	5	6	38%	0	8	0	0	13	5	31%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Antelope	5-021.54	High	0	10	0	6	8	3	37%	0	2	0	2	22	1	7%
Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	0	13	0	6	3	13	37%	0	11	0	1	14	9	31%
City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	11	0	7	8	6	34%	0	11	0	0	15	6	34%
Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	0	17	0	9	16	9	33%	0	19	0	5	20	7	37%
South Sutter Water District GSA	Sacramento Valley - North American	5-021.64	High	0	2	0	0	2	2	33%	0	3	0	0	2	1	50%
City of Newman GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	2	0	0	1	3	33%	0	1	0	0	3	2	17%
Lockeford Community Service District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	3	0	4	2	0	33%	0	0	0	1	8	0	0%
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	0	82	0	19	66	90	32%	0	85	0	9	96	67	33%
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	6	0	2	2	9	32%	0	6	0	2	2	9	32%
County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	10	0	1	13	8	31%	0	8	0	0	19	5	25%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Los Molinos	5-021.56	Medium	0	6	0	3	8	4	29%	0	4	0	4	9	4	19%
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	0	110	0	34	73	160	29%	0	121	0	12	108	136	32%
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	13	0	7	13	14	28%	0	20	0	4	14	9	43%
Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	0	40	0	7	27	75	27%	0	47	0	8	39	55	32%
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	0	6	0	3	6	8	26%	0	3	0	7	10	3	13%
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	0	7	0	1	2	18	25%	0	4	0	0	10	14	14%
City of Vacaville GSA	Sacramento Valley - Solano	5-021.66	Medium	0	6	0	3	5	10	25%	0	5	0	1	10	8	21%
Amador County Groundwater Management Authority GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	0	3	0	0	5	4	25%	0	3	0	0	6	3	25%
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Red Bluff	5-021.50	Medium	0	16	0	9	27	16	24%	0	14	0	4	36	14	21%
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	5	0	2	9	6	23%	0	4	0	1	11	6	18%
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	0	7	0	2	15	8	22%	0	5	0	0	21	6	16%
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	0	1	0	1	0	3	20%	0	0	0	1	3	1	0%
Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	0	5	0	8	9	4	19%	0	7	0	2	15	2	27%
Borrego Valley GSA - Borrego Springs	Borrego Valley - Borrego Springs	7-024.01	High-critically overdraft	0	5	0	2	6	13	19%	0	4	0	2	7	13	15%
West Placer GSA	Sacramento Valley - North American	5-021.64	High	0	5	0	1	10	10	19%	0	4	0	0	15	7	15%

Table 7b
Summary of Nitrate as Nitrogen Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	2	0	0	4	5	18%	0	1	0	0	5	5	9%
San Gorgonio Pass GSA	Coachella Valley - San Gorgonio Pass	7-021.04	Medium	0	5	0	1	15	8	17%	0	4	0	2	18	5	14%
Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	0	1	0	0	2	3	17%	0	3	0	0	0	3	50%
Byron-Bethany Irrigation District GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	0	1	0	3	2	0	17%	0	1	0	3	2	0	17%
Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	0	13	0	20	26	20	16%	0	9	0	10	45	15	11%
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	18	0	8	27	58	16%	0	21	0	4	45	41	19%
Alameda County Water District GSA	Santa Clara Valley - Niles Cone	2-009.01	Medium	0	5	0	13	2	11	16%	0	2	0	2	18	9	6%
Banta-Carbona Irrigation District GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	2	0	3	5	3	15%	0	2	0	1	7	3	15%
Desert Water Agency GSA - Statutory Area - Mission Creek	Coachella Valley - Mission Creek	7-021.02	Medium	0	2	0	4	3	4	15%	0	1	0	2	6	4	8%
Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	0	9	0	8	25	17	15%	0	5	0	7	31	16	8%
County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	5	0	6	13	9	15%	0	7	0	3	18	5	21%
Coachella Water Authority GSA	Coachella Valley - Indio	7-021.01	Medium	0	2	0	0	7	5	14%	0	2	0	0	7	5	14%
Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Vall	4-004.07	High	0	11	0	20	17	35	13%	0	5	0	9	51	18	6%
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	0	8	0	6	33	16	13%	0	5	0	2	41	15	8%
Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	0	9	0	1	33	29	13%	0	7	0	2	34	29	10%
Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	0	2	0	0	5	9	13%	0	2	0	0	6	8	13%
Siskiyou County Flood Control and Water Conservation District GS SHAS	Shasta Valley	1-004	Medium	0	1	0	0	4	3	13%	0	0	0	0	5	3	0%
Ojai Basin Groundwater Management Agency GSA	Ojai Valley	4-002	High	0	2	0	5	0	10	12%	0	1	0	4	4	8	6%
City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	0	3	0	4	9	10	12%	0	2	0	3	12	9	8%
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	0	18	0	30	69	51	11%	0	21	0	12	101	34	13%
Montecito Groundwater Basin GSA	Montecito	3-049	Medium	0	2	0	1	4	12	11%	0	3	0	3	7	6	16%
Oakdale Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	2	0	6	8	3	11%	0	2	0	0	14	3	11%
DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	1	0	0	6	3	10%	0	2	0	0	5	3	20%
Petaluma Valley GSA	Petaluma Valley	2-001	Medium	0	2	0	3	12	5	9%	0	1	0	3	13	5	5%
Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	0	4	0	3	26	15	8%	0	4	0	1	31	12	8%
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	0	1	0	1	7	4	8%	0	1	0	1	7	4	8%
San Antonio Basin GSA	San Antonio Creek Valley	3-014	Medium	0	1	0	0	6	6	8%	0	1	0	0	7	5	8%
Sierra Valley Groundwater Management District GSA	Sierra Valley - Sierra Valley	5-012.01	Medium	0	1	0	0	8	4	8%	0	1	0	0	8	4	8%
Fox Canyon Groundwater Management Agency GSA - Pleasant Valley	Pleasant Valley	4-006	High-critically overdraft	0	1	0	0	7	5	8%	0	0	0	1	10	2	0%
Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	0	1	0	1	8	4	7%	0	1	0	0	10	3	7%
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	1	0	0	6	8	7%	0	1	0	1	7	6	7%
Santa Ynez River Valley Basin Eastern Management Area GSA	Santa Ynez River Valley	3-015	Medium	0	4	0	14	32	21	6%	0	7	0	9	36	19	10%
Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	0	4	0	6	31	21	6%	0	4	0	2	37	19	6%
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	1	9	5	6%	0	1	0	1	9	5	6%
Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	0	2	0	0	7	24	6%	0	1	0	2	9	21	3%
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	3	0	1	31	21	5%	0	2	0	0	37	17	4%
Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	0	5	0	11	26	52	5%	0	7	0	11	39	37	7%
Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	0	1	0	4	6	8	5%	0	0	0	5	8	6	0%
Ukiah Valley Basin GSA	Ukiah Valley	1-052	Medium	0	2	0	4	19	15	5%	0	0	0	4	23	13	0%
Fox Canyon Groundwater Management Agency GSA - Las Posas Valley	Las Posas Valley	4-008	High	0	1	0	2	8	10	5%	0	3	0	0	12	6	14%
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	0	2	0	0	17	23	5%	0	2	0	0	23	17	5%
Monterey Peninsula Water Management District GSA	Carmel Valley	3-007	Medium	0	1	0	2	14	6	4%	0	3	0	0	17	3	13%
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	1	0	0	14	9	4%	0	0	0	1	15	8	0%
County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	0	3	0	4	50	21	4%	0	1	0	4	52	21	1%
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	0	4	0	7	42	60	4%	0	8	0	2	55	48	7%
Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	0	1	0	1	24	4	3%	0	1	0	1	25	3	3%
Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	0	1	0	0	20	27	2%	0	1	0	0	32	15	2%
Siskiyou County Flood Control and Water Conservation District GS BUTT	Butte Valley	1-003	Medium	0	0	0	1	2	2	0%	0	0	0	1	2	2	0%
Siskiyou County Flood Control and Water Conservation District GS SCOT	Scott River Valley	1-005	Medium	0	0	0	0	2	2	0%	0	0	0	1	1	2	0%
Santa Monica Basin GSA	Coastal Plain Of Los Angeles - Santa Monica	4-011.01	Medium	0	0	0	4	1	12	0%	0	3	0	4	6	4	18%

Table 7b
Summary of Nitrate as Nitrogen Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
Buena Vista Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	0	0	1	5	1	0%	0	1	0	0	5	1	14%
City of Galt GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	0	0	0	0	2	5	0%	0	1	0	0	4	2	14%
County of Sutter GSA - North American	Sacramento Valley - North American	5-021.64	High	0	0	0	0	2	1	0%	0	1	0	0	2	0	33%
East Bay Municipal Utility District GSA	Santa Clara Valley - East Bay Plain	2-009.04	Medium	0	0	0	0	1	0	0%	0	1	0	0	0	0	100%
Eastside San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	0	0	1	8	4	0%	0	1	0	0	10	2	8%
El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	0	0	0	1	4	0%	0	1	0	0	1	3	20%
Mound Basin GSA	Santa Clara River Valley - Mound	4-004.03	High	0	0	0	0	1	3	0%	0	1	0	0	1	2	25%
West Kern Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	0	0	3	2	2	0%	0	1	0	0	4	2	14%

Abbreviations:
Conc. = Concentration
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level
mg/l = milligrams per liter
PWS = public water system

Notes:
(a) Only GSAs with identified impacts are shown herein. The MCL for nitrate as nitrogen is 10 mg/L.
(b) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
(c) For each category, trends with more PWS wells are assigned with darker color. For visualization purposes. Colors generally correspond to those used on Figure 6b.
(d) Trends are sorted by the percentage of PWS wells showing increasing trend of each GSA under the three subgroups: GSAs with at least one PWS well with a recent detection over the MCL (Including PWS wells without identified trends), GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL, and GSAs with no statistically significant increasing trends identified in PWS wells.

References:
1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.

Table 7c
Summary of Uranium Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
GSAs with at least one PWS well with a recent detection over the MCL (Including PWS wells without identified trends)																	
Desert Water Agency GSA - Statutory Area - Indio	Coachella Valley - Indio	7-021.01	Medium	1	4	1	2	4	11	22%	1	1	0	0	15	6	9%
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	1	8	0	1	12	37	15%	0	7	0	0	17	35	12%
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	1	0	3	1	9	13%	1	1	0	2	6	5	13%
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	5	5	0	2	33	68	9%	7	6	0	2	49	49	12%
City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	1	0	0	4	7	8%	1	2	0	0	8	1	25%
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	3	8	0	10	57	62	8%	10	21	0	2	65	42	22%
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	1	0	0	0	4	17	5%	1	0	0	0	5	16	5%
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	0	10	33	2%	1	1	0	0	12	30	5%
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	3	1	8	34	144	2%	3	1	0	7	51	128	2%
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	0	0	1	4	17	0%	1	2	0	0	6	13	14%
Santa Monica Basin GSA	Coastal Plain Of Los Angeles - Santa Monica	4-011.01	Medium	0	0	0	0	5	7	0%	1	1	0	1	7	2	17%
Desert Water Agency GSA - Statutory Area - Mission Creek	Coachella Valley - Mission Creek	7-021.02	Medium	0	0	0	1	5	3	0%	1	0	0	0	7	1	11%
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	0	1	1	10	62	0%	0	1	0	2	18	53	1%
GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL																	
West Kern Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	0	4	0	0	1	1	67%	0	5	0	0	0	1	83%
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	0	1	0	0	0	1	50%	0	1	0	0	0	1	50%
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	0	1	0	0	1	2	25%	0	0	0	0	3	1	0%
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	0	2	3	17%	0	1	0	0	2	3	17%
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	2	0	0	2	13	12%	0	3	0	0	5	9	18%
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	1	0	0	6	3	10%	0	1	0	0	8	1	10%
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	0	1	0	0	3	6	10%	0	1	0	0	3	6	10%
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	0	3	0	2	8	23	8%	0	3	0	1	9	23	8%
Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	0	2	0	0	13	9	8%	0	2	0	1	15	6	8%
Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	0	3	0	2	18	30	6%	0	2	0	5	24	22	4%
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	1	7	11	5%	0	2	0	3	8	7	10%
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	0	2	0	3	8	30	5%	0	4	0	1	14	24	9%
Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	0	1	0	1	5	15	5%	0	2	0	0	7	13	9%
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	2	0	2	3	40	4%	0	1	0	2	6	38	2%
City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	1	23	1	4%	0	4	0	0	21	1	15%
Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	0	1	0	0	3	23	4%	0	1	0	1	13	12	4%
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	1	0	0	4	27	3%	0	2	0	0	8	22	6%
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	0	2	0	1	18	55	3%	0	3	0	3	24	46	4%
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	0	1	0	0	7	31	3%	0	1	0	1	7	30	3%
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	0	3	0	1	26	88	3%	0	4	0	1	38	75	3%
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	0	1	0	4	19	25	2%	0	2	0	4	32	11	4%
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	0	1	0	0	8	44	2%	0	3	0	0	11	39	6%
Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	0	0	0	2	21	42	0%	0	2	0	3	27	33	3%
Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	0	0	0	0	1	5	0%	0	2	0	0	2	2	33%
Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	0	0	0	0	2	3	0%	0	2	0	0	1	2	40%
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	0	0	0	0	1	11	0%	0	1	0	0	2	9	8%
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	0	0	0	0	5	17	0%	0	1	0	1	8	12	5%
Fox Canyon Groundwater Management Agency GSA - Pleasant Valley	Pleasant Valley	4-006	High-critically overdraft	0	0	0	1	1	7	0%	0	1	0	2	1	5	11%
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	0	0	0	0	20	41	0%	0	1	0	0	26	34	2%

Table 7c
Summary of Uranium Concentration Trends in Public Supply Wells by GSA
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Recent Trend (2000-2014)							Long Term Trend (All Available Data)						
				PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend	PWS Wells with Increasing Trends		PWS Wells with Decreasing Trends		PWS Wells With No Identified Trends		Percentage of PWS Wells Showing Increasing Trend
				Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)		Recent Conc. Above MCL	Recent Conc. Below MCL	Recent Conc. Above MCL	Recent Conc. Below MCL	Not Statistically Significant	Not Tested (Insufficient Data)	
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	0	0	0	0	5	17	0%	0	1	0	0	6	15	5%
Mound Basin GSA	Santa Clara River Valley - Mound	4-004.03	High	0	0	0	0	1	1	0%	0	1	0	0	1	0	50%

Abbreviations:
Conc. = Concentration
DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level
PWS = public water system
pCi/L = picocurie per liter

Notes:
(a) Only GSAs with identified impacts are shown herein. The MCL for uranium is 20 pCi/L.
(b) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Long-term trends were calculated based on the entire period of available data through 2014. Recent trends were calculated based on water quality data collected from 2000 through 2014.
(c) For each category, trends with more PWS wells are assigned with darker color. For visualization purposes. Colors generally correspond to those used on Figure 6c.
(d) Trends are sorted by the percentage of PWS wells showing increasing trend of each GSA under the three subgroups: GSAs with at least one PWS well with a recent detection over the MCL (including PWS wells without identified trends), GSAs with at least one PWS well with an increasing trend, but no recent detections over the MCL, and GSAs with no statistically significant increasing trends identified in PWS wells.

References:
1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.

Table 8a
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Arsenic Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Arsenic (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	15	 720	 150	 300	 410
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	9	 286	 130	 180	 217
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	9	 286	 100	 137	 200
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	9	 437	 78	 126	 200
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	9	 330	 107	 140	 204
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	8	 292	 145	 200	 235
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	8	 868	 55	 200	 292
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	8	 274	 120	 150	 205
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	5	 843	 261	 400	 600
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	4	 153	 118	 200	 539
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	3	 265	 120	 140	 175
County of Sacramento GSA - Solano	Sacramento Valley - Solano	5-021.66	Medium	3	--	 121	 215	 370
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	3	 475	 92	 151	 210
Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	3	 715	 281	 320	 384
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	3	 1,000	 146	 195	 270
Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	3	 720	 160	 292	 460
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	3	 480	 64	 78	 120
City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	2	--	 91	 125	 151
City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	2	--	 64	 80	 114
City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	2	 660	 258	 340	 365
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	2	 400	 106	 159	 221
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	2	 390	 125	 177	 242
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	2	 519	 138	 200	 240
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	2	--	 105	 140	 175
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	2	 531	 164	 220	 300
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	2	 500	 106	 150	 220
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	2	 331	 123	 184	 240
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	2	 101	 73	 100	 145
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	 455	 105	 141	 195
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	--	 208	 250	 280
City of Firebaugh GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	 190	--	 78	--
City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	1	--	 176	 250	 300
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 235	 106	 137	 161
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	1	 770	 270	 320	 367
County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	1	 360	 122	 203	 325
County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 523	 120	 166	 210
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	1	 540	 290	 380	 500

Table 8a
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Arsenic Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Arsenic (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	1	 280	 80	 98	 122
Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	1	 1,410	 130	 200	 275
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	 700	 201	 283	 345
Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	1	 1,940	 92	 132	 460
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	1	--	 100	 140	 230
North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	--	 215	 255	 295
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	1	 650	 280	 321	 400
Reclamation District No. 369 GSA	Sacramento Valley - South American	5-021.65	High	1	 50	 168	 196	 211
Reclamation District No. 551 GSA	Sacramento Valley - South American	5-021.65	High	1	--	 141	 150	 185
Reclamation District No. 70 GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	--	 88	 100	 130
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	1	 340	 204	 316	 420
Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	1	 610	 199	 355	 473
Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River	4-004.07	High	1	 210	 143	 257	 375
Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	1	--	 130	 200	 300
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 200	 130	 170	 207
Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	 265	 68	 85	 105

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
Max = Maximum

Min = Minimum
PWS = public water system

Notes:

- (a) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) Well construction information for PWS wells is from USGS, 2019 and for domestic wells is from UC Berkeley WESS, 2019. When well perforation information is not available, well completion depth is used. "--" indicates that no well construction information is available.
- (c) Data bars are added in order to visualize PWS well and domestic well depths. Given the relative data quality of domestic well construction information (e.g., many wells with total depths reported as less than 10 feet below ground surface), 25th and 75th percentile values are used to represent the general range of domestic well depths by GSA.

References:

1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
2. UC Berkeley WESS, 2019. UC Berkeley Water Equity Science Shop Domestic well locations version 1.0, 2019, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch.

Table 8b
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Nitrate as N Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Nitrate as N (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	160	 400	105	 140	 175
Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	110	 330	100	 137	 200
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	87	 640	150	 300	 410
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	82	 258.5	112	 168	 230
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	81	 255.5	120	 150	 205
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	65	 360	145.75	 195	 270
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	62	 265	107	 140	 204
Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	54	 790	261	 400	 600
Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	48	 479	128.25	 200	 274.25
Vina GSA	Sacramento Valley - Vina	5-021.57	High	48	 480	110	 136	 170
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	47	 384	100	 134	 176
Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	44	 330	123	 184	 240
Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	42	 260	106	 150	 220
Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	40	 800	300	 440	 559
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	40	 270	200	 240	 280
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	34	 337.5	125	 177	 242
Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	34	 265	145	 200	 235
Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	33	 435	103.75	 160	 280
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	26	 520	187.5	 284	 380
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	25	 371	105	 141	 195
South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	25	 265	130	 170	 207
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	24	 610	204	 316	 420
Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	23	 306	185.75	 218.5	 326.5
Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	20	 400	196	 300	 395
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	18	 370	130	 180	 217
Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	18	 201.5	78	 126	 200
Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	17	 264	93	 128	 165
Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	17	 584.5	160	 220	 360
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	14	 274	106	 137	 161
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	14	 456	210	 300	 350
Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	14	 520	164	 220	 300
East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	13	 230	110	 165	 224.5
Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	13	 205	84	 128	 188.75
Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	13	 970	280	 357	 546

Table 8b
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Nitrate as N Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Nitrate as N (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	13	 445	 66	 110	 140
North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	12	 415	 215	 255	 295
City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	11	 390	 113	 165	 244
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	11	 580	 201	 283	 345
Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	11	 262.5	 150	 200	 255
Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River	4-004.07	High	11	 182.5	 142.75	 256.5	 375
City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	10	 575	 176	 250	 300
County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	10	 413.5	 120	 166	 210
Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey	9-007.01	Medium	10	 218	 167.5	 344	 598.5
Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	10	 492	 148	 217	 295
City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	9	--	 120	 220	 240
Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	9	 187.5	 100	 137	 180
Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	9	 390	 180	 268	 380
Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	9	 90	 120	 230	 300
County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	8	 465	 92	 150.5	 210
Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	7	 628	 212	 300	 360
City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	7	 365	 91	 125	 151
County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	7	 371	 290	 380	 500
Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	7	 331	 120	 202	 280
Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	7	 220	 140	 347	 590
Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	7	 423	 146	 255	 392.5
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	6	 274	 120	 140	 175
City of Vacaville GSA	Sacramento Valley - Solano	5-021.66	Medium	6	 900	 68	 103	 199
County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	6	 85	 80	 150	 250
Desert Water Agency GSA - Statutory Area - Indio	Coachella Valley - Indio	7-021.01	Medium	6	 576.5	 300	 385	 500
Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	6	 795.5	 145	 217	 360
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	6	 124	 73	 100	 145
Alameda County Water District GSA	Santa Clara Valley - Niles Cone	2-009.01	Medium	5	 312	 101	 156	 293
Borrego Valley GSA - Borrego Springs	Borrego Valley - Borrego Springs	7-024.01	High-critically overdraft	5	 590	 248	 300	 492
City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	5	 395	 64	 80	 114
City of Patterson GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	5	 289	 131	 165	 197
County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	5	 484	 270	 320	 366.5
County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	5	 202.5	 125	 185	 250
County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	5	--	 80	 98	 122
Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	5	 387	 281	 320	 384.25

Table 8b
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Nitrate as N Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Nitrate as N (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
San Geronio Pass GSA	Coachella Valley - San Geronio Pass	7-021.04	Medium	5	 870	 118	 420	 806
West Placer GSA	Sacramento Valley - North American	5-021.64	High	5	 301.5	 120	 150	 200
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	5	 170	 115	 180	 235
Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	5	 264	 100	 120	 150
Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	4	 218	 63	 80	 100
Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	4	 205	 130	 195	 265
Corning Subbasin GSA	Sacramento Valley - Corning	5-021.51	High	4	 200	 84	 115	 160
Santa Ynez River Valley Basin Eastern Management Area GSA	Santa Ynez River Valley	3-015	Medium	4	 423	 200	 380	 506.25
Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	4	--	 100	 140	 181
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	4	 103.5	 64	 77.5	 120
West Stanislaus Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	4	 327	 150.25	 185	 240
Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	4	 198.5	 87	 122	 160
Amador County Groundwater Management Authority GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	3	 216	 123	 200	 260
Carpinteria Groundwater Sustainability Agency	Carpinteria	3-018	High	3	 1,230	 315	 465	 670
City of Gustine GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	3	 254	 133	 165	 209
City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	3	 450	 258	 340	 365
County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	3	 210	 122	 203	 325
Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	3	 801.5	 300	 381	 462.5
Greenfield County Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	3	 675	 121	 215	 320
Linden County Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	3	 609.5	 260	 285	 365
Lockeford Community Service District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	3	 310	 231	 260	 285
Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	3	--	 137.75	 200	 240
Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	3	 570	 280	 321	 400
Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	3	 425	 306.5	 400	 567.75
Arroyo Seco GSA - 1	Salinas Valley - Forebay Aquifer	3-004.04	Medium	2	 522	 141	 186	 199
Banta-Carbona Irrigation District GSA	San Joaquin Valley - Tracy	5-022.15	Medium	2	 687	 160	 200	 248
City of Newman GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	2	 565	 96	 130	 170
City of San Luis Obispo GSA	San Luis Obispo Valley	3-009	High	2	 65	 82	 140	 161
City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	2	--	 106	 159	 221
City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	2	--	 80	 90	 115
Coachella Water Authority GSA	Coachella Valley - Indio	7-021.01	Medium	2	 829	 290	 400	 565
Desert Water Agency GSA - Statutory Area - Mission Creek	Coachella Valley - Mission Creek	7-021.02	Medium	2	 765	 218	 300	 420
Desert Water Agency GSA - Statutory Area - San Geronio Pass	Coachella Valley - San Geronio Pass	7-021.04	Medium	2	 597.5	--	 420	--
East Contra Costa Irrigation District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	2	--	 120	 156	 220
Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	2	--	 92	 132	 460

Table 8b
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Nitrate as N Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Nitrate as N (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
Montecito Groundwater Basin GSA	Montecito	3-049	Medium	2	323.5	210	309	450
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	2	60	101.5	143.5	190
Oakdale Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	2	136.5	155	200	234
Ojai Basin Groundwater Management Agency GSA	Ojai Valley	4-002	High	2	471.5	162.5	282.5	525
Petaluma Valley GSA	Petaluma Valley	2-001	Medium	2	300	157	225	300
Richvale Irrigation District GSA	Sacramento Valley - Butte	5-021.70	Medium	2	--	70	100	122
Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	2	440	199.25	355	472.5
Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	2	585	117.5	200	539
Sloughhouse Resource Conservation District GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	2	436	230	270	310
South Sutter Water District GSA	Sacramento Valley - North American	5-021.64	High	2	--	103.25	140	171.5
Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	2	297	100	160	278.75
Tri-County Water Authority GSA - Tule	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	2	257.5	265	440	600
Ukiah Valley Basin GSA	Ukiah Valley	1-052	Medium	2	119	70	120	200
West San Jacinto GSA	San Jacinto	8-005	High	2	385	140	220	320
Byron-Bethany Irrigation District GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	1	510	115	180	253
Cawelo Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	1	785	600	785	1,183
Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	--	208	250	280
City of McFarland GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	1	640	--	982	--
County of Merced GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	1	460	--	306	--
DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	380	120	200	247.75
Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	1	1965	130	200	275
Fox Canyon Groundwater Management Agency GSA - Las Posas Valley	Las Posas Valley	4-008	High	1	1041.5	298.5	617.5	982.5
Fox Canyon Groundwater Management Agency GSA - Pleasant Valley	Pleasant Valley	4-006	High-critically overdraft	1	740	310.5	393	800
Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	1	--	100	140	229.5
Monterey Peninsula Water Management District GSA	Carmel Valley	3-007	Medium	1	--	96.25	159.5	347.5
North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	--	153.5	200	260
San Antonio Basin GSA	San Antonio Creek Valley	3-014	Medium	1	530	205	367.5	528.75
San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	--	120	150	185
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	1	300	170	450	470
Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	1	252	130	200	300
Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	1	400	77.5	170	379.5
Sierra Valley Groundwater Management District GSA	Sierra Valley - Sierra Valley	5-012.01	Medium	1	190	100	142.5	216.25
Siskiyou County Flood Control and Water Conservation District GS	Butte Valley	1-003	Medium	1	--	75	105	160
Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	1	360	159.75	291.5	460

Table 8b
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Nitrate as N Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Nitrate as N (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	265	68	85	105
Sutter Extension Water District GSA	Sacramento Valley - Sutter	5-021.62	Medium	1	--	67	85	115

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
Max = Maximum

Min = Minimum
PWS = public water system

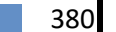
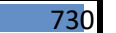
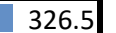
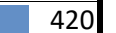
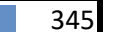
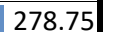
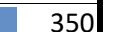
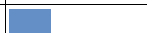
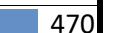
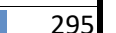
Notes:

- (a) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) Well construction information for PWS wells is from USGS, 2019 and for domestic wells is from UC Berkeley WESS, 2019. When well perforation information is not available, well completion depth is used. "--" indicates that no well construction information is available.
- (c) Data bars are added in order to visualize PWS well and domestic well depths. Given the relative data quality of domestic well construction information (e.g., many wells with total depths reported as less than 10 feet below ground surface), 25th and 75th percentile values are used to represent the general range of domestic well depths by GSA.

References:

1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
2. UC Berkeley WESS, 2019. UC Berkeley Water Equity Science Shop Domestic well locations version 1.0, 2019, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch.

Table 8c
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Uranium Concentration Trends
Water Foundation

Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	Number of PWS Wells that Have Recent Increasing Trend (a)	Well Depths for PWS Wells with Recent Increasing Trend in Uranium (b)(c)	Well Depths for Domestic Wells Within GSA (b)(c)		
					Median (50th Percentile)	25th Percentile	Median (50th Percentile)	75th Percentile
Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	11	 240	 120	 150	 205
West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	10	 199.5	 107	 140	 204
Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	9	 523	 187.5	 284	 380
Desert Water Agency GSA - Statutory Area - Indio	Coachella Valley - Indio	7-021.01	Medium	5	 600	 300	 385	 500
West Kern Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	4	 800	 332.25	 527	 730
Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	3	 233.5	 185.75	 218.5	 326.5
Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	3	 640	 150	 300	 410
Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	3	 162	 112	 168	 230
Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	3	 620	 204	 316	 420
Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	2	 197	 125	 177	 242
Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	2	--	 100	 134	 176
Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	2	 500	 201	 283	 345
Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	2	 290	 145.75	 195	 270
South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	2	 609	 55	 200	 292
Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	2	 190	 100	 160	 278.75
Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	 325	 105	 141	 195
City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	1	 265	 120	 140	 175
City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 468	 113	 165	 244
City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	--	 120	 220	 240
City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 154	 106	 137	 161
City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 354	 130	 180	 217
Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	1	--	 280	 357	 546
Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	1	--	 210	 300	 350
Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	1	 104	 101.5	 143.5	 190
San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	1	 300	 170	 450	 470
South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	1	 370	 66	 110	 140
South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	1	 156	 64	 77.5	 120
Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	--	 200	 240	 280
Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	1	 170	 115	 180	 235
Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	1	 119	 73	 100	 145
Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	1	--	 148	 217	 295

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency
Max = Maximum

Min = Minimum
PWS = public water system

Table 8c
Comparison of Public Supply Well Depths to Domestic Well Depths In GSAs With Increasing Uranium Concentration Trends
Water Foundation

Notes:

- (a) Trends were calculated for public supply wells with 4 or more unique laboratory analyses, per USGS, 2019. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) Well construction information for PWS wells is from USGS, 2019 and for domestic wells is from UC Berkeley WESS, 2019. When well perforation information is not available, well completion depth is used. "--" indicates that no well construction information is available.
- (c) Data bars are added in order to visualize PWS well and domestic well depths. Given the relative data quality of domestic well construction information (e.g., many wells with total depths reported as less than 10 feet below ground surface), 25th and 75th percentile values are used to represent the general range of domestic well depths by GSA.

References:

- 1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
- 2. UC Berkeley WESS, 2019. UC Berkeley Water Equity Science Shop Domestic well locations version 1.0, 2019, Authors: Clare Pace, Carolina Balazs, Lara Cushing, Rachel Morello-Frosch.

Table 9a
Summary of Public Water Systems that Show Increasing Arsenic Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
1010039	Caruthers Comm Serv Dist	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	2,503	696	1	5
1600008	Central Union Elementary	South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Non-Transient Non-Community	320	3	1	5
5000077	Ceres West MHP	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	161	46	1	4
5000051	Mobile Plaza Park	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	125	50	1	4
4000774	Pleasant Valley Elementary	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Non-Transient Non-Community	100	1	1	4
1510001	Arvin Community Services Dist	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	20,499	3,776	1	3
5410009	Pixley Public Util Dist	Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	3,310	825	1	3
1510012	Lamont Public Utility Dist	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	19,057	3,300	1	1
1500401	Mettler County Water District	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	157	43	1	0
2410004	City Of Livingston	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	14,894	3,112	2	1
3410020	City Of Sacramento Main	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	862,077	157,312	6	0
3310009	Eastern Municipal WD	West San Jacinto GSA	San Jacinto	8-005	High	Community	560,080	144,931	1	0
1010007	City Of Fresno	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	533,524	132,981	2	0
1510003	CWS - Bakersfield	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	279,701	70,062	6	0
5010010	Modesto, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	211,903	69,141	6	0
3910012	City Of Stockton	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	175,530	48,568	8	0
3910001	California Water Service - Stockton	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	171,253	42,910	2	0
3310037	Corona, City Of	Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	Community	168,432	41,810	1	0
3310012	Elsinore Valley MWD	Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	Community	153,280	43,466	1	0
1510031	Bakersfield, City Of	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	143,917	44,554	5	0
5410016	CWS - Visalia	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	140,868	43,153	1	0
2710010	Cwsc Salinas	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	106,858	23,312	1	0
0910002	South Tahoe PUD - Main	Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	Community	91,128	23,935	2	0
3910011	Tracy, City Of	City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	88,028	23,813	2	0

Table 9a
Summary of Public Water Systems that Show Increasing Arsenic Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3910005	Manteca, City Of	City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	80,038	21,873	1	0
5010019	Turlock, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	72,050	18,497	6	0
5710001	City Of Davis	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	67,298	16,449	1	0
2010002	City Of Madera	City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	66,082	13,695	1	0
5410015	Tulare, City Of	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	63,837	18,453	1	0
3910004	Lodi, City Of	City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	63,715	26,440	1	0
1610003	Hanford, City Of	Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	59,338	16,742	1	0
1510005	Delano, City Of	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	55,459	9,437	1	0
0710004	Brentwood	City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	Community	54,700	17,939	2	0
5010028	Ceres, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	47,639	11,297	1	0
5710009	Uc - Davis	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	44,844	782	1	0
1910156	Beverly Hills-City, Water Dept.	Santa Monica Basin GSA	Coastal Plain Of Los Angeles - Santa Monica	4-011.01	Medium	Community	43,628	10,092	2	0
4910014	Rohnert Park, City Of	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	42,067	9,314	3	0
4210006	Lompoc-City Water Utility Div	Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	41,541	9,789	4	0
3410004	Carmichael Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	40,000	11,693	1	0
3410009	Fair Oaks Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	35,114	13,892	1	0
1510006	East Niles CSD	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	31,772	7,846	3	0
4010007	Paso Robles Water Department	City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	31,398	10,650	2	0
2710017	Marina Coast Water District	Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	Community	31,218	8,162	1	0
2410001	City Of Atwater	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	30,406	6,780	2	0
1510017	Indian Wells Valley W.D.	Indian Wells Valley Groundwater	Indian Wells Valley	6-054	High-critically overdraft	Community	29,933	12,418	2	0
1610005	Lemoore, City Of	South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	26,093	6,819	7	0
1610004	Corcoran, City Of	El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	24,813	3,388	2	0

Table 9a
Summary of Public Water Systems that Show Increasing Arsenic Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5010018	Riverbank, City Of	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	23,734	6,886	1	0
3910015	City Of Lathrop	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	23,384	6,558	1	0
4910013	Valley Of The Moon Water District	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Community	22,536	7,001	1	0
3910007	Ripon, City Of	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	14,915	4,815	1	0
5210004	City Of Red Bluff	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	14,076	4,865	1	0
5810001	Cal-Water Service Co.-Marysville	Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	Community	12,210	3,612	2	0
4910012	Sonoma, City Of	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Community	11,654	4,387	1	0
4410013	Scotts Valley Water District	Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	Community	10,509	3,735	1	0
1910250	Santa Clarita Valley W.A.-Pinetree Div.	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	9,158	2,775	1	0
4810004	City Of Rio Vista	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	9,000	4,630	2	0
5110001	City Of Live Oak	City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	Community	8,531	2,237	2	0
2710012	Cwsc Salinas Hills	Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	Community	8,213	1,652	1	0
1010005	Firebaugh City	City of Firebaugh GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	7,619	1,642	1	0
4910011	Sebastopol, City Of	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	7,579	2,887	2	0
1510703	China Lake Naval Air Weapons Station	Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	Community	5,000	1,380	1	0
3910800	Deuel Vocational Institution	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Community	4,544	1,510	3	0
2410007	Planada CSD	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	4,500	1,095	2	0
3400173	Northgate 880 [SWS]	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Non-Transient Non-Community	2,926	85	1	0
5110007	Sutter Community S.D.	Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	Community	2,904	1,045	1	0
2010800	Central Ca Womens Facility	County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	2,847	656	1	0
3610854	Searles Valley Minerals Operations Inc	Indian Wells Valley Groundwater	Indian Wells Valley	6-054	High-critically overdraft	Community	2,000	790	1	0
5210003	Los Molinos Comm. Services Dist.	Tehama County Flood Control and	Sacramento Valley - Corning	5-021.51	High	Community	1,500	352	1	0
5010029	City Of Modesto, De Hillcrest	Stanislaus and Tuolumne Rivers	San Joaquin Valley - Modesto	5-022.02	High	Community	1,257	395	1	0
4410016	Forest Lakes MWC	Santa Margarita Groundwater Agency	Santa Margarita	3-027	Medium	Community	1,200	327	3	0

Table 9a
Summary of Public Water Systems that Show Increasing Arsenic Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
0910015	Tahoe Keys Water Company	South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	Community	1,200	1,563	1	0
2400172	John Latoracca Correctional Facility	Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	800	12	1	0
1502615	Frito-Lay, Inc. Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	600	1	1	0
3910701	Defense Distrib. Depot, Sharpe Site	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	500	70	2	0
4900796	Santa Rosa Mobile Estates	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	420	141	1	0
1600013	Lakeside Elementary School	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	388	5	1	0
4000206	Laureate Water Company	County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	350	7	1	0
1500597	Grimmway Farms- Frozen Foods	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	300	7	1	0
4901258	Sonoma Lodge	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Non-Transient Non-Community	300	2	1	0
4900878	Santa Rosa Golf & Country Club	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Non-Transient Non-Community	250	3	1	0
2400169	E & J Gallo Winery	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	225	5	1	0
3400135	Korths Pirates Lair	County of Sacramento GSA - Solano	Sacramento Valley - Solano	5-021.66	Medium	Community	150	55	1	0
3400164	Vieira'S Resort, Inc	County of Sacramento GSA - Solano	Sacramento Valley - Solano	5-021.66	Medium	Community	150	107	2	0
4900546	Hawkins Water Co-Cal Water Service (PUC)	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	138	51	1	0
2400053	El Nido Mobile Home Park	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	137	50	1	0
2800129	Sterling Vineyards	County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	Non-Transient Non-Community	100	1	1	0
5100141	Meridian Elementary School	Reclamation District No. 70 GSA	Sacramento Valley - Sutter	5-021.62	Medium	Non-Transient Non-Community	100	1	1	0
4900513	Madrone Mutual Water Company	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	95	23	1	0
3400138	Locke Water Works Co [SWS]	Reclamation District No. 369 GSA	Sacramento Valley - South American	5-021.65	High	Community	80	42	1	0
1600601	Kwra Mrf	Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Non-Transient Non-Community	53	3	1	0
3900579	Century Mobile Home Park	Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	50	16	1	0
3400137	Lincoln Chan-Home Ranch	Reclamation District No. 551 GSA	Sacramento Valley - South American	5-021.65	High	Community	33	26	1	0
5403054	Pffj, LLC	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	32	11	1	0

Table 9a
Summary of Public Water Systems that Show Increasing Arsenic Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
4901294	Wine Country Ind Park-Bldgs A&B	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Transient Non-Community	30	1	1	0
5102032	Dwr-Sutter Maintenance Yard	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Non-Transient Non-Community	27	1	1	0
Total							5,048,992	1,271,768	162	30

Abbreviations:

DWR = Department of Water Resources

GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level

PWS = public water system

Notes:

- (a) Only PWS wells with recent increasing trends are shown herein. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) MCL violations in 2018 are summarized per Reference 2.
- (c) PWS characteristics are from Reference 3.

References:

1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf
3. SWRCB, 2020. Drinking Water Watch – Public Water System Information, State Water Resources Control Board Safe Drinking Water Information System, downloaded on 17 April 2020. <https://data.ca.gov/en/dataset/drinking-water-public-water-system-information>

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3303100	Oasis Gardens Water Co.	Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	314	160	1	5
1502680	Orange Grove Rv Park	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Transient Non-Community	204	181	1	5
5400651	Beverly Grand Mutual Water	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	108	28	1	5
5000499	Ratto Bros, Inc	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	100	2	1	5
3600391	Hillcrest Mobile Estates	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	900	180	1	4
5401003	East Orosi CSD	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	700	106	2	4
1500575	San Joaquin Estates Mutual Water Company	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	165	61	1	4
5000295	Shiloh School District	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	105	7	1	4
5400558	Saucelito Elementary School	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	98	7	1	4
5400666	Del Oro Grandview Gardens District	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	347	104	1	3
2701926	Moro Rd WS #09	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	210	65	1	3
1502017	Wheeler Farms Headquarters	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	25	10	1	3
1500493	El Adobe Poa, Inc.	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	200	80	1	2
1500585	Oasis Property Owners Association	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	100	39	1	2
1500494	Wilson Road Water Community	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	66	20	1	2
1510012	Lamont Public Utility Dist	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	19,057	3,300	4	1
5610029	Vineyard Avenue Acres MWC	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	1,820	364	1	1
1500409	Brock Mutual Water Company	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	511	155	1	1
3701408	Yuima Municipal Water District	Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey Valley	9-007.01	Medium	Community	260	105	1	1
1502012	Heck Cellars Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	47	8	2	1
5000372	Storer Transportation	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	40	5	1	1
4310011	San Jose Water	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	924,954	225,214	26	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3410020	City Of Sacramento Main	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	862,077	157,312	18	0
3310009	Eastern Municipal WD	West San Jacinto GSA	San Jacinto	8-005	High	Community	560,080	144,931	4	0
1010007	City Of Fresno	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	533,524	132,981	109	0
0110001	Alameda County Water District	Alameda County Water District GSA	Santa Clara Valley - Niles Cone	2-009.01	Medium	Community	340,000	80,871	5	0
3910006	Stockton East Water District	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	337,656	4	1	0
3310001	Coachella VWD: Cove Community	Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	280,000	103,571	36	0
1510003	CWS - Bakersfield	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	279,701	70,062	37	0
3410001	Sacramento Suburban Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	266,010	46,318	42	0
0110010	Zone 7 Water Agency	Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	Community	226,840	13	4	0
5610046	United Wtr Cons Dist	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	226,044	15	8	0
5010010	Modesto, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	211,903	69,141	44	0
5610007	Oxnard Water Dept	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	205,489	39,935	3	0
3410029	Scwa - Laguna/Vineyard	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	184,381	43,494	16	0
3910012	City Of Stockton	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	175,530	48,568	12	0
3910001	California Water Service - Stockton	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	171,253	42,910	8	0
3310037	Corona, City Of	Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	Community	168,432	41,810	2	0
3310012	Elsinore Valley MWD	Elsinore Valley GSA	Elsinore - Elsinore Valley	8-004.01	Medium	Community	153,280	43,466	1	0
1510031	Bakersfield, City Of	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	143,917	44,554	26	0
5410016	CWS - Visalia	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	140,868	43,153	40	0
3110008	City Of Roseville	West Placer GSA	Sacramento Valley - North American	5-021.64	High	Community	132,562	42,395	1	0
1910017	Santa Clarita Valley W.A.-Santa Clarita	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	124,673	30,394	1	0
4310012	City Of Santa Clara	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	117,200	25,889	5	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5610017	Ventura Water Department	Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	Community	113,478	28,983	4	0
3410010	Calam - Suburban	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	111,768	16,329	10	0
2710010	Cwsc Salinas	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	106,858	23,312	25	0
0410002	Cal-Water Service Co.-Chico	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Community	105,660	28,249	41	0
1010003	City Of Clovis	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	103,871	32,571	13	0
4110013	City Of Daly City	City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	102,593	22,549	4	0
1910240	Santa Clarita Valley W.A.-Valencia Divis	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	97,300	29,877	6	0
4810008	City Of Vacaville	City of Vacaville GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	96,735	26,734	6	0
3410013	Calam - Lincoln Oaks	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	95,482	14,391	16	0
2710004	Cal Am Water Company - Monterey	Monterey Peninsula Water Management District GSA	Carmel Valley	3-007	Medium	Community	94,803	37,659	2	0
3410017	Calam - Parkway	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	94,004	14,068	8	0
4510005	City Of Redding	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	87,113	29,230	2	0
2410009	City Of Merced	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	80,542	20,963	10	0
3910005	Manteca, City Of	City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	80,038	21,873	13	0
4310007	City Of Mountain View	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	78,000	16,246	4	0
3310020	Indio Water Authority	Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	77,605	22,566	10	0
0110008	City Of Pleasanton	Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	Community	73,067	21,882	3	0
5010019	Turlock, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	72,050	18,497	16	0
3610037	Redlands City Mud-Water Div	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	71,035	23,744	7	0
4310001	Cwsc Los Altos Suburban	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	68,404	19,111	6	0
3410031	Calam - Antelope	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	68,290	10,245	9	0
5710001	City Of Davis	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	67,298	16,449	13	0
3410006	Citrus Heights Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	66,500	19,896	2	0
2010002	City Of Madera	City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	66,082	13,695	9	0
4410011	Watsonville, City Of	Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	Community	65,739	14,328	6	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3310005	Desert Water Agency	Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	64,887	22,344	5	0
5410015	Tulare, City Of	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	63,837	18,453	16	0
3910004	Lodi, City Of	City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	63,715	26,440	11	0
3410015	Golden State Water Co. - Cordova	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	63,713	14,488	2	0
5410010	Porterville, City Of	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	62,021	15,535	17	0
4910006	Petaluma, City Of	Petaluma Valley GSA	Petaluma Valley	2-001	Medium	Community	60,350	20,010	1	0
0110003	California Water Service - Livermore	Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	Community	59,000	18,109	2	0
5710006	City Of Woodland	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	56,464	15,942	9	0
1510005	Delano, City Of	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	55,459	9,437	3	0
0710004	Brentwood	City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	Community	54,700	17,939	6	0
3610055	Yucaipa Valley Water District	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	54,310	12,733	11	0
3110004	City Of Lincoln	West Placer GSA	Sacramento Valley - North American	5-021.64	High	Community	48,165	18,308	2	0
5010028	Ceres, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	47,639	11,297	5	0
5710009	Uc - Davis	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	44,844	782	5	0
3310007	Coachella Water Authority	Coachella Water Authority GSA	Coachella Valley - Indio	7-021.01	Medium	Community	43,917	8,036	2	0
3310002	Beaumont Cherry Valley WD	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	43,111	17,282	5	0
4910014	Rohnert Park, City Of	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	42,067	9,314	7	0
4310006	City Of Morgan Hill	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	41,779	12,980	2	0
1010339	California State University Fresno	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	41,000	158	2	0
3410008	Elk Grove Water Service	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	40,461	12,261	4	0
3410004	Carmichael Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	40,000	11,693	3	0
2410005	City Of Los Banos	City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	39,359	11,720	10	0
4410017	Soquel Creek Water District	Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	Community	37,720	14,390	5	0
3310008	Mission Springs WD	Desert Water Agency GSA - Statutory Area - Mission Creek	Coachella Valley - Mission Creek	7-021.02	Medium	Community	36,774	13,039	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3410009	Fair Oaks Water District	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	35,114	13,892	3	0
1510015	Oildale MWC	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	34,133	9,863	3	0
1510029	Vaughn Wc Inc	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	31,680	10,525	6	0
4010007	Paso Robles Water Department	City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	31,398	10,650	2	0
2710017	Marina Coast Water District	Marina Coast Water District GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	Community	31,218	8,162	3	0
2410001	City Of Atwater	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	30,406	6,780	6	0
3310006	Banning, City Of	San Gorgonio Pass GSA	Coachella Valley - San Gorgonio Pass	7-021.04	Medium	Community	30,325	10,480	6	0
5610063	Camrosa Water District	Fox Canyon Groundwater Management Agency GSA - Pleasant Valley	Pleasant Valley	4-006	High-critically overdraft	Community	30,000	8,555	2	0
4310028	San Jose State University	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	30,000	1,233	1	0
2710001	Alco Water Service	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	29,179	8,871	5	0
1010029	City Of Sanger	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	25,664	6,210	3	0
1010024	CWS - Selma	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	25,329	6,282	11	0
1010027	Reedley, City Of	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	24,842	5,964	5	0
1610004	Corcoran, City Of	El Rico GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	24,813	3,388	3	0
5410002	Dinuba, City Of	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	24,657	5,905	6	0
1510055	CWS - North Garden	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	23,990	7,062	5	0
5010018	Riverbank, City Of	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	23,734	6,886	4	0
3910015	City Of Lathrop	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	23,384	6,558	2	0
1510021	Wasco, City Of	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	22,690	4,872	4	0
5010017	Patterson, City Of	City of Patterson GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	22,679	6,543	4	0
4910013	Valley Of The Moon Water District	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Community	22,536	7,001	1	0
5010014	Oakdale, City Of	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	22,348	7,749	1	0
3410023	Fruitridge Vista Water Company	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	21,441	4,688	10	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
4410014	San Lorenzo Valley Water Dist	Santa Margarita Groundwater Agency GSA	Santa Margarita	3-027	Medium	Community	21,145	5,868	1	0
1510001	Arvin Community Services Dist	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	20,499	3,776	4	0
1510019	Shafter, City Of	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	19,100	4,720	6	0
0400070	Butte-Glenn Community College Dist	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Non-Transient Non-Community	18,000	35	1	0
2710008	Greenfield, City Of	Arroyo Seco GSA - 1	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	17,898	3,520	1	0
1010001	Bakman Water Company	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	16,756	2,505	4	0
1010026	Pinedale County Water District	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	16,735	3,541	2	0
2710011	Soledad, City Of	Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	16,729	3,669	1	0
2310003	Ukiah, City Of	Ukiah Valley Basin GSA	Ukiah Valley	1-052	Medium	Community	16,185	4,781	1	0
4210001	Carpinteria Valley Water District	Carpinteria Groundwater Sustainability Agency	Carpinteria	3-018	High	Community	16,050	3,980	3	0
5610002	Fillmore Water Dept	Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	Community	15,222	3,790	2	0
3410704	Scwa Mather-Sunrise	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	15,170	5,464	1	0
0600050	Caltrans-Maxwell Reststops	Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	Transient Non-Community	15,000	1	1	0
3910007	Ripon, City Of	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	14,915	4,815	5	0
2410004	City Of Livingston	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	14,894	3,112	2	0
1510013	Mcfarland, City Of	City of McFarland GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	14,658	2,804	2	0
2710009	Cwsc King City	Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	Community	14,441	2,701	2	0
5010005	City Of Modesto, Salida	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	14,246	4,398	4	0
4310018	City Of Cupertino	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	14,207	4,468	1	0
5410006	Lindsay, City Of	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	14,200	2,959	2	0
5210004	City Of Red Bluff	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	14,076	4,865	6	0
2010001	Chowchilla City Water Dept	Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	Community	13,220	3,960	4	0
1910096	Santa Clarita Valley W.A.--Newhall Div.	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	12,480	3,782	1	0
5810001	Cal-Water Service Co.-Marysville	Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	Community	12,210	3,612	4	0
1010025	City Of Parlier	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	12,058	2,505	4	0
1010019	Kingsburg, City Of	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	11,504	3,549	3	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
4210007	Montecito Water Dist	Montecito Groundwater Basin GSA	Montecito	3-049	Medium	Community	11,398	4,558	2	0
4510001	City Of Anderson	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	11,147	3,339	2	0
3310017	South Mesa Wc	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	11,006	2,935	5	0
5410004	Farmersville, City Of	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	10,908	2,587	1	0
5010013	City Of Newman-Water Department	San Joaquin River Exchange Contractors Water Authority GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	10,753	3,421	2	0
0410005	Cal-Water Service Co.-Oroville	Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	Community	10,556	3,574	2	0
5410003	Exeter, City Of	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	10,548	3,298	3	0
4910027	Sonoma State University	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	10,386	1,100	2	0
4500153	Shasta District Fair	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Transient Non-Community	10,200	1	1	0
1510024	Greenfield County WD	Greenfield County Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	9,900	3,021	3	0
3410002	Scwa - Arden Park Vista	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	9,841	2,973	3	0
4810002	California Water Service Co. - Dixon	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	9,278	2,897	7	0
3410045	Calam - Arden	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	9,048	1,166	3	0
4810004	City Of Rio Vista	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	9,000	4,630	3	0
3310051	Myoma Dunes Mutual Water Company	Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	8,948	2,485	3	0
5410021	Earlimart PUD	Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	8,800	1,591	1	0
5410008	Orosi Public Utility District	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	8,770	1,631	3	0
5010006	City Of Waterford	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	8,686	2,112	4	0
2410006	Delhi Cwd	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	8,625	2,361	3	0
4810009	City Of Dixon	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	8,593	2,604	1	0
5110001	City Of Live Oak	City of Live Oak GSA	Sacramento Valley - Sutter	5-021.62	Medium	Community	8,531	2,237	5	0
2710007	Gonzales, City Of	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	8,383	1,930	1	0
2710012	Cwsc Salinas Hills	Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	Community	8,213	1,652	4	0
5410020	Woodlake, City Of	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	7,950	1,799	1	0
1110001	City Of Orland	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Community	7,815	2,828	2	0
5610014	Ojai Water System	Ojai Basin Groundwater Management Agency GSA	Ojai Valley	4-002	High	Community	7,679	2,901	1	0
5210001	City Of Corning	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	7,663	2,264	4	0

Table 9b
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3410033	Florin County Water District	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	7,652	2,373	6	0
1100258	Caltrans-Willows Reststop-Sb	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Transient Non-Community	7,500	1	1	0
1900046	Peter Pitchess Honor Rancho Detn. Ctr	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	7,500	1,952	1	0
4810701	Travis Air Force Base - Distribution	Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	Community	7,190	2,104	2	0
1110003	Cal-Water Service Co.-Willows	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Community	7,140	2,342	6	0
3910003	Escalon, City Of	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	7,137	2,477	4	0
3610053	Western Heights Water Company	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	7,120	2,090	2	0
2710005	Castroville Community Services District	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Community	7,100	2,080	1	0
5710005	City Of Winters	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	7,098	2,025	1	0
1000442	Cherry Auction	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	7,000	8	1	0
4210020	Santa Ynez River Water Cons. Dist. ID#1	Santa Ynez River Valley Basin Eastern Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	6,737	2,435	2	0
0410004	City Of Gridley	Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	Community	6,608	2,077	2	0
1910247	Santa Clarita Valley W.A.-Castaic Div.	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Community	6,310	1,912	1	0
2410008	Meadowbrook Wc	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	6,309	1,668	3	0
5410001	Cutler PUD	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	6,200	1,218	2	0
5010008	Hughson, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	6,082	2,010	2	0
1010006	City Of Fowler	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	5,801	1,784	2	0
5610022	Ventura River Water District	Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	Community	5,700	2,127	4	0
3410003	Golden State Water Co - Arden Water Serv	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	5,653	1,713	4	0
2410003	City Of Gustine	City of Gustine GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	5,546	1,878	2	0
3610062	Running Springs Water District	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	5,528	2,934	3	0
2710850	Correctional Training Facility - Soledad	Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	5,500	2,769	3	0
1510801	Wasco St. Prison Reception Ctr	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	5,064	1,768	2	0
1503215	Famoso Raceway, Smokers Inc.	Cawelo Water District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Transient Non-Community	5,000	4	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
1510703	China Lake Naval Air Weapons Station	Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	Community	5,000	1,380	1	0
5010021	Denair Community Services District	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	4,860	1,645	2	0
2410012	Hilmar County Water District	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	4,850	1,598	2	0
3410007	Del Paso Manor County Water Di	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	4,520	1,795	4	0
2410007	Planada CSD	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	4,500	1,095	2	0
5410019	Ivanhoe Public Utility Dist	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	4,495	1,116	6	0
1000097	Fcpg/Lost Lake Recreation Area	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	4,204	20	1	0
3310048	Coachella VWD: I.D. No. 8	Desert Water Agency GSA - Statutory Area - Mission Creek	Coachella Valley - Mission Creek	7-021.02	Medium	Community	4,200	1,555	3	0
5610005	Meiners Oaks Cwd	Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	Community	4,200	1,246	2	0
2710019	Cwsc Oak Hills	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Community	3,904	887	2	0
3910017	San Joaquin County-Mokelumne Acres	County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	3,762	1,144	1	0
4210019	Mission Hills CSD	Santa Ynez River Valley Basin Western Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	3,560	1,271	1	0
5810004	City Of Wheatland	Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	Community	3,509	1,258	1	0
3710036	Borrego WD	Borrego Valley GSA - Borrego Springs	Borrego Valley - Borrego Springs	7-024.01	High-critically overdraft	Community	3,429	2,038	4	0
2710851	Salinas Valley State Prison	Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	3,386	2,208	1	0
5410009	Pixley Public Util Dist	Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	3,310	825	1	0
2010008	Madera Co Md #10A - Madera Ranchos	County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	3,039	925	2	0
1500491	Interstate 5 Properties	Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	2,948	21	1	0
3400173	Northgate 880 [SWS]	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Non-Transient Non-Community	2,926	85	3	0
5110007	Sutter Community S.D.	Sutter Community Service District GSA	Sacramento Valley - Sutter	5-021.62	Medium	Community	2,904	1,045	1	0
4410018	Central Water District	Santa Cruz Mid-County Groundwater Agency GSA	Santa Cruz Mid-County	3-001	High-critically overdraft	Community	2,700	803	2	0
1510007	Frazier Park PUD	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	2,691	1,290	2	0
5602407	Rio Mesa High School/Oxnard Uhs	Fox Canyon Groundwater Management	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Non-Transient Non-Community	2,600	13	1	0
4010010	San Miguel Community Services District	San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	2,600	779	1	0
1110002	Cal-Water Service Co.-Hamilton City	Corning Subbasin GSA	Sacramento Valley - Corning	5-021.51	High	Community	2,562	623	3	0
3310047	Cabazon Water District	San Gorgonio Pass GSA	Coachella Valley - San Gorgonio Pass	7-021.04	Medium	Community	2,535	907	1	0

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1010039	Caruthers Comm Serv Dist	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	2,503	696	1	0
3910008	Lockeford Community Serv. Dist.	Lockeford Community Service District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	2,500	833	2	0
1503349	Wm. Bolthouse Farms, Inc.	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	2,463	18	2	0
1510046	Lost Hills Utility District	Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	2,412	424	1	0
0310021	Awa - Camanche Village	Amador County Groundwater Management Authority GSA	San Joaquin Valley - Cosumnes	5-022.16	Medium	Community	2,384	731	3	0
5410038	Terra Bella Irrigation District - Tbt	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	2,340	979	4	0
2710016	Little Bear Water Company	Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	Community	2,303	705	1	0
0610001	Arbuckle Public Utility District	Colusa Groundwater Authority GSA -	Sacramento Valley - Colusa	5-021.52	High	Community	2,300	794	1	0
5410026	Poplar Comm Service Dist	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	2,200	582	3	0
5410017	London Community Serv Dist	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	2,138	439	1	0
3610854	Searles Valley Minerals Operations Inc	Indian Wells Valley Groundwater	Indian Wells Valley	6-054	High-critically overdraft	Community	2,000	790	2	0
1010055	Fcsa #47/Quail Lake Estates	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	1,982	709	2	0
0410001	City Of Biggs	Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	Community	1,805	650	2	0
4210002	Los Alamos Community Services District	San Antonio Basin GSA	San Antonio Creek Valley	3-014	Medium	Community	1,800	609	1	0
5410014	Tipton Community Services Dist	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	1,792	601	2	0
3910019	Linden County Water District	Linden County Water District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Community	1,784	612	3	0
3400180	Branch Center [SWS]	Sacramento Central Groundwater	Sacramento Valley - South	5-021.65	High	Non-Transient Non-Community	1,700	40	1	0
5410025	Woodville Public Utility Dist	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	1,673	467	2	0
2010004	Madera Co Cmd No 19 Parkwood	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	1,637	496	2	0
1010049	Biola Community Services Dist	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	1,623	300	1	0
0410003	Durham Irrigation District	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Community	1,558	472	1	0
2010006	Madera Co Sa# 3 Parksdale	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	1,555	532	2	0
2400011	Dole Atwater Plant	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	1,500	1	2	0
5210003	Los Molinos Comm. Services Dist.	Tehama County Flood Control and	Sacramento Valley - Corning	5-021.51	High	Community	1,500	352	1	0
3400259	Grant High School [SWS]	Sacramento Groundwater Authority	Sacramento Valley - North	5-021.64	High	Non-Transient Non-Community	1,400	12	1	0
3910702	Defense Distrib. Depot - Tracy Site	Banta-Carbona Irrigation District GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	1,300	83	1	0
0900646	Al Tahoe Elem/Stms (Water Sys)	South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	Non-Transient Non-Community	1,300	6	1	0
4010028	Slo Csa No. 16 - Shandon	County of San Luis Obispo GSA - Paso	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	1,295	326	2	0
4010023	Golden State Water Company - Edna	County of San Luis Obispo GSA - San	San Luis Obispo Valley	3-009	High	Community	1,294	590	1	0
5010029	City Of Modesto, De Hillcrest	Stanislaus and Tuolumne Rivers	San Joaquin Valley - Modesto	5-022.02	High	Community	1,257	395	1	0
5610056	Vineyard Ave Estates MWC	Fox Canyon Groundwater Management	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	1,200	342	2	0
1503093	Grimmway Enterprises-Malaga Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	1,200	39	3	0
4800809	Valley Evangelical Free Church	Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	Transient Non-Community	1,200	1	1	0
5210002	Gerber Las Flores CSD	Tehama County Flood Control and	Sacramento Valley - Corning	5-021.51	High	Community	1,200	396	1	0
5000433	Oid-Oakdale Rural Water System #1	Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Community	1,134	476	2	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5401074	Bob Wiley Detention Facility	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	1,130	5	2	0
2710006	Cal Am Water Company - Ambler Park	Salinas Valley Basin GSA - Monterey	Salinas Valley - Monterey	3-004.10	Medium	Community	1,114	402	1	0
1000461	Cargill Meat Solutions Corporation	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	1,100	4	2	0
5010023	City Of Modesto, De #6, So. Turlock	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	1,079	332	1	0
2800561	Freemark Abbey Properties	County of Napa GSA	Napa-Sonoma Valley - Napa	2-002.01	High	Non-Transient Non-Community	1,000	3	1	0
1000221	Washington Union High School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	1,000	23	2	0
2700984	Hwy 101 North Rest Stop-Ct Maint (Dist)	Salinas Valley Basin GSA - Upper Valley	Salinas Valley - Upper Valley	3-004.05	Medium	Transient Non-Community	1,000	1	1	0
4200902	La Purisima Golf Course	Santa Ynez River Valley Basin Western	Santa Ynez River Valley	3-015	Medium	Transient Non-Community	1,000	6	1	0
1010042	Malaga County Water District	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	947	509	1	0
3400391	Bradshaw Christian School	Sacramento Central Groundwater	Sacramento Valley - South	5-021.65	High	Non-Transient Non-Community	935	8	1	0
2700511	Normco Wc	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	928	272	2	0
3710012	Rancho Pauma Mutual Wc	Pauma Valley GSA	San Luis Rey Valley - Upper San	9-007.01	Medium	Community	897	392	2	0
1502229	Rio Bravo Greeley School Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	887	16	1	0
2700773	Sunny Mesa Water System	Pajaro Valley Water Management	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	Community	880	263	1	0
3910024	San Joaquin County - Wilkinson Manor	Stockton East Water District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Community	871	256	2	0
5010033	City Of Modesto, De Grayson	West Stanislaus Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	865	274	2	0
5010007	Hillsview Homes	West Stanislaus Irrigation District GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	840	230	2	0
5610035	Rio Manor Mutual Water Co	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	826	295	1	0
3901169	Musd-Nile Garden School	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	804	3	1	0
1000201	Sun Empire School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	780	10	1	0
5400824	Sultana CSD	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	775	249	1	0
1500231	Victory Mutual Water Company	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	740	173	1	0
5410041	CWS - Tulco Water Company	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	716	178	2	0
4500041	Anderson Union High School	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Non-Transient Non-Community	700	2	2	0
1503249	Buttonwillow Road Circuit, Lp	Semitropic Water Storage District GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Transient Non-Community	700	2	1	0
2000600	Howard Elementary School	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	673	1	1	0
5400553	Del Oro Traver District	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	634	187	2	0
3901085	Lodi Usd-Davis School	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	630	1	1	0
5410039	Plainview Mutual Water Company	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	617	187	1	0
5000019	Riverdale Park Tract CSD	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	610	178	1	0
2400066	Planada Elementaryschool	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	605	1	1	0
1502615	Frito-Lay, Inc. Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	600	1	2	0

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3900585	Rodeway Inn	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	600	1	1	0
4900693	Bellevue Union Sch Dist-Bellevue School	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Non-Transient Non-Community	591	1	1	0
3910020	Stockton Verde Mobile Home Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	571	293	2	0
5010026	Waterford - Hickman	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	565	181	2	0
5400542	Ducor CSD	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	558	166	1	0
5400624	Kings River Elementary School	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	550	9	1	0
1000285	Washington Colony School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	550	12	2	0
3301031	Banning Hts. Mutual Water Co.	San Gorgonio Pass GSA	Coachella Valley - San Gorgonio Pass	7-021.04	Medium	Community	548	206	1	0
5400844	Elbow Creek School	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	530	1	1	0
3400172	Tokay Park Water Co	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	525	190	2	0
5400544	Allensworth CSD	Tri-County Water Authority GSA - Tule	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	521	156	2	0
4600009	Sierra Brooks Psd	Sierra Valley Groundwater Management District GSA	Sierra Valley - Sierra Valley	5-012.01	Medium	Community	515	191	1	0
1000187	Indianola School	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	511	10	1	0
3910701	Defense Distrib. Depot, Sharpe Site	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	500	70	2	0
2000315	Madera District Fair	City of Madera GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Transient Non-Community	500	12	1	0
5410007	Lsid - Tonyville	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	500	50	4	0
5400903	Tract 92 CSD	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	500	93	1	0
5400797	Tulare Co Correctional Ctr Rd Camp	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	500	19	1	0
5000483	River Oak Grace-Water System	Oakdale Irrigation District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Transient Non-Community	500	4	1	0
2701676	San Lucas WD	Salinas Valley Basin GSA - Upper Valley	Salinas Valley - Upper Valley	3-004.05	Medium	Community	500	96	1	0
5400880	The Lakes Association	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	495	147	2	0
1000194	Pacific Union Elementary School	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	490	1	1	0
3310078	West Palm Springs Village	Desert Water Agency GSA - Statutory	Coachella Valley - Indio	7-021.01	Medium	Community	471	252	2	0
5610068	Cloverdale Mutual Water Co.	Fox Canyon Groundwater Management	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	455	150	1	0
1600015	Kings River Hardwick School	Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Non-Transient Non-Community	450	7	1	0
3410022	Olympia Mobilodge	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	450	200	1	0
5201057	Sierra Pacific Industries - Red Bluff Mi	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	450	5	1	0
2000659	Cbuso DbA Mission Bell Winery	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	440	20	2	0
1500588	Son Shine Properties	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	438	106	1	0
1500211	Stockdale Annex Mutual Water	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	433	143	2	0

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5700615	Yolo Co Housing Authority-El Rio Villa	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	432	113	1	0
5602117	Strickland Acres	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	429	125	2	0
4900796	Santa Rosa Mobile Estates	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	420	141	1	0
1000021	Fcsa #05/Wildwood Island	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	417	149	1	0
4500204	White Oak Mutual Water Company	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	415	126	1	0
1000276	Orange Center School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	410	3	1	0
5403032	Monrovia Nursery - Nursery	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	400	30	2	0
5403023	Delft Colony Water	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	400	99	1	0
3700938	Yuima Municipal Water District Ida	Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey Valley	9-007.01	Medium	Community	400	228	5	0
2700705	Prunedale School WS	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Non-Transient Non-Community	400	1	1	0
5700643	Plainfield Elem School - Water	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	400	1	1	0
5700751	Dunnigan Chevron	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Transient Non-Community	400	1	1	0
0605002	Morning Star Pkg. Co.-Wms.	Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	Non-Transient Non-Community	390	1	1	0
5010300	Turlock State Recreation Area	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Transient Non-Community	389	19	1	0
2710705	Camp Roberts - California National Guard	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Non-Transient Non-Community	385	342	1	0
4500161	Prairie Elementary School	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Non-Transient Non-Community	375	1	1	0
1000208	Roosevelt Elementary School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	370	8	1	0
5100136	East Nicolaus Joint Union High School	South Sutter Water District GSA	Sacramento Valley - North American	5-021.64	High	Non-Transient Non-Community	368	1	1	0
5000255	Mountain View Elementary School	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	364	8	1	0
2400078	Turlock Golf & Country Club	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	360	7	1	0
2000770	Pomona Ranch Housing Center	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Transient Non-Community	358	54	1	0
3310081	Palm Springs Crest	Desert Water Agency GSA - Statutory Area - San Geronio Pass	Coachella Valley - San Geronio Pass	7-021.04	Medium	Community	355	164	2	0
2000660	Ardagh Glass Inc	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	354	2	2	0
5601105	Fillmore Irrigation Co	Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	Community	353	169	2	0
4000554	Green River Mutual Water Co.	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	350	115	1	0
5101009	Wildwood East Mutual	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Community	350	48	1	0
5403043	Yetttem Water System	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	350	64	1	0
2000601	La Vina School	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	350	1	1	0
2000728	Md 37 La Vina	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Community	350	99	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3400296	Travel Lodge Mobile Home Park	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	350	164	1	0
4200807	Woodstock Property Owners Assn	Santa Ynez River Valley Basin Eastern Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	350	94	1	0
3400254	Dillard Elementary School	Sloughhouse Resource Conservation District GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	Non-Transient Non-Community	350	3	1	0
1000078	Fcwwd #42/Alluvial & Fancher	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	343	104	2	0
5400641	Teviston CSD	Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	343	104	1	0
5601120	Sisar Mutual Water Co	Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	Community	340	103	1	0
1100232	Johns Manville	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Non-Transient Non-Community	330	1	1	0
5400873	Union School (Charter Alternatives)	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	330	2	1	0
1000193	Navelencia School	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	330	1	1	0
3301046	Boe Del Heights Mutual Water	Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	325	116	1	0
4900695	Northwest Prep	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Non-Transient Non-Community	325	1	1	0
0400120	Bidwell Park Golf Course	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Transient Non-Community	325	6	1	0
1500314	Del Oro Wc - Country Estates Dist	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	310	90	2	0
1000206	Houghton-Kearney School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	310	4	1	0
5700784	Grace Valley Christian Center	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	304	4	1	0
3900810	Jr Simplot Co	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	300	1	2	0
3900903	Franks One/Stop Food Mart Water Sys	City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	300	1	1	0
3900805	Morehead Park	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Community	300	108	1	0
5400583	Cutler Park	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	300	1	1	0
5403031	Sun Pacific-Tulare	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	300	3	1	0
3301040	Riverdale Estates	Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	300	186	1	0
3301107	Carver Tract Mutual Water Comp	Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	300	188	1	0
5401033	Horizon Nut LLC	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	300	1	1	0
5401039	Tulare County Civic Center	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	300	5	1	0
5402031	Preet Market	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	300	5	1	0
1000299	Three Palms Mobilehome Park	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	300	105	1	0
1000459	Road Runner Food And Fuel	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	300	1	1	0
3400412	Sacramento Sikh Society	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	300	2	1	0
2702229	Manzanita Park WS	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Transient Non-Community	300	1	1	0
3900797	Escalon Premier Brands	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	300	1	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3901163	Musd-New Haven School	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	300	3	1	0
5000189	Nmip Fire & Water System, LLC	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	300	24	4	0
5200538	Lassen View Union Elementary School Dist	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	300	4	1	0
5000501	River Oaks/Kingdom Hall	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Transient Non-Community	300	1	1	0
0400063	Manzanita Elementary School	Butte Water District GSA - Butte	Sacramento Valley - Butte	5-021.70	Medium	Non-Transient Non-Community	295	3	1	0
2701929	Country Meadows MWC	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	294	108	2	0
4200619	Santa Ynez Rancho Estates MWC	Santa Ynez River Valley Basin Eastern Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	294	92	1	0
1000383	Guardian Industries LLC	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	291	2	1	0
2400055	Saputo Dairy Foods Usa, LLC	City of Gustine GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Non-Transient Non-Community	280	1	1	0
1000104	Centerville School	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	280	3	1	0
5400994	Hope Elementary School	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	275	7	1	0
1900011	Camp Scott And Scudder	Santa Clarita Valley GSA	Santa Clara River Valley - Santa Clara River Valley East	4-004.07	High	Non-Transient Non-Community	275	2	1	0
3900661	Mapache Trailer Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	275	99	1	0
5200507	Berrendos School	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	275	4	1	0
5601119	Siete Robles Mutual Water Co	Ojai Basin Groundwater Management Agency GSA	Ojai Valley	4-002	High	Community	274	105	1	0
3901080	Alpine Meats Inc	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	270	1	1	0
5000014	Oid #46 - Sunset Oaks	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	269	77	1	0
3400121	El Dorado Mobile Home Park	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	256	128	2	0
3901074	Twin Oaks Mobile Park	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	255	85	2	0
1000204	American Union School	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	250	33	1	0
1000279	U.C. Kearney Field Station	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	250	18	2	0
2000597	Dairyland School	Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	Non-Transient Non-Community	250	1	1	0
0707557	Neighborhood Church	City of Brentwood GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	Non-Transient Non-Community	250	2	1	0
2000846	Sierra View School	County of Madera GSA - Madera	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	250	5	1	0
3901216	Santos Ranch PWS #5-Csa #35	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Community	250	105	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
4000722	Fiero Lane Water Company, Inc.	County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	250	112	2	0
0910007	Lukins Brothers Water Company	El Dorado County Water Agency GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	Community	250	972	1	0
4300575	Twin Valley Inc	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Community	250	92	2	0
4900798	Mountain View Mobile Estates, LLC	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	250	111	1	0
3900798	Franzia Winery	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	250	1	2	0
5000090	Riverview Mobile Home Estates	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	250	175	1	0
5000467	Ram Naam Mandali Church Of Modesto	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	250	1	1	0
5700773	Unitarian Church Of Davis	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	250	3	1	0
5100176	Calvary Christian Center	City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	Non-Transient Non-Community	245	1	1	0
5700817	Jehovah'S Witnesses - Kingdom Hall	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Transient Non-Community	245	1	1	0
5400919	Buena Vista School	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	240	9	1	0
0400133	Lundberg Rice Products	Richvale Irrigation District GSA	Sacramento Valley - Butte	5-021.70	Medium	Non-Transient Non-Community	240	8	1	0
1100448	Plaza Elementary School	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Non-Transient Non-Community	230	1	1	0
1100527	Capay Joint Union Elem. School	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	230	1	1	0
0400036	Mountain View Mobile Acres MHP LLC	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Community	230	129	1	0
2400169	E & J Gallo Winery	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	225	5	1	0
4300771	New Avenue Mutual Water Company	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Community	225	111	2	0
4800727	Campbell Soup Dixon	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Non-Transient Non-Community	225	1	1	0
3900757	Linden Usd-Waterloo Elementary	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	225	1	1	0
2400028	Merced River Resort	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Transient Non-Community	225	154	1	0
5000116	Roselawn High School	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	223	5	1	0
5400882	Pleasant View West School	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	220	9	1	0
5400951	Mooney Grove Park	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	220	1	1	0
1000189	Laton High School	North Fork Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	220	1	1	0
4500054	Balls Ferry Fishing Resort	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	204	75	1	0
5402013	Sun Pacific Shippers Lp - Exeter	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	200	2	1	0
5403105	The Barn	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	200	2	1	0
1500555	Mustang Mutual Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	200	51	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
1500349	Stockdale Mutual Water Co.	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	200	81	2	0
1500380	De Rancho Y Mobile Villa Water	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	200	90	1	0
5400620	Grand View School	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	200	9	1	0
3400190	Imperial Manor Mobilehome Community	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Community	200	186	1	0
3400226	Virgin Sturgeon	Sacramento Groundwater Authority GSA	Sacramento Valley - North American	5-021.64	High	Transient Non-Community	200	1	1	0
2702484	Growers Service Assn WS (Ice)	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Non-Transient Non-Community	200	1	1	0
3901167	Eusd-Van Allen School	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	200	1	1	0
3900602	Tahama Village Mobile Home Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	200	68	1	0
3901205	Lower Sac Plaza	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	200	2	1	0
2300731	City Of 10,000 Buddhas	Ukiah Valley Basin GSA	Ukiah Valley	1-052	Medium	Community	200	50	1	0
3901248	Flag City Water System	Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	200	4	1	0
1100203	Artois Community S.D.	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Community	198	53	1	0
1000366	Sunnyside Convalescent Hosp	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	198	3	1	0
2700534	Colonial Oak Wc Inc	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	198	66	2	0
5200508	Rio Vista Mobile Home Park	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	198	198	1	0
4500208	Clear Creek Market	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Transient Non-Community	196	3	1	0
2400071	Washington School	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	190	4	1	0
5400548	Kings Inn Motel	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	189	2	1	0
3901306	Kellogg Garden Products	Lockeford Community Service District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	185	2	1	0
2702198	Foothill Estates WS	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	183	61	1	0
4500333	Airport Planet Water	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Non-Transient Non-Community	181	3	1	0
4300560	Green Mountain Water Company	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Community	180	43	1	0
3901337	Morada Estates N PWS #46	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	180	82	2	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5602140	Saticoy Country Club-City Of Ventura	Fox Canyon Groundwater Management Agency GSA - Las Posas Valley	Las Posas Valley	4-008	High	Community	177	74	1	0
1600009	Hanford Christian School	Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Non-Transient Non-Community	175	14	1	0
3410027	Calam - Security Park	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Non-Transient Non-Community	175	30	1	0
5010031	City Of Modesto, De Walnut Manor	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	175	53	1	0
3400122	El Dorado West MHP	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	172	128	1	0
3710302	Anza Borrego SP - Palm Canyon	Borrego Valley GSA - Borrego Springs	Borrego Valley - Borrego Springs	7-024.01	High-critically overdraft	Non-Transient Non-Community	170	9	1	0
1100440	Lake Elementary School	Corning Subbasin GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	170	1	1	0
3901421	Viejo Ltd	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	163	2	1	0
3900720	Shaded Terrace PWS	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	161	72	1	0
4500167	Auction Mart Snack Bar	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Transient Non-Community	160	4	1	0
4800709	Campbell Ranch	Solano Subbasin GSA	Sacramento Valley - Solano	5-021.66	Medium	Transient Non-Community	160	3	1	0
3900624	West Lane Mobile Home Park	Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	160	83	2	0
3900722	Morada Estates PWS	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	158	86	2	0
1500401	Mettler County Water District	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	157	43	1	0
5403120	Panaderia La Cabana	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	155	2	1	0
3400382	Bradshaw Ranch Golf Course Inc	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	155	2	1	0
5000055	Olive Lane Mobilehome Park	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	153	51	1	0
1000440	Hmc Group Cold Storage	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	150	1	1	0
3901082	St Josephs Hospital	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	150	1	1	0
5102016	Pasquini'S (Micheli) WS	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Transient Non-Community	150	1	1	0
4500217	Anderson Tucker Oaks Golf	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Transient Non-Community	150	5	1	0
1100237	Willows Mobile Home Community & Rv Park	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Community	150	87	2	0
1100444	Orland Estates Mobile H.P.	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Community	150	74	1	0
1500447	Sierra Breeze Mutual Water Company	Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	Community	150	60	1	0
2000531	Rancho Market	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Transient Non-Community	150	2	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3901303	Acampo Water System	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	150	61	2	0
5000177	Shady Lawn Farm (Summer Camp)	Oakdale Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	150	4	1	0
2701068	Iverson & Jacks Apts WS	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	150	31	1	0
4800732	Dixon 76	Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	Transient Non-Community	150	1	1	0
3901164	Jimco Truck Plaza Water System	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	150	5	1	0
3900907	Bel Air Mobile Estate	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	150	116	1	0
5700802	Nelson'S Grove	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Transient Non-Community	150	1	1	0
4800615	Superior Packing Co	Solano Irrigation District GSA	Sacramento Valley - Solano	5-021.66	Medium	Non-Transient Non-Community	147	1	1	0
5000016	Oid #41 - Mountain View	Stanislaus and Tuolumne Rivers	San Joaquin Valley - Modesto	5-022.02	High	Community	147	42	1	0
3900563	Gayla Manor PWS	Stockton East Water District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Community	146	54	1	0
3910300	Csp Caswell State Park	County of San Joaquin GSA - Eastern	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Transient Non-Community	145	9	2	0
4300638	San Martin Foothills Water Company	Santa Clara Valley Water District GSA -	Gilroy-Hollister Valley - Llagas	3-003.01	High	Community	145	44	1	0
5010034	City Of Modesto - North Turlock	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	145	52	1	0
1000324	Manning Gardens Care Center Inc	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	144	1	1	0
5000013	Oid #45	Stanislaus and Tuolumne Rivers	San Joaquin Valley - Modesto	5-022.02	High	Community	144	51	1	0
3900558	Rancho San Joaquin Water Sys	County of San Joaquin GSA - Eastern	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Community	141	51	1	0
5403053	Ns Mini Mart	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	140	2	1	0
4500107	Zufall'S Mobilehome Park	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	140	72	1	0
5400682	Plainview MWC - Central Water	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	138	42	1	0
1500546	Harvest Moon Mutual Water Co	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	138	49	1	0
2400065	Plainsburg Elementary School	Merced Subbasin GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	136	5	1	0
3901081	Mobile Villas Trailer Park	County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	130	32	1	0
5400763	Giumarra Vineyards Camp 5 & 6	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	130	6	1	0
4500011	Andreini Business Park Water System	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Non-Transient Non-Community	130	47	1	0
1502581	Sunview Cold Storage Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	130	4	1	0
5403042	California Dairies Inc Tipton	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	130	2	2	0
4900788	El Crystal Mobile Home Park	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	130	58	1	0
5200550	New Orchard Mobile Home Park LLC	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	125	50	2	0
3901006	Arp Minimart Corp WS	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Transient Non-Community	125	1	1	0
5400762	Giumarra Vineyards Camp 3 & 4	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	125	4	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5400972	Outside Creek School	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	125	2	1	0
5403080	Legacy Packing	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	125	1	2	0
5403081	Peters Fruit Farms, Inc	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	125	1	1	0
2400148	Merced Adventist Church Water Sys.	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	125	4	1	0
1000496	Copper River Country Club	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	125	1	1	0
0900623	Tahoe Travel Inn	South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	Transient Non-Community	125	3	1	0
5000141	Libitzky	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	125	15	2	0
3700934	Pauma Valley Mutual Water Company	Pauma Valley GSA	San Luis Rey Valley - Upper San Luis Rey Valley	9-007.01	Medium	Community	120	28	2	0
3900637	Big Wheel Mobile Home Park	County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	120	55	1	0
3901172	Par Country Estates Csa-16	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Community	120	51	1	0
5100142	Nuestro School	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Non-Transient Non-Community	120	1	1	0
1000316	Kings Canyon High School	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	120	2	1	0
2400162	Hughson Nut Inc. - Livingston	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	120	12	1	0
3900504	Clements Water Works #43	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	120	65	1	0
4200891	Bobcat Springs MWC	Santa Ynez River Valley Basin Central Management Area GSA	Santa Ynez River Valley	3-015	Medium	Community	120	31	1	0
3900755	Shady Rest Trailer Court	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	120	53	1	0
5700554	Campers Inn - Rv & Golf Course	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	120	68	1	0
5010035	City Of Modesto - Central Turlock	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	116	35	1	0
5100172	Encinal Elementary School	Sutter Extension Water District GSA	Sacramento Valley - Sutter	5-021.62	Medium	Non-Transient Non-Community	115	1	1	0
5200510	River Ranch Mobile Home Park	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	114	114	1	0
4300577	Rancho Robles Mutual Water Company	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Community	112	41	1	0
1100443	Orland Livestock Comm. Yard, Inc.	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Transient Non-Community	110	4	1	0
5401082	Ventura Coastal, LLC - Visalia Division	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	110	5	2	0
2400122	Longview Mennonite School	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	110	2	1	0
2400134	Buhach Preschool (Kindercare)	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Transient Non-Community	110	3	1	0
4300596	Coyote Creek Golf Club	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Non-Transient Non-Community	110	25	1	0
3900796	Btqc-Escalon	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	110	1	1	0
5800840	MjUSD Cordua School	Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	Non-Transient Non-Community	110	6	1	0
5400616	Lemon Cove Water Co	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	109	60	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5200502	Las Flores Water Works	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	107	57	1	0
5400536	Kings River Estates Mutual Water Company	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	106	35	1	0
4000790	Paso Robles Rv Ranch	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Transient Non-Community	105	1	1	0
5400850	Packwood School (Sycamore Vllly Academy)	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	105	2	1	0
2700665	Oak Heights W & R Co Inc	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	105	35	3	0
1502673	Gateway Market Water System	Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	Transient Non-Community	104	2	1	0
5400846	Elbow School	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	103	3	1	0
0400140	Durham Dayton Industrial Partners	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Non-Transient Non-Community	102	3	1	0
2000790	United Park Inc	Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	Transient Non-Community	100	1	1	0
3901215	San Juan Vista	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	100	73	1	0
3901312	Cbuso DbA Turner Road Vintners (East)	County of San Joaquin GSA - Eastern San Joaquin 1	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	100	9	1	0
3901181	Ameron International	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	100	3	1	0
4000693	Creston Elementary School	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Non-Transient Non-Community	100	1	1	0
4500194	Village Green	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Community	100	32	1	0
1400043	Pearsonville Water System	Indian Wells Valley Groundwater Authority GSA	Indian Wells Valley	6-054	High-critically overdraft	Transient Non-Community	100	20	1	0
5402030	Waukena Market	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	100	2	1	0
3400208	Sac Valley Truck Stop	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	100	2	1	0
3400286	Cordova Golf Course	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	100	3	1	0
3400352	Acorn Mobile Village	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	100	56	1	0
3400379	Silva'S Sheldon Inn	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	100	1	1	0
2700709	Rancho Borromeo MWS	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	100	36	1	0
2700738	San Miguel WS #01	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	100	34	2	0
4300971	PG&E Metcalf	Santa Clara Valley Water District GSA -	Santa Clara Valley - Santa Clara	2-009.02	High	Non-Transient Non-Community	100	1	1	0
3901231	Escalon Golf Course WS	South San Joaquin GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Transient Non-Community	100	1	1	0
3901329	West Kingdom Hall Of Jehovah Witnes	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	100	1	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3901331	Ripon Usd-Colony Oak School	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	100	1	1	0
3900649	Glenwood Mobile Home Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	100	50	1	0
3901284	Sjc Sports Complex	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	100	1	1	0
3901411	Oakmoore Congre Of Jehovah Wit	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	100	1	1	0
3901452	Berea Baptist Church Stockton Ca	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	100	3	1	0
2400166	Foster Farms Chicken Livehaul (Sycamore	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	100	1	1	0
5700558	Dunnigan Express	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Transient Non-Community	100	1	1	0
5800800	Yuba River Moulding & Millwork	Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	Non-Transient Non-Community	100	8	1	0
1000057	Del Oro Water Co - Metropolitan District	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	99	29	1	0
3900702	Corral Hollow PWS	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Community	98	38	1	0
4900559	Fircrest Mutual Water Company	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	98	46	1	0
5200544	Vina Elementary School	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	98	2	1	0
5400647	Yokohl Mutual Water Co	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	95	32	2	0
2701918	Lomas Del Sol MWS	Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	Community	93	31	1	0
2702073	San Miguel WS #22	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	93	31	1	0
1000411	O'Neill Vintners & Distillers	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	90	2	1	0
1000452	Ray Moles Farms (Marks Ave)	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	90	1	1	0
4500274	Airport Industrial Park	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Non-Transient Non-Community	90	21	1	0
1500584	Gooselake Water Company	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	90	32	1	0
2702466	San Vicente MWC	Salinas Valley Basin GSA - Forebay Aquifer	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	90	30	1	0
5000041	Maze Blvd Mobilehome Park	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	90	40	1	0
5200574	Del Oro Wc - Larkspur Meadows	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	89	31	1	0
5200560	Mira Monte Water Co.	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	88	41	1	0
5403114	Foster Farms Traver Feedmill	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	85	3	1	0
5200255	Corning Rv Park	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	85	40	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5200545	Modern Village MWC	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	85	34	1	0
3900978	Sj County-Redwood School	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	83	1	1	0
0105020	Alameda County Fairgrounds	Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	Non-Transient Non-Community	82	3	1	0
5400881	Sunrise Mutual Water Co.	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	80	39	1	0
1000511	The Worship Center Easton	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	80	1	1	0
4700638	Oak Valley Acres P.O.A.	Siskiyou County Flood Control and Water Conservation District GS	Butte Valley	1-003	Medium	Community	80	26	1	0
2700589	Glenn Ave WS #01	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	78	26	1	0
4500213	Jolly Giant Flea Market	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Non-Transient Non-Community	75	1	1	0
5403090	In & Out Foodmart	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	75	1	1	0
3900844	Country Manor MHP	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	75	37	1	0
2701876	Mushroom Farms WS	Pajaro Valley Water Management Agency GSA	Corralitos - Pajaro Valley	3-002.01	High-critically overdraft	Non-Transient Non-Community	75	2	1	0
4900797	North Star Mobile Home Park	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	75	76	1	0
5000154	The Fruit Yard Restaurant	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	75	4	1	0
3900606	A1 Winstons Mobile Home Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	75	30	1	0
5200008	Breese Subdivision 2	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	75	30	1	0
5200521	Antelope Creek MHP	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	75	60	1	0
5200548	Lassen View Water District	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	75	30	1	0
4500241	Mister Taco	Enterprise-Anderson GSA - Anderson	Redding Area - Anderson	5-006.03	Medium	Transient Non-Community	74	1	1	0
1000507	Gillette Citrus Company	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	74	5	1	0
0400019	Oroville Mobile Home Park	Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	Community	74	35	1	0
2700509	Oak Manor WS	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	71	33	1	0
5403046	Visalia Citrus Packing-Orange Cove	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	70	7	1	0
5200546	Antelope-Homewood MHP	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	70	44	2	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5601141	South Mountain Mutual Water Co	Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	Community	68	27	1	0
4300760	Santa Teresa Meadows Water Company	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	68	24	1	0
0400073	Nord Country School	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Non-Transient Non-Community	66	6	1	0
5000426	Liberty Baptist Church	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	65	2	1	0
5700623	Davis JUSD - Fairfield School	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	65	1	1	0
3900779	Bethany Temple Water System	County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	65	1	1	0
5402050	Milk Specialties Global	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	65	5	2	0
3400331	Westerner Mobile Home Park	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	65	49	1	0
4900913	Robin Way Water System	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Community	65	20	1	0
5000049	Lone Pine MHP	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Community	64	32	1	0
3900607	Country Squire Mobile Estates & Water Sy	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	64	47	1	0
0400062	Richvale Elementary School	Richvale Irrigation District GSA	Sacramento Valley - Butte	5-021.70	Medium	Non-Transient Non-Community	63	3	1	0
5200500	Reeds Creek Estates	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	63	25	1	0
1503209	Superior Mutual Water Company	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	61	49	1	0
5000086	Countryside MHP	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	60	44	1	0
2701036	Apple Ave WS #03	Arroyo Seco GSA - 1	Salinas Valley - Forebay Aquifer	3-004.04	Medium	Community	60	20	1	0
3901107	Jefferson Esd-Jefferson School	Banta-Carbona Irrigation District GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	60	1	1	0
2800648	Wine Country Inn	County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	Non-Transient Non-Community	60	1	1	0
5403106	Exeter-Ivanhoe Citrus Association	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	60	1	1	0
5402027	Tulare County Road Yard 2/3	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	60	5	1	0
5403055	Monrovia Nursery - Office	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	60	3	1	0
1503330	Gcg Water System	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	60	9	1	0
5403048	Jd Heiskell Holdings LLC	Pixley Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	60	4	1	0
3400250	Pleasant Grove Elementary School	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Non-Transient Non-Community	60	6	1	0
3400380	Bert'S Diner	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	60	3	1	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
2701820	Corda Rd WS	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Community	60	19	1	0
3900569	El Rio Mobile Home Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	60	28	1	0
1503336	Golden Empire Concrete Company	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	58	1	1	0
5402057	Deer Creek Rv Park	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	56	83	1	0
1000207	Central West Arts Center	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	56	7	1	0
3400140	Aspen Grove Mh & Rv Park (SWS)	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	55	35	1	0
3900592	Town & Country Inn	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	55	1	1	0
3900705	Finnlees Trailer Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	55	26	1	0
5200655	Louisiana-Pacific Corporation	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	55	4	1	0
4300571	Sullivan Mutual Water	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	53	16	1	0
1502004	Andrews Ag., Inc	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Transient Non-Community	52	7	1	0
4300578	Angelo Lane Water Company	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Community	52	15	1	0
4000788	Hunter Ranch Golf Course	City of Paso Robles GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Transient Non-Community	50	1	1	0
5100112	Tierra Buena MHP #1	City of Yuba City GSA	Sacramento Valley - Sutter	5-021.62	Medium	Community	50	17	1	0
3901330	Cherokee Freight Lines Water System	County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	50	1	1	0
1500561	Round Mountain Water Company	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	50	17	1	0
1502033	Golden State Vintners-Franzia Mcfarland	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Transient Non-Community	50	1	1	0
3901131	Bay Valley Estates PWS	Linden County Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	50	13	1	0
5403007	E.M. Tharp, Inc.	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	50	6	1	0
1000447	E&J Gallo Winery	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	50	1	1	0
1000544	Shop-N-Quick #2	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	50	1	1	0
4901214	Adobe Christian Church	Petaluma Valley GSA	Petaluma Valley	2-001	Medium	Non-Transient Non-Community	50	2	1	0
3400287	Cordova Shooting Center	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	50	2	1	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
2701153	Growers Transplanting WS	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Non-Transient Non-Community	50	1	1	0
4901273	S & W Warehousing, LLC	Sonoma Valley GSA	Napa-Sonoma Valley - Sonoma Valley	2-002.02	High	Non-Transient Non-Community	50	4	1	0
3901322	Manteca Industrial Prk Csa-30	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	50	17	2	0
3901296	Italian Athletic Club	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	50	1	1	0
5200527	Hunter'S Fishing Resort	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	50	23	1	0
5200541	E Headstart	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	50	2	1	0
5000217	Faith Home Teen Ranch	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	50	7	1	0
5700757	Grassland Park Host Well (Old Yolo Bowme	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Transient Non-Community	50	3	1	0
5401076	Golden State Vintners Cutler	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	46	3	1	0
5400767	Del Oro East Plano District	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	46	14	1	0
5601116	San Cayetano Mutual Water Co	Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	Community	46	14	1	0
2000511	Md 85 Valeta	Chowchilla Water District GSA	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	Community	45	20	1	0
4000216	Tank Farm Business Park	City of San Luis Obispo GSA	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	45	1	1	0
4500098	Anderson Mobile Home Park	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Community	45	21	1	0
2700856	Altman Plants WS #01	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Non-Transient Non-Community	45	5	1	0
2701589	Sunny Acres MWS	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	45	15	1	0
4300792	Aborn Heights Water Mutual Association	Santa Clara Valley Water District GSA - Santa Clara	Santa Clara Valley - Santa Clara	2-009.02	High	Community	45	17	1	0
5200338	Jehovah'S Witnesses -Corning	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Transient Non-Community	45	1	1	0
5200642	Tehama Co.-Ridgeway Park	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Transient Non-Community	45	3	1	0
5000484	United Pallet Services Inc Water System	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	45	5	1	0
1500560	Kranenburg Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	42	15	1	0
1502066	Delano Grower S Grape Products	Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	41	1	1	0
1000479	Franzia Winery-Sanger	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	41	2	1	0
3901217	Haynes Board & Care Home	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	41	15	1	0

Table 9b
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Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5200520	Kirkwood Elementary School	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Non-Transient Non-Community	41	4	1	0
2801046	St. Supery Winery	County of Napa GSA	Napa-Sonoma Valley - Napa Valley	2-002.01	High	Non-Transient Non-Community	40	1	1	0
4000753	Slo Partners	County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	40	1	1	0
5102025	Blue Angel Apartments W.S.	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Community	40	13	1	0
5403039	Teapot Dome Water Co	Eastern Tule GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Transient Non-Community	40	4	1	0
5403030	Jack Griggs Inc.	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	40	1	1	0
1000407	George Cox Water System	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	40	20	1	0
2000672	Robert Johnson Farms, Inc	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	40	8	1	0
1600507	Hardwick Water Group	Mid-Kings River GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	40	16	1	0
3400201	Countryside Drive-In	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Transient Non-Community	40	1	1	0
2702621	Iverson Rd WS #03	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Non-Transient Non-Community	40	1	1	0
4300976	Seed Testing Real Estate II LLC	Santa Clara Valley Water District GSA - Llagas Area	Gilroy-Hollister Valley - Llagas Area	3-003.01	High	Non-Transient Non-Community	40	3	1	0
3400302	Rancho Seco Park	Sloughhouse Resource Conservation District GSA - Cosumnes	San Joaquin Valley - Cosumnes	5-022.16	Medium	Transient Non-Community	40	3	1	0
3901319	International Paper	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	40	1	1	0
5200584	Little Avenue Water System	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	40	16	1	0
5200609	Moose Lodge	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Transient Non-Community	40	1	1	0
5700707	Rolling Acres Mutual Water Company	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	40	11	1	0
5601405	Santa Clara School	Fillmore and Piru Basins GSA - Fillmore	Santa Clara River Valley - Fillmore	4-004.05	High	Non-Transient Non-Community	39	1	1	0
1105001	South Willows Industrial Park	Glenn Groundwater Authority GSA	Sacramento Valley - Colusa	5-021.52	High	Non-Transient Non-Community	39	6	1	0
2700964	Bradley Union School WS	Salinas Valley Basin GSA - Upper Valley Aquifer	Salinas Valley - Upper Valley Aquifer	3-004.05	Medium	Non-Transient Non-Community	39	1	1	0
3901276	Hanot Foundation Inc	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	38	15	1	0

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5401004	Styrotek, Inc.	Delano-Earlimart Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	36	1	1	0
5100135	East Nicolaus MWC	South Sutter Water District GSA	Sacramento Valley - North American	5-021.64	High	Transient Non-Community	36	1	1	0
5200575	Rancho Colorado WS	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Community	36	18	1	0
1502133	Treehouse California Almonds	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Non-Transient Non-Community	35	3	1	0
3900799	Olde Towne	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	35	13	1	0
5500148	Chinese Camp School	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	35	1	1	0
5700542	Teichert Construction	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	35	3	1	0
0400023	Golden Oaks Mobile Estates	Wyandotte Creek GSA	Sacramento Valley - Wyandotte Creek	5-021.69	Medium	Community	34	52	1	0
5700649	Westucky Water Assoc	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Community	33	15	1	0
0707517	Colonia Santa Maria	East Contra Costa Irrigation District GSA	San Joaquin Valley - East Contra Costa	5-022.19	Medium	Community	32	8	1	0
2700669	Orchard Ln WS #02	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Community	32	16	1	0
5700798	Pavestone	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Transient Non-Community	32	2	1	0
3100538	Rosecrest Mutual	West Placer GSA	Sacramento Valley - North American	5-021.64	High	Community	31	15	1	0
3901318	S M S Briners Inc	Central San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
5000271	Buehner Water System - Weber Complex	City of Patterson GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	30	9	1	0
4000730	Holdgrafer & Associates	City of San Luis Obispo GSA	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	30	1	1	0
3901258	At&T California - Uer47	County of San Joaquin GSA - Eastern San Joaquin 2	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
4000781	Paso 360	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
5403040	Suhovy Water System	East Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Transient Non-Community	30	2	1	0
5602513	Pyramid Flowers	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
5602514	Vulcan Materials Company - Cal Mat	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
5402043	Monson Market	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	30	2	1	0

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5403041	Family Tree Farms	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	30	3	1	0
2000286	Specialty Crop Co	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Transient Non-Community	30	1	1	0
2000885	Ripperdan Dehydrator	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Transient Non-Community	30	1	1	0
3901278	Color Spot, Lodi	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
3901350	Boething Treeland Farms Inc	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
3901394	Calva Products Co Inc	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	30	1	1	0
5601401	Krotona Institute	Upper Ventura River Groundwater Agency GSA	Ventura River Valley - Upper Ventura River	4-003.01	Medium	Community	30	26	1	0
0409177	G & J Properties	Vina GSA	Sacramento Valley - Vina	5-021.57	High	Non-Transient Non-Community	30	1	1	0
5000494	Turlock Machine Works	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	30	1	1	0
3901323	Cozad Water System	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	29	1	1	0
2702452	El Camino Machine & Welding WS	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Non-Transient Non-Community	28	3	1	0
4000768	J M Sims Water Supply	County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	Non-Transient Non-Community	27	1	1	0
1000460	Belmont Temperance Property Water System	North Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	27	4	2	0
5000411	Mchenry Business Park	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	27	15	2	0
5000402	Our Lady Of Assumption Church	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Transient Non-Community	26	1	1	0
0605005	Kingdom Hall Of Jehovah'S Witness-Wms	Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	Transient Non-Community	26	1	1	0
1500518	Agbayani Village Water System	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	26	2	1	0
5000158	Filbin Land & Cattle Co	Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Transient Non-Community	26	2	1	0
5000213	Hamlet Motel	Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Transient Non-Community	26	15	1	0
5000409	Shiloh-Paradise Baseball For Youth	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	26	1	1	0
5000117	Lakewood Memorial Park & Funeral Home	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	26	5	1	0
5800821	Heritage Park	Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	Community	26	20	1	0
3901369	Basalite - Tracy	Byron-Bethany Irrigation District GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	25	1	1	0
1000075	Tract 1199 Water System	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	25	10	1	0
1000526	Harris Ranch Beef Co	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	25	2	1	0
1600603	Homegrown Cold Storage	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	25	3	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
3901409	Valpico Industrial Park	City of Tracy GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Non-Transient Non-Community	25	1	1	0
2400216	Cal Trans Chp Chowchilla River Facility	County of Merced GSA - Chowchilla	San Joaquin Valley - Chowchilla	5-022.05	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901406	Southwinds Church Of Tracy	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Transient Non-Community	25	1	1	0
3901433	Kingdom Hall Of Jehovahs Witnesses	County of San Joaquin GSA - Tracy	San Joaquin Valley - Tracy	5-022.15	Medium	Transient Non-Community	25	1	1	0
4000802	Santa Ysabel Ranch MWC	County of San Luis Obispo GSA - Paso Robles Area	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	25	146	1	0
4000809	Congregation Beth David	County of San Luis Obispo GSA - San Luis Obispo Valley	San Luis Obispo Valley	3-009	High	Transient Non-Community	25	1	1	0
5101013	Ranch House Restaurant & Bar	County of Sutter GSA - Sutter	Sacramento Valley - Sutter	5-021.62	Medium	Transient Non-Community	25	1	1	0
5000443	Triangle Truck Stop (Water)	DM-II GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Transient Non-Community	25	2	1	0
4500230	Airport Commercial Plaza	Enterprise-Anderson GSA - Enterprise	Redding Area - Enterprise	5-006.04	Medium	Non-Transient Non-Community	25	6	1	0
5400917	Shop N Go	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Transient Non-Community	25	1	1	0
2702495	Folktale Winery WS	Monterey Peninsula Water Management District GSA	Carmel Valley	3-007	Medium	Transient Non-Community	25	4	1	0
3901371	Lockeford Springs Golf Course	North San Joaquin Water Conservation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	25	1	1	0
2702444	River Rd WS #28	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Transient Non-Community	25	9	1	0
2702482	Color Spot Nursery WS #02	Salinas Valley Basin GSA - 180/400 Foot Aquifer	Salinas Valley - 180/400 Foot Aquifer	3-004.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
2700558	Pentecostal WS	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Non-Transient Non-Community	25	1	1	0
2702165	Orchard Ln WS #09	Salinas Valley Basin GSA - Langley Area	Salinas Valley - Langley Area	3-004.09	High	Transient Non-Community	25	5	1	0
4900934	Sonoma Wine Shop	Santa Rosa Plain GSA	Santa Rosa Valley - Santa Rosa Plain	1-055.01	Medium	Transient Non-Community	25	1	1	0
3901182	Finleys	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	25	2	1	0
3901441	Lovelace Transfer Station	South San Joaquin GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Transient Non-Community	25	1	1	0
0900585	Ginger Mountain Lodge	South Tahoe Public Utility District GSA	Tahoe Valley - Tahoe South	6-005.01	Medium	Transient Non-Community	25	3	1	0
5000138	El Rincon & Yosemite Hacienda Market	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	25	2	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5000284	Rainbow Sports Complex	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Transient Non-Community	25	1	1	0
5000335	Brethren Heritage School, Inc	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	25	2	1	0
5000517	Kiernan/Mchenry Water Company, Inc	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	25	3	1	0
5000563	Elks Lodge 1282	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Transient Non-Community	25	1	1	0
3901345	Normans Nursery	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901387	Stockton Baptist Church	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901392	Enviroplex, Inc	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901423	Down River An Itw Company	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901425	Morada Produce	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
5000454	Purina Mills Inc	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Transient Non-Community	25	1	1	0
3901390	Frank C Alegre Trucking Inc WS	Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Non-Transient Non-Community	25	1	1	0
3901393	Cbuso DbA Turner Road Vintners (West)	Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Transient Non-Community	25	1	1	0
5800004	Mariani Packing Company, Inc.	Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	Transient Non-Community	25	5	1	0
5800202	Red Hill Saloon	Yuba Water Agency GSA - South Yuba	Sacramento Valley - South Yuba	5-021.61	High	Transient Non-Community	25	2	1	0
2400005	Manchester Mobile Home Park	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Public	24	14	1	0
5000435	Bloomingcamp Water System	Stanislaus and Tuolumne Rivers Groundwater Basin Association GSA	San Joaquin Valley - Modesto	5-022.02	High	Non-Public	24	12	1	0
5000378	Tony Morris / Morris Dairy	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Public	24	8	1	0
5700769	Fraternal Order Of Eagles #2345	Yolo Subbasin GSA	Sacramento Valley - Yolo	5-021.67	High	Non-Public	24	2	1	0
3400175	Twin Palms Motel	Sacramento Central Groundwater	Sacramento Valley - South	5-021.65	High	Non-Public	21	8	1	0
0706007	Villa De Guadalupe	East Contra Costa Irrigation District GSA	San Joaquin Valley - East Contra	5-022.19	Medium	Non-Public	20	7	1	0
0400021	Robinson'S Corner MHP	Wyandotte Creek GSA	Sacramento Valley - Wyandotte	5-021.69	Medium	Community	20	22	1	0
3910302	San Joaquin Fair - 2nd District	City of Stockton GSA	San Joaquin Valley - Eastern San	5-022.01	High-critically overdraft	Transient Non-Community	19	48	1	0
5000388	Cardoza Water System	Stanislaus and Tuolumne Rivers	San Joaquin Valley - Modesto	5-022.02	High	Non-Public	15	10	1	0
2400052	Edge Of Town - Atwater Rentals	Merced Irrigation-Urban GSA	San Joaquin Valley - Merced	5-022.04	High-critically overdraft	Non-Public	10	8	1	0
5000342	Slavick Water System	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Public	10	6	1	0

Table 9b
Summary of Public Water Systems that Show Increasing Nitrate Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (b)
5000035	El Rancho Mobile Estates	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Non-Public	8	8	1	0
5201083	Bartels' Giant Burger	Tehama County Flood Control and Water Conservation District GSA	Sacramento Valley - Corning	5-021.51	High	Transient Non-Community	5	2	1	0
Total							11,832,009	2,794,501	1,874	61

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level
PWS = public water system

Notes:

- (a) Only PWS wells with recent increasing trends are shown herein. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) MCL violations in 2018 are summarized per Reference 2.
- (c) PWS characteristics are from Reference 3.

References:

1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf
3. SWRCB, 2020. Drinking Water Watch – Public Water System Information, State Water Resources Control Board Safe Drinking Water Information System, downloaded on 17 April 2020. <https://data.ca.gov/en/dataset/drinking-water-public-water-system-information>

Table 9c
Summary of Public Water Systems that Show Increasing Uranium Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (c)
1510003	CWS - Bakersfield	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	279,701	70,062	2	0
0110010	Zone 7 Water Agency	Zone 7 Water Agency GSA - Exclusive Portion	Livermore Valley	2-010	Medium	Community	226,840	13	1	0
5010010	Modesto, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	211,903	69,141	16	0
5610007	Oxnard Water Dept	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	205,489	39,935	1	0
3910012	City Of Stockton	City of Stockton GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	175,530	48,568	1	0
3310037	Corona, City Of	Temescal Subbasin GSA	Upper Santa Ana Valley - Temescal	8-002.09	Medium	Community	168,432	41,810	3	0
1510031	Bakersfield, City Of	Kern River GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	143,917	44,554	1	0
5410016	CWS - Visalia	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	140,868	43,153	1	0
3410010	Calam - Suburban	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	111,768	16,329	1	0
2710010	Cwsc Salinas	Salinas Valley Basin GSA - East Side Aquifer	Salinas Valley - East Side Aquifer	3-004.02	High	Community	106,858	23,312	11	0
3410017	Calam - Parkway	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	94,004	14,068	1	0
0910002	South Tahoe PUD - Main	Colusa Groundwater Authority GSA - Colusa	Sacramento Valley - Colusa	5-021.52	High	Community	91,128	23,935	1	0
3910005	Manteca, City Of	City of Manteca GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	80,038	21,873	1	0
5010019	Turlock, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	72,050	18,497	1	0
3610037	Redlands City Mud-Water Div	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	71,035	23,744	5	0
3310005	Desert Water Agency	Coachella Valley Water District GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	64,887	22,344	4	0
5410015	Tulare, City Of	Mid-Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	63,837	18,453	1	0
3910004	Lodi, City Of	City of Lodi GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	63,715	26,440	1	0

Table 9c
Summary of Public Water Systems that Show Increasing Uranium Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (c)
5010028	Ceres, City Of	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	47,639	11,297	3	0
2410005	City Of Los Banos	City of Los Banos GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	39,359	11,720	1	0
1610005	Lemoore, City Of	South Fork Kings GSA	San Joaquin Valley - Tulare Lake	5-022.12	High-critically overdraft	Community	26,093	6,819	2	0
1010024	CWS - Selma	Central Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	25,329	6,282	1	0
3910015	City Of Lathrop	City of Lathrop GSA	San Joaquin Valley - Tracy	5-022.15	Medium	Community	23,384	6,558	1	0
1510022	West Kern Water District	Kern Groundwater Authority GSA	San Joaquin Valley - Kern County	5-022.14	High-critically overdraft	Community	22,434	7,955	4	0
3410023	Fruitridge Vista Water Company	Sacramento Central Groundwater Authority GSA - 1	Sacramento Valley - South American	5-021.65	High	Community	21,441	4,688	1	0
5810001	Cal-Water Service Co.-Marysville	Yuba Water Agency GSA - North Yuba	Sacramento Valley - North Yuba	5-021.60	Medium	Community	12,210	3,612	1	0
3610062	Running Springs Water District	Yucaipa Basin GSA	Upper Santa Ana Valley - Yucaipa	8-002.07	High	Community	5,528	2,934	2	0
5410019	Ivanhoe Public Utility Dist	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Community	4,495	1,116	1	0
4010010	San Miguel Community Services District	San Miguel Community Services District GSA	Salinas Valley - Paso Robles Area	3-004.06	High-critically overdraft	Community	2,600	779	1	0
5410026	Poplar Comm Service Dist	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Community	2,200	582	1	0
5610029	Vineyard Avenue Acres MWC	Fox Canyon Groundwater Management	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	1,820	364	1	0
2710023	Tasco Spreckels Water Company	Salinas Valley Basin GSA - 180/400 Foot	Salinas Valley - 180/400 Foot	3-004.01	High-critically overdraft	Community	1,079	327	1	0
5010023	City Of Modesto, De #6, So. Turlock	West Turlock Subbasin GSA	San Joaquin Valley - Turlock	5-022.03	High	Community	1,079	332	1	0
5400553	Del Oro Traver District	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	634	187	1	0
3310078	West Palm Springs Village	Desert Water Agency GSA - Statutory Area - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	471	252	1	0
5610068	Cloverdale Mutual Water Co.	Fox Canyon Groundwater Management Agency GSA - Oxnard	Santa Clara River Valley - Oxnard	4-004.02	High-critically overdraft	Community	455	150	1	0
2000660	Ardagh Glass Inc	Madera Irrigation District GSA	San Joaquin Valley - Madera	5-022.06	High-critically overdraft	Non-Transient Non-Community	354	2	1	0
1000383	Guardian Industries LLC	South Kings GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Non-Transient Non-Community	291	2	1	0
3901248	Flag City Water System	Woodbridge Irrigation District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Non-Transient Non-Community	200	4	1	0
1000247	Sherwood Forest MHP	Kings River East GSA	San Joaquin Valley - Kings	5-022.08	High-critically overdraft	Community	126	50	1	0
5403121	International Paper - Exeter Bulk	Greater Kaweah GSA	San Joaquin Valley - Kaweah	5-022.11	High-critically overdraft	Non-Transient Non-Community	106	1	1	0
3301247	Elms Mobile Park	Indio Water Authority GSA - Indio	Coachella Valley - Indio	7-021.01	Medium	Community	100	48	1	0
5000061	Martin'S Mobile Home Court	Northwestern Delta-Mendota GSA	San Joaquin Valley - Delta-Mendota	5-022.07	High-critically overdraft	Community	60	20	1	0

Table 9c
Summary of Public Water Systems that Show Increasing Uranium Concentration Trends
Water Foundation

PWS ID	PWS Name	Groundwater Sustainability Agency	DWR Groundwater Basin/Subbasin	DWR Basin ID	DWR Basin Prioritization	PWS Type	Population Served by PWS	Number of Service Connections	Number of PWS Wells with Recent Increasing Trends (a)	Number of Violations (c)
3900705	Finnlees Trailer Park	Stockton East Water District GSA	San Joaquin Valley - Eastern San Joaquin	5-022.01	High-critically overdraft	Community	55	26	1	0
5403054	Pffj, LLC	Lower Tule River Irrigation District GSA	San Joaquin Valley - Tule	5-022.13	High-critically overdraft	Non-Transient Non-Community	32	11	1	0
Total							2,611,574	632,349	87	0

Abbreviations:

DWR = Department of Water Resources
GSA = Groundwater Sustainability Agency

MCL = maximum contaminant level
PWS = public water system

Notes:

- (a) Only PWS wells with recent increasing trends are shown herein. Recent trends were calculated based on water quality data collected from 2000 through 2014.
- (b) MCL violations in 2018 are summarized per Reference 2.
- (c) PWS characteristics are from Reference 3.

References:

1. USGS, 2019. California GAMA Priority Basin Project: Trends in water-quality for inorganic constituents in California public-supply wells (1st ed.), Dupuy, D.I., Nguyen, D.H., and Jurgens, B.C., 2019. U.S. Geological Survey website, <https://ca.water.usgs.gov/projects/gama/public-well-water-quality-trends/>.
2. SWRCB, 2018. 2018 Annual Compliance Report, California Drinking Water Program: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/dwdocuments/acr_2018_final_20191220.pdf
3. SWRCB, 2020. Drinking Water Watch – Public Water System Information, State Water Resources Control Board Safe Drinking Water Information System, downloaded on 17 April 2020. <https://data.ca.gov/en/dataset/drinking-water-public-water-system-information>