Imperial County
Drought Resilience Plan

Administrative Final

Prepared with funding from the:
California Department of Water Resources

Prepared for:
Imperial County

Prepared by:
Stantec Consulting Services Inc.

March 24, 2026

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Acronyms and Abbreviations

2018 legislation	legislation on water conservation and drought planning (SB 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended
CDAG	County Drought Advisory Group
County	Imperial County
CWC	California Water Code
DRP	Drought Resilience Plan
DWR	California Department of Water Resources
DWWM	Drinking Water Well Mitigation
EIDWD	Emergency and Interim Drinking Water Distribution
FEMA	Federal Emergency Management Agency
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HSC	California Health and Safety Code
IID	Imperial Irrigation District
LTMSA	long-term mitigation strategy and action
MTBE	methyl tertiary butyl ether
OES	Office of Emergency Services
PCT	Project Coordination Team
PLSS	Public Land Survey Section
SAFER	Safe and Affordable Funding for Equity and Resilience
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
SSWS	state small water system
State	State of California
State Water Board	State Water Resources Control Board
STRA	short-term response action
Task Force	County Drought and Water Shortage Task Force
WSVE	Water Shortage Vulnerability Explorer

1.0 Introduction

The Imperial County (County) Drought Resilience Plan (DRP) documents how the County, its Drought and Water Shortage Task Force (Task Force) members, and other entities with water supply and drought management responsibilities will address water supply vulnerabilities for two types of systems in the County: domestic wells, as defined in California Health and Safety Code (HSC) Section 116275(n) and Section 10609.51(d), and state small water systems (SSWS), as defined in HSC Section 116275(n) and Section 10609.51(m). The County DRP was prepared pursuant to Senate Bill (SB) 552: Drought Planning for Small Water Suppliers, State Small Water Systems, and Domestic Well Communities (Hertzberg; see Section 1.2 for additional detail). This County DRP was developed by the County with funding and technical support provided by the California Department of Water Resources (DWR) Drought Resilience Planning Assistance Program.

1.1 Document Organization

The organization of this document draws from DWR's *County Drought Resilience Guidebook* (DWR 2023). The guidebook is a resource for counties to use in developing a county DRP specifically for SSWSs and domestic wells. Consistent with the guidebook, this County DRP is organized into six chapters, as follows:

- **Chapter 1, Introduction,** provides an overview of the legislation relating to SB 552 and the development of the County DRP. This chapter also includes background information on County demographics and geography and an overview of domestic wells and SSWSs within the County's jurisdiction.
- **Chapter 2, County Drought and Water Shortage Task Force,** provides an overview of the Task Force, including its development process and charter, membership, roles, purpose, and meeting frequency.
- **Chapter 3, Drought and Water Shortage Risk Assessment,** characterizes the vulnerability of domestic wells and SSWSs within the County to drought and water shortage. This chapter also presents the approach and data used to assess vulnerability. It highlights areas within the County that have a higher risk of drought and water shortage where domestic wells and SSWSs are present. Additionally, data gaps are identified to help inform potential long-term strategies.
- **Chapter 4, Short-Term Response Actions,** details the proposed short-term response actions (STRA) for emergency and interim drought solutions, including specific actions, local response triggers, and public engagement.
- **Chapter 5, Long-Term Mitigation Strategies and Actions,** details proposed long-term mitigation strategies and actions (LTMSA) for improving the water supply resilience of domestic wells and SSWSs.
- **Chapter 6, Implementation Considerations,** presents a roadmap for implementing STRAs and LTMSAs consistent with the mission and authority of involved agencies. This includes identifying agencies and entities responsible for implementation, the status of implementation, funding, authorization for implementation, and anticipated schedule. This section also summarizes the level of multi-agency collaboration identified by agencies to support implementation.

- **Chapter 7, References,** provides a list of references used in this plan.

1.2 Legislative Requirements

Signed into law in September 2021 by Governor Gavin Newsom, SB 552 (Hertzberg)[1] obligated the State of California (State) and local governments to share the responsibility of preparing for and responding to a water shortage event. These new requirements are expected to improve the ability of Californians to manage future droughts and help prevent catastrophic impacts on drinking water for communities vulnerable to the effects of climate change. The bill outlines new requirements for small water suppliers, county governments, DWR, and the State Water Resources Control Board (State Water Board) to implement more proactive drought planning and be better prepared for future water shortage events or dry years.

SB 552 also implements legislation on water conservation and drought planning (SB 606 [Hertzberg] and Assembly Bill 1668 [Friedman], as amended; collectively referred to as the "2018 legislation") passed by the State Legislature (Legislature). The 2018 legislation provides a new framework for urban water use efficiency; directives for eliminating water waste; additional requirements for strengthening local drought resilience for urban areas, vulnerable small water suppliers, and rural communities; and recommendations for improving agricultural water use efficiency and drought planning.

Water users protected under SB 552 include the following:

- **Small Water Supplier:** A community water system serving 15 to 2,999 service connections, inclusive, that provides less than 3,000 acre-feet of water annually (California Water Code [CWC] Section 10609.51(k)).
- **Community Water System:** A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system, as defined in HSC Section 116275(i) and Section 10609.51(a).
- **SSWS:** A system for the provision of piped water to the public for human consumption that serves at least 5, 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, as defined in HSC Section 116275(n) and Section 10609.51(m).
- **Domestic Well:** A groundwater well used to supply water for the domestic needs of an individual residence or a water system that is not a public water system and that has no more than four service connections, as defined in HSC Section 116275(n) and Section 10609.51(d).

[1] In 2018, DWR convened a County Drought Advisory Group (CDAG) to assist in a vulnerability assessment and to develop recommended actions for improving drought planning for small water suppliers and rural communities. The CDAG consisted of representatives from counties and other local agencies, small water systems, tribes, academics, non-profit organizations, and other interested parties. The CDAG's recommendations were provided to the legislature in March 2021 and served as the basis for SB 552. DWR has also established a standing drought and water shortage interagency task force, in coordination with the State Water Board and other relevant State agencies, to facilitate proactive State planning and coordination for pre-drought planning, emergency response, and post-drought management, consistent with SB 552. The interagency task force, called the Drought Resilience Interagency and Partners Collaborative, serves as a public forum with State and non-State agency members to advance drought strategies and continue building resilience to the increasingly arid conditions California faces. More information is available at: Drought Resilience Interagency & Partners Collaborative.

- **Nontransient Noncommunity Water System:** A public water system that is not a community water system and that regularly serves at least 25 of the same persons for over 6 months per year, as defined in HSC Section 116275(k) and Section 10609.51(f).

Among the water users protected under SB 552, this County DRP addresses water shortage vulnerabilities for domestic wells and SSWSs. Other water users protected under SB 552 that are not covered by this County DRP have separate requirements to address water shortage vulnerabilities.

1.2.1 County Agency Requirements

This plan fulfills county requirements for preparation of a plan that addresses potential drought and water shortage risk and proposed interim and long-term solutions for domestic wells and SSWSs within a county's jurisdiction (CWC Section 10609.70). While measures to protect small water suppliers and nontransient noncommunity water systems are not within the scope of this County DRP, this plan considers integration opportunities consistent with the intent of SB 552. Applicable county requirements are:

- Establish a standing County Drought and Water Shortage Task Force (CWC Section 10609.70(a))
- Develop a plan that considers, at a minimum, each of the following (CWC Section 10609.70(b)):
    1) Consolidations for existing water systems and domestic wells
    2) Domestic well drinking water mitigation programs
    3) Provision of emergency and interim drinking water solutions
    4) Analysis of the steps necessary to implement the plan
    5) Analysis of local, State, and federal funding sources available to implement the plan

1.2.2 State Agency Involvement and Implementation

SB 552 defined a series of requirements for the State Water Board and DWR. These include:

State Water Board (CWC Section 10609.70(c)):

> *The state board shall work with counties, groundwater sustainability agencies, technical assistance providers, nonprofit organizations, community-based organizations, and the public to address state small water system and domestic well community drought and emergency water shortage resiliency needs, including both of the following:*
>
> > *(1) Proactive communication to domestic well communities before a drought occurs, such as information on local bottled water and water tank providers.*
> >
> > *(2) Funding for installation of basic drought and emergency water shortage resiliency infrastructure, such as well monitoring devices.*

California Department of Water Resources (CWC Section 10609.80(a)):

> *The department shall take both of the following actions to support implementation of the recommendations of its County Drought Advisory Group:*
>
> > *(1) Maintain, in partnership with the state board and other relevant state agencies, the risk vulnerability tool developed as part of the County Drought Advisory Group*

process and continue to refine existing data and gather new data for the tool, including, but not limited to, data on all of the following:

(A) Small water suppliers and nontransient noncommunity water systems serving a school.

(B) State small water systems and rural communities.

(C) Domestic wells and other self-supplied residents.

(2) Update the risk vulnerability tool for small water suppliers and rural communities periodically, by doing all of the following:

(A) Revise the indicators and construction of the scoring as more data becomes readily available.

(B) Make existing and new data publicly available on the California Open Data internet web portal.

(C) In consultation with other relevant state agencies, identify deficits in data quality and availability and develop recommendations to address these gaps.

(b) (1) The department, in collaboration with the state board and relevant state agencies, shall establish a standing interagency drought and water shortage task force to facilitate proactive state planning and coordination, both for predrought planning and post-drought emergency response, to develop strategies to enhance collaboration between various fields, and to consider all types of water users.

(2) The interagency drought and water shortage task force shall include representatives from local governments, community-based organizations, nonprofit technical assistance providers, the public, and experts in land use planning, water resiliency, and water infrastructure.

1.3 Purpose of Imperial County Drought Resilience Plan

The County DRP documents how the County, Task Force members, and other entities with water supply and drought management responsibilities intend to address water supply vulnerabilities of water users protected under SB 552 in the County. It has been prepared as a single document for ease of reference and to facilitate future updates. It describes the water shortage vulnerabilities present in the County; the responses to identified vulnerabilities; and the policy, financial, and regulatory considerations necessary for the implementation of the County DRP. Implementation of the County DRP is led by the County's Public Health Department, Environmental Health Division, Planning & Development Services Department, Department of Public Works, Fire Department & Office of Emergency Services (OES), State Water Board, DWR, and Imperial Irrigation District (IID).

The County DRP was developed by the County with funding and technical support provided by DWR's Drought Resilience Planning Assistance Program and conforms to the legislative requirements of SB 552.

1.4 Imperial County Overview

Imperial County is located in the Imperial Valley region of southern California. Its county seat, El Centro, is located approximately 115 miles east of San Diego and approximately 12 miles north of Mexicali, the capital of the Mexican state of Baja California.

Imperial County is located in the Inland Deserts Region of California, which includes the Mojave Desert, Colorado Desert, and parts of the Great Basin Desert, covering much of the state's southeastern interior. This region is characterized by extreme temperatures, low precipitation, and unique desert ecosystems, with notable features such as Death Valley, Joshua Tree National Park, and the Salton Sea (California Department of Fish and Wildlife n.d.).

1.4.1 Demographics

Selected demographics of the County are summarized below per the 2020, 2023, and 2024 censuses (U.S. Census Bureau 2020, 2023-a, 2023-b, 2024).

- **Population:** As of July 1, 2023, the estimated population of Imperial County was 179,057, representing a 0.4 percent decline from the 179,713 residents recorded in the 2020 census (U.S. Census Bureau 2020, 2024).

- **Age:** The County has a median age of 33.4 years. Approximately 28.4 percent of the population is under 18 years old, while 13.2 percent is 65 years and older. This demographic profile indicates a relatively young population compared to the State (38.2 years) and national median (39.2 years) (U.S. Census Bureau 2023-a, 2024).

- **Ethnicity:** The four largest ethnic groups are Hispanic or Latino (86.3 percent), White (Non-Hispanic) (8.9 percent), Black or African American (2.0 percent), and Asian (1.9 percent). The county's demographics reflect a predominantly Hispanic or Latino population (U.S. Census Bureau 2020).

- **Household Income:** The County's predominant businesses include agriculture, manufacturing, and mineral extraction. It is the 31st most populated region in the state and is ranked 56 out of 58 California counties, with a median household income of $56,393. This reflects the economic conditions of the region, where income distribution varies significantly, as shown in Table 1-1. The lowest quintile (bottom 20 percent) has a mean income of $10,567. In contrast, the highest quintile (top 20 percent) has a mean income of $206,100, demonstrating income disparity. Additionally, the top 5 percent of households earn a mean income of $366,765, further emphasizing the range of economic diversity within the county (U.S. Census Bureau 2024).

  Income variation among the County's incorporated areas, as shown in Table 1-1, is moderate. The city of Imperial has the highest median household income at $83,214, well above the county median of $56,393, while Calexico reports the lowest at $50,021. Other cities, like Brawley, El Centro, and Holtville, fall within a comparable income range. Poverty rates vary more, with Calexico at 21 percent and the city of Imperial at 12.4 percent. While disparities exist, they are less pronounced within incorporated areas compared to the countywide income gap.

Table 1-1. Household Income Among Incorporated Regions of Imperial County

	Imperial	Brawley	Calexico	El Centro	Holtville	Imperial County	Yuma, Arizona	California
Population[1]	20,263	24,416	38,633	44,322	5,605	179,702	100,858	39,538.223
Median household income	$83,214	$60,370	$50,021	$56,093	$63,438	$56,393	$56,439	$96,334
Persons in poverty (%)	12.4	20.9	21	20.1	14.4	12	16.5	17.3

Note:
[1] US Census, April 1, 2020.

- **Education:** The County has a lower-than-average percentage of residents 25 years or older with a bachelor's or higher degree, around 16.1 percent compared to 37 percent for California overall (U.S. Census Bureau 2024).
- **Poverty Level:** About 17.3 percent of Imperial County's population lives below the poverty line, exceeding the national average of 12.6 percent. The largest demographic affected by poverty includes residents under 18 years old, followed by those 65 years and older. Additionally, females experience poverty at a slightly higher rate than males. The most common racial or ethnic group living below the poverty line in the County is Hispanic or Latino (U.S. Census Bureau 2023-b).

1.4.2 Geography

The County is located in the far southeast portion of California and has a total area of approximately 4,482 square miles, of which 4,177 square miles (or 93.2 percent) is land and 305 square miles (or 6.8 percent) is water (U.S. Census Bureau 2012). San Diego County is located to its west, Riverside County to the north, the state of Arizona and Yuma County to the east, and Mexico to the south. The Imperial Valley extends southward for 50 miles from the southern end of the Salton Sea, while the Colorado River forms the County's eastern boundary (Figure 1). The Chocolate Mountains span the eastern portion of the County, and the Santa Rosa Mountains and Fish Creek Mountains border the western portion in a north-south direction. The Imperial Valley runs through the center of the County, which is largely below sea level and home to the Salton Sea (Encyclopedia Britannica 2024). Located in the Colorado Desert, an extension of the larger Sonoran Desert, its hot desert climate is characterized by extremes in daily temperatures (Encyclopedia Britannica 2024).

Imperial County was largely uninhabited until 1901 (Encyclopedia Britannica 2024). Once part of the Gulf of California, the valley was cut off by damlike sediment deposits from the Colorado River Delta Fan (Encyclopedia Britannica 2024). It was then that irrigation canals were opened to divert water from the Colorado River into the valley through Mexico (WEF 2024c). In 1905–1907, floodwaters destroyed the irrigation channels and flooded what was then known as the Salton Sink. These unfettered flows created California's largest lake, the Salton Sea. While the Salton Sea measured approximately 500 square miles in the 1950s, it has steadily shrunk over subsequent decades and is now about 343 square miles, due in part to reduced inflows of irrigation runoff and water transfers to coastal cities (WEF 2024c). These declining water levels have led to increased salinity in the lake and dust storms from exposed lakebed. Development continued in the region following the completion of the Hoover Dam in 1935 and the All-American Canal in 1940 (WEF, 2024c). The Imperial Valley receives the single largest share of Colorado

River water through the All-American Canal to support much of the nation's fruit and vegetable supply (WEF 2024-a).

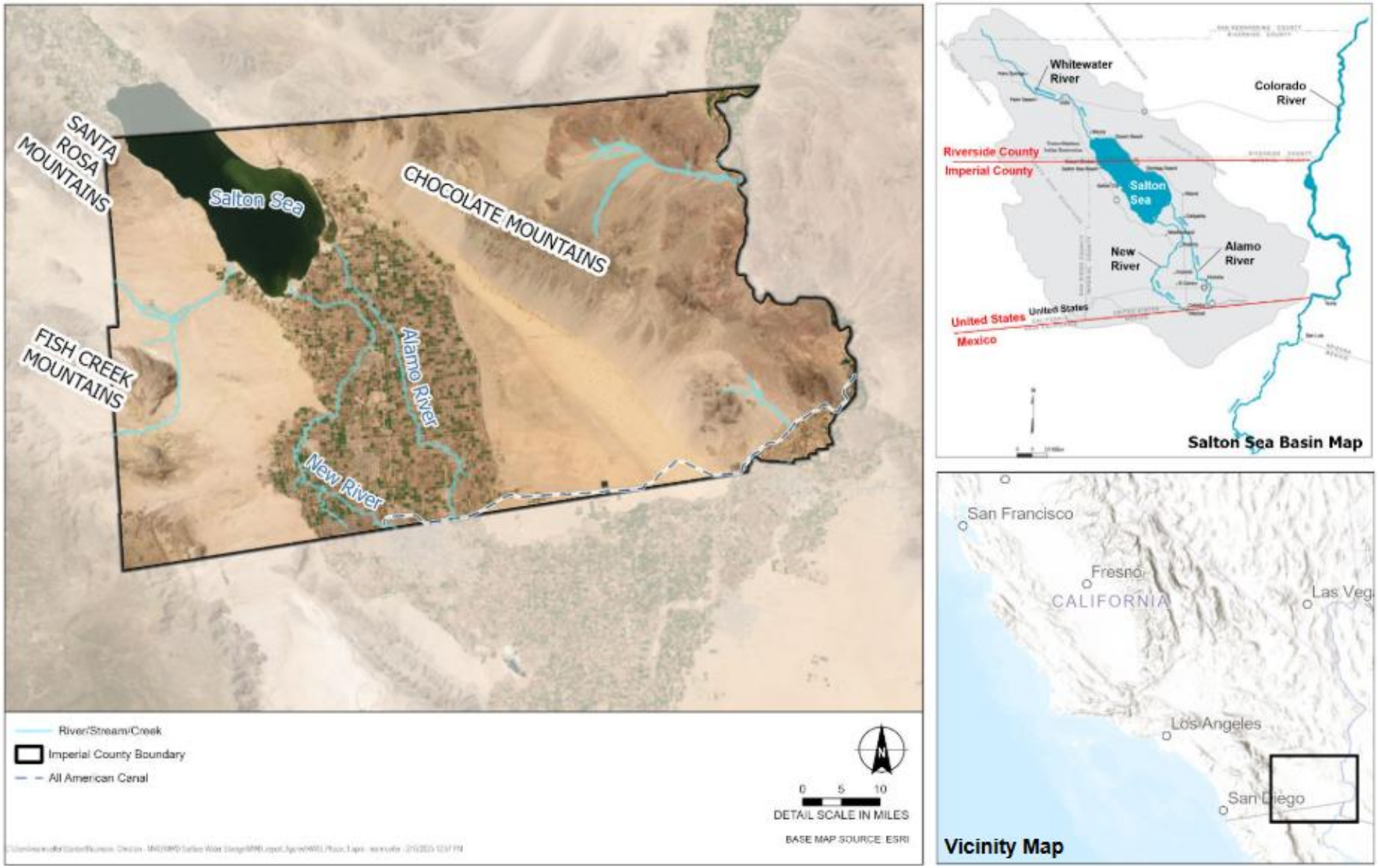
1.4.3 Hydrology

The All-American Canal traverses more than 80 miles of desert to deliver water from the Colorado River (Source: Cohen & Hyun (2006)

Figure 1-1). About 1 million acre-feet of agricultural drainage flows from Imperial County farms to the Salton Sea on an annual basis (WEF 2024-c). The Imperial Valley drainage system consists of 1,450 miles of ditches that drain 500,000 acres of agricultural land into the New River and the Alamo River, which drain into the Salton Sea (WEF 2024-c) (Source: Cohen & Hyun (2006)

Figure 1-1). The New River and the Alamo River flow west and north from the Mexicali Valley in Baja California and then discharge to the Salton Sea (WEF 2024-c). The major watershed (basin) in the Imperial Valley is the Salton Sea Basin, which is delineated by the mountains to the east and west of the valley and discharges into the Salton Sea (Source: Cohen & Hyun (2006)

Figure 1-1).



Source: Cohen & Hyun (2006)

Figure 1-1. Imperial Valley Hydrology (left) and Salton Sea Basin (top right;)

1.4.4 Precipitation

The average annual rainfall in Imperial County from 1991 through 2020 was 2.38 inches (National Weather Service n.d.). Detailed weather records from the National Oceanic and Atmospheric Administration indicate variability in precipitation throughout the year, with some months experiencing nearly negligible rainfall. Typically, the wettest period spans from November through March, aligning with the broader regional patterns in California where winter months bring the majority of annual precipitation. The driest months, on the other hand, generally occur from April through October, reflecting the arid climate of the region. For instance, the data highlight February as one of the wetter months, with a noticeable increase in rainfall, which significantly drops off as the dry season progresses, culminating in extremely low precipitation levels by mid-year (NOAA n.d.; NOAA National Centers for Environmental Information n.d.).

1.4.5 Topography

The Imperial Valley, located in the Colorado Desert, is bordered by sand dunes and barren mountains (Encyclopedia Britannica 2024) (Figure 1-2). Much of the western portion of the County is below sea level, with the elevation of the Salton Sea being approximately 230 feet below sea level (Figure 1-2).

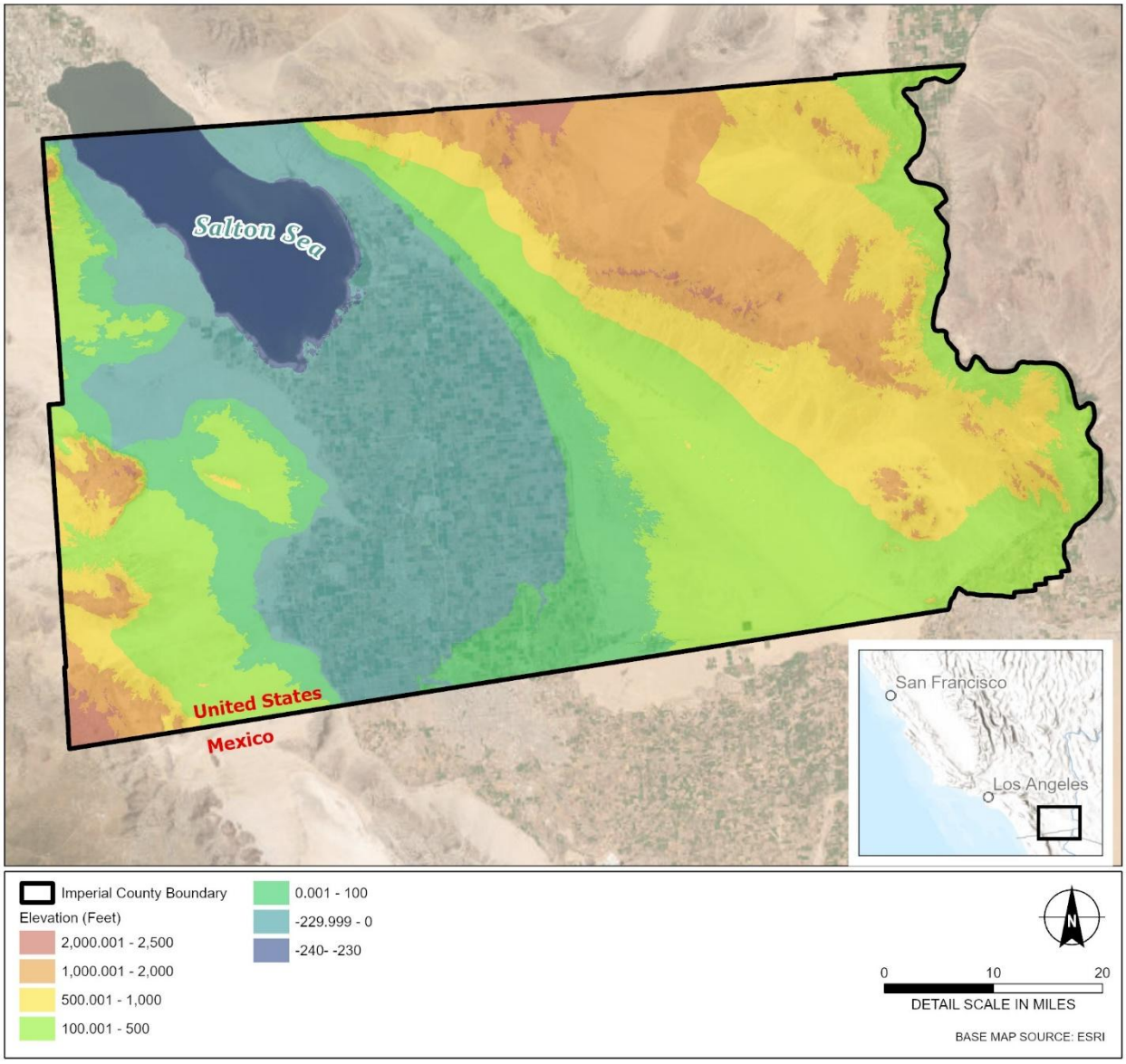


Figure 1-2. Topography of Imperial County

1.4.6 Land Cover and Management

Imperial County's land cover is primarily composed of shrub/scrub vegetation, barren land, cultivated crops, open water, and herbaceous areas. Shrub/scrub accounts for approximately 34 percent of the County's land area, predominantly covering the hillslopes of the Chocolate Mountains (Figure 1-3). Barren land constitutes about 33 percent, with a higher concentration in the western portion of the County (Figure 1-3). The low-lying valley is largely dedicated to cultivated crops, making up approximately 16 percent of the total land area. The Salton Sea, which represents the County's largest water body, covers around 6 percent of the land, while herbaceous vegetation accounts for 5 percent. A detailed breakdown of additional land cover types is provided in Table 1-2. The County's land management and land use is shown in Figure 1-4, which also highlights the extensive agriculture in the Central Valley. In addition, significant portions of Imperial County are managed by the U.S. Department of Defense for military installations and training purposes, including large, contiguous areas such as the Chocolate Mountain Aerial Gunnery Range and the Naval Air Facility El Centro, which collectively occupy an extensive footprint across the eastern and southeastern portions of the County (U.S. Department of Defense 2023; U.S. Navy 2024).

Table 1-2. Land Cover Types Within Imperial County

Land Cover Type	Percentage of County
Shrub/Scrub	34
Barren	33
Cultivated Crops	16
Open Water	6
Herbaceous	5
Low-Intensity Development	1.3
Hay/Pasture	1.1
Open Space Development	1.1
Medium-Intensity Development	0.8
Woody Wetlands	0.6
Emergent Herbaceous Wetlands	0.4
High-Intensity Development	0.2

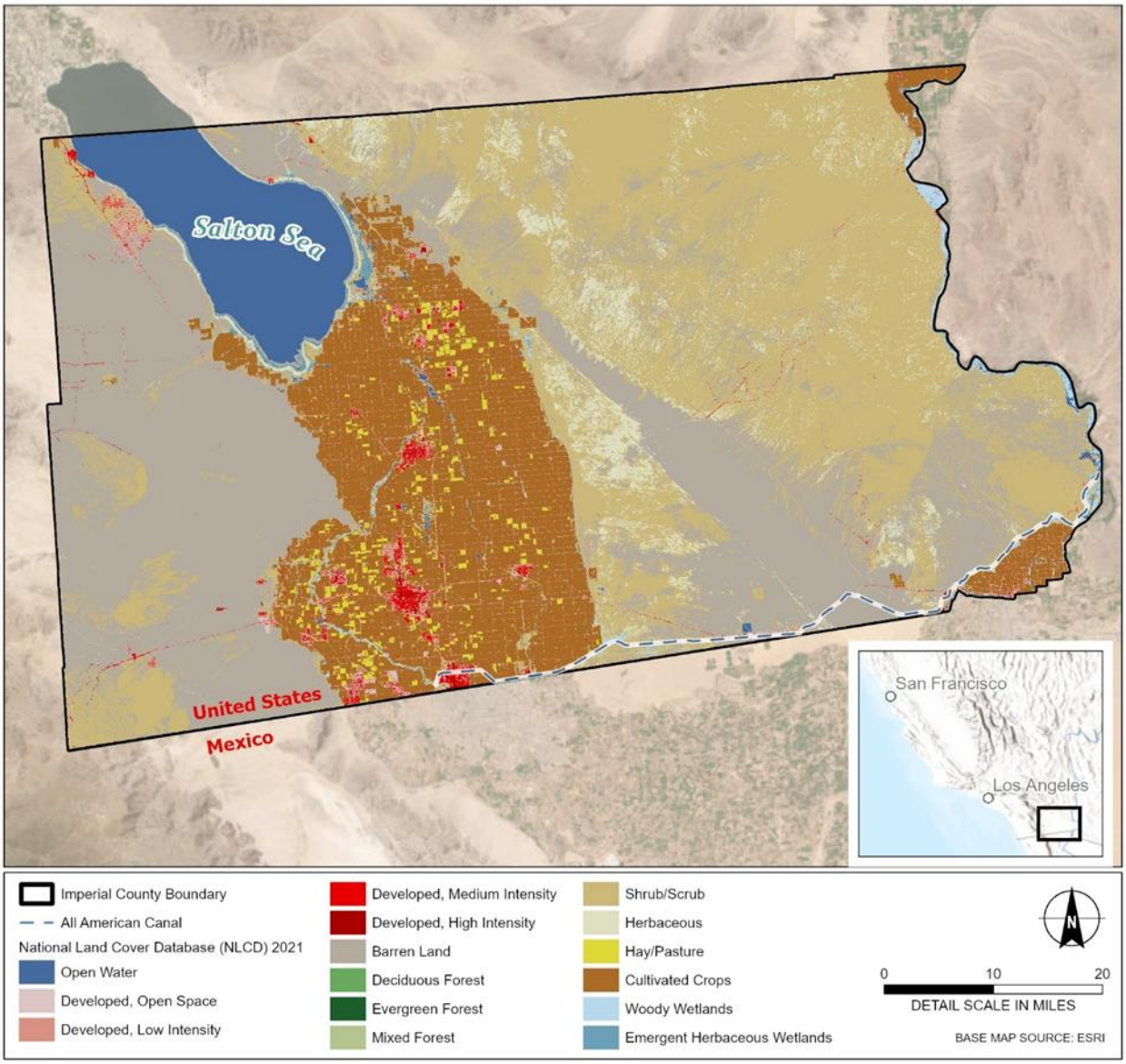


Figure 1-3. Land Cover Within Imperial County

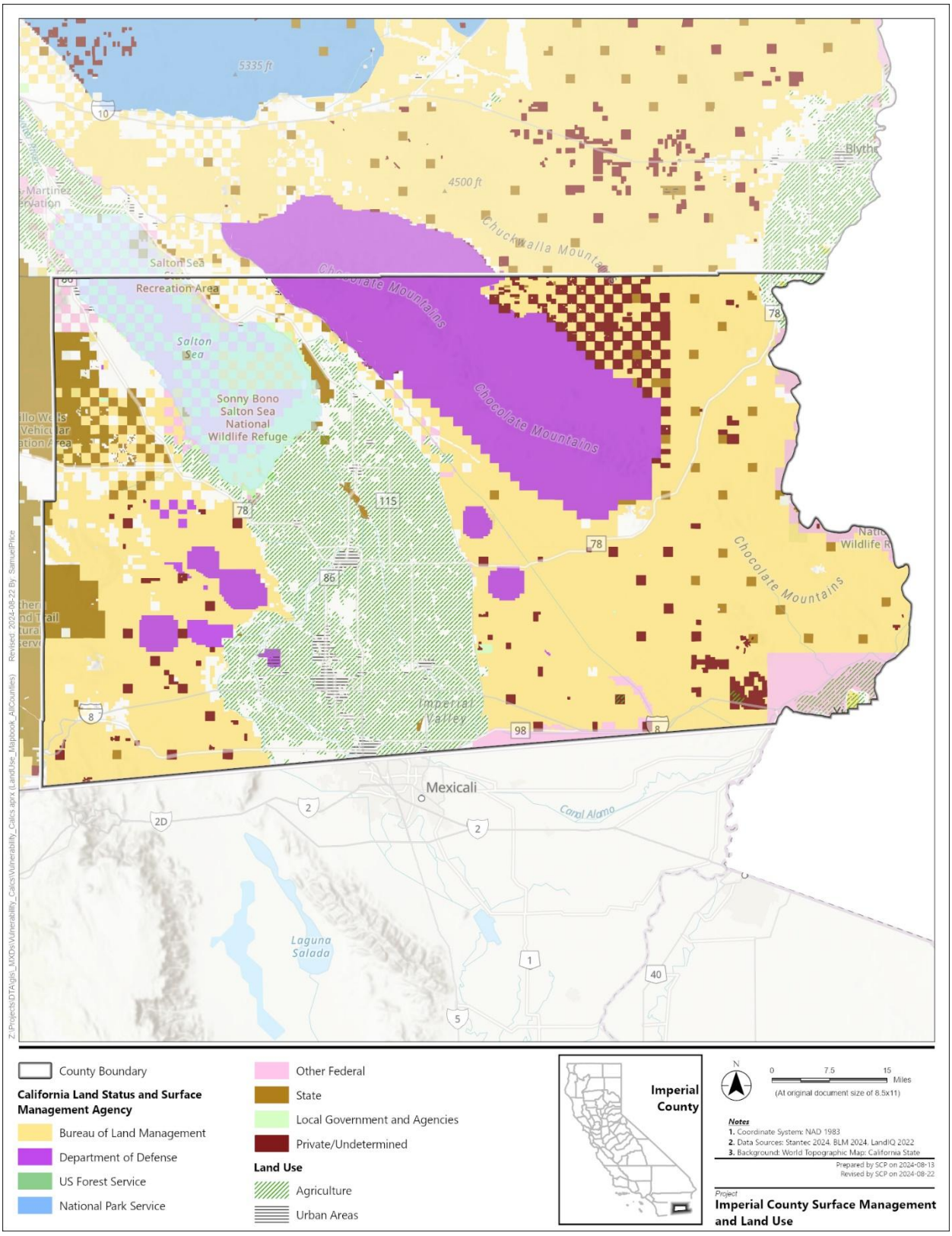


Figure 1-4. Land Management and Land Use Within Imperial County

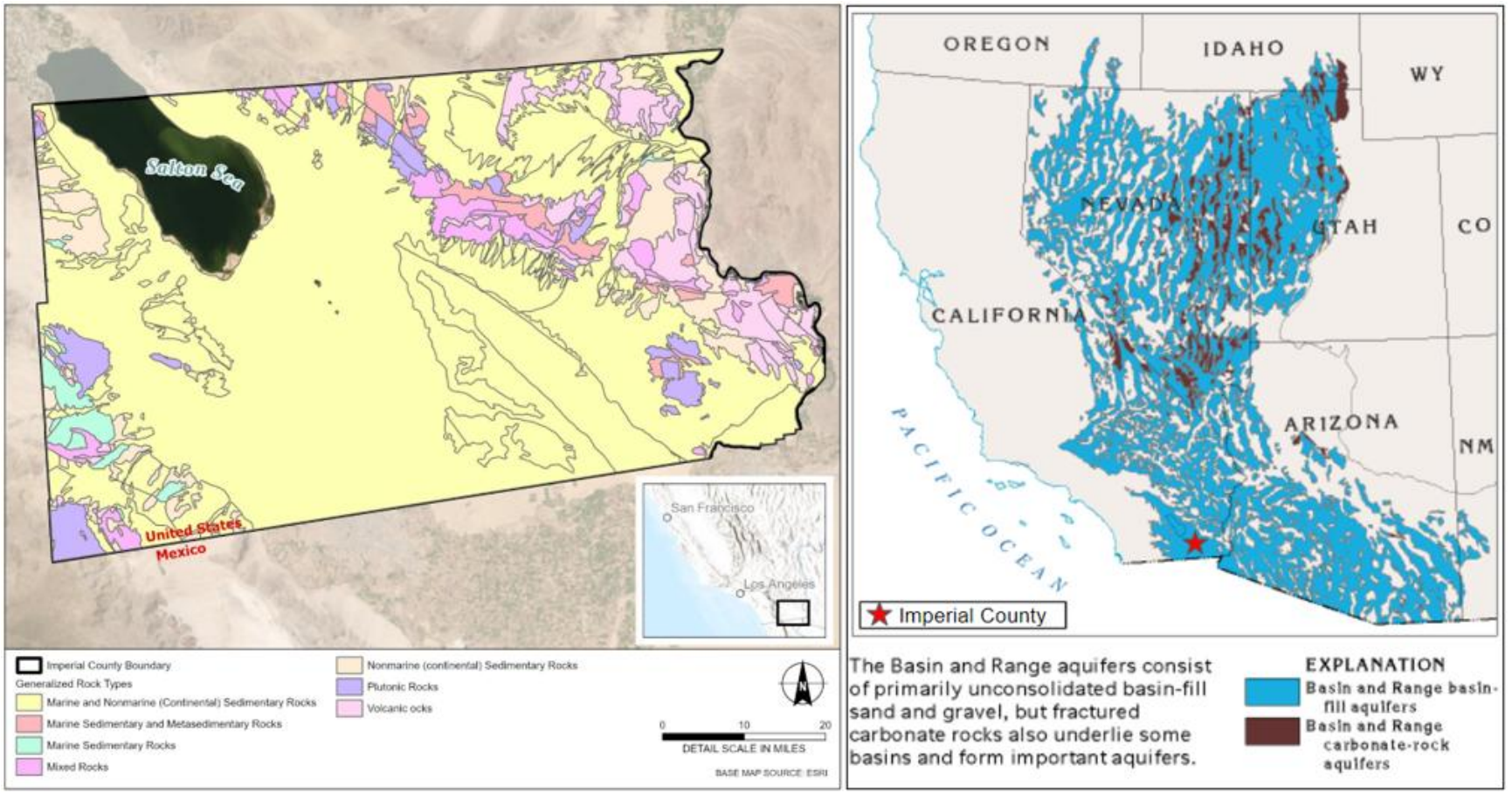
1.4.7 Geology

The geology of Imperial County is primarily influenced by the southernmost transition of the San Andreas Fault system, where the boundary between tectonic plates shifts from a rift zone to a fault zone, making the region highly susceptible to seismic activity. This transitional boundary also induces crustal extension, leading to gradual subsidence over time.

The subsurface geology of the County is predominantly composed of various sedimentary rock formations (Source: University of Buffalo n.d.

Figure 1-5). The groundwater system in the region is characterized by an alluvial basin-fill aquifer (Source: University of Buffalo n.d.

Figure 1-5), which has developed within structural basins where sediment deposition has occurred over time. These aquifers are typically located in valleys and low-lying areas between mountain ranges, where eroded materials from adjacent highlands have accumulated, forming a heterogeneous mix of sand, gravel, silt, and clay that influences groundwater movement and storage.



Source: University of Buffalo n.d.

Figure 1-5. Imperial County Generalized Geology Type Map (left) and Western United States Aquifer Map (right)

1.4.8 Water Landscape: Supply, Use, and Management

The IID operates the largest irrigation network in the U.S., managing over 3,000 miles of canals and drains. IID's Water Department oversees the delivery of 3.1 million acre-feet of water annually, (excluding transfer obligations, to nearly 500,000 acres for agricultural, municipal, and industrial use. Approximately 97 percent of IID's water supports agriculture, making Imperial County one of the top 10 agricultural regions nationwide, while the remaining 3 percent serves municipalities, industrial users, and rural communities (IID n.d.-a).

However, IID's sole water supply is the Colorado River (IID n.d.-b). The Colorado River is experiencing an extended drought exacerbated by climate change, and water demands exceed available supplies due to historical overallocation (WEF 2024-a; Water Finance & Management 2024). This imbalance has increased pressure to reduce water consumption within the system, which covers seven western states and Mexico. In response to the ongoing drought conditions and federal conservation initiatives, IID has recently expanded its voluntary compensated conservation programs (IID n.d.-b; WEF 2024-b). These programs focus on implementing field conservation measures to improve water use efficiencies and deficit irrigating certain forage crops (i.e., a short-term temporary fallowing that seasonally reduces crop yields) to reduce water usage, leading to an overall reduction in irrigation (IID n.d.-b; WEF 2024-b; Water Finance & Management 2024). These measures not only impact agricultural output but also influence regional water balances (IID n.d.-b).

Water supplies for domestic, industrial, agricultural, and environmental uses within the County are described below (IID n.d.-c; Imperial County Public Health Department n.d.-a.; California Water Boards 2021).

Water Supplies:

- **Surface Water**: The Colorado River is the primary water source for the County, supplying the vast majority of the region's water. This water is delivered through the All-American Canal and managed by IID, which oversees its allocation and distribution for agricultural, municipal, and industrial uses. The All-American Canal is the sole source of irrigation water for the region, transforming the desert into a productive agricultural area.
- **Groundwater**: In areas outside the reach of IID's canal system, some residents depend on individual domestic wells or water supplied by a public water system. Groundwater within IID irrigated lands is not typically used for domestic purposes; when used, it is primarily for irrigation. In contrast, groundwater located outside irrigated lands is generally considered potable and suitable for direct consumption. While there are localized areas where groundwater may contain higher levels of naturally occurring constituents such as fluoride and arsenic, the majority of groundwater sources outside of irrigated lands are potable without requiring extensive treatment.
- **Municipal Water Systems**: The majority of residents in urban areas are served by regulated municipal water systems that draw from surface water treated to meet drinking water standards.
- **Imported Water**: The Colorado River, via the All-American Canal, serves as the exclusive imported water source for Imperial County.

Water Uses:

- **Agriculture**: Agriculture is the primary water use in the County, accounting for approximately 97 percent of water use in the County.
- **Municipal and Domestic**: While the majority of Colorado River water is used for agricultural irrigation, a portion (3 percent) is also directed for domestic and industrial use within Imperial County through IID's infrastructure.

Water Management Actions:

- **Groundwater Management**: Groundwater is regulated to prevent over-extraction, especially in areas not served by IID canals. The County issues conditional use permits to all water wells being proposed, including in local medium- and high-priority basins.
- **Water Distribution**: IID is responsible for managing and distributing water from the Colorado River. It operates an extensive network of canals and infrastructure to support agricultural domestic use within the County. While IID serves as a wholesale raw water service provider to treated water systems, it does not directly supply domestic water.
- **Possible Expansion and Innovation**: There are occasional discussions about importing water from other regions or enhancing desalination technologies, but these solutions are not cost-effective and unlikely to augment the County's water supply.

Imperial County primarily depends on Colorado River water supply that is managed and distributed by IID, with localized groundwater resources used in limited areas outside of IID's water service area. Efforts are underway to balance the needs of agriculture, urban and industrial growth, and the environment. However, challenges such as water rights, environmental preservation, and sustainability remain important issues to all water suppliers.

1.4.8.1 Groundwater Detail

Bulletin 118 subbasins are specific divisions within California's groundwater basins, categorized by DWR based on geological and hydrological conditions. Delineation of these subbasins helps manage and regulate groundwater resources effectively across the state (DWR n.d.). The County contains 16 Bulletin 118 subbasins:

- Imperial Valley (DWR Basin Number 7-030)
- Chuckwalla Valley (DWR Basin Number 7-005)
- Coachella Valley (DWR Basin Number 7-021)
- Arroyo Seco Valley (DWR Basin Number 7-037)
- Palo Verde Mesa (DWR Basin Number 7-039)
- Ocotillo-Clark Valley (DWR Basin Number 7-025)
- East Salton Sea (DWR Basin Number 7-033)
- Coyote Wells Valley (DWR Basin Number 7-029)

- Ogilby Valley (DWR Basin Number 7-035)
- Amos Valley (DWR Basin Number 7-034)
- Yuma Valley (DWR Basin Number 7-036)
- Vallecito-Carrizo Valley (DWR Basin Number 7-028)
- West Salton Sea (DWR Basin Number 7-022)
- Borrego Valley (DWR Basin Number 7-024.02)
- Palo Verde Valley (DWR Basin Number 7-038)
- Davie Valley (DWR Basin Number 7-061)

Passed in 2014, the Sustainable Groundwater Management Act (SGMA) represents a statewide framework for long-term groundwater sustainability and management. SGMA required local public agencies, pursuant to CWC Section 10721(n), to form groundwater sustainability agencies (GSA) in high- and medium-priority basins and develop groundwater sustainability plans (GSP) to avoid undesirable results and mitigate overdraft within 20 years. Analysis completed by DWR to support implementation of SGMA classified all of the basins in the County as very low-priority subbasins, except for Coachella Valley, which is a medium-priority basin.

DWR approved a groundwater management plan for the Indio Subbasin of the Coachella Valley Basin, the only medium-priority basin in the County, as an alternative to a GSP. Coachella Valley Water District, Coachella Water Authority, Desert Water Agency, and Indio Water Authority collaborated on the alternative for the Indio Subbasin. The State's approval indicates that the updated water management plan complies with SGMA, relying upon the best available science and information, and that implementing the plan is likely to achieve or maintain groundwater sustainability (Mission Springs Water District 2024).

1.4.9 Water Systems Within Imperial County's Jurisdiction

CWC Section 10609.70 requires the County DRP to address domestic wells and SSWSs. Figure 1-6 shows the location of domestic wells and SSWSs within the County, and Table 1-3 summarizes how many domestic wells and SSWSs are in the Bulletin 118 groundwater basins. In addition, the figure and table show domestic wells that are outside the County but still within groundwater basins that are within the County.

Table 1-3. Summary of Groundwater Basins, Domestic Wells, and State Small Water Systems in Imperial County

Bulletin 118 Basin ID	Groundwater Basin Name	SGMA Priority	Domestic Wells Drilled After 1977[1]	Domestic Wells Drilled Before 1977[1]	State Small Water Systems	Domestic Wells in Basin but Outside County
7-005	Chuckwalla Valley	Very Low	0	0	0	21
7-021.01	Coachella Valley - Indio	Medium	1	0	0	1,173

Bulletin 118 Basin ID	Groundwater Basin Name	SGMA Priority	Domestic Wells Drilled After 1977[1]	Domestic Wells Drilled Before 1977[1]	State Small Water Systems	Domestic Wells in Basin but Outside County
7-022	West Salton Sea	Very Low	0	12	0	0
7-024.02	Borrego Valley - Ocotillo Wells	Very Low	3	0	0	127
7-025	Ocotillo-Clark Valley	Very Low	3	1	0	4
7-028	Vallecito-Carrizo Valley	Very Low	0	0	0	13
7-029	Coyote Wells Valley	Very Low	30	3	0	0
7-030	Imperial Valley	Very Low	44	20	2	0
7-033	East Salton Sea	Very Low	1	3	0	2i
7-034	Amos Valley	Very Low	0	0	0	0
7-035	Ogilby Valley	Very Low	26	1	0	0
7-036	Yuma Valley	Very Low	23	13	0	0
7-037	Arroyo Seco Valley	Very Low	2	1	0	0
7-038	Palo Verde Valley	Very Low	0	0	0	86
7-039	Palo Verde Mesa	Very Low	0	0	0	110
7-061	Davies Valley	Very Low	0	0	0	0
N/A	Fractured Rock Aquifer Wells	N/A	5	1	0	N/A
Total			**138**	**55**	**2**	**1,536**

Note:

[1] Information presented in this table and Figure 1-6 are derived from the Online System for Well Completion Reports. Geographic information in well completion reports may not be up-to-date and/or lack sufficient location information. Wells lacking coordinate information are associated to the centroid of a Public Land Survey Section. A single point may represent multiple wells at that location.

Key:

N/A = not available

SGMA = Sustainable Groundwater Management Act

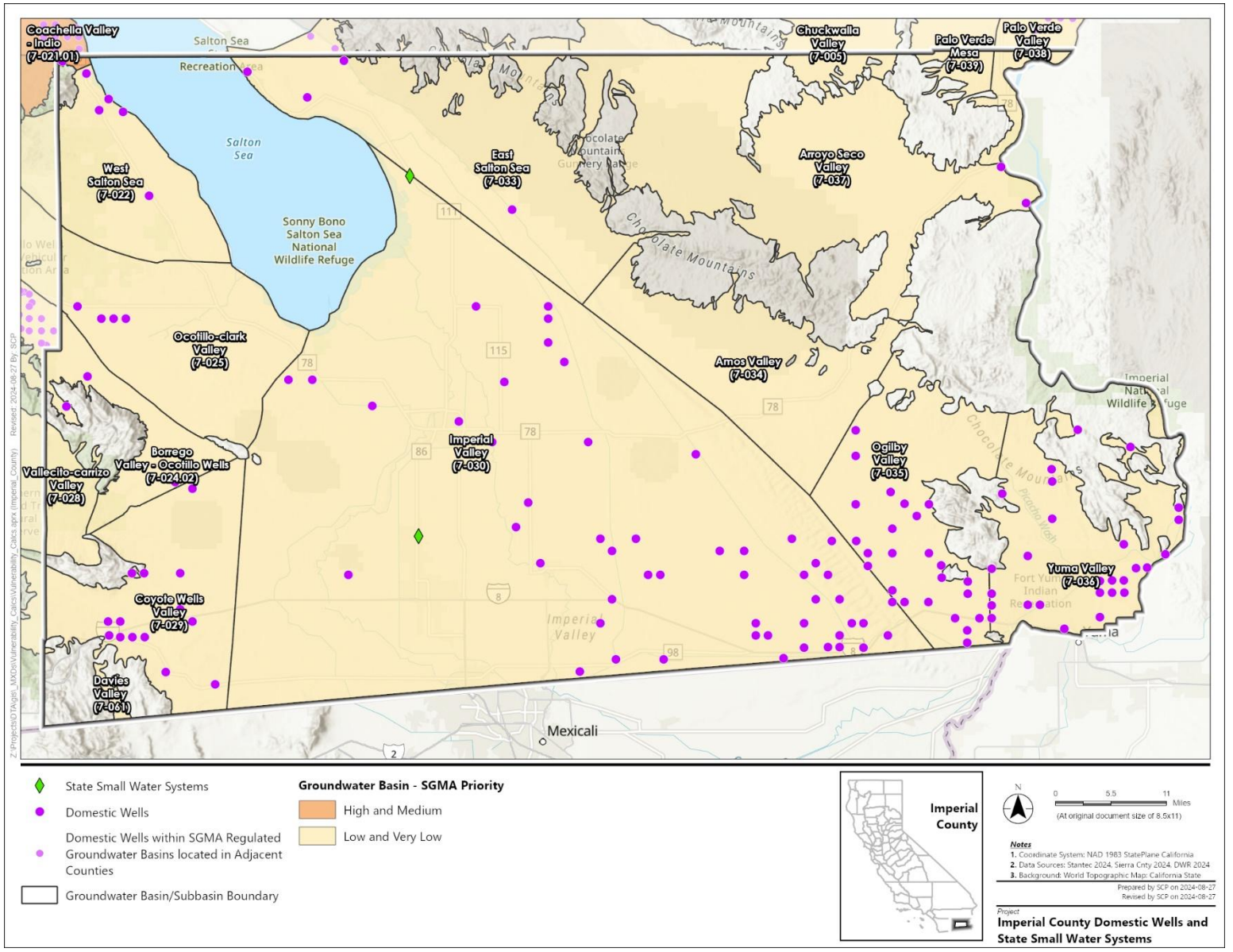


Figure 1-6. Locations of Domestic Wells and State Small Water Systems in Imperial County

2.0 County Drought and Water Shortage Task Force

This section describes the Task Force established in support of the County DRP and the activities undertaken to communicate and collaborate with the State and other local governments, GSAs, community-based organizations, local water suppliers, and local residents.

2.1 Purpose and Goals

The purpose of the Imperial County Task Force is to:

- Establish the authority, scope, and structure of the Task Force, a standing body established pursuant to SB 552 and CWC Section 10609.70.
- Define the organizational structure of the Task Force for development, revision, and implementation of the County DRP.
- Describe additional Task Force communication and engagement efforts related to the County DRP.
- Establish additional information needed for establishing the Task Force within the County's standing committee framework.

The Task Force seeks to achieve the following goals:

- Facilitate drought and water shortage preparedness for domestic wells and SSWSs within the County's jurisdiction.
- Facilitate regular coordination and communication among staff of relevant County departments, local water agencies, local water suppliers, GSAs, and others representing the concerns of domestic wells and SSWS users.
- Develop a County DRP that supports drought and water shortage preparedness and responsiveness for domestic wells and SSWSs within the County's jurisdiction.
- Support implementation of the County DRP.

2.2 Legislative Direction

In September 2021, SB 552 (Hertzberg) was enacted to address, among other things, water shortage risks faced by small water suppliers and domestic well users during drought and water shortage events. Under SB 552, counties are required to prepare a County DRP to achieve meaningful and long-term improvements in water resilience for domestic well and SSWS communities.

Passage of SB 552 mandates establishment of a standing Task Force to cultivate the continued practices of drought planning and improving long-term water resilience. Composition of the Task Force is guided by CWC Section 10609.70 (a)(1) and (2):

> *(a)(1) A county shall establish a standing county drought and water shortage task force to facilitate drought and water shortage preparedness for state small water systems and domestic wells within the county's jurisdiction, and shall invite representatives from the state and other local governments, including groundwater sustainability agencies, and*

community-based organizations, local water suppliers, and local residents, to participate in the task force.

(2) In lieu of the task force required by paragraph (1), a county may establish an alternative process that facilitates drought and water shortage preparedness for state small water systems and domestic wells within the county's jurisdiction. The alternative process shall provide opportunities for coordinating and communicating with the state and other local governments, community-based organizations, local water suppliers, and local residents on a regular basis and during drought or water shortage emergencies.

The Imperial County Task Force has been established pursuant to CWC Section 10609.70(a)(2). The composition, roles, and responsibilities defined in this section are intended to fulfill the County's obligations under SB 552.

2.3 Organization

The Task Force is a community- and agency-based body that is focused on water shortage vulnerabilities and water supply reliability of domestic wells and SSWS communities. Figure 2-1 illustrates the hierarchy and decision-making framework of the Task Force in relation to the Project Coordination Team (PCT) and County staff.

2.3.1 Project Coordination Team

The PCT consists of County offices and departments responsible for preparation, revision, and implementation of the County DRP. The PCT is led by Imperial County's Public Health Department, Environmental Health Division.

The PCT is responsible for:

- Leading and managing preparation and revision of the County DRP.
- Convening, collaborating, and responding to informational needs of the Task Force in relation to the preparation, revision, implementation, and adoption of the County DRP.
- Supporting the Task Force in conducting annual and emergency meetings.
- Leading and coordinating implementation of the County DRP by County agencies and other partner agencies.
- In collaboration with the Task Force, leading communication and engagement activities with County DRP interested parties.
- Evaluating and accepting non-County parties as PCT members where such parties serve as implementation partners of the County DRP.

2.3.2 Drought and Water Shortage Task Force

The Task Force, shown in Figure 2-1, is a standing body established pursuant to CWC Section 10609.70(a)(2) and formed administratively by the PCT. The Task Force is an advisory and consultative entity to the County Board of Supervisors and the PCT.

Figure 2-1. Structure of Parties Involved in Imperial County Drought and Water Shortage Task Force

2.4 Communication and Engagement

While developing the County DRP, the County completed various communication and collaboration activities to gather input, including establishing a website for domestic well and SSWSs. The website hosts information about SB 552 requirements, DRP developments and updates, resources to report dry wells, local resources and assistance, and educational resources for well monitoring and management.

To strengthen communication and collaboration both routinely and during drought or water shortage emergencies, the PCT may implement a series of public engagement activities featured on the DRP website. These may include prominently displayed alerts and critical information at the top of the website, clearly indicating the severity of drought conditions and providing resources to support community response.

These activities provide opportunities for broad community awareness among interested parties and serve to support the County in fulfilling the requirements of CWC Section 10609.70(a)(2).

3.0 Drought and Water Shortage Risk Assessment

A drought and water shortage risk assessment (risk assessment) was conducted during development of the County DRP as directed in CWC Section 10609.70(b). This risk assessment evaluated how various hazards impact water shortage vulnerability for the County's domestic well, SSWS, and other community assets. The risk assessment results informed STRAs and LTMSAs for emergency response measures and build resilience for future water shortages. This chapter presents the risk assessment results for Imperial County.

The risk assessment presented in this County DRP does not replace the regulatory requirements of the Federal Emergency Management Agency (FEMA). The County DRP could make the County eligible for FEMA's Pre-Disaster Mitigation and Hazard Mitigation Grant programs. However, if a jurisdiction is also seeking approval of a drought and/or water shortage risk assessment within the multi-jurisdictional hazard mitigation plan update, it should follow the requirements outlined in FEMA's *Local Mitigation Planning Handbook* (FEMA 2013).

3.1 Terminology

The County DRP adapted the following definitions from the FEMA *Local Mitigation Planning Handbook* (FEMA 2013) within the context of drought and water shortage planning:

- **Community assets:** The people, structures, facilities, and systems that have value to the community. The minimum assets considered as part of the SB 552 DRP include domestic wells, SSWSs, and populations relying on those water supplies.
- **Hazard:** A source of harm or difficulty created by a meteorological, environmental, geological, hydrological, or other event. In the context of SB 552, hazards are the natural, human-made, and social processes that can lead to water shortages in the County.
- **Impact:** The consequences or effects of a hazard related to drought and water shortages on the community and its assets.
- **Risk:** The potential for damage, loss, or other impacts (e.g., water shortage) created by the interaction of natural hazards with community assets and their physical and social vulnerabilities.
- **Risk assessment:** A product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision-making.
- **Vulnerability:** The characteristics of community assets or populations that make them susceptible to damage from a given hazard. It includes both physical vulnerability and social vulnerability.

3.2 Risk Assessment Methodology

The nature and severity of hazards that can cause water shortages vary at regional and local scales due to differences in conditions, such as precipitation patterns, groundwater levels, topography, geology, infrastructure, and regulatory frameworks. Communities lacking access to reliable water sources and

assistance are most vulnerable such hazards during a water shortage. To address this, a risk assessment was completed that assessed physical and social vulnerability indicators for domestic wells and state small water systems. The County and Task Force used risk assessment results to develop STRAs and LTMSAs to address vulnerable communities within the County (see Sections 4 and 5).

The risk assessment was completed following four steps:

1. **Describe Major Hazards in the County:** Drought, climate change, and water quality hazards were summarized and described.
2. **Complete Draft Risk Assessment using DWR Water Shortage Vulnerability Explorer:** The DWR Water Shortage Vulnerability Explorer (WSVE) Tool was used to (1) identify areas within the County where domestic wells and SSWSs are vulnerable to water supply shortages, and (2) characterize the hazards driving vulnerability. This information was included in a draft risk assessment. The County and Task Force reviewed the draft risk assessment, provided feedback, and identified data gaps. Additional details on the WSVE Tool and how it was applied in the risk assessment are included below.
3. **Revise the Draft Risk Assessment:** The County and Task Force feedback on the draft risk assessment was used to develop a revised risk assessment.
4. **Incorporate Results of Revised Risk Assessment into County DRP:** Information from the revised risk assessment was included in the County DRP (Section 3.4). The County and Task Force use the revised risk assessment results to develop STRAs and LTMSAs to for vulnerable communities with domestic wells and state small water systems (Sections 4 and 5).

Developed by DWR in collaboration with the County Drought Advisory Group (CDAG), the WSVE Tool is an online geospatial application that assesses water shortage vulnerability using physical (Table 3-1) and social (Table 3-2) vulnerability indicators. These indicators were selected by DWR and the CDAG to reflect the hazards that could make a domestic well or SSWS vulnerable to water shortage.

The WSVE Tool calculates both a physical vulnerability score and a social vulnerability score, each combining the associated individual indicators. The process used by the WSVE Tool to calculate those scores is summarized below.

- The physical vulnerability score was calculated at the Public Land Survey Section[2] (PLSS) scale by normalizing the indicator value between 0 and 1, with 1 representing the highest possible vulnerability for that indicator. Normalized scores were multiplied by a weighting factor from 1 to 5. The weights were assigned by DWR and the CDAG to capture how some indicators contribute more to water shortage vulnerability than others.
- The social vulnerability score was calculated at the Census Block Group[3] scale by normalizing the indicator value between 0 and 1 and summing the values together with no weighting.

DWR periodically revises the WSVE Tool to incorporate improved data and/or updated methodology. The 2024 version was used to complete the risk assessment for this County DRP. The detailed

[2] A Public Land Survey Section is a geographic delineation of an area equivalent to 1 square mile.
[3] A Census Block Group is a geographic unit with a population between 600 and 3,000 people. It is the smallest geographical unit for which the U.S. Census Bureau publishes data collected from a fraction of households.

methodology that describes the WSVE Tool indicators and corresponding values, data sources, and weighting factors is available on the WSVE Tool website (Water Shortage Vulnerability Explorer Tool).

Table 3-1. Water Shortage Vulnerability Explorer Indicators Used in Development of the Physical Vulnerability Score

Indicator Name[1]	Indicator Description
Climate Change	
Temperature Shift (RC1a)	Projected change in maximum temperatures by mid-century.
Saline Intrusion Projected (RC1b)	Spatial extent of projected 1-meter sea level rise by 2040 into coastal aquifers.
Wildfire Risk (RC1c)	Projected area burned by 2035–2064.
Current Environmental Conditions and Events	
2024 Precipitation (RC2a)	If water year 2024 precipitation was less than 70 percent of normal.
Multiple Dry Years (RC2aa)	Count of dry years within the last five water years (2020–2024).
Wildfire Risk (RC2b)	USFS Wildfire Hazard Potential.
Geology (RC2c)	Fractured rock basin within the PLSS.
Water Quality Aquifer Risk (RC2i)	SAFER Needs Assessment 2024 water quality composite score.
Subsidence (RC2d)	Amount of subsidence as measured by remote sensing.
Basin Salt (RC2e)	Presence of saltwater intrusion into coastal aquifer.
Overdrafted Basin (RC2f)	SGMA critically overdrafted groundwater basin.
Chronic Declining Water Levels (RC2g)	Amount of declining groundwater levels between 2003 to 2023.
Surrounding Land Use (RC2j)	Proportion of irrigated agriculture in the PLSS.
Infrastructure Susceptibility	
Dry Domestic Well Susceptibility in basins (RC3a)	Dry well susceptibility.
Domestic Well Density in Fractured Rock Areas (RC3c)	Density of well completion reports.
Record of Shortage	
Reported Household Outage on Domestic Well (RC5a)	Presence of one or more households with reported outages in the PLSS.

Note:
[1] Abbreviations are included next to Indicator Name (i.e., "RC1a") for clarity.
Key:
PLSS = Public Land Survey Section
SAFER = Safe and Affordable Funding for Equity and Resilience Program
SGMA = Sustainable Groundwater Management Act
USFS = U.S. Forest Service

Table 3-2. Water Shortage Vulnerability Explorer Indicators Used in Development of the Social Vulnerability Score

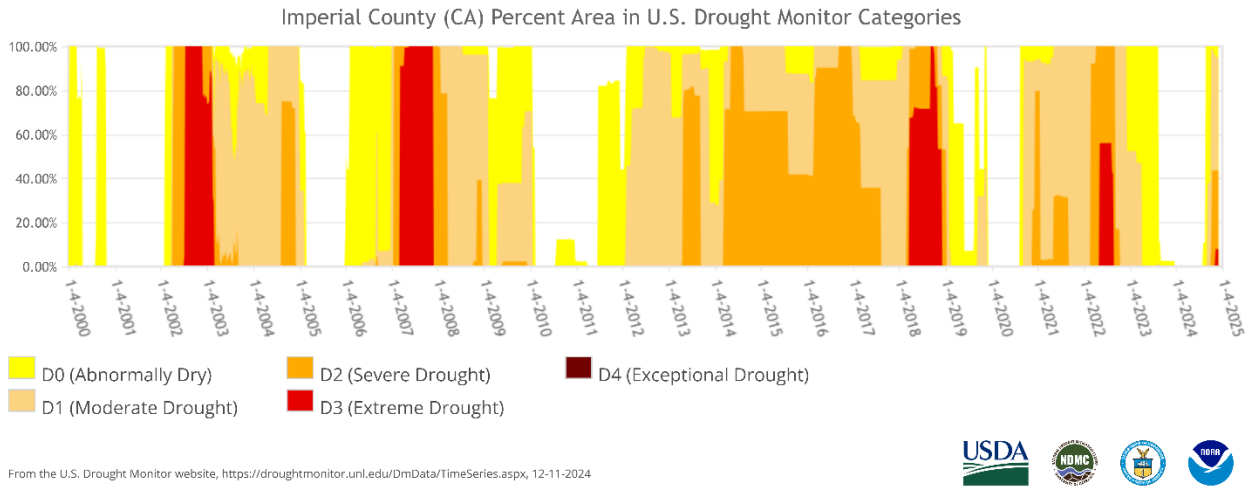
Indicator Name	Indicator Description
Socioeconomic Status	
Poverty Level	Percent of persons below poverty level.
Unemployment	Percent of persons aged 16 years of age or older that are unemployed.
Per Capita Income	Per capita income.
Language and Education	
Education Attainment	Percent of persons without a high school diploma.
English Language Proficiency	Percent of persons who speak little to no English.
Demographics	
Elderly Population	Percent of persons 65 years of age or older.
Non-Adult Population	Percent of persons 17 years of age or younger.
Minority Population	Percent of persons that are in a minority population.
Disability	Percent of persons 5 years of age or older with a disability.
Single Parent Households	Percent of single-parent households.
Housing and Transportation	
Multi-Unit-Housed Population	Percent of persons living in a multi-unit structure.
Mobile Home-Housed Population	Percent of persons living in a mobile home.
Crowded Conditions	Percent of persons living in conditions with more than one person per room.
No Vehicle Access	Percent of households with no vehicle available.
Race and Ethnicity	
Persons of Color	Percent of persons that identify with a race other than White or identify ethnically as Hispanic or Latino.

3.3 Hazards in Imperial County

This section summarizes the recent drought, projected climate change, current water quality, and groundwater hazards in the County. Section 3.4 provides more detail on the vulnerabilities related to these hazards.

3.3.1 Drought

Since 2000, the County has experienced what the U.S. Drought Monitor categorizes as “Extreme Drought,” as shown in Figure 3-1. The figure highlights the cyclical nature of droughts within the County, where periods of “Extreme Drought” are followed by periods without drought. The longest drought lasted 7 years, from 2012 through 2019. This figure also shows that drought can occur rapidly, sometimes within a single year.



Source: Time Series | U.S. Drought Monitor, Accessed: 08/2024

Figure 3-1. Occurrence of Drought in Imperial County

3.3.2 Climate Change

According to California's Fourth Climate Change Assessment, climate change has increased both average temperatures and the frequency and intensity of extreme heat events in the Inland Deserts region, including Imperial County. By the end of the century, average annual temperatures are projected to increase by 8 to 14 degrees Fahrenheit, with the number of extreme heat days and warm nights also rising significantly. These changes will exacerbate existing vulnerabilities, such as water scarcity and agricultural stress, in a region where annual precipitation is already low, averaging only about 5 inches. Drought conditions are expected to become more frequent and severe, driven by high temperatures that increase evaporation rates and reduce water availability for communities, ecosystems, and agriculture (Bedsworth et al. 2018).

The region's reliance on the Colorado River, coupled with increasing demands and climate-driven reductions in flow, heightens the potential for water shortages. Extended periods of drought can adversely affect public health, reduce the number of workable farm-labor days, and degrade air and water quality. Precipitation patterns in the Inland Deserts region are expected to remain variable, with potential decreases in early winter precipitation and increases in late winter and spring. However, overall annual precipitation is not anticipated to change significantly (Bedsworth et al. 2018).

Climate change is also likely to influence wildfire risk in the region. Rising temperatures and altered precipitation patterns could lead to vegetation shifts, potentially increasing the presence of invasive grasses that act as fuel for wildfires (Bedsworth et al. 2018). Wildfires can damage infrastructure and cause water quality issues, including those discussed in Section 3.3.3.

3.3.3 Water Quality

Water quality in the County is significantly impacted by agricultural runoff and irrigation-related salinity. In addition, secondary risks such as septic leaks, industrial discharges, and naturally occurring contaminants like arsenic, selenium, and boron are further compounded by climate change, which worsens pollutant concentrations and diminishes water availability.

Within the County, only the Bard-Winterhaven region and Ocotillo rely on groundwater from alluvial aquifers, making these communities particularly sensitive to groundwater-related water quality and supply conditions. The WSVE Tool indicates potential water quality vulnerability for domestic wells in both areas due to reliance on untreated groundwater, limited monitoring, and the potential presence of naturally occurring constituents common to alluvial aquifers. Some public water systems in the County rely on groundwater for their supply and regularly monitor water quality. For domestic wells that use the same groundwater sources and are in close proximity to these public water systems, any water quality issues identified by public water systems could include water used by domestic wells.

In particular, the Ocotillo and Bard-Winterhaven regions have public water systems within their areas that routinely monitor groundwater. There are six public water systems in the Ocotillo area, including Ocotillo Mutual Water Company, Coyote Valley Mutual Water Company, Jackson's Hide-A-Way RV Park, Imperial Valley Desert Museum, Ocotillo Chevron, and U.S. Gypsum Company. In the southwestern portion of Ocotillo, the County has noted elevated levels of fluoride and arsenic at the Imperial Valley Desert Museum and Ocotillo Chevron public water systems, which are both classified as transient non-community water systems. In the Bard-Winterhaven region there are three public water systems including Winterhaven County Water District, Well Trailer Park, and Yumi Dates. The County has noted elevated iron and manganese at Winterhaven County Water District, which is classified as a community water system. Outside of these areas, domestic wells are not subject to routine water quality monitoring or treatment, site-specific groundwater quality conditions in these areas are not well characterized, and water quality risks may increase during periods of groundwater level decline or prolonged drought.

3.3.3.1 Surface Water

Residents of the County are significantly vulnerable to degraded surface water quality, which affects their drinking water supplies. One primary source of contamination is agricultural runoff, which often contains silt, pesticides, salts, and nutrients like phosphorus (University of California Cooperative Extension n.d.). These pollutants primarily degrade surface water quality in IID drains and the two County rivers, which also function as drains.

However, it is important to note that IID canals, which supply water for municipal treatment, are not degraded by discharges originating within the Imperial Valley. Canals and drains are completely independent conveyance systems, with the canal system elevated in relation to adjacent land, including fields and drains, thereby preventing contamination via gravity flow. Nevertheless, degradation of IID canal water may occur due to upstream discharges, typically originating outside the Imperial Valley.

In addition to agricultural runoff, other significant water quality challenges in the County include contamination associated with the Salton Sea, industrial discharges, and transboundary pollution:

- **Salton Sea:** The Salton Sea faces increasing salinity and the exposure of dried lakebed areas, which can negatively impact both air and water quality through dust emissions (State Water Board n.d.-a).
- **Industrial Discharges:** Unauthorized activities, such as auto dismantling, can release hazardous waste into surface and groundwater, exacerbating water quality issues (CalEPA 2019).
- **Transboundary Pollution:** The New River, which flows from Mexico into Imperial County, carries pollutants such as raw sewage and industrial waste, posing environmental and public health risks. This contamination complicates water treatment efforts and highlights the need for cross-

border collaboration to improve water quality management (Imperial County Public Health Department n.d.-b).

3.3.3.2 Groundwater

Groundwater quality in Imperial County is threatened by agricultural runoff, irrigation-related salinity, septic system leaks, and naturally occurring contaminants.

Key groundwater quality constituents of concern in Imperial County include arsenic, nitrate, and elevated levels of salinity, as well as naturally occurring substances such as boron and uranium. The presence of contaminants like hexavalent chromium (chromium-6), methyl tertiary butyl ether (MTBE), and 1,2,3-trichloropropane has been detected in localized areas throughout the county, along with elevated bacteriological levels (State Water Board 2024-a). Some of these elevated concentrations result from natural geologic conditions, while others are attributed to contamination from agricultural activities, septic systems, and industrial sources. The key water quality constituents affecting groundwater are summarized below.

- **Nitrate (and nitrite):** These constituents occur naturally in the environment and can also be introduced via fertilizers, mining, septic and landfill leaks, and animal and industrial waste (among other pathways). Ingestion of nitrates is known to cause methemoglobinemia in infants and may lead to some types of cancer (ATSDR 2017).
- **1,2,3-trichloropropane:** This constituent is an industrial chemical that may enter the hydrologic environment through spills or manufactured products such as paint removers. Limited data are available on its toxicology for humans; the chemical is listed as a likely carcinogen by the U.S. Environmental Protection Agency (ATSDR 2021).
- **Arsenic:** This constituent is a metalloid that occurs naturally in the environment, including soils and rock, and is also introduced by anthropogenic activities such as pesticide application and mining of metals. Ingestion of arsenic via drinking water has led to documented human deaths (ATSDR 2007).
- **Boron:** This constituent occurs naturally in the environment and can also be introduced via sewage, fertilizers, and herbicides. Acute exposure to high doses via ingestion (approximately 66 percent or higher than the average daily intake) can pose serious health risks (ATSDR 2010).
- **Chromium-6:** Chromium occurs naturally in the environment and has several forms, including chromium-6. Chromium-6 is listed as a carcinogen by the International Agency for Research on Cancer (ATSDR 2012).
- **MTBE:** This constituent is a compound historically added to gasoline. Leaks from storage tanks introduce the chemical into soils and groundwater. No known human studies are available on the possibility of death and cancer following exposure (ATSDR 2023).
- **Uranium:** This constituent is heavy metal that occurs naturally in the environment as a radioactive element. It may also be introduced via mining and fertilizer production. No evidence or reports have linked exposure to death or cancer (ATSDR 2013).
- **Selenium:** This trace element occurs naturally in sedimentary rocks, soils, and groundwater and can be mobilized through weathering and irrigation drainage. While essential in small amounts,

excessive exposure through drinking water or bioaccumulation in aquatic ecosystems can be toxic to humans and wildlife, affecting reproduction and development (ATSDR 2003).

- **Elevated salinity:** Salinity is a persistent problem in the County due to irrigation practices, which contribute to the buildup of salts in both surface water and groundwater (IID n.d.-d).
- **Elevated bacteriological levels:** Elevated bacteriological levels can be caused by seepage of sewage into well water and can lead to gastrointestinal disease (EPA 2024).

3.4 Risk Assessment Results

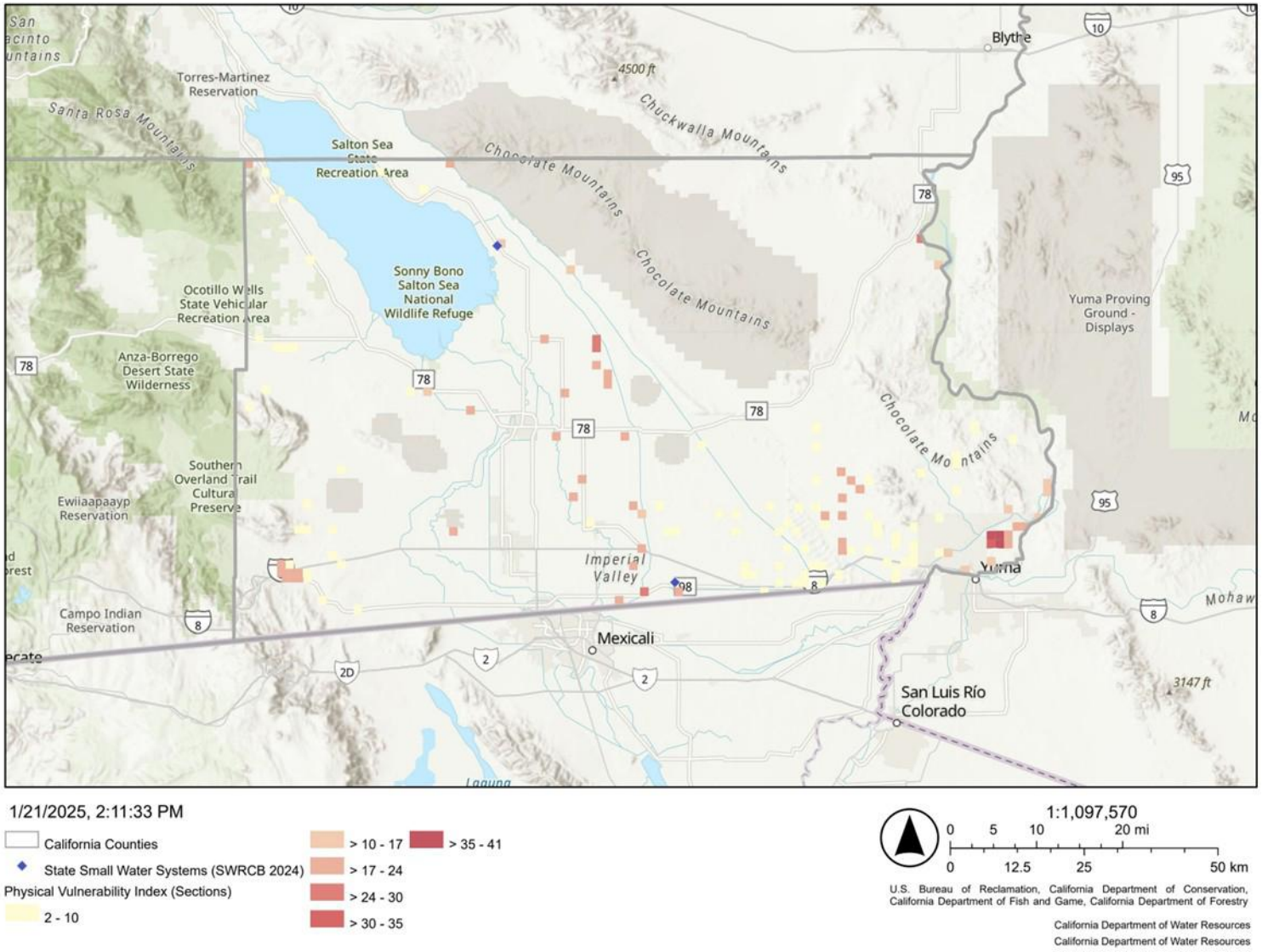
This section summarizes the risk assessment results, including the County's total physical and social vulnerability scores, followed by discussions of the individual indicators driving physical vulnerability. This information was used to identify the regions vulnerable to water supply shortage described in Section 3.5. This study focuses on domestic wells and SSWSs primarily used for drinking water, narrowing the analysis to the southeast, southwest, and northwest corners of the County.

3.4.1 Physical Vulnerability and Social Vulnerability Scores

Physical vulnerability scores within the County are shown in Figure 3-2, with darker shaded areas (or PLSSs) indicating higher physical vulnerability scores. The maps in this section show PLSSs where domestic wells and/or state small water systems are present. High physical vulnerability to water supply shortages is concentrated in communities relying on groundwater from alluvial aquifers in the Bard-Winterhaven region and Ocotillo. Both SSWSs in the County have a moderate physical vulnerability score.

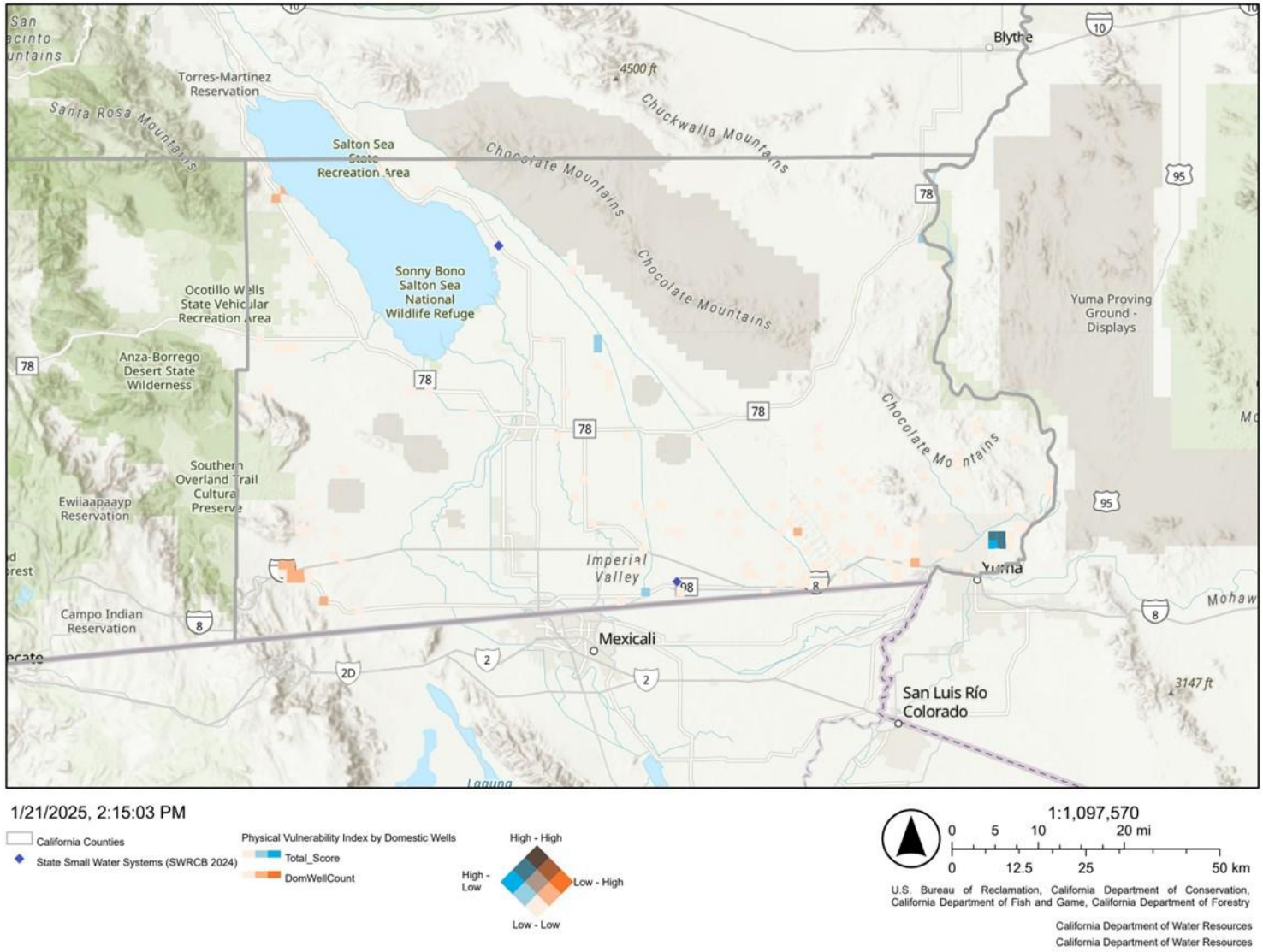
Figure 3-3 displays the intersection of physical vulnerability and location of domestic wells within the County. A darker shaded area indicates a higher presence of domestic wells within an area with high physical vulnerability, such as the Bard-Winterhaven region. A blue area has a higher physical vulnerability but minimal domestic wells, and an orange area has a high number of domestic wells but low physical vulnerability. The SSWSs are shown as blue diamonds, and their locations generally align with the presence of domestic wells within the County. This figure shows where STRAs and LTMSAs are most likely to be needed because of the vulnerability to water supply shortages. Three of the five domestic wells in the Ocotillo area show a low to moderate physical vulnerability.

Social vulnerability is also an important factor in assessing the risk of water supply shortage and need for mitigation through STRAs and LTMSAs. Social vulnerability scores in the County are depicted in Figure 3-4, with darker shaded areas indicating higher vulnerability. Comparing the social vulnerability scores in Figure 3-4 with the physical vulnerability scores in Figure 3-3 helps characterize how social vulnerability may overlap with the physical vulnerability of domestic wells and SSWSs. The Bard-Winterhaven region exhibits a high social vulnerability score, while Ocotillo has moderate to high social vulnerability scores.



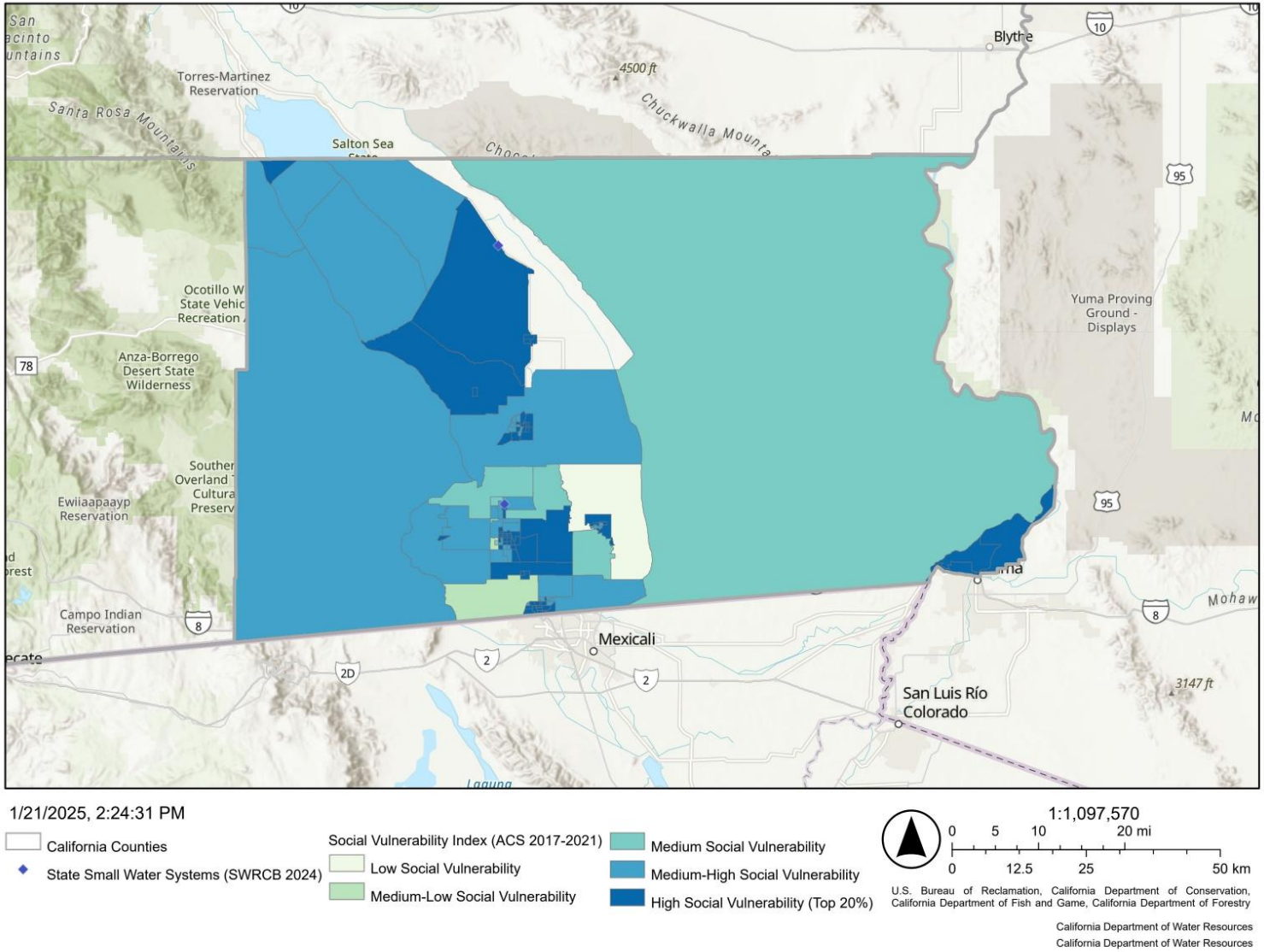
Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 1/21/2025

Figure 3-2. Physical Vulnerability to Drought and Water Supply Shortage in Imperial County



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 1/21/2025/

Figure 3-3. Intersection of Physical Vulnerability and Density of Domestic Wells and State Small Water Systems in Imperial County/



California Department of Water Resources

Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 1/21/2025

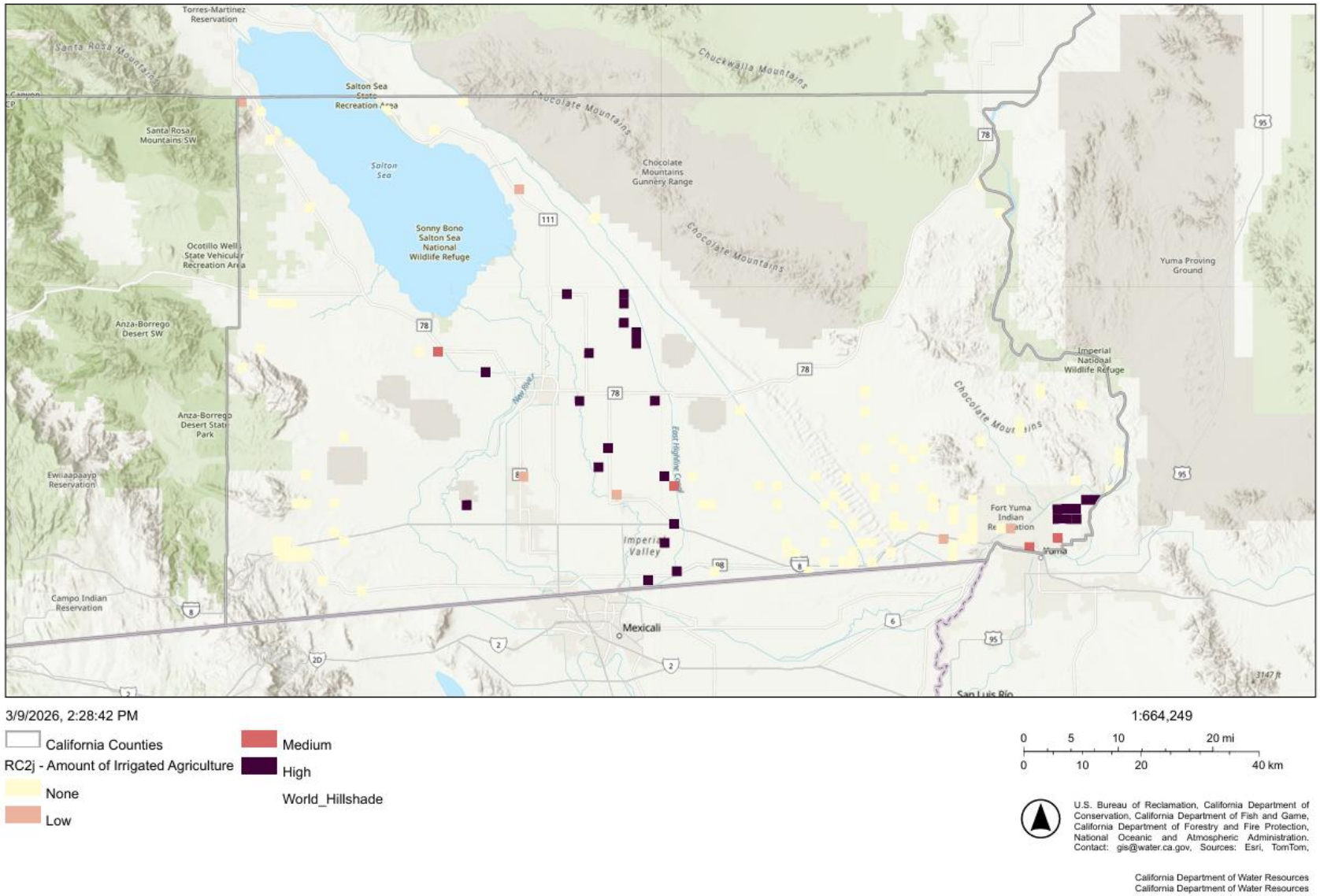
Figure 3-4. Social Vulnerability Scores by Census Block Group in Imperial County

3.4.2 Physical Vulnerability Indicators

The risk assessment identifies areas where water shortage vulnerability is high where water domestic wells and SSWSs reside. This section describes factors driving water shortage risk in greater detail. Identifying and characterizing these drivers of physical vulnerability help the County and the Task Force develop effective STRAs and LTMSAs and their associated implementation.

The primary indicators driving physical vulnerability throughout the County are (1) irrigated agriculture, (2) potential water quality, and (3) multiple dry years. Wildfire hazard is an additional primary driver for the Bard-Winterhaven region. Fractured rock geology is an additional primary driver for Ocotillo and the southwestern region. Details on the driving physical vulnerability indicators are included below, and information on all physical vulnerability indicators is summarized in Table 3-3.

Agricultural activity is concentrated in the center and southeast corner of the County. High agricultural use is shown in dark purple and indicates that at least 50 percent of the PLSS is irrigated agriculture (Figure 3-5). Alluvial aquifers in these regions are highly permeable to agricultural runoffs and other contaminants, such as fertilizers, pesticides, and other agricultural chemicals. Additionally, irrigation practices lead to increased salinity and excess water percolation, which can transport naturally occurring contaminants such as nitrate, arsenic, selenium, and boron into groundwater.



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 3/9/2026

Figure 3-5. Irrigated Agriculture in Imperial County

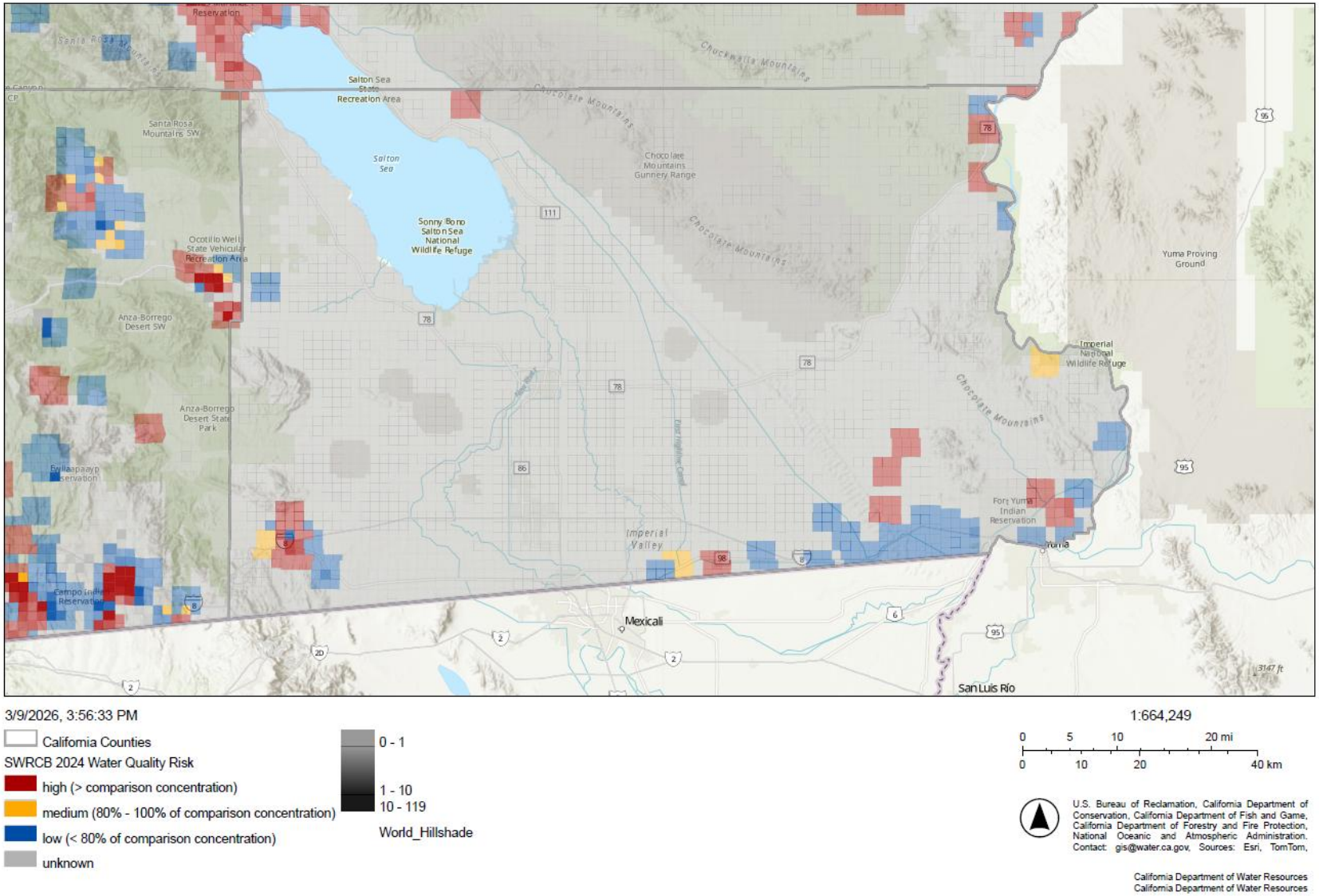
Water quality, due to agriculture and natural processes, is another driving indicator for physical vulnerability. The WSVE Tool derives water quality data from the Aquifers at Risk scores from the State Water Resource Control Board's 2024 Safe and Affordable Funding for Equity and Resilience (SAFER) Needs Assessment. The figure shows areas where domestic wells and SSWSs may be accessing groundwater that does not meet safe drinking water standards (maximum contaminant level). Data does not represent current conditions and shows potential water quality contamination.

The Aquifer Risk Map summarizes publicly available water quality data from previously sampled wells of similar depth to domestic wells or SSWSs. For the analysis, scores are assigned based on both the 20-year average (long-term) contaminant concentrations and 5-year (short-term) maximum observed values to reflect chronic and acute water quality risks. Domestic wells and SSWSs are not regulated under Californias Safe Drinking Water Act, and comprehensive statewide water quality data for these systems are limited (SWRCB 2024-a, 2026). Available water quality data are aggregated at the PLSS section level where data exist, and sections without data are assigned values based on adjacent PLSS sections.

If the long-term or short-term data were above contaminant levels, a PLSS is scored as High. If the long-term or short-term data were within 80 percent to 100 percent of contaminant levels, a PLSS is scored as Medium. A PLSS was scored as Low if both the long-term *and* short-term data were below 80 percent of contaminant levels.

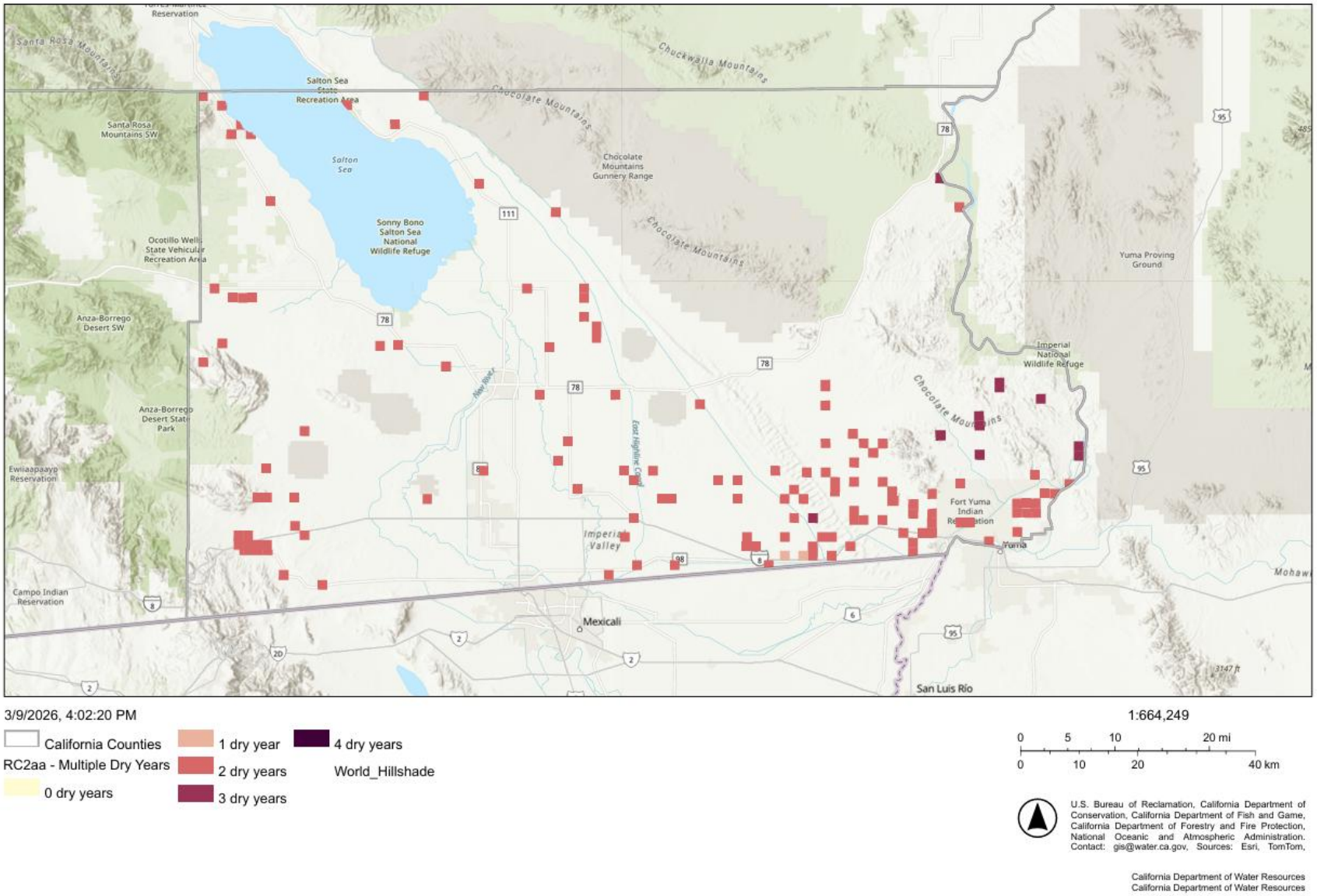
Potential water quality issues are present in the Ocotillo region, the Bard-Winterhaven region, northwest of the Salton Sea, and the northeast corner of the County (Figure 3-6). Commonly reported contaminants include fluoride and arsenic.

Multiple Dry Years is another indicator driving water shortage vulnerability in the County, which can implicate longer periods of insufficient water supply. A year is considered dry if precipitation for a given water year falls below 70 percent of the historical average. The majority of the County experienced 2 dry years in the last 5 years, while the southeastern corner of the County experienced 3 dry years (Figure 3-7).



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 3/9/2026

Figure 3-6. Potential Water Quality in Imperial County



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 3/9/2026

Figure 3-7. Multiple Dry Years in Imperial County

Table 3-3. Summary of Observed Conditions for Physical Vulnerability Indicators in Imperial County

Physical Vulnerability Indicator	Observed Conditions[1]
Climate Change	
Temperature Shift (RC1a)	The projected increase in maximum average temperature by mid-century is 2.9°F to 3.3°F throughout the County. Increased temperatures could increase water supply demands from users, evapotranspiration, and other sources, thereby increasing vulnerability to drought and/or water shortage impacts.
Saline Intrusion Projected (RC1b)	Water in the County is not tidally influenced and is not anticipated to experience saltwater intrusion.
Wildfire Risk (RC1c)	Projections indicate low to moderate increases in wildfire risk throughout the County by 2035–2064. The largest increase is projected for the southwest corner of the County, near Anza-Borrego State Park
Current Environmental Conditions and Events	
2024 Precipitation (RC2a)	Precipitation in WY 2024 was above the historical average in all areas, except for areas in the Chocolate Mountains. It's important to consider current precipitation trends to prepare for near-term water shortage emergencies.
Multiple Dry Years (RC2aa)	Data show that most of the County has experienced 2 dry years over the last 5 water years, with a smaller region in the northeast experiencing 3 dry years. A higher number of recent dry years may increase the physical vulnerability of water supply conditions due to resource depletion and prolonged periods without sufficient water.
Wildfire Risk (RC2b)	The County is primarily designated as having no to low wildfire hazard potential. High wildfire risk is present in the Bard-Winterhaven region, areas west of the New Canal, and the southwest corner of the County. Although wildfire risk is low in most regions, desert shrub/scrub environments are especially sensitive to wildfire impacts. Additionally, wildfires can be destructive and destroy essential water infrastructure for domestic well owners and state small water systems.
Geology (RC2c)	The majority of the County lies within an alluvial basin, where groundwater is at risk of contamination due to the region's extensive irrigated agriculture. Fractured rock is only found in the southeast corner (north of Yuma) and southwest corner of the County. Water availability in fractured rock areas is more difficult to monitor and, therefore, more uncertain for those relying on it as a source of water. Areas with fractured rock are considered susceptible to drought impacts due to their geologic features.
Water Quality Aquifer Risk (RC2i)	This index shows that groundwater likely accessed by domestic wells may contain concentrations of constituents above regulatory levels, specifically in the Bard-Winterhaven region and Ocotillo.
Subsidence (RC2d)	No subsidence has been reported in the County.
Basin Salt (RC2e)	Water in the County is not tidally influenced and is not anticipated to experience saltwater intrusion.

Physical Vulnerability Indicator	Observed Conditions[1]
Overdrafted Basin (RC2f)	Overdrafted basins increase physical vulnerability to water shortage and drought. Groundwater basins in the County are not considered critically overdrafted.
Chronic Declining Water Levels (RC2g)	No decline in groundwater levels has been observed in the County. Consistently declining groundwater levels cause several interconnected challenges and consequences, exacerbating the vulnerability of the groundwater system.
Surrounding Land Use (RC2j)	There is extensive farming in the County, with the majority of irrigated agriculture located in the valley. Presence of agricultural activities could indicate competing demand for groundwater suppliers, as well as water quality concerns, both of which could create higher vulnerability for domestic wells and state small water systems, especially during a drought or water shortage event.
Infrastructure Susceptibility	
Dry Domestic Well Susceptibility in basins (RC3a) – Alluvial Basin	This factor analyzes locations where there are many susceptible wells that may go dry if the current groundwater trends in the County continue. Data show an overall low susceptibility to wells going dry.
Domestic Well Density in Fractured Rock Areas (RC3c)	Higher density of domestic wells in a single square mile within a fractured rock area tends to create a higher susceptibility for outages and increase competing demands, especially in a dry period. The data for the County indicate low competing demand in fractured rock areas, especially because the basin is alluvial.
Record of Shortage	
Reported Household Outage on Domestic Well (RC5a)	Areas that have already experienced outages are more likely to experience similar conditions during future dry years, due to combinations of aquifer sensitivity/fluctuations and shallow wells. No household outages have been reported in the County.

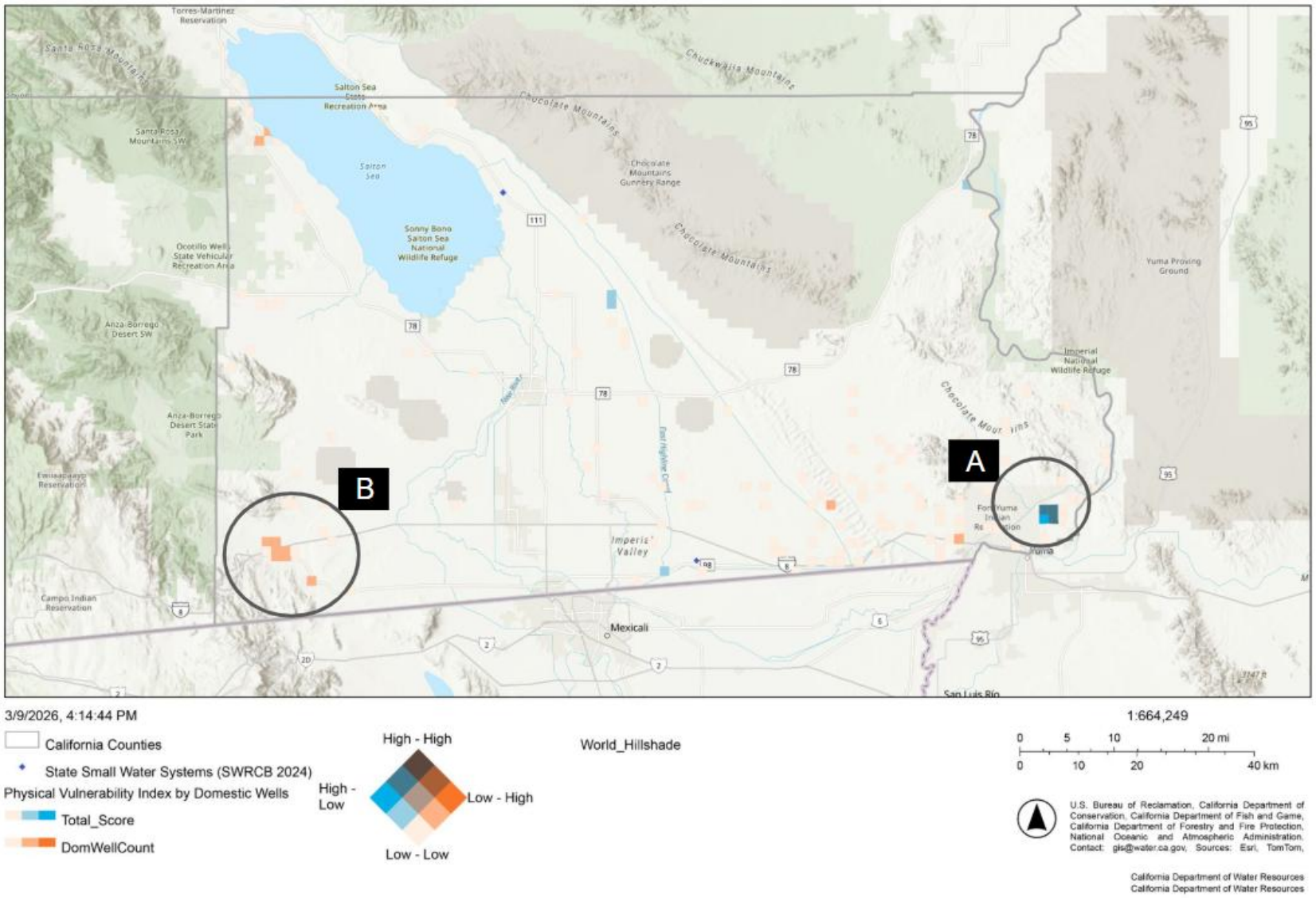
Note:
[1] Abbreviations are included next to indicator name (i.e., "RC1a") for clarity.
Key:
°F = degrees Fahrenheit
County = Imperial County
WY = water year

3.5 Risk Assessment Findings

The areas within the County with domestic wells and/or SSWSs that are vulnerable to water supply shortage, the drivers of those physical vulnerabilities, and the corresponding total social vulnerability scores are summarized in Table 3-4 and Figure 3-8. These areas and vulnerabilities were used by the County and Task Force to develop STRAs and LTMSAs for addressing water shortages of domestic wells and SSWSs across the County. Although the 2 SSWSs do not fall within the identified vulnerable communities and are not demonstrating high physical vulnerability, they are still being considered for short-term response and long-term mitigation strategies.

Table 3-4. Summary of Risk Assessment Findings in Imperial County

Area with Water Shortage Vulnerability and Domestic Wells/SSWSs	Physical Vulnerability Indicators	Social Vulnerability Score	Location in Figure
Bard-Winterhaven Region	• Multiple Dry Years • Wildfire Hazard • Surrounding Land Use • Water Quality Aquifer Risk	High-Low	A
Ocotillo/Southwest Corner of County	• Multiple Dry Years • Water Quality Aquifer Risk • Fractured Rock Area	Medium-High	B



Source: Water Shortage Vulnerability Explorer Tool, Water Shortage Vulnerability Explorer Tool, Accessed: 3/9/2026

Figure 3-8. Summary of Risk Assessment Findings Showing Areas with Water Shortage Vulnerability and Domestic Wells/State Small Water Systems in Imperial County

3.6 Risk Assessment Gaps

Understanding gaps in the risk assessment (1) helps identify physical and social vulnerabilities that may exist but are not effectively captured using the methodology applied and data available, (2) focuses future efforts to improve risk assessments, and (3) allows communities to develop long-term continuous monitoring and improvement plans. This proactive approach helps build resilience over time. The risk assessment gaps described below were identified by the County and Task Force during the development of the County DRP.

- Domestic Well Data: There are concerns regarding the accuracy and completeness of domestic well data, particularly in agricultural areas of the Imperial Valley. The total number of domestic wells reported by the County differs from the information available from the State. Additionally, some well completion records date back to the 1970s and may not accurately reflect active wells. The most recent domestic well data available from County Planning & Development Services date back to 2016. Online databases could be updated using digitized County forms and local knowledge to ensure that data is current and easily accessible.

4.0 Short-Term Response Actions

The risk assessment presented in Section 3 identified areas of Imperial County where domestic wells may be susceptible to water supply shortages, namely the Bard–Winterhaven region and the Ocotillo area. These vulnerabilities are primarily associated with consecutive dry years and water quality risks. Based on the outcomes of that assessment, the Imperial County Environmental Health Division identified STRAs discussed in this County DRP to help address the effects of water shortage emergencies that could occur in these vulnerable regions.

SSWSs are not a primary focus of the identified STRAs because only two SSWSs exist within the County, with one receiving surface water as their water source, both of which exhibit low to moderate physical vulnerability and are not located in the Bard–Winterhaven or Ocotillo areas identified as having the highest risk. However, SSWSs will still be included in STRAs when relevant. The identified STRAs are not exhaustive and may be modified in the future. For the purposes of this County DRP, STRAs are defined as actions implemented in advance of, and during, water shortage emergencies caused by drought and water shortage events, typically addressing immediate and basic public safety needs.

This section describes the STRAs included in the County DRP and the Drought and Water Shortage Emergency Response Process developed as part of the County DRP to assist with implementing STRAs.

4.1 Legislative Direction

SB 552 requires that each county develop a drought and water shortage plan that includes proposed interim solutions for SSWSs and domestic wells, per CWC Section 10609.70 (**bold face** added for emphasis as related to STRAs and this section of the County DRP):

> *(b)* ***A county shall develop a plan that includes potential drought and water shortage risk and proposed interim*** *and long-term* ***solutions for state small water systems and domestic wells within the county's jurisdiction****. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> *(1) Consolidations for existing water systems and domestic wells.*
>
> *(2) Domestic well drinking water mitigation programs.*
>
> ***(3) Provision of emergency and interim drinking water solutions.***
>
> *(4) An analysis of the steps necessary to implement the plan.*
>
> *(5) An analysis of local, state, and federal funding sources available to implement the plan*

4.2 Short-Term Response Actions Included in the Imperial County Drought Resilience Plan

STRAs included in the County DRP are summarized in Table 4-1 and described in this section. Most of these STRAs provide emergency and interim drinking water supplies via bulk water delivery or with packaged or bottled water. Other STRAs include mutual aid agreements required to (1) provide these emergency and interim drinking water supplies efficiently, and (2) support coordinated implementation of STRAs through partner agencies and public water purveyors. A process for STRA implementation is presented in Section 0, while future efforts to address STRA implementation challenges and develop new STRAs are described in Section 6.2.

Table 4-1. List of Short-Term Response Actions Included in Imperial County Drought Resilience Plan

ID	Short-Term Response Action Type	Short-Term Response Action Name	Short-Term Response Action Description	Responsible Entity	Supporting Entities
STRA 01	Emergency And Interim Drinking Water Supplies	Water Hauling, Bulk Water for Existing Tanks	County staff to ensure policies and mutual aid agreements are in place for coordination with public water systems that allow for water hauling and bulk water delivery to domestic well and SSWS users with existing bulk water supply storage tanks that are accessible.	County OES	County Environmental Health Division, County Planning & Development Services
STRA 02	Emergency And Interim Drinking Water Supplies	Voluntary Water Conservation Program	County staff, in coordination with non-government organizations, GSAs, and other entities may establish a communication and engagement program to support voluntary water conservation measures among domestic well and SSWS users in the event of a water shortage event.	County OES	County Environmental Health Division
STRA 03	Emergency And Interim Drinking Water Supplies	Packaged and Bottled Water Supplies	County staff to identify and establish a program to acquire and distribute packaged or bottled water to domestic well and SSWS users in the event of an emergency.	County OES	County Environmental Health Division
STRA 04	Emergency And Interim Drinking Water Supplies	Dedicated Water Filling Stations During a Water Shortage	County staff to identify and establish a network of emergency potable water supply stations/suppliers in the event of a water shortage emergency. County will ensure network of water filling stations have sufficient water supplies while a water shortage is occurring.	County OES	County Environmental Health Division, Local Water Providers, County Planning & Development Services
STRA 05	Mutual Aid Agreements	Agreements with Partner Agencies for Emergency Water Distribution	County may establish mutual aid and system investment agreements with entities commonly relied upon by communities in the event of a disaster. These include schools, county fairgrounds, and others. Agreements would focus on installation of emergency potable water supply actions called for in the DRP such as bottled water, bottled water storage, water filling stations, and bulk water distribution.	County OES	County Executive Office, County Counsel, County Environmental Health Division

ID	Short-Term Response Action Type	Short-Term Response Action Name	Short-Term Response Action Description	Responsible Entity	Supporting Entities
STRA 06	Mutual Aid Agreements	Agreements with Large Water Providers	County may establish mutual aid agreements, as necessary, to provide for STRAs called for in the DRP including water filling stations, bottled water distribution/storage, and bulk water distribution.	County OES	County Executive Office, County Counsel, County Environmental Health Division

Key:
County = Imperial County
DRP = Drought Resilience Plan
OES = Office of Emergency Services
SSWS = state small water systems
STRA = short-term response action

4.2.1 Emergency and Interim Drinking Water Supplies

Emergency and interim drinking water supplies involve providing temporary water supplies until longer term water supplies are secured or the water shortage emergency ends. Emergency and interim drinking water supplies are used during water shortage emergencies to meet basic health and safety needs.

4.2.1.1 Water Hauling or Bulk Water Delivery (STRA 01)

Water hauling or bulk water delivery involves using licensed water haulers or tankers to deliver emergency water supplies to those in need at either (1) a central distribution point where residents could bring a container to be filled, or (2) a hospital or other critical infrastructure where the water hauler or tanker can be connected. Water hauling or bulk water delivery is included as a STRA in the County DRP.

Imperial County OES is the lead entity for this STRA, with support from County Environmental Health Division, County Executive Office, and County Planning & Development Services. Water hauling and bulk water delivery would follow the process described in Section 0. Locations, operating hours, and other information regarding water hauling and bulk water delivery would be communicated using the process described in Section 4.4.2. A list of licensed bulk water haulers and commercial water suppliers operating within Imperial County is provided in Appendix A to support implementation of this Short-Term Response Action.

4.2.1.2 Voluntary Water Conservation Program (STRA 02)

Voluntary water conservation outreach consists of providing information and guidance to domestic well and SSWS users to encourage reduced water use during a water shortage event. This strategy focuses on communication and engagement activities that support voluntary conservation measures and does not include regulatory or mandatory actions. Voluntary water conservation outreach is included as a STRA in the County DRP.

If implemented, the County may coordinate with non-government organizations, GSAs, and other relevant entities to support outreach activities directed toward affected domestic well and SSWS users. Outreach efforts may include distribution of educational materials, water-use efficiency guidance, and information regarding available emergency drinking water supply resources.

The County OES would serve as the lead entity for this STRA, with coordination support from County Environmental Health Division, as appropriate. Communication related to voluntary water conservation outreach would follow the notification and coordination procedures described in Section 0 and would be scaled to the location and severity of the water shortage event.

4.2.1.3 Packaged or Bottled Water Supplies (STRA 03)

In areas where other emergency and interim drinking water supplies are unavailable, the County would provide packaged or bottled water (i.e., 1- to 5-gallon jugs and individual bottled waters) to affected domestic well and SSWS users. Packaged or bottled water delivery is included as a STRA in the County DRP as STRA 03.

Packaged or bottled water may be sourced from approved commercial vendors or local retail establishments. Approved bottled water vendors are identified by the California Department of Public Health's Food and Drug Branch. Depending on availability, retail stores and commercial delivery vendors may provide bottled water or 1- to 5-gallon water jugs on short notice.

The County currently has funding available through a State Water Board SAFER Program grant to support emergency drinking water supplies, including packaged or bottled water and bulk water delivery. This grant includes approximately $1.1 million allocated as part of a broader emergency drinking water program. While these funds have not yet been used for an emergency response, they provide an existing mechanism for the County to acquire and distribute drinking water during drought or water shortage events. The current grant term extends through December 2026 and is anticipated to be extended through 2029, subject to State approval.

County OES is the lead entity for this STRA, with support from County Environmental Health Division. Packaged or bottled water would be distributed to affected domestic well or SSWS users following the process described in Section 0. Locations, operating hours, and other information regarding packaged or bottled water would be communicated using the process described in Section 0.

4.2.1.4 Dedicated Water Filling Stations During a Water Shortage (STRA 04)

In the event of a water shortage emergency, the County may identify and establish dedicated potable water filling stations to provide interim drinking water supplies to affected domestic well and SSWS users when other response options are unavailable or infeasible.

Dedicated water filling stations may be established at existing potable water suppliers, public facilities, or other suitable locations capable of providing drinking water that meets applicable regulatory standards. The County would coordinate with participating entities, as appropriate, to ensure that filling stations have sufficient water supplies and operational capacity for the duration of the water shortage.

County OES would serve as the lead entity for this response action, with support from other County departments as needed. Information regarding filling station locations, hours of operation, and access requirements would be communicated to affected users using the outreach and notification processes described in Section 0. Potential public water system facilities that may serve as emergency water staging or distribution locations during a water shortage emergency are identified in Appendix B to support implementation of this Short-Term Response Action.

4.2.2 Mutual Aid Agreements

Mutual aid agreements support implementation of emergency and interim drinking water supply response actions by establishing coordination mechanisms with partner agencies and public water providers. These agreements are intended to facilitate timely deployment of STRAs during water shortage emergencies by leveraging existing facilities, infrastructure, and operational capacity. Mutual aid agreements do not create new water supply sources but provide a framework for cooperation and coordination to support emergency drinking water distribution activities identified in the County DRP.

4.2.2.1 Agreements with Partner Agencies for Emergency Water Distribution (STRA 05)

Agreements with partner agencies for emergency water distribution involve establishing mutual aid and system investment agreements with entities commonly relied upon by communities during emergency or disaster events. These entities may include schools, county fairgrounds, and other public or community facilities that could serve as locations for emergency potable water supply actions.

If implemented, these agreements would focus on facilitating installation and operation of emergency drinking water supply measures identified in the County DRP, such as bottled water distribution and storage, water filling stations, and bulk water distribution. County OES would serve as the lead entity for this STRA, with support from County Executive Office, County Counsel, and Environmental Health

Division, as appropriate. Activation and coordination of these agreements would follow the implementation and communication processes described in Section 4.3.

4.2.2.2 Agreements with Large Water Providers (STRA 06)

Agreements with large water providers involve establishing mutual aid agreements, as necessary, to support implementation of STRAs during water shortage emergencies. These agreements are intended to facilitate coordination with public water purveyors that have the capacity to support emergency potable water supply actions identified in the County DRP.

If implemented, mutual aid agreements with large water providers may support emergency drinking water response actions including water filling stations, bottled water distribution and storage, and bulk water distribution. County OES would serve as the lead entity for this STRA, with coordination support from County Executive Office, County Counsel, and County Environmental Health Division. Implementation would be in accordance with the procedures outlined in Section 0, and activities would be scaled based on the severity and geographic extent of the water shortage event.

4.3 Pre-Negotiated Contracts and Mutual Aid Agreements

Efficient implementation of STRAs requires coordination and cooperation with other entities beyond those within the County government. This can include pre-negotiated contracts and mutual aid agreements.

The acquisition of materials to implement this County DRP may be subject to local and State policies and regulations that govern their purchase. In the event of an emergency, counties can acquire materials necessary for the protection of public health, welfare, or safety via existing emergency procurement policies that are faster than traditional procurement. Exercise of this authority requires declaration of a local emergency and is time-limited, obligating counties to follow traditional procurement practices at the earliest practicable opportunity.

The County may seek to establish pre-negotiated contracts and other related agreements for identified STRAs that can be exercised during a recognized water shortage event. This would allow the County to act quickly and maintain consistent resources during emergencies and interim water shortage events. Such pre-negotiated contracts may involve private companies or other local public agencies, such as public water systems, to secure needed resources. The establishment, renewal, and ongoing management of these pre-negotiated contracts will comply with traditional procurement practices as required by local and State policies, except when emergency procurement authorities are temporarily invoked during a declared emergency. Pre-negotiated contracts recommended for activation of STRA are included in Table 4-2.

Table 4-2. Pre-Negotiated Contracts Recommended for Activation of Short-Term Response Actions Included in Imperial County Drought Resilience Plan (as of March 2026)

STRA	Contract or Mutual Aid Agreement Need	Lead	Status
STRA 01: Water Hauling, Bulk Water for Existing Tanks	County needs to procure pre-negotiated contracts with bulk water haulers	County OES	Pending
STRA 03: Packaged and Bottled Water Supplies	County needs to procure pre-negotiated contracts for packaged and bottled water vendors.	County OES	Pending

Key:
County = Imperial County
OES = Office of Emergency Services
STRA = short-term response action

4.4 Drought and Water Shortage Emergency Response Process

The Drought and Water Shortage Emergency Response Process describes (1) how County staff would evaluate drought and water shortage conditions in the County and declare a water shortage, and (2) its Emergency and Interim Drinking Water Distribution (EIDWD) Plan to activate emergency and interim drinking water supplies and communicate with affected domestic well and SSWS communities.

4.4.1 Drought or Water Shortage Declaration

Declaring a drought or water shortage is important as it communicates a potential or ongoing emergency, activates mutual aid agreements, and is the first step in accessing State and federal resources that may be available to assist the County in implementing STRAs.

This DRP outlines a process for classifying water shortage stages. This process uses indicators of water supply with defined criteria that categorize the County into one of three water shortage stages—information, alert, and response—as described below and shown in Table 4-3.

- In the **Water Shortage Information Stage**, there is no major drought or potential for water shortage. In this stage, County staff completes the County DRP adaptive management planning described in Section 6.4.
- In the **Water Shortage Alert Stage**, drought or the potential for water shortage exists, but there is no active water shortage emergency. In this stage, County staff increases communication and outreach activities and initiates coordination with other entities.
- If a water shortage emergency is imminent or actively occurring, the County is in the **Water Shortage Emergency Response Stage**. In this stage, County staff, in coordination with the Task Force and County Board of Supervisors, would declare a water shortage emergency and activate the EIDWD Plan described in Section 4.4.2.

If a State drought or water shortage emergency declaration includes areas within the County, the County would go into the Water Shortage Emergency Response Stage and activate the EIDWD Plan described in Section 4.4.2. In the event of a federal disaster declaration, County staff would evaluate if the disaster could require emergency and interim drinking water supplies and activate the EIDWD Plan if needed. State and/or federal disaster declarations may make additional resources available to provide emergency and interim drinking water supplies. County staff would evaluate how these declarations

may influence the implementation of the STRAs identified in this County DRP and the activation of the EIDWD Plan.

Table 4-3. Indicators and Trigger Considerations for Determining Active Water Shortage Stages for Domestic Wells and SSWS in Imperial County

Indicator Name	Indicator Description	Trigger Consideration When Going into the Alert Stage	Trigger Consideration When Going into the Response Stage
U.S. Drought Monitor	The U.S. Drought Monitor is a map updated every Thursday that classifies drought conditions across the United States into none, Abnormally Dry, Moderate, Severe, Extreme, and Exceptional. The County can use this resource to understand the prevalence and severity of drought within the County and surrounding areas when determining if it should be in the Warning Stage.	The County should use experience during previous droughts to determine what U.S. Drought Monitor classification warrants going into the Warning Stage. Some counties may be more resilient against Abnormally Dry or Moderate drought conditions and may only need to go into the Warning Stage in Severe, Extreme, or Exceptional Drought. Also consider if groundwater in the County is reliant on conditions outside the County such as in mountain watersheds or locations where water is imported from.	An Extreme or Exceptional drought classification may not solely indicate that a water shortage emergency is occurring or imminent. The County should heighten its monitoring of other indicators if Extreme or Exceptional drought exist in the County.
Water Quality	Areas with known water quality issues are likely monitored. The presence of potential water quality issues that may result in water supplies being unusable can be used to establish a water shortage stage. Note that other hazards such as droughts or wildfires can exacerbate poor water quality conditions and should also be considered in combination with this indicator.	Water quality observations that are noted as being of concern (for unregulated chemicals or those without an established water quality level) or the measured water quality is outside of established standards (maximum contaminant levels, primary or secondary standards, etc.). However, a boil water notice or other intervention limiting use is not in place.	Observed water quality is outside public health standards (maximum contaminant levels, primary or secondary standards, etc.). and/or a boil water notice or intervention limiting use is in place.
Applications for New Well Permits	Some counties have observed an increase in new well permit applications (both domestic and others) to replace existing wells that are not providing sufficient water supply even if there are not associated Dry Well Reports. The County can evaluate if these new applications are to replace an existing as a proxy for water shortage.	If the County is in a drought condition (U.S. Drought Monitor, Public Water System, or others) and there is an increase in new well permit applications, then the county should consider going into the warming stage while evaluating if the new applications are due to water shortages for domestic well or SSWS.	If the County determines that an increase in new well permits is because of water shortages at domestic wells or SSWS, then it may indicate water shortages at other domestic wells or SSWS. This may require going into the emergency stage.
Dry Well Reports	California has a dry well reporting system that well owners or operators can use to report a dry well. The County can use this to identify where a water shortage is occurring.	Any dry well reports submitted within the County should trigger evaluating the cause of the water shortage. If the cause is due to an isolated issue (i.e. very shallow well, aging infrastructure, etc.) that was exacerbated by drought, the County could go into the warning stage and monitor for other dry well reports.	If after evaluating the dry well reports it is found the features of the dry well (i.e., depth, age, etc.) are consistent with other wells in the area, that may indicate the potential for widespread water shortages. This may require going into the emergency stage.

Key:
County = Imperial County
SSWS = state small water system

4.4.2 Emergency and Interim Drinking Water Distribution Plan

The EIDWD Plan outlines the process County staff will follow to provide emergency and interim drinking water supplies to affected domestic well and SSWS communities through coordination with licensed bulk water haulers and commercial water suppliers, use of identified public water system emergency staging locations, and deployment of water distribution actions supported by available County or approved external funding sources. Table 4-4 shows the process County staff would follow in the event that distribution of emergency or interim drinking water supplies is required due to a short-term water shortage event/emergency. Unless otherwise noted, implementation of these activities is subject to declaration of an emergency consistent with the County DRP or by direction of the County Board of Supervisors. This plan is implemented as part of Water Shortage Emergency Response Stage of the County DRP (see Table 4-3).

The information in Table 4-4 is not exhaustive and should be periodically reviewed and updated by County staff. This table may also help identify the types and locations of emergency water supplies in the event of a water shortage emergency outside the currently identified vulnerable domestic well and SSWS communities.

Table 4-4. Emergency and Interim Drinking Water Distribution Plan Summary

EIDWD Plan Component	Description
Lead Agency	County OES manages implementation and oversight of the EIDWD Plan. Implementation of the EIDWD Plan may be led by County Environmental Health Division or a designated County department, community group, or other designated entity. Implementation will be specifically tailored to on-the-ground conditions and the risk response requirements of the water shortage event. The lead entity for implementation will be assigned by County OES, in consultation with the Task Force, as applicable.
Activation	Activation of the EIDWD Plan is subject to recommendation by County Environmental Health to County OES. Activation is informed by an assessment conducted by County Environmental Health Division that includes: • Trigger or cause of water shortage emergency. See Section 4.4.1 for drought and water shortage triggers to be considered in the assessment • Affected geographic area and demographics of the affected population • Emergency and interim water supply type(s). See Table 4-1 for options. • Estimated duration of need County OES, following review of the assessment, may authorize activation administratively, through the County Board of Supervisors, or other applicable authorities.

EIDWD Plan Component	Description
Notification	County OES will serve as the lead agency managing notification to the affected community on how and where to get emergency water supplies. The notification method may vary depending on the cause of the water shortage emergency (climate influenced, wildfire, power interruption, etc.) Anticipated notification methods include: • Agency website (Office of Emergency Services - Imperial County Fire Department) • Email • U.S. Mail • Broadcast media (radio/television) • Door hangers, fliers, information kiosks. • Public outreach meetings, and other existing meetings • Hotline (311, other) Conduct of notifications may include coordination/collaboration with other partner agencies and organizations, such as: • Neighborhood associations • Non-profit organizations • Schools, churches, and community groups Depending on the demographics of the affected community, information, materials, and other notifications may be required for non-English speaking communities. County OES to determine whether bilingual services are needed in support of water distribution activities.
Information Collection	The County OES will collect specific information to support applicable cost recovery and inform future emergency and interim drinking water distribution efforts. Such data collection would not include personal information and generally include: • Number of people served by emergency supply, including age and household income. • General geographic location of household. • Occupancy status (homeowner or tenant) • The duration for which emergency supplies would maintain water needs. • Distance traveled to receive emergency supplies and mode of transportation. • Known condition of well; prior experiences with water supply shortages. • Others as identified as needed

Key:
County = Imperial County
EIDWD = Emergency and Interim Drinking Water Distribution
OES = Office of Emergency Services

5.0 Long-Term Mitigation Strategies and Actions

The risk assessment presented in Section 3 showed localized and regional water supply concerns, including water quality risks and multi-year droughts. While risks that impact the basic public health and safety of residents can be addressed through STRAs, LTMSAs mitigate and potentially prevent the conditions that lead to water shortage emergencies. This County DRP identified six LTMSAs, organized into four categories: drinking water well mitigation (DWWM) programs, system consolidation, regional water infrastructure investment, and data gaps. These LTMSAs are not exhaustive and may be modified in the future.

In the context of this County DRP, LTMSAs serve to reduce drought and water shortage vulnerabilities for domestic well and SSWS communities. When implemented, LTMSAs can reduce the extent and cost of emergency response actions but cannot eliminate the need for emergency response actions.

5.1 Legislative Direction

SB 552 requires that each county develop a drought and water shortage plan that covers long-term solutions for SSWSs and domestic wells, per CWC Section 10609.70 (**boldface** added for emphasis as related to LTMSAs and this section of the County DRP):

> *(b)* ***A county shall develop a plan that includes potential drought and water shortage risk and proposed*** *interim and* ***long-term solutions for state small water systems and domestic wells within the county's jurisdiction****. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> ***(1) Consolidations for existing water systems and domestic wells.***
>
> ***(2) Domestic well drinking water mitigation programs.***
>
> *(3) Provision of emergency and interim drinking water solutions.*
>
> *(4) An analysis of the steps necessary to implement the plan.*
>
> *(5) An analysis of local, state, and federal funding sources available to implement the plan*

5.2 Long-Term Mitigation Strategies and Actions Included in the Imperial County Drought Resilience Plan

LTMSAs included in the County DRP are summarized in Table 5-1. LTMSAs related to DWWM programs are described in Section 5.3. LTMSAs that address data gaps are discussed in Section 5.4. System consolidation opportunities within the County are discussed in Section 5.4. Future efforts related to LTMSA implementation and challenges are described in Section 6.2. The LTMSAs shown in this table may be updated or replaced as part of future County DRP updates.

Table 5-1. List of Long-Term Mitigation Strategies and Actions Included in Imperial County Drought Resilience Plan

ID	Long-Term Mitigation Strategy or Action Category and Type	Long-Term Mitigation Strategy and Action Name	Long-Term Mitigation Strategy or Action Description	Responsible Entity	Supporting Entities
LTMSA 01	Drinking Water Well Mitigation Programs: Drought and Water Shortage Risk Assessment	Non-Drought Hazard Assessment	County could seek to assess the potential risk for non-drought hazards (e.g., wildfires, earthquakes, landslide(s)) that could interrupt domestic well or SSWS supplies and provide findings to inform appropriate planning efforts.	County OES	County Environmental Health Division, County Planning & Development Services
LTMSA 02	Drinking Water Well Mitigation Programs: Well Rehabilitation	Establish Network of Vendors and County Contacts	County could seek to provide domestic wells and SSWSs with a resource list of well drillers, laboratories, and other entities that could help them evaluate well condition, rehabilitation efforts, and replacements (as needed).	County Planning & Development Services	County Environmental Health Division
LTMSA 03	Drinking Water Well Mitigation Programs: Water Shortage Prevention	Bulk Water Tank Installation	County staff could seek to coordinate and collaborate with DWR and other entities to assist domestic well and SSWS operators with sizing and installing bulk water storage tanks at existing wells. This could include just coordination and technical assistance but could also include financial assistance with purchasing a tank.	County Planning & Development Services, County Fire Department	County Environmental Health Division
LTMSA 04	Drinking Water Well Mitigation Programs: Other Management Actions	Create Single Online Location for Relevant Resources to Assist Domestic Wells and SSWSs	County could create and maintain a web portal with County information, permits, and forms in one place and develop an online mapping and data tool. The portals and tools should be simple, accessible, and easy to navigate to remove avoidable associated barriers. This portal will need to be regularly updated.	County Planning & Development Services	County Environmental Health Division, County OES
LTMSA 05	Data Gaps: Well Completion Reports	Evaluate and update Well Completion Report administrative record	County could complete a review of well completion reports maintained by DWR and update them with geographic location, operation, and other factors.	County Planning & Development Services	County Environmental Health Division

ID	Long-Term Mitigation Strategy or Action Category and Type	Long-Term Mitigation Strategy and Action Name	Long-Term Mitigation Strategy or Action Description	Responsible Entity	Supporting Entities
LTMSA 06	System Consolidation	Consolidation of SSWSs	County, in coordination with the interested SSWS, could identify and implement managerial and/or physical consolidation of water systems.	County Environmental Health Division	County Planning & Development Services

Key:
County = Imperial County
LTMSA = long-term mitigation strategy and action
OES = Office of Emergency Services
SSWS = state small water system

5.3 Drinking Water Well Mitigation Programs (LTMSA 01, 02, 03, and 04)

This County DRP considered the utility of drinking water well DWWM programs as directed under CWC Section 10609.70(b)(2). DWWM programs describe actions that provide assistance to domestic well and SSWS communities with groundwater wells that are relatively shallower than those in the area or that are located in specific areas where wells are at a higher risk of running dry more frequently. This section first identifies the DWWM program(s) within the County organized by Bulletin 118 groundwater basin and fractured rock areas. This section then details the LTMSA components that are included in the DWWM programs. The DWWM programs and LTMSA components described herein are not exhaustive and may be modified in the future.

When identifying and defining DWWM programs, the County DRP considered the following factors:

- Domestic wells and SSWSs vulnerable to water supply shortages (see Chapter 3)
- If a DWWM Program had already been defined as part of a GSP
- The SGMA priority for Bulletin 118 basins
- The occurrence of potentially shallow wells that could be at enhanced risk of drying up
- History of dry well reports and/or new well permits for replacement or deepened wells

Table 5-2 details the identified DWWM programs within the County.

Table 5-2. Drinking Water Well Mitigation Programs within the County

Location	Vulnerable Domestic Wells Included	Drinking Water Well Mitigation Program Description
Bard-Winterhaven Region	Domestic wells located in the Bard and Winterhaven areas along the lower Colorado River corridor, including rural residential areas reliant on individual groundwater supplies (vulnerable area A in Section 3.5).	This area is not covered by a groundwater sustainability plan, and limited information is available regarding groundwater conditions and domestic well vulnerability. The County DRP DWWM program for this location will focus on communication and outreach, as well as water shortage prevention.
Ocotillo/Southwest Corner of County	Scattered domestic wells located in the southwestern portion of the County, including isolated rural areas with reliance on groundwater as a primary drinking water source (vulnerable area B in Section 3.5).	This area is not included within a groundwater sustainability plan, and groundwater conditions are not comprehensively monitored at the County scale. Given the limited availability of groundwater data and the dispersed nature of domestic wells, the County DRP DWWM program for this location will focus on communication and outreach, as well as water shortage prevention.

5.3.1 Non-Drought Hazard Assessment (LTMSA 01)

While drought is the primary driver of water supply vulnerability for domestic wells and SSWSs, non-drought hazards may also disrupt water supplies. These hazards can include wildfires, earthquakes, extreme heat events, flooding, or other natural hazards that affect power supply, access, or well infrastructure rather than groundwater availability itself.

Under this LTMSA, County OES, in coordination with County Environmental Health Division and County Planning & Development Services, could assess the potential for non-drought hazards to interrupt domestic well and SSWS water supplies. This assessment could leverage existing hazard planning efforts, such as the County's Emergency Operations Plan, to identify areas where domestic wells or SSWSs may be vulnerable to non-drought-related disruptions.

Findings from this assessment could be shared with relevant County planning and emergency response efforts to improve awareness of potential risks and support coordination during emergency events. This LTMSA is intended to improve planning integration and situational awareness and does not establish new regulatory requirements or emergency response programs.

5.3.2 Establish Network of Vendors and County Contacts (LTMSA 02)

Domestic well and SSWS owners are typically responsible for evaluating the conditions of their wells and arranging for maintenance, rehabilitation, or replacement when needed. Access to reliable information on qualified service providers can help well owners respond more effectively to water supply or water quality concerns.

Under this LTMSA, County Planning & Development Services, in coordination with County Environmental Health Division, could provide domestic well and SSWS owners with a resource list of well drillers, laboratories, pump installers, and other relevant service providers. This list could be made available through County informational resources and would include a disclaimer stating that inclusion does not constitute endorsement by the County.

The County's role under this LTMSA would be limited to maintaining and sharing contact information to support domestic well and SSWS owners in independently evaluating, rehabilitating, or replacing wells. This LTMSA focuses on improving access to information rather than providing direct technical or financial assistance.

5.3.3 Bulk Water Tank Installation (LTMSA 03)

Water supply interruptions for domestic wells and SSWSs can occur during emergency events that limit the ability to pump groundwater, even when groundwater remains available. Bulk water storage tanks can improve water supply reliability by providing short-term storage during such events.

Under this LTMSA, County Planning & Development Services and County Fire Department, in coordination with County Environmental Health Division, could conduct outreach to domestic well and SSWS owners regarding the potential benefits of bulk water storage. Outreach could include general information on sizing considerations, installation requirements, and permitting considerations, as well as references to available technical guidance from other agencies.

In the future, and subject to available funding and resources, this LTMSA could be expanded to include information on potential financial assistance programs for bulk water tank or generator installation. At this time, the LTMSA is focused on outreach and information-sharing and does not establish a County-funded assistance program.

5.3.4 Create Single Online Location for Relevant Resources to Assist Domestic Wells and SSWS (LTMSA 04)

Domestic well and SSWS owners often need to interact with multiple County departments to access permits, forms, guidance, and information related to water supply, water quality, and emergency

preparedness. Navigating multiple platforms can create barriers to accessing timely and relevant information, particularly during water shortage events or other emergencies.

As part of this County DRP, the County has established a centralized online portal that serves as a single access point for County information relevant to domestic wells and SSWSs. County Planning & Development Services led development of the portal in coordination with County Environmental Health Division and County OES. The portal consolidates links to applicable permits and forms, general guidance documents, emergency response and preparedness information, and other relevant County resources. Where feasible, the portal also includes simple mapping or data tools to improve access to publicly available information.

The portal is designed to be straightforward, accessible, and easy to navigate in order to reduce avoidable barriers for domestic well and SSWS owners. County staff will maintain and periodically update the portal to ensure information remains current and accurate. This LTMSA improves information accessibility and coordination and does not establish new regulatory requirements or monitoring programs.

5.4 Data Gaps - *Well Completion Reports* (LTMSA 05)

This County DRP uses available data to support (1) evaluation of the vulnerability of domestic wells and SSWSs to water shortages, and (2) development and alignment of effective STRAs and LTMSAs. Access to new or more accurate or complete data would help improve this planning process in the future. This section details the LTMSAs identified by the County DRP that would provide new or improved data for use in future planning efforts.

5.4.1.1 Well Completion Reports (LTMSA 05)

This LTMSA addresses data gaps identified in Section 3.6 of the County DRP related to the accuracy and completeness of well completion reports maintained by DWR. County staff may review available well completion reports to identify potential inaccuracies related to geographic location, well status, and other relevant attributes that affect the characterization of domestic wells. Where feasible, County staff could coordinate with DWR to reconcile discrepancies using paper records and other information maintained by the County and support updates to the state registry. Improving the accuracy of well completion reports would support future drought resilience planning efforts by enhancing the County's understanding of domestic well distribution and vulnerability to water shortages.

5.5 System Consolidation (LTMSA 06)

System consolidation is the physical or managerial joining of two or more water systems to improve long-term drinking water supply reliability. Consolidation can include shared management, shared infrastructure, or physical interconnection between systems and may occur between SSWSs or between smaller systems and a larger community water system. By broadening water supply sources and increasing the number of users served by a coordinated system, consolidation can improve operational efficiency, enhance system resilience, and reduce vulnerability to water shortages. SB 552 identifies consolidation as a long-term mitigation strategy for counties to consider where local conditions allow.

5.5.1 Consolidation of SSWSs (LTMSA 06)

In Imperial County, there are currently only two SSWSs, both of which are located more than 3 miles from the nearest community water system. Based on this geographic distance and the absence of nearby water delivery infrastructure, consolidation of the existing SSWSs is not considered feasible at

this time. Domestic wells in the County are limited in number and spatially dispersed, and consolidation of existing domestic wells is also not anticipated to be a viable strategy.

For future SSWSs that may be established closer to community water system service areas, consolidation could be considered as part of long-term planning efforts. Under this LTMSA, the County, in coordination with interested SSWS operators and relevant agencies, could evaluate managerial or physical consolidation on a case-by-case basis, considering factors such as proximity to existing infrastructure, water supply availability and quality, institutional feasibility, and potential funding opportunities.

6.0 Implementation Considerations

The STRAs and LTMSAs identified and described in Chapters 4 and 5 represent the range of in-progress and proposed activities. Implementation of these STRAs and LTMSAs often (1) falls under the authorities and jurisdictional responsibilities of separate County departments and other local and State public agencies, and (2) requires the involvement of other interested parties. To implement these STRAs and LTMSAs and contribute to continued improvement of water supply reliability for domestic well and SSWS communities, this section describes the implementation steps designed to assist the County with:

- Ongoing water supply monitoring and inter-agency collaboration in support of implementation
- Outlining STRA and LTMSA implementation responsibility, status, and resource needs
- Identifying opportunities to align the County DRP with other County policy and County and regional planning documents
- Adaptive management
- Identifying funding opportunities

6.1 Legislative Direction

SB 552 requires the County to develop a drought and water shortage plan that analyzes the steps to implement the plan and funding sources available to support implementation, per CWC Section 10609.70 (**boldface** added for emphasis as related to plan implementation and this section of the County DRP):

> *(b) A county shall develop a plan that includes potential drought and water shortage risk and proposed interim and long-term solutions for state small water systems and domestic wells within the county's jurisdiction. The plan may be a stand-alone document or may be included as an element in an existing county plan, such as a local hazard mitigation plan, emergency operations plan, climate action plan, or general plan. A county shall consult with its drought task force or alternative coordinating process as established by this section in developing its plan. A county shall consider,* ***at a minimum****, all of the following in its plan:*
>
> *(1) Consolidations for existing water systems and domestic wells.*
>
> *(2) Domestic well drinking water mitigation programs.*
>
> *(3) Provision of emergency and interim drinking water solutions.*
>
> ***(4) An analysis of the steps necessary to implement the plan.***
>
> ***(5) An analysis of local, state, and federal funding sources available to implement the plan***

6.2 Implementation Roadmap

The County DRP describes existing and proposed STRAs and LTMSAs that, when executed, help the County meet its objectives under CWC Section 10609.70(b)(1), (b)(2), and (b)(3). Implementing these

STRAs and LTMSAs will require resources and clear roles and responsibilities. The identified STRAs and LTMSAs include existing or new activities to be implemented under existing authorities and funding of County departments and activities that are dependent on appropriation of funds from local, State, or federal resources. This section presents the implementation roadmap for this County DRP; identification of ongoing monitoring and collaboration with County staff; and conduct of management oversight, prioritization, and resource identification needs.

6.2.1 Monitoring and Collaboration

Supply monitoring and inter-agency collaboration support County DRP implementation by evaluating water supply reliability and maintaining ongoing coordination and collaboration among County departments, related organizations, and the Task Force. County staff will conduct a range of activities as described in Table 6-1. These activities may be superseded by the activities described in Section 0 if a drought or water shortage emergency has occurred.

Table 6-1. Imperial County Drought Resilience Plan Monitoring and Collaboration Activities

Activity	Description	Activity Lead	Timing
Task Force Meeting	County staff to schedule and facilitate a minimum of one Task Force meeting annually. The meeting will follow the County Environmental Health Division's update of its annual water supply condition assessment (see Section 4.4.1). Results of this assessment shall support County staff, in collaboration with the Task Force, to identify potential activation of water shortage response measures as described in this DRP.	County OES	April of each year
Water Supply Monitoring and Coordination	County Environmental Health Division to regularly engage with agencies/organizations that monitor physical risk factors and water supply conditions as associated with domestic well and SSWS communities (see Section 4.4.1). Coordinating agencies to include: IID, DWR, and ICPDS.	County Environmental Health Division, in collaboration with County OES and County Planning & Development Services	As-needed April through November
Internal Coordination	Biannual meeting to inform development of water supply condition assessment. This meeting prepares draft final assessment for presentation at annual Task Force meeting.	County OES, in coordination with County Environmental Health Division and County Planning & Development Services	March and October of each year
Drought Resilience Plan Website Update	County staff to update the website content and resource materials as described in the water supply condition assessment. This includes contact information, list of resources (vendors, links to external websites, etc.), and other website content.	County OES, in coordination with County Environmental Health Division and County Planning & Development Services	April of each year prior to Task Force meeting and as water supply conditions merit

Key:
County = Imperial County
CWC = California Water Code
DRP = Drought Resilience Plan
DWR = California Department of Water Resources
ICPDS = Imperial County Planning and Development Services
IID = Imperial Irrigation District
OES = Imperial County Office of Emergency Services
SSWS = state small water systems

6.2.2 Oversight, Responsibilities, Priorities, and Resource Needs

Individual STRAs and LTMSAs identified in this County DRP have been assigned to individual County departments and agencies pursuant to each agency's regulatory and policy authorities. County OES, as lead agency of the County DRP, shall provide administrative oversight/collaboration for all implementation actions that fall outside of its regulatory and policy authorities.

Table 6-2 details the type, status, and lead of County DRP STRAs and LTMSAs. Activities described in this table are subject to modification based on climate conditions, engagement with the Task Force, and other relevant factors. While activities have been assigned a near-, mid-, and long-term priority status, the pace of an activity's implementation schedule can be changed depending on various drivers such as new regulations, climate conditions, and funding. Priority classifications are:

- Near-term (in the next 2 years)
- Mid-term (within 2 to 5 years)
- Long-term (5 or more years in the future)

Status is classified as:

- Available
- In progress (for those currently being implemented)
- Proposed (for those that require additional resources)

The "Resource Requirement" columns specify if the STRA/LTMSA would require additional staff time, additional County budget, and external funds beyond what the County currently has available. These external funds could include grants, financing, federal funding, and future State funding to support DRP implementation.

Beyond these implementation activities, County OES will coordinate with the entities listed in Table 6-2 on mid-term and long-term priorities. The status of these mid- and long-term priorities, as well as the information in this table, will be reviewed at least annually in coordination with the Task Force meeting.

Table 6-2. Imperial County Drought Resilience Plan Short-Term Response Action and Long-Term Mitigation Strategy and Action Implementation Summary

Action/Strategy ID and Name	Lead Agency	Coordinating Agency	Priority	Status	Resource Requirement		
					Additional Staff Time	County Budget	External Funds
STRA-01: Water Hauling, Bulk Water for Existing Tanks	County OES	County Environmental Health Division, County Planning & Development Services	Near-term	Available	Yes	Yes	No
STRA-02: Voluntary Water Conservation Program	County OES	County Environmental Health Division	Mid-term	Proposed	Yes	No	No
STRA-03: Packaged and Bottled Water Supplies	County OES	County Environmental Health Division	Near-term	Available	Yes	Yes	Yes
STRA-04: Dedicated Water Filling Stations During a Water Shortage	County OES	County Environmental Health Division, Local Water Providers, County Planning & Development Services	Mid-term	Proposed	Yes	Yes	Yes
STRA-05: Agreements with Partner Agencies for Emergency Water Distribution	County OES	County Environmental Health Division	Mid-term	Proposed	Yes	No	No
STRA 06: Agreements with Large Water Providers	County OES	County Environmental Health Division	Mid-term	Proposed	Yes	No	No
LTMSA 01: Non-Drought Hazard Assessment	County OES	County Environmental Health Division, County Planning & Development Services	Mid-term	Proposed	Yes	No	No
LTMSA 02: Establish Network of Vendors and County Contacts	County Planning & Development Services	County Environmental Health Division	Mid-term	Proposed	Yes	No	No
LTMSA 03: Bulk Water Tank Installation	County Planning & Development Services	County Environmental Health Division	Mid-term	Proposed	Yes	Yes	Yes

Action/Strategy ID and Name	Lead Agency	Coordinating Agency	Priority	Status	Resource Requirement		
					Additional Staff Time	County Budget	External Funds
LTMSA 04: Create Single Online Location for Relevant Resources to Assist Domestic Wells and SSWSs	County Planning & Development Services	County Environmental Health Division, County OES	Near-term	In progress	Yes	No	No
LTMSA 05: Evaluate and Update Well Completion Report Administrative Record	County Environmental Health Division	County Planning & Development Services	Long-term	Proposed	Yes	No	No
LTMSA-06: Consolidation of SSWSs	County Environmental Health Division	County Planning & Development Services	Long-term	Proposed (when feasible)	Yes	No	No

Key:
County = Imperial County
LTMSA = long-term mitigation strategy and actions
OES = Office of Emergency Services
SSWS = state small water system
STRA = short-term response action

6.3 Policy Alignment and Integration

While this County DRP is a stand-alone document, the information and actions contained in it provide mutual benefits toward realizing goals and objectives of other County and regional planning efforts associated with domestic well and SSWS communities. Table 6-3 describes recommended policy alignment and/or integration actions that promote delivery of STRA and LTMSA actions identified in this County DRP through coordinated efforts with other related County and regional planning efforts.

Table 6-3. Imperial County Drought Resilience Plan Policy Alignment and Integration

Related Planning Effort	Release Date	County Lead	Integration Activity (Domestic Wells/SSWS Focus)
County General Plan	2021 Update	County Planning & Development Services	Coordinate future County General Plan amendments and element updates to ensure land use, safety, and infrastructure policies consider domestic well and SSWS vulnerability to drought, groundwater depletion, and water quality risks. Incorporate DRP findings to inform siting, growth decisions, and long-term water supply reliability for rural communities.
Multi-Jurisdictional Hazard Mitigation Plan	2021	County OES	Align drought-related hazards, mitigation actions, and vulnerability assessments with DRP priorities. Use DRP data to inform risk identification for domestic wells and SSWSs, support eligibility for hazard mitigation funding, and integrate drought mitigation measures that reduce long-term water supply risk.
Emergency Operations Plan	2016	County OES	Coordinate emergency response protocols for drought-related water supply disruptions affecting domestic wells and SSWSs. Use DRP monitoring thresholds and impact indicators to inform emergency preparedness, response coordination, and contingency planning for drinking water shortages.
County Strategic Plan	2023	CAO	Integrate DRP goals into countywide strategic priorities by supporting cross-departmental coordination, funding alignment, and implementation actions that improve drinking water resilience for domestic well and SSWS communities. Use the DRP to inform investment priorities and performance tracking related to water supply reliability and public health.

Key:
CAO = County Administration Office
County = Imperial County
DRP = Drought Resilience Plan
OES = Office of Emergency Services
SSWS = state small water system

6.4 Adaptive Management

The County DRP will be reviewed and updated periodically or in response to new information or changing conditions to ensure findings, STRAs, and LTMSAs are appropriate and relevant. At a minimum, this County DRP will be reviewed and updated by County staff every 5 years. The County DRP may also be revisited after major droughts, water shortage events, changes in GSA status, as well as when new

data, strategies, policies, or requests from the Task Force arise. County OES is responsible for initiating and coordinating the County DRP update.

Updates to the County DRP will include: (1) reviewing the risk assessment findings in light of new and improved information that characterizes water supply vulnerability, (2) evaluating progress on STRA and LTMSA implementation, (3) updating any communications and outreach materials and information, (4) updating Task Force details, and (5) revising the County DRP content to incorporate any changes. During this update, County OES will report on these updates to the Task Force to ensure transparent communication and coordination.

6.5 Funding Opportunities and Assistance Programs

As described in Table 6-2, this County DRP includes a variety of proposed activities that require appropriation of additional funds as approved by the County Board of Supervisors or through other State or federal sources. Receipt of these additional funds could involve a variety of activities, both for County staff and domestic well and SSWS owners/operators, including plan administration, management, and updates; submitting funding applications and administering agreements; outreach and communications; coordination with other agencies and entities; Task Force engagement; managing assistance programs; development and construction of infrastructure and associated operations, maintenance, repair, rehabilitation, and eventual replacement; and other efforts. Those activities require funding—both in the short term for projects with a finite schedule (for example, design and construction of a new domestic well) and in the long term for ongoing activities (for example, use and upkeep of that new well). As SB 552 does not provide funding for implementation activities, this DRP analyzed local, State, and federal funding sources available to implement the plan.

A combination of funding sources could be used to support County DRP implementation—such as generated revenue (e.g., rates and assessments), grants, loans, agency staff time, services provided by others (e.g., in-kind work, technical or training assistance through a State or federal agency)—with various agencies and entities involved in securing and administering each source. The availability of these internal and external funding sources will impact the success and timeliness of DRP implementation.

Although access to reliable funding is a hurdle faced by agencies and entities when implementing any program or project, domestic well and SSWS owners/operators are the most acutely impacted due to limited staff, reserves, and requirements of the implementing agencies. Agencies and entities may find (1) it is cost- and resource-prohibitive to implement STRAs and LTMSAs by themselves; (2) solutions frequently require participation or involvement of other entities; and (3) it is challenging to prepare for, navigate, apply for, and administer the various local, State, and federal funding mechanisms that could be available at any given time. These system owners/operators will need assistance and support from the County and other agencies and entities.

Using the STRAs and LTMSAs developed for the County (listed in Section 4.2 and 5.2, respectively), this DRP investigated and analyzed potential funding sources for implementation, as shown in Table 6-4. This analysis presented in this table will be used as the basis for developing future funding strategies, and it is not a complete/exhaustive list. Note that available funding sources are constantly changing, and funding needs, timing, and potential opportunities should be periodically reassessed.

Table 6-4. Funding Opportunities and Assistance Programs for Drought Resilience Plan Implementation

Resource	Funding Agency	Description
General Fund	County	The County General Fund includes revenues such as sales and property tax. Use of this fund is discretionary and subject to approval by the County Board of Supervisors.
Proposition 4: Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024 (Bush and Capelli 2024; DWR 2025-a)	Multiple State Agencies	Major categories with potential support for domestic well and SSWS communities include: • Safe Drinking Water, Drought, Flood, and Water Resilience • Wildfire and Forest Resilience • Coastal Resilience
Sustainable Groundwater Management Grant Program (DWR 2025-b)	DWR	Provides GSAs with assistance and engagement support for preparation and implementation of GSPs.
Countywide and Regional Funding Program (State Water Board 2023)	State Water Board	Provides direct funding to support SSWSs and domestic wells serving disadvantaged communities and low-income households. Community outreach, domestic well testing, and interim and long-term solutions are eligible to receive funds.[3]
Drinking Water State Revolving Fund (State Water Board 2025-a)	State Water Board	Fund provides low-cost loans for planning, design, and construction of drinking water improvements to water systems and can be used to support system consolidation.
Technical Assistance Funding Program (State Water Board 2025-b)	State Water Board	Provides technical assistance for small, disadvantaged communities to develop, fund, and implement eligible drinking water needs, including system consolidation support.
Water and Environmental Program (USDA 2015)	USDA	Through the Rural Utilities Service Water and Environmental Programs, communities with populations of 10,000 or less can apply for funding support to construct water and wastewater facilities. Such programs could support annexation of SSWS and domestic well communities as part of a multi-benefit project led by a Water and Environmental Program-eligible public water system.

Key:
County = Imperial County
DWR = California Department of Water Resources
GSA = groundwater sustainability agency
GSP = groundwater sustainability plan
SSWS = state small water system
State Water Board = State Water Resources Control Board
USDA = U.S. Department of Agriculture

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Appendix A

Licensed Bulk Water Haulers and Commercial Water Suppliers in Imperial County

Table A-1. Licensed Bulk Water Haulers and Commercial Water Suppliers in Imperial County

Business Name	Facility Address	City	Zip Code
BLU BULK TRANSPORT, INC. (D&M Water Co)	1548 JONES STREET	BRAWLEY	92227
EL OASIS WATER CO. INC.	200 EAST MAIN STREET	WESTMORLAND	92281
ROMAN'S WATER, INC.	920 SOUTH 2ND STREET	EL CENTRO	92243

Appendix B

Public Water System Emergency Water Staging Areas in Imperial County

Table B-1. Public Water System Emergency Water Staging Areas in Imperial County

Water System Name	Water System Number	Water System Classification	Physical Location	Owner	Administrative Contact	Administrative Address	Administrator Phone	Administrative Contact Email	Operator	Operator Mailing Address	Operator email	Operator Cell	Operator Phone	Water Source	Comment
Coyote Valley Mutual Water Co.	CA1300514	CWS	1157 Imperial Highway, Ocotillo, CA 92259	Diane Epperson	David Player	400 N. Imperial Ave. Ste. 2, Imperial, CA 92251	760-545-1177	dplayer3@gmail.com	Rod Gaddis	831 Beale Ave., Holtville, CA	rnrwtr@aol.com	760-457-6433	760-356-2556	Groundwater - 2 Wells	
Ocotillo Mutual Water Co.	CA1300513	CWS	Fourth and Palo Verde, Lot 42, Ocotillo, CA 92259	Jim Pelley	David Player	400 N. Imperial Ave. Ste. 2, Imperial, CA 92251	760-545-1177	dplayer3@gmail.com	Rod Gaddis	831 Beale Ave., Holtville, CA	rnrwtr@aol.com	760-457-6433	760-356-2556	Groundwater - 2 Wells	
U.S. Gypsum Co.	CA1300517	NTNC	3810 W. Evan Hewes Hwy., Imperial, CA 92251	US Gypsum Company	Don Murphy	3810 W. Evan Hewes Hwy., Plaster City, CA 92269	760-455-8259	DRMurphy@usg.com	Frank Cornejo		jclabs72@gmail.com	760-457-9064	760-356-3186	Groundwater - 3 Wells	
Winterhaven County Water District	CA1300009	CWS	494 Second Ave., Winterhaven, CA 92283	Winterhaven County Water District	Leticia Glenn	P.O. Box 787, Winterhaven, CA 92283	760-550-2068	whavenca@gmail.com	Rick Miller	4743 E. 30th Place, Yuma, AZ 85365	christina@sunstatees.com	760-550-2068	928-920-9056	Groundwater - 2 Wells	Gerry Salas (Shift Operator): 928-920-0776

Key:
CWS = community water system
NTNC = Nontransient Noncommunity Water System

Imperial County Drought Resilience Plan
Administrative Final

Prepared for:
Imperial County

Prepared by:
Stantec Consulting Services Inc.

March 18, 2026