Prepared for

Monterey Peninsula Water Management District

FINAL | March 2019

North Monterey County Drought Contingency Plan

Funding in part by the Department of the Interior, Bureau of Reclamation
Under a Water SMART Drought Contingency Planning Grant

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March 13, 2019

Ms. Vanessa Emerzian
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149392

Subject: Final North Monterey County Drought Contingency Plan

Dear Ms. Emerzian:

Brown and Caldwell and the consulting team on this project on behalf of the Monterey Peninsula Water Management District and the Drought Contingency Plan (DCP) Drought Task Force are pleased to submit to you this North Monterey DCP. This DCP addresses the six drought contingency planning elements including drought monitoring, vulnerability assessment, mitigation actions, response actions, operational and administrative framework, and plan development and update as defined by the Reclamation Manual Directives and Standards for the Drought Response Program, WTR TRMR-110. We have incorporated your review comments provided to-date in this updated document. This region looks forward to implementing this DCP document and continuing the regional communication and collaboration that the development of this DCP has created and fostered.

Very truly yours,

Brown and Caldwell

Melanie Holton
Production Manager

Mike Savage
Project Manager

cc. Dave Stoldt, Monterey Peninsula Water Management District

Attachment: Final North Monterey County Drought Contingency Plan

FINAL

North Monterey County Drought Contingency Plan

Prepared for

Monterey Peninsula Water Management District

Monterey, CA

March 13, 2019

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North Monterey County Drought Contingency Plan

Prepared for
Monterey Peninsula Water Management District
Monterey, CA
March 13, 2019

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Acknowledgements

The following individuals provided significant and valuable contributions to development of the North Monterey County Drought Contingency Plan:

Agencies

- Dave Stoldt, Monterey Peninsula Water Management Agency (Lead Agency, Project Manager)
- Gary Petersen, Salinas Valley Groundwater Sustainability Agency
- Dave Chardavoyne and Howard Franklin, Monterey County Water Resources Agency
- Paul Sciuto and Mike McCullough, Monterey One Water
- Eric Tynan, Castroville Community Services District
- Keith Van Der Maaten, Marina Coast Water District

United States Bureau of Reclamation

- Vanessa Emerzian (Mid-Pacific Region)
- Arlan Nickel (Mid-Pacific Region)

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- Steve Thomas, Thomas Brand Consulting

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List of Abbreviations

ACWA	Association of California Water Agencies
AF	acre-feet
AFY	acre feet per year
Alco Water	Alisal Water Corporation
AMBAG	Association of Monterey Bay Area Governments
ASR Project	Aquifer Storage and Recovery Project
ATW	advanced treated recycled water
AWPF	Advanced Water Purification Facility
Basin Study	Salinas and Carmel Rivers Basin Study
Cal Water	California Water Service Company
Cal-Am	California American Water Company
CCSD	Castroville Community Services District
CDO	cease and desist order
CII	commercial, industrial and institutional
CMIP5	Coupled Model Intercomparison Project 5
CPN	Certificate of Public Necessity
CPUC	California Public Utilities Commission
CSIP	Castroville Seawater Intrusion Project
CWC	California Water Code
DAC	disadvantaged community
DCP	Drought Contingency Plan
DWR	California Department of Water Resources
EO	Executive Orders
ET	Evapotranspiration
FORA	Fort Ord Reuse Authority
GEMS	Groundwater Extraction Management System
GHG	greenhouse gas
gpcd	gallons per capita per day
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IFA	Infrastructure Finance Act
in	inches
IPCC	Intergovernmental Panel on Climate Change
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
JPA	Joint Powers Authority
LAFCO	Local Agency Formation Commission
M1W	Monterey One Water
MBNMS	Monterey Bay National Marine Sanctuary
MCRMA	Monterey County Resource Management Agency
MCWD	Marina Coast Water District
MCWRA	Monterey County Water Resources Agency
MG	million gallons
MGD	million gallons per day
MOA	Memorandum of Agreement
MPWMD	Monterey Peninsula Water Management District
MPWSP	Monterey Peninsula Water Supply Project
MRSWMP	Monterey Regional Stormwater Management Program
NGO	non-government organization
NOAA	National Oceanic and Atmospheric Administration
O&M	operations and maintenance
P3s	public-private partnerships
Pure Water Monterey	Pure Water Monterey Groundwater Replenishment Project
Q	quarterly
R&R	repair and replacement
Reclamation	U.S. Bureau of Reclamation
RUWAP	Recycled Water Element of the Regional Urban Water Augmentation Project
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act

SGWP	Sustainable Groundwater Planning
SIWTF	Salinas Industrial Wastewater Treatment Facility
SLO	San Luis Obispo
SRA	Shortage Response Action
SRDF	Salinas River Diversion Facility
SRF	State Revolving Fund
SVGB	Salinas Valley Groundwater Basin
SVIGSM	Salinas Valley Integrated Ground and Surface Water Model
SVRP	Salinas Valley Reclamation Project
SVWP	Salinas Valley Water Project
SWRCB	State Water Resources Control Board
Task Force	Drought Contingency Plan Task Force
TOC	total organic carbon
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VOC	volatile organic compound
WAC	Water Awareness Committee of Monterey County
WRAIMS	Water Resources and Information Management System
WSCP	Water Shortage Contingency Plan

Section 1

Introduction

This section describes the background, objectives, and steps taken in the development of this Drought Contingency Plan (DCP). The coordination with the Salinas and Carmel Rivers Basin Study (Basin Study) and agency and stakeholder engagement are also described.

Section 1 Summary

Key Take-Aways

- This Drought Contingency Plan (DCP) addresses six drought contingency planning elements: drought monitoring, vulnerability assessment, mitigation actions, response actions, operational and administrative framework, and plan development and update.
- Staff from local participating agencies led by Monterey Peninsula Water Management District (MPWMD) convened the DCP Task Force and collaborated in defining the DCP's direction and developing its content.
- This DCP and the Salinas and Carmel Rivers Basin Study (Basin Study) are coordinated efforts however, the DCP plan area is in the northern part of the much larger Basin Study area.
- This DCP references initial findings from climate change modeling as part of the Basin Study.
- Main geographic features in the DCP area are the lower Salinas River valley and Carmel River valley as well as the Salinas Valley and Seaside Groundwater Basins.
- Urban areas included in the DCP consist of the Cities of Carmel, Monterey, Pacific Grove, Del Rey Oaks, Seaside, Marina, Salinas, and Castroville.
- There is a potential long-term water supply to demand imbalance in the DCP area as demonstrated in State orders to cut the use of existing surface and groundwater resources exacerbated by over 80 years of documented seawater intrusion and groundwater level declines.

1.1 Background

The DCP area is home to some of California's most valuable agriculture, diverse urban centers, and spectacular natural resources. The area is dependent on local rainfall and runoff and is not served by a state or federal water project. Groundwater basins have been over-drafted resulting in significant seawater intrusion near the coast. State-mandated actions required to support sustainable groundwater use could also place significant constraints on future water supplies. These conditions coupled with a fourth year of drought in 2016 provided the catalyst to bring stakeholders together to share technical information, understand the impacts of drought and climate change to their way of life and jointly develop a DCP to manage their scarce water resources to the benefit of all.

The DCP area is in the northern portion of Monterey County and includes part of the Salinas Valley from the southern edge of the City of Salinas to the Pacific Ocean, the western portion of Carmel Valley, and the urbanized Monterey Peninsula area between the two valleys. The main geographic features in the DCP area are the lower Salinas River valley and Carmel River valley including the Salinas Valley Groundwater Basin (SVGB) and the Seaside Groundwater Basin. The urban areas consist of the cities of Carmel, Monterey, Pacific Grove, Del Rey Oaks, Seaside, Marina, Salinas, and Castroville. Major land uses include agriculture, rangeland, forest, and urban development. The groundwater basins including the subareas of the SVGB and boundaries of the DCP water agencies are shown in Figure 1-1. Figure 1-1 is helpful to illustrate the location of the DCP water agencies with respect to the groundwater basins. To clearly identify the DCP study area and avoid confusion of the DCP water agency services areas with the groundwater basin areas, Figure 1-2 illustrates the DCP study area as the yellow area within the boundaries of the DCP water agency service areas.

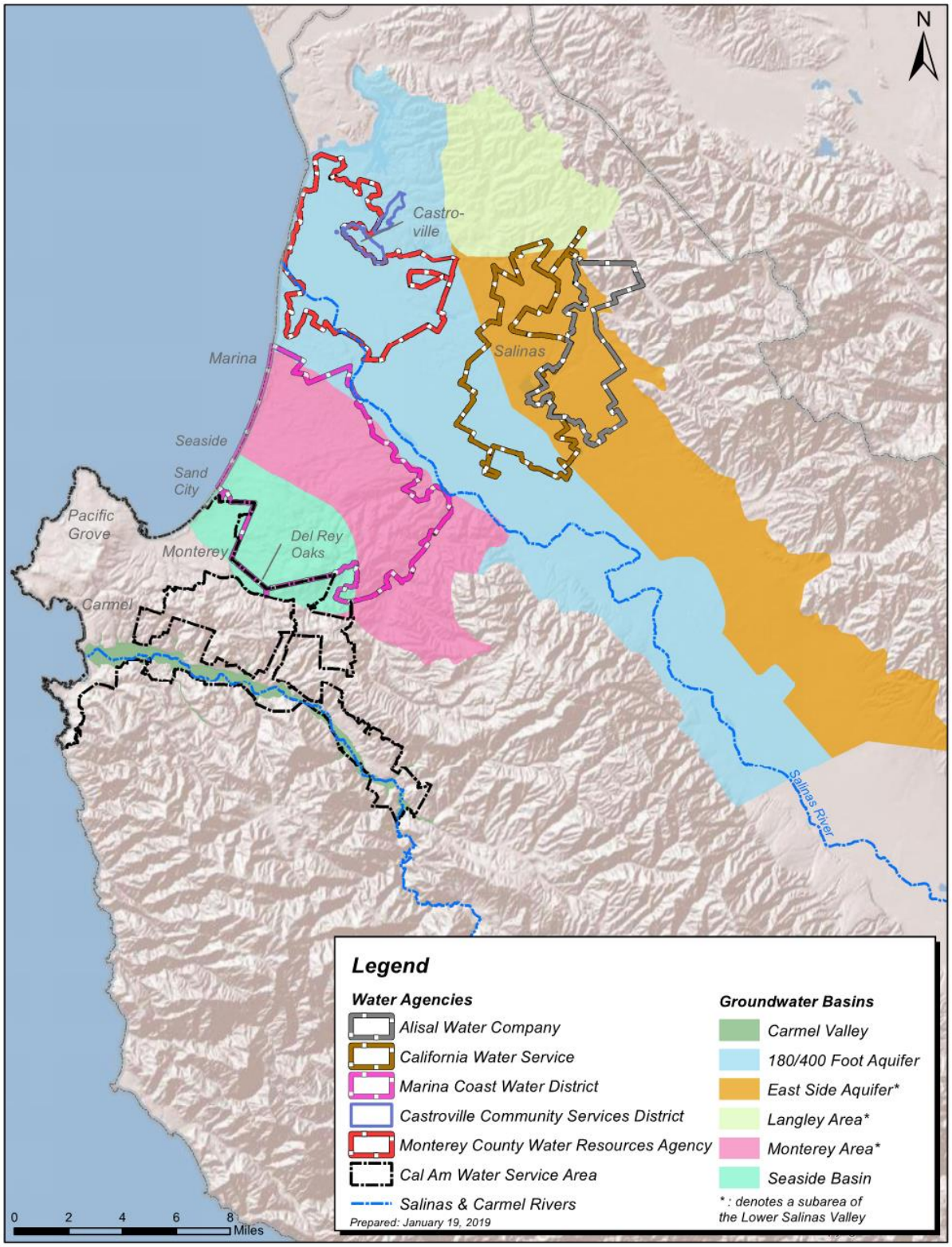

Figure 1-1. Groundwater Basins and Drought Contingency Plan Area Water Agencies

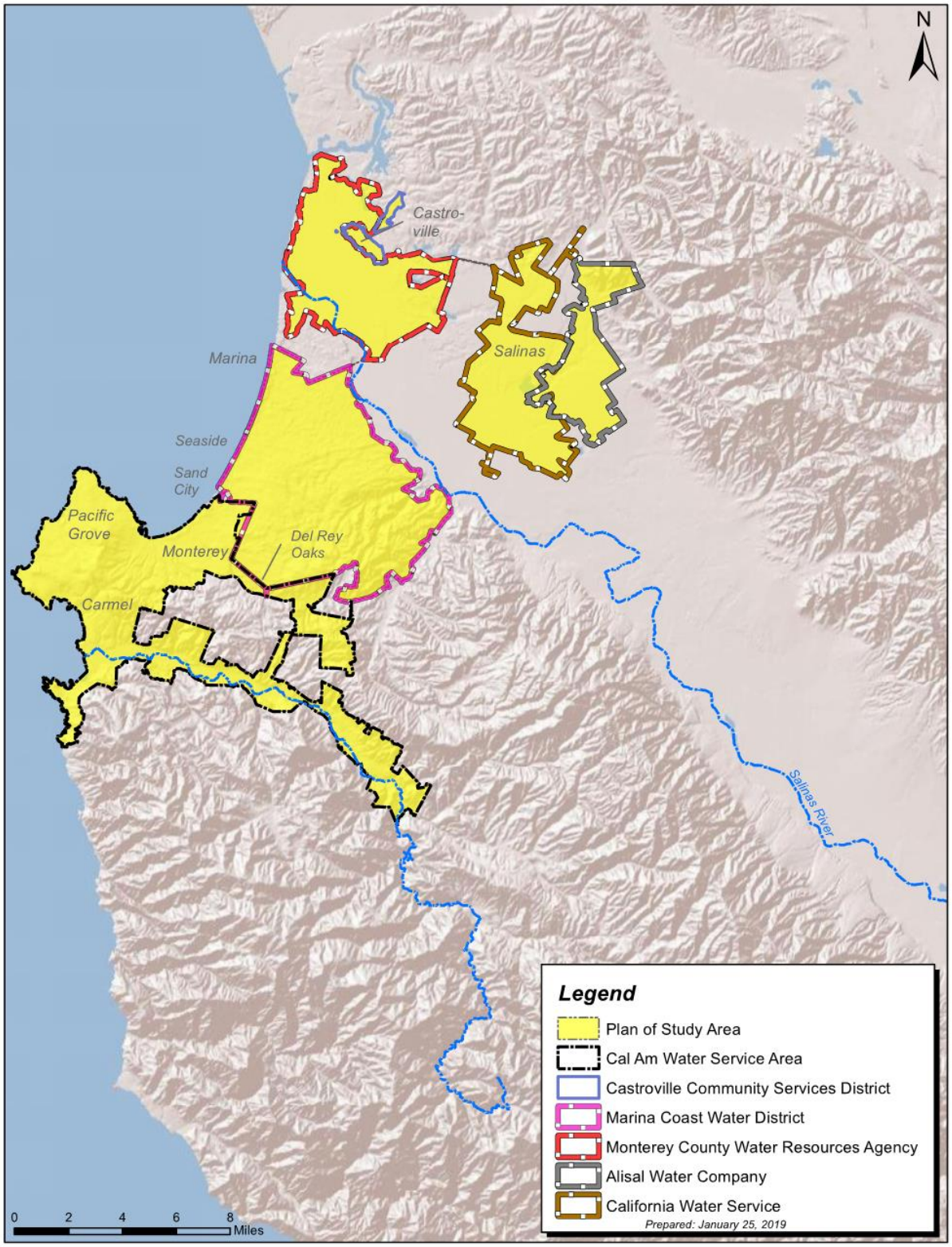

Figure 1-2. Drought Contingency Plan Area

This DCP addresses a geographic area that experienced multiple impacts associated with California's last drought from 2012 to 2016. There is a potential long-term water supply to demand imbalance as demonstrated by State orders to cut use of existing surface and groundwater resources exacerbated by over 80-years of documented seawater intrusion and groundwater level declines. Extended droughts like the drought that occurred from 2012 to 2016, have further intensified this condition. The region's entire domestic, industrial, and agricultural supply is dependent on local surface and groundwater sources and recycled water.

The drought monitor map shown in Figure 1-3 shows that the entirety of Monterey County was in a Severe to Exceptional Drought during the drought from 2012 to 2016, with approximately the eastern half of the County in Exceptional Drought and most of the western half in Extreme Drought. In July 2014, the entire County was in Exceptional Drought. The lack of precipitation and resulting river flows have been significantly below normal since 2012, as a result of the four-year dry period.

Figure 1-4 depicts how dry the Carmel River had been for the last two years of the 2012 to 2016 drought as measured by unimpaired streamflow at monthly intervals as indicated by the dates at the bottom of the chart. The rainfall total for Water Year 2014 was the second lowest on record, with 1924 being the lowest.

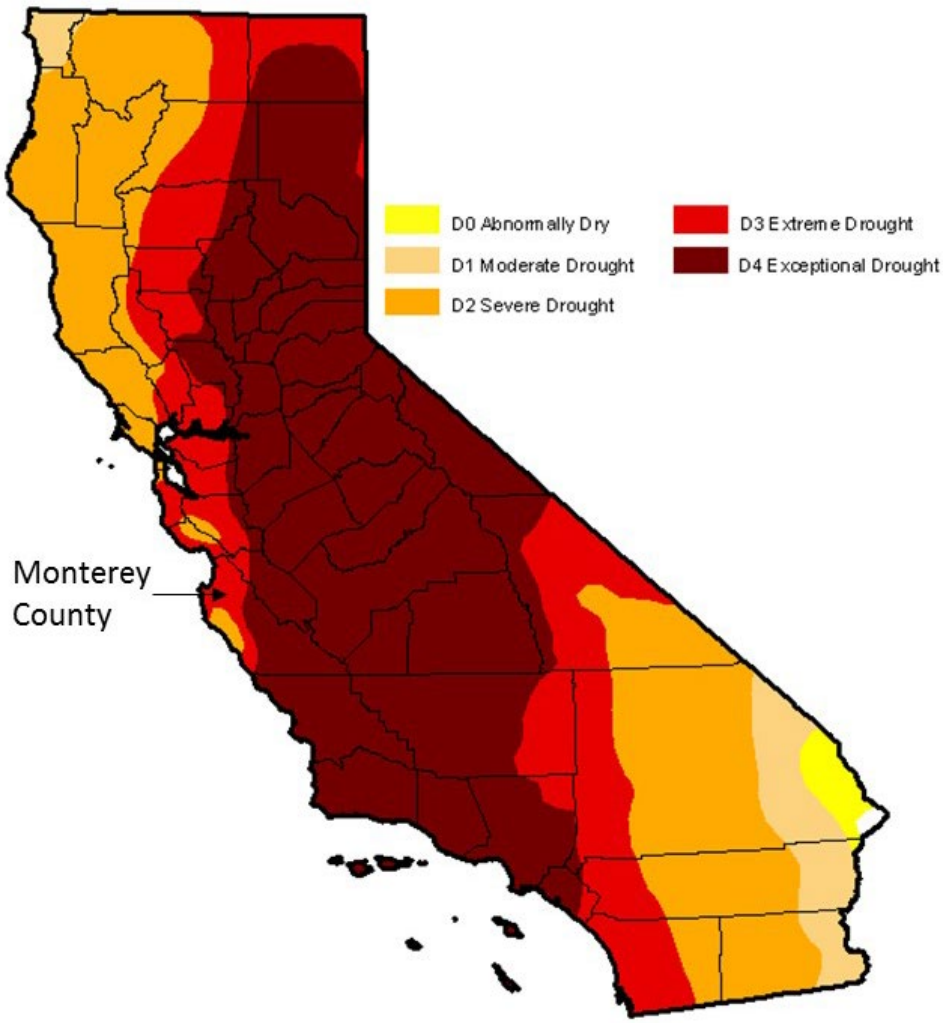

Figure 1-3. U.S. Drought Monitor for May 26, 2015

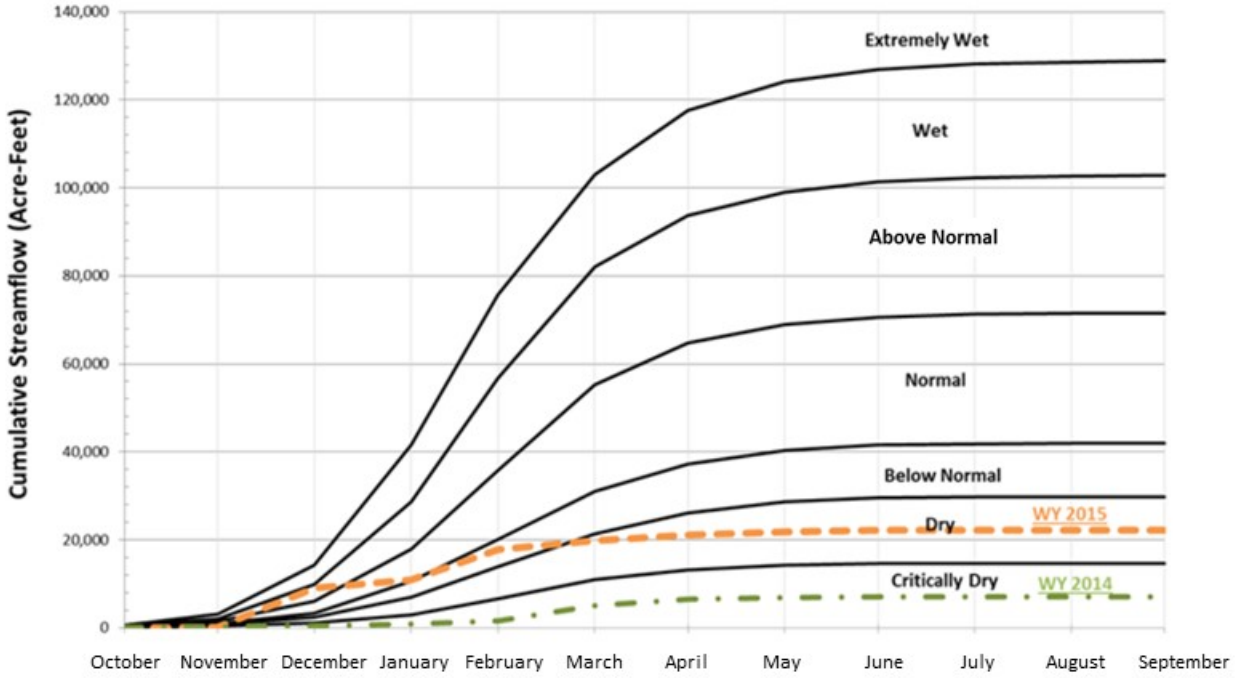

Figure 1-4. Water Year Cumulative Unimpaired Streamflow for the Carmel River

1.2 DCP Development Steps and Elements

As part of the required steps undertaken to initiate a DCP, a Detailed Work Plan and a Communications and Outreach Plan were developed.

1.2.1 Detailed Work Plan

Monterey Peninsula Water Management District (MPWMD) developed a Detailed Work Plan in consultation with U.S. Bureau of Reclamation (Reclamation) that described in detail how the various tasks included in developing the DCP will be accomplished in conjunction with the Basin Study. This included a detailed project schedule, and descriptions of the coordination and responsibilities of Reclamation, MPWMD as the planning lead, the Drought Contingency Plan Task Force (Task Force), Advisory Committee, and other interested stakeholders. The Detailed Work Plan was submitted on March 21, 2016 and subsequently approved by Reclamation.

1.2.2 Development of a Communications and Outreach Plan

MPWMD also developed a Communications and Outreach Plan (attached to the Detailed Work Plan) that established a Task Force to coordinate and make initial planning decisions to later be vetted by the Advisory Committee, various stakeholders and the North County communities through a series of collaborative activities. The Communications and Outreach Plan also includes description of linkages to the DCP and Basin Study. The implementation of the Communications and Outreach Plan for agency and stakeholder engagement in the development of the DCP is described in Section 1.4.

1.2.3 DCP Elements

Reclamation defines six elements to be addressed in the DCP. When available, existing information is used to satisfy the required elements. The elements are described below and illustrated in Figure 1-5. A checklist of the DCP elements and items to be discussed within each element based on the Detailed Work Plan and the Reclamation Manual Directives and Standards for the Drought Response Program, WTR TRMR-110 (Reclamation, July 2017) and corresponding DCP section number is provided in Table 1-1.

Drought Monitoring. Define the local agencies' processes for monitoring near and long-term water availability, and a framework for predicting the probability of future droughts or confirming an existing drought. Drought monitoring is discussed in Section 3. Discussion on improving communications and coordination on future droughts is discussed in Section 7.

Vulnerability Assessment. Include a vulnerability assessment evaluating the risks and impacts of drought based on a range of future conditions. A vulnerability assessment of the agencies' water supplies and drought impacts to other sectors is provided in Section 4.

Response Actions. Identify, evaluate, and prioritize response actions and activities that can be quickly implemented during a drought to mitigate the impacts. Existing WSCPs for each participating agency and the drought response actions are described in Section 5.

Mitigation Actions. Identify, evaluate, and prioritize mitigation actions and activities (referred to as drought mitigation measures) that will build long-term resiliency to drought and that will mitigate the risks posed by drought. Drought mitigation measures are described and evaluated in Section 6.

Operational and Administrative Framework. Identify who is responsible for undertaking the actions necessary to implement each element of the DCP, including communicating with the public about those actions. The operational and administrative framework to continue the implementation of the recommendations and coordination developed as part of this DCP are described in Section 7.

Plan Development and Update. Describe the process that was undertaken to develop the plan, including how stakeholders were engaged and how input was considered. In addition, the DCP must also include a process and schedule for monitoring, evaluating, and updating the DCP. The process to develop this DCP is described in Section 1 and the proposed process to update this DCP is described in Section 7.

Table 1-1. Program Requirements Aligned with North Monterey County DCP Report Sections		
Section from Reclamation's Temporary Directives and Standards (WTR TRMR-110)	**Program Requirements**	**Section in this DCP where addressed**
WTR TRMR-110 6 D.(1)(a) Drought Monitoring	Establish process for monitoring near and long-term water availability and framework for predicting the probability of future droughts or confirming an existing drought.	Section 3.2 describes how local agencies monitor water supplies
	Explain how water availability and drought-related data will be used to predict or confirm droughts including identifying metrics and triggers that will be used to define stages of drought.	Section 5.1.2 describes water shortage stages and triggers for each of the local agencies
WTR TRMR-110 6 D.(1)(b) Vulnerability Assessment	Include a vulnerability assessment evaluating the risks and impacts of drought.	Section 4.3 defines risks to critical resources Section 4.4 defines climate change risks including preliminary findings from Basin Study Section 4.5 defines impacts of drought across various sectors
	Assessment must be based on a range of future conditions.	Section 4.1 defines future conditions used for this DCP Section 4.2 defines potential supply shortfalls under the future conditions
WTR TRMR-110 6 D.(1)(c) Mitigation Actions	Identify, evaluate, and prioritize mitigation actions and activities that will build long-term resiliency to drought and that will mitigate the risks posed by the drought.	Section 6.2 describes the approach to identifying the drought mitigation measures Section 6.3 characterizes the large list of potential drought mitigation measure projects Section 6.4 defines the screening approach for prioritizing the drought mitigation measures Section 6.5 summarizes the ranking of the structural drought mitigation measure projects Section 6.6 summarizes the programmatic/conceptual drought mitigation measure projects
WTR TRMR-110 6 D.(1)(d) Response Actions	Identify, evaluate, and prioritize response actions and activities that can be implemented during a drought to mitigate the impacts.	Section 5.1.2 describes water shortage stages and triggers for each of the local agencies Section 5.2 presents the regional drought response coordination Section 5.3 recommends future regional potential drought response actions
WTR TRMR-110 6 D.(1)(e) Operational and Administrative Framework	Identify who is responsible for undertaking the actions necessary to implement each element of the DCP.	Section 7 describes the implementation of the DCP and the DCP work plan overview
	Identify roles, responsibilities, and procedures necessary to conduct drought monitoring, initiate response actions, initiate mitigation actions, and update the plan.	Section 7 describes the implementation of the DCP and a potential sequence of decisions for implementing the drought mitigation measures
WTR TRMR-110 6 D.(1)(f) Plan Development and Update Process	Describe the process that was undertaken to develop the plan.	Section 1 describes the coordination with the Basin Study and the agency and stakeholder engagement process
	Include a process and schedule for monitoring, evaluating, and updating the DCP.	Section 1 defines the process to develop the DCP Section 7.1.5 describes the process to update the DCP

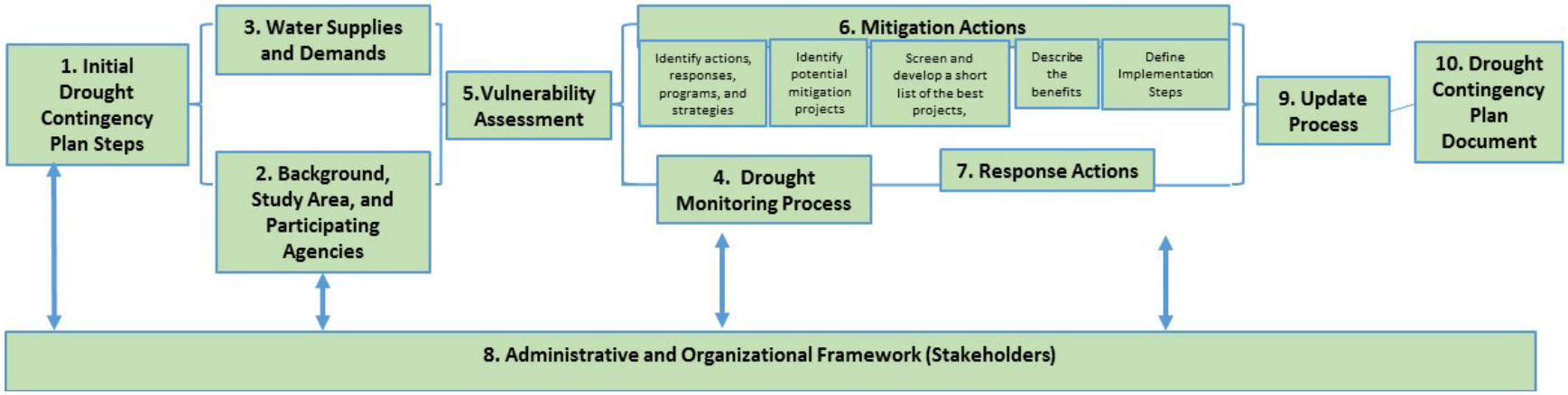

Figure 1-5. Drought Contingency Plan Development Steps and Elements

1.3 Coordination with the Salinas and Carmel Rivers Basin Study

The DCP and the Basin Study are synergistic with one another but differ in four primary areas: schedule, geographic extent, stakeholder processes, and project outcomes.

The Basin Study is a longer-term study process that will develop new modeling and information to be used for the formulation and evaluation of currently identified and potential new drought mitigation measures.

The Basin Study and the DCP both access data created under the locally sponsored, and currently underway, Salinas River Groundwater Basin Investigation. The Basin Study will conduct analyses that expand upon the mitigation measures identified in the DCP.

The study area for the DCP is also a much smaller sub-region of the Basin Study area. However, the DCP sub-region was the most critically impacted by the drought, with the greatest diversity of stakeholders and seriously competing demands between agricultural, environmental and urban water-users. The DCP study area is the most susceptible to exacerbating the seawater intrusion problems during drought as agricultural interests are prone to rely more on groundwater when surface water supplies are in decline.

The DCP calls for a much more involved stakeholder driven process tasked with identifying drought mitigation measures and/or actions to address current drought and conditions associated with increased drought conditions. The drought mitigation measures in the DCP could be viewed as stakeholder-driven, whereas the adaptation strategies in the Basin Study are climate science driven. Ultimately, the Basin Study will provide new information that can inform future updates to the DCP and other regional water management plans.

The goals of the Basin Study are to evaluate water supply and demand and help ensure reliable water supplies in the region by identifying strategies to address imbalances in water supply and demand. The Basin Study and DCP have collaborated on stakeholder workshops to-date to maximize sharing of information and to minimize impacts to stakeholder's busy schedules.

Objectives of the Basin Study have been identified at the local level through the integrated regional water management plan (IRWMP) process, several existing groundwater management plans, and the Sustainable Groundwater Management Act (SGMA). The enabling federal legislation for the Basin Study program states the overall goal is to assess the effect and risk of climate change on the quantity of water resources and develop strategies to address water shortages. The Basin Study must include; projections of future water supply and demand, considering specific impacts resulting from climate change, including any risk related to factors such as changes in the timing and quantity of runoff, groundwater recharge and discharge, and any increase in the demand for water as a result of increasing temperatures or the rate of reservoir evaporation. The Basin Study can also leverage the analysis and documentation in the DCP. Table 1-2 lists the Basin Study program objectives.

Table 1-2. Salinas and Carmel Rivers Basin Study Program Objectives	
Category	**Objective**
Water supplies and demands	Project future water supply and demand considering changes in climate, runoff, groundwater recharge and discharge, water demands, and reservoir evaporation.
Groundwater	Attain or maintain target groundwater levels and storage
	Prevent or reduce seawater intrusion
	Maintain groundwater quality
	Prevent land subsidence
	Attain or maintain beneficial use of interconnected surface water
Flood protection	Analyze impacts of supply changes
	Prevent damage to urban areas and agriculture
Climate change	Analyze performance of infrastructure considering climate change, extreme events, and population growth.
	Understand and plan for climate change impacts
Water quality	Analyze impacts of supply changes
	Meet drinking water standards
	Meet waste discharge criteria
	Meet reuse criteria
Environmental	Analyze impacts of supply changes
	Manage invasive species
	Maintain species and habitat
	Meet instream flow requirements
Hydroelectric power and recreation	Analyze impacts of supply changes
	Maintain or increase hydropower generation
Stakeholder support and regional collaboration	Improve collaboration between urban, rural, and agricultural, as well as regional, state, and federal entities.
Adaptation and mitigation strategies	Identify effective adaptation and mitigation strategies
	Improve reliability and sustainability of water supplies
	Diversify water supplies
	Maximize water conservation

1.4 Agency and Stakeholder Engagement

Staff from each of the local participating agencies collaborated in defining the DCP's direction and developing its content. These local agencies, led by MPWMD, convened an advisory group, the Drought Contingency Plan (DCP) Task Force to provide feedback on strategies and work products developed for the DCP. The Task Force represents a broad range of stakeholder interests, including business, environmental, environmental justice, public policy, regional planning, and other water/wastewater/recycled water agencies. The Task Force process provided stakeholders and interested parties an opportunity for substantive engagement on the development of the DCP, providing input to the local agencies and the consultant team at key milestones and interim work products (e.g., system schematics, drought mitigation measures and response action list), which

were utilized to create the DCP. Task Force members provided input through six workshops. These are summarized below. Note that due to the close coordination between the DCP and the Basin Study, these workshops were usually held in conjunction with one another. The agencies were provided a draft DCP report to review in October 2018.

The list of agencies in the Task Force is as follows:

- California American Water Company (Cal-Am)
- California Water Service Company (Cal Water)
- Castroville Community Services District (CCSD)
- City of Salinas
- Grower-Shipper Association of Central California
- Marina Coast Water District (MCWD)
- Monterey County Farm Bureau
- Monterey County Office of Emergency Services
- Monterey County Resources Management Agency
- Monterey County Water Resources Agency (MCWRA)
- Monterey One Water (Formerly Monterey Regional Water Pollution Control Agency) (M1W)
- Monterey Peninsula Water Management District (MPWMD)
- Salinas Valley Water Coalition

It should be noted, as discussed in Section 7.1.2, the drought mitigation measures that are being undertaken by investor owned water utilities operating in the DCP planning area and would incrementally contribute to regional supply reliability may be considered outside the purview of the participating DCP agencies.

Workshop No. 1 – February 24, 2016

On February 24, 2016, MPWMD working with Reclamation staff and consultants led a workshop that served as a kickoff meeting for the Task Force and introduced the Basin Study to those in attendance. The purpose of the workshop was to 1) introduce the DCP and the Task Force, 2) offer an opportunity to those present to learn how the DCP is integrating with other regional water supply investigations, and 3) introduce the Basin Study and the benefits it could provide to local water managers making decisions on how to adapt to impacts associated with competing demands, climate vulnerability, and drought. Attendees included:

- Cal-Am
- Cal Water
- CCSD
- City of Salinas
- County of San Luis Obispo
- MCWD
- Monterey County Farm Bureau
- Monterey County Office of Emergency Services
- MCWRA
- M1W
- MPWMD
- Reclamation

Workshop No. 2 – August 16, 2016

On August 16, 2016, MPWMD working with Reclamation staff and consultants met in a workshop setting to discuss the linkages between the DCP and Basin Study. Data needs for the DCP were identified and the DCP consultant team was tasked with initial data gathering and work on tasks identified in the Detailed Work Plan. Attendees included:

- Cal-Am
- Cal Water
- CCSD
- City of Salinas
- MCWD
- Monterey County Farm Bureau
- MCRMA
- MCWRA
- M1W
- MPWMD
- Reclamation

Workshop No. 3 – October 5, 2017

On October 5, 2017, MPWMD working with Reclamation staff and consultants led a joint workshop to introduce the Basin Study team and present progress on the DCP. The morning session served as a kickoff session for the Basin Study that was led by Reclamation staff. The Basin Study team was introduced and a brief overview of the project area, purpose, objectives, and expected outcomes was presented. The afternoon session focused on the DCP. The session reviewed system interconnectedness schematics, preliminary list of drought mitigation measures and response actions, introduced the data request template, and discussed review of Urban Water Management Plans (UWMPs) and data compiled to-date (truth test). Attendees included:

- Cal-Am
- Cal Water
- Carmel Area Wastewater District
- CCSD
- City of Salinas
- County of San Luis Obispo
- MCWD
- Merrill Farms
- Monterey County Farm Bureau
- Monterey County Office of Emergency Services
- MCWRA
- M1W
- MPWMD
- Pebble Beach Community Services District
- Pueblo Water
- Reclamation

Workshop No. 4 – May 31, 2018

On May 31, 2018, MPWMD working with Reclamation staff and consultants led a joint workshop to present progress on the Basin Study and DCP. The morning session focused on the status of the Basin Study. This included providing a general overview of the study, summarizing future tasks, and updating the Basin Study's schedule. The afternoon session focused on the DCP. Progress to date was presented with focus on the vulnerability assessment and the drought mitigation measures and response actions. Attendees included:

- Cal Water
- County of San Luis Obispo
- MCWD
- MCRMA
- MCWRA
- M1W
- MPWMD
- Salinas Valley Basin Groundwater Sustainability Agency
- Reclamation

Workshop No. 5 – August 13, 2018

On August 13, 2018, MPWMD working with Reclamation staff and consultants led a workshop to review the drought mitigation measure projects including the screening criteria and project scoring. Also discussed were the regional drought response actions and the operational and administrative framework to support the implementation of the drought mitigation measures. Attendees included:

- CCSD
- MCWD
- MCRMA
- M1W
- MPWMD
- Salinas Valley Basin Groundwater Sustainability Agency
- Reclamation

Workshop No. 6 – December 2018

On December 6, 2018, MPWMD working with Reclamation staff and consultants led a workshop to provide an overview of the draft DCP document. Comments on the draft document were discussed. Attendees included:

- CCSD
- MCWD
- MCRMA
- MCWRA
- M1W
- MPWMD
- Reclamation

Section 2

Water System Review

This section describes the service areas and existing water facilities for the participating local agencies. Note that not all the agencies included in this discussion are water purveyors. However, all these agencies play a role in helping move water in the area to meet regional demands. The water supply sources for each of the agencies are defined and the current and future water demands are described.

Section 2 Summary

Key Take-Aways

- The local agencies' current Urban Water Management Plans served as the primary source of water supply and demand information for this DCP.
- The water supply sources in the DCP area are surface water, groundwater, and recycled water. The region receives no imported water from out of the area.
- Combined, the local agencies serve more than 250,000 people and provide for municipal, industrial, landscape, and agricultural uses in the region. This population is expected to increase by 117 percent to 429,000 people by 2035.
- Regional water demand is expected to increase by 47 percent between 2015 and 2035 from about 53,000 acre-feet per year (AFY) to 78,000 AFY.
- The region has a notable dependence on groundwater. The availability of groundwater could be diminished in the coming years as a result of State Water Resources Control Board mandates and new SGMA implementation requirements. Water supply and demand information suggests that there is a need to develop or identify new water resources to help satisfy anticipated future demand.
- Local agencies each have ongoing water use efficiency programs to help reduce water demands. While this is a step in the right direction, it might not be enough to balance future demands with available supplies.

2.1 Local Agencies' Service Areas and Existing Water Facilities

For this analysis, the local agencies' 2015 UWMPs served as the primary source of water supply and demand information. A brief description of each local agency is described in this section.

Alisal Water Corporation. Alisal Water Corporation (Alco Water) is a privately owned public utility that began serving water in 1932 in a previously unincorporated area near the City of Salinas. This area was annexed by the City of Salinas in the 1960's. Alco Water's service area encompasses an 8-square mile area in the northeast part of Salinas within the County of Monterey. Alco Water serves a population of approximately 29,000 which includes approximately 8,800 metered water connections within its service area. All water supplied by Alco Water comes from groundwater obtained from the SVGB. Based on their 2005 UWMP, Alco Water has eight water wells, five of which are active and three which have been designated as standby sources by the Division of Drinking Water and will be returned to active status after the addition of treatment or blending facilities for arsenic. These existing eight wells have capacities ranging between 800 and 4,000 gallons per minute (gpm) with a total capacity of 24,800 gpm. Water is distributed through Alco Water's distribution system which is comprised of approximately 555,000 linear feet of pipeline, ranging in size from 3 to 30-inch diameter, and multiple storage tanks amounting to approximately 205,000 gallons of storage capacity.

Monterey County Water Resources Agency/Castroville Seawater Intrusion Project Area. The Monterey County Water Resources Agency (MCWRA) is responsible for managing, protecting, and enhancing water supply and water quality, as well as providing flood protection, in Monterey County. MCWRA was formed in 1947 as the Monterey County Flood Control and Water Conservation District. MCWRA adopted its current name in 1991 when new legislation changed the agency's name to better reflect its powers and functions. MCWRA has jurisdiction over matters pertaining to water within all of Monterey County, including both incorporated and unincorporated areas. MCWRA owns and operates both the Nacimiento and San Antonio Reservoirs for flood management and water supply purposes. They are partnered with Monterey One Water (M1W) for jointly operating and maintaining the Castroville Seawater Intrusion Project (CSIP), which includes a distribution system of 45 miles of pipeline and 22 supplemental wells. This distribution system delivers approximately 13,300 acre-feet (AF) of recycled water to approximately 12,000 acres of farmland.

Monterey One Water. In Monterey County, seawater intrusion from over drafted wells and the Federal Clean Water Act wastewater treatment standards became a problem for wastewater and water agencies during the 1970s. Monterey One Water (M1W) was formed in November 1972 as the Monterey Regional Water Pollution Control Agency, by Monterey, Pacific Grove, and Seaside Sanitation Districts, with many other northern Monterey County entities joining over time to form a Joint Powers Authority (JPA) to collectively treat wastewater. M1W adopted its current name in 2017 to better reflect their efforts and vision for a water resilient Central Coast. MCWRA partnered with M1W to build and jointly operate the Salinas Valley Reclamation Project (SVRP) recycled water plant and the CSIP distribution system. M1W currently serves a population of approximately 250,000 people and treats on average 18.5 million gallons per day (MGD). The JPA has representatives from the Monterey County Board of Supervisors, City of Salinas, Boronda County Sanitation District, CCSD, City of Del Rey Oaks, City of Monterey, City of Pacific Grove, City of Sand City, City of Seaside, Marina Coast Water District, Moss Landing County Sanitation District, and the U.S. Army as an ex-officio member.

California American Water Company. Cal-Am is a privately owned public utility providing water services to over 630,000 people in 50 communities throughout California. The company is organized into three divisions: Northern, Central, and Southern. The Central Division includes the Monterey County District. The Cal-Am Central Division's Monterey County District serves most of the population on the Monterey Peninsula. Cal-Am's Monterey District encompasses most of the Monterey Peninsula through its Monterey Main System, including the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, Seaside, and the unincorporated areas of Carmel Highlands, Carmel Valley, Pebble Beach, and the Del Monte Forest. Cal-Am's Monterey District also includes five small satellite water systems along the Highway 68 corridor east of the City of Monterey: the Ryan Ranch, Bishop, Hidden Hills, Toro, and Ambler systems. These satellite systems are not included in the scope of this DCP. In total, Cal-Am serves a population of approximately 95,000.

Two-thirds of Cal-Am's water supply is from a known and definite underground channel of the Carmel River that is considered surface water, with the rest of the supply consisting of local groundwater and desalinated water. Over the past couple of decades, demand has exceeded supply, and they have exceeded their legal right to water from the Carmel River as documented in the cease and desist order (CDO) discussed in Section 2.2.3.4.

California Water Service Company. The California Water Service Group is the third-largest publicly traded water utility in the United States. The company provides water utility services to more than two million people in 100 cities through six operating subsidiaries (four of which are regulated by state public utility commissions and two of which are not). The company's largest subsidiary, Cal Water, began providing water utility services in the Salinas area in 1962. Cal Water's Salinas District serves more than 130,000 people, delivering approximately 20,000 AF of groundwater from the SVGB per year through a system that includes 59 wells, 300 miles of main pipeline, and 8.6 million gallons (MG) of storage capacity.

Castroville Community Services District. The Castroville Water District was formed in 1952 under the County Water District Act for the purpose of installing and operating water supply and distribution system facilities for the community of Castroville. In 2007, the Castroville Water District joined with County Service Area 14 to form the CCSD. CCSD provides water, sewer, and stormwater services to the Castroville community, Monte de Lago, North Monterey County High School and Moro Cojo subdivision, as well as recreation facilities, open space, street lighting, private street maintenance, pest control and abatement services within the district boundaries. Presently, CCSD serves more than 7,250 customers through 1,984 water connections in the community of Castroville. CCSD provides approximately 800 AF of water annually to government, industrial, commercial, and residential customers. CCSD operates three domestic water production wells and the estimated capacity of all three wells is just over 4.4 MGD. The water system encompasses approximately 13 miles of pipeline and includes two water storage tanks with a capacity of 1.1 MG. At this time, CCSD receives 100 percent of its water from the 400-foot aquifer of the SVGB, but has drilled a new well at Well Site #2 that will pump its supply from the 900-foot or "deep" aquifer. Currently, the new well is not ready for operation.

Marina Coast Water District. The Marina Coast Water District (MCWD) is a county water district formed in 1960 and authorized by Division 12 of the California Water Code (CWC). The MCWD delivers approximately 4,500 acre feet per year (AFY) of potable water to 38,000-42,000 customers in the City of Marina and the Fort Ord Community. Their water supply is from the SVGB. While the MCWD currently delivers water to the Fort Ord Community by contract, they are in the process of annexing that service area. The MCWD operates six wells and owns a desalination plant (currently idle), which has a capacity of 300 AFY.

Monterey Peninsula Water Management District. Monterey Peninsula Water Management District (MPWMD) assists Cal-Am with managing the water supplies, permits water projects, and assists in integrated water resources management. Its other functions include: augmenting the water supply in the Monterey Peninsula area through integrated management of ground and surface water, promoting water conservation, promoting water reuse and reclamation of storm and wastewater, and fostering the scenic values, environmental qualities, native vegetation, fish and wildlife, and recreation on the Monterey Peninsula and in the Carmel Rivers Basin. The MPWMD oversees approximately 112,000 people within the cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Seaside, Sand City, Monterey Peninsula Airport District, and portions of unincorporated Monterey County including Pebble Beach, Carmel Highlands and Carmel Valley. MPWMD has established five main goals: 1. Increase the water supply to meet community and environmental needs; 2. Assist Cal-Am in developing a legal water supply; 3. Protect the quality of surface and groundwater resources and continue the restoration of the Carmel River environment; 4. Instill public

trust and confidence; and 5. Manage and allocate available water supplies and promote water conservation.

2.2 Water Supply Sources

The water supply sources in the DCP area are surface water, groundwater, and recycled water. The DCP area does not receive imported water. The significant surface water sources are the Salinas River in the Salinas Valley, the Carmel River, and the coastal waters of the Monterey Bay National Marine Sanctuary (MBNMS). The local agencies rely on a diverse network of infrastructure and portfolios of supplies to deliver high-quality, reliable water within their respective service areas. The existing sources of supply within the local agencies' service areas are summarized in Table 2-1. A schematic showing the interlinkage between the water supplies and the local agencies is shown in Figure 2-1.

Table 2-1. Existing and Potential Sources of Supply within Local Agencies' Service Areas

Supply	Alco Water	MCWRA/ CSIP[a]	Cal-Am[b]	Cal Water	CCSD	MCWD
Groundwater						
Salinas Valley Groundwater Basin (SVGB)	X	X[f]		X	X	X
Seaside Groundwater Basin[c]			X			
Recycled Water						
Salinas Valley Reclamation Project (SVRP)/Castroville Seawater Intrusion Project (CSIP)		X				
Pure Water Monterey			X			X
Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)						X
Surface Water [e]						
Carmel River Aquifer Storage and Recovery Project (ASR Project)			X			
Carmel Valley Alluvial Aquifer[d]			X			
Salinas River/Salinas Valley Water Project (SVWP)[e]		X				
Desalination						
Sand City Desalination			X			
Ocean Desalination (MPWSP and MCWD)			X		X	X

a. MCWRA and M1W jointly operate the SVRP and CSIP.
b. MPWMD regulates Cal-Am in their service area.
c. Seaside groundwater basin has been formally recognized by the California Department of Water Resources as its own hydrologically separated basin from the SVGB.
d. The Carmel River Alluvial Aquifer is under direct influence of the Carmel River, and the SWRCB defines the alluvial aquifer as surface water.
e. The Salinas River and the Salinas Valley Water Project are not shown on this table because they are not direct sources of supply for the local agencies, but they do provide supply directly for agricultural users in the CSIP area within MCWRA.
f. Includes supplemental wells.

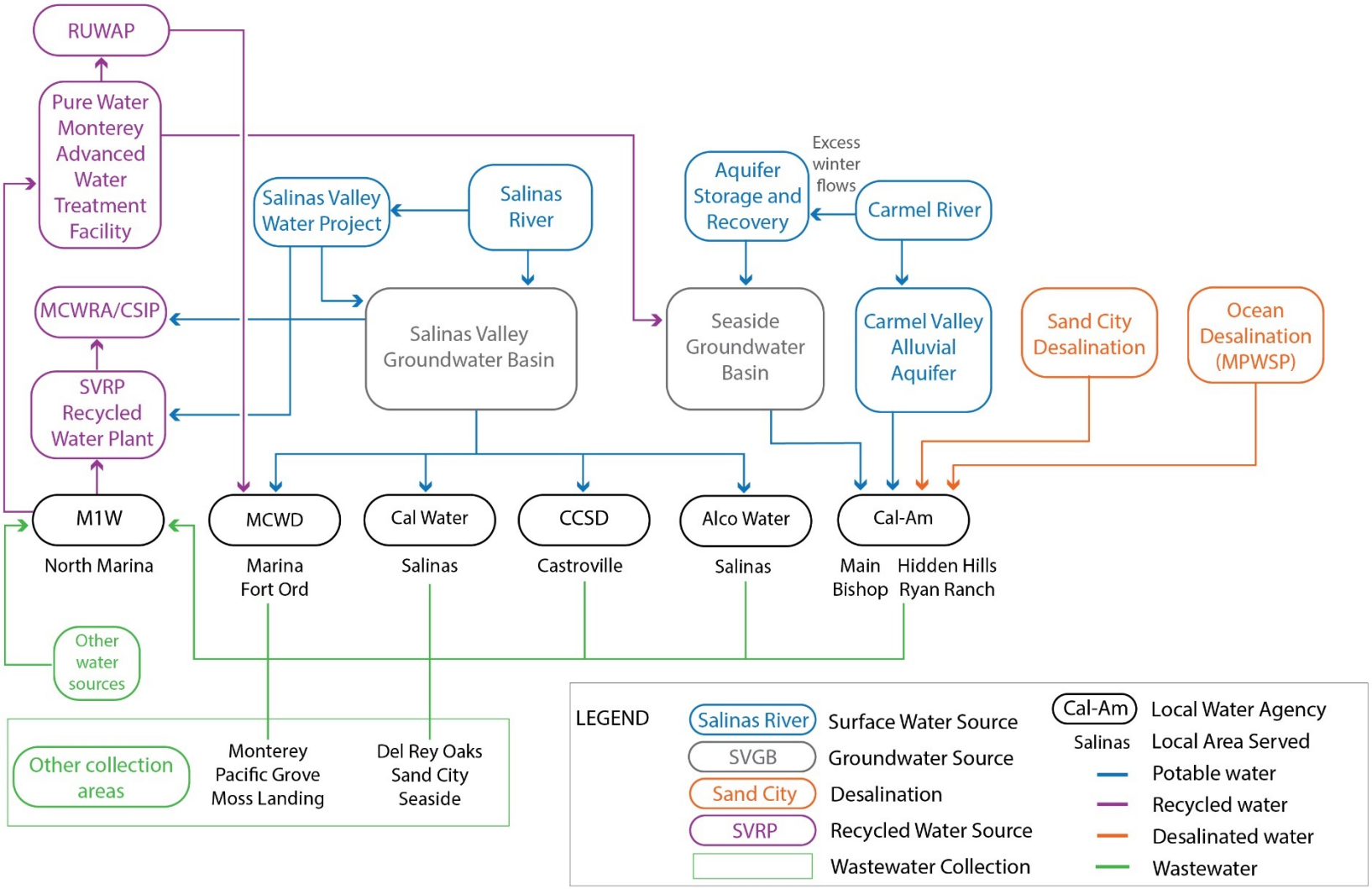

Figure 2-1. Schematic of Existing Water Supplies

2.2.1 Groundwater

The local agencies have a strong reliance on groundwater. The two main groundwater basins in the DCP area are the SVGB and the Seaside Groundwater Basin.

2.2.1.1 Salinas Valley Groundwater Basin

The SVGB is the largest groundwater basin in the DCP area. The basin is located entirely within Monterey County and is comprised of five subareas: Upper Valley, Arroyo Seco, Forebay, Pressure, and Eastside. While these subareas have different hydrogeologic and recharge characteristics, no physical barrier inhibits horizontal flow between them and they act as one large hydrologic unit. The Pressure and Eastside Subbasins are most relevant to the DCP area. Due to cumulative groundwater basin pumping, coastal aquifers, like the Pressure and Eastside Subbasins, are experiencing seawater intrusion.

Pressure Subbasin. The Pressure Subbasin is located near the coast and has three stratified aquifers under confined conditions: Pressure 180-Foot, Pressure 400-Foot, and the Deep Zone. In January 2016, the California Department of Water Resources (DWR) classified the 180/400 Foot Aquifer of the Pressure Subbasin of SVGB as a Critically Overdrafted Subbasin. CCSD provides municipal and domestic water service to Castroville and currently relies on about 780 AFY of SVGB groundwater to meet Castroville's water demands, and increasingly has experienced water supply challenges because the water is getting saltier. Castroville draws 100 percent of its water supply from the 400 Foot Aquifer of the Pressure Subbasin of the SVGB. Groundwater levels in the 400 Foot Aquifer have dropped to more than 100 feet below mean sea level as of July 2015 at static conditions. This dramatic drop combined with the close proximity to the Pacific Ocean (less than 4 miles) and close proximity to existing seawater intrusion (less than one-quarter mile) has raised significant alarm that the existing water supply to Castroville is imminently threatened by saline water that could exceed drinking water standards. CCSD has already observed seawater intrusion into some of its wells, as can be seen on the historic seawater intrusion map in Figure 2-2.

Eastside Subbasin. The Eastside Subbasin extends five miles north of Salinas to twenty-five miles south along the eastern side of the lower Salinas Valley. Groundwater levels have declined over the years. When groundwater levels are low, the subbasin is recharged by the Pressure or Forebay Subbasins, leading to potential movement of seawater inland into the coastal area. Groundwater quality issues primarily stem from long-term agricultural production in the Salinas Valley, contributing to a nitrate problem in some wells.

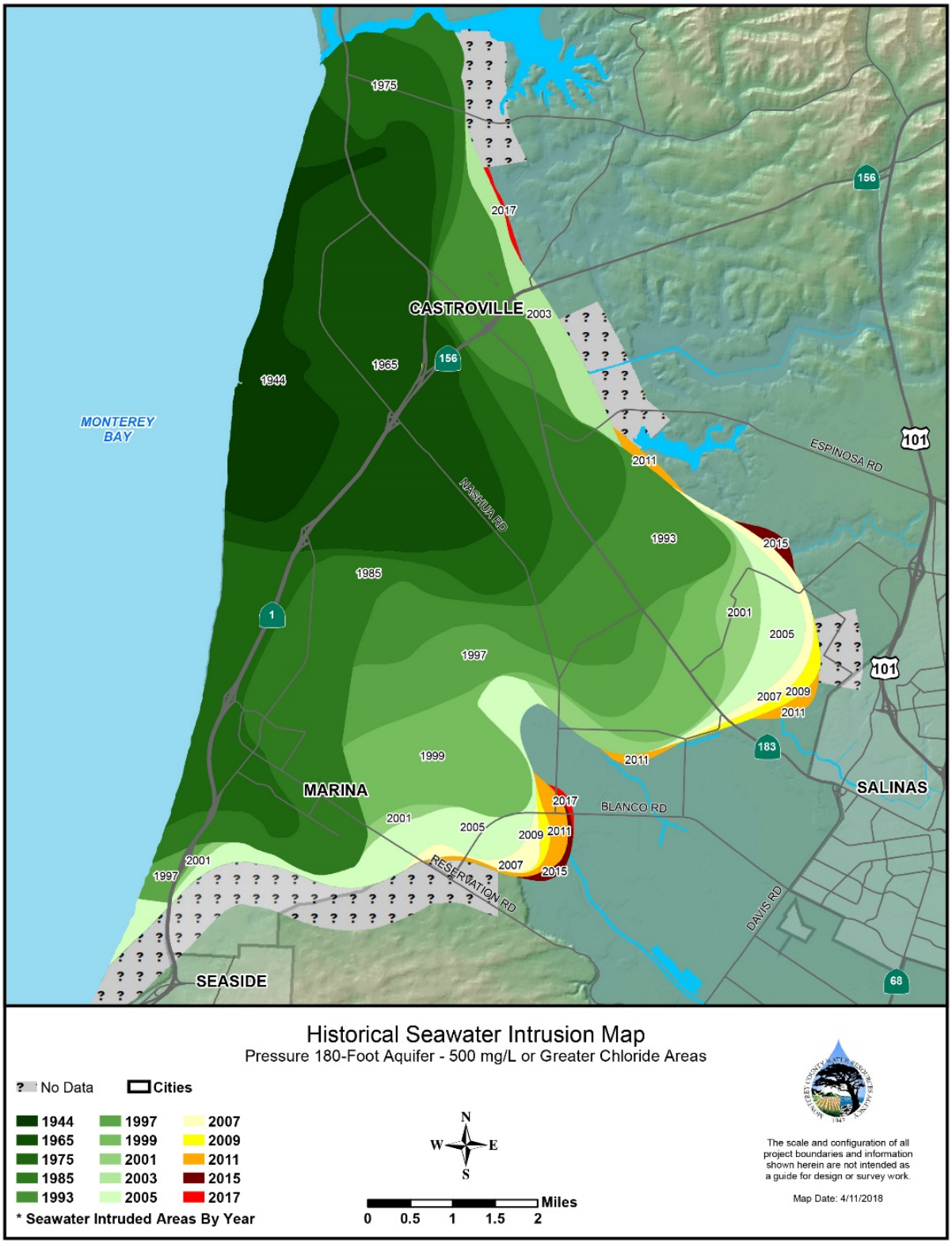

Figure 2-2. Historic Seawater Intrusion Map from 1944 to 2017 in the Pressure 180-foot Aquifer

2.2.1.2 Seaside Groundwater Basin

While the Seaside groundwater basin has been considered a part of SVGB in the past, this DCP considers it to be its own groundwater basin. In 2016, a basin boundary modification was requested by the MPWMD to create an independent basin to better manage the users in the basin. The Seaside Groundwater Basin underlies a hilly coastal plain that slopes northward toward the Salinas Valley and westward toward Monterey Bay. The water-bearing aquifers used for potable water supply extend offshore under the Monterey Bay, but the extent of the aquifers under the Monterey Bay has not been fully explored. The basin area includes a 19 square-mile area of Sand City, and much of the cities of Seaside and Del Rey Oaks, as well as unincorporated parts of Monterey County, including a portion of the Ord Community in the former Fort Ord. The Seaside Basin, which provides about 30 percent of urban supplies for the Monterey Peninsula, is recharged through percolation of rainfall and irrigation, leaky pipes, septic systems and by excess winter flows in the Carmel River that are diverted, pumped into the local distribution system, and then injected into the basin for recovery in the dry season. Artificial recharge from existing and planned recharge projects will become more significant sources in the future.

Cal-Am's Carmel River supplies (described in Section 2.2.3.4) are supplemented by groundwater from the Seaside Groundwater Basin. Groundwater conditions in the Seaside Basin had deteriorated for several decades through the early 2000s. Groundwater extraction near the coast increased markedly beginning in 1995, resulting in declining water levels and depletion of groundwater storage. Until the Seaside Basin was adjudicated in 2006, basin-wide groundwater withdrawals were up to 5,600 AFY. The Final Decision set three-year goals aimed at reducing annual extractions to 3,000 AFY, which is termed the "natural safe yield," by 2021. At that time, Cal-Am will have rights to extract up to 1,474 AFY; however, the company has signed an agreement with the Watermaster that once its desalination plant is online Cal-Am will forego 700 AFY of extractions over 25 years in order to "pay back" about 17,500 AF of production in excess of their portion of the "natural safe yield" of the basin.

2.2.2 Recycled Water

Due to a heavy reliance on groundwater supplies that are facing saltwater intrusion, the agencies within Monterey came together to create recycled water facilities collected from the region's wastewater for non-potable and agricultural uses.

2.2.2.1 Salinas Valley Reclamation Project/Castroville Seawater Intrusion Project

In 1992, M1W (formerly the Monterey Regional Water Pollution Control Agency) and the MCWRA formed a partnership to build the Monterey County Reclamation Projects: SVRP recycled water plant and CSIP distribution system that delivers recycled water to agriculture near Castroville. As long-time project partners, M1W is contracted with the MCWRA to operate and maintain the CSIP. The projects were built to help retard the advancement of seawater intrusion. The projects started delivering recycled water in 1998. SVRP produces a maximum of 91-acre feet per day.

MCWRA's CSIP distribution system is a 12,000-acre underground pipeline system that distributes recycled water to farmland in northern Monterey County. It includes 45 miles of pipeline and 22 supplemental wells. Recycling water for irrigation in northern Salinas Valley reduces aquifer pumping, thereby retarding the advancement of seawater intrusion, which became a problem in the 1970s from extensive withdrawal of groundwater.

2.2.2.2 Pure Water Monterey Groundwater Replenishment

MPWMD and M1W are currently working on building the Pure Water Monterey Groundwater Replenishment Project (Pure Water Monterey). Pure Water Monterey is a water supply project that will serve northern Monterey County. The project will provide purified recycled water to replenish the Seaside Groundwater Basin and provide recycled water to augment the existing CSIP agriculture irrigation supply. MPWMD and M1W completed the required environmental study work and the project is fully funded and expected to be online by 2020. The first phase of Pure Water Monterey is expected to provide 3,500 AFY and has been included in our analysis as an existing supply. There is an expansion currently being explored called the Pure Water Monterey Expansion Project. This project would look to expand the existing Pure Water Monterey with an additional 2,250 AFY.

2.2.2.3 Recycled Water Element of the Regional Urban Water Augmentation Project

The Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) has an estimated completion date of 2020, and it is assumed as an existing supply in the DCP. The RUWAP Transmission Main is a combined use advanced treated recycled water (ATW) conveyance system to serve both the MCWD Water Augmentation Program and M1W. The two agencies propose to combine their projects for the construction of one single transmission pipeline, storage reservoir and related facilities to deliver ATW in the 180/400 Aquifer sub basin, Monterey sub basin and the Seaside Groundwater Basin. Several sections of the MCWD transmission pipeline are already existing. M1W proposes to separately construct the Pure Water Monterey ATW production and pumping facilities and the Pure Water Monterey lateral pipeline and injection facilities for indirect potable reuse.

It will provide up to 1,727 AFY of recycled water to urban users in the MCWD service areas, specifically including the former Fort Ord, and potentially the Monterey Peninsula. The project also includes a 10-mile transmission pipeline from the treatment plant to Marina and Fort Ord communities.

2.2.3 Surface Water

Surface water supply sources have been developed to reduce the region's heavy dependence on groundwater. The cities of Carmel, Monterey, Pacific Grove, Del Rey Oaks, Seaside, Marina, and Salinas are all dependent on surface supplies in addition to their groundwater supplies.

2.2.3.1 Salinas River

The Salinas River is the largest river on California's Central Coast and the third longest river in the state of California, originating in the center of San Luis Obispo County and then flowing 170 miles north and northwest to the MBNMS. The San Antonio, Nacimiento, and Arroyo Seco Rivers are the largest tributaries of the Salinas River.

Seawater intrusion in the northern Salinas Valley was first documented in 1933 by the California State Water Commission and has continued so that it now reaches as far as eight miles inland from the coast due to pumping to meet agricultural and urban demands. During past short-term droughts, the storage in the reservoirs has been sufficient to carry the Salinas groundwater basin through the drought period, making up for decreased natural recharge. However, during extreme drought, the storage in the reservoirs declines to the point where releases are heavily curtailed, and groundwater pumped out of the aquifers is not replenished by water from the Salinas River. It is during these extended droughts with little to no reservoir releases that the greatest declines in water storage and habitat downstream of reservoirs have been observed.

2.2.3.2 Nacimiento and San Antonio Reservoirs

The Nacimiento and San Antonio Dams were constructed to control floodwaters and provide water for summer recharge of the SVGB for urban and agricultural use. The Nacimiento Dam was completed in 1957. Both the Nacimiento Dam and its reservoir are located in northern San Luis Obispo County, approximately 20 miles from the coast. The Nacimiento Reservoir has a maximum storage capacity of 377,900 AF. The San Antonio Dam was completed in 1967. The San Antonio Dam and corresponding reservoir are in southern Monterey County, about 16 miles northwest from Paso Robles. The reservoir has a maximum storage capacity of 477,000 AF. Both the Nacimiento and San Antonio Dams are under the jurisdiction of the DWR, Division of Safety of Dams.

Average annual flows to the ocean from the Salinas River are approximately 360,400 AFY. A portion of this flow is released for environmental purposes to promote the threatened anadromous steelhead run in the Central Coast.

Groundwater recharge in the Salinas Valley is principally from the Nacimiento and San Antonio Reservoir releases to the Salinas River, flow into the Salinas River from the Arroyo Seco River and other tributaries to the Salinas River, and from percolation of rainfall.

2.2.3.3 Salinas Valley Water Project

Despite great success of the recycled water projects, the region's heavy dependence on groundwater for irrigation persisted. In an effort to further reduce the demand on groundwater, MCWRA and various interested stakeholders began the development of the Salinas Valley Water Project (SVWP) in 2003. The Salinas River Diversion Facility (SRDF)was constructed to provide treated (filtered and chlorinated) river water, significantly reducing the need to pump groundwater except in periods of extremely high demand. The SVWP called for a series of modifications to existing facilities (Nacimiento Dam Spillway Modification) and the installation of new ones (SRDF) to allow for the diversion of river water for treatment and piping to nearby farms for irrigation. Since its inception in April 2010, the SVWP has provided water that meets or exceeds the recycled water quality the farmers in the CSIP area were previously receiving. Without this project, seawater intrusion would continue to advance and there would be a continuing need for groundwater extraction to meet the irrigation needs of the growers in the CSIP area.

2.2.3.4 Carmel River and Carmel Valley Alluvial Aquifer

The Carmel Valley Alluvial Aquifer is located along the Carmel River, southeast of the Monterey Peninsula. The aquifer lies along the downstream portion of the Carmel River. The Carmel Valley Alluvial Aquifer is unconfined (there are no impermeable barriers between the groundwater surface and the atmosphere) and is highly permeable (laterally and vertically), recharging rapidly after extended dry periods. The aquifer is under the direct influence of the Carmel River. Due to the close connection between the alluvial aquifer and surface flows in the Carmel River, the State Water Resources Control Board (SWRCB) defines the Carmel Valley Alluvial Aquifer as surface water.

The Carmel River flows along a 36-mile course through the Carmel Valley to the Carmel River lagoon and into the MBNMS at Carmel Bay. Runoff from the basin averages about 75,000 AFY. In 1949, Los Padres Dam, which forms Los Padres Reservoir, was constructed about 6 miles upstream of San Clemente Dam, which was removed in 2015. Cal-Am owned and operated both reservoirs since 1966. Over the years, sediment that accumulated behind San Clemente and Los Padres Dams significantly reduced the usable storage in both reservoirs. Summer releases from the Los Padres Reservoir continue to recharge a portion of the Carmel Valley Alluvial Aquifer and maintain fish habitat between the Los Padres Dam and San Clemente Dam site. MPWMD and Cal-Am are currently studying options for use or removal of the Los Padres Reservoir.

Cal-Am relies primarily on the multiple wells in the alluvial aquifer along the lower Carmel River for its Carmel River supplies and more recently Cal-Am has relied entirely on these wells for its Carmel River supply. The Carmel River currently supplies about 70 percent of the municipal supply for the Monterey Peninsula. Cal-Am's use of its Carmel Valley wells is restricted by agreements with state and federal wildlife agencies. In 1995, the SWRCB adopted Order WR 95-10 that found Cal-Am to be diverting approximately 10,730 AFY of water from the Carmel River without a valid basis of right and directed Cal-Am to implement actions to terminate the unlawful diversions. In 2009, Cal-Am was accused of continuing to divert unlawfully from the Carmel River and was cited with their first CDO, WR 2009-0060. This CDO was amended by CDO WR 2016-0016 in 2016 which requires Cal-Am to terminate all unlawful diversions from the Carmel River by December 31, 2021. The CDOs established that Cal-Am has a legal right to divert a total of 3,376 AFY from the Carmel River system, including surface water diversions from the Carmel River and water pumped from the Carmel Valley Alluvial Aquifer. These CDOs effectively reduced the amount of water Cal-Am can divert from the Carmel River by two-thirds. The CDOs are summarized in Table 2-2.

Table 2-2. Summary of Cal-Am State Water Resources Control Board Orders

Year	State Water Resources Control Board Order	Description
1995	Order WR 95-10	• Cal-Am was diverting about 10,730 AFY from the Carmel River without a valid basis of right. • Requires Cal-Am to terminate all unlawful diversions from the Carmel River by December 31, 2021.
2009	Order WR 2009-0060	• CDO issued after finding that Cal-Am failed to comply with the requirements of Oder WR 95-10. • Cal-Am continues to divert at least 7,150 AFY without a valid basis of right. • Requires Cal-Am to terminate all unlawful diversions from the Carmel River by December 31, 2016. • Instills new unlawful diversion reduction stipulations as well as reporting requirements to ensure compliance with CDO.
2016	Order WR 2016-0016	• Cal-Am proposed modifying the compliance schedule to accommodate the anticipated pace for approval and implementation of several projects that would help augment water supplies after the proposed reductions to the Carmel River water supply take shape. • Established Cal-Am has legal right to divert a total of 3,376 AFY from Carmel River System. • Requires Cal-Am to terminate all unlawful diversions from the Carmel River by December 31, 2021, regardless of whether the envisioned projects are timely built.

Through an annual Memorandum of Agreement (MOA) entered into each year by Cal-Am, MPWMD, and the California Department of Fish and Wildlife minimum flow targets below the Los Padres Dam are established, which are expected to produce estimated minimum flows at the gaging station near the San Clemente Dam site, and limits surface water diversions from April to October. Two federally listed endangered species, the California red-legged frog and steelhead trout, inhabit the Carmel River. In 2001, Cal-Am negotiated a Conservation Agreement with the National Oceanic and Atmospheric Administration (NOAA) Fisheries that included various changes in operations, with the long-term goal of procuring an alternative water supply source to reduce withdrawals from the Carmel River Alluvial Aquifer.

2.2.3.5 Aquifer Storage and Recovery Project

MPWMD and Cal-Am own and operate two injection/extraction sites in the coastal area of the Seaside Groundwater Basin that are used to inject excess winter flows from the Carmel River via the Cal-Am distribution system, called the Aquifer Storage and Recovery Project (ASR Project), where it is injected into the aquifer for storage and subsequently recovered for delivery to customers. ASR Project water supplies that are extracted from the Seaside Groundwater Basin are disinfected onsite

before being conveyed via an existing 16-inch diameter pipeline beneath General Jim More Boulevard to the Cal-Am distribution system.

The Phase I and Phase II ASR projects correspond to MPWMD and Cal-Am's existing State Water Board Permits 20808A and 20808C, which authorize the diversion of up to 2,426 AFY for ASR Phase I, and up to 2,900 AFY for ASR Phase II. Permit conditions establish limits on diversions to the ASR system, including a requirement that minimum mean daily instream flows in the Carmel River be maintained for the protection of fisheries, wildlife, and other instream uses. Diversions for the ASR system are contingent on maintaining minimum daily instream flows, and precipitation and, streamflow can vary substantially from year to year as shown in Table 2-3. For the purposes of Cal-Am's water supply assumptions, the estimated combined long-term average annual yield from ASR is 1,300 AFY for the Phase I and Phase II projects. The annual amount is highly dependent upon rainfall and river flows.

Table 2-3. Timeline and Volumes of Water Injected Via the ASR Project into the Seaside Groundwater Basin from the Carmel River

Year	Volume of Water Injected (AFY)
2011	1,117
2012	132
2013	295
2014	0
2015	215
2016	699
2017	2,345

A third phase is envisioned as part of the overall Monterey Peninsula Water Supply Project (MPWSP) (see Section 2.2.4.2 Monterey Peninsula Water Supply Project) to be installed in the Fitch Park neighborhood north of Phase 2. This additional phase is designed to accommodate water produced by the proposed desalination facility in off-peak hours, in order to make it available for periods of greater demand.

2.2.4 Desalination

Desalination has been discussed and studied in the study area since the 1980's as a potential water supply source to help augment existing groundwater and surface water supplies.

2.2.4.1 Sand City Coastal Desalination Plant

The Cal-Am desalination plant (Sand City Coastal Desalination Plant) is currently operational and producing water being used in part by Cal-Am's Monterey County District. It is the only operating desalination plant in the study area. The Sand City Coastal Desalination Plant, which began operations in April 2010, is owned by the City of Sand City and operated by Cal-Am. The plant's total capacity is 300 AFY, of which Cal-Am's long-term share is 94 AFY. The balance of the plant's capacity is reserved by Sand City to support its future growth. Sand City is served by Cal-Am's distribution system, consistent with the MPWMD's allocation program.

2.2.4.2 Monterey Peninsula Water Supply Project

Cal-Am is also currently working toward the completion of their own desalination project called the MPWSP. In April 2012, Cal-Am applied for a Certificate of Public Necessity (CPN) and Convenience for future water supply. The application proposes the development of a desalination plant that will produce 6.4 MGD or 6,252 AFY of water when completed. The MPWSP will consist of slant intake wells and the desalination plant. The status of the project continues to evolve as permitting and regulatory issues continue to be addressed.

2.3 Current and Future Demand Conditions

Based on the Agency's 2015 UWMP water demand projections that are provided in five-year increments from 2020 to 2035, as well as input from the participating agencies during development of this DCP, the current and future water demands are presented in this section. Combined, the local agencies serve more than 250,000 people and provide water for municipal, industrial, landscape, and agricultural uses in the region. Water use in the region over the past several years has been significantly reduced because of the drought that occurred from 2012 to 2016, based on policy changes, and because of actions taken at the State and local levels. In 2015, the local agencies experienced an overall reduction in demand because of their calls for extraordinary water use reductions during the 2012 to 2016 drought. Water shortage conditions, such as during the 2012 to 2016 drought, can necessitate actions to support short-term emergency water use cutbacks. However, extraordinary cutbacks may be unsustainable and can result in potential unintended consequences, such as long-term economic impacts (e.g., California business climate and residential property values), utility revenue instability, water affordability issues, disincentive for future capital investment to improve local reliability, compromised quality of life, as well as other potential long-term impacts.

A short-term uptick in water demand is expected to reflect the easing of current water supply emergency conditions and an increase in long-term water demands given the population growth expected in the region. Some demand rebound is anticipated in the near-term and regional population growth projections would suggest an overall increase in water demand in the future. The collected 2015 UWMP data supports this notion. Regional water demand (comprised largely of potable water with a small portion of recycled water) is expected to increase by 47 percent between 2015 and 2035 (about 53,000 to 78,000 AFY), while regional population is projected to increase by 29 percent over the same period from about 286,000 to 361,000 people, as shown in Figure 2-3.

The Association of Monterey Bay Area Governments (AMBAG) published the2018 Regional Growth Forecast, which is a roadmap for the region's future growth based on assumptions considering the region's key economic, demographic, and financial trends. It notes that while agricultural job growth has declined in most markets, the AMBAG region is experiencing steady agricultural job growth, which has implications for projected water demands. AMBAG forecasts a 57 percent increase in population for Monterey County between 2015-2040, which is about 24 percent higher than the forecasts from the UWMPs, as shown in Figure 2-3.

Future water use is currently challenging to project. California water management is amid a transformation due in part to state initiatives, legislation, and regulations such as a new statewide long-term water use efficiency framework, the California Water Action Plan, and the Water Quality Control Plan for the Central Coastal Basin. Though the effects of these state efforts on future demands and water management are not yet fully defined, the long-term regional trend for water use efficiency is expected to continue.

Agencies regularly revise their demand projections in response to changing conditions, such as new regulations, demographics, city and county general plans, customer behavior, and other factors. The demands presented in 2015 UWMPs were based on information available to the agencies at that time.

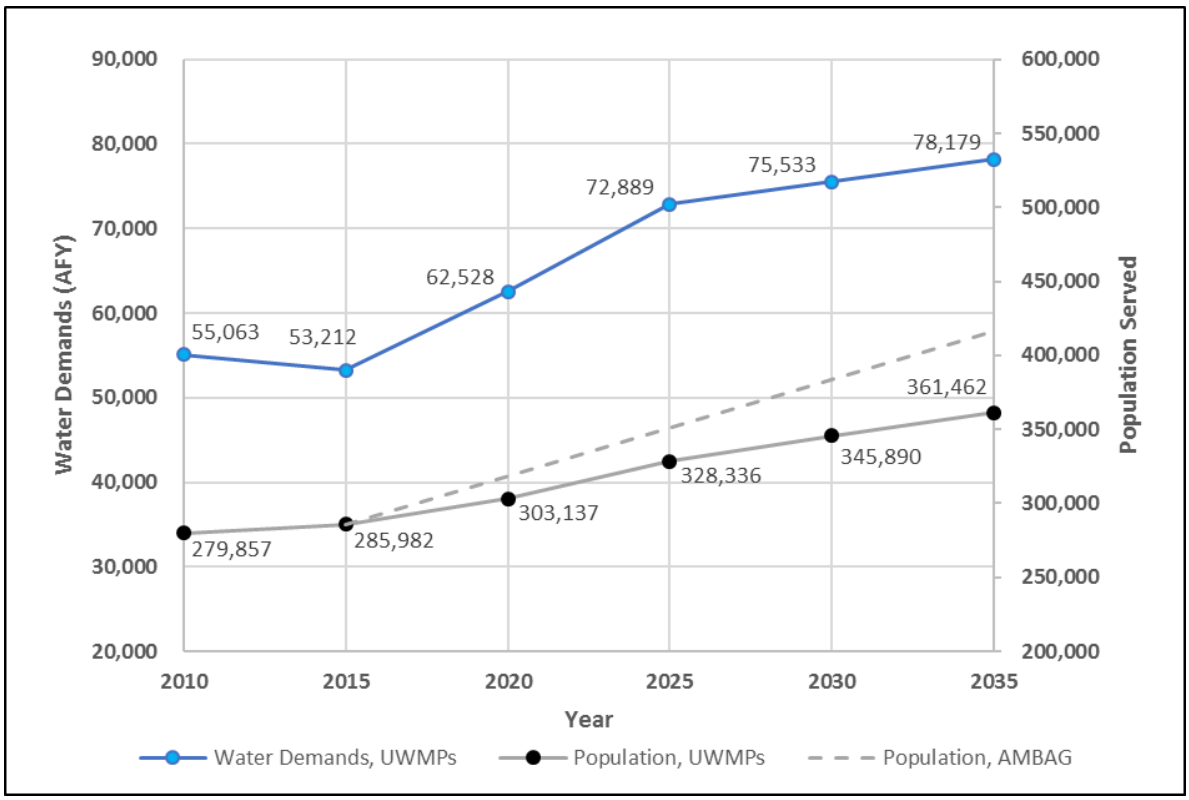

Figure 2-3. Historical and Future Regional Potable Demands and Population Served in the DCP Area

Note: The decline in water demands from 2010 to 2015 is due to the conservation efforts during the 2012 to 2016 drought.

2.4 Water Use Efficiency

Substantial water use reductions over the last decade, and particularly over the last several years, are largely due to recession, drought water use restrictions, and changing culture. Public awareness and actions during the drought have resulted in lasting water use efficiencies (cultural changes and passive savings) and temporary reductions (behavioral changes). Some lasting efficiencies were gained during the 2012 to 2016 drought; however, extreme water use reductions over the last several years are due in part to short-term actions taken in response to the emergency drought mandate, such as shorter showers and limited outdoor watering. However, on the Monterey Peninsula, mandatory retrofit regulations and other programs have been put into place since the 1990s resulting in permanent water use reductions.

2.4.1 Statewide Water Use Policies and Drought Actions

A statewide public survey sponsored by the Association of California Water Agencies (ACWA) reports that two-thirds of survey participants felt they made "reasonably substantial reductions in their households' water use over the past few years." Most indicated their efforts focused on behavior changes rather than efficiency upgrades, and on outdoor rather than indoor reductions (FM3, 2017).

The Water Conservation Bill of 2009 (i.e., Senate Bill (SB) x7-7) established a regulatory framework to support the statewide reduction in urban per capita water use, with urban water suppliers achieving a 20 percent reduction in urban per-capita water use by 2020. As directed by specific methodology in the legislation, SBx7-7 required retail water suppliers to establish and report a historical per capita water use baseline (in gallons per capita per day [gpcd]) and targets for 2015 (interim milestone) and 2020 in their 2010 UWMPs. Retail water agencies reported on interim progress toward meeting the targets in their 2015 UWMPs.

The 2012 to 2016 drought led to extreme water use reductions, based on policy changes and actions taken at the state and local levels, as illustrated in Figure 2-4. In January 2014, Governor Brown issued an Emergency Proclamation declaring a drought emergency and calling for voluntary conservation. After that time, the governor issued several additional drought-related Executive Orders (EO) that significantly influenced water use. The SWRCB adopted an Emergency Water Conservation Regulation in May 2015 to address specific provisions of the April 2015 EO, including specific outdoor water use restrictions and a mandatory 25 percent statewide reduction in potable urban water use between June 2015 and February 2016. The SWRCB established tiered water use reduction mandates for each retail urban water supplier in the state (i.e., retail agencies serving more than 3,000 connections or 3,000 AFY), using past water use data. In February 2016, the SWRCB adopted an updated Emergency Regulation to extend restrictions on urban water use through October 2016 while making modest adjustments for issues raising statewide water use equity concerns. In recognition of improved supply conditions throughout the state, the SWRCB further revised the Emergency Regulation in May 2016, enabling water suppliers to submit a supply-based self-certification to determine any needed water use reduction standards. The Emergency Regulation was lifted in Spring 2017 as a result of substantially improved water supply conditions.

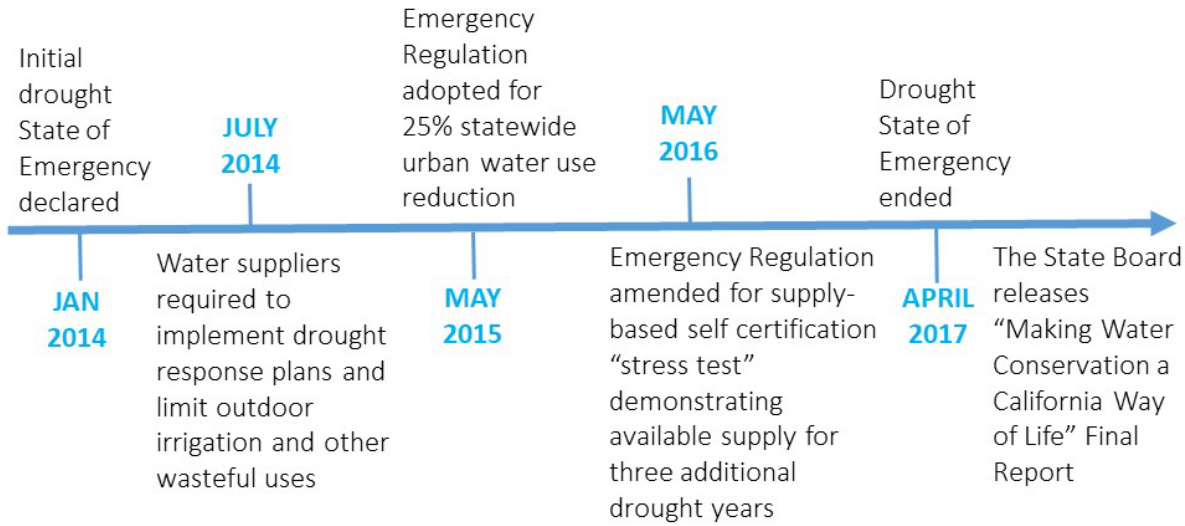

Figure 2-4. Timeline of State Drought Mandates Affecting North Monterey County Demands

In addition to directing the SWRCB to update the Emergency Regulation, the Governor's May 2016 EO directed state agencies to develop a long-term water use efficiency framework that builds upon SBx7-7 and generates more statewide conservation than existing requirements. The EO stated that "water use targets shall be customized to the unique conditions of each water agency" and directed

the DWR and SWRCB to develop a framework for long-term water use efficiency through a stakeholder process. To address the EO, DWR, the SWRCB, and other state agencies released the "Making Water Conservation a California Way of Life" final report in April 2017, and proposed legislation that tiers off the state agencies' report is currently pending. This proposed legislation would require annual water shortage response actions, updated WSCPs with a five-year drought risk assessment, an annual water budget forecast, long-term urban water use efficiency standards in 2021, permanent prohibitions on wasteful practices, monthly water use reporting, more robust public participation, and certifying innovative water and energy efficiency technologies.

In addition to the long-term water use efficiency framework, implementation of the broader California Water Action Plan and the Water Quality Control Plan for the Central Coastal Basin are also expected to change the way California water is managed. The effects of these state efforts on future demands and water management are not yet fully defined, but one certainty is known: the long-term regional trend for water use efficiency will continue.

Finally, the state initiated SGMA, which will put a number of new requirements to be placed on groundwater basins currently in overdraft. Monterey County has at least two groundwater basins that appear on official maps as high priority overdraft basins—Salinas Valley and Carmel Valley basins, both of which are the major sources of water for the DCP Area. The emphasis of SGMA is on local management to "sustainably manage groundwater." Established in 2017 under SGMA, the SVGB Groundwater Sustainability Agency (GSA) was created to manage the SVGB. To accomplish this, local groundwater management agencies will be given new authorities to develop and implement a Groundwater Sustainability Plan (GSP). Groundwater basins ranked as medium or high priority must adopt and implement a GSP by 2020. DWR issued the final priority rankings on January 31, 2015, at which time the SVGB GSA was included to meet the 2020 deadline for GSP development. At the request of MPWMD, DWR consulted with the SWRCB and determined that the Carmel Valley comprised surface water flowing in a known and definite channel underground and was therefore not subject to a GSP, even though MPWMD became its GSA in 2015.

2.4.2 Agencies' Commitment to Water Use Efficiency

The local agencies acknowledge the distinction between long-term water use efficiency (ongoing efficiency) and short-term emergency water use reductions (cutbacks)—and the difference between actions to appropriately support each. Water shortage conditions, such as observed in the 2012 to 2016 drought, can require actions to support short-term emergency water use cutbacks. However, extraordinary cutbacks are unsustainable and can result in unintended consequences, such as long-term economic impacts (e.g., California business climate and residential property values), utility revenue instability, water affordability issues, disincentive for future capital investment to improve local reliability, compromised quality of life, as well as other potential long-term impacts.

Long-term water use efficiency is ongoing, regardless of hydrologic conditions. When properly designed and implemented, water use efficiency programs result in sustainable potable demand offsets that support the economy, environment, and communities.

The local agencies have implemented water use efficiency programs over decades to manage demands and effectively reduce per capita demands. As part of this ongoing commitment to water use efficiency, the agencies continue to expand and update their programs to integrate new practices and policies. Table 2-4 summarizes the local agencies' ongoing water use efficiency programs. Many cities and agencies have come together to participate as a member of the Water Awareness Committee of Monterey County (WAC). Through the WAC, representatives from several agencies throughout Monterey County work together coordinating conservation and other water awareness efforts including education programs and public understanding of Monterey County water

challenges and opportunities. Of the local agencies participating in this DCP, Cal-Am, Cal Water, CCSD, MCWD, MCWRA, MPWMD, and M1W are members in addition to individual cities.

Cal-Am. Cal-Am performed an assessment of its service area population to calculate per-capita water use and project future service area demands for its 2015 UWMP. Improvements in Cal-Am's distribution system could reduce demand by reducing non-revenue water. Non-revenue water, also known as unaccounted-for water, is the difference between a water system's metered production and metered consumption. In its 2009 CDO, the SWRCB observed that the industry standard for non-revenue water was 10 percent; that Cal-Am's non-revenue water was about 12 percent of production; and that the MPWMD had required Cal-Am to reduce non-revenue water to 7 percent. The California Public Utilities Commission (CPUC) ordered Cal-Am to develop and implement a program for reducing unaccounted-for water in its Monterey main system and associated subsystems, and to provide a financial incentive, the CPUC created a penalty/reward program to be calculated based on a 9 percent non-revenue water target. Cal-Am has often described the company's efforts to reduce non-revenue water in its Monterey District.

Cal-Am submits quarterly compliance reports to the State Water Board under the CDO. In those reports, Cal-Am states that between the 2011 and 2015 water years, the company has reduced system losses by an average of 506 AFY, compared to the base year system losses in water year 2009. Further, for the last three years, the reduction in system losses ranged from 752 AF in water year 2013 to 919 AF in water year 2015, which exceeds the 549 AFY target established in the CDO.

MPWMD created the 2016 Monterey Peninsula Water Conservation and Rationing Plan for Cal-Am. This plan is meant to supplant the existing WSCP that was included in Cal-Am's 2015 UWMP. The newly developed plan lays out general provisions and guidelines that better reflect existing water conservation efforts and rationing strategies during periods of drought.

Cal Water. For the five-year period 2011-2015, apparent and real water loss in the Salinas District averaged 1,524 AF, or approximately 9 percent of total production. In addition to its routine and planned system maintenance and water loss reporting, Cal Water is planning to implement a lift-and-shift sonic data logger leak detection program in the District starting in 2017. Lift-and-shift sonic data logging technology will enable Cal Water to quickly and efficiently locate leaks in one part of the water distribution network and then re-deploy the equipment to another part of the network. Cal Water conservatively estimates the lift-and-shift program will reduce real water loss in the District by up to 294 AFY – enough water for about 900 households.

Alco Water. Alco Water is a small water supply agency that does not have an updated UWMP. The information available on its conservation efforts is limited. Alco Water does have a leak detection program for residents in which an Alco representative will do an extensive house visit if there are high water bills. It also has conservation pricing, a public education program, and encourages use of water-use efficient fixtures.

MCWD. Marina Coast Water District's regional baseline water demand was estimated to be 154 gpcd, according to their 2015 UWMP. MCWD has been at or below the regional 2020 target of 123 gpcd since 2009 due to aggressive water conservation practices. To further reduce per capita demands below the compliance targets, MCWD will continue on-going water conservation efforts. It is implementing an urban recycled water project for landscape irrigation through Pure Water Monterey. It has design standards for new construction exceeding the State's plumbing code requirements. Non-metered customers will be metered and have a financial incentive to reduce water use. MCWD plans to replace a significant amount of the water distribution system in the Fort Ord Community to reduce system water losses.

CCSD. Castroville Community Service District is below the population threshold to be required to submit an UWMP (less than 3,000 AFY and less than 3,000 customers). During the 2012 to 2016 drought, CCSD was able to reduce water usage by 12 percent between 2013 and 2016. CCSD has offered various incentives to encourage its customers to conserve water, including low-flow toilet rebates and soil moisture meters. However, Castroville claims they do not have much opportunity for significant conservation measures as there is only one swimming pool property owner in town and mostly small yards and landscapes to maintain.

Table 2-4. Local Agencies' Ongoing Water Use Efficiency Programs

Program Type	Alco Water[a]	Cal-Am	Cal Water	CCSD[b]	MCWD
Utility Operations Programs					
Water waste prohibitions		✓	✓	✓	✓
Water loss control	✓	✓	✓		✓
Metering	✓	✓	✓		✓
Conservation pricing	✓	✓	✓	✓	✓
Education and outreach		✓			✓
Public information	✓	✓	✓	✓	✓
School education		✓	✓		✓
Residential					
Indoor water surveys		✓	✓		✓
Outdoor water surveys		✓	✓		✓
Landscape ordinance		✓			
Residential plumbing retrofit	✓	✓	✓		✓
High-efficiency washing machine rebate programs	✓	✓	✓		✓
Toilet replacement programs (ultra-low flow/high efficiency)	✓	✓	✓	✓	✓
Landscape rebate programs		✓	✓	✓	
Water use reports		✓	✓		✓
Commercial, Industrial, and Institutional (CII)					
Conservation programs for CII (e.g., process water use reduction, laundry retrofits, water-efficient commercial dishwashers, etc.)		✓	✓		✓
Landscape ordinance		✓			
Landscape water surveys/budgets		✓	✓		✓
Landscape rebate/grant programs		✓	✓		✓

a. Alco Water has not submitted their 2015 UWMP, therefore information may not be complete.

b. CCSD is below the population threshold to submit an UWMP, therefore information may not be complete.

Section 3

Drought Monitoring

Water supply conditions are monitored on a statewide level by DWR, Reclamation, and others. The local agencies also regularly monitor supply conditions, compare available supplies to projected demands to effectively manage operations and water use, and prepare WSCPs for responding to water shortages.

Section 3 Summary

Key Take-Aways

- Local agencies conduct local water supply monitoring in various way including measuring groundwater levels, seawater intrusion, precipitation, and reservoir releases. These monitoring results help to predict and confirm droughts.
- Local agencies measure monthly consumption, well depth, and production.
- As part of the Monterey County Groundwater Management Plan agricultural, urban, and industrial operators of wells located in certain zones of the SVGB are required to report groundwater extractions to MCWRA annually.
- MPWMD can determine the water year type for the Carmel River based on unimpaired streamflow and will declare a "drought" when there are two "dry" or "critically dry" years in a row.

3.1 Statewide Water Supply Monitoring

During the 2012 to 2016 drought, DWR staff provided biweekly reports to the SWRCB on statewide water supply conditions, and DWR and SWRCB staff regularly referenced the U.S. Drought Monitor Index (National Drought Mitigation Center), statewide precipitation (NOAA Regional Climate Center), and DWR California Data Exchange Center monitoring data, including snowpack, snow water equivalents, and reservoir storage. National monitoring of streamflow data is done by the U.S. Geological Survey.

Proposed state legislation from "Making Water Conservation a California Way of Life" would require monthly water use reporting from agencies, requiring monthly monitoring by the local agencies.

3.2 Local Supply Monitoring

Local agencies monitor their water supplies in various ways and conduct regular reporting. A formal coordinated effort for local supply monitoring is not yet in place but the local agencies are working toward this as described in Section 7. MCWRA is the key agency monitoring water supplies associated with the Salinas Valley basin and MPWMD is the key agency monitoring water supplies associated with the Seaside and Carmel Valley basins. As a result, their water supply monitoring and reporting approach is described in more detail that the other local agencies. MCWRA and MPWMD are the two key agencies that identify the region's water supply conditions and any anticipated drought conditions. MCWRA and MPWMD inform the other local agencies in the region on the status of the water supply conditions. The region does not currently have a formal approach to coordinating and communicating drought information. The discussion in Section 7.1.4 of this DCP plan identifies a plan to form a DCP Implementation Group operational sub-committee to develop policies and approaches for coordination on this topic. In addition, the GSA may become the key agency in the future for supply monitoring and reporting for the entire DCP area.

3.2.1 MCWRA Water Supply Monitoring and Reporting

MCWRA monitors their water supplies by tracking groundwater levels, seawater intrusion, precipitation, and reservoir releases.

Groundwater Head Change. MCWRA operates multiple programs to monitor groundwater levels in the SVGB as part of the Monterey County Groundwater Management Plan (MCWRA, 2006). Quarterly groundwater level figures are also prepared for each subarea and are posted on MCWRA's website at http://www.mcwra.co.monterey.ca.us/.

MCWRA provides annual groundwater pumping data on a subarea basis. MCWRA has current pumping data from the Groundwater Extraction Management System (GEMS) reporting program, which began in 1994. Since November 1995, MCWRA has compiled groundwater extraction data reported by individual well owners in accordance with County of Monterey ordinance No. 3717. Under this ordinance, well owners are required to report monthly pumping volumes for every well with a discharge pipe of diameter 3 inches (in) or greater. Figure 3-1 illustrates the location of these monthly measured wells in the SVGB. Groundwater pumping volumes are generally reported in November. While groundwater extraction data are available for a large number of wells throughout the study area, construction information is generally not known, meaning that it is often not known from what particular aquifers a well is drawing water.

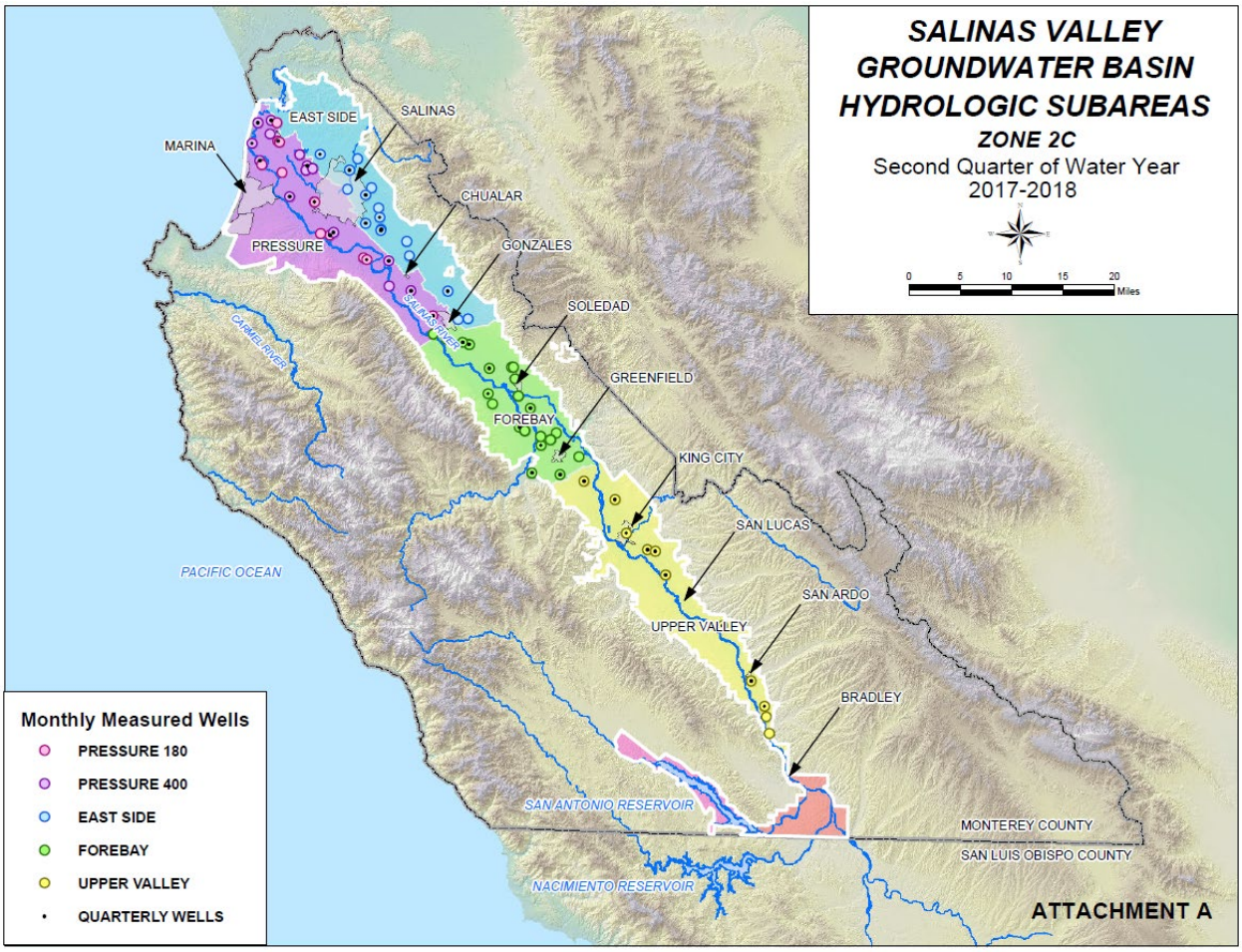

Figure 3-1. MCWRA's Monthly Monitoring Wells in the SVGB

Before 1994, pumping data can be found from the Salinas Valley Integrated Ground and Surface Water Model (SVIGSM). Head measurements are collected by MCWRA staff from about 400 wells each Fall, from mid-November to mid-December. This is the time of year following the peak growing (and groundwater pumping) season, before rainfall has begun to recharge basin aquifers. Groundwater conditions at this time of year are most likely to reflect overall changes in storage from year to year.

Seawater Intrusion. MCWRA tests 90 wells in the seawater intrusion zone (Pressure and East Side Areas) during the summer months for a subset of chloride, nitrate, conductivity, calcium, magnesium, potassium, pH, sodium, sulfate, and alkalinity. Over 300 additional wells are also tested yearly for the same constituent set, with wells sampled on a rotating basis. Additionally, whenever MCWRA samples an agricultural well, the water quality results, including nitrate concentrations, are reported back to the well owner. MCWRA monitors the position of the seawater intrusion front for both the Pressure 180 Foot and Pressure 400 Foot aquifers. MCWRA commissioned a study in January 2015 to follow the seawater intrusion front based on groundwater elevations.

Precipitation. MCWRA also monitors monthly precipitation levels from the Salinas Municipal Airport gauge, with data spanning over 140 years, available from July 1872 to present.

Reservoir Releases. For surface water, MCWRA monitors reservoir storage, reservoir releases, surface water flows and surface water quality. MCWRA owns and operates two reservoirs along tributaries to the Salinas River: Nacimiento Reservoir and San Antonio Reservoir. Nacimiento Reservoir began releasing water in October 1958, while San Antonio Reservoir began releasing water in November 1966. MCWRA has a time series of daily releases, storage, and lake stage. MCWRA also has daily reservoir release data, recorded from 1958 to present.

3.2.2 MPWMD Water Supply Monitoring and Reporting

Through a series of monitoring wells and stream gages, MPWMD monthly monitors and reports rainfall, streamflow, and storage in the Monterey Peninsula Water Resource System. Each May 1, usable storage throughout the system is analyzed to determine if it is sufficient to meet the projected demands of both Cal-Am and non-Cal-Am pumpers for the ensuing 17 months. If not, MPWMD enters Stage 2 of its Water Conservation and Rationing Plan. Further, based on stratified historical data, MPWMD can determine the type of water year for the Carmel River (see Table 3-1 below.) MPWMD will declare a “drought” when there are two “dry” or “critically dry” years in a row, based on unimpaired streamflow.

Table 3-1. Breakpoints for Water Year Classification Carmel River at San Clemente Dam (Through Water Year 2016)

Water Year Classification	Rainfall, in (1922 – 2017)	Unimpaired Streamflow, AF (1902 – 2017)
Extremely Wet	Above 31.50	Above 128,453
Wet	Above 24.57	Above 100,165
Above Normal	Above 21.56	Above 71,490
Normal	Between 17.08 and 21.56	Between 40,563 and 71,490
Below Normal	Below 17.08	Below 40,563
Dry	Below 15.62	Below 27,598
Critically Dry	Below 13.02	Below 14,687

3.2.3 Local Agencies Water Supply Monitoring and Reporting

In addition to MCWRA's and MPWMD's monitoring, many local agencies conduct their own supply monitoring and regular reporting.

Cal-Am. Cal-Am provides the MPWMD with monthly consumption reports by customer classification and jurisdiction, as well as a water year summary report. System pressure, water production flow rate, and power status are monitored and reported at representative locations throughout the various water systems. Reports are sent to the Monterey County District office where they are displayed, monitored and recorded. Additionally, approximately twenty representative water supply and production sites are equipped with "mission controllers", a web based monitoring system. The mission controllers alert both on-duty and on-call staff by cell phone when operational problems arise.

Cal Water. Cal Water monitors its well depth and volume of water pumped. MCWRA requires annual extraction reports from all agricultural and municipal well operators in the SVGB. Given that the DWR has listed the 180/400 foot aquifers as critically overdrafted, SGMA regulations will require more intensive monitoring of the groundwater levels. Additionally, MCWRA developed the Monterey County Groundwater Management Plan. According to Cal Water's UWMP, they intend to include the enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water levels, and key water quality parameters within the context of day-to-day operations.

MCWD. MCWD monitors its wells for groundwater levels and seawater intrusion. MCWD operates a monitoring well installed between the Monterey Bay and the Marina production wells. That monitoring well serves as an early warning system to identify any seawater intrusion that might later affect MCWD's production wells, located further inland. Once identified, the District can install or begin operating one or more back-up wells to replace any potential future loss of production capacity. Further well and groundwater monitoring to better understand the location and movement of groundwater contamination caused by closed landfills occurs by the U.S. Army and MCWD, due to three water supply wells at the former Fort Ord.

Alco Water. Alco Water monitors the depth to water, pumping capacities, and annual quantity of water pumped in its wells.

CCSD. CCSD monitors groundwater elevations in its three existing wells.

Salinas Valley Basin Groundwater Sustainability Agency. With the creation of SGMA, groundwater supplies will be monitored closely in the SVGB. SGMA will help protect against seawater intrusion and water quality degradation, which future monitoring will include. This GSA will augment and build upon any monitoring work done by the existing Monterey County Groundwater Management Plan.

3.3 Water Use Monitoring and Reporting

Local agencies track water use and provide regular updates to their decision-making bodies (i.e., Board of Directors or Commission) on water use trends and projections compared to available supplies.

Since July 2014, the SWRCB has been tracking potable water production and conservation on a monthly basis for the state's urban water suppliers, and SWRCB staff provide monthly reports to summarize monthly and cumulative data provided by urban water agencies, including potable production and per capita water use. Agencies were required to submit biweekly water usage reports during the drought, and under pending legislation will require monthly reports. Agencies must also submit annual water usage to the SWRCB Division of Drinking Water.

Through the Monterey County Groundwater Management Plan, agricultural, urban, and industrial operators of wells located in Zones 2A and 2B of the SVGB with a discharge pipe having an inside diameter of at least three inches are required by ordinance to report groundwater extractions to MCWRA on an annual basis. MCWRA publishes extraction data reports summarizing extractions by subarea, and water use. MCWRA maintains the Water Resources and Information Management System (WRAIMS) database in which groundwater elevation, quality, and extraction data are stored.

In normal water supply conditions, production figures are recorded daily by MCWD operations and maintenance (O&M) personnel. Totals are reported monthly to the O&M Superintendent. Production figures are reported in the Annual Report to the Drinking Water Program, which is submitted to the SWRCB Division of Drinking Water each year. During a Stage 1 or 2 water shortage, daily production figures will be reported to the O&M Superintendent. The O&M Superintendent compares the weekly production to the target weekly production to verify that the reduction goal is being met. Monthly reports are forwarded to the District Engineer and the General Manager, the Water Conservation Commission and the MCWD Board of Directors. If reduction goals are not met, the General Manager may notify the Board of Directors so that corrective action can be taken. During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the addition of a daily production report to the General Manager and weekly reports to the Water Conservation Commission and Board of Directors. Special meetings may be called for administration of the WSCP. During a Stage 5 shortage, production figures will be reported to the O&M Superintendent hourly, and to the General Manager daily. Reports will also be provided to MCWD's Board of Directors, the Monterey County Office of Emergency Services, and land use jurisdictions located within MCWD's service territory. Water shortage stages by local agency and triggers for each stage are further discussed in Section 5 of this DCP.

Section 4

Vulnerability Assessment

Specific threats to the region's critical water resources that may reduce availability and reliability of existing and future water supplies must be understood for effective drought contingency planning. In addition, past climate, water supply, and water use trends and potential future drought conditions and climate change impacts must be considered.

In the context of this drought contingency planning framework, drought vulnerability is the extent to which local agencies, and the region are exposed or susceptible to risk. Risk is a combination of frequency of occurrence, magnitude and severity, and consequences. Local agencies use the resulting baseline risk assessment to inform potential drought response actions and drought mitigation measures described in this DCP in Section 5 and Section 6, respectively.

4.1 Future Conditions of Critical Resources for Drought Supply

Drought contingency planning requires assessing the potential for a range of future hydrologic conditions and corresponding risk to critical resources, which are highly important to protect considering drought consequences, magnitude, and severity. The significance of the region's critical water resources varies by local agency based on their individual supply portfolio.

For this analysis, future conditions are evaluated for normal, single dry year, and third consecutive dry year scenarios. California water agencies were required to

Section 4 Summary

Key Take-Aways

- The local agencies appear to have enough water supply to meet the evaluated future conditions for normal, single dry year, and third consecutive dry year scenarios in the years 2020 and 2035. However, this is not sustainable long-term due to expected cuts to the amount of water that can be diverted from the Carmel Valley Alluvial Aquifer that are to take place by 2022.
- Sufficient supplies under 2035 conditions assumes completion of Pure Water Monterey and RUWAP projects and funding and construction of two new projects: 1) MPWSP Ocean Desalination and 2) MCWA expansion/upgrade of existing desalination plant.
- Water supply from the SVGB is the most significant existing supply source for Alco Water, Cal Water, CCSD, and MCWD in the 2035 third consecutive dry year future condition. Ocean desalination plays a major role for Cal-Am and CCSD.
- The recently passed SGMA also has the potential to alter operation and management procedures that may result in pumping reductions in the DWR listed high priority SVGB, below what is assumed in this DCP, resulting in a potential normal year supply shortage as soon as 2025.
- Climate change is projected to increase the region's vulnerability to a water supply and demand imbalance under future conditions.
- The potential impacts of climate on supply indicates increased occurrences of floods and droughts and increased average temperatures in the future based on Basin Study climate change modeling.
- Potential drought impacts extend beyond the water supply sources themselves and into other sectors including agricultural, energy, environmental (fish/wildlife), local business, public health, recreation, residential, and tourism.

Recommended Actions

- Climate change modeling that is being evaluated in detail in the Basin Study can be used in the future to refine the availability of water supplies under future conditions.
- SGMA impacts, once defined in the groundwater sustainability plans (GSPs) that are being developed, should be used to refine the availability of water supplies under future conditions.
- Water supply planning for the study area should focus on reducing the region's water supply vulnerability. This can be achieved by diversifying water supply portfolios and by mitigating various contributing factors that directly impact the availability of existing water supplies.
- Potential drought mitigation measures that are evaluated and prioritized to reduce the region's water supply vulnerabilities are presented in Section 6 of this DCP.

evaluate the impacts of normal years, single dry years, and multiple consecutive dry years for every five years from 2020 through 2035 on their water supply availability for their 2015 UWMPs. As a result, use of normal, single dry year, and third consecutive dry year for this vulnerability assessment ensures consistency across agencies and supplies. The local agencies' water supply availability by source is quantified and projected under normal year, single dry years and third consecutive dry year conditions considering historic reliability and corresponding risks to each supply source in their 2015 UWMPs. The water supply availability data use for the water supply analysis in this DCP is based on water supply availability estimates by source from 2020 to 2035 in five-year increments from the Agencies' 2015 UWMPs as well as based on input from the participating agencies in the development of this DCP. The same normal year, single dry year, and third consecutive dry year information, for years 2020 and 2035 is used in this vulnerability assessment.

Single dry year and third consecutive dry year future conditions are also appropriate for this analysis because these water year types describe realistic conditions under which the local agencies would be vulnerable to supply shortages due to legal, environmental, water quality, and climatic factors.

Future condition scenarios are applied to the remainder of this analysis for the following:

- Assessing regional potential future supply shortfalls by comparing supply portfolios and demands (as projected for a normal year, single dry year, and third consecutive dry year in 2020 and 2035)
- Determining significance of supply source to local agencies' drought portfolios (as projected for a third consecutive drought year in 2035)
- Plotting a risk matrix to illustrate the vulnerability of regional drought supplies (as projected for a third consecutive drought year in 2035)

4.2 Potential for Future Supply Shortfalls

This section provides a brief discussion on near and long-term future water supply conditions for the DCP area. Information from the local agencies' 2015 UWMPs was compiled to quantify potential regional supply shortfalls for the collective agencies in 2020 and 2035, based on comparing the region's future demands to projected total supplies under future conditions (normal, single dry, and third consecutive dry year conditions).

4.2.1 2020 Future Condition Water Supply and Demand Comparison

The 2020 future conditions for water supply volume assumed to be available for each supply source for the 2020 future condition is compared to the 2020 demand in Table 4-1 and in Figure 4-1. As shown in Figure 4-1, the region has a heavy reliance on groundwater. A substantial amount (approximately 60 percent of the total projected 2020 supply portfolio in all year types) is comprised of supplies stemming from the SVGB and Seaside Groundwater Basin. The region's water portfolio is also dependent on the Carmel River. How much water is diverted from the river is dependent on the availability of other supplies and the effective diversion limit set in place by the SWRCB's CDOs WR 2009-0060 and WR 2016-0016.

Table 4-1. 2020 Future Conditions Regional Supply Portfolio versus Demand

Water Supply/Demand	Normal Year	Single Dry Year	Third Consecutive Dry Year	Notes
Water Supply[a]				
Carmel Valley Alluvial Aquifer	4,210	4,810	4,810	Assumes the ASR project yield (the first 600 AF) and the Pure Water Monterey supply (3,500 AF) would count towards the annual Carmel River diversion limit which currently stands at 8,310 AFY. During non-drought years, Cal-Am is also entitled to divert an additional 200 AF per Permit 30215.
Salinas River (Salinas River Diversion Facility	2,500	-	-	Totals were estimated using historical data.
Salinas Valley Groundwater Basin	39,824	40,038	40,511	-
Seaside Groundwater Basin	1,474	1,474	1,474	-
ASR Project	1,900	-	-	-
Pure Water Monterey	8,000	7,500	7,200	Assumes project has been constructed and producing listed quantities, 3,500 AF for replenishment of the Seaside Groundwater Basin and up to 4,500 AF for CSIP agriculture demands.
RUWAP	600	600	600	The supply assumes MCWD would construct the RUWAP, a recycled water transmission and distribution system.
SVRP Recycled Water	13,400	11,700	11,000	Totals were estimated using historical data.
Sand City Desalination	150	150	100	-
Total Water Supply	72,058	66,272	65,695	-
Water Demand[b]				
Urban Water Demand	41,828	41,828	41,828	Urban demands are assumed to remain constant across scenarios.
Agriculture Water Demand[c]	20,700	20,700	20,700	Agricultural demands are based on CSIP historical data and are assumed to remain constant across scenarios.
Total Demand	62,528	62,528	62,528	Sum of urban and agriculture demands.
Difference				
Project Surplus/(Deficit)	9,530	3,744	3,167	-

The values in this table are based on the 2015 Urban Water Management Plans and input from local agencies.

a. *2020 water supplies are based on projections in the 2015 UWMPs and input from participating agencies for this DCP, as discussed in Section 4.1 of this document.*

b. *2020 urban and agricultural water demands are based on projections in the 2015 UWMPs and input from participating agencies for this DCP, as discussed in Section 2.3 of this document.*

c. *Section 4.4.3 discusses that agricultural water use is expected to increase to offset higher temperature and increases evaporative losses in the future. This finding is not used to adjust the demand projections in this table although it is anticipated this information will be reflected in this next update of this DCP.*

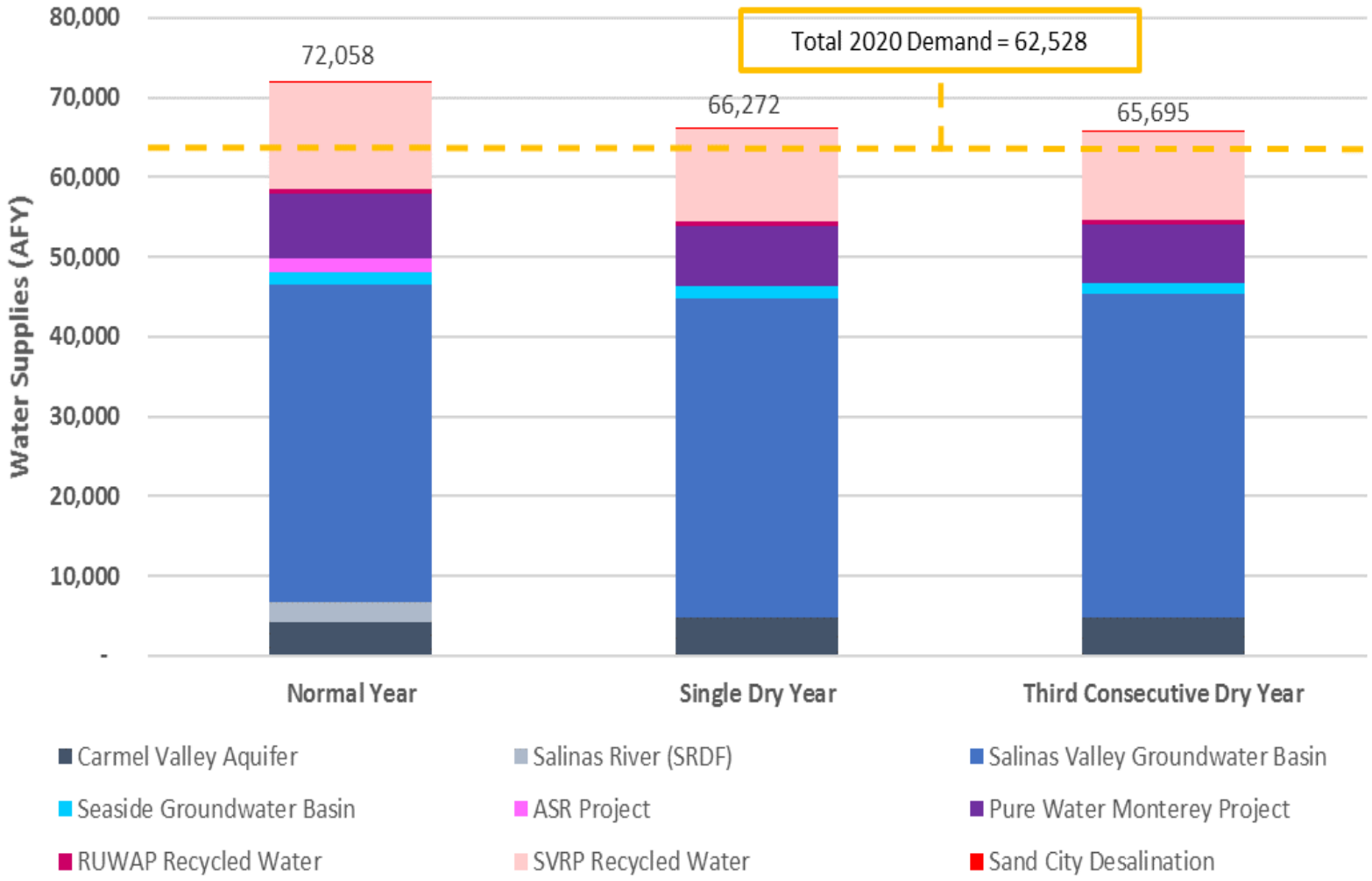

Figure 4-1. Projected Regional Water Supply Portfolio for 2020

Discrepancies in the total projected water supplies when comparing normal, single dry year, and third consecutive dry year scenarios in the projections for 2020 stem mainly from reductions to the agriculture water supply. The Salinas River supply is not expected to be available during single dry and third consecutive dry year scenarios and any drought condition is expected to reduce wastewater flows which would result in a reduction of the recycled water produced by the SVRP facility and the additional CSIP water that is to be produced by Pure Water Monterey. In addition to these agriculture supply reductions, the ASR project water is also expected to become unavailable during the single dry year and third consecutive dry year scenarios based on Cal-Am's 2015 UWMP and input from Cal-Am staff. There is also a small reduction in the projected amount of water withdrawn from the SVGB when looking at those two same scenarios. One other notable change is related to the amount of water that can be diverted from the Carmel River from one-year type to the other. All other supplies are projected to remain constant across all year types.

Based on the collated water supply information from the 2015 UWMPs, the local agencies appear to have more than enough supply to satisfy 2020 water demands (62,528 AF) in all year types. Even if other projects were to not be built, the local agencies would still have enough water supply available in the near-term to meet water demands, as evidenced by Figure 4-1. However, this would not be a sustainable long-term strategy. Substantial cuts to the amount of water that can be diverted from the Carmel Valley Alluvial Aquifer are expected to take effect by 2022. Based on Order No. WR-95-10, Cal-Am has the rights to divert 3,376 AFY from the Carmel River based on pre-1914 appropriative water rights, riparian water rights, and License 11866. Cal-Am also has a 200 AFY water right per Permit 30215 that is available during non-drought years. All other water diversions and extractions from the Carmel River are subject to the SWRCB CDOs WR 2009-0060 and WR 2016-0016. Ultimately, the reduction schedule set in place by the SWRCB will result in the effective diversion limit from the Carmel Valley Alluvial Aquifer being reduced from 8,310 AFY in 2020 to 3,576 AFY in 2022. These changes are not limited to the Carmel Valley Alluvial Aquifer. SGMA has the potential to alter operation and management procedures potentially resulting in pumping reductions from the SVGB. DWR has already listed the SVGB as a high priority with the 180/400-foot aquifers designated as critically over drafted.

4.2.2 2035 Future Condition Water Supply and Demand Comparison

The 2035 future condition for water supply is compared to the 2035 demand in Table 4-2 and in Figure 4-2. As observed for the 2020 water supply portfolio, UWMP data suggest a strong continued reliance on groundwater supplies. A substantial amount (approximately 60 percent of the total projected 2035 supply portfolio in all year types) is comprised of supplies stemming from the SVGB and the Seaside Groundwater Basin. Additionally, by 2035 the CDOs will have ended all unlawful diversions from the Carmel River.

Table 4-2. 2035 Future Conditions Regional Supply Portfolio versus Demand

Water Supply/Demand	Normal Year	Single Dry Year	Third Consecutive Dry Year	Notes
Water Supply[a]				
Carmel Valley Alluvial Aquifer	3,576	3,376	3,376	Assumes the CDO has been lifted and the annual Carmel River diversion limit stands at 3,376 AFY. Cal-Am is also entitled to divert an additional 200 AF per Permit 30215 which would bring the total Carmel River diversion limit up to 3,576. However, the 200 AF would only be available during non-drought years.

Table 4-2. 2035 Future Conditions Regional Supply Portfolio versus Demand				
Water Supply/Demand	Normal Year	Single Dry Year	Third Consecutive Dry Year	Notes
Salinas River (SRDF)	2,500	-	-	Totals were estimated using historical data.
Salinas Valley Groundwater Basin	44,193	44,700	44,937	-
Seaside Groundwater Basin	774	774	774	-
ASR Project	1,900	1,900	1,900	Assumes CDO has been lifted and water could be withdrawn from storage in all year types.
Pure Water Monterey	8,000	7,500	7,200	Assumes project has been constructed and producing listed quantities, 3,500 AF for replenishment of the Seaside Groundwater Basin and up to 4,500 AF for CSIP agriculture demands.
RUWAP	1,359	1,359	1,359	The supply assumes MCWD would construct the RUWAP, a recycled water transmission and distribution system.
SVRP Recycled Water	13,400	11,700	11,000	Totals were estimated using historical data.
MPWSP Ocean Desalination	6,252	6,252	6,252	Assumes the MPWSP would be constructed and producing 6,252 AFY.
MCWD Ocean Desalination	1,766	1,766	1,766	Assumes MCWD's existing desalination plant would have been expanded/upgraded to produce 1,766 AFY.
Sand City Desalination	150	150	100	-
Total Water Supply with Ocean Desalination	83,870	79,477	78,664	-
Total Water Supply without MPWSP and WCWD Ocean Desalination	75,852	71,459	70,646	-
Water Demand[b]				
Urban Demand	57,479	57,479	57,479	Urban demands are assumed to remain constant across scenarios.
Agriculture Demand[c]	20,700	20,700	20,700	Agricultural demands are based on CSIP historical data and are assumed to remain constant across scenarios.
Total Demand	78,179	78,179	78,179	Sum of urban and agriculture demands.
Difference				
Project Surplus/(Deficit) with Ocean Desalination	5,691	1,298	485	-
Project Surplus/(Deficit) without Ocean Desalination	(2,327)	(6,720)	(7,533)	-

The values in this table are based on the 2015 Urban Water Management Plans and input from local agencies.

a. 2035 water supplies are based on projections in the 2015 UWMPs and input from participating agencies for this DCP, as discussed in Section 4.1 of this document.

b. 2035 urban and agricultural water demands are based on projections in the 2015 UWMPs and input from participating agencies for this DCP, as discussed in Section 2.3 of this document.

c. Section 4.4.3 discusses that agricultural water use is expected to increase to offset higher temperature and increases evaporative losses in the future. This finding is not used to adjust the demand projections in this table although it is anticipated this information will be reflected in this next update of this DCP.

Discrepancies in the total projected water supplies when comparing normal, single dry year, and third consecutive dry year scenarios for 2035 mimic what was observed in the 2020 projections in that they stem mainly from reductions to the agriculture water supply. The Salinas River supply is not expected to be available during single dry and third consecutive dry year scenarios and any drought condition is expected to reduce wastewater flows which would result in a reduction of the recycled water produced by the SVRP facility and the additional CSIP water that is to be produced by Pure Water Monterey. Additionally, the Cal-Am Permit 30215 water (200 AF) is expected to be unavailable during the single dry year and third consecutive dry year scenarios. The SVGB withdrawal patterns are slightly different than what was projected for 2020 in that 2035 projections suggest a small increase in groundwater pumping activity during the single dry year and third consecutive dry year scenarios. By 2035, the UWMP data also assumes that both the Pure Water Monterey and MPWSP ocean desalination projects will be producing 9,752 AFY of potable water combined and that MCWD will have expanded/upgraded their own desalination facility to keep up with the increasing water demands and RUWAP will be purveying 1,359 AFY of recycled water. All other supplies are projected to remain constant across all year types.

Based on the collated water supply information from the 2015 UWMPs, the local agencies appear to have enough supply to satisfy 2035 water demands (78,179 AF) in all year types. These projections assume completion of the Pure Water Monterey (3,500 AFY for potable use and up to 4,500 for CSIP use) and RUWAP projects and funding and construction of two new projects: 1) MPWSP Ocean Desalination and 2) MCWD expansion/upgrade of their existing desalination plant. By 2035, these two projects are projected to account for approximately 10 percent of the total water supply portfolio (8,018 AFY). Without the construction of these projects, the region would be looking at a supply deficit ranging between 2,327 and 7,533 AFY depending on the year type, as observed in Figure 4-2.

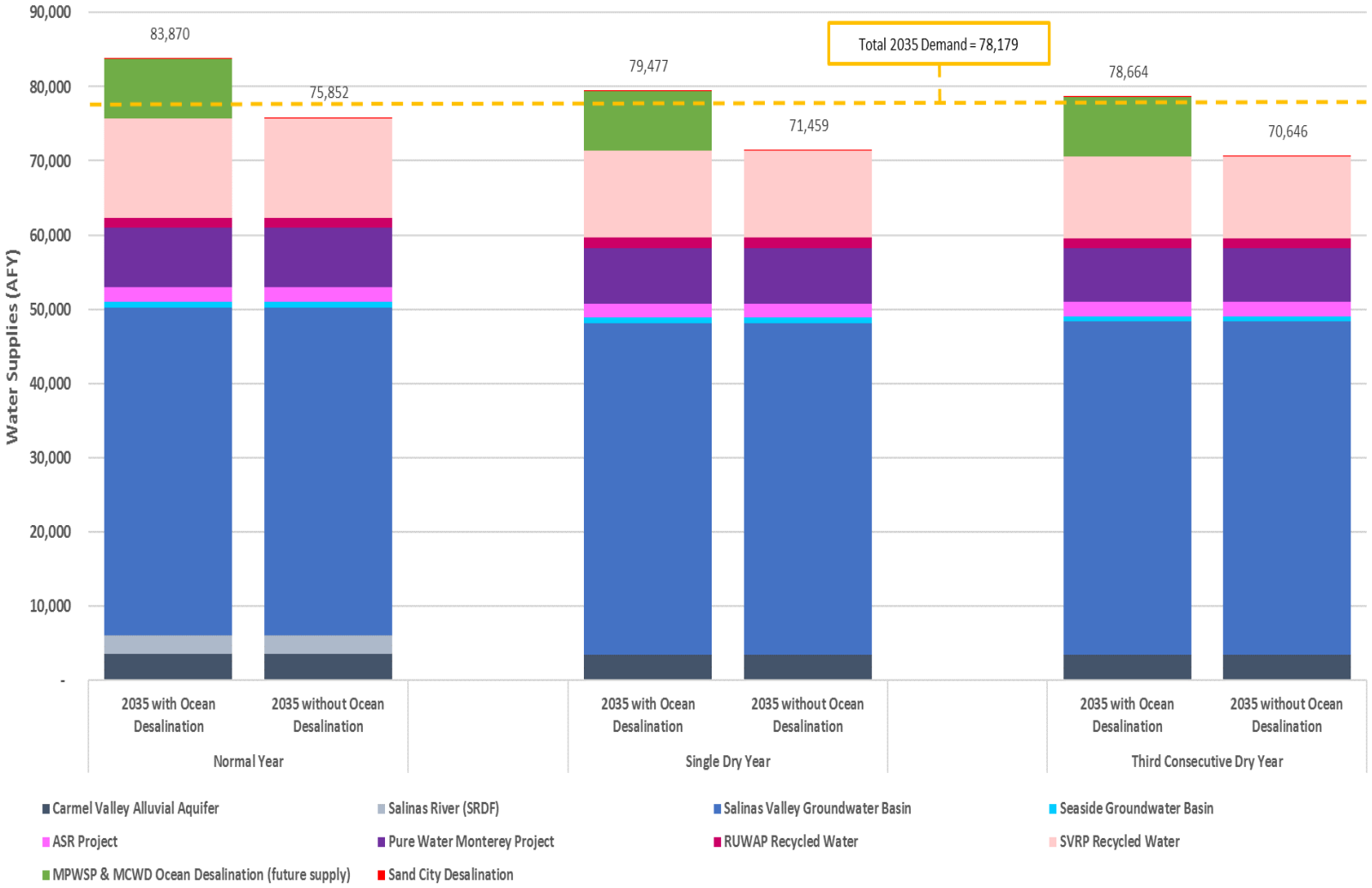

Figure 4-2. Projected Regional Water Supply Portfolio for 2035 with and without Ocean Desalination

Also, note that the UWMPs project a steady increase in groundwater pumping from the SVGB by the local agencies to meet future demands, as shown in Figure 4-3. Without the new projects listed in Table 4-2, the region would likely look to further increase groundwater pumping out of the SVGB since it is currently the only other available source of supply.

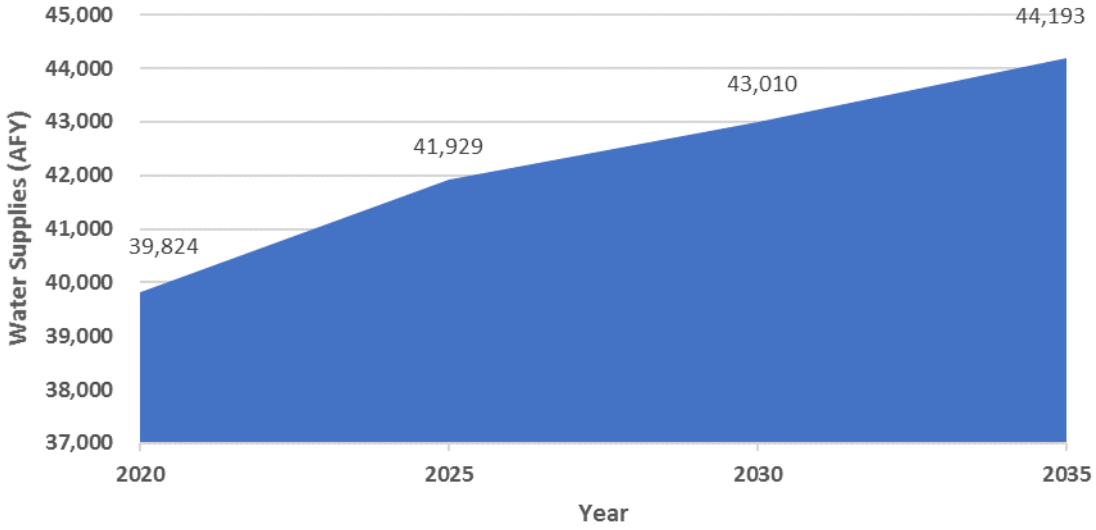

Figure 4-3. Projected Normal Year Groundwater Pumping out of the Salinas Valley Groundwater Basin by the DCP Agencies Only[a,b]

a. *The values in this figure may be underestimating the projected amount of groundwater pumping from the SVGB. However, the potential impacts of SGMA on the ability to pump groundwater in the future are unknown and could be less than the SVGB available supply that is assumed in this DCP.*

b. *Projected pumping from the SVGB is based on 2020 through 2035 five-year increment projections in the Agencies' 2015 UWMPs as well as input from the participating agencies for this DCP.*

Note that the projections shown in Figure 4-3 do not account for groundwater pumping activity from other users in the immediate study area (e.g., agricultural users not in the CSIP) that do not rely on one of the agencies included in the DCP for water deliveries. As such, its plausible that the numbers shown in Figure 4-3 could be underestimating the total projected amount of groundwater pumping from the SVGB. However, as previously discussed, the potential impacts of SGMA on the ability to pump groundwater in the future are unknown. A scenario where restrictions on the amount of water that can be withdrawn from the basin could be an outcome of the State required GSP that is currently being initiated by the GSA. Table 4-3 presents the impact that a range of potential reductions to the SVGB supply would have on the region's ability to meet projected future demands. Figure 4-4 is an illustration of Table 4-3.

Table 4-3. Projected Normal Year Regional Supply Portfolio VS Demand – Salinas Valley Groundwater Basin Supply from 0 to 20 Percent Reduction				
Reduction Scenarios during Normal Year	2020	2025	2030	2035
Scenario 1				
Estimated Salinas Valley Groundwater Basin Supply (assumed in Tables 4-1 and 4-2)[a]	39,824	41,929	43,010	44,193
Total Supplies[a]	72,058	80,052	82,256	83,870
Total Demands[b]	62,528	72,889	75,533	78,179
Project Surplus/Deficit	9,530	7,163	6,723	5,691
Scenario 2				
5 Percent Reduction in Salinas Valley Groundwater Basin Supply	37,833	39,938	41,019	42,201
Total Supplies	70,067	78,061	80,265	81,878
Projected Surplus/Deficit	7,539	5,172	4,732	3,700
Scenario 3				
10 Percent Reduction in Salinas Valley Groundwater Basin Supply	35,842	37,946	39,028	40,210
Total Supplies	68,076	76,069	78,274	79,887
Projected Surplus/Deficit	5,548	3,181	2,741	1,709
Scenario 4				
15 Percent Reduction in Salinas Valley Groundwater Basin Supply	33,851	35,955	37,036	38,219
Total Supplies	66,085	74,078	76,282	77,896
Projected Surplus/Deficit	3,556	1,189	749	(283)
Scenario 5				
20 Percent Reduction in Salinas Valley Groundwater Basin Supply	31,859	33,964	35,045	36,228
Total Supplies	64,093	72,087	74,291	75,905
Projected Surplus/Deficit	1,565	(802)	(1,242)	(2,274)

a. *Projected pumping from the SVGB and total supplies is based on 2020 through 2035 five-year increment projections in the Agencies' 2015 UWMPs as well input from the participating agencies for this DCP as discussed in Section 4.1. of this document.*

b. *Total demands are based on 2020 through 2035 five-year increment demand projections in the 2015 UWMPs and input from participating agencies for this DCP, as discussed in Section 2.3 of this document.*

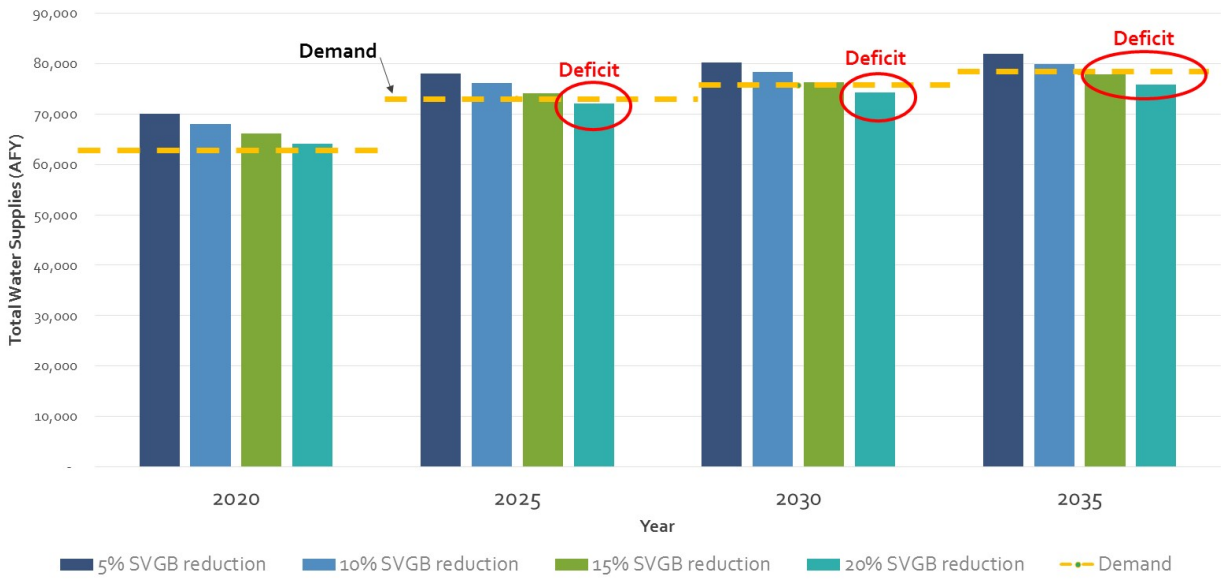

Figure 4-4. Projected Normal Year Regional Supply Portfolio VS Demand – Salinas Valley Groundwater Basin Supply from 0 to 20 Percent Reduction

Based on the 2015 UWMP data, the agencies in the region project that demands have the potential to exceed available supplies at various points in the future and over a range of hydrologic conditions, particularly extended droughts. These shortfalls have the potential to be exacerbated should restrictions resulting in reductions to the projected SVGB supply be imposed, as shown in Table 4-3. Current supply projections assume the completion of four projects in the region: 1) Pure Water Monterey, 2) MPWSP Ocean Desalination, 3) RUWAP, and 4) the expansion/upgrade of MCWDs existing desalination plant. At this time, Pure Water Monterey (3,500 AFY for potable use and up to 4,500 for CSIP use) and RUWAP are under construction but portions of the MPWSP project have not been approved or funding completely identified. As for MCWD, the costs associated with expanding/ upgrading their desalination plant have not been fully scoped out, these projects are included in Section 7 as drought mitigation measures that will need support to be completed.

4.3 Risks to Critical Resources

This section describes the uncertainty factors contributing to the potential reduction or loss of water supplies and the vulnerability of drought supplies in the region to these factors.

4.3.1 Uncertainty Factors Contributing to Loss of Water Supplies

Critical water supplies in the region's resources face a number of threats and uncertainties, including impacts associated with climate change, infrastructure susceptibility in the event of an emergency, supply limitations, regulatory, environmental, and water rights constraints, cost constraints and affordability, and source water quality degradation. These factors may reduce availability and reliability of existing and future water supplies to serve the region's population. The local agencies assessed the vulnerability of the region's critical water resources due to these uncertainty factors, as summarized by supply source in Table 4-4.

- **Climate Change.** Climate change is one of the most significant and challenging risks to future water supplies. The uncertainty surrounding climate change, with the possibility of more frequent and more severe droughts in the future, requires consideration of drought mitigation measures that are resilient to a range of possible climatic conditions. The risks that climate change poses to the region's future water supplies are described in more detail in Section 4.4.
- **Infrastructure Susceptibility and Supply Limitations.** Infrastructure susceptibility broadly applies to each local agency. Agencies in the region rely upon a diverse network of water-related infrastructure to help convey, treat, and distribute water supplies from local sources. These systems have limitations and are susceptible to damage from floods, earthquakes, coastal erosion, or other events.
- **Regulatory, Environmental, and Water Rights Constraints.** Changes to water rights and environmental regulations also influence management and operations of water facilities. New or changing regulations such as SGMA can affect agencies' abilities to access and use supplies as they have in the past (i.e., Carmel River or the SVGB); the availability of some supplies is reduced as day-to-day operations are modified to achieve compliance. New, and often costly, treatment technologies are needed to meet evolving regulations and/or decreasing water quality conditions. Agencies are obligated to maintain fiscal responsibility and balance increasing costs of maintaining and updating infrastructure.
- **Cost Constraints and Affordability.** Addressing aging infrastructure, securing alternative supplies, and complying with evolving regulations are just several examples of factors contributing to the rising cost of water. By California law, water rates must reflect the cost of service, which can lead to customer affordability issues. The local agencies serve many low-income customers and therefore recognize that affordability is a major issue in California that must be considered when setting water rates.
- **Source Water Quality Degradation.** Water suppliers are responsible for protecting public health. Providing high water quality starts at the source. Agencies apply a multi-barrier approach to protect public health, starting with protecting drinking water quality at its source, treating the supply, and distributing to customers through a safe, reliable system. The level of risk related to source water quality can vary largely depending on the supply.

4.3.2 Vulnerability of Regional Drought Supplies

As summarized in Table 4-4, a relative ranking of the likelihood a particular supply source may be reduced or lost was assigned. The likelihood score is a qualitative score based on the cumulative likelihood of the reduction or loss of supply as a result of the uncertainty factors described. The likelihood score ranges from 1 to 5, with 1 being a low likelihood of loss or reduction and 5 being a high likelihood of loss or reduction.

Based on the supply projections from 2015 UWMPs for the third consecutive year of drought in 2035, Figure 4-5 illustrates the relative significance in terms of percent of the direct supply sources to the local agencies' overall supply portfolios. Each local agency is listed on the first axis while the water supplies are listed on the second axis. For each agency, the water supply portfolio is illustrated by percent of supply source on the third axis. As shown in Figure 4-5, water supply from the SVGB is the most significant existing supply source for Alco Water, Cal Water, CCSD, and MCWD under the 2035 third consecutive dry year future condition. Ocean desalination plays a major role for Cal-Am and CCSD.

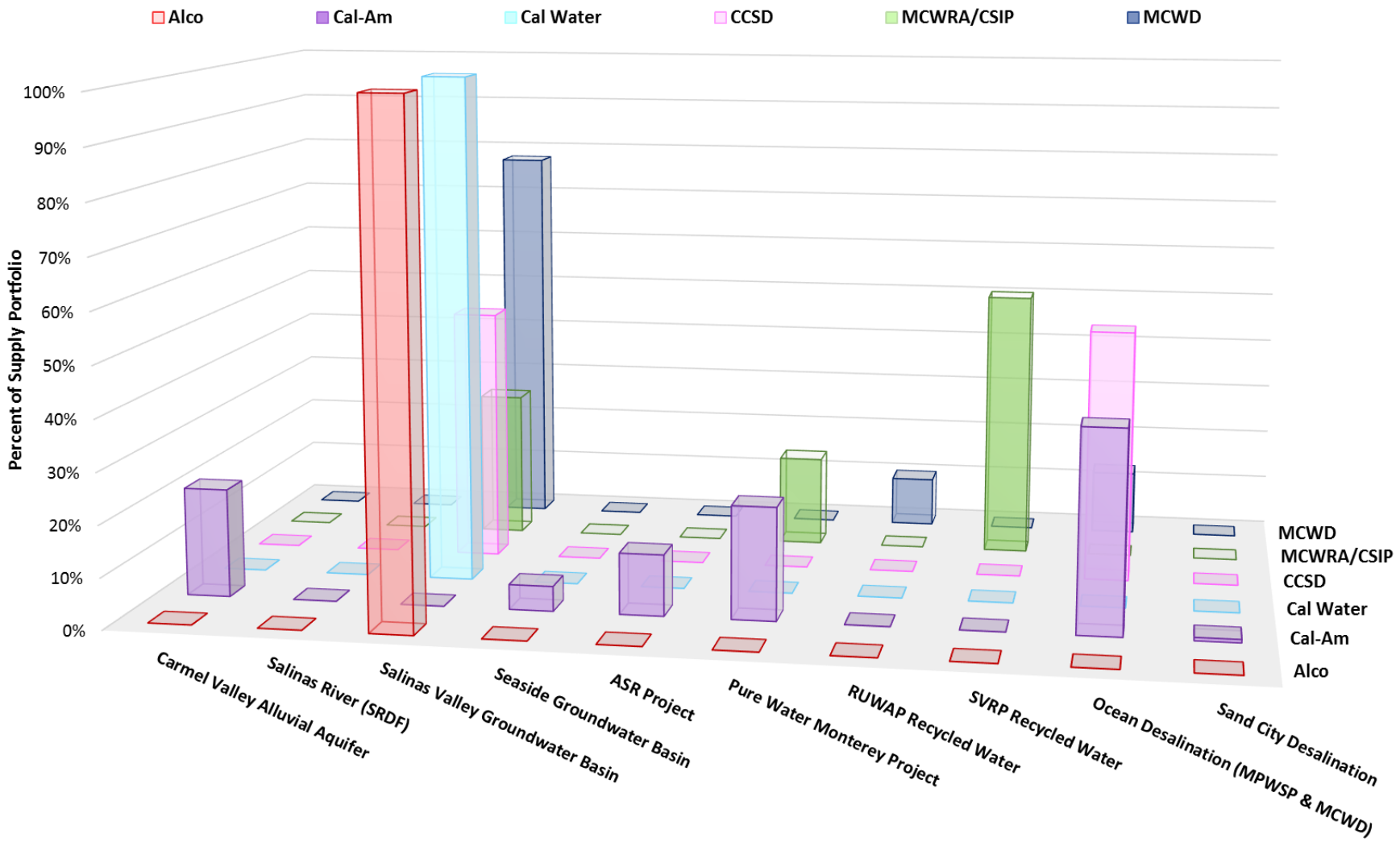

Figure 4-5. Significance of Supply Sources to Local Agencies' Drought Portfolios, as Projected for a Third Consecutive Drought Year in 2035

To frame the consequence of reduction or loss of supplies in Table 4-4, the significance of the supply sources to the region's supply portfolio was considered (assuming the third consecutive dry year in 2035). The consequence score is a quantitative score based on the weighted average of each individual supply source volume to total regional overall supply volume for all sources. A higher percentage indicates a supply that is a larger portion of the region's supply portfolio.

As illustrated in Figure 4-6, the vulnerability of the region's drought supply sources is assessed using a combination of the likelihood and consequence of supply reduction or loss. In addition, the significance of sources to individual agencies' drought supply portfolios is shown (as bar charts) in Figure 4-6. Key take aways from this risk matrix for 2035 during a third consecutive drought year are as follows:

- High vulnerability supplies:
  - The SVGB has the highest vulnerability to the region due to loss or reduction. The SVGB is the supply with the highest consequence of supply loss or reduction in this region. 57 percent of the DCP study area supply is from the SVGB. Two agencies rely 100 percent on this supply to meet their water demands. The moderate likelihood of loss or reduction of this supply is due mainly to climate change impacts, potential regulatory constraints such as SGMA, infrastructure costs constraints, and water quality impacts.
  - The drought mitigation measures should focus on reducing the consequence of supply loss or reduction of the SVGB by providing for reduced reliance on the SVGB as a supply during drought periods in the future.
- Medium vulnerability supplies
  - The future Ocean Desalination supply is considered a medium vulnerability to the region due to loss or reduction because although only 10 percent of the DCP study area supply is from the Ocean Desalination, it's likelihood of loss or reduction due to regulatory, cost constraints, and sea level rise is moderate.
- Low vulnerability supplies
  - Although still very important to the region's water supply portfolio, most of the other supplies in the region have a lower regional vulnerability to loss or reduction due to either of the following reasons:
    - There is a moderate reliance on these supplies compared to the overall regional supply portfolio combined with a lower likelihood of loss or reduction of availability of the supply during drought years.
    - There is a low to no reliance on these supplies expected during drought periods.

Table 4-4. Summary of Uncertainty Factors Contributing to Potential Reduction or Loss of Critical Resources

Supply Source	Climate Change	Infrastructure Susceptibility and Dry Year Supply Limitations	Regulatory, Environmental, and Water Rights Constraints	Cost Constraints and Affordability	Source Water Quality Degradation	Likelihood – Cumulative Effect of Factors (scale of 1 to 5, low to high likelihood)	Consequence – Significance to Regional Drought Supply Portfolio (in 2035, third consecutive dry year)
Carmel Valley Alluvial Aquifer	• Altered/extreme precipitation patterns (less in spring, higher-intensity storms in winter) • More frequent and severe droughts (adverse impacts to reliable yield and reduced groundwater recharge/deliveries) • Higher water temperatures/degraded surface water quality	• Varies by agency/water source and based on hydrologic conditions • Regulatory uncertainty related to in-stream/ downstream flow requirements • Seismic risk varies by agency/water source and infrastructure condition and proximity to faults	• Changes in current water rights are forthcoming which will result in curtailments of existing supply • Maintaining water rights • Regulatory uncertainties that can reduce deliveries (e.g., potential removal of the Los Padres Dam for Endangered Species Act concerns) • Increased environmental regulations • In-stream/downstream flow requirements • Unforeseen changes in release requirements and storage rights	• Rising costs to address needed infrastructure improvements and regulatory compliance, including subsidence of aqueducts caused by groundwater overdraft • Customer affordability issues with rising cost of water	• Saltwater intrusion due to droughts • Sea level rise • Algal by-products/ blooms during drought • Salinity and nutrients	3	4%
Salinas River (SRDF)	• Altered/extreme precipitation patterns (less in spring, higher-intensity storms in winter) • More frequent and severe droughts • Higher water temperatures/degraded surface water quality	• Varies by agency/water source and based on hydrologic conditions • Susceptible to supply reductions and changes in timing • Regulatory uncertainty related to in-stream/ downstream flow requirements • Seismic risk varies by agency/water source and infrastructure condition and proximity to faults	• Potential changes in current water rights • In-stream/downstream flow requirements • Unforeseen changes in release requirements and storage rights • Maintaining water rights	• Pumping costs • Infrastructure (e.g., storage) costs, including rehabilitation and replacement of aging infrastructure	• Salinity and nutrients • Agriculture runoff • Wastewater discharges • Algal blooms (also potentially affect treatability and decrease production capacity)	5	0%
Salinas Valley Groundwater Basin	• Altered/extreme precipitation patterns (less in spring, higher-intensity storms in winter) • More frequent and severe droughts (adverse impacts to reliable yield and reduced groundwater recharge/deliveries) • Sea-level rise (seawater intrusion/water quality impacts, threats to facilities near coast lines, and limited ability to drawdown the aquifers)	• Special care must be taken to avoid overdrafting, which can lead to subsidence • Sanding concerns • Facilities and infrastructure susceptible to seismic events	• More stringent water quality regulations that could impact the way agencies operate and manage this supply • Uncertain impacts of the SGMA	• Costly fisheries projects to maintain access to recharge supply • Treatment costs with increasingly stringent water quality regulations • Customer affordability issues with rising cost of water	• Varies by agency and basin • Saltwater intrusion due to droughts • Some constituents of concern to local agencies include: hardness, salinity, nutrients, Chromium 6, Methyltert-butyl ether (MTBE), and arsenic	3	57%
Seaside Groundwater Basin	• Altered/extreme precipitation patterns (less in spring, higher-intensity storms in winter) • More frequent and severe droughts (adverse impacts to reliable yield and reduced groundwater recharge/deliveries) • Sea-level rise (seawater intrusion/water quality impacts, threats to facilities near coast lines, and limited ability to drawdown the aquifers)	• Special care must be taken to avoid overdrafting, which can lead to subsidence • Facilities and infrastructure susceptible to seismic events	• More stringent water quality regulations that could impact the way agencies operate and manage this supply • Uncertain impacts of the SGMA	• Costly fisheries projects to maintain access to recharge supply • Treatment costs with increasingly stringent water quality regulations • Customer affordability issues with rising cost of water	• Varies by agency and basin • Saltwater intrusion due to droughts • Some constituents of concern to local agencies include: hardness, salinity, nutrients, Chromium 6, MTBE, and arsenic	3	1%
ASR Project	• Altered/extreme precipitation patterns (less in spring, higher-intensity storms in winter) • More frequent and severe droughts (adverse impacts to reliable yield and reduced groundwater recharge/deliveries) • Less years available for recharge opportunities resulting in reduced supply	• Highly dependent on hydrological conditions, unreliable source during drought years • Facilities and infrastructure susceptible to seismic events	• More stringent water quality regulations that could impact the way agencies operate and manage this supply	• Treatment costs with increasingly stringent water quality regulations • Pumping costs	• Some constituents of concern to local agencies include: hardness, salinity, nutrients, and arsenic	3	2%

Table 4-4. Summary of Uncertainty Factors Contributing to Potential Reduction or Loss of Critical Resources

Supply Source	Climate Change	Infrastructure Susceptibility and Dry Year Supply Limitations	Regulatory, Environmental, and Water Rights Constraints	Cost Constraints and Affordability	Source Water Quality Degradation	Likelihood – Cumulative Effect of Factors (scale of 1 to 5, low to high likelihood)	Consequence – Significance to Regional Drought Supply Portfolio (in 2035, third consecutive dry year)
Pure Water Monterey Project	• More frequent and severe droughts, which may reduce wastewater flows and the amount of available recycled water available • Concentrated wastewater flows (with reduced flows), necessitating treatment changes • Sea-level rise (seawater intrusion/water quality impacts, threats to facilities near coast lines, and limited ability to drawdown the aquifers)	• Once constructed, will provide a highly reliable local supply in the event of a drought	• Increasingly stringent regulations on recycled water treatment and distribution • Unclear rights to wastewater effluent and institutional agreements needed • Competition for wastewater effluent between potable and non-potable reuse	• High cost of building and maintaining separate distribution system for recycled water and potentially retrofitting customer sites	• Challenging to provide recycled water quality that meets customers' standards • High salinity problematic for sensitive end uses	2	9%
RUWAP Recycled Water	• More frequent and severe droughts, which may reduce wastewater flows and the amount of recycled water available • Concentrated wastewater flows (with reduced flows), necessitating treatment changes • Sea-level rise (seawater intrusion/water quality impacts, threats to facilities near coast lines, and limited ability to drawdown the aquifers)	• Once constructed, will provide a highly reliable local supply in the event of a drought	• Increasingly stringent regulations on recycled water treatment and distribution • Unclear rights to wastewater effluent and institutional agreements needed • Competition for wastewater effluent between potable and non-potable reuse	• High cost of building and maintaining separate distribution system for recycled water and potentially retrofitting customer sites	• Challenging to provide recycled water quality that meets customers' standards • High salinity problematic for sensitive end uses	2	2%
SVRP Recycled Water	• More frequent and severe droughts, which may reduce wastewater flows and the amount of available recycled water available • Concentrated wastewater flows (with reduced flows), necessitating treatment changes	• Highly reliable local supply in the event of a drought	• Increasingly stringent regulations on recycled water treatment and distribution • Unclear rights to wastewater effluent and institutional agreements needed • Competition for wastewater effluent between potable and non-potable reuse	• High cost of building and maintaining separate distribution system for recycled water and retrofitting customer sites	• Challenging to provide recycled water quality that meets customers' standards • High salinity problematic for sensitive end uses	2	14%
Ocean Desalination (future)	• Sea-level rise (seawater intrusion/water quality impacts and threats to facilities near coast lines)	• Once constructed, will provide a highly reliable supply in the event of a drought • In seismic events, potential vulnerability to pipelines supplying facility	• Fisheries protection • Concentrate discharge under NPDES permit • Relatively high energy requirements	• Costs of constructing new or expanding existing desalination plants • Potentially increased per unit costs with increased salinity • Increasing energy costs (depending on source)	• Very high-quality water • Potentially rising salinity handled by treatment technology	3	10%
Sand City Desalination	• Sea-level rise (seawater intrusion/water quality impacts and threats to facilities near coast lines)	• Higher salinity in brackish feedwater would trigger a lower production of freshwater in order to meet NPDES ocean discharge quality requirements • In seismic events, potential vulnerability to pipelines supplying facility	• Fisheries protection • Concentrate discharge under NPDES permit • Relatively high energy requirements	• Potentially increased per unit costs with increased salinity • Increasing energy costs (depending on source)	• Very high-quality water • Rising salinity in brackish feedwater would reduce volume of freshwater production	1	<1%

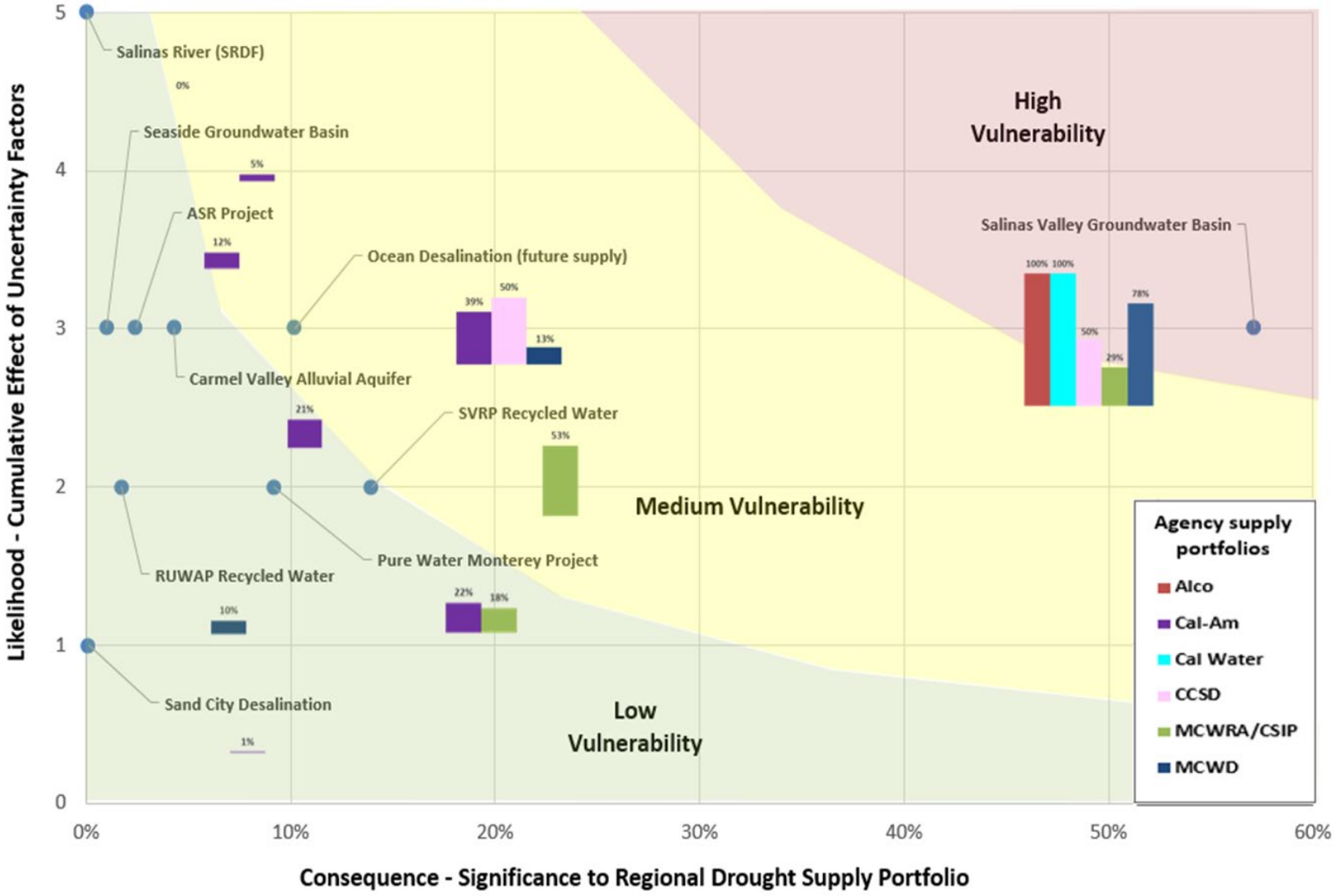

Figure 4-6. Vulnerability of Regional Drought Supplies as Projected for Third Consecutive Dry Year Conditions in 2035

4.4 Climate Change Risks

Climate change is projected to make resolving the water supply and demand imbalance even more challenging. Climate change projections from the Intergovernmental Panel on Climate Change (IPCC) and Scripps Institute of Oceanography indicate that global temperatures could increase by 4 degrees Celsius by the end of the century (IPCC, 2014). Precipitation amounts could also potentially be altered. Historically, California has had a hydroclimate with significant inter-annual variability even in the absence of anthropogenic climate change. Anthropogenic climate change may increase the frequency of extreme hydrologic events such as floods or droughts. This section describes potential impact factors as a result of the uncertainty surrounding climate change.

4.4.1 Precipitation

While there is a range of forecasts for changes in total precipitation (i.e., wetter or drier), most climate projections indicate that there will be greater variability in annual precipitation (DWR, 2015). California has created several web-based interfaces to help local and regional planners "downscale" climate models for local planning purposes. The Cal-Adapt website is one that provides a geographically based climate model interpretation tool that generates predictive changes to climate variables using different IPCC greenhouse gas (GHG) emissions projections. The Cal-Adapt tool was used to model changes in climate variables that may affect water resources within the Monterey Peninsula Integrated Regional Water Management (IRWM) planning area. The Cal-Adapt tool predicts that average rainfall will begin to decline throughout the Greater Monterey County region with projected decreases of approximately three inches in the Carmel and Salinas Valley region (20 percent) by 2100 (High Emissions Scenario A2). The uncertainty surrounding climate change, with the possibility of more frequent and more severe droughts in the future, necessitates consideration of mitigation measures that are resilient to a range of possible climatic conditions.

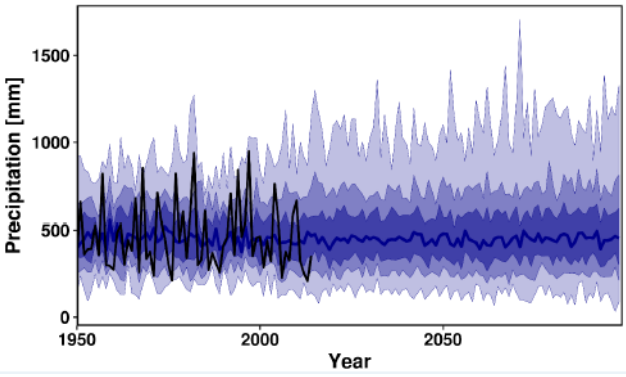

Figure 4-6. Basin Study Climate Change Modeling for Precipitation

Basin Study climate change modeling for precipitation shows an increase in variability and extremes but there is no clear consensus on quantifiable future increases or decreases in the Basin. averages.

Initial climate change modeling for precipitation in the Basin Study, as presented at the May 31, 2018 joint Basin Study and DCP workshop based on localized constructed analogs from Coupled Model Intercomparison Project 5 (CMIP5), 64 projections, and 1/16 degree grid, shows that precipitation increases in some projections and decreases in others with no clear consensus. Many projections show an increase in the variability and extremes. The potential impacts on supply indicates increased occurrences of floods and droughts. Figure 4-6 illustrates the initial modeling results for precipitation in the basin. As this modeling is finalized and quantitative information is developed for this region it is recommended that this information be incorporated into the next DCP update analysis of demands and supply reliability.

4.4.2 Temperature

Initial climate change modeling for precipitation in the Basin Study, as presented at the May 31, 2018 joint Basin Study and DCP workshop based on localized constructed analogs from CMIP5, 64 projections, and 1/16 degree grid, predicts the occurrence of temperature increases in all projections with a strong consensus. Many projections also show an increase in variability and extremes, as shown in Figure 4-7. Potential impacts of increased temperatures could have an impact on water demands, especially agricultural and outdoor demands.

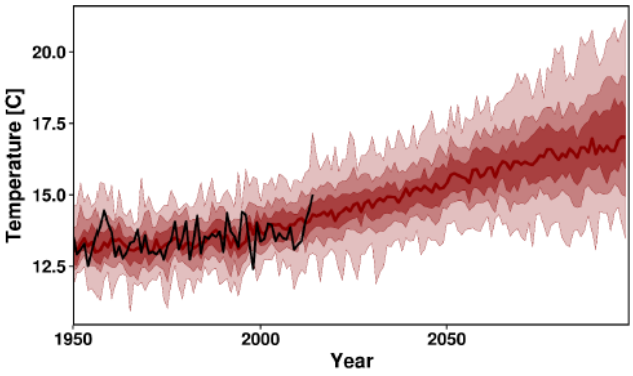

Figure 4-7. Basin Study Climate Change Modeling for Temperature

Basin Study climate change modeling for temperature shows a strong consensus predicting an increase in Basin average temperatures in the future. At this point in time there is no quantifiable data on the temperature increase expected nor the impact on future water demands.

4.4.3 Water Demands

Increasing temperatures could result in drier rangelands. While domestic landscaping water needs could potentially increase, typical customer response in the area has shown that customers adapt to using less water by converting to drought tolerant landscaping and reducing turf irrigated areas. Agriculture water use is expected to increase to offset higher temperature and increased evaporative losses. This finding was not used to adjust the demand projections described in Section 2 of this report. This information will be reflected in the demand projections in the next update of this DCP. Higher temperatures could also result in longer growing seasons which would contribute to increased demands. During the 2012 to 2016 drought, MCWRA suspended diversions from the SRDF, which also provides irrigation water to growers in the CSIP area, because of insufficient supply in the Nacimiento and San Antonio reservoirs. Growers in the area compensated for the drought by increasing pumping from local wells, which can undermine achievements in slowing seawater intrusion in the Castroville area.

4.4.4 Surface Water Resources

Changes in climate that affect the amount and frequency of local rainfall can have dramatic impacts on available local surface supplies. Decreased inflow from flashier or more intense runoff, increased evaporative losses, and warmer and shorter winter seasons can reduce the amount of water stored in surface water reservoirs and aquifers. For the Monterey Peninsula, an extreme lack of surface storage in the Carmel River watershed limits the capability to withstand extreme droughts through reservoir releases. In drought periods a lack of runoff and dewatering of the aquifer to meet domestic demand depletes aquifer storage and dries up the river for 10 to 11 miles.

4.4.5 Groundwater Resources

Changes in local hydrology could affect natural recharge to the local groundwater aquifers and the quantity of groundwater that could be pumped sustainably over the long-term in some areas. Reductions in surface water supplies (e.g., curtailed diversions from the Carmel River), combined with changes in local hydrology, could lead to less water available for recharge of local groundwater basins. Changes to water rights and environmental regulations also influence management and operations of water facilities (e.g., SGMA). Both the Salinas Valley and Seaside groundwater basins

have been experiencing overdraft for many years. Intensified periods of drought would likely exacerbate this overdraft trend at both basins.

4.4.6 Sea Level Rise

Sea level is projected to increase by 4 to 66 inches along the California coast by 2100[1]. This increase in sea level combined with overdrafting of coastal wells may increase salinity intrusion into coastal aquifers. The Carmel River system, SVGB, and Seaside Groundwater Basin are all hydraulically connected to Monterey Bay and are subject to saltwater intrusion. While the Carmel River system and the Seaside Groundwater basin have not shown signs of seawater intrusion, the SVGB has. Should periods of drought intensify, the lack of sufficient recharge in the SVGB could place domestic water supply at risk. Continued groundwater pumping to satisfy demands risks is compromising water quantity and quality due to seawater intrusion. Should groundwater levels continue to fall near the coast in this unconfined aquifer, data from the 1987-91 drought shows that the existing positive gradient normally exhibited in the aquifer could reverse and more seawater could begin to mix with freshwater. Groundwater extraction, primarily for agricultural use, continues to exceed the recharge rate and seawater intrusion continues to move inland as growers continue to rely on groundwater production to provide irrigation water. Continued drought will intensify this reliance and speed up the rate of saltwater intrusion. As sea level rises, it may become increasingly difficult to maintain a positive groundwater level gradient to keep saline waters from intruding deeper into the aquifer.

The Basin Study is reviewing updated sea level projections for California. The sea level scenarios will be paired with climate scenarios based on projected temperature change.

4.4.7 Water Quality

Warmer temperatures may increase algae growth in the Carmel and Salinas rivers as well as in the Nacimiento and San Antonio Reservoirs. Increases in algae growth can increase the frequency of taste and odor events, increase total organic carbon (TOC), and increase the formation of disinfection by-products. Low water levels in rivers and reservoirs combined with the presence of algae can interrupt water deliveries during the peak demand season, affecting the ability of water agencies to provide a reliable supply of healthy, clean drinking water and or increase groundwater pumping that further exacerbates the overdrafting problem facing the groundwater basins in the region. Overdrafting could lead to increased seawater intrusion which would further degrade water quality.

Should periods of drought increase, so too could the concentration of agricultural and urban stormwater runoff that make their way into the Salinas River. Since surface flows within the river would be reduced during intensified periods of drought, pollutants discharged to the river would be more concentrated and may cause serious adverse impacts in downstream environments, including critical habitat for steelhead as well as other sensitive habitats within the MBNMS.

Increases in flash floods may increase surface water turbidity in imported and local water supplies. A drier climate may also lead to an increase in wildfires, which can degrade surface water supplies and result in reduced groundwater recharge.

[1] 2012 National Research Council, Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future report.

4.5 Impacts of Drought Across Various Sectors

Potential drought impacts extend beyond the supply sources themselves. A lack of water can trigger impacts to various sectors across the region, as summarized in Table 4-5 and further described by sector below. These impacts include those experienced by local agencies during the 2012 to 2016 drought as well as impacts that are likely to occur in a future drought in the region.

Although not every agency is affected to the same degree, all local agencies are susceptible to most if not all of these impacts.

Table 4-5. Drought Impacts Across Sectors

Potential Drought Impact	Agriculture	Energy	Environmental (Fish/Wildlife)	Local Business	Public Health	Recreation	Residential	Tourism
Increased water temperatures	X		X					
Increased nutrient levels, harmful algal blooms			X	X	X	X		X
Increased salinity in water and soil	X	X	X	X				
Reduced reservoir levels	X	X	X	X		X	X	X
Reduced stream flow	X	X	X	X	X	X	X	X
Reduced groundwater supply	X	X	X	X	X		X	
New development limitations/moratorium				X			X	
Loss of vegetation, wetlands, crops	X		X	X	X		X	X
Air quality degradation			X	X	X	X		X
Land subsidence	X		X	X			X	
Increased soil erosion	X		X	X	X	X	X	X
Increased evapotranspiration (ET)	X		X	X		X	X	
More frequent and intense wildfires[a]		X	X	X	X	X	X	X

a. *Although the cause of wildfires is nuanced, periods of drought following periods of above average rainfall can result in very favorable wildfire conditions.*

Many of the impacts discussed below are interconnected and may result in a positive feedback cycle, increasing the intensity of drought impacts on other sectors. For example, the death of forest, meadows, and other vegetation increases wildfire intensity, which causes additional erosion and worsens water quality, which impacts the aquatic food chain, which impacts recreational and commercial fisheries.

In addition, local water agencies acknowledge that many drought impacts, especially those related to public health and residential impacts, fall disproportionately on low-income communities, communities of color, and other frontline communities (e.g., disabled and or homeless populations), thereby exacerbating environmental justice issues.

4.5.1 Agriculture

Stakeholders. Farmers/ranchers, wineries, processors, farm workers, agricultural equipment suppliers, grocery stores, consumers

During drought conditions, soil salinity can increase because there is less water available to leach salts from the soil. This can significantly reduce agricultural production, since many crops are sensitive to salinity levels. Drought can also lead to higher soil erosion, since dry soil is more easily swept away by wind. When topsoil erodes, the land becomes less fertile. Overall reduced water supply can limit the crop production. All of these factors can lead to higher consumer costs for agricultural products and loss of income for the supply chain.

Climate change affects the wine makers directly. The changing climate is causing the vineyard owner to change varietals to match the new climate in the region.

A 2015 analysis of the economic impact of the drought on the California agricultural economy estimated the total economic loss as $2.7 billion, with loss of 18,600 jobs. The impact on the local agricultural economy due to the 2012 to 2016 drought has not been estimated.

4.5.2 Energy

Stakeholders. Local businesses and residents, water agencies, wastewater agencies, electricity providers.

Lower stream flow and reservoir levels lead to a decrease in available hydropower for MCWRA, and an increase in use of non-renewable energy sources may occur, resulting in greater GHG emissions. Lower groundwater levels require more energy for pumping, and wildfires may impact energy transmission lines.

In addition, higher salinity in source water may increase the energy required for water treatment (e.g., reverse osmosis can remove salinity, but it is an energy-intensive treatment method).

4.5.3 Environmental (Fish/Wildlife)

Stakeholders. Wildlife, ecosystems, tribal communities, environmental non-governmental organizations (NGO)

Drought can degrade habitat and trigger holistic ecosystem impacts and system failures. Low streamflow, higher temperatures, and degraded water quality affect aquatic ecosystems as well as terrestrial wildlife that rely on surface water, floodplains, wetlands/marshes, and surrounding soil and vegetation. Instream flow requirements set for the Carmel River and reservoir releases required in the Salinas River, in order to protect steelhead habitat and encourage adult migration, could be in jeopardy of not being met.

Agricultural and urban stormwater runoff discharges to the Salinas River, which flows to the Monterey Bay. Pollutants discharged to the river may cause serious adverse impacts in downstream environments, including critical habitat for steelhead as well as other sensitive habitats within the MBNMS. Reduced surface flows in the Salinas River due to drought, have the potential to increase the concentration of these pollutant loads. The rate and extent of soil erosion and wildfires increase with drought and can further degrade water quality. In addition, low groundwater levels can impact stream flows by causing reduced baseflow.

Warming temperatures as a result of climate change shift populations of krill, snails and small fish needed to sustain the population of larger fish and marine mammals.

4.5.4 Local Business (Commercial/Industrial) and Regional Economy

Stakeholders. Businesses, employees

Drought may affect local businesses, employment rates, and the region's economy directly and indirectly. Water use restrictions can directly affect businesses and industries that provide water-related services (e.g., power-washing). Degraded water quality can affect industrial users and limit specific applications. In addition, drought impacts to other sectors (e.g., agriculture and energy) can increase product costs and potentially reduce discretionary consumer spending (e.g., entertainment, dining, and retail). Water rates may increase as agencies rely on supplemental/alternative supply sources or incur increased O&M costs. Supply limitations can also lead to land development restrictions.

In 2010, the economic consulting firm *The Brattle Group* concluded a conservatively-estimated 50 percent water supply reduction in this region would impact industrial and commercial customers in that they would be forced to reduce output and employment to cope with reduced water supplies. It is estimated that annual industrial sales losses within the Cal-Am service territory would be $261 million, annual commercial sales losses would be $742 million.

4.5.5 Public Health

Stakeholders. Residents, visitors, businesses, hospitals, other health related facilities, environmental NGOs

Increased soil erosion and wildfires can lead to degraded air quality, causing respiratory health problems and increasing the number of patients at local hospitals and health clinics. For example, during the 2016 Soberanes Fire following four years of drought Carmel Valley experienced prolonged days of an Air Quality Index (AQI) in the range of 151-200 deemed "unhealthy", as compared to normal conditions of an AQI between 10 and 20.

Degraded source water quality can impact public health due to increased harmful algal blooms and toxins in water bodies. In the midst of the drought, late spring 2015, the Monterey Bay and elsewhere on the West Coast experienced one of the most toxic algal blooms on record. The bloom affected wildlife, including anchovies, sea birds, and sea lions, and led to the closure of commercial fisheries. Scientists have asserted that the extremely high concentrations of domoic acid were probably caused by unusual ocean chemistry, specifically a low ratio of silicate to nitrate in Monterey Bay waters. Because the unusual chemistry of the Monterey Bay waters coincided with the large-scale warming of the Pacific Ocean, the researchers suspect there may be a link between the two phenomena. Lower stream flows can cause vector issues, such as mosquitos and rodents. Personal hygiene can be impacted during drought as people wash their hands less frequently. In addition, a lack of water can contribute to higher stress and anxiety levels.

4.5.6 Recreation

Stakeholders. Residents, visitors, businesses, environmental NGOs

Figure 4-8. Lake Nacimiento During Drought Conditions in 2014

Lower stream flows and reduced reservoir/lake levels can impact recreational activities, such as rafting, kayaking, boating, and fishing, and access to boat launches. Figure 4-8 shows Lake Nacimiento, Monterey County's largest recreational lake, during drought conditions in 2014. Degraded water quality can compromise the safety of swimming or fishing. Harmful algal blooms may also increase and can cause illness or death if ingested. Increased evapotranspiration (ET) and soil erosion can make it harder to maintain playing fields and hiking trails. Wildfires can cause closures of recreation areas and impact the user experience.

4.5.7 Residential

Stakeholders. Residents, businesses

Water rates may increase as agencies rely on supplemental/alternative supply sources or incur increased O&M costs. Supply limitations can also lead to land development restrictions. Additionally, drought can adversely affect residential landscapes due to outdoor watering restrictions or tree health and lead to a decrease in property values. In some locations, residential land and properties also become more vulnerable to damage from wildfires.

In 2010, the economic consulting firm *The Brattle Group* also concluded a conservatively-estimated 50 percent water supply reduction in the region would have negative consequences for residential customers of between $17 and $51 million annually.

4.5.8 Tourism

Stakeholders. Visitors, businesses, hotels, restaurants

Monterey County hosts 9 million visitors a year, generating $2.3 billion in revenue, and 22,000 jobs in the hospitality sector, the primary economic driver on the Monterey Peninsula. In 2009, the Marriott hotel estimated that in order to achieve a 10 percent savings in water use it would require a 10 percent decrease in business. The local hospitality association also calculated at that time that every 10 percent reduction in hotel occupancy would translate to a reduction in direct spending of $180 million per year. The association also determined a 30 percent reduction in water use could cause the loss of 10,000 to 12,000 jobs in the sector. Since that time, rules were introduced mandating that all non-residential water users retrofit existing water using facilities with high efficiency facilities. Reduction in landscape water use is also encouraged. Additional reduction in water use will be achieved as non-residential properties change hands and are subject to requirements to retrofit with ultra-high efficiency facilities.

Drought can affect local scenery (e.g., through wildfires, soil erosion, and algal blooms), causing certain tourist attractions to be less desirable or inaccessible. Loss of aquatic species and reduced environmental flows lead to less fishing, boating, hiking, and recreational activities. Therefore, hotels and restaurants are impacted due to reduced tourism.

4.6 Opportunities to Reduce Regional Drought Vulnerability

The local agencies aim to cooperatively develop regional projects to strengthen the region's long-term water supply reliability and drought resilience.

As a guiding principle, all drought strategies described in this DCP engage multiple local agencies and provide increased regional water supply reliability during water supply shortages. For the purpose of this DCP, drought strategies are defined in the following two distinct ways:

- **Drought response actions** are specific actions triggered during specific drought stages to manage the limited supply and decrease the severity of immediate impacts (e.g., curtailing lawn watering). Drought response actions use temporary, short-term infrastructure and activities that agencies and the public can implement quickly and that provide expeditious benefits. Section 5 includes further discussion on the drought response actions identified by the local water agencies.
- **Drought mitigation measures** are actions, programs, and strategies implemented during non-drought periods to address potential risks and reduce potential drought-related impacts when the event occurs. Many drought mitigation measures identified by the local agencies involve leveraging/expanding existing assets and/or potentially constructing new facilities—such as desalination plants, interties, storage, and treatment—which typically require thoughtful and often lengthy planning and implementation. Potential drought mitigation measures are described in more detail in Section 6.

Section 5

Regional Drought Response Actions

Water supply planning for the area should focus on reducing demands and building resiliency into the region's limited and vulnerable water supplies.

Drought response actions are near term actions triggered during specific stages of drought to manage the limited supply and decrease the severity of immediate impacts. Response actions can be quickly implemented and provide expeditious benefits.

This section describes the local agencies' WSCPs. WSCPs describe the local agency's triggers for stages of drought and their associated supply shortage reductions. Also discussed are regional initiatives for drought response coordination in the DCP area and future drought response actions.

5.1 Water Shortage Contingency Plans

Urban agencies regularly compare their amount of supply to triggers (thresholds) to determine whether drought conditions exist and, if so, what drought response actions will be taken. Retail and wholesale urban water suppliers in California are required to adopt and submit a WSCP every 5 years to DWR. WSCPs are required under the Urban Water Management Planning Act, which is in the CWC, Sections 10610 through 10656, and amended in 2015. UWMPs document anticipated supplies and demands over a 20- to 25-year planning horizon under different hydrologic conditions and support long-term water supply planning.

Section 5 Summary

Key Take-Aways

- Each local water agency has a water shortage contingency plan (WSCP) that guides actions to be taken during a drought.
- These WSCPs range from one to five or less stages of drought with various supply shortage triggers based on factors affecting each agency's unique portfolio of supplies.
- During the drought from 2012 through 2016 the local agencies participated in a Countywide Interagency Drought Task Force. This task force is no longer active.
- There are other ways the local agencies are coordinating regionally including the Salinas and Carmel Rivers Basin Study, Greater Monterey Integrated Regional Water Management (IRWM), Salinas Valley Water Management Group, Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan (IRWMP), and the Salinas Valley Basin Groundwater Sustainability Agency.

Recommended Actions

- Local Agencies continue to meet as the DCP Implementation Group to coordinate efforts such as Annual Water Budget Forecasts and UWMP and WSCP five-year updates as well as coordinated drought response actions.
- Local agencies work together to have coordinated drought messaging and media runs.
- Develop infrastructure improvements to existing water supply projects to expand the dry year water supply from the SRDF and Pure Water Monterey.

5.1.1 Water Shortage Contingency Plan Elements

WSCPs document water suppliers' plans for responding to water shortages and are required to include the following elements[2]:

- **Stages of action.** Stages of action implemented by water agencies in response to supply shortages, including up to a 50 percent supply reduction, and a framework to assign specific supply conditions to each stage (CWC Section 10632(a)). The WSCP must identify stages of action in response to water supply shortages and describe specific water supply conditions applicable to each stage. The WSCP must include up to a 50 percent reduction in water supply, and DWR recommends that the WSCP address conditions exceeding a 50 percent reduction in water supply. DWR also recommends that the triggers for each stage be clearly defined and be able to be assessed frequently.
- **Prohibitions on end users.** Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, the use of potable water for street cleaning (CWC Section 10632(a)(4)). Applies only to retail agencies.
- **Penalties, charges, and other enforcement.** Penalties or charges for excessive use (CWC Section 10632(a)(6)). Applies only to retail agencies.
- **Consumption-reduction methods.** Consumption-reduction methods are actions to reduce water demand within a service area, whereas prohibitions limit specific uses of water. Each urban water supplier has a choice regarding the types of consumption-reduction methods to use in its WSCP analysis. The methods must be appropriate for the area and capable of reducing water use by up to 50 percent. CWC Section 10632(a)(5) requires the water supplier to implement consumption-reduction methods during the most restrictive stages of a water shortage.
- **Determining water shortage reductions.** A mechanism for determining actual reductions in water use. The local agencies record water production data. Totals are reported monthly to DWR and are incorporated into water supply reports. The local agencies maintain water use records on individual customer accounts and monitor production figures during all stages of water shortages.
- **Revenue and expenditure impacts.** An analysis of the impacts of each water shortage action and condition on the water agency's revenues and expenditures, and proposed measures to overcome those impacts (e.g., development of reserves and rate adjustments) (CWC Section 10632(a)(7)).
- **Resolution or ordinance.** A draft water shortage contingency resolution or ordinance. For example, an ordinance may require implementation of mandatory conservation, a water restriction plan, and/or a drought surcharge and may prohibit various wasteful water uses (e.g., washing sidewalks and driveways with potable water, cleaning or filling decorative fountains, or allowing plumbing leaks to go uncorrected for more than 72 hours).
- **Catastrophic supply interruption plan.** WSCPs describe actions water agencies take to prepare for, and implement during, a catastrophic interruption of water supplies (e.g., a regional power outage, earthquake, or other disaster) (CWC Section 10632(a)(3)).
- **Three-year minimum water supply.** WSCPs include an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historical sequence for the agency's water supply (CWC Section 10632(a)(2)).

[2] WSCP requirements are subject to periodic update based on state mandates and may change in the future.

5.1.2 Drought Response Actions in Existing Water Shortage Contingency Plans

There are no overall regional stages and triggers but rather each local agency's WSCP guides actions to be taken during drought. It is unlikely that the region will work toward one set of uniform stages and triggers because the WSCPs approaches vary widely based on a number of factors, such as each agency has a different water supply portfolio, customer categories served, and policies and ordinances adopted by their decision-making bodies (Boards/Commissions). DWR's guidance for WSCPs provides a framework while allowing flexibility to adapt drought response actions based on agency-specific, local considerations. Although each of the local agencies have varying stages and triggers a key objective of continuing drought contingency planning efforts coming out of this plan is a regional coordinated effort to response actions to mitigate impacts of drought during times of drought as discussed in section 5.2 and 5.3 and Section 7.

The local agencies' WSCPs range from one to five or less stages of drought with various supply shortage triggers, based on factors affecting each agency's unique portfolio of supplies. The agencies use different water supply reduction indicators and triggers to define each stage of action as shown in Table 5-1. The indicators reflect each agency's basis for monitoring when demand reductions are necessary. Most agencies have specific triggers that are clearly defined and can be assessed frequently. Cal-Am's WSCP differs from others in that its first drought stage is in effect at all times to promote long-term water use conservation.

In responding to water shortages, most agencies begin with voluntary conservation encouraged by public outreach, often with restrictions on outdoor water use. During the drought from 2012 through 2016, each local agency experienced some degree of water shortage and triggered varying stages of its WSCP. The agencies vary widely in their responses to increasing shortages with mandatory water use restrictions, allowances, and/or penalties implemented, as follows:

- **Alco Water** has Stage 1 - 5 drought, with Stage 1 limiting irrigation and Stage 5 stopping all irrigation and hand car washes and requiring one-day fixes for customer leaks.
- **Cal Water** has Stage 1 - 4 drought, with Stage 4 triggering no irrigation.
- **Cal-Am** has Stage 1 - 4 drought, in compliance with the MPWMD 2016 Monterey Peninsula Water Conservation and Rationing Plan. Regulatory production targets for Cal-Am water systems within the Monterey Peninsula water resources system and physical storage targets for the Monterey Peninsula water resources system are set through water year 2019. Water conservation rates are triggered in Stage 3. Stage 4 triggers water rationing and prohibitions for new service connections to achieve the necessary reduction.
- **MCWD** has Stage 1 - 5 drought. Response actions elevate from voluntary to mandatory between Stages 2 and 3. At Stages 4 and 5, water rates may be increased.
- **CCSD** has Stage 1–5 drought. Response actions elevate from voluntary to mandatory between Stages 2 and 3. Stage 3 triggers the mandatory annual allotments for each connection based on the average use of all connections within that category during a base period proposed by the Water Conservation Commission and adopted by CCSD's Board of Directors. At Stages 4 and 5 water rates may be increased.

5.1.3 Updates to the WSCP Requirements

Governor Brown's May 2016 EO directed state agencies to "strengthen local drought resilience" by establishing a long-term framework for water use efficiency and drought planning. The EO specifically calls for updating WSCP requirements to include "adequate actions to respond to droughts lasting at least five years" and to remain "customized according to local conditions." In April 2017, DWR and the SWRCB released the final framework report, which describes the state agencies' recommendations for updated requirements for water use targets, monthly reporting, permanent

water use prohibitions, and water loss reductions. Proposed legislation to establish the recommendation as law is currently pending. If the proposed legislation advances, water agencies will be required to submit specific drought planning/projection information at two different frequencies as follows:

- **Each year**, agencies will submit an Annual Water Budget Forecast (projecting supplies and demands based on current conditions and an additional dry year), Shortage Response Actions (SRAs) tied to specific water shortage levels, and protocols for implementing drought response actions (e.g., communication plan, customer compliance/enforcement, implementation authorities, financial plan for drought condition, and monitoring/reporting).
- **Every five years**, as part of their updated UWMPs, agencies will submit updated WSCPs that include a five-year drought risk assessment that examines shortage risks for the next five or more consecutive years, based on historical drought hydrology, plausible climate and regulatory changes, and demand projections.

It is recommended that the participating agencies coordinate as they develop their Annual Water Budget Forecasts as well as their UWMP and WSCP updates every five years in an effort to develop consistent information and data that will be used for the next DCP update described in Section 7.

Table 5-1. Summary of Local Agencies' WSCPs - Drought Stages, Indicators, and Triggers

Agency	Stage 1		Stage 2		Stage 3		Stage 4		Stage 5	
	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger
Alco Water	No specific number	Limited irrigation As dictated by the CPUC	No specific number	Limited irrigation Water use limitations As dictated by the CPUC	No specific number	Limited irrigation Water use limitations As dictated by the CPUC	No specific number	Limited irrigation Water use limitations As dictated by the CPUC	No specific number	Prohibited irrigation Water use limitations As dictated by the CPUC
Cal-Am	No specific number—in effect always.	Prohibitions on water waste Stage is to promote water use efficiency.	1) Physical Trigger: Up to 5%. 2) Regulatory Trigger – Production Targets: Voluntary reduction = percentage overage of the annual production up to 5%. 3) Regulatory Trigger – Regulatory Order: Voluntary reduction = percentage directed by a governmental or regulatory agency. 4) Emergency Trigger: Determined by regulating entity	Triggers voluntary conservation and increases enforcement of water waste. 1) Physical Shortage Trigger: Total storage available falls below total storage required but at least 95% of total storage required. 2) Regulatory Trigger – Production Targets: When the most recent 12-month Cal-Am production from the Monterey Peninsula Water Resource System is greater than (but no greater than 105%) the then-current annual production target. 3) Regulatory Trigger – Regulatory Order: When the system is directed to reduce use by a governmental or regulatory agency. 4) Emergency Trigger: Determined by regulating entity due to catastrophic event.	1) Physical Trigger: Up to 5%. 2) Regulatory Trigger – Production Targets: Voluntary reduction = percentage overage of the annual production up to 5%. 3) Regulatory Trigger – Regulatory Order: Voluntary reduction = percentage directed by a governmental or regulatory agency. 4) Emergency Trigger: Determined by regulating entity	Triggers 25% and 40% rate surcharges to induce conservation 1) Stage 2 deemed unsuccessful and has failed to sunset after 6 months. 2) Physical Shortage Trigger: Total storage available falls below 95% total storage required. 3) Regulatory Trigger - Production Targets: When the most recent 12-month production is greater than 105% of the then-current annual production target and Stage 2 has not been implemented. 4) Regulatory Trigger - Regulatory Order: When directed by a governmental or regulatory agency. 5) Emergency Trigger: A water supply emergency exists.	1) Amount of mandatory reduction = the shortfall in Total Storage Available as compared to the total storage required; or 2) Amount of mandatory reduction = overage of the last 12-month actual production as compared to the then-current annual production target; or 3) Amount of mandatory reduction = determined by regulating entity	Residential rationing and prohibition of non-essential commercial water use 1) Stage 3 deemed unsuccessful and has failed to sunset after 8 months. 2) Physical Shortage Trigger: Stage 3 deemed unsuccessful for Cal-Am and Stage 2 deemed unsuccessful for non-Cal-Am systems for 8 months. 3) Regulatory Trigger - Regulatory Order: When directed by a governmental or regulatory agency. 4) Emergency Trigger: Determined by regulating entity. 5) Stage 4 shall not be triggered if the GM determines that production targets associated with the final CDO are to be met by adhering to the requirements of a lesser stage.	--	--
Cal Water	Minimal shortage, up to 10%	Outdoor water restrictions Water use prohibitions When Cal Water, the Commission, a wholesale water supplier, or other authorized government agency determines that measures are needed to reduce water consumption.	Moderate shortage, up to 20%	Outdoor water restrictions Water use prohibitions When Stage 1 Water Shortage restrictions are deemed insufficient to achieve water use goals established by Cal Water, the Commission, a wholesale water supplier, or other authorized government agency.	Severe shortage, up to 35%	Outdoor water restrictions Water use prohibitions When Stage 2 Water Shortage restrictions are deemed insufficient to achieve water use goals established by Cal Water, the Commission, a wholesale water supplier, or other authorized government agency.	Critical shortage, > 35%	Outdoor water restrictions Water use prohibitions When Stage 3 Water Shortage restrictions are deemed insufficient to achieve water use goals established by Cal Water, the Commission, a wholesale water supplier, or other authorized government agency.	--	--
CCSD	Loss of well or quantity of 10% of more	Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	20%	1) System malfunction resulting in > 10% shortage. 2) Increase in chlorides that threaten to exceed drinking water quality standard. 3) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	25 to 35%, mandatory compliance	1) System malfunction resulting in greater than 25% shortage. 2) Increase in chlorides are expected to exceed drinking water quality standard. 3) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	35 to 50%, mandatory compliance	Water rates may be increased 1) System malfunction resulting in > 35% shortage. 2) Increase in chlorides are expected to exceed drinking water quality standard. 3) Increase in volatile organic compounds (VOCs) concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 35%. 4) Directive by the State of California or the County of Monterey to implement demand. reduction measures in response to drought conditions.	> 50%, mandatory compliance	Water rates may be increased 1) System malfunction resulting in > 50% shortage. 2) Increase in chlorides are expected to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 50%. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.

Table 5-1. Summary of Local Agencies' WSCPs - Drought Stages, Indicators, and Triggers

Agency	Stage 1		Stage 2		Stage 3		Stage 4		Stage 5	
	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger	Supply Reduction (%)	Water Supply Condition/Trigger
MCWD	10%, voluntary compliance	Outdoor water restrictions Water use prohibitions 1) System malfunction resulted in up to a 10% shortage. 2) Increase in chlorides which do not threaten to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	20%, voluntary compliance	Outdoor water restrictions Water use prohibitions 1) System malfunction resulting in 10% - 25% shortage. 2) Increase in chlorides which may threaten to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	30%, mandatory compliance	Outdoor water restrictions Water use prohibitions 1) System malfunction resulting in 25% - 35% shortage. 2) Increase in chlorides which are expected to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced by up to 25%. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	40%, mandatory compliance	Outdoor water restrictions Water use prohibitions Water rates may be increased 1) System malfunction resulting in 35% - 50% shortage. 2) Increase in chlorides which are expected to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 35%. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.	> 50%, mandatory compliance	Outdoor water restrictions Water use prohibitions Water rates may be increased 1) System malfunction resulting in > 50% shortage. 2) Increase in chlorides which are expected to exceed drinking water quality standard. 3) Increase in VOC concentrations which do not threaten to exceed standards with blending or when remaining capacity is reduced more than 50%. 4) Directive by the State of California or the County of Monterey to implement demand reduction measures in response to drought conditions.

5.2 Regional Drought Response Coordination

Regional drought response activities including a media campaign, interim water recycling, and creation of task force during the 2012 to 2016 drought are described below.

Media Campaign. In 2014, using drought emergency reserve funds, MPWMD initiated a media campaign called "Save Water – Go Blue" that featured messaging across all major media platforms including five television stations in English and Spanish, five radio stations, four print publications and three social media channels. This outreach was targeted to Monterey County, and by virtue of the designated market area, Santa Cruz and San Benito counties were also exposed to the content. The campaign also included yard signs, a website (www.MontereyWaterInfo.org), and multiple community events. The events designated as "Drought Drive-Thrus" allowed residents and business in the MPWMD's jurisdiction to drive into the event and pick up pre-made water wise conservation kits. These kits included free nozzles, shower timers, low-flow showerheads, moisture meters, and other devices and literature on rebates. In conjunction with Cal-Am, MPWMD also held a series of Water Wise Workshops including "Laundry to Landscape" and "Rainwater Harvesting". These free events included classroom instruction as well as hands-on demonstration projects. Cal--Am (in partnership with MPWMD) submitted notices of the State-mandated restrictions to local newspapers. Letters were sent to all utility customers. Finally, the MPWMD conducted bi-lingual outreach to the hospitality and landscaping industries regarding mandated water conservation measures. Similar response actions would be undertaken in the event of a future drought and financial reserves have been replenished and are held to do so.

Interim Water Recycling. Also, in 2014, and again in 2015, almost 1 billion gallons of produce wash water were redirected from evaporation and percolation ponds for use as irrigation in the MCWRA Castroville Seawater Intrusion sector of the Study Plan Area. Such water is used for washing pre-packaged lettuce products and is high in phosphates due to equipment cleaning. Typically discharged without further beneficial use, the water was diverted in a low-cost temporary manner, tertiary treated, and delivered for irrigation use. The necessary infrastructure has now been made permanent as part of the Pure Water Monterey project. A 1,000 AF drought reserve of potable supply is being built up as part of the project so that in a future drought event the diversions to irrigation use may be reinstated on a temporary basis. Upon request of the growers through the MCWRA, up to 1,000 AF of stored water may be released by MPWMD to Cal-Am customers allowing a like amount of source water for Pure Water Monterey to be redirected to irrigation as an in-lieu transfer.

Creation of a Drought Task Force. During the 2012 to 2016 drought the County Office of Emergency Services convened local agencies in a Countywide Interagency Drought Task Force which included a range of state and local officials and the local agencies to discuss how to deal with the potential impacts of a historic drought. At the meetings the local agencies outlined the status of current water supplies, conservation efforts and contingency plans for potential future shortages. State and regional agency representatives also officered an overview of available funding for drought related projects. The Countywide Interagency Drought Task Force first met in May of 2014 and met every two months during the drought period. Monterey County developed a webpage with a variety of information related to the drought and notifications of upcoming Countywide Interagency Drought Task Force meetings. This Countywide Interagency Drought Task Force is currently not active but serves as a model for drought response in the future. There is no formal commitment as part of this DCP planning effort to reconvene this task force in a declared drought, however the DCP implementation group would work towards this. There is currently a re-occurring formal regional meeting with the GSA general manager, MCWRA, MCWD, M1W, and MPWMD at which drought and drought triggers is a standing agenda item

Formation of State-wide Group. In 2014, ACWA formed its Drought Action Group comprised of 38 water agencies around the state. The purpose of ACWA's Drought Action Group was to assemble experts in the water community who could leverage their collective knowledge of drought impacts and activities to recommend specific actions for ACWA's advocacy to the state and federal governments that could be undertaken to combat that and future droughts. There was an emphasis on identifying and cataloguing serious conditions in the areas of greatest need, water supply alternatives, potential solutions and/or needed actions and how those actions may affect other stakeholders. The Drought Action Group prepared and delivered a report of its findings to Governor Brown. MPWMD was one of the 38 participating agencies and would look to do so again in a future drought.

Golf Course Superintendents Voluntary Program. In below-normal rainfall years, the superintendents of the 7 golf courses in the Del Monte Forest meet, in conjunction with MPWMD, the Pebble Beach Community Services District, and the Carmel Area Wastewater District to set voluntary irrigation limits based on the expectation of reduced supplies.

Other ways the local agencies are coordinating regionally are as described below.

- **USBR Salinas and Carmel Rivers Basin Study.** The study boundaries encompass the Salinas and Carmel Rivers Basin, providing an opportunity to improve collaboration between the project partners, collectively estimate and plan for changing conditions, and cooperatively identify regional water supply opportunities in both basins.
- **Greater Monterey County Integrated Regional Water Management.** The Regional Water Management Group is the entity tasked with developing and implementing the IRWMP formed in 2012, reviewing projects submitted to the plan, and choosing which projects to put forward for funding. That plan included several water supply projects, including stormwater capture for additional CSIP supply, the Inter-Lake Tunnel Project to connect the San Antonio and Nacimiento Reservoirs, the RUWAP Urban Recycled Water Project, and the initial wells for a Regional Seawater Desalination Project.
- **Salinas Valley Water Management Group.** Formed in 2005, the Monterey County Water Resource Agency, the Marina Coast Water District and the Castroville Water District formed this to spearhead regional planning for the Salinas Valley Region of Monterey County. In May 2006, they published the Salinas Valley IRWM Functionally Equivalent Plan. The plan outlined regional goals, objectives and strategies in the areas of water supply, water quality, flood protection and environmental enhancement. Strategies in the Functionally Equivalent Plan that addressed water supply were the SVWP, the MCWD Eastern Distribution System and the City of Soledad Water Recycling Project.
- **Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan.** This plan was adopted in 2013, updating the earlier 2007 Monterey Peninsula IRWMP. That plan included water quality enhancement projects, but no water supply projects.
- **Salinas Valley Basin Groundwater Sustainability Agency.** Established in 2017 under California's SGMA, the Salinas Valley Basin Groundwater Sustainability Agency is tasked with the ambitious goal of developing a comprehensive GSP by 2020 and implementing the plan to achieve basin sustainability by 2040. The Agency's eleven-member Board is comprised of diverse interests from across the Salinas Valley.

5.3 Future Regional Drought Response Actions

There are currently no overall regional drought response actions. Currently there are three active water focused groups that meet on a regular basis. The WAC is comprised of local agencies, utilities and businesses based in the county. Its mission is to promote water conservation and knowledge of the county's water supply situation. There are also two regional groups; The Monterey Bay Green Gardener Program and the Monterey Bay Friendly Landscape Program. The Green Gardener Program is designed to certify landscapers and gardeners as green through a series of classes. The Monterey Bay Friendly Landscape Program is focused on the proper drought-tolerant and environmentally friendly plant types.

Figure 5-1. Example of On-Going Coordinated Messaging – Table Top Placard

Santa Cruz water department, Soquel Creek Water District, MCWD, and MPWMD jointly produce water conservation signage for the hospitality industry, such as this table top placard.

To develop future regional drought response actions, it is recommended that the local agencies coordinate as a region by continuing to meet as the DCP Implementation Group before and during times of drought as discussed in Section 7. The response actions that were implemented in response to the 2012 to 2016 drought described in Section 5.2 and those actions listed below are to be further developed through this DCP Implementation Group. Regional implementation would typically be initiated as the agencies approach stage 3 or 4 of their WSCPs because those are the stages when agencies begin requiring mandatory water use reductions and mandatory supply reductions.

- Local agencies within the DCP Implementation Group (including MPWMD) along with others in the region including Santa Cruz, Monterey, San Benito, and South Santa Clara work together to have coordinated messaging. For example, Santa Cruz water department, Soquel Creek Water District, MCWD, and MPWMD jointly produce water conservation signage for the hospitality industry, such as the table top placard shown in Figure 5-1. Further, local agencies in Monterey County actively coordinate through the Water Awareness Committee (http://www.waterawareness.org/) which, in turn, coordinates with other regional partners. An example of ongoing regional coordination on drought messaging is the current effort is the educational service announcement save water video contest shown in Figure 5-2. The 2019 theme is water wise gardening.

Figure 5-2. Example of On-Going Coordinated Messaging – Save Water Video Contest

The save water video contest is an example of the on-going regional coordination for drought messaging.

- Coordinate Pure Water Monterey drought reserves discussed above to rely on ASR banked water as a drought response.

- Supplement the SRDF rubber dam with additional pumps to increase supply that can be accessed during a drought.
- Urban agencies coordinate with other sectors including the agricultural sector once the GSP is in place to develop drought response water conservation restrictions in all sectors.

Section 6

Regional Drought Mitigation Measures

Section 6 Summary

Key Take-Aways

- 119 reports/studies were reviewed, and agency interviews conducted to develop the comprehensive list of over 50 potential structural and programmatic/conceptual drought mitigation measures.
- Drought mitigation measures fall into five primary categories: new water supplies, storage, conservation/management, watershed, and infrastructure improvements/ interties.
- Project yield, timing, regional benefit to drought resilience, institutional considerations, and consistency with/support of SGMA are used to screen and rank drought mitigation measures.
- Projects are prioritized into structural projects that address regional vulnerabilities by creating new water supplies to alleviate over use of the SVGB and programmatic/conceptual projects that are less defined or quantified but are also a critical element to a holistic drought plan.
- A diverse water supply portfolio will allow the region to better address its vulnerabilities. There is a need to identify additional long-term, high yield projects, as well as storage projects to help mitigate regional vulnerabilities.
- The top two ranked drought mitigation measures (Pure Water Monterey Groundwater Replenishment Program and the Monterey Peninsula Water Supply Project [MPWSP]) provide for high yield, new water supplies.

Recommended Actions

- The region should pursue funding opportunities for the top 10 ranked mitigation projects.
- The region should continue to update the drought mitigation measures matrix as projects are further defined or identified.
- As funding is available, Drought Mitigation Measures projects should be placed in water supply portfolios to provide a balance of water supply, storage and water management projects.

This section describes the process used to identify drought mitigation measures for the DCP area, presents an overview of the local agencies' potential drought mitigation measures, the process used to categorize and screen the measures, the potential regional resiliency benefits of the measures, and the linkage of this DCP with the Basin Study.

6.1 Purpose

Drought mitigation measures are actions, programs, or strategies implemented to address potential risks and impacts and reduce the need for response actions when drought occurs. The drought mitigation measures are intended to decrease sector vulnerabilities to drought. To address the vulnerabilities described in Section 4, the local water agencies developed a list of potential measures that will mitigate risks posed by drought. This section identifies, evaluates and prioritizes mitigation measures and activities that will help to build long-term resiliency to drought and will mitigate the risks posed by drought in the region.

As discussed in Section 4, the primary vulnerabilities for the region are related to limited sources of water supply. The SVGB supplies over 70 percent of the water supply for the region's users – domestic, industrial and agricultural. This basin is also experiencing seawater intrusion from groundwater overdraft. These two conditions lead to a high vulnerability of reduced water supply from the basin. To address this vulnerability, the region must find ways to bring in new water supplies and diversify their current water portfolio with drought resilient sources.

6.2 Approach to Developing Drought Mitigation Measures

The Monterey region is a study and data rich region and one goal of the DCP study efforts is to leverage regional efforts that had been or were being conducted, rather than recreate work already completed. Various agencies in the region have individually or collaboratively identified projects that can help to build drought resiliency. These projects are in the planning, design or even implementation phases. This DCP provides a mechanism by which to develop a regional understanding of all the projects underway, identify where potential vulnerabilities exist and collaboratively plan and build support for projects that build long-term resilience to drought.

6.2.1 Data Collection

The first step to identifying potential mitigation projects was working with the participating and local agencies to identify regional projects that had been previously developed and considered for implementation, regardless of the level of planning and development of the project. In parallel to the DCP, both the GSA and the Monterey Regional Stormwater Management Program (MRSWMP) are in the process of compiling potential projects and measures that can be implemented to benefit sustainable management of the local groundwater, and improve the capture and reuse of stormwater, respectively.

A comprehensive search was conducted to collect documents, studies, maps and data through agency calls, review of Task Force and regional stakeholder websites and internet searches. Agency sources included MCRMA, MCWRA, U.S. Army Corps of Engineers (USACE), United States Geological Survey (USGS), Reclamation, San Luis Obispo (SLO) Regional Water Management Group (IRWM), Cal-Am, Cal Water, Watershed Institute - Division of Science & Environmental Policy California State University Monterey Bay, MPWMD, AMBAG, DWR, Regional Water Management Groups, MCWD, Local Agency Formation Commission (LAFCO) of Monterey County, Pebble Beach Community Services District, Carmel Area Watershed District, Pebble Beach Company, City of Salinas, CPUC, MBNMS, MCWD Groundwater Sustainability Agency, City of Soledad, Templeton Community Services District, Moss Landing Harbor District, Alco Water, Seaside Basin Watermaster, SLO Flood Control and Water Conservation District and SLO County Public Works.

The DCP Study efforts reviewed existing relevant studies, including but not limited to:

- UWMPs
- General Plans
- Greater Monterey County and Monterey Peninsula IRWMP and project solicitation forms
- Groundwater Basin Study
- Salt and nutrient management plans
- Groundwater extraction summary reports
- Environmental assessments / project environmental impact reports (including notice of preparation/initial study reports)
- Project engineering reports
- Feasibility/planning studies
- Stormwater resource plans
- Agency board meeting minutes
- Basin maps, project maps, etc.
- GSA project and concept lists
- MRSWMP project lists

A detailed bibliography of water demands, vulnerability assessments, drought monitoring processes, and mitigation measures is included in Appendix A. Also included in the project bibliography is a list of the agencies and/or report sponsors. The bibliography was presented at the July 26, 2017 DCP Workshop for review and resources used to identify and collect information on the project study area/background, water supplies, comment, and subsequently updated based on Task Force member input.

6.2.2 Identification of Mitigation Actions

A total of 119 reports/studies/data sources were reviewed to develop a preliminary list of potential mitigation actions/projects. For each project identified, details relevant to the DCP effort including project descriptions, sponsoring agencies, location, cost, potential yield of water, beneficiaries of the project, timing, and status of the project were developed and compiled into an overall matrix of potential mitigation measures. Appendix B includes a matrix summarizing the list of potential mitigation actions/projects, including project details, identified.

The matrix was presented to Task Force members at a workshop on October 5, 2017 to solicit input on identified project details and augment the list of identified potential drought mitigation measures with additional projects for the list. Subsequently, the drought mitigation measure matrix was electronically provided to workshop attendees to review and provide comment. As a follow-up, individual agencies were contacted, via email and follow-up phone calls, to discuss agency specific mitigation projects to review and confirm project details. This ensured the most accurate and up-to-date information was included in the DCP.

6.3 Drought Mitigation Measures

Drought mitigation measures are those projects, actions and activities that will build long-term resiliency to drought, mitigate the risks posed by drought, decrease sector vulnerabilities and reduce the need for response actions. Mitigation activities can include both structural and programmatic/conceptual projects. “Structural” projects are those that involve physical construction or engineering to implement a project, while programmatic/conceptual projects are those that do not involve major engineering/construction but more so, use knowledge, practice or agreement to reduce impacts, in particular through policies and laws, public awareness raising, training and education. “Programmatic/conceptual” projects may also be characterized as those projects that are emergent projects at the concept stage or are regional/watershed based projects.

A comprehensive list of potential mitigation projects within the DCP study area was developed to identify those projects that:

- Build long-term resiliency to drought
- Mitigate risks posed by drought
- Decrease regional vulnerabilities
- Reduce need for drought response actions

These drought mitigation measures are each at various stages of implementation ranging from concept level to construction/implementation. The majority of the drought mitigation measures identified are specific projects with implementation plans, however some are in the concept phase and may not proceed to implementation. General ideas to combat drought were not included in the overall list of mitigation actions due to the preliminary nature of the ideas. The measures considered in this DCP are based on current knowledge and planning objectives, which will evolve over time, as discussed in Section 7.

The drought mitigation measures are sorted into five drought mitigation project "categories" that while individually provide a mitigation benefit, when combined provide for a balanced water supply portfolio to help the region mitigate for drought impacts and risk. Drought mitigation project categories include:

- **New Water Supplies.** Projects that provide for a new supply of water to the region helping to address a water supply vulnerability.
- **Storage.** Projects providing storage of existing or potential new water supplies to provide for drought resiliency through storage for future use.
- **Conservation/Management.** Projects and programs that target on-going efforts to reduce water usage within the communities including outreach, education, rebates/incentives and low impact development.
- **Watershed.** Projects that target collection and utilization of watershed sources of water including stormwater, floodwaters, agricultural irrigation tail water, etc.
- **Infrastructure Improvements/Interties.** Projects that provide for infrastructure improvements necessary to maintain mitigation projects or current supply/treatment sources.

The list of identified projects in the region sorted into each mitigation measure category are summarized in Figure 6-1.

6.3.1 Planning Horizon

The DCP is intended to be a living document that is updated regularly to ensure implementation status and project details are up-to-date. Based on available project information regarding project status and whether funding has been secured, the potential timing for the implementation of all of the identified mitigation measures were categorized as either near term (0-5 years), medium-term (5-10 years), or long-term (beyond 10 years). Figure 6-4 delineates the potential timing for the implementation of all identified mitigation measures which also coincides with the vulnerability assessment horizon of 2020 and 2035. During each update to the DCP, new mitigation measures should be added and already identified mitigation measure project details should be updated (including implementation timing). This ensures that the region has a dynamic DCP that can address continually evolving environmental conditions.

It should be noted that the DCP time scale differs from the Basin Study. The Basin Study targets the longer-term time scale as well as a larger study area, whereas the DCP focuses on specific mitigation actions that can be implemented within the DCP study area to mitigate the impacts of future droughts and reduce the region's vulnerability to drought under future conditions as defined in Section 4.

6.3.2 Mitigate Measures Initial Screening

The matrix of identified mitigation measures includes a wide variety of projects and programs that all contribute to mitigating drought impacts. This matrix was screened and the mitigation measures were initially prioritized into two categories: structural mitigation measures and programmatic/conceptual mitigation measures. Structural projects are those that have a quantified yield of water supply and involve construction projects of physical structures in a specific location. Programmatic/conceptual project inherently do not yield supply (such as monitoring efforts or studies) but are nonetheless essential in preparing for drought and understanding how to mitigate drought impacts or do not yet have a quantified direct yield of supply and are only currently conceptual in nature. As shown in Figure 6-1, in most cases the programmatic/conceptual projects fall in the Conservation/Mitigation and Watershed categorizes.

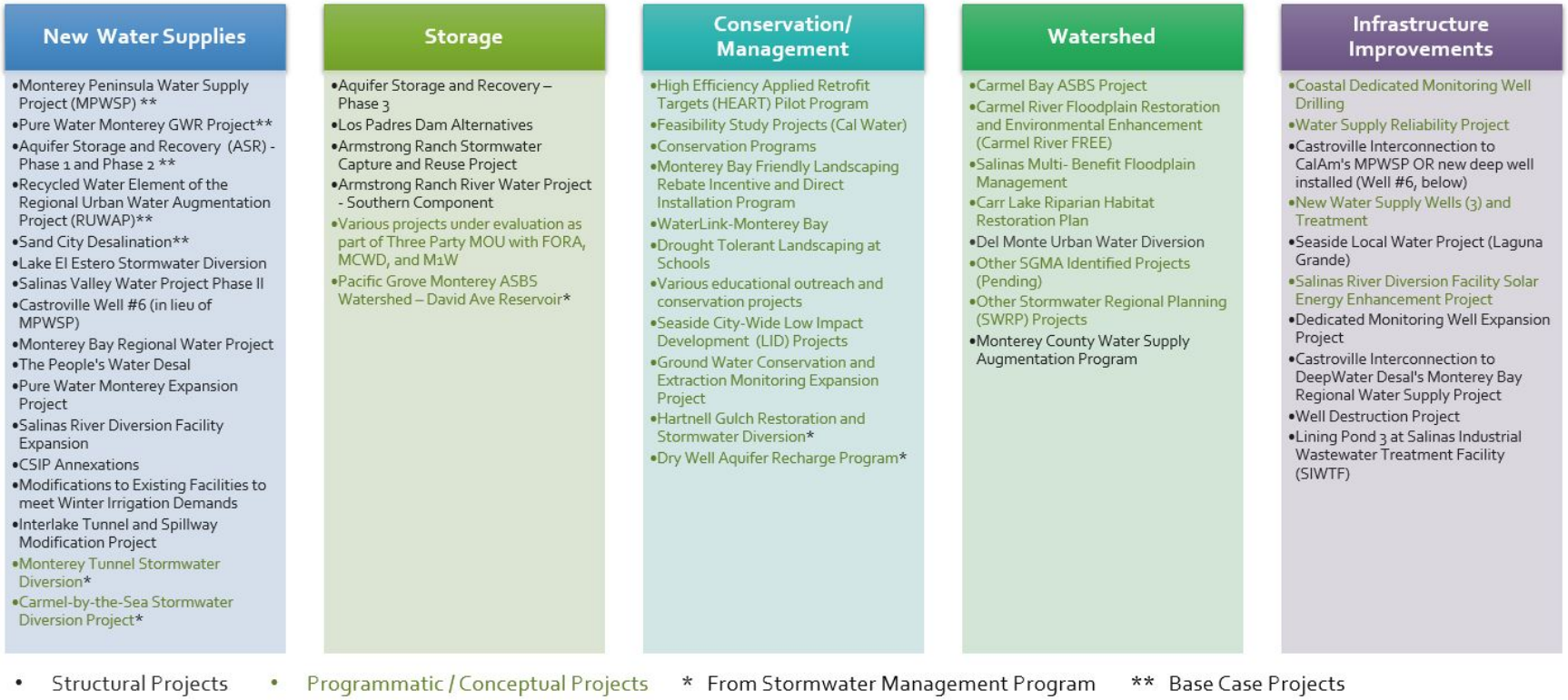

Figure 6-1. Categorization of Drought Mitigation Measures

6.3.3 Base Case Projects

In addition to screening the drought mitigation measures as either structural or programmatic/conceptual, a group of base case projects are also identified. Base case projects consist of those that are either under construction or have a high likelihood of implementation. Although these projects were assumed to be implemented, base case projects categorized as structural are still included in the project screening process. The following mitigation measures are considered base case projects:

Figure 6-2. MPWMD and Cal-Am Aquifer Storage and Recovery Phase 1 and Phase 2 Projects (Project 8a and 8b)

The MPWMD and Cal-Am Aquifer Storage and Recovery Phase 1 and Phase 2 Projects (Project 8a and 8b) which entails diversion and treatment of "excess" Carmel River winter flows that are injected and recovered from wells in the Seaside Groundwater Basin have already been completed and are two of the drought mitigation measures considered base case projects.

- **Project 1** – Monterey Peninsula Water Supply Project (Cal-Am)
- **Project 2** – Pure Water Monterey Groundwater Replenishment Project (M1W, MPWMD)
- **Project 8a** – Aquifer Storage and Recovery – Phase 1 (MPWMD, Cal-Am)
- **Project 8b** – Aquifer Storage and Recovery – Phase 2 (MPWMD, Cal-Am)
- **Project 12a** – Recycled Water Element of the Regional Urban Water Augmentation Project (MCWD, Ford Ord Reuse Authority [FORA], M1W, Cal-Am)
- **Project 16** – Sand City Desalination (MCWD, FORA, Cal-Am)

Base case mitigation measures that have already been completed, including Project 8a, 8b, and 16, are included in the overall matrix, but were not ranked in the screening process. Project 8a and 8b, the MPWMD/Cal-Am Aquifer Storage and Recovery Project, are shown in Figure 6-2.

6.3.4 Potential Drought Mitigation Measures

Table 6-1 summarizes the potential mitigation measures, by mitigation category, identified through the review of reports/documents, discussions with various agencies and input through stakeholder workshops. Each of the identified measures feature shared benefits, including reduction in regional vulnerability to drought, directly or indirectly providing a yield of water under future conditions, and wherever possible, utilizing existing resources, facilities, and infrastructure to reduce both the overall cost and the environmental footprint of the measure. Each project is assigned a project reference number located in the first column of Table 6-1 to consistently refer to the projects in the tables, figures, and appendices. Appendix B provides a detailed summary of the proposed projects including a discussion on the project features. While some of the measures are already underway or recently completed, others are still conceptual and may or may not be necessary or implemented with future evolving conditions. Local agencies should consider the entire list of viable mitigation measures depending on need and timing.

Figure 6-3 presents the locations of the proposed drought mitigation measures (denoted by category of the mitigation measure and project reference number), local agency boundaries, and geographic basins.

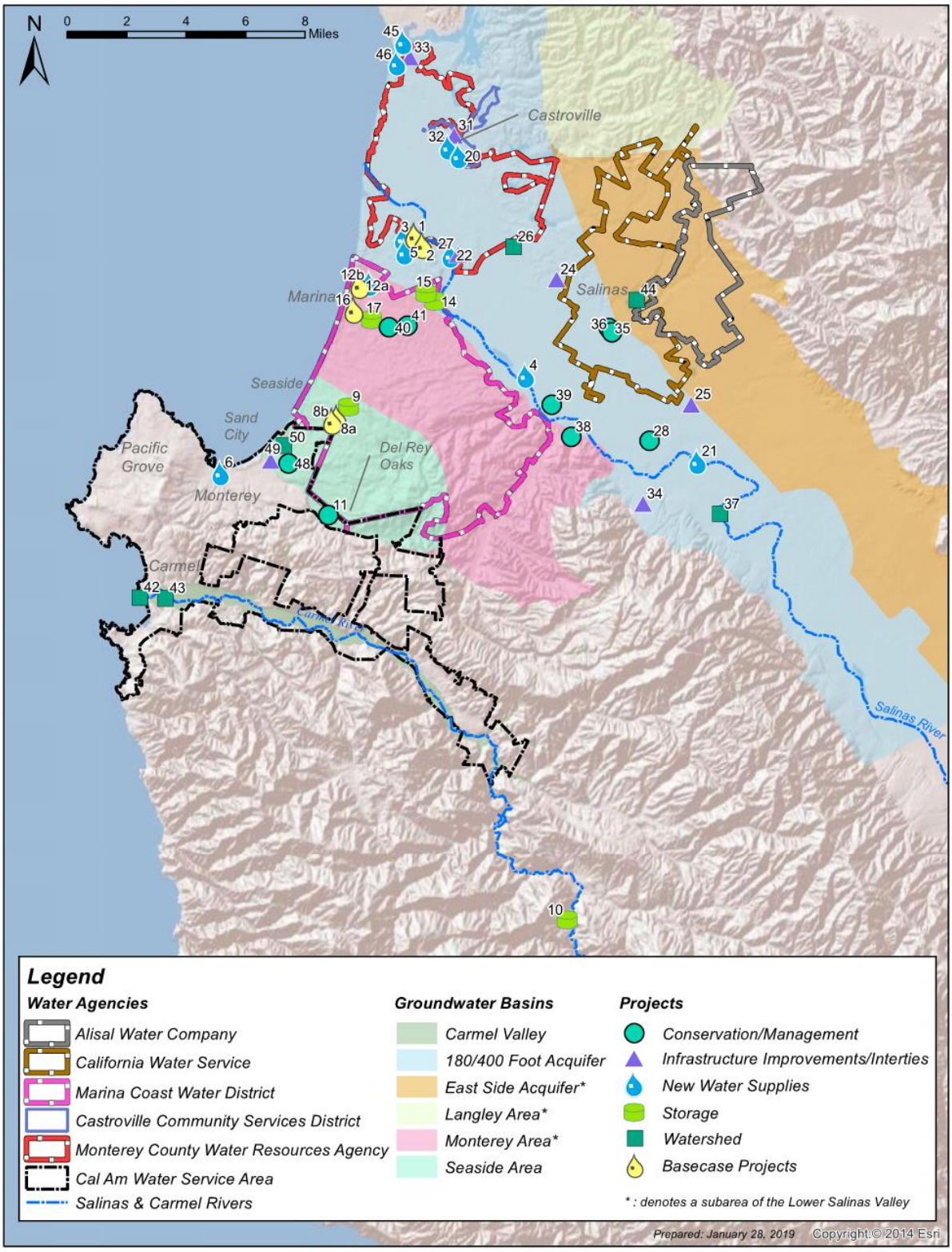

Figure 6-3. Northern Monterey Identified Drought Mitigation Measures

Table 6-1. Summary of Drought Mitigation Projects

Project Reference No.	Drought Mitigation Measure	Engaged Local Agencies	Structural or Programmatic/Conceptual	Brief Mitigation Measure Description	Status
New Water Supplies					
1	Monterey Peninsula Water Supply Project (MPWSP)	Cal-Am	Structural	Desalination project that will replace existing water supplies constrained by legal decisions	Base case project Final EIR (March 2018)
2	Pure Water Monterey Groundwater Replenishment Project	M1W, MPWMD	Structural	Purified recycled water for replenishment of the Seaside Groundwater Basin; and recycled water to augment the existing Castroville Seawater Intrusion Project (CSIP) agricultural irrigation supply	Base case project Under construction
3	Pure Water Monterey Expansion	M1W, MPWMD	Structural	Expands the Advanced Water Purification Facility (AWPF) to produce up to 7 MGD for maximum production and injection of advanced treated water during the winter months.	Preliminary Design
5	Modifications to Existing Facilities to Meet Winter Irrigation Demands	M1W, MCWRA	Structural	Adding sluice gates to existing chlorine contact basins and installing pipelines to maximize reuse.	Concept level Implementation pending grant funding
6	Lake El Estero Stormwater Diversion	M1W	Structural	Divert urban stormwater and dry weather runoff from Lake El Estero into the municipal wastewater system.	Unknown
7	Advance Water Purification Demonstration Facility	M1W, MPWMD	Structural	Treat secondarily treated wastewater for indirect potable reuse for the Pure Water Monterey recycled water project	Construction Complete. Operational through PWM construction (2019 at min)
8a	Aquifer Storage & Recovery - Phase 1	MPWMD, Cal-Am	Structural	Diverts excess Carmel River winter flows, treats it and transmits to Seaside Groundwater Basin Y.	Base case project Phase 1 wells in operation
8b	Aquifer Storage & Recovery - Phase 2	MPWMD, Cal-Am	Structural	Diverts excess Carmel River winter flows, treats it and transmits to injection/recovery wells in the Seaside Groundwater Basin.	Base case project Phase 2 wells in operation
12a	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)	MCWD, FORA, M1W, Cal-Am	Structural	Backbone facilities needed for a recycled water distribution system	Base case project Under construction
12b	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) Expansion	MCWD, FORA, M1W, Cal-Am	Structural	This project expands the Recycled Water element of the RUWAP.	-
16	Sand City Desalination	MCWD, FORA, Cal-Am	Structural	This project involves the recommission of existing 300 AFY desalination plant at Sand City.	Base case project Construction Complete
19	Interlake Tunnel and Spillway Modification Project	MCWRA	Structural	Interlake tunnel between Lake Nacimiento and Lake San Antonio capture flood control releases.	Planning
20	Castroville Seawater Intrusion Project (CSIP) Annexations	M1W, MCWRA	Structural	Potential annexations to Zone 2B to expand recycled water deliveries by 2,250 acres	Planning
21	Salinas Valley Water Project (SVWP) Phase II	MCWRA	Structural	Two additional water capture and diversion facilities along the Salinas River.	Planning EIR
22	Salinas River Diversion Facility (SRDF) Expansion	MCWRA	Programmatic/ Conceptual	Evaluate possible alternatives that could increase Salinas River Diversion Facility functionality	Concept Proposals (2014)
32	Castroville Well #6 (in lieu of MPWSP interconnection, Project #31)	CCSD	Structural	New deep aquifer well and arsenic removal treatment system for Castroville.	On hold pending MPWSP outcome
45	Monterey Bay Regional Water Project (Deep Water Desal)	DeepWater Desal LLC	Structural	Reverse osmosis desalination plant that has a deepwater intake.	Completing Benthic Study. Draft Subsurface Feasibility Study (Summer 2018).
46	The People's Water Desal	Moss Landing Harbor District	Structural	Develops a desalination water supply of approximately 13,400 AFY.	2015: EIR scoping
47	Pacific Grove Local Water Project	City of Pacific Grove, MPWMD	Structural	Eliminating existing irrigation of the City Golf Links and El Carmelo Cemetery.	Construction Complete (January 2018)
51a	Agricultural Tail Water Recapture	-	Programmatic/ Conceptual	The project targets recapturing agricultural tail waters.	Conceptual
51b	Recycle Water (collect wastewater from River Road and Toro & Pipe to Hitchcock)	-	Programmatic/ Conceptual	Recycle water - opportunity to collect waste water from River Road and Toro. Pipe to Hitchcock	Conceptual
51c	Alternative Recycled Water Sources		Programmatic/ Conceptual	Recycle agricultural, industrial, and winery process water.	Conceptual
51d	Recycle Chualar Wastewater/South County		Programmatic/ Conceptual	Recycle Chualar wastewater/South County	Conceptual

Table 6-1. Summary of Drought Mitigation Projects

Project Reference No.	Drought Mitigation Measure	Engaged Local Agencies	Structural or Programmatic/Conceptual	Brief Mitigation Measure Description	Status
51e	Capture and Recycle Municipal Well flushing water		Programmatic/ Conceptual	Municipal wells require flushing for water quality, need to capture water to repurpose.	Conceptual
52b	Monterey Tunnel Stormwater Diversion	City of Monterey, M1W	Structural	Diverting dry weather flows (April to October), including groundwater seepage (currently not quantified), for recycling.	Conceptual
52c	Carmel-by-the-Sea Stormwater Diversion Project	City of Carmel-by-the-Sea, Carmel Area Wastewater District	Structural	Diverting dry weather runoff (April to October) and first flush events to the Pebble Beach sanitary sewer main for recycling.	Conceptual
Storage					
9	Aquifer Storage & Recovery - Phase 3	MPWMD, Cal-Am	Structural	Diverts excess Carmel River winter flows, treats and transmits to injection/recovery wells in the Seaside Groundwater Basin for recharge.	Permitting
10	Los Padres Dam Alternatives	MPWMD, Cal-Am	Structural	Dredge reservoir sediments and reservoir storage expansion with a rubber dam.	Ongoing
14	Armstrong Ranch River Water Project - Southern Component	MCWD, Cal-Am	Structural	1.5 MGD Surface Water Treatment Plant to treat Salinas River high flows for direct use.	Conceptual
15	Armstrong Ranch Stormwater Capture and Reuse Project	MCWD, Cal-Am	Structural	Stormwater capture and treat it for water supply purposes.	Project development stage
17	Projects under Evaluation as part of Three Party MOU with FORA, MCWD, and M1W	MCWD, FORA, M1W, Cal-Am	Programmatic/ Conceptual	Exploring various projects for implementation including: 1) ASR; 2) Brackish desalter; 3) Augmenting groundwater recharge using surface/storm water; and 4) Expansion of RUWAP beyond 1,427 AFY.	Under Evaluation
51i	Better Manage Dams/Releases		Programmatic/ Conceptual	Better Manage Dams	Conceptual
51j	Increase Reservoir Storage by Increasing Release Capacity		Programmatic/ Conceptual	Increase reservoir storage by increasing release capacity (and associated operations management)	Conceptual
51k	Weather Responsive Dam Operations		Programmatic/ Conceptual	Weather responsive dam operations	Conceptual
51l	Build Small Groundwater or Storage Basins		Programmatic/ Conceptual	Build other small basins (groundwater or storage basins), In situ/in river bed infiltration basins (small)	Conceptual
51m	Use 11043 Permit Water to fill Cone of Depression in Natividad		Programmatic/ Conceptual	Use 11043, permit water to fill Cone of Depression in Natividad	Conceptual
51n	Create Extraction Barrier Well Field	-	Programmatic/ Conceptual	Create Extraction Barrier Well field	Conceptual
51o	Monterey One Water – Wintertime Effluent Storage		Programmatic/ Conceptual	One Water – Wintertime effluent storage	Conceptual
51p	North End Storage (Recharge)		Programmatic/ Conceptual	North End Storage (Recharge)	Conceptual
51r	Dam Arroyo Seco		Programmatic/ Conceptual	Dam Arroyo Seco	Conceptual
52d	Pacific Grove Monterey ASBS Watershed - David Avenue Reservoir	City of Pacific Grove, M1W, Cal-Am	Programmatic/ Conceptual	Stormwater would be detained during the wet season in Reservoir and metered out during the dry season to augment water supply.	Conceptual
Conservation / Management					
11	High Efficiency Applied Retrofit Targets (HEART) Pilot Program -Phase 1	MPWMD, Ecology Action	Programmatic/ Conceptual	Washing machine replacement program in multi-family property common-area laundry rooms, and comprehensive water efficiency retrofits for low-income customer properties.	Pending
28	Ground Water Conservation and Extraction Monitoring Expansion Project	MCWRA	Programmatic/ Conceptual	Expansion of the Ground Water Conservation and Extraction Program (GWCE)	Planning
35	Feasibility Study Projects	Cal Water	Programmatic/ Conceptual	A new feasibility study to re-evaluate water supply options.	Study Underway (Anticipated 2019)
36	Conservation Program	Cal Water, California Department of Water Resources	Programmatic/ Conceptual	Turf Replacement Rebate, installation of low flow toilets, and conservation kits.	Ongoing Program - pending funding availability. Turf Replacement funds have expired

Table 6-1. Summary of Drought Mitigation Projects

Project Reference No.	Drought Mitigation Measure	Engaged Local Agencies	Structural or Programmatic/Conceptual	Brief Mitigation Measure Description	Status
38	Monterey Bay Friendly Landscaping Rebate Incentive and Direct Installation Program	Ecology Action; Salinas Valley Solid Waste Authority, Cal Water Salinas, MCWD, MPWMD; M1W, California Conservation Corps, Monterey Bay	Programmatic/ Conceptual	Watershed-wide approach to reducing water demand, increases the number of distributed stormwater infiltration BMPs, and simple greywater irrigation systems.	Ongoing Program -MBFL Recognition Program (active) -MBFL LID Incentives (pending - not funded)
39	WaterLink-Monterey Bay	Ecology Action; Potential Partners Cal Water Salinas, MCWD, MPWMD; CCSD, Pajaro-Sunny Mesa CSD	Programmatic/ Conceptual	Helps people and businesses located in under resourced communities save water and energy to reduce their monthly utility bills.	Ongoing (funded by DWR Water-Energy Grant in Pajaro, Las Lomas, Salinas, Seaside and Marina through April 2019)
40	Drought Tolerant Landscaping at Schools	Watershed Institute; Return of the Natives; Cal State Monterey Bay, Monterey Peninsula Unified School District	Programmatic/ Conceptual	Drought tolerant native gardens on 11 MPUSD school sites.	Ongoing
41	Educational Outreach/Conservation Projects	Return of the Natives, Cal Sate Monterey Bay, BLM, USFWS, CA State Parks, City of Salinas	Programmatic/ Conceptual	Education and outreach programs are more centered on water quality and conservation.	Ongoing
48	Seaside City Wide Low Impact Development Projects	City of Seaside, Seaside County Sanitation District	Programmatic/ Conceptual	Low impact development projects implemented on a case by case basis throughout the City of Seaside.	Ongoing
51g	Reduce Pumping in Coastal Areas		Programmatic/ Conceptual	Reduce pumping in coastal areas.	Conceptual
51h	Limit Groundwater Extraction (180 to 400 foot aquifer)		Programmatic/ Conceptual	Limit extraction in 180/400 ft. aquifer.	Conceptual
51s	Improve Farming Practices and Provide Incentives to Farmers		Programmatic/ Conceptual	Incentives for farm practices	Conceptual
51t	Re-evaluate Nitrate Regulations		Programmatic/ Conceptual	Re-evaluate regulations (nitrate)	Conceptual
51y	Urban Conservation Programs		Programmatic/ Conceptual	Continue Urban conservation programs	Conceptual
51z	Incentives to foster land retirement/fallowing	-	Programmatic/ Conceptual	Quotas/credits that would foster nurture land retirement/fallowing	Conceptual
51ac	Land Use Policies Reviewed		Programmatic/ Conceptual	Review land use policies regarding water limitations on urban development	Conceptual
51ad	Fast track CEQA/permitting for projects pertaining to water		Programmatic/ Conceptual	Fast track permitting for projects pertaining to water	Conceptual
51ae	Price Incentives		Programmatic/ Conceptual I	Price incentives for all water use	Conceptual
51af	Baseline Data		Programmatic/ Conceptual	Collect baseline data & conduct modeling	Conceptual
51ag	Better models that can be actively used as watershed management tool		Programmatic/ Conceptual I	Better models (hydrogeology, hydrologic communication) to be actively used as management tool	Conceptual
52a	Hartnell Gulch Restoration and Stormwater Diversion	City of Monterey, M1W	Structural	Creek rehabilitation and dry weather flow diversion to sanitary sewer.	Conceptual
52e	Dry Well Aquifer Recharge Program	City of Seaside	Programmatic/ Conceptual	Dry wells to recharge urban runoff to the Seaside Groundwater Basin.	Conceptual
Watershed					
26	Monterey County Water Supply Augmentation Program	MCWRA	Programmatic/ Conceptual	This project incorporates new surface water storage facilities, as well as surface water treatment, distribution systems for both agriculture and urban uses	Concept Proposals (2014)
37	Salinas Multi-Benefit Floodplain Management	Grower-Shipper Association, Monterey County Resource Conservation District, MCWRA, Salinas River Channel Coalition	Programmatic/ Conceptual	Collaborative partnership to develop an adaptive approach to flood risk reduction, groundwater recharge, community health and safety, and riparian and coastal biodiversity.	Ongoing - Implementation (36 channels completed since 2014) - Annual maintenance

Table 6-1. Summary of Drought Mitigation Projects

Project Reference No.	Drought Mitigation Measure	Engaged Local Agencies	Structural or Programmatic/Conceptual	Brief Mitigation Measure Description	Status
42	Carmel Bay Area of Special Biological Significance (ASBS) Project	Pebble Beach CSD, Pebble Beach Company	Programmatic/ Conceptual	BMPs to improve stormwater and non-stormwater discharges from Pebble Beach.	Planning
43	Carmel River Floodplain Restoration and Environmental Enhancement (Carmel River FREE)	Big Sur Land Trust, Monterey County	Programmatic/ Conceptual	Removing nearly 1,500 feet of riverbank levee to improve floodwater movement and re-establish connection with floodplain	EIR (Public review fall 2018, certification early 2019) 60% plans complete
44	Carr Lake Riparian Habitat Restoration Plan	City of Salinas, Big Sur Land Trust	Programmatic/ Conceptual	Conversion from agricultural to habitat related restoration for storm management.	Land Acquisition (Jan. 25, 2017) Site Planning (3-5 years)
50	Del Monte Urban Water Diversion	City of Seaside, Seaside County Sanitation District	Structural	Diversion structure on a 90-inch storm drain for an approximate 1500 acre watershed.	95% design ongoing
51q	Stormwater Capture (mouth of Salinas River)		Programmatic/ Conceptual	Stormwater capture at mouth of Salinas and use or injection near coast/intrusion area	Conceptual
51v	Watershed Management Practices (increase natural runoff flow)		Programmatic/ Conceptual	Watershed management practices to increase natural runoff flow controlled vegetation management-prescriptive-goat herds, burns.	Conceptual
51w	Coordinate Outside Basin to incorporate watershed into Santa Lucia and Gabilan waters		Programmatic/ Conceptual	Coordinating outside basin to incorporate watershed into Santa Lucia and Gabilan surface run-offs, creeks, rivers.	Conceptual
51x	Maximize River to move Water (not pipeline)		Programmatic/ Conceptual	Maximize river to move water, not pipeline	Conceptual
51aa	ET as a loss component for projects – ponds, native vegetation, urban greening	-	Programmatic/ Conceptual	Evapotranspiration has a loss component for projects – ponds, native vegetation, urban greening	Conceptual
51ab	Integrate Habitat Conservation Plans into all Projects	-	Programmatic/ Conceptual	Habitat conservation plan integration all projects	Conceptual
Infrastructure Improvements / Interties					
4	Lining Pond 3 at Salinas Industrial Wastewater Treatment Facility (SIWTF)	M1W	Structural	Lining pond to capture more water for AWPF.	Conceptual
13	Marina Coast Water District Well 33 Pump Station and Reservoir Project	MCWD	Structural	New test well replacement of a non-functioning well; additional new well connection to raw water transmission network.	Complete
18	Salinas Valley Water Project (SVWP) Phase I	MCWRA	Structural	Transfers water from the MCWRS's reservoirs in the southern part of the Salinas Valley to the northern portion of the SVGB.	Complete
23	Salinas River Diversion Facility (SRDF) Solar Energy Enhancement Project	MCWRA	Programmatic/ Conceptual	The project includes construction of a solar energy field to power pumps to extract water from the Salinas River for delivery to 12,000 acres of agricultural fields.	Conceptual
24	Coastal Dedicated Monitoring Well Drilling	MCWRA	Programmatic/ Conceptual	The project consists of drilling 12 dedicated monitoring wells for water quality monitoring and water level data	Planning
25	Dedicated Monitoring Well Expansion Project	MCWRA	Programmatic/ Conceptual	The project includes installation of up to 100 dedicated monitoring wells throughout the basin.	Concept
27	Water Supply Reliability Project	MCWRA	Programmatic/ Conceptual	Deferred maintenance and improvements of the MCWRA facilities to improve operations	Planning
29	Well Destruction Project (SVWP)	-	Programmatic/ Conceptual	This project targets destroying groundwater wells that are contributing to vertical transfer of seawater.	Pending funding
30	CCSD: Well #5 Treatment Project	CCSD	Structural	Project consists of a well pump and arsenic removal treatment system for existing well in Castroville.	Construction completed
31	Castroville Interconnection to Cal-Am's MPWSP	CCSD	Structural	The project consists of CCSD taking delivery of a Return Water supply from the MPWSP to replace all or part of its current reliance on groundwater	Awaiting CPUC Certificate of Public Necessity (CPN)
33	Castroville Interconnection to DeepWater Desal's Monterey Bay Regional Water Supply Project	CCSD, DeepWater Desal	Structural	CCSD has an MOI with DeepWater Desal should it come to fruition.	On hold pending MPWSP
34	New Water Supply Wells (3) and Treatment (Cal Water)	Cal Water	Programmatic/ Conceptual	This project consists of drilling 3 new wells to replace wells that have been impacted with poor water).	Permit Application (July 2017) Pending regulatory approval
49	Seaside Local Water Project (Laguna Grande)	City of Seaside, Seaside County Sanitation District	Structural	Design and construction of a system to provide non-potable water for public works.	Grant Award in 2015

Table 6-1. Summary of Drought Mitigation Projects

Project Reference No.	Drought Mitigation Measure	Engaged Local Agencies	Structural or Programmatic/Conceptual	Brief Mitigation Measure Description	Status
51f	Construct Seawater Intrusion Barrier		Programmatic/ Conceptual	Seawater intrusion barrier	Conceptual
51u	Wellhead Treatment (Brackish water)		Programmatic/ Conceptual	Wellhead brackish treatment	Conceptual

Notes: (1) Projects starting with 51(x) are projects identified through the SWRP efforts and projects starting with 52(x) are project concepts/ideas identified through the GSA process. These projects once vetted and developed further should be updated in the matrix to include project details.

6.4 Screening Approach

After the drought mitigation measure projects were categorized based on the characteristics, the structural projects were compared with each other in a screening process to assess the relative ranking of the associated beneficial impact to reduce the effects of drought in the DCP area. As described in Section 1, the local agencies led by MPWMD convened a Drought Task Force to provide feedback on strategies and work products developed for the DCP. During a workshop on May 31, 2018, the approach to developing the mitigation measures, the identified mitigation measures including both structural and programmatic/conceptual projects, as well as the approach to screening of projects were presented. Stakeholder feedback was solicited on the projects, screening approach and ranking/screening criteria. Based on the feedback received at the workshop, the screening and ranking was updated and presented again to stakeholders at a workshop on August 13, 2018.

The following sections describe the screening criteria and resulting comparisons used to determine a relative ranking of the structural drought mitigation measures.

6.4.1 Evaluation Criteria

To develop a relative ranking of mitigation measures with respect to the ability of each to reduce vulnerabilities in the planning area, screening criteria were defined. Screening criteria consisted of the following:

- **Project yield (AFY)/availability.** Criteria considers the amount of supply made available by the mitigation measure and its reliability.
- **Project timing.** Criteria considers both the status of the mitigation measure and the anticipated completion timeline.
- **Regional benefit to drought mitigation/resiliency.** Criteria considers the regional versus local benefit (locally or on a larger scale) of a mitigation measure. The criterion also considers how the mitigation measure contributes to the overall resiliency of the regions water supply (i.e., diversifies water portfolio).
- **Implementation/project complexity.** Criteria considers the level of stakeholder support, how technically complex a mitigation measure is to implement, potential regulatory and permitting issues, reliance of the measure on implementation of other projects, etc.
- **Consistent with/supports SGMA.** Considers if the mitigation measure would assist in creating a sustainable approach to managing local groundwater supplies.

The metrics used for each criteria are shown in Table 6-2. These metrics were used to develop the ranking and comparison of the measures.

Table 6-2. Evaluation Criteria Ranking			
Criterion	Ranking = 1	Ranking = 3	Ranking = 5
Project yield (AFY)/Availability	Yield is <1,000	Yield is between 1,000 and 5,000	Yield > 5,000
Project timing (concept, feasibility, design, construction)	Implementation in > 10 years	Implementation in 5 to 10 years	Implementation in 0 to 5 years
Regional benefit to drought mitigation/resiliency	Benefits small area/single agency	Benefits multiple agencies and adds to Resiliency	Benefits multiple agencies and reduces highly vulnerable supplies
Institutional considerations (stakeholder support, technical complexity, regulatory, reliance on other projects)	Complex project/significant stakeholder considerations	Moderate project complexity/Some stakeholder considerations	Relatively simple project/broad stakeholder support
Consistent with/Supports SGMA	Not Consistent/ Little to No importance supporting GSP meet sustainable groundwater basin goals	Moderately important to supporting GSP to meet sustainable groundwater basin goals	Consistent with SGMA goals/Critical to supporting GSP meet sustainable groundwater basin goals

Note: *Ranking =1 Provides the lowest benefit and Ranking =5 Provides the highest benefit*

These criteria were only applied to structural mitigation projects (those involving construction projects of physical structures in a specific location and provide for a specific water yield) as the projects were relatively well defined and resulted in a specific water supply yield. The programmatic/conceptual projects, which typically do not provide for a specific quantifiable yield and have a more localized impact, were not screened with this criteria but are identified as mitigation measures as they are critical to building long-term drought resilience on an on-going basis or are important for the region to continue implementing.

6.4.2 Comparison of Projects

Of the evaluation criteria discussed in the previous section, project timing and project yield have the most significant impact on developing a portfolio of drought mitigation measures for the region. Given the recent drought that lasted over five years from 2012 through 2016 paired with the significantly over-drafted SVGB (as seen by seawater intrusion), the region is acutely aware that they need to implement measures soon that provide significant yields and address their drought vulnerabilities.

Project Timing

To understand the variety of mitigation measures in terms of the DCP timeline, a comparison of mitigation measures versus the anticipated implementation timing of each was created, as shown in Figure 6-4. The potential timing for implementing the mitigation measures was categorized as either near-term (0-5 years), medium-term (5-10 years), or long-term (beyond 10 years), based on project status and whether funding has been secured. As the figure shows, the majority of identified mitigation measures are anticipated in the near and medium terms. Fewer measures have been identified that fall in the long-term phase beyond ten years. Additionally, Figure 6-4 shows the mitigation measures which fall under the base case grouping, which includes measures that are either already completed, under construction, in permitting, or soon expected to occur. In addition, projects were distinguished as either structural, programmatic/conceptual, or completed, as discussed in Section 6-3.

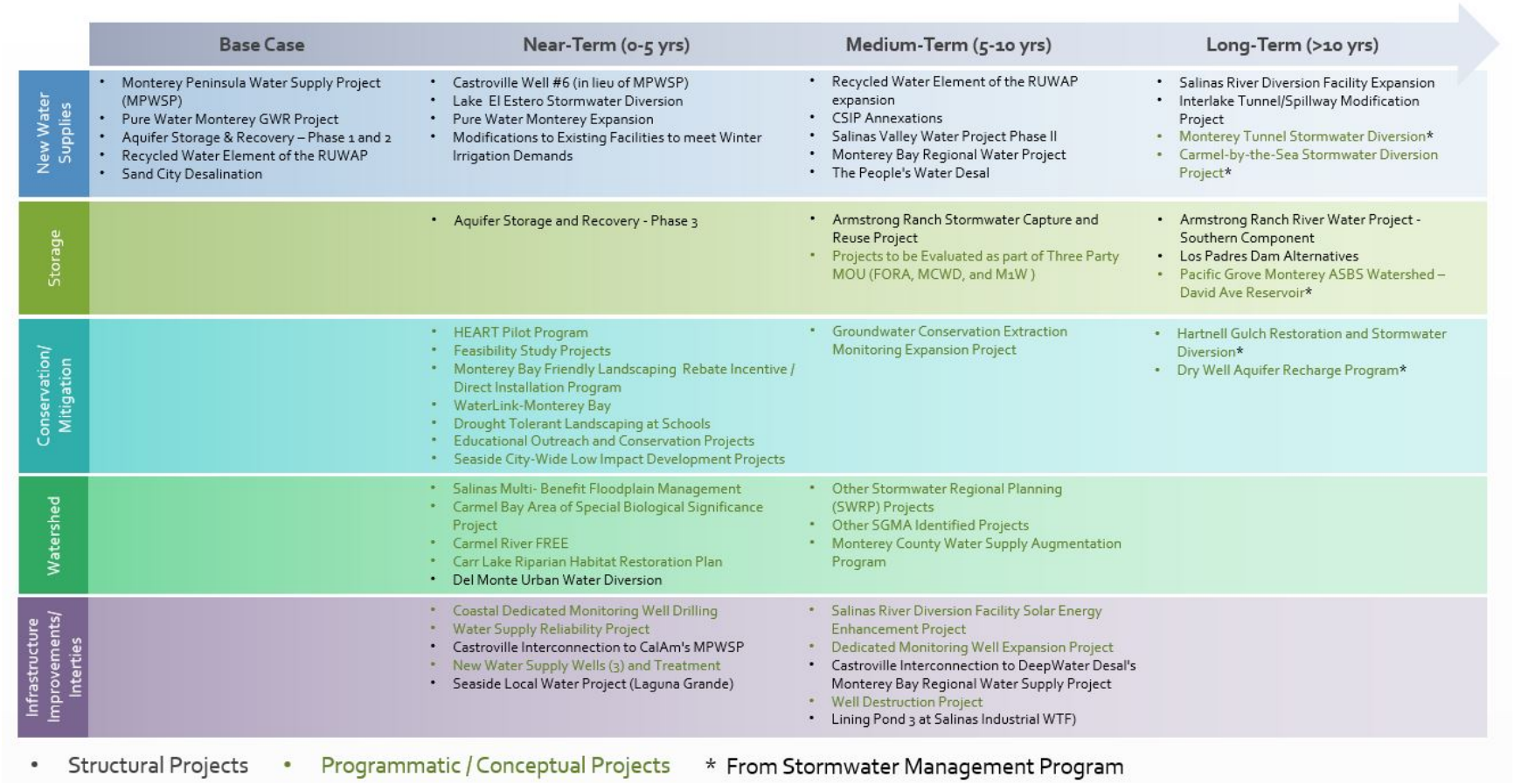

Figure 6-4. Potential Timing for Mitigation Measure Implementation

Project Yield

In addition to comparing mitigation measure timing to project type, timing was also compared with the anticipated project yield, shown in Figure 6-5. Several projects fall within the 0-1,000 AFY and the 1,000 to 5,000 AFY yield categories, while few projects have yields greater than 5,000 AFY. Also included in Figure 6-5 are projects that either have no direct yield or an unquantifiable yield. These projects tend to be those categorized as programmatic/conceptual. Figure 6-5 also helps demonstrate that it is the structural projects that have predictable yields, as opposed to unknown or non-quantifiable yields associated with the programmatic/conceptual projects. In addition, the structural projects are the only projects that provide yields over 1,000 AFY.

6.5 Ranking of Structural Projects

As previously mentioned, structural projects are those which involve construction of physical structures and provide for a specific water yield. Only structural projects that were not yet completed were evaluated using the screening criteria and ranked. The following section summarizes the ranking results.

Structural projects were scored for each evaluation criteria summarized in Table 6-2. The DCP project team developed the initial scoring and reviewed the scoring and ranking with the local agencies in the August 13, 2018 workshop.

Results of project ranking are summarized in Table 6-3. The table also includes notes for each mitigation measure regarding the factors and reasoning that influenced the scoring of each evaluation criteria. An overall score was determined for each mitigation measure. It should be noted that none of the evaluation criteria were weighted, therefore each one contributed equally to the overall score. Those with the highest overall score, rank higher than those with lower overall scores. Projects with the same overall score were assigned the same rank, therefore the ranking numbers skip (e.g., from 1 to 3) when there are multiple measures with the same score.

The rankings shown here should not be interpreted to be the order in which projects should occur. To develop drought resiliency for the region a portfolio of many measures must be implemented both in the near-term and in the long-term. Those measures in concept or development phase need to continue to be developed so they can be ranked in the future once more information is known. Some observations of the project ranking are as follows:

1. Of the 50 mitigation measures identified, the majority of projects are slated for implementation in the next 10-year window. The region needs to identify and evaluate additional long-term drought mitigation measures for implementation in the medium and long-term.
2. The three largest new water supply projects, which include Pure Water Monterey Groundwater Replenishment Project, MPWSP and the Recycled Water Element of the Regional Urban Water Augmentation Project, are already accounted-for in the base case water supply scenario of the DCP. The region needs to identify and evaluate additional high yield water supply projects to address vulnerabilities.
3. Seawater desalination is a mitigation measure that will provide the region with a high yield new water supply source.
4. There are four water storage projects under consideration, of which only the Los Padres Dam Alternatives and the Interlake Tunnel and Spillway Modification Project provide for the capture and storage of water and management of water in surface reservoirs. Infrastructure improvement and intertie projects have been identified where feasible through a comprehensive review of regional facilities and needs.
5. Programmatic/conceptual projects, primarily targeted at conservation/mitigation and watershed management, are also a critical element for drought mitigation.

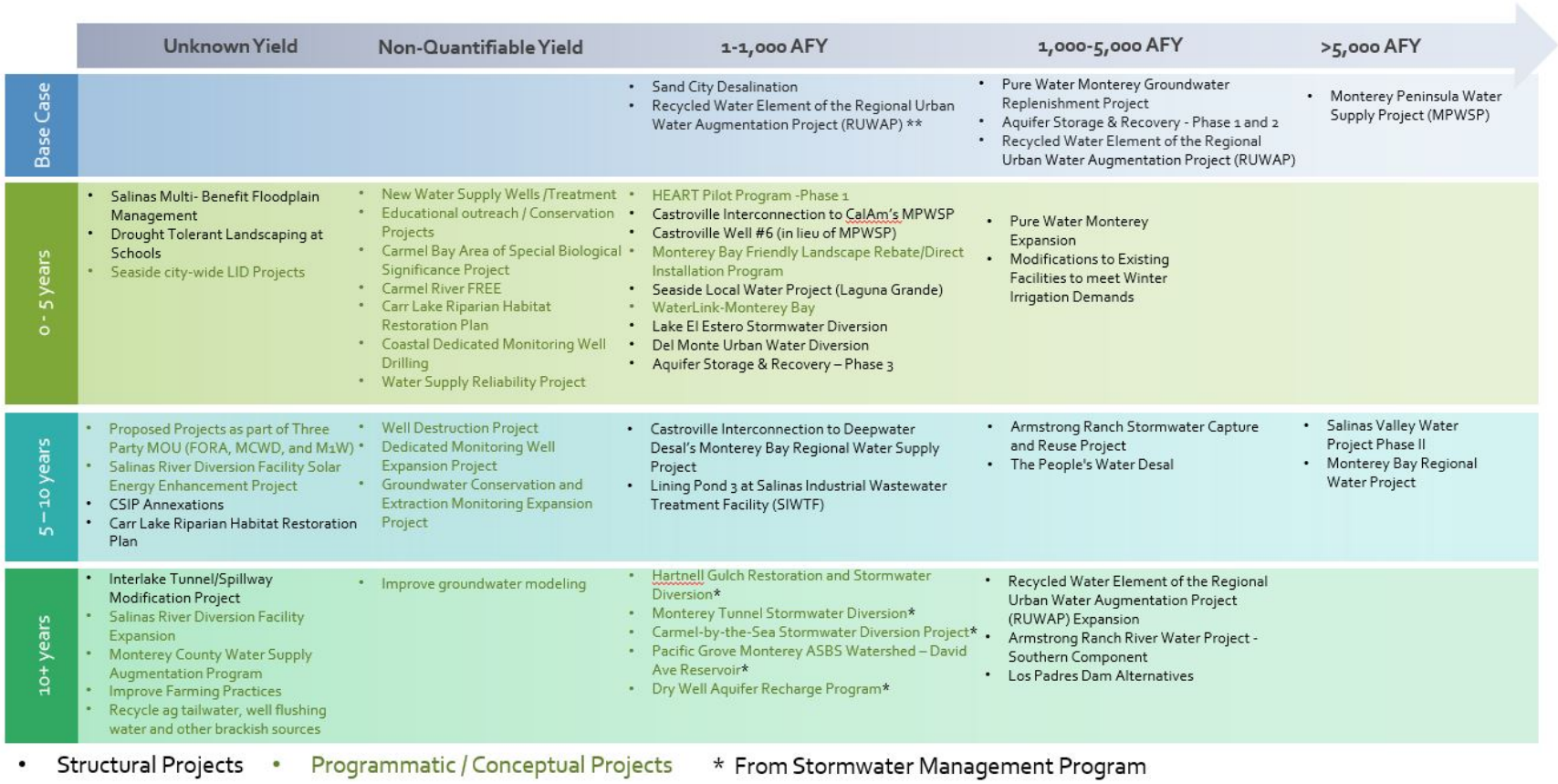

Figure 6-5. Mitigation Measures Estimated Yield versus Implementation Timing

Table 6-3. Structural Drought Mitigation Measures Screening Results[a]

Project Reference No.	Drought Mitigation Project (Structural)	Engaged Agencies	Scoring Notes	Rank	Total	Implementation / Project Complexity[b]	Regional Benefit to Drought Mitigation / Drought Resiliency[c]	Consistent with/ Supports SGMA[d]	Project Timing[e]	Project Yield[f]
2[g]	Pure Water Monterey Groundwater Replenishment Project 7	M1W, MPWMD	• Permitting completed, project under construction • Broad support • Provides new supply	1	23	5	5	5	5	3
1[g]	Monterey Peninsula Water Supply Project (MPWSP, Cal-Am)	Cal-Am	• High support from agencies and CPUC expected to approve; • Provides new supply which benefits several agencies / areas • Expected to be operating in late 2021, but significant threat of lawsuits	1	23	3	5	5	5	5
3	Pure Water Monterey Expansion	M1W, MPWMD	• Provides new supply, but some uncertainty of future expansion (will additional water be available at 10+ timeline?) • If expansion moves forward, likely in place by 2022	3	21	3	5	5	5	3
5	Modifications to Existing Facilities to Meet Winter Irrigation Demands	M1W, MCWRA	• Located on treatment plant property and not technically difficult to implement • Only benefits a portion of the region, not a large yield. • Provides new supply; helps offset groundwater usage • Desire to construct within 5 years, but dependent on grant funding	3	21	5	3	5	5	3
19	Interlake Tunnel and Spillway Modification Project	MCWRA	• Technically complex project (i.e., tunneling) with potential environmental and permitting considerations • Provides for additional storage in region which supplies headwater for many areas; large reservoir, but amount is dependent on water year • New supply broadens water portfolio and reduces reliance on Salinas River Basin • Slated to be complete by 2020 (but concern with timing due to project status - planning phase)	5	19	3	5	5	1	5
45	Monterey Bay Regional Water Project (DeepWater Desal)	DeepWater Desal LLC	• Environmental considerations/permitting; • Politically challenging, stakeholder considerations; • Large regional benefit, serving more of the DCP region • Scheduled to be complete in next 5 years, but likely difficult to implement	5	19	1	5	5	3	5
12a	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)	MCWD, FORA, M1W, Cal-Am	• Broad support and involves 2 cities • Reduces groundwater usage, but provides only a small yield • Already under construction	7	17	5	3	3	5	1
12b	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) Expansion	MCWD, FORA, M1W, Cal-Am		7	17	5	3	5	1	3
20	Castroville Seawater Intrusion Project (CSIP) Annexations	M1W, MCWRA	• Not technically complex, just an expansion of already performed action • Reduces groundwater pumping in area with seawater intrusion and improves resiliency • Serves over 2,000 acres, assuming crops use min 1 AFY • Timing is 3-10 years	7	17	5	3	3	3	3
21	Salinas Valley Water Project (SVWP) Phase II	MCWRA	• Complex project, difficult to implement due to numerous stakeholders/considerations (water rights holders, fisheries, environmental issues, etc.) • Significant yield (135,000 AFY) which benefits a large region, but concerns with water rights • EIR scheduled 3-10 years out	7	17	1	5	5	1	5
4	Lining Pond 3 at Salinas Industrial Wastewater Treatment Facility (SIWTF)	M1W	• Not technically complex to implement • Some uncertainty of future expansion; • Localized impact with small yield (350 AFY) • Benefits CSIP annexation as well as Peninsula potable supply; • Slated for 5-10 years	7	17	5	5	3	3	1

Table 6-3. Structural Drought Mitigation Measures Screening Results[a]

Project Reference No.	Drought Mitigation Project (Structural)	Engaged Agencies	Scoring Notes	Rank	Total	Implementation / Project Complexity[b]	Regional Benefit to Drought Mitigation / Drought Resiliency[c]	Consistent with/ Supports SGMA[d]	Project Timing[e]	Project Yield[f]
9	Aquifer Storage & Recovery - Phase 3	MPWMD, Cal-Am	• Supports reliability of existing wells • Allows for excess water storage in off-season which helps maximize operations of Cal-Am desalination plant • Supports SGMA, but not critical and has small regional benefit (basin extent) • Does not produce new water as project uses desalination water (already counted) or Carmel River	12	16	5	3	1	5	2
15	Armstrong Ranch Stormwater Capture and Reuse Project	MCWD	• Small area, one agency • Should be in SGMA, but not critical • Concept phase, 3-10 years	13	15	5	1	3	3	3
46	The People's Water Desal	Moss Landing Harbor District	• Complex Project with environmental and permitting considerations • Politically challenging, stakeholder considerations; • Project is not fully planned out, therefore regional benefit is unclear; • This project only likely to proceed if Cal-Am MPWSP (Project 1) fails to advance, in which case Pure Water Monterey Expansion (Project 3) may be more likely to occur first, resulting in a downsized desalination project	13	15	1	3	5	3	3
31	Castroville Interconnection to Cal-Am's MPWSP	CCSD	• Dependent on Cal-Am MPWSP (Project 1), which is considered a base case project, but is also a desalination project • Castroville is a disadvantaged community and just lost a well • Localized impact with low yield • Slated to occur before 2021	15	13	3	1	3	5	1
32	Castroville Well #6 (in lieu of MPWSP interconnection, Project #31)	CCSD	• Well is simple project and easy to permit • Localized impact with a low yield • Contributes to more groundwater pumping • Castroville is a disadvantaged community and just lost a well, this is a priority	15	13	5	1	1	5	1
50	Del Monte Urban Water Diversion	City of Seaside, Seaside County Sanitation District	• Localized impact	15	13	5	1	1	5	1
6	Lake El Estero Stormwater Diversion	M1W	• Localized impact with small yield • Not technically difficult to implement	15	13	5	1	1	5	1
49	Seaside Local Water Project (Laguna Grande)	City of Seaside, Seaside County Sanitation District	• Localized impact with small yield • Not technically difficult to implement	15	13	5	1	1	5	1
10	Los Padres Dam Alternatives	MPWMD, Cal-Am	• Relocation of dredged soils could be difficult / environmental concerns • Provides a moderate yield and resiliency for the Carmel River (a highly sensitive area; drought impact) • No direct impact to SGMA • Study planned to be complete in Dec 2019, 3-10 years project complete	20	11	3	3	1	1	3
14	Armstrong Ranch River Water Project - Southern Component	MCWD	• Water rights issues and other diversions • Simple enough to build • Small area, only benefits Marina • Using surface water helps reduce groundwater usage • Timing unknown	20	11	3	1	3	1	3
33	Castroville Interconnection to DeepWater Desal's Monterey Bay Regional Water Supply Project	CCSD & Deep Water Desal	• Technically easy to implement • Dependent upon DeepWater Desal (Project 45)	22	9	1	1	3	3	1

Table 6-3. Structural Drought Mitigation Measures Screening Results[a]										
Project Reference No.	Drought Mitigation Project (Structural)	Engaged Agencies	Scoring Notes	Rank	Total	Implementation / Project Complexity[b]	Regional Benefit to Drought Mitigation / Drought Resiliency[c]	Consistent with/ Supports SGMA[d]	Project Timing[e]	Project Yield[f]
16[g]	Sand City Desalination [h]	MCWD, FORA, Cal-Am								
7	Advance Water Purification Demonstration Facility [h]	M1W, MPWMD								
8a[g]	Aquifer Storage & Recovery - Phase 1[h]	MPWMD, Cal-Am								
8b[g]	Aquifer Storage & Recovery - Phase 2 [h]	MPWMD, Cal-Am								
13	Marina Coast Water District Well 33 Pump Station and Reservoir Project[h]	MCWD								
18	Salinas Valley Water Project (SVWP) Phase I [h]	MCWRA								
30	CCSD: Well #5 Treatment Project[h]	CCSD								
47	Pacific Grove Local Water Project [h]	City of Pacific Grove, MPWMD								

Notes:

a. Structural projects are defined as those projects that are constructed structures providing for a specific source production area.

b. Implementation / Institutional Criterion (Ranking: 1 = difficult to implement, low support, 3 = moderate support/some institutional issues, 5 = broad support, relatively easy to implement)

c. Regional benefit / Resiliency Criterion: (Ranking: 1 = benefits small area / single agency, 3 = benefits multiple agencies, adds resiliency, 5 = reduces highly vulnerable supplies)

d. Consistent with/Supports SGMA Criterion (Ranking: 1 = mildly or not important for GSP, 3 = moderately important for GSP, 5 = critical to GSP to achieving sustainable groundwater basin goals)

e. Project timing Criterion (Ranking: 1 = Project will be completed in > 10 years, 3 = Project to be completed in 5 - 10 years, 5 = Project to be completed in 0 - 5 years)

f. New Water Source Yield Criterion (Ranking: 1 = Yield is < 1,000 afy, 3 = Yield ranges from 1,000 - 5,000 afy, and 5 = Yield is equal to or > 5,000 afy)

g. Projects highlighted in green are considered base case projects.

h. Completed structural project – project was not ranked.

6.6 Regional Resilience of Drought Mitigation Measures

Water supply yield and availability during future dry years as well as regional resilience are key characteristics directly related to reducing the risk and vulnerability of critical water resources identified in Section 4. As presented in the sections of this chapter, there are numerous actions and projects that the region has identified to help develop more resilient water supplies. While structural projects are required to address vulnerabilities by bringing in new water supplies and alleviating over use of the SVGB, programmatic/conceptual projects including continued education, conservation and restoration activities are also a critical element to a holistic drought plan. Moving forward, the region needs to continue to implement both near-term and long-term projects and actions that are both structural and programmatic.

The drought mitigation measures defined and characterized in this section reduce potential risks associated with drought, climate change, infrastructure failures, and other emergencies (e.g., earthquakes, groundwater contamination events) by reducing the consequence of these factors on the local agencies. Many of the measures leverage existing infrastructure and water supply sources by utilizing water system facilities already in place. Table 6-4 describes benefits in reducing the drought risk that are expected to result from implementing the top ranked projects and thereby improving the health and safety of people, fish and wildlife, and the environment.

It should be noted that for some of the projects, the beneficiaries may differ than the engaged agencies as mitigation projects/actions may have broad regional benefits and engaged agencies may be working collaboratively to benefit highly vulnerable areas.

Table 6-4. Regional Resilience Benefits of Top Ranked Structural Drought Mitigation Measures

Project Reference No.	Drought Mitigation Project and Engaged Agencies	Beneficiaries	Benefits due to Reduction in Drought Risk
2	Pure Water Monterey Groundwater Replenishment Project *Project Sponsor: M1W, MPWMD*	Seaside Groundwater Basin, MCWRA and the CSIP customers	• Reduces likelihood of decreased amount of supply and degraded groundwater water quality in the Seaside Groundwater Basin • Mitigates the consequences of failure by providing a highly reliable local source of water • Improves water supply reliability by storing recycled water in the Seaside Basin during normal/wet years for use in dry years • Augments groundwater supply which reduces groundwater over drafting, helps combat seawater intrusion, and improves groundwater quality in the Seaside Aquifer
1	Monterey Peninsula Water Supply Project (MPWSP) *Project Sponsor: Cal-Am*	Cal-Am service area customers	• Reduces consequence of Carmel Valley Alluvial Aquifer and Seaside Groundwater Basin supply reductions • Provides highly reliable water supply that is not affected by drought • Diversifying the region's water supply portfolio and reduces reliance on groundwater supplies • Increases amount of water supply for urban and agricultural uses

Table 6-4. Regional Resilience Benefits of Top Ranked Structural Drought Mitigation Measures

Project Reference No.	Drought Mitigation Project and Engaged Agencies	Beneficiaries	Benefits due to Reduction in Drought Risk
3	Pure Water Monterey Expansion *Project Sponsor: M1W, MPWMD*	Cal-Am service area customers	• Reduces likelihood of decreased and degraded groundwater supply through the injection of advanced treated water during the winter months • Increases recycled water production at the AWTF at the Regional Wastewater Treatment Plant • Improves water supply reliability by increasing amount of water available to replenish Seaside Basin • Reduces overdraft from Seaside Basin, helps combat seawater intrusion, and improves groundwater quality
5	Modifications to Existing Facilities to Meet Winter Irrigation Demands *Project Sponsor: M1W, MCWRA*	Localized benefit to the CSIP customers	• Reduces likelihood of water supply failure in the CSIP area • Increases flexibility to store and deliver recycled water during times when recycled water facility is not in operation • Reduces groundwater pumping
19	Interlake Tunnel and Spillway Modification Project *Project Sponsor: MCWRA*	Regional benefit to customers within Monterey County	• Reduces likelihood of regional water supply failure by providing for increased storage during wet years that can be used to offset periods of drought • Increases storage capacity in the Nacimiento and San Antonio Reservoirs by collectively storing water between the two reservoirs • Provides flexibility and improves reservoir management which serves to improve the hydrologic balance of the Salinas Valley Groundwater Basin and reduces seawater intrusion • Helps meet environmental flow requirements • Reduces drought impact on existing hydroelectric projection • Preserves recreational opportunities in the reservoirs
45	Monterey Bay Regional Water Project (DeepWater Desal) *Project Sponsor: DeepWater Desal LLC*	Soquel Creek Water District, Pajaro Sunny Mesa Community Services District, Cal Water serving Salinas, CCSD, and MPWMD customers	• Reduces consequence of water supply failure and reduces beneficiary vulnerability to drought impacts • Diversifies regional water supply for several agencies in northern Monterey County and southern Santa Cruz County • Provides highly reliable water supply that is not affected by drought • Reduces groundwater pumping thereby improving groundwater basin quality and groundwater levels

Table 6-4. Regional Resilience Benefits of Top Ranked Structural Drought Mitigation Measures

Project Reference No.	Drought Mitigation Project and Engaged Agencies	Beneficiaries	Benefits due to Reduction in Drought Risk
			• Energy demands partially offset with co-located power sub-station
12a	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) *Project Sponsor: MCWD, FORA, M1W, Cal-Am*	MCWD and the Fort Ord area customers	• Reduces likelihood of water supply failure by improving infrastructure and offsetting potable water demands • Reduces consequence of water supply failure by adding a new source of water supply • Diversifies the water portfolio and reduces reliance on groundwater supplies • Distributes a highly reliable local source of recycled water that is minimally affected by drought conditions • Improves water supply redundancy and offsets potable water usage
12b	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) Expansion *Project Sponsor: MCWD, FORA, M1W, Cal-Am*	MCWD and the Fort Ord area customers	• Reduces likelihood and consequence of water supply failure • Expands the first phase of the RUWAP, increasing the recycled water supply available to the MCWD and Fort Ord communities.
20	Castroville Seawater Intrusion Project (CSIP) Annexations *Project Sponsor: M1W, MCWRA*	Castroville area farmers	• Reduces likelihood of water supply degradation and depletion in Zone 2B • Provides reliable alternative source of agricultural irrigation water • Reduces reliance on groundwater supplies and groundwater overdraft • Potentially improves groundwater quality due to reduced need of added fertilizers
21	Salinas Valley Water Project (SVWP) Phase II *Project Sponsor: MCWRA*	Agricultural farmers in the CSIP service area, Salinas Valley aquifers	• Reduces consequence of water supply loss in the Salinas River Groundwater Basin • Improves water supply reliability through capture and diversion • Potentially improves Salinas River water quality by reducing nutrient and contaminant runoff entering river
4	Lining Pond 3 at Salinas Industrial Wastewater Treatment Facility (SIWTF) *Project Sponsor: M1W*	Localized benefit to the Seaside Basin and CSIP customers	• Reduces consequences of water supply failure in the Seaside Basin • Diversifies and increases amount of source water (industrial wastewater) available to be converted to recycled water, thereby improving water supply reliability

6.7 Screening of Programmatic and Conceptual Projects

Programmatic/conceptual projects are typically those project that are emergent, and projects of related regional benefits that are critical to ongoing water management efforts but do not have the quantified water supply yield as the structural projects described above. The programmatic/conceptual projects are screened into three categories: 1) those that are part of an agency's existing mission or conservation programs, 2) projects that are at the concept stage and need development under future workplans and, 3) those that are identified as part of larger regional activities or watershed efforts beyond the management of the DCP taskforce. These categories are further described below and used to sort the projects in Table 6-5.

Category 1. Projects or programs that are part of agencies' monitoring, maintenance and asset management, education, and ongoing conservation efforts. These activities can be described as drought response actions to reduce impact or need for drought mitigation actions.

Category 2. These projects are emerging in the overall planning for regional supply resiliency but at this time have not been developed to the point of providing a quantifiable yield or supply benefit. Further investigation of these projects will be informed by outcomes from the GSP and alternatives developed under the Basin Study.

Category 3. All other water supply and quality management projects not included in Categories 1 and 2 that are regional in basis and involve partners both in and out of the DCP area. These projects demonstrate that water supply reliability partners are often found when working from a watershed perspective. These projects also reflect the need to capture, and put to beneficial use, all available sources of water to meet the supply demands of multiple end-users throughout the region.

All of these categories demonstrate the need for members to continue working together, as collaboratively supporting ongoing and future efforts, to secure the region's water supply.

Table 6-5. Summary of Programmatic/Conceptual Drought Mitigation Measures[a]

Type	Project Reference No.	Programmatic/Conceptual Project[b]	Primary Project Type - categorized
Category 1	11	High Efficiency Applied Retrofit Targets (HEART) Pilot Program - Phase 1 *(MPWMD)*	Conservation/ Management
	24	Coastal Dedicated Monitoring Well Drilling *(MCWRA)*	Infrastructure Improvements/ Interties
	25	Dedicated Monitoring Well Expansion Project *(MCWRA)*	Infrastructure Improvements/ Interties
	27	Water Supply Reliability Project *(MCWRA)*	Infrastructure Improvements / Interties
	28	Ground Water Conservation and Extraction Monitoring Expansion Project *(MCWRA)*	Conservation/ Management
	29	Well Destruction Project *(Salinas Valley Water Project [SVWP])*	Infrastructure Improvements/ Interties
	34	New Water Supply Wells (3) and Treatment *(Cal Water)*	Infrastructure Improvements/ Interties
	36	Conservation Program (*Cal Water)*	Conservation/ Management
	37	Salinas Multi-Benefit Floodplain Management (*Monterey County Resource Conservation District; Grower-Shipper Association*)	Watershed
	38	Monterey Bay Friendly Landscaping Rebate Incentive and Direct Installation Program *(Ecology Action*)	Conservation / Management
	39	WaterLink-Monterey Bay *(Ecology Action*)	Conservation / Management

Table 6-5. Summary of Programmatic/Conceptual Drought Mitigation Measures[a]			
Type	Project Reference No.	Programmatic/Conceptual Project[b]	Primary Project Type - categorized
	40	Drought Tolerant Landscaping at Schools *(Watershed Institute, Return of the Natives)*	Conservation / Management
	41	Educational Outreach/Conservation Projects *(Return of the Natives)*	Conservation / Management
	43	Carmel River Floodplain Restoration and Environmental Enhancement (Carmel River FREE) (*Big Sur Land Trust*)	Watershed
	44	Carr Lake Riparian Habitat Restoration Plan (*Big Sur Land Trust, City of Salinas)*	Watershed
	48	Seaside City Wide Low Impact Development Projects *(City of Seaside)*	Conservation / Management
Category 2	22	Salinas River Diversion Facility Expansion (*MCWRA)*	New Water Supplies
	23	Salinas River Diversion Facility Solar Energy Enhancement Project *(MCWRA)*	Infrastructure Improvements / Interties
	26	Monterey County Water Supply Augmentation Program *(MCWRA)*	Watershed
	51 and 52	Expand Recycled Water Sources: • Agricultural Tail Water Recapture (51a) • Recycle Water (collect wastewater from River Road & Toro and convey to Hitchcock) (51b) • Recycled Chualar Wastewater/South County (51d) • Capture and Recycle Municipal Well flushing water (51e) • Monterey Tunnel Stormwater Diversion (52b) • Carmel-by-the-Sea Stormwater Diversion Project (52c) • Other alternative recycled water sources (51c)	New Water Supplies
	51 and 52	Groundwater: • Construct Seawater Intrusion Extraction Barrier (51f) • Reduce Pumping in Coastal Areas (51g) • Limit Groundwater Extraction (180 to 400 foot aquifer) (51h) • North End Storage (Recharge) (51p) • Wellhead Treatment (Brackish water) (51u) • Dry Well Aquifer Recharge Program (52e)	Infrastructure Improvements / Interties, Conservation / Management
	51 and 52	Storage: • Better Manage Dams/Releases (51i) • Increase Reservoir Storage by Increasing Release Capacity (51j) • Weather Responsive Dam Operations (51k) • Build Small Groundwater or Storage Basins (51l) • Use 11043 Permit Water to fill Cone of Depression in Natividad (51m) • Monterey One Water – Wintertime Effluent Storage (51o) • Dam Arroyo Seco (51r) • Pacific Grove Monterey ASBS Watershed - David Avenue Reservoir (52d)	Storage
	51	Agricultural Management Practices: • Improve Farming Practices and Provide Incentives to Farmers (51s) • Incentives to foster land retirement/fallowing (51z)	Conservation / Management

Table 6-5. Summary of Programmatic/Conceptual Drought Mitigation Measures[a]

Type	Project Reference No.	Programmatic/Conceptual Project[b]	Primary Project Type - categorized
	51	Conservation Programs • Watershed Management Practices (increase natural runoff flow) (51v) • Coordinate Outside Basin to incorporate watershed into Santa Lucia and Gabilan waters (51w) • Maximize River to move Water (not pipeline) (51x) • Urban Conservation Programs (51y) • Evapotranspiration has a loss component for projects – ponds, native vegetation, urban greening (51aa) • Integrate Habitat Conservation Plans into all Projects (51ab)	Watershed, Conservation / Management
	51	Local and State Policies/Incentives • Re-evaluate Nitrate Regulations (51t) • Land Use Policies Reviewed (51ac) • Fast track CEQA/permitting for projects pertaining to water (51ad) • Price Incentives for all water use (51ae)	Conservation / Management
	51	Refine Models: • Baseline Data (51af) • Better models that can be actively used as watershed management tool (51ag)	Conservation / Management
	51 and 52	Miscellaneous Stormwater: • Stormwater Capture (mouth of Salinas River) (51q) • Hartnell Gulch Restoration and Stormwater Diversion (52a)	Conservation / Management, Watershed
Category 3	17	Projects under Evaluation as part of Three Party MOU *(FORA, MCWD, and M1W)*	Storage
	35	Feasibility Study Projects *(Cal Water)*	Conservation/ Management
	42	Carmel Bay Area of Special Biological Significance (ASBS) Project (*Pebble Beach CSD*)	Watershed

a. Programmatic/conceptual projects include 'do-anyway' projects, conceptual projects, projects that are beyond the 10-year planning horizon, and other projects.

b. Sponsoring Agencies are shown in parentheses next to project name.

c. Projects numbered as 51 are SWRP projects.

d. Projects numbered as 52 are GSA concept ideas.

Section 7

DCP Implementation: Near-Term Projects and Operational and Administrative Framework

Section 7 Summary

Key Take-Aways

- For the near-term MPWMD will continue to provide leadership and strengthen the regional partnership that has emerged from the DCP stakeholder process.
- Efforts already in place such as the development of GSPs and UWMPs as well as information from the Salinas and Carmel Rivers Basin Study will be used to inform assumptions related to both surface and groundwater reliability and availability in the next DCP updated in 2026.
- The drought mitigation measure projects should progress based on need for the supply and relevant triggers rather than based solely on a timeline tied to a specific year.

Recommended Actions

- Over the next five-years, the DCP Implementation Group will continue to meet on a 6-month basis to address the following:
  - Continued coordination with Monterey County and the GSA
  - Discuss funding and next steps to keep the DCP elements updated
  - Use the modeling and analysis results of the Basin Study to check assumptions and update the drought planning for the next version of the DCP
  - Continue support and tracking of programmatic/conceptual projects in all categories.
  - Form an operational sub-committee as a subset of the DCP Implementation Group to develop policies and approaches for drought response activities, future involvement from agricultural water users, land use issues, and coordination on construction partnerships.

Previous to undertaking this DCP, the lack of a regional plan demonstrates the historically independent, sub-regional approach to management of the region's water resources. Traditionally, urban water users on the Peninsula have had little need to develop comprehensive water management plans inclusive of the agricultural sector doing business just a few miles away.

However, the recent historic drought from 2012 to 2016, extremes in temperature and precipitation variability due to climate change, and actions by the State related to groundwater management and conservation standards, are bringing these interests to the table to jointly plan for management of water resources for the future benefit of all the region's water users.

The DCP planning process has considered multiple stakeholders' perspectives; urban, industrial, environmental, and agricultural in the development of the drought response and mitigation actions under the DCP.

Now, after decades of 'local-agency based' thinking, and subsequent water conflict, a regional approach and shared commitment toward investing in a reliable water supply has firmly taken hold. The first increment of this shared vision was the Pure Water Monterey water reuse program, followed by this North Monterey County DCP and Salinas and Carmel Rivers Basins Study. Next came implementation of California's SGMA and subsequent formation of the Salinas Valley Groundwater Sustainability Agency. Within the last 5-years all of these

efforts have contributed toward establishing a regional identity and shared commitment toward managing all available waters for future supply reliability.

The final aspect of this DCP is the operational and administrative framework that is critical for supporting implementation of the drought mitigation measures and describes who is responsible for undertaking necessary actions to implement various DCP elements. This section describes the ownership of the administrative framework, and approach to implementing and updating the components of this DCP into the future.

7.1 DCP Implementation

For the near-term, MPWMD will continue to provide leadership and strengthen the regional partnership that has emerged from the DCP stakeholder process. Although this group was formed primarily with representation from surface water suppliers, future water management in the region will be a mix of both surface and groundwater management.

The DCP Task Force and Basin Study stakeholders help to fill an institutional gap and created a new regional identity and forum to discuss water supply reliability. The DCP process also facilitated development of a common understanding of the role each agency plays in the region's co-equal management of water quality and quantity for all water-users.

Also, by participating in the stakeholder process participants had access to top watershed and climate science from the Basin Study, relevant information from the GSA, and project influences from other entities.

Implementing and updating the DCP is just the beginning of this group's work. The new forum will provide support for commenting and participating in future surface and groundwater planning, infrastructure development, response to local investor-owned water projects, and anticipated new public policy influences for the next five-years and beyond.

7.1.1 Planning - Regional Approach and Shared Commitment

It is important to assign the roles and responsibilities for undertaking the actions necessary to implement each element of the DCP including the procedures necessary to conduct drought monitoring; initiate response actions, including emergency response actions, initiate mitigation actions, and update the plan. Information flow and coordination between the local agencies and others as well as the approach for undertaking the actions necessary to implement each element of the DCP will leverage efforts and stakeholder activities already in place.

Figure 7-1 lists the efforts already in place by the local agencies and stakeholders, the roles and responsibilities and frequency of these efforts, how these efforts meet DCP requirements, and which DCP elements are addressed. Some efforts depend on information or analysis in other efforts to improve and update water supply reliability planning. As indicated in Figure 7-1 efforts such as the GSPs and UWMPs will use information from the Salinas and Carmel Rivers Basin Study to inform assumptions related to both surface and groundwater reliability and availability.

The GSPs will likely result in recommendations with up to six sub-regions under an over-arching management plan. There will likely be many recommendations for both technical and policy actions such as local ordinance recommendations for new wells and pump monitoring.

Efforts already in place		DCP Update	
Activities	**Roles and responsibilities, frequency**	**Related DCP elements**	**Related DCP requirements**
Sustainable Groundwater Management Act Groundwater Sustainability Plans (GSP)	• SVGSA GSP and MCWD GSP • Identify mitigation actions, groundwater pumping limits • GSPs due in 2020	• Mitigation Actions • Operational and Administrative Framework • Plan Development and Update	• Identify, evaluate, and prioritize mitigation actions/activities • Identify responsibilities for implementation
Urban Water Management Planning Act Urban Water Management Plans (UWMP)	• UWMP includes updated 25 year demand/supply availability outlook • Alco Water, Cal-Am, Cal Water, MCWD • 5 year submittal frequency	• Drought Monitoring • Vulnerability Assessment • Plan Development and Update	• Collection, analysis, dissemination of water availability • Identifying metrics and triggers to define stages of drought
Urban Water Management Planning Act- Water Shortage Contingency Plans (WSCP)	• Alco Water, Cal-Am, Cal Water, CCSD, MCWD, MPWMD • WSCP update in conjunction with UWMPS 5-year updates	• Drought monitoring • Response Actions	• Identify metrics and triggers to define states of drought, trigger mitigation or response action, define states drought • Identify response actions and activities to provide expeditious benefits
Salinas and Carmel River Valley Basin Study	• Alco Water, Cal-Am, Cal Water, CCSD, MCWD, MPWMD, MCWRA, SVBGSA • Develop mitigation measures to improve water supply reliability, diversify supplies, manage groundwater, supply vulnerability assessment, climate change impacts • Complete by 2020	• Vulnerability Assessment • Mitigation Actions	• Identify, evaluate, prioritize mitigation actions for resiliency • Evaluate risks and impacts of drought, based on range of future conditions
Grant Funding Opportunities	• Alco Water, Cal-Am, Cal Water, CCSD, MCWD, MPWMD, M1W, MCWRA, SVBGSA • Implement drought mitigation measures projects • Grant funding opportunities shown for top ranked projects • Frequency and timing based upon available grant funding opportunities	• Mitigation Actions • Operational and Administrative Framework	• Prioritize mitigation actions • Actions necessary to initiate/implement mitigation actions
Ongoing Regulatory, Groundwater Management Plan, and Other Studies Reporting Activities	• MPWMD, MCWRA, Alco Water, Cal-Am, Cal Water, CCSD, MCWD, SVBGSA, Seaside Watermaster • Monitor groundwater levels, groundwater extraction data, seawater intrusion, precipitation, reservoir releases • Monthly consumption reports • Varies - monthly, quarterly, annually	• Drought Monitoring • Operational and Administrative Framework	• Process for monitoring near and long-term water availability • Collection of water availability/other drought related information • Identifies responsibilities

Figure 7-1. Leveraging efforts already in place by local agencies will support the update of DCP Elements in the future

7.1.2 Infrastructure - Implementing Top Ranked Drought Mitigation Measures

The drought mitigation measures described and screened in Section 6 encompass all known water projects within the DCP area. The DCP participating agencies are the owners and drivers of some of these projects whereas other projects are owned and driven by other utilities and stakeholders, outside the control of the local DCP agencies.

The drought mitigation measure projects that are outside of the control of the DCP agencies could still have massive sway and impacts on the implementation of the drought mitigation measures controlled by the participating local agencies in this DCP.

The projects in Table 7-1 have been identified as the top projects contributing to supply reliability in the 5-year or near-term horizon. The first group are under the purview of DCP agencies, and the second are being undertaken by investor owned water utilities operating in the DCP planning area. All of these projects were identified as near-term priorities and, as each is brought on line, will incrementally contribute to regional supply reliability. The Pure Water Monterey program implementation will be completed in approximately three-years but the progression of many of the other structural projects that are within the purview of the DCP agencies is linked to the two desalination projects outside the purview of the DCP agencies. Cal-Am is taking the lead on the MPWSP, but Deep Water Desal LLC's Monterey Bay Regional Water Project still needs a major financing partner.

Table 7-1. Drought Mitigation Measures Grouped by DCP Participating Agencies

Drought Mitigation Measures (Structural)	Participating Agencies	Relationship to other Drought Mitigation Measures Implementation Triggers
DCP Participating Local Agency Purview		
Pure Water Monterey Groundwater Replenishment Project	M1W, MPWMD	Assume to be implemented.
Interlake Tunnel and Spillway Modification Project	MCWRA	Long-term implementation if agricultural demands cannot be met as a result of GSP report extraction limitations and/or if CSIP needs are not met from lining ponds and/or modifications to existing facilities to meet winter irrigation demands.
Pure Water Monterey Expansion	M1W, MPWMD	On-site expansion of the treatment facility for exclusively potable supply. This should not be confused with the larger, general term Pure Water Monterey that provides urban and agricultural benefits. This project will provide multiple benefits to agricultural growers as it will make available more water for irrigation by creating additional potable supply for urban users that would otherwise use the agricultural supplies as well. Pure Water Monterey Expansion may only be implemented if desalination plan plant does not move forward or may be an interim solution while desalination facilities are being constructed.
Modifications to Existing Facilities to Meet Winter Irrigation Demands	M1W, MCWRA	Improvements are located within the treatment facility and readily implemented and is viewed similar to lining the ponds or expanding Pure Water Monterey. This project will be implemented if urban and/or agricultural demands cannot be met as a result of the GSP report limiting groundwater extractions.
Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)	MCWD, FORA, MRWPA	Assume to be implemented. If FORA needs are not met then RUWAP Expansion will be implemented.
Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) (expansion)	MCWD, FORA, MRWPA	If FORA needs are not met with RUWAP then RUWAP Expansion will be implemented.

Table 7-1. Drought Mitigation Measures Grouped by DCP Participating Agencies		
Drought Mitigation Measures (Structural)	**Participating Agencies**	**Relationship to other Drought Mitigation Measures Implementation Triggers**
CSIP Annexations	M1W, MCWRA	Can be implemented following pond lining and modifications to existing facilities to meet winter irrigation demands.
Salinas Valley Water Project (SVWP) Phase II	MCWRA	
Lining Pond 3 at Salinas Industrial Wastewater Treatment Facility (SIWTF)	M1W	Relatively minor onsite improvements and would add supply to the Pure Water Monterey Expansion Project and/or could procure water for CSIP Expansion. This also allows shifting of agricultural wash water from winter to summer as well as stormwater use from winter to summer. This project will be implemented if urban demands cannot be met as a result of the GSP report limiting groundwater extractions.
Outside Purview of DCP Participating Local Agencies		
Monterey Peninsula Water Supply Project (MPWSP)	Cal-Am	Assumed to be implemented.
Monterey Bay Regional Water Project	Deep Water Desal LLC	May be implemented if urban demands are not met as a result of the Pure Water Expansion.

The potential sequence for implementation of these projects and key decisions upon which the implementation depends are illustrated in Figure 7-2. The intent of this figure is to simplify a very complex group of consequences and outcomes to illustrate the drought mitigation measure projects progressing based on need for the supply and relevant triggers rather than based solely on a timeline tied to a specific year. This is not a completely comprehensive sequence of events in that all variables that impact the decision process are not shown, but rather the key factors and opportunities are included. The variables that are shown on this figure change day to day. Other programs such as programmatic and additional wastewater flows collected are not represented in Figure 7-2. It is anticipated that this figure will be updated in the future and used as a tool to summarize the decision process for the DCP Implementation Group. Once this information is better understood, decisions can be made regarding whether an expanded Pure Water Monterey program will be needed to meet the region's supply needs without additional supply provided by either the Monterey Peninsula Water Supply Project (MPWSP) or the Monterey Bay Regional Water Project.

In the coming 5-years much more will be known that will allow DCP water managers to make decisions for future supply reliability. There are two pivotal investigations underway that are key to future decisions:

- The Basin Study will provide anticipated precipitation scenarios affecting surface supply, and
- The GSP will determine safe groundwater management under present and future conditions.

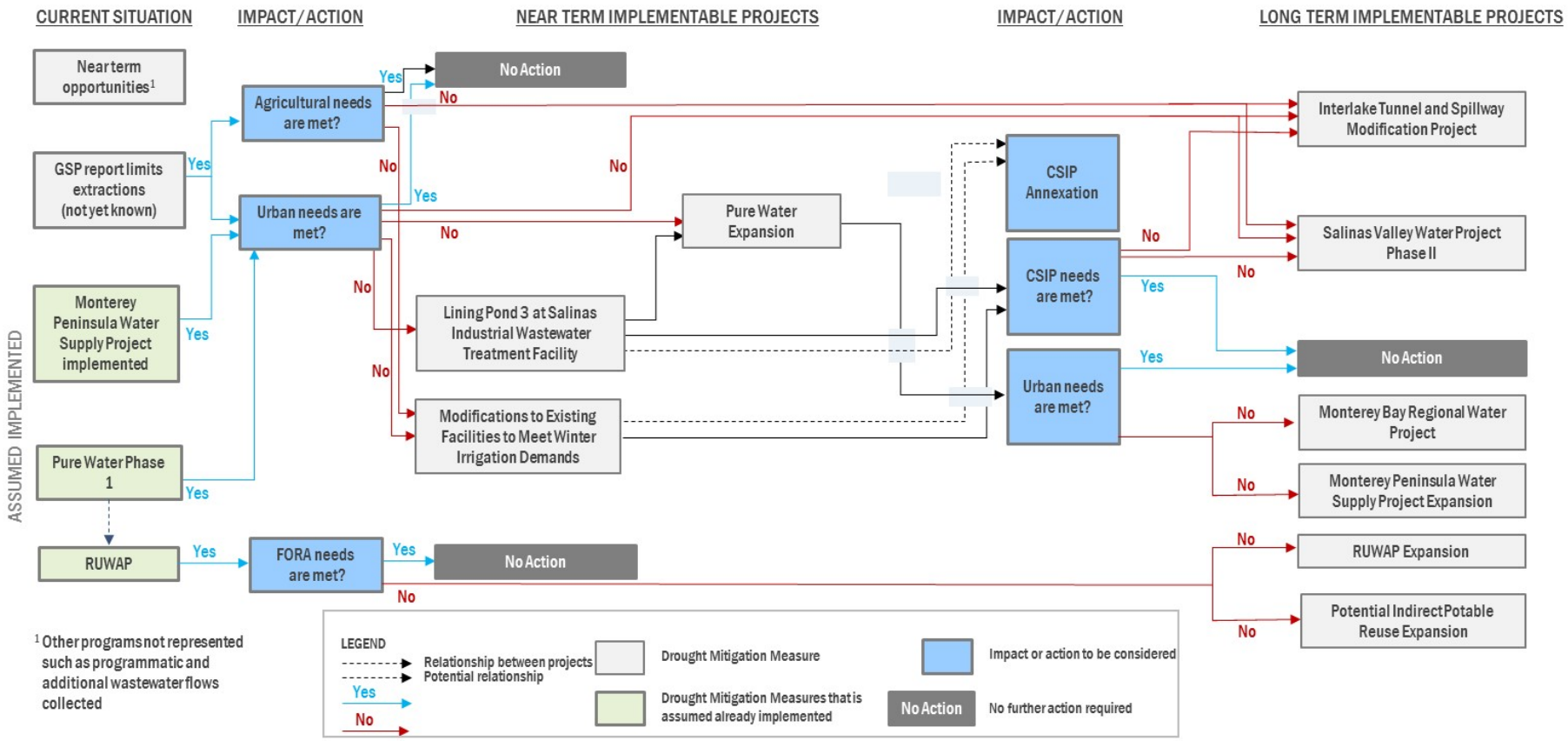

Figure 7-2. Potential sequence of decisions for Drought Mitigation Measures in Table 7-1

7.1.3 Programs, Studies, and Policy that Influence the DCP

There are four key components to this regional approach and shared commitment toward investing in a reliable water supply for the region. Each of these play an important role because they each address issues and provide solutions in both the urban and agricultural sectors in the region. The four key components are as follows:

1. Pure Water Monterey Program
2. North Monterey County DCP
3. Salinas and Carmel Rivers Basin Study
4. California SGMA (and implementing GSP)

In addition to the above four components, there are two recent state initiatives that will also shape future water use in the DCP region:

1. Water conservation requirements under SB 606 and AB 1668 implementing the Executive Order: *Making Water Conservation a California Way of Life*.
2. Policy and actions emerging from California's Fourth Climate Change Assessment

The supply and vulnerability analysis from Section 4 will need to be revisited with information from the Basin Study and outcomes of the GSP. The identified actions and projects will need to be incorporated into a updated drought mitigation measures screening to re-sort the top priorities of this DCP area. The management of the dam/Salinas River sub and surface flows will be the second key supply.

7.1.4 DCP Implementation Work Plan

The DCP Implementation Group needs to have a forum to continue addressing these components from a regional perspective. Figure 7-3 illustrates an overview of the DCP Implementation Work Plan. MPWMD has volunteered to take a lead role for the next five-years and to lead the first update of the DCP document. Depending on the outcomes of the update, future leadership could be followed by M1W and/or the GSA. Over the next five-years, the DCP Implementation Group will continue to meet on a 6-month basis to address the following:

- Continued coordination with Monterey County and the GSA
- Discuss funding and next steps to keep the DCP elements updated
- Incorporate on-going studies into drought mitigation and response activities including the Basin Study, Monterey County studies and modeling, and the GSPs
- Use the modeling and analysis results of the Basin Study to check assumptions and update the drought planning for the next version of the DCP
- Continue support and tracking of programmatic/conceptual projects in all categories:
  - Category 1: Programmatic or existing conservation programs
  - Category 2: Emergent projects at concept stage
  - Category 3: Regional projects beyond the scope of this DCP
- Implement structural projects
  - Continue support and track progress of structural projects
  - Seek grant funding for top ranked structural projects
  - Provide regional voice in support of project implementation funding

  - Individual grant application leads will vary by project
  - Coordinate with key project entities outside the purview of the DCP group authority
- Form an operational sub-committee as a subset of the DCP Implementation Group to develop policies and approaches for drought response activities, future involvement from agricultural water users, land use issues, and coordination on construction partnerships
- At the August 13, 2018 DCP Task Force meeting there were a number of both conceptual and specific activities identified for future consideration and technical analysis:
  - Small system consolidations, annexing more lands on the CSIP under Pure Water Monterey
  - Annexing more lands on the CSIP under Pure Water Monterey
  - Small-scale storage for agricultural uses and drought contingency
  - Lining of ponds (in coast zone)
  - Determine evaluation along the Salinas River that would facilitate groundwater recharge in 180/400 sub-basins
  - Analysis of monitoring wells south of Reservation Road for sea water intrusion mapping and active characterization of actual sea water intrusion

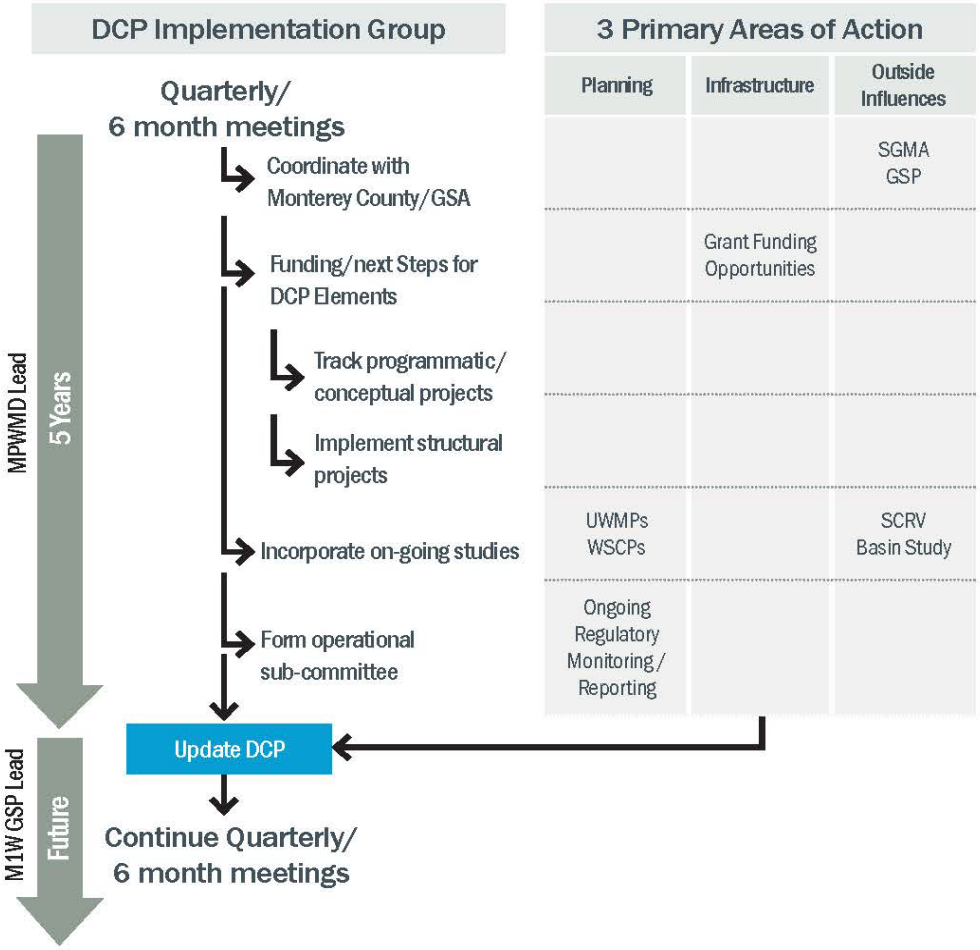

Figure 7-3. DCP Implementation Work Plan Overview

7.1.5 DCP Update Process

The DCP will be updated in 2026 and then every five years thereafter. This is in order to incorporate updated information from the member agency UWMPs which will be filed with the State in 2026 and every five years thereafter. The process for updating the DCP is summarized as by quarter (Q) and year as follows:

- **Q3 2024.** MPWMD identifies findings of Salinas Valley GSPs and the Basin Study which may impact update of the DCP.
- **Q4 2024.** MPWMD identifies which Base Case projects in section 6.3.3 and Structural and Programmatic/Conceptual projects from Table 6-1 (and identified in Figures 6-1 and 6-3) have been completed and added to the resource mix. Additional projects identified through the Salinas Valley GSPs will be added.
- **Q1 2025.** MPWMD convenes Task Force and distributes revised Table 6-1. Screening Approach (Section 6.4) and Evaluation Criteria to be discussed and agreed upon by the parties.
- **Q2 2026.** UWMPs submitted to the State.
- **Q3 2026.** Existing water facilities sections (2.1 and 2.1) updated based on then known facilities. Current and future demand conditions (Section 2.3) updated based on UWMPs. Section 4 Vulnerability Assessment performed based on future conditions from UWMPs, adjusted for agricultural water use due to higher temperatures and evaporation discussed in Section 4.3.3 above. Ranking of projects performed (Section6.5) based on Vulnerability Assessment and the criteria set by Task Force.
- **Q4 2026.** Other sections of the DCP updated and report finalized.

7.2 Linkage with Salinas and Carmel Rivers Basin Study

The North Monterey County DCP area includes several subareas identified in the Salinas and Carmel River Basin Study and specifically includes those most impacted by the 2012 to 2016 drought. The DCP area is located in the approximate northern-third of the Basin Study planning area.

As the DCP and Basin Study efforts are complementary, it was intended that future climate information developed under the Basin Study would inform and provide a greater level of specificity to decisions pertaining to near-term actions of the DCP. However, due to time delays in initiating the Basin Study, the full range of information was not available to DCP Task Force members beyond the preliminary temperature and precipitation data discussed in Section 4.

In discussions throughout this DCP, it has been established that there are near-term actions that can be taken in the initial five-year timeframe but full integration of information from the Basin Study will take place when the DCP is updated.

Reclamation's Climate Change Adaptation Strategy—which includes the Basin Studies, DCP and Title XVI water reuse programs—identifies 4 primary goals for Reclamation, its contractors, and local water supply managers working with Reclamation to build resiliency to climate change impacts. Of these, 3 have direct application to current activities and will also inform the next version of the DCP when updated:

Goal 1 – Increase Water Management Flexibility: identifies funding Title XVI projects as one of the actions Reclamation can take to implement adaptation strategies supported by climate analysis. Pure Water Monterey has completed their Title XVI Feasibility Study and is actively seeking construction grant assistance under this program.

Goal 2 – Enhance Climate Adaptation Planning: recognizes the importance of planning as a tool for building resiliency to climate change. This region's efforts to integrate Basin Study information and DCP actions demonstrates how near and long-term planning activities inform and support climate resiliency planning. The information from the Basin Studies will also extend beyond the DCP to provide foundational information for other decision documents such as future UWMPs and the GSP.

Goal 4 – Expand Information Sharing: supports active partnering, information and data exchange with stakeholders, federal and state agencies and NGOs. The shared stakeholder process between the Basin Study and DCP has provided an efficient, structured processes to inform local decision makers and include multiple stakeholder perspectives.

7.3 Available Drought Relief, Mitigation Programs, and Drought Resources

To advance a suite of regional drought mitigation measures, viable funding sources must be identified and is often the primary constraint in implementing projects. Several state, federal, and local funding sources are potentially available (i.e., current grants and loan opportunities). Funding eligibility and other requirements, such as local cost-share for grants and repayment terms for loans, are important considerations. In addition, grant funding is competitive (thus, less certain to materialize). Alternative funding mechanisms, such as public-private partnerships (P3s), are additional pathways to consider.

Like other water projects, costs associated with the drought mitigation measures have three components—capital costs for initial construction, O&M costs, and repair and replacement (R&R) costs for ongoing implementation once initial construction is complete. Some funding sources can be used only for capital expenditures, while others are more broadly applicable.

7.3.1 Grants and Loans

Agencies can use grant and loan programs to finance capital projects. Table 7-2 provides a summary of currently available federal and state funding sources. Such programs evolve with time, and current information is typically most efficiently found on websites (refer to the embedded hyperlinks in Table 7-2).

When pursuing grant funding, the following general guidelines typically apply:

- Grant applications require demonstration of the ability to construct, operate, and maintain the project without grant funding.
- Grant award or funding authorization is not a promise of grant reimbursement.
  - Most grants are reimbursements and not up-front cash, which means a funding source must be available for project construction.
  - Grant reimbursements are subject to annual budget and appropriations processes. As such, disbursement of grant funds is not guaranteed to follow an established schedule.
  - It may take several years after project completion to receive reimbursements, especially in difficult economic times.
  - Most grants require a minimum cost share by the project sponsor.
  - Federal grants typically require investment of additional resources.

Despite the competitive nature of grants, securing external funding can help to minimize ratepayer impacts and the rising cost of water services, which is particularly important to the local agencies concerning affordability issues in low-income disadvantaged communities (DACs).

7.3.2 Public-Private Partnerships

In recent years, public agencies have explored P3s and other forms of private-sector financial involvement as possible ways to improve service, quality, and efficiency. P3s involve private financing and the sharing of a project's risks and rewards beyond the construction phase between public and private partners. In P3 projects, the private partner is typically responsible for the financing, design, construction, and O&M of the facility. In return, the private partner will typically receive a fee for the water from the public partner(s).

California's Infrastructure Finance Act (IFA) (IFA; published in California Government Code Section 5956) authorizes local governments to use private-sector investment capital for developing "fee-producing infrastructure facilities." It must be paid for by those benefiting from the facility. Among others, the IFA applies to cities (general law and charter), counties (general law and charter), public districts, JPAs, and any other public or municipal corporations. The government agency may grant ownership or leasing rights to the facility for up to 35-year terms.

Projects built under a P3 approach can offer some unique benefits. P3s provide a new source of funding for projects with costly infrastructure and/or operational costs. This approach can make otherwise unaffordable capital projects economically feasible. Private partners are often incentivized to complete the project as soon as possible because the private partner is usually not paid until after the project has been successfully constructed and is operating to predetermined performance requirements.

While P3s can offer many direct and indirect benefits, they also present challenges. Some types of P3 arrangements can be complex. Each agreement is unique and requires significant legal and technical input by both the public and private partners. Also, by forming a P3, an agency may concede some control of its water system to a private entity. Further, the public may perceive issues with respect to privatizing public water infrastructure assets and the loss of public control over such assets. While these concerns may be mitigated by the terms of most agreements, they can pose challenges for a public agency to pursue projects on a P3 basis.

Table 7-2. Federal and State Grant and Loan Funding Opportunities

Program	Agency	Type	Description	Funding Ceiling	Minimum Cost-Share Requirement
Federal					
Drought Response Program	Reclamation	The Drought Response Program is administered by the USBR. It supports a proactive approach for addressing drought by providing assistance to water users to conduct drought contingency planning and to take actions that build long-term resilience to drought. (http://www.usbr.gov/drought/)			
		Grants: Construction	Drought Resiliency Project: Financial assistance will be made available to implement small-scale projects to increase the reliability of water supplies; improve water management; implement systems to facilitate the voluntary sale, transfer, or exchange of water; and benefit fish and wildlife and the environment.	$750,000	50% (non-federal)
Title XVI	Reclamation	Grants: Construction	USBR administers funds for recycled water feasibility, demonstration, and construction projects through the Water Reclamation and Reuse Program authorized by the Reclamation Wastewater and Groundwater Study and Facilities Act of 1992 (Title XVI) and its amendments. To meet eligibility requirements, a project must have a feasibility study, comply with environmental regulations, and demonstrate the ability to pay the remainder of the construction costs. Programs/projects that provide regional benefits are more likely to be funded under this program. Projects successful in the application process are authorized by Congress and included in USBR's annual budget request to the president. Congress then appropriates funds, and USBR ranks and prioritizes projects and disburses the money on a competitive grant basis each year. Prioritized projects are those that postpone the development of new water supplies, reduce diversions from natural watercourses, and reduce demand on federal water supply facilities, or that have a regional or watershed perspective. (http://www.usbr.gov/watersmart/title/)	Up to 25% of construction costs, with a maximum of $20 million	75% of construction costs
WaterSMART Water and Energy Efficiency Grants	Reclamation	Grants: Implementation	WaterSMART Water and Energy Efficiency Grants provide cost-shared funding for projects that save water, increase energy efficiency and the use of renewable energy in water management, support environmental benefits (i.e., make conserved water available instream or otherwise address endangered species issues), mitigate conflict risk in areas at a high risk of future water conflict, and accomplish other benefits that contribute to water supply sustainability in the western United States. Projects are selected through a competitive process and the focus is on projects that can be completed within 24 months that will help sustainable water supplies in the western United States. (http://www.usbr.gov/watersmart/weeg/index.html). The region is actively involved in the Title XVI program through M1W.	Up to 50%, with a maximum of $1 million	50% (non-federal)
Water Infrastructure Finance and Innovation Act (WIFIA)	EPA	Loans	The WIFIA program accelerates investment in the nation's water infrastructure by providing long-term, low-cost supplemental loans for regionally and nationally significant projects. The WIFIA program was established by the Water Infrastructure Finance and Innovation Act of 2014. EPA estimates that current budget authority may provide more than $1 billion in credit assistance and may finance over $2 billion in water infrastructure investment. (https://www.epa.gov/wifia).	Up to 49% of eligible project costs. Minimum project size: $20 million for large communities (population greater than 25,000) $5 million for small communities (population of 25,000 or less)	Not applicable to loans.
State					
Proposition 1	SWRCB	The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) authorizes $7.545 billion in general obligation bonds to fund ecosystems and watershed protection and restoration, water supply infrastructure projects, including surface water and groundwater storage, and drinking water protection. The SWRCB is administering funds for five programs, described below. (http://www.waterboardsa.gov/water_issues/programs/grants_loans/proposition1.shtml)			
		Grants: Planning and Construction	Drinking Water (total funding: $260 million)	Planning: $500,000 Construction: $5 million	Variable, depending on inclusion of DACs and/or economically distressed areas (EDAs)
		Grants: Planning and Implementation	Groundwater Sustainability (total funding: $800 million)	Planning: $100,000 to $1 million Implementation: Two types 1st type – Offers funding starting at $500,000 with no maximum funding limit 2nd type - Provides funding opportunities for drinking water treatment projects that only benefit a DAC/EDA. Applicants are eligible to receive up to $5 million. No minimum funding amount is set.	Variable, depending on inclusion of DACs and/or EDAs. Non-DAC/EDA projects require a 50% match.
		Grants: Planning and Construction	Small Community Wastewater (total funding: $260 million)	Planning: $500,000 Construction: $6 million	Variable, depending on inclusion of DACs and/or EDAs
		Grants: Planning and Implementation	Stormwater (total funding: $200 million)	Planning: $50,000 to $500,000 Implementation: $250,000 to $10 million	50% (local)
		Loans	Water Recycling (total funding: $625 million): Grant funds have been committed. However, loans currently remain available.	TBD	Not applicable to loans.

Table 7-2. Federal and State Grant and Loan Funding Opportunities

Program	Agency	Type	Description	Funding Ceiling	Minimum Cost-Share Requirement
	CWC	Grants: Implementation	Water Storage Investment Program: Funding for storage projects. State funds can only be spent on the public benefits.	$2.7B ~$250M will be available for implementation in 2018.	50% cost share.
	CNRA	Grants: Planning and Implementation	CVP Improvement Act Grant Program (total funding: $475 million; 2016/17 budget: $89.15 million)	No maximum or minimum amounts have been set for 2016/17 budget	
Proposition 68 – SB 5	SWRCB/DWR	Grants	California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018 (June 2018). Relevant categories: safe drinking water, wastewater recycling, water conservation, water measurement, stormwater, watershed improvements, groundwater		
Integrated Regional Water Management (IRWM) Implementation Grant Program	DWR	Grants: Planning and Implementation	The IRWM Grant Program provides funding for projects that help meet the long-term water needs of the state, including: • Assisting water infrastructure systems adapt to climate change • Providing incentives through each watershed to collaborate in managing the region's water resources and setting regional priorities for water infrastructure • Improving regional water self-reliance, while reducing reliance on the Delta Proposition 1 authorized a total of $510 million in IRWM funding. (http://www.water.ca.gov/irwm/)	Updating an existing IRWM plan: $250,000 (minimum request of $50,000) New IRWM plan: $1 million	50%
Sustainable Groundwater Planning (SGWP) Grant Program	DWR	Grants: Planning and Implementation	The SGWP Grant Program provides funds for projects that develop and implement SGWP and projects consistent with groundwater planning requirements outlined in CWC Division 6. Proposition 1 appropriated a total of $100 million for this program. (http://www.water.ca.gov/irwm/grants/sgwp/index.cfm)	DACs/EDAs and critically over drafted: $500,000 All other grant applicants: $250,000	50% (local)
Water Energy Grant Program	DWR	Grants: Implementation	The Water Energy Grant Program provides funds to implement water efficiency programs or projects that reduce GHG emissions and reduce water and energy use, including: • Commercial water efficiency or institutional water efficiency programs • Residential water efficiency programs that benefit DACs • Projects that reduce GHG, water use, and energy use • Projects with water conservation measures that also save energy DWR was appropriated $19 million of GHG Reduction Funds by Senate Bill 101 to administer the program. (http://www.water.ca.gov/waterenergygrant/index.cfm)	$3 million	None required. However, projects proposing a cost share may be prioritized for funding (i.e., a "tie-breaker advantage").
Water Desalination Grant Program	DWR	DWR provides grants to local agencies for planning, design, and construction of desalination facilities (including pilot, demonstration, and research projects) for both brackish and ocean water. DWR has conducted three funding rounds since 2005 using Proposition 50 funds. The rules and procedures for funding vary depending on funding source/availability and DWR priorities at the time of funding. A fourth funding round is planned and will use primarily Proposition 1 funds (total funding of $100 million for desalination projects). The five relevant project categories follow below. (http://www.water.ca.gov/desalination/Water_Desal_Fund_Prog_OV.cfm)			
		Grants: Construction	Construction projects	$3 million	50%
		Grants: Construction	Pilot and demonstration projects	$1 million	50%
		Grants: Planning	Feasibility studies	$250,000	50%
		Grants: Planning	Environmental documents	$250,000	50%
		Grants: Research	Research projects	$500,000	50%
Clean Water State Revolving Fund (SRF)	SWRCB	Loans	The Clean Water SRF program offers low-interest (below-market) financing for a wide variety of water quality projects, such as construction of wastewater treatment and water recycling facilities, implementation of nonpoint source and storm drainage pollution control solutions, and development and implementation of estuary plans to protect and promote the health, safety, and welfare of all Californians. Repayment periods are usually the lesser of 30 years or the expected useful life of the financed asset. (http://www.waterboards.ca.gov/water_issues/programs/grants_loans/srf/)	No maximum funding limit.	Not applicable to loans.
Drinking Water SRF	SWRCB	Loans	Established by an amendment to the federal Safe Drinking Water Act in 1996, the Drinking Water SRF provides low-interest loans, additional subsidy (principal forgiveness), and technical assistance to public water systems for infrastructure improvements to correct system deficiencies and improve drinking water quality for the health, safety, and welfare of all Californians. (http://www.waterboards.ca.gov/drinking_water/services/funding/SRF.shtml)	No maximum funding limit.	Not applicable to loans.

a. *Though the IRWM Implementation Grant Program includes funding options for new IRWM Plans, the BARR agencies already participate in existing IRWM Plans. Thus, this funding option is not a viable option for BARR and is included only to provide a complete description of the grant program.*

Section 8

References

Alisal Water Corporation, Urban Water Management Plan Update, September 8, 2008.

Association of Monterey Bay Area Governments. 2018 Regional Growth Forecast, June 2018.

California Water Service, 2015 Urban Water Management Plan for the Salinas District, Final, June 2016.

Department of Water Resources. Climate Change Technical Advisory Group, Perspectives and Guidance for Climate Change Analysis. 2015.

Fairbank, Maslin, Maullin, Metz & Associates (FM3), 2017. Key Findings from a Recent Survey on Water Conservation in California. Prepared for the Association of California Water Agencies. May.

Fish impacts: http://www.montereyherald.com/article/zz/20130808/NEWS/130808226. By Virginia Hennessey, Herald Staff Writer, posted 080813.

IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Monterey County Water Resource Agency, Monterey County Groundwater Management Plan, May 2006

Monterey County Water Resource Agency, Historical Seawater Intrusion Map: Pressure 180-Foot Aquifer, http://www.co.monterey.ca.us/home/showdocument?id=63713, April 11, 2018.

Monterey Peninsula Water Management District, Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management Plan Update, prepared on behalf of the Regional Water Management Group, May 2014.

Monterey Peninsula Water Management District, Regulation XV: 2016 Monterey Peninsula Water Conservation and Rationing Plan, 2016

Nellor Environmental Associates, Inc. et. al., Final Engineering Report – Pure Water Monterey Groundwater Replenishment Project, Volume 1: Engineering Report, September 2016.

2015 Perspectives and Guidance for Climate Change Analysis. California Department of Water Resources Climate Change Technical Advisory Group.

Regional Water Management Group, Integrated Regional Water Management Plan for the Greater Monterey County Region, April 2013 (with amendments through August 2014).

Schaaf & Wheeler, Consulting Civil Engineers, 2015 Urban Water Management Plan for the Marina Coast Water District, June 2016.

State of California, State Water Resources Control Board, Order No. WR 95-10, July 1995.

State of California, State Water Resources Control Board, Order No. WR 2009-0060, October 2009.

State of California, State Water Resources Control Board, Order No. WR 2016-0016, July 2016.

United States Bureau of Reclamation. Reclamation Manual Directives and Standards – Drought Response Program WTR TRMR-110. Temporary Release, July 6, 2017.

Water Systems Consulting, Inc., 2015 Urban Water Management Plan for the Central Division – Monterey County District, prepared for California American Water, Final, June 30, 2016.

Appendix A: Bibliography of Drought Mitigation Measures References

Monterey DCP Agency Contact List

Agency	Agency Contact
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Grower-Shipper Association	Abby Taylor-Silva
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MONTEREY DCP BIBLIOGRAPHY

Report Name	Agency	Report Description	Background on Study Area		Water Supply		Water Demands		Drought Monitoring Process		Vulnerability Assessment		Mitigation Actions (Potential Projects)		Document Citation
			Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	
2015 UWMP Central Division - Monterey County District	California-American Water Central Division - Monterey County District	The UWMP is a planning document all urban water suppliers are required to complete every five years. These plans are intended to support long term resource planning, and ensure adequate water supplies are available to meet existing and future water demands.	Yes	Section 3 of the report provides a system description which includes discussion of the service area, climate, and population.	Yes	Section 5 of the report discusses system supplies. Section touches on available sources, transfer opportunities, and potential projects to help augment supply.	Yes	Section 4 of the report discusses the system demands. There is discussion on baseline and targets (SB X7-7), water demands, and discussion on a water reduction plan.	Yes	Section 6.2 of the report includes information of the areas Water Shortage Contingency Plan. Section 7 of the report includes a description of demand management measures for the region.	Yes	Section 6 of the report discusses supply reliability and water shortage contingency planning. Section 6.1 in particular, addresses the reliability of the major water resources of the region. Section 8.1 addresses vulnerability as it pertains to climate change.	Yes	Section 5.7 discusses future water projects, including ocean desalination on Pure Water Monterey.	Water Systems Consulting, inc, *2015 Urban Water Management Plan for the Centra-Division-Monterey County District* , Sections 3,4,5 and 6, "System Description", "System Demands", "System Supplies", "Supply Rreliability and Water Shortage Contingency Planning", California American Water, 2016,3-1 through 6-12.
2015 UWMP California Water Service Company - Salinas District	California Water Service Company - Salinas District	The UWMP is a planning document all urban water suppliers are required to complete every five years. These plans are intended to support long term resource planning, and ensure adequate water supplies are available to meet existing and future water demands.	Yes	Section 3 of the report provides a system description which includes discussion of the service area, climate, and population.	Yes	Section 6 of the report discusses system supplies. Section touches on available sources, transfer opportunities, and potential projects to help augment supply.	Yes	Section 4 of the report discusses the system demands. There is discussion on baseline and targets (SB X7-7), water demands, and discussion on a water reduction plan.	Yes	Section 8 of the report includes information of the areas Water Shortage Contingency Plan. Section 9 of the report includes a description of demand management measures for the region.	Yes	Section 7 of the report provides a water supply reliability assessment.	Yes	Section 6.8 discusses future water projects in the area.	California Water Service, *2015 UWMP Salinas District* , California Water Service, 2016.
Physical and Hydrologic Assessment of the Carmel River Watershed California	The Watershed Institute - Division of Science & Environmental Policy California State University Monterey Bay	The report documents the present hydrologic and physical condition of the Carmel Watershed.	Yes	Section 4 of the report provides a physical description of the Carmel watershed. Section 7 provides descriptions and issues of several subwatersheds and regions.	Yes	Section 6 of the report discusses hydrology of the watershed including a discussion on surface water and groundwater resources. Section 8.1 includes a discussion on watershed management as it pertains to water quantities.	No	N/A	Yes	Some narrative on conservation strategies is included in Section 8.1.4.	No	N/A	No	N/A	Douglas Smith, Wendi Newman, Fred Watson, Janna Hameister, *Physical and Hydrologic Assessment of the Carmel River Watershed California* , The Watershed Institute Division of Science & Environmental Policy California State University Monterey Bay 2004.
Environmental and Biological Assessment of Portions of the Carmel River Watershed	Monterey Peninsula Water Management District	The report documents an environmental and biological assessment of portions of the Carmel River Watershed.	Yes	Section 5.6 offers an assessment of water quality conditions in the Carmel River.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Monterey Peninsula Water Management District, *Environmental and Biological Assessment of Portions of the Carmel River Watershed* , 2004.
Drought and Desperation: What They Mean on the Monterey Peninsula (PowerPoint)	Monterey Peninsula Water Management District	Presentation that provides information on the severity of the ongoing drought.	Yes	Provides information on the ongoing drought.	No	N/A	No	N/A	Yes	Presentation includes graphics that help identify drought conditions.	No	N/A	No	N/A	Dave Stoldt, *Drought and Desperation: What They Mean on the Monterey Peninsula* , Monterey Peninsula Water Management District, 2016.
Item 18: Consider Changes to Project Sizing by California American Water	Monterey Peninsula Water Management District	The memorandum includes information that was put together to propose changes to the original size of the Monterey Peninsula Water Supply Project Desalination Plant.	Yes	Provides brief discussion on the area and the need for the new desalination plant.	Yes	Provides brief discussion on current water supplies and the need for the new desalination plant.	Yes	The document identifies demands of the region as a way to justify the need for the proposed project.	No	N/A	No	N/A	Yes	The document discusses recommended capacity for the Monterey Peninsula Water Supply Project Desalination Plant	David J Stoldt, *Item 18: Consider Changes to Project Sizing by California American Water,* 2013.
2014 Regional Growth Forecast - Technical Documentation	Association of Monterey Bay Area Governments	The report provides a regional growth forecast that helps inform regional planning processes and helps local jurisdictions and special districts inform local and sub regional planning.	Yes	The report provides growth forecast for the region.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Association of Monterey Bay Area Governments, 2014 Regional Growth Forecast Technical Documentation, 2014.
Item 14: Receive Comments from Jurisdictions and Consider Final Action on Proposed Yield Targets to Satisfy Current Replacement and Future Water Needs of the Monterey Peninsula	Monterey Peninsula Water Management District	The Item reviewed comments from the jurisdictions and considered final action on proposed current replacement and future water needs of the Monterey Peninsula.	No	N/A	No	N/A	Yes	The item includes information on the current replacement and future water needs of the Monterey Peninsula.	No	N/A	No	N/A	No	N/A	David A. Berger, *Item 14 Receive Comments from Jurisdictions and Consider Final Action on Proposed Yield Targets to Satisfy Current Replacement and Future Water Needs of the Monterey Peninsula* , Section number, Monterey Peninsula Airport District, 2007.
California Water Plan Update 2013 - Central Coast Hydrologic Region	Department of Water Resources	The report describes the Central Coast hydrologic region.	Yes	The report provides a summary of the hydrologic region that includes a description of the setting, resource management conditions, water planning and management, and future conditions.	Yes	The report provides information on water supplies by planning area within the region.	Yes	The report includes environmental water demands and future water demands for the region.	No	N/A	No	N/A	Yes	The document includes a list of implemented activities in recent history and a list of ongoing planning efforts in the region.	California Department of Water Resources, *California Water Update 2013 Plan Investing in Innovation & Infrastructure Central Coast Hydrologic Region* ,2013 .
IRWMP for the Greater Monterey County Region	Multiple parties: Regional Water Management Group	The IRWMP is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduces conflict, and manages water to concurrently achieve social, environmental, and economic objectives.	Yes	Sections B.1 to B.3 of the report provides a system description which includes discussion of the physical setting, watersheds, biological resources, and water systems.	Yes	Section B.3.3 of the report discusses system supplies. Future water supply is discussed in Section B.5.5. includes a discussion on future water supply.	Yes	Section B.5.4 of the report discusses the system demands.	No	N/A	Yes	Section B.4.2 includes discussion on vulnerability as it pertains to evaluating the adaptability of water management systems in the region to climate change.	Yes	The IRWMP includes an extensive list of mitigation actions for the region. Section G includes the proposed implementation projects of the region.	Regional Water Management Group, *Integrated Regional Water Management Plan for the Greater Monterey County Region* , 2014.

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IRWMP for the Greater Monterey County Region Section G - Projects	Multiple parties: Regional Water Management Group	This document is part of the IRWMP for the Greater Monterey County Region. This section lists the projects included in the IRWMP through 2014 and includeds proposed implementation projects, funded IRWMP projects, and concept projects.	No	N/A	Yes	When relevent, the project descriptions include information about the water supplied by the project.	Yes	When relevent, the project descriptions include information about the water supplied by the project.	No	N/A	No	N/A	Yes	Each project listed is a mitigation action.	Regional Water Management Group, *Integrated Regional Water Management Plan for the Greater Monterey County Region Section G: Projects* , 2014.
Monterey Regional Water Supply Program: EIR Project Description	California American Water, Marina Coast Water District, Monterey County Water Resources Agency, Monterey Regional Water Pollution Control Agency	The report discusses the Monterey Regional Water Supply Program.	Yes	Section 2.1 of the report includes a description of North Monterey County.	Yes	Section 2.4 of the report includes a discussion of the purpose and need of the project which includes information on water supplies in the region.	Yes	Section 2.4 of the report includes a discussion of the purpose and need of the project which includes information on water demands in the region.	No	N/A	Yes	Section 2.4 of the report includes a discussion of the purpose and need of the project..	Yes	The report provides information on the Monterey Regional Water Supply Program.	RMC, *Monterey regional Water Supply Program: EIR Project Description Proposed Alternative to a Desalination Facility at Moss Landing* , Sections 2.1 and 2.4, “Background”, "Project Purpose and Need", CAL Am Water, 2008, 2-1, 2-6.
Final Municipal Services Review for the North County Area of Monterey County	LAFCO of Monterey County	The reports provides a municipal services review for the service districts in the northern area of Monterey County.	Yes	The report offers an overview of the region in general and a more in depth description of the service districts in the northern area of Monterey County.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Cypress Environmental and Land Use Planning, *Final Municipal Services for the North County Area of Monterey County* , 2006.
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP Update	Monterey Peninsula Water Management District	The IRWMP is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduces conflict, and manages water to concurrently achieve social, environmental, and economic objectives.	Yes	Chapter 2 of the report provides a system description which includes discussion of the physical setting, watersheds, biological resources, and water systems.	Yes	Chapter 2.2 of the report discusses current water resources in the project area.	Yes	Chapter 2.3 of the report discusses quality and quantity of water resources including region demands.	No	N/A	Yes	Chapter 15 includes discussion on vulnerability as it pertains to evaluating the adaptability of water management systems in the region to climate change.	Yes	The IRWMP includes an extensive list of mitigation actions for the region.	Monterey Peninsula Water Management District, *Monterey Peninsula, Carmel Bay, an South Monterey Bay Integrated Regional Water Management Plan Update* , Regional Water Management Group, 2014.
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP Update Appendices	Monterey Peninsula Water Management District	The Appedices of the IRWMP includes the MOU, stakeholders hist, NOI, CalAm service area map, salt and nutrient management plan, drainage plans, concept project proposals for IRWMP, stakeholder meeting notes.													Monterey Peninsula Water Management District, *Monterey Peninsula, Carmel Bay, an South Monterey Bay Integrated Regional Water Management Plan Update Appendices* , Regional Water Management Group, 2014.
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: City of Salinas Stormwater Diversion.	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the Salinas Stormwater Diversion Project.	Yes	Briefly in the 'Detailed Project Information' section.	Yes	In the' Detailed Project Information' section and in the 'Water Supply' section.	No	N/A	Yes	Project addresses monitoring, this document does not in detail	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: City of Salinas Stormwater Diversion* . Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Pacific Grove Recycled Water Onsite Retrofits	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the Pacific Grove Recycled Water Onsite Retrofits.	Yes	Briefly in the 'Detailed Project Information' section.	Yes	In the' Detailed Project Information' section and in the 'Water Supply' section.	Yes	Throughout summary	No	N/A	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Pacific Grove Recycled Water Onsite Retrofits.* Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: High Efficiency Applied Retrofit Targets (HEART) Pilot Program	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the High Efficiency Applied Retrofit Targets ('Heart') Pilot Program.	Yes	Briefly in the 'Detailed Project Information' section.	No	N/A	No	N/A	Yes	Strategic Considerations section briefly discusses monitoring.	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: High Efficiency Applied Retrofit Targets (HEART) Pilot Program* . Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Lake El Estero Diversion	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the Lake El Estero Diversion.	Yes	In the 'Detailed Project Information' section.	Yes	Briefly in the' Detailed Project Information' section and in the 'Water Supply' section.	No	N/A	Yes	Strategic Considerations section briefly discusses monitoring.	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Lake El Estero Diversion* . Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Advance Water Purification Demonstration Facility	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the Advance Water Purification Demonstration Facility.	No	N/A	Yes	Briefly in the' Detailed Project Information' section and in the 'Water Supply' section.	No	N/A	No	N/A	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Advance Water Purification Demonstration Facility* . Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Solicitation Form: Carmel Bay ASBS Project	Pebble Beach Community Services District, Carmel Area Watershed District, Pebble Beach Company	This is the project solicitation form for the Carmel Bay Area of Special Biological Significance (ASBS).	Yes	Briefly in the 'Detailed Project Information' section.	Yes	In the 'Water Supply' section.	No	N/A	Yes	Includes performance and water quality monitoring	No	N/A	Yes	This entire document is for the Carmel Bay ASBS Project which is a mitigation action.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Solicitation Form: Carmel Bay ASBS Project* . Pebble Beach Community Services District. 2013

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Geohydrology of a Deep-Aquifer System Monitoring-Well Site at Marina, Monterey County, California	U.S. Geological Survey	The report presents findings from a study that was completed at Marina to provide basic geological and hydrologic information about the deep-aquifer system in the coastal region of the Salinas Valley.	Yes	The report includes a description of the physical setting and the geohydrology of the Salinas Valley.	Yes	The report provides an overview of groundwater use in the Salinas Valley.	No	N/A	No	N/A	No	N/A	No	N/A	R.T. Hanson, Rhett R. Everett, Mark W Newhouse, Steven M. Crawford, M. Isabel Pimentel, and Gregory A. Smith, *Geohydrology of a Deep-Aquifer System Monitoring-Well Site at Marina, Monterey County, California* , Monterey County Water Resources Agency, 2002.
Deep Aquifer Investigative Study	Marina Coast Water District	The report presents findings from a study that was completed for the Marina Coast Water District on the Salinas groundwater basin deep aquifer system.	Yes	Section 1 of the report provides a description of the Marina Coast Water District service area.	Yes	Section 2 of the report includes information on the groundwater basins and the amount of production from wells in the study area.	No	N/A	No	N/A	Yes	Section 4 of the report presents information on water supply reliability and a safe yield analysis.	No	N/A	RIME Water Resources & Information Management Engineering, Inc, *Deep Aquifer Investigative Study* , Marina Coast Water District, 2003.
Marina Coast Water District 2015 Urban Water Management Plan	Marina Coast Water District	The UWMP is a planning document all urban water suppliers are required to complete every five years. These plans are intended to support long term resource planning, and ensure adequate water supplies are available to meet existing and future water demands.	Yes	Section 2 of the report provides a system description which includes discussion of the service area, climate, and population.	Yes	Section 4 of the report discusses system supplies. Section touches on available sources, transfer opportunities, and potential projects to help augment supply.	Yes	Section 3 of the report discusses the system demands. There is discussion on baseline and targets (SB X7-7), water demands, and discussion on a water reduction plan.	Yes	Section 5.5 of the report includes information of the areas Water Shortage Contingency Plan. Section 6 of the report includes a description of demand management measures for the region.	Yes	Section 5 of the report discusses supply reliability and water shortage contingency planning.	Yes	Section 4 discusses future water projects, including ocean desalination on Pure Water Monterey.	Schaaf & Wheeler Consulting Civil Engineers, *Marina Coast Water District 2015 Urban Water Management Plan* , Marina Coast Water District, 2016.
Monterey County Water Resources Agency: Volume 1A - Conditions of the Contract and Technical Specifications	Monterey County Water Resources Agency	Document includes conditions of contract and technical specifications between the Monterey County Water Resources Agency and consultant.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Bookman-Edmonston Engineering, Inc, *Monterey County Water Resources Agency Volume 1A-Conditions of the Contract and Technical Specifications* , Montgomery Watson 1995.
Monterey County Water Resources Agency: Volume 1B - Appendices	Monterey County Water Resources Agency	Document includes appendices to "Monterey County Water Resources Agency: Volume 1A - Conditions and Technical Specifications."	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Bookman-Edmonston Engineering, Inc, *Monterey County Water Resources Agency Volume 1B-Appendices* , Montgomery Watson, 1995.
Executive Summary: State of the Salinas River Groundwater Basin Report	Monterey County Water Resources Agency & Brown and Caldwell	The document presents findings on the state of the Salinas River Groundwater Basin.	Yes	The report includes a description of the physical setting and the geohydrology of the Salinas Valley.	Yes	The report provides an overview of groundwater use in the Salinas Valley.	No	N/A	Yes	The report includes various groundwater management options to address water supply under continued drought conditions.	Yes	Document includes analysis on potential declining levels of groundwater storage.	No	N/A	Brown and Caldwell, *Executive Summary State of the Salinas River Groundwork Basin Report* , 2014.
State of the Salinas River Groundwater Basin Final	Monterey County Resource Management Agency	The document presents findings on the state of the Salinas River Groundwater Basin.	Yes	Section 2.2 provides a description of the physical setting and the geohydrology of the Salinas Valley.	Yes	Section 4 provides information on the groundwater balance in the Salinas Valley. Section 6.1 describes the state of the basin and current water supply conditions.	Yes	The background Section 2.5 of the report discusses the current water users.	Yes	Section 6.3 includes groundwater management steps to take to address water supply under continued drought conditions.	Yes	Document includes analysis on potential declining levels of groundwater storage. (Section 3.4 and 4.4)	Yes	Two Technical Options to address water supply under continued drought conditions are given in section 6.3. Such actions include shifting pumping to areas further away from the coast, reduction of pumping, and shifting from pumping shallow aquifers to deeper aquifers.	Brown and Caldwell, *State of the Salinas River Groundwork Basin Final,* Monterey County Resource Management Agency. Jan. 2015.
Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River	Monterey County Water Resources Agency	The report presents flow requirements for steelhead trout in the Salinas River.	Yes	The report includes a description of the Salinas River system.	No	N/A	Yes	The report includes information on environmental demands to maintain fisheries.	No	N/A	No	N/A	Yes	Document has information on the Salinas Valley Water Project.	Monterey County Water Resources Agency, Hagar Environmental Science, *Salinas Valley Water Project Flow Prescription for Steelhead Trout in the Salinas River, 2005*.
Salinas Valley Water Project Opinion	Monterey County Water Resources Agency & U.S. Army Corps of Engineers	The document presents the biological opinion on the proposal to permit the construction of the Salinas River Diversion Facility. The biological opinion analyzes the effects of the proposed action on threatened steelhead trout.	Yes	The report includes a description of the Salinas River system.	No	N/A	Yes	The report includes information on environmental demands to maintain fisheries.	No	N/A	No	N/A	Yes	Document has information on the Salinas Valley Water Project.	National Marine Fisheries Services, Southwest Region, *Salinas Valley Water Project Opinion* , United States Department of Commerce National Marine Fisheries Service, 2007.
Zone 2B Proposition 218 Engineer's Report	Monterey County Water Resources Agency & RMC	The document presents the Salinas Valley Water Project including a project description and assessment methodology.	Yes	The report includes a brief description of the Salinas River system.	No	N/A	No	N/A	No	N/A	No	N/A	Yes	Document has information on the Salinas Valley Water Project.	RMC, *Zone 2B Proposition 218 Engineer's Report,* Monterey County Water Resource Agency, 2007.
San Luis Obispo County 2014 IRWMP	San Luis Obispo Regional Water Management Group	The IRWMP is a collaborative effort to identify and implement water management solutions on a regional scale that increase regional self-reliance, reduces conflict, and manages water to concurrently achieve social, environmental, and economic objectives.	Yes	Sections C of the report provides a system description which includes discussion of the physical setting, watersheds, biological resources, and water systems.	Yes	Section D.2 of the report discusses system supplies.	Yes	Section D.3 and D.4 of the report discusses the system demands, including a water demand and supply analysis broken down by sub region.	No	N/A	Yes	Sections D includes discussion on vulnerability of supplies in the region.	Yes	The IRWMP includes an extensive list of mitigation actions for the region. Section G includes the proposed implementation projects of the region.	GEI Consultants, *San Luis Obispo County 2014 IRWMP* , San Luis Obispo Regional Water Management Group, July 2014.
San Luis Obispo County 2014 IRWMP Appendix G Project Solicitation and Scoring Forms	San Luis Obispo Regional Water Management Group	This appendix to the SLO County 2014 IRWMP includes the full project list, project objectives, prioritization methodology of selecting projects, and project abstract reports for each project.	No	N/A	Yes	Depending on the specific project, water supply is discussed in the Project Abstract Reports.	Yes	Depending on the specific project, water demand is discussed in the Project Abstract Reports.	Yes	Depending on the specific project, monitoring is included in the Project Abstract Reports.	No	N/A	Yes	Section G-3 includes all the Project Abstract Reports for the 2014 SLO IRWMP.	GEI Consultants, *San Luis Obispo County 2014 IRWMP Appendix G. Project Solicitation and Scoring Forms* , San Luis Obispo Regional Water Management Group, 2014.

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2013 San Luis Obispo County IRWMP Final Project Abstracts	San Luis Obispo Regional Water Management Group	This is a consolidated collection of SLO IRWMP project abstracts. There is an application for each project including a description, location, cost, need for project, and estimated schedule.	No	N/A	Yes	When applicable, the project descriptions note the amount of water the project will supply.	No	N/A	No	N/A	No	N/A	Yes	Each project listed is a mitigation action.	*San Luis Obispo County IRWMP Final Project Abstracts* . San Luis Obispo County Regional Water Management Group, 2013.
Regulation XV 2016 Monterey Peninsula Water Conservation and Rationing Plan	Monterey Peninsula Water Conservation and Rationing Plan	This report outlines the stages of the water conservation and rationing plan. It presents regulatory production targets and physical storage targets. It also provides details on the implementation of water waste prohibitions, fines, voluntary reduction in use, conservation rates, and water rationing	No	N/A	No	N/A	No	N/A	Yes	The report specifies rules and various actions for drought conditions as well as penalties for not following the specified rules.	No	N/A	Yes	The rules outlined in this plan all contribute to reducing water waste.	Monterey Peninsula Water Management District. *Regulation XV 2016 Monterey Peninsula Water Conservation and Rationing Plan* . 2016
Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations February - November 2016		The plan includes a quantitative anaylsis of modeled hydrology for 2016 under various exceedence scenarios as well as potential operations and modified standards based on these analyses. The goal of the plan is to ensure essential water supply needs are met and that there is sufficient carry-over storage for the following year.	Yes	Section II provides information on the initial status of water conditions in California including water quality, hydrology, and biology.	Yes	CVP and SWP Upstream Reservoir Stroage conditions are provided in Addendum 5 (June) Section I and in Attachment 1. The Final Working Draft (Nov. 16 - Jan 17) provides the most up-to-date resrevoir capacities	Yes	Section I C describes critical operational conditions and discusses needed water demands for health and safety, economic considerations, fish and wildlife protection, refuge water supplies, and operational flexibility.	Yes	Section VIII outlines real time monitoring efforts to inform operations. These include Delta Smelt early warning surveys, salmonids drought monitoring, and early warning turbidity monitoring.	Yes	Section I C describes the critical operations considerations.	Yes	Section VI B. discusses drought response actions including: initial temperature management projections, hatchery winter-run, delta cross channel gates, salinity control barriers, and water transfers	*Central Valley Project and State Water Project 2016 Drought Contingency Plan for Water Project Operations* . 2016
Rule No. 14.1 Water Shortage Contingency Plan	California Water Service Company	This rule defines wasteful uses of water and describes the mandatory staged restrictions of water use for all of California Water Service Company's areas. It aslo outlines methods of enforcement of the rule.	No	The area applicable are all of California Water Service's regulated ratemaking areas in California, as well as Grand Oaks Water.	No	N/A	No	N/A	No	N/A	No	N/A	Yes	Section F of the rule describes various actions of mandatory staged restrictions of water use.	California Water Service Company. *Rule No. 14.1 Water Shortage Contingency Plan.* DATE: 2013??
Monterey Regional Water Pollution Control Agency 40-Year Wastewater Flow Projections Report 2014 - 2054	Monterey Regional Water Pollution Control Agency	The report presents a 40-year projection of wastewater flows to the MRWPCA Regional Treatment Plant (RTP). It finds a trend of decreasing wastewater flows to the RTP.	Yes	Sections 1 and 2 describe the MRWPCA service area and include a map as well as a pump station schematic.	No	The report focues on wastewater flows coming into the RTP, not water supply	No	The report focues on wastewater flows coming into the RTP	No	Section 5 recommends flow monitoring to validate current wastewater flow data and correct historical flow data, but not necessarily drought monitoring.	No	N/A	No	The report used theoretical minimum gallons per capita per day water flow generated per person, but does not specify actions to reach such levels.	Brezack & Associates Planning, LLC. *40-Year Wastewater Flow Projections Report 2014 - 2054.* Monterey Regional Water Pollution Control Agency. 2014
Monterey Peninsula Proposition 1 Planning Grant Application Attachment 1: Workplan	Monterey Regional Water Pollution Control Agency	This application is for a grant to fund the development of a collaborative regional Stormwater Resource Plan for the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM planning region.	Yes	Section 1 describes the region and why boundaries were chosen for the Sotrmwater Resource Plan. It also explains local land uses and water quantity and water quality issues in the region.	Yes	Brief descrition of water quantity in Section 1.3	No	N/A	Yes	Section 8 briefly mentions monitoring as a study task	No	N/A	Yes	Section 5 outlines tasks of the plan to develop conceptual designs and prioritize projects, but does not specify actions.	Geosyntec Consultants. *Monterey Peninsula Proposition 1 Planning Grant Application Attachement 1: Work Plan.* Monterey Regional Stormwater Management Program. 2016
Monterey Peninsula Proposition 1 Planning Grant Application Attachment 2: Budget	Monterey Regional Water Pollution Control Agency	This is the budget section of the grant application to develop a Monterey Peninsula Region Stormwater Resource Plan.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	*Monterey Peninsula Proposition 1 Planning Grant Application Attachment 2: Budget.* Monterey Regional Stormwater Management Program. 2016
Monterey Peninsula Proposition 1 Planning Grant Application Attachment 3: Schedule	Monterey Regional Water Pollution Control Agency	This is the schedule section of the grant application to develop a Monterey Peninsula Region Stormwater Resource Plan. It describes the schedules for the various work plan tasks.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	*Monterey Peninsula Proposition 1 Planning Grant Application Attachment 3: Schedule.* Monterey Regional Stormwater Management Program. 2016
Water Capital Facilities Plan Volume 1 Report	Monterey County Water Resources Agency	This is the Specifications and General Conditions for the MCWRA Castroville Seawater Intrusion Project (CSIP).	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Montgomery Watson and Boyle Engineering. *Volume 1A - Conditions of the Contract and Technical Specifications.* Monterey County Water Resources Agency. 1995
Water Capital Facilities Plan Volume 2 Appendices	Monterey County Water Resources Agency	This is the appendices of the MCWRA CSIP. It includes the I/O list, instrument list, stormwater pollution prevention plan, and permits.	Yes	Appendix C, Section 1 and Section 2 describe the CSIP and the project area. A map is included. Appendix D, the Environmental Commitment Plan also provide a description of the project site.	No	N/A	Yes	Appendix D: Environmental Commitment Plan discusses water demands.	No	N/A	Yes	Appendix D: Environmental Commitment Plan includes a discussion of impacts due to the proposed program (on surface water, fisheries, vegetation, and wildlife, traffic, soils, and cultural resources).	Yes	Appendix D, Section on Environmental Commitments outlines mitigation actions to reduce project impacts.	Montgomery Watson and Boyle Engineering. *Volume 1B - Appendices.* Monterey County Water Resources Agency. 1995

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MPWSP Desalination Plant Sizing Update	California American Water	This update provides attachements to the Desalination Plant Sizing Update including recommended capacity, schedule, costs, and contingency planning.	Yes	Attachment 11 provides information on the project description and site locations	Yes	Attachment 1 provides information on water supply from the desalination plant.	Yes	Attachment 1 provides information on water CalAm Water demand.	No	N/A	No	Attachment 10 mentions permitting status update and impact assessments, but does not go into detail.	No	N/A	*MPWSP Desalination Plant Sizing Update Attachments* . California American Water. 2013
Storm Water Resource Plan for the Greater Salinas Area Final	Monterey Regional Water Pollution Control Agency	This report outlines the development and objective of the SWRP, discusses compliance, and coordination, and identifies / prioritizes projects that will benefit storm water mgmt and are located in the Greater Salinas Area.	Yes	Section 2 provides information on the Watersheds in the plan.	Yes	Section 1.1.2.2 describes the water supply objective of the plan, Section 2.2.1 provides information on water and wastewater service providers in the area. Section 6.4.2 Quantifies the amount of water captured from the implementation of projects	Yes	Section 2.2.1 briefly discusses water demands for the planning area.	Yes	Section 3.4 discusses monitoring, but not specifically for drought.	No	N/A	Yes	Section 5 presents projects that were identified as having beneficial impacts on water supply, flood management, and water quality in the Greater Salinas Area.	Kennedy/Jenks Consultants. *Stormwater Resource Plan for the Greater Salinas Area Final.* Monterey Regional Pollution Control Agency. 2017
Salinas Valley Water Project Engineer's Report	Monterey County Water Resources Agency	This report describes the technical basis for and benefits of the Salinas Valley Water Project which includes the operation and maintenance of the exisiting reservoirs, construction of the Nacimiento Dam Spillway Modifications, and contruction of the Salinas River Diversion Facility.	Yes	Section 2.2 provides information on the project background and maps.	Yes	Section 3.2	No	N/A	No	Drought protection is mentioned, but is primarily provided with existing reservoirs.	No	N/A	Yes	This report pertains to a specific project - the Salinas Valley Water Project which has three main componenets: O&M of exisiting reservoirs, construction of the Nacimiento Dam Spillway Modifications, and construction fo the Salinas River Diversion Facility	RMC. *Salinas Valley Water Project Engineer's Report* . Monterey County Water Resources Agency. 2003
2016 Project List Greater Monterey County Integrated Regional Water Management Plan Implementation Projects	Multiple parties: Regional Water Management Group	This document is a summary of the Implementation Projects for the Greater Monterey County IRWMP. It includes a project summary and information on funding.	No	N/A	Yes	Some of the project descriptions specify the water supply from the project.	No	N/A	No	N/A	No	N/A	Yes	The document is a summary of all of the GMC IRWM projects	*2016 Project List Greater Monterey County Integrated Regional Water Management Plan Implementation Projects* . 2016
2014 Greater Monterey County IRWM Drought Grant Proposal Attachment 3 Project Justification	City of Salinas	This report describes the Salinas Stormwater Diversion project. It includes justification for the project, maps, and project benefits.	Yes	Section 3.3 & Section 3.5.2	Yes	Section 3.4: Project Physical Benefits	No	N/A	Yes	Section3.5.5.3: Actions Required and Monitoring	No	N/A	Yes	This document is a summary of the Salinas Stormwater Diversion project.	City of Salinas. *2014 Greater Monterey County IRWM Drought Grant Proposal Attachment 3 :Project Justification* . 2014 http://www.water.ca.gov/irwm/grants/docs/Archives/Prop84/Submitted_Applications/P84_2014Drought/City%20of%20Salinas%20(201498760019)/
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP 2014 Drought Grant Proposal Attachment 6: Schedule	Monterey Peninsula Water Management District	This document is an attachment to the 2014 Drought Grant Proposal and includes the schedule for the 5 projects that were ready to proceed with construction / implementation on or before March 27, 2014	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Yes	This is the schedule summary for 5 mitigation projects.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management 2014 Drought Grant Proposal Attachment 6: Schedule.* Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preferences	Monterey Peninsula Water Management District	This document is an attachment to the 2014 Drought Grant Proposal dicusses the project program preferences for the 5 projects that were ready to proceed with construction / implementation on or before March 27, 2014	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Yes	This is the program preferences for each of the 5 mitigation projects.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay Integrated Regional Water Management 2014 Drought Grant Proposal Attachment 7: Program Preferencess* Regional Water Management Group. 2014
Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Del Monte Lift Station Upgrades	Monterey Peninsula Water Management District	This document is an attachment to the IRWMP 2014 Drought Grant Proposal Attachment 7: Program Preference and includes a project overview of the Del Monte Lift Station Upgrades.	No	N/A	No	N/A	No	N/A	Yes	No details provided, just says it will monitor	No	N/A	Yes	This is the project summary of a mitigation project.	Monterey Peninsula Water Management District. *Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Project Overview: Del Monte Lift Station Upgrades* . Regional Water Management Group. 2014
Interlake Tunnel and Spillway Modification Project Notice of Preparation/Initial Study	Monterey County Water Resources Agency	This document provides a brief description of the Interlake Tunnel and Spillway Modification Project, including its goals and objectives, and possible environmental impacts.	Yes	Section A: Project Description	Yes	Section B: Environmental Checklist briefly mentions impacts on water supply	Yes	Section B: Environmental Checklist briefly mentions impacts on water demand	No	N/A	Yes	Section B: Environmental Checklist	Yes	This entire document is for the Interlake Tunnel Project which is a mitigation action.	*Interlake Tunnel and Spillway Modification Project Notice of Preparation/Initial Study.* Monterey County Water Resources Agency. 2016
Granite Ridge Regional Water Supply Project Engineer's Report	Monterey County Water Resources Agency	This report describes the technical basis for a new assessment to fund the capital costs of this project. The report includes a general description of the project, documentation of the assessment methodology, delineation of the zone of benefit, and the proposed assessments.	Yes	Section 1: Introduction Section 2.1 includes project maps	Yes	Throughout document, primarily in Section 2.4	Yes	Section 2.4: Analysis of Current and Future System Demands	No	N/A	No	N/A	Yes	This is the project summary of a mitigation project.	RMC. *Granite Ridge Regional Water Supply Project Proposition 218 Engineer's Report* . Monterey County Water Resources Agency. 2008
CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS 2017	California Public Utilities Commission, Monterey Bay National Marine Sanctuary	This document identifies and assesses potential environmental impacts associated with the CalAm Monterey Peninsula Water Supply Project and identifies six alternatives.	Yes	Section ES.2, Section 1	Yes	Section 2.4, 2.5	Yes	Section 2.3, 2.5	Yes	Monitoring is specified throughout the report for various criteria. Not specifically 'drought'	Yes	Section 4: Environmental Setting (Affected Environment), Impacts, and Mitigation Measures	Yes	This entire project is a drought mitigation action, Section 4 also discusses mitigation measures	ESA. *CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report /Environmental Impact Statement.* California Public Utilities Commission. January 2017

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			Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	
Final Engineering Report Pure Water Monterey Groundwater Replenishment Project (Volume I)	Monterey Regional Water Pollution Control Agency; Monterey Peninsula Water Management District	This is the technical Engineering Report which provides detailed information on the Monterey Groundwater Replenishment Project and the overall plan for compliance with the Title 22 Criteria.	Yes	Section 1.1, Section 3.1	Yes	Section 9.3: Groundwater Budget, Section 3.4.2	No	N/A	Yes	Monitoring is described in Section 12	Yes	Section 11 describes Groundwater Recharge Impacts	Yes	This is the Engineering Report of a mitigation project	Nellor Environmental, Trussell Technologies & Todd Groundwater. *Final Engineering Report Pure Water Monterey Groundwater Replenishment Project.* MRWPCA & Monterey Peninsula Water Management District. Sept. 2016
Final Engineering Report Pure Water Monterey Groundwater Replenishment Project (Volume II: Appendices for Engineering Report)	Monterey Regional Water Pollution Control Agency; Monterey Peninsula Water Management District	The appendicies of the Engineering Report for the Pure Water Monterey GW Replenishment Project.													Nellor Environmental, Trussell Technologies & Todd Groundwater. *Final Engineering Report Pure Water Monterey Groundwater Replenishment Project Volume II: Appendices.* MRWPCA & Monterey Peninsula Water Management District. Sept. 2016
Marina Coast Water District Groundwater Sustainability Agency Board Meeting June 5, 2017 Attachments.	Marina Coast Water District Groundwater Sustainability Agency	Map of the Pure Water Monterey and Regional Urban Water Augmentation Project (RUWAP)	Yes	All three attachments provide maps of the project location	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Marina Coast Water District. *Joint Board Meeting Groundwater Sustainability Agency June 5, 2017 Attachments* . 2017
Marina Coast Water District Groundwater Sustainability Agency Board Meeting June 5, 2017 Agenda & Agenda Transmittal	Marina Coast Water District Groundwater Sustainability Agency	This is the agenda and the agenda transmittal of the June 5, 2017 Marina Coast Water Distric Board Meeting. Meeting topic included the MCWD Groundwater Sustainability Agency. Transmittal discusses the Regional Urban Water Augmentation Recycled Water Project (RUWAP), Armstrong Ranch Stormwater Capture and Reuse Project, The Three Party Memorandum of Understanding (MOU) Project.	Yes	Short descriptions of each project area in the Froundwater Sustainability Agency Staff Reprot Agenda Item 9-A2	Yes	Briefly in Agenda Item 9-A1 Staff Report	No	N/A	No	N/A	No	N/A	Yes	Agenda Item 9-A2 describes a few groundwater sustainability projects	Marina Coast Water District. *Joint Board Meeting Groundwater Sustainability Agency June 5, 2017 Agenda and Agenda Transmittal.* 2017
Marina Coast Water District Groundwater Sustainability Agency Board Meeting June 5, 2017 Item 8-B Draft 5-Year CIP	Marina Coast Water District Groundwater Sustainability Agency	A draft list of 5-Year CIP projects for Marina Coast Water District. Includes project titles and proposed budgets through FY 2021-22	No		No		No		No		No				Marina Coast Water District. *Joint Board Meeting Groundwater Sustainability Agency June 5, 2017 Item 8-B Draft 2017-2018 5-Year CIP.* 2017
Initial Study for Soledad Recharge Project	City of Soledad	This is an initial study of the Soledad Regional Recharge Project and includes an assessment of the environmental factors that could potentially be affected. The determination is a negative declaration.	Yes	Environmental Checklist Section. Each Determination also describes existing conditions	Yes	Determination IX and Determination XVII	No	N/A	No	N/A	Yes	The Determination Section of the report describes various possible impacts	No	N/A	Harris & Associates. *Initial Study for Soledad Regional Recharge Project.* Prepared for City of Soledad. 2016
Upper Salinas River Basin Conjunctive Use Project Overview and Update	Templeton Community Services District	This is an update for the Upper Salinas River Basin Conjunctive Use Project (US-CUP) including financing and schedule updates.	Yes	Page 1	No	N/A	No	N/A	No	N/A	No	N/A	Yes	This Update describes the US-CUP which is a mitigation project.	Mayer, Bettina L. *Upper Salinas River Basin Conjunctive Use Project Overview and Update.* Templeton Community Services District.2016
San Luis Obispo County Integrated Regional Water Management 2015 Implementation Grant - Proposition 84 Summary Sheet	SLO County Public Works	This is a implementation grant summary of various water management projects. The document includes a short description of each of the projects.	No	A map is included of the project locations, but minimal information otherwise.	Yes	Each project description provides a brief description of water supply.	No	N/A	No	N/A	No	N/A	Yes	Three mitigation projects are summarized in this grant summary.	*San Luis Obispo County Integrated Regional Water Management 2015 Implementation Grant - Proposition 84 Summary Sheet* . SLO County Public Works. 2015
Monterey County Water Resources Agency Zone Boundaries Map	Monterey County Water Resources Agency	This is a map of the Monterey County Water Resources Agency Zone 2C boundaries which includes parcel outlines.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	*Monterey County Water Resources Agency Zone Boundaries Zone 2C* . Monterey County Water Resources Agency. 2016
Seaside Groundwater Basin Aquifer Storage and Recovery Phase 1	Monterey Peninsula Water Management District, California American Water	This is a Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP and Integrated Coastal Watershed Management Plan summary of the Seaside Groundwater Basin ASR project. It describes the project, alternatives, includes maps, and cost	Yes	In the Project Description/Proposed Action and Alternatives section	Yes	The sections on 'Carmel River Diversions', 'Carmel River Pumping' and on Extraction Wells discuss water supply.	Yes	The sections on 'Carmel River Diversions', 'Carmel River Pumping' and on Extraction Wells discuss water demand.	No	N/A	No	N/A	Yes	This entire document is for the Seaside Groundwater Basin Aquifer Storage and Recharge Project which is a mitigation action.	*Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWMP and ICWMP: Seaside Groundwater Basin Aquifer Storage and Recovery Phase 1.* Monterey Peninsula Water Management District. 2005

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			Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	
Summary of Operations Monterey Peninsula ASR Project Water Year 2015	Monterey Peninsula Water Management District, California American Water	This report presents a summary of operations of the Monterey Peninsula ASR project during the water year 2015. It includes an assessment of ASR well performance, aquifer response, and water-quality data, and recommendations for ongoing operation of the project.	Yes	The Introduction includes a Background section	Yes	This entire project is focused on water supply. The 'Findings' section present injection and pumping performance data	Yes	The 'Findings' section present injection and pumping performance data	No	Not specific drought monitoring, but monitoring of the wells	No	N/A	Yes	This entire document is for the Seaside Groundwater Basin Aquifer Storage and Recharge Project which is a mitigation action. The last section specifies Recommendations for future operations of the project wells to improve performance.	Pueblo Water Resources. *Summary of Operations Monterey Peninsula ASR Project Water Year 2015 Draft.* Monterey Peninsula Water Management District. 2016
Notice of Preparation Environmental Impact Report for People's Moss Landing Water Desalination Project	Moss Landing Harbor District	This report provides an overview of the project and the components, describes regional alternatives, and discusses some of the environmental issues to be addressed in the EIR	Yes	Section E.1 briefly describes the project area.	Yes	Sections D (Goals and Objectives for the People's Moss Landing Desalination Project) and E (Description of Proposed Project)	Yes	Sections D (Goals and Objectives for the People's Moss Landing Desalination Project) and E (Description of Proposed Project)	No	Monitoring is mentioned in regards to seawater desalination facility and acoustics.	Yes	Section G: Environmetnal Issues to be Addressed in the EIR	Yes	This document describes the desalination project at Moss Landing which is a mitigation action to reduce groundwater and river extractions.	*Notice of Preparation Environmental Impact Report for People's Moss Landing Water Desalination Project.* Moss Landing Harbor District. 2015
Salinas Basin Investigation Summary Report	State Department of Water Resources, County of Monterey	This report documents a study of the Salinas ground water basin to investigate salt water intrusion in the basin. It evaluate the water problems, provides methods of conservation and proposed solutions.	Yes	Chapter 2 (pg 11) provides description of the Salinas Basin	Yes	Chapter 2 (pg 17, 20, 39)	Yes	pg. 28	No	N/a	No		Yes	Pg 31 - Proposed Solution (describes diversion system)	Simpson, Russel T. *Salinas Basin Investigation Summary Report.* Department of Public Works Division of Water Resources and County of Monterey. 1946
Historic Seawater Intrusion Map: Pressure 180-Foot Aquifer	Monterey County Water Resource Agency	Map showing seawater intrusion in the Marina/Castroville Pressure 180-ft aquifer from 1944 until 2015.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Historic Seawater Intrusion Map Pressure 180-Foot Aquifer. Monterey County Water Resource Agency. June 7, 2017 http://www.co.monterey.ca.us/home/showdocument?id=19376
Historic Seawater Intrusion Map: Pressure 400-Foot Aquifer	Monterey County Water Resource Agency	Map showing seawater intrusion in the Marina/Castroville Pressure 400-ft aquifer from 1959 until 2015.	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	Historic Seawater Intrusion Map Pressure 400-Foot Aquifer. Monterey County Water Resource Agency. 2017 http://www.co.monterey.ca.us/home/showdocument?id=19378
Agency Supplemental Funding Strategic Plan June 2015	Monterey County Water Resource Agency	This plan identifies current and future grant opportunities, as well as partnerships with other entities, that could provide supplemental monies to the Agency, particularly for groundwater sustainability.	No	Background on each fund is provided, but not on a specific area	No	N/A	No	N/A	No	N/A	No	N/A	Yes	Some mitigation projects and their budgeted costs are provided in Appendix A, only project title provided.	*Agency Supplemental Funding Strategic Plan June 2015* . Monterey County Water Resources Agency. 2015
2015 CPUC Annual Report Schedule D-1 Sources of Supply and Water Developed	Alco Water Service	Table of Alco Water Service water supply wells and annual quantities pumped.	No	N/A	Yes	This is a table of water supply wells.	No	N/A	No	N/A	No	N/A	No	N/A	*2015 CPUC Annual Reprot Schedule D-1 Sources of Supply and Water Developed.* Alco Water Service. 2015
Rule No. 14.1 Water Conservation and Mandatory Stated Water Use Prohibitions	Alisal Water Corporation	This rule describes the implementation o fthe water conservation and mandatory staged water use prohibition plan and describes the stages and corresponding restrictions. This rule includes a definitions section.	No	The area applicable are all water customers served under all potable water tariff rate schedules authorized by the Ca PUC for Alisal Water Corporation.	No	N/A	No	N/A	No	N/A	No	N/A	Yes	Section E describes the prohibited water use restrictions for each stage of the water conservation plan	Alisal Water Corporation. *Rule No. 14.1 Water Conservation and Mandatory Staged Water Use Prohibitions.* California Public Utilities DATE: ??
Schedule No. 14.1 Water Conservation and Mandatory Staged Water Use Prohibitions and Reduction Plan	Alisal Water Corporation	This schedule describes when the mandatory staged water use prohiitions and reduction plan may be implemented, the monthly water budgets and restrictions for each stage, enforcement of the plan, and water conservation surcharges.	Yes	This schedule is applicable to all water customers served under all potable water tariff rate schedules authorized by the Ca PUC for Alisal Water Corporation in the City of Salinas and Rosehart Industrial Park and Vicinity, Monterey Co.	Yes	Section F describes the monthly water budget in ccf for each stage of Schedule 14.1.	No	N/A	No	N/A	No	N/A	Yes	Section F has monthly water budgets and prohibitied water use restrictions for each stage.	Alisal Water Corporation. *Schedule No. 14.1 Water Conservation and Mandatory Staged Water Use Prohibitions and Reduction Plan.* California Public Utilities DATE: ??
Monterey Regional Water Pollution Control Agency Delivery Summary 1998-2016	Monterey Regional Water Pollution Control Agency	This is a table of the monthly water deliveries from FY 1998/99 - FY 2015/16 for the MRWPCA including supplemental well production, Salinas River Diversion Facility, and recycled water production.	No	N/A	Yes	The entire table	No	N/A	No	N/A	No	N/A	No	N/A	*Salinas River Diversion Facility and Castrovill Seawater Intrusion Project 1998 - 2015 Delivery Summary* . Monterey Regional Water Pollution Control Agency. 2017.
Ground Water Summary Report 2012	Monterey County Water Resources Agency	This report summarizes the data submitted to the Agency by well operators over the period of Nov. 1, 2011 to Oct 31, 2012. The report presents a summary of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements.													*Ground Water Summary Report 2012.* Monterey County Water Resources Agency. October 2013.
2013 Ground Water Summary Report	Monterey County Water Resources Agency	This report summarizes the data submitted to the Agency by well operators over the period of Nov. 2012 to Oct 2013. The report presents a summary of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements.	Yes	Page 1 "History of the Groundwater Reporting Program" and map on page 2	No	N/A	Yes	Pages 3 - 9	No	N/A	No	N/A	No	The report describes BMP and conservation plans, but no specific projects.	*2013 Ground Water Summary Report.* Monterey County Water Resources Agency. October 2014

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			Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	
2014 Groundwater Extraction Summary Report	Monterey County Water Resources Agency	This report summarizes the data submitted to the Agency by well operators over the period of Nov. 1, 2013 thru Oct 2014. The report presents a summary of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements.	Yes	Page 1 "History of the Groundwater Reporting Program"	No	N/A	Yes	Page 3 - 12	No	N/A	No	N/A		The report describes BMP (pg. 13) and conservation plans, but no specific projects.	*2014 Groundwater Extraction Summary Report.* Monterey County Water Resources Agency. October 2015
2015 Groundwater Extraction Summary Report	Monterey County Water Resources Agency	This report summarizes the data submitted to the Agency by well operators over the period of Nov. 1, 2014 thru Oct 2015. The report presents a summary of current water extraction within the Salinas Valley, including agricultural and urban water conservation improvements.													*2015 Groundwater Extraction Summary Report.* Monterey County Water Resources Agency. April 2017
Canyon del Ray Master Drainage Plan - Draft	Monterey Peninsula Water Management District, Monterey County Water Resources Agency, City of Seaside	This drainage plan update describes changes in hydrolofic and hydraulic conditions in the watershed, as well as the addition of new and updated flood management facilities that have occurred since the prior Canyon del Rey master drainage plan (1977).	Yes	Section 1.2, Section 2											Balance Hydroloics, Inc. *Canyon del Ray Master Drainage Plan - Draft.* Monterey Peninsula Water Management District. April 2014
Paso Robles Groundwater Basin Supplemental Supply Options - PRESENTATION	County of San Luis Obispo	Presentation that discusses the Paso Robles Groundwater Model Study update, Goals to stabilize the groundwater basin, Supply Options Study (State Water Project, Nacimiento Water Project, Recycled Water)													Geoscience, RMW, WSC, & Carollo. *Paso Robles Groundwater Basin Supplemental Supply Options Study.* Dec. 15, 2016
Appendix M: Interregional Coordination between the Greater Monterey County and Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM Regions - Summary Report (April 18, 2014)	Monterey Peninsula Water Management District														Denis Duffy & Associates, Inc. *Project 5 - Inter-Regional Coordination.* Monterey Peninsula Water Management District. April 18, 2014
Protective Elevations to Control Sea Water Intrusion in the Salinas Valley TM	Monterey County Water Resources Agency														Geoscience. *Protective Elevations to Control Sea Water Intrusion in the Salinas Valley.* Monterey County Water Resources Agency. November 19, 2013
Seaside Groundwater Basin Salt & Nutrient Management Plan	Monterey Peninsula Water Management District	The SNMP identifies sources, transport and fate of salts and nutrients in surface water and groundwater supply within the Seaside Basin.	Yes	Section 3	Yes	Section 4.1 discusses Existing Sources of water and 4.2 Covers Proposed Sources of water. Section 7.1.2 Inflows & Table 20: Seaside Basin Water Balance.	Yes	Section 7.1.3 Outflows from the Seaside Basin	No	Not drought monitoring, but Section 9 covers the Salt and Nutrient Monitoring Program	No	N/A	Yes	Section 4.1.5 (MPWMD Cal-Am Aquifer Storage Project), Section 4.1.7 (Sand City Desalination Plant), 4.1.8 (irrigation with recycled water), 4.2.1 (RUWAP), 4.2.2 (GWRP), 4.2.3 (Aquifer Storage Phase II). Section 8: Salt and Nutrient Mgmt Strategies	HydroMetrics WRI. *Seaside Groundwater Basin Salt & Nutriuent Management Plan.* Monterey Peninsula Water Management District. June 2014
Figures 5-1 & 5-2 from Salinas River Groundwater Basin Investigation -MAPS	Monterey County Water Resources Agency	Maps of seawater intrusion from 2013 in the 180 ft and 400 ft. aquifers. See items # 68 & 69													
CalAm Monterey Peninsula Water Supply Project Draft EIR/EIS	California Public Utilities Commission	See item # 54													ESA. *CalAm Monterey Peninsula Water Supply Project Draft Environmental Impact Report* . California Public Utilities Commission. April 2015
Pure Water Monterey GWR Project Draft EIR Appendix Q: Blanco Drain Yield Study	Monterey Peninsula Water Management District	The MPWMD and the MRWPCA are jointly sponsoring the proposed Pure Water Monterey GWR Project which proposes stormwater runoff from the Blanco Drain as a water supply source. This study analyzes water availability in the Blanco Drain, provides an engineering analysis of the potential yields and required infrastructure, and assesses the potential project impacts on hydrology and water quality.	Yes	Section 1	Yes	Section 2 - Yield estimates									Schaaf & Wheeler. *Blanco Drain Yield Study.* Monterey Peninsula Water Management District. Dec. 2014
Water Year 2012 Seawater Intrustion Analysis Report Seaside Basin, Monterey County California	Monterey County Water Resources Agency, Monterey Peninsula Water Management District, Seaside Basin Watermaster														HydroMetrics WRI. *Water Year 2012 Seawater Intrusion Analysis Report Seaside Basin, Monterey County California.* Prepared for Seaside Basin Watermaster. November 2012

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Water Year 2014 Seawater Intrustion Analysis Report Seaside Basin, Monterey County California	Monterey County Water Resources Agency, Monterey Peninsula Water Management District, Seaside Basin Watermaster														HydroMetrics WRI. *Water Year 2014 Seawater Intrusion Analysis Report Seaside Basin, Monterey County California.* Prepared for Seaside Basin Watermaster. December 2014
Paso Robles Groundwater Basin Supplemental Supply Options Feasibility Study	San Luis Obispo County Flood Control and Water Conservation District														Carollo Engineers, Inc. *Paso Robles Groundwater Basin Supplemental Supply Options Feasibility Study.* San Luis Obispo County Flood Control and Water Conservation District. January 2017
Paso Robles Groundwater Basin Model Update	San Luis Obispo County Flood Control and Water Conservation District	This report sumarizes the Basin Model Update which extends the model study period over water years 1981-2011 to improve the water balance assessment and refine the perennial yield, and to evaluate the Basin's response to "growth" and "no growth" scenarios projected over the period water years 2012-2040.													Geoscience & Todd Groundwater. *Paso Robles Groundwater Basin Model Update.* San Luis Obispo County Flood Control and Water Conservation District. December 19, 2014
Central Coast Groundwater: Seawater Intrusion and Other Issues	California Water Foundation	This report describes issues facing the central coast with regards to seawater intrusion and over extracting groundwater. It provides information on the Monterey and Salinas Valley Area, the Paso Robles Area, the Santa Barbara Area, and the Oxnard Plain area. It also provides conclusions and recommendations													Martin, Julie Nico. *Central Coast Groundwater: Seawater Intrusion and Other Issues.* California Water Foundation.
Salinas Valley Integrated Hydrolofic Model (SVIHM) - Presentation	USGS	Presentation describing the model development team, the model framework, geologic framework analysis, surface-water and climate data, and the integrated hydrologic model (IHM) of the Salinas River Valley													Hanson,R., Hevesi, J., Boyce, S., Traum, J., Flint, L., Flint, A., Ritchie, A., Galanter, A., Sweetkind., Taylor, E. *Salinas Valley Integrated Hydrologic Model (SVIHM).* USGS. May 10, 2016
Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project - Table of Contents	Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District	This is the table of contents for a combined report (Volumes I - IV) including the EIR and the resolution and notices from the hearing for the final EIR and Pure Water Monterey Project approval.													Duffy & Associates, Inc. *Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project.* Prepared for Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. January 2016
Seaside Basin Monitoring and Management Program	Seaside Groundwater Basin Watermaster Board	This monitoring and management program sets forth actions that will be taken to monitor current overdraft conditions and present threat of potential seawater intrusion, develop/import supplemental water supplies to prevent overdraft, and establish procedures to be implemented to address seawater intrusion.													Seaside Groundwater Basin Watermaster Board and Technical Committee. *Seaside Basin Monitoring and Management Program.* May 17, 2006.
Salinas Valley Basin Fall 2013 - MAP	Monterey County Water Resources Agency	The map shows the Salinas Valley Basin with Lines of Equal Groundwater Elevations in the Pressure 400-ft and East Side Deep Aquifers.													*Salinas Valley Basin Fall 2013 - Lines of Equal Groundwater Water Elevation in the Pressure 400-Foot and East Side Deep Aquifers.* Monterey County Water Resources Agency. Decmeber 14, 2014
Salinas Valley Basin Fall 2013 - MAP	Monterey County Water Resources Agency	The map shows the Salinas Valley Basin with Lines of Equal Groundwater Elevations in the Pressure 180-ft, East Side Shallow, Forebay and Upper Valley Aquifers.													*Salinas Valley Basin Fall 2013 - Lines of Equal Groundwater Water Elevation in the Pressure 180-Foot, East Side Shallow, Forebay and Upper Valley Aquifers.* Monterey County Water Resources Agency. Decmeber 14, 2014
Salinas Valley Basin Fall 2015 - MAP	Monterey County Water Resources Agency	The map shows the Salinas Valley Basin with 10 ft. contour lines of equal groundwater elevation in the Pressure 180-ft, East Side Shallow, Forebay and Upper Valley Aquifers.													*Salinas Valley Basin Fall 2015 - Lines of Equal Groundwater Water Elevation.* Monterey County Water Resources Agency. July 11, 2017
Salinas Valley Basin Fall 2015 - MAP	Monterey County Water Resources Agency	The map shows the Salinas Valley Basin with Lines of Equal Groundwater Elevations in the Pressure 400-ft and East Side Deep Aquifers for Fall 2015.													*Salinas Valley Basin Fall 2013 - Lines of Equal Groundwater Water Elevation in the Pressure 400-Foot and East Side Deep Aquifers.* Monterey County Water Resources Agency. July 11, 2017
Salinas Ri ver Groundwater Basin Hydrologic Subareas: Fourth Quarter of Water Year 2014-2015	Monterey County Water Resources Agency	This report covers the fourth quarter of Water Year 2014-2015. It provides a brief overview of water conditions in the Salinas Valley with discussion of precipitation, reservoir storage, and groundwater level trends. Data for each of these components are included as graphs and tables.													*Salinas River Groundwater Basin Hydrologic Subareas: Fourth Quarter of Water Year 2014-2015.* Monterey County Water Resources Agency. October 26, 2015.

Report Name	Agency	Report Description	Background on Study Area		Water Supply		Water Demands		Drought Monitoring Process		Vulnerability Assessment		Mitigation Actions (Potential Projects)		Document Citation
			Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	Info Available	Section/Page Number	
CalAm Coastal Water Project Final EIR Appendix P: Groundwater Modeling Simulation of Impacts for Monterey Regional Water Supply Project, 20,000 AFY Desalination Pumping Scenario (Scenario 4d) Technical Memorandum		This TM presents a scenario for the Salinas Valley Integrated Groundwater and Surface water Model (SVIGSM) to compute long-term impacts from the proposed Monterey Regional Water Supply Project. This scenario includes desalination pumping of 20,000 AFY produced from 5 to 10 wells all located along the coast. It also includes setting recycled water and surface water to the CSIP service area to be the same as in the 2030 Baseline.													Blanke, J., Namvar, R. of WRIME. *Groundwater Modeling Simulation of Impacts for Monterey Regional Water Supply Project, 20,000 AFY Desalination Pumping Scenario (Scenario 4d). Prepared for Ryan Alameda, RMC. Oct. 29, 2008.*
Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project - Volume I	Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District	Volume I contains the full text of the Pure Water Monterey Groundwater Replenishment Project EIR with changes to the Draft EIR as a result of comments.													Duffy & Associates, Inc. *Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project Volumn I.* Prepared for Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. January 2016
Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project - Volume II: Appendices to the EIR	Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District	Volume II contains the complete set of Appendices to the Consolidated EIR, including those added to the EIR as part of the September 2015 Final EIR.													Duffy & Associates, Inc. *Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project Volumn II: Appendices to the EIR.* Prepared for Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. January 2016
Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project - Volume III: Final EIR (Sept. 2015)	Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District	Volume III contains the Final EIR of the Pure Water Monterey Groundwater Replenishment Project as published in September 2015, including comments received on the Draft EIR and responses.													Duffy & Associates, Inc. *Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project Volumn III: Final EIR (Sept. 2015).* Prepared for Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. January 2016
Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project - Volume VI: EIR Certification and Project Approval	Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District	Volume IV includes documents associated with the EIR certification and project approval (Notice of public hearing, staff report, presentation, MRWPCA Resolution 2015-2024, signed Notice of Determination, Meeting minutes)													Duffy & Associates, Inc. *Consolidated Final Environmental Impact Report fot the Pure Water Monterey Groundwater Replenishment Project Volumn IV: EIR Certification and Project Approval.* Prepared for Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. January 2016
Monterey County Groundwater Management Plan	Monterey County Water Resources Agency	This GWMP provides a comprehensive overview of the Salinas Valley Groundwater Basin and recommends various management strategies for the basin.	Yes	Ch. 3 Describes the Basin											Monterey County Water Resources Agency and RMC and Luhdorff & Scalmanini Consulting Engineers. *Monterey County Groundwater Management Plan.* Monterey County Water Resources Agency. May 2006
Reclamation Ditch Watershed Assessment and Management Strategy: Part A - Watershed Assessment	Monterey County Water Resources Agency														Casagrande, J., Watson, F., of the Watershed Institute and MCWRA Project Manager and Technical Advisory Committee. Reclamation Ditch Watershed Assessment and Management Strategy: Part A - Watershed Assessment. Monterey County Water Resources Agency. YEAR?
Plan of Study: Salinas and Carmel Rivers Basin Study	SLOCFCWCD, MCWRA, MPWMD, MRWPCA	The Basin Study is to inform and guide futre courses of action in response to existing an potential future imbalances between water supplies and demands in the Salinas and Carson River Basins.													SLOCFCWCD, MCWRA, MPWMD, MRWPCA, Bureau of Reclamation, and USGS. *Plan of Study: Salinas and Carmel Rivers Basin Study.* January 2017.
Reclamation - Managing Water in the West: Environmental Assessment - Pure Water Monterey Groundwater Replenishment Project	Bureau of Reclamation, Monterey Regional Water Pollution Control Agency, MPWMD	This is the environmental assessment for the Pure Water Monterey Groundwater Replenishment Project. Appendicies are not fully included.													Bureau of Reclamation. *Environmental Assessment - Pure Water Monterey Groundwater Replenishment Project.* Monterey Regional Water Pollution Control Agency, Monterey Peninsula Water Management District. May 2017
Reclamation - Managing Water in the West: Finding of No Significant Impact - Pure Water Monterey Groundwater Replenishment Project	Bureau of Reclamation, Monterey Regional Water Pollution Control Agency, MPWMD	The report describes the findings of the proposed action (Pure Water project) based on the Environmental Assessment.													Martin, N., Emerzian, V., Kaplan, S., *Findings of No Significant Impact.* Monterey Regional Water Pollution Control Agency. May 2017.
Lo Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan	Monterey Peninsula Water Management District	This plan provides a new perspective on water resource development in the upper watershed and use the pending fate of Los Padres Dam and Reservoir as the impetus for discussion.			Yes	Section 5.1 and 5.3	Yes	Section 5.2 and 5.4							Shibatani Group Inc., ECORP Consulting, Inc., Northwest Hydraulic Consultants, Inc., *Los Padres Dam and Reservoir Long-Term Strategic and Short-Term Tactical Plan.* Prepared for Monterey Peninsula Water Management District. May 2014.

Report Name	Agency	Report Description	Background on Study Area		Water Supply		Water Demands		Drought Monitoring Process		Vulnerability Assessment		Mitigation Actions (Potential Projects)		Document Citation
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North Monterey County Comprehensive Water Resources Management Plan	Monterey County Water Resources Agency	This management plan describes alternative strategies of demand management, water supply augmentation, and land use policy change for the Salinas River sub-basin to ensure long term solutions to water issues.													EDAW Inc. and Monterey County Water Resources Agency. *North Monterey County Comprehensive Water Resources Management Plan.* Jan. 2002.
2015 Salinas Valley Groundwater Level Contours & Seawater Intrusion Maps - PRESENTATION	Monterey County Water Resources Agency	This is a presentation at the Special Joint Meeting of MCWRA BOD and Monterey County BOS. It presents several maps of the Salinas Valley Groundwater Level as well as water quality information.													*2015 Salinas Valley Groundwater Level Contours & Seawater Intrusion Maps.* Monterey County Water Resources Agency. July 13, 2017.
Pure Water Monterey Groundwater Replenishment Project - Final Feasibility Study Report	Monterey Regional Water Pollution Control Agency, MPWMD	This feasibility study presents an engineering evaluation and economic analysis of a proposed Pure Water Monterey Groundwater Replenishment Project to provide replacement water to the Seaside Groundwater Basin and enhance agricultural irrigation with additional recycled water in Monterey County.													Brezack & Associates Planning. *Pure Water Monterey Groundwater Replenishment Project - Final Feasibility Study Report.* Monterey Regional Water Pollution Control Agency. July 2015
San Antonio and Nacimiento Rivers Watershed Management Plan	Monterey County Water Resources Agency, State Water Resources Control Board	This plan identifies the existing conditions of and stresses in the Nacimiento/San Antonio River Watersheds as they relate to water quality. This plan also recommends methods for reducing or eliminating those stressors.													Nacitone Watersheds Steering Committee and Central Coast Salmon Enhancement, Inc., *San Antonio and Nacimiento Rivers Watershed Management Plan.* Prepared for Monterey County Water Resources Agency and the State Water Resources Control Board. October 2008.
San Luis Obispo County Master Water Report Volume I of III	SLOCFCWCD	This report is a compilation of the current and future water resource managemetn activities being undertaken by various entities within the County. It explores how these activities interrelate, analyzes current and future supplies and demands, identifies future water mgmt strategies and ways to optimize.													Carollo Engineers, Inc., West Yost Associates. *San Luis Obispo County Master Water Report Volume I of III.* May 2012.
San Luis Obispo County Master Water Report Volume II of III	SLOCFCWCD	This is chapter 4 of the report: Water Resource Analysis. It evaluates and compares the available water supplies to the water demands for the different water planning areas.													Carollo Engineers, Inc., West Yost Associates. *San Luis Obispo County Master Water Report Volume II of III.* May 2012.
San Luis Obispo County Master Water Report Volume III of III	SLOCFCWCD	This is chapter 5 of the report: Water Resources Planning. It describes the relationship between the Master Water Report and the different State, County and local agency water related documents, programs, or policies that guide water resource management decisions.													Carollo Engineers, Inc., West Yost Associates. *San Luis Obispo County Master Water Report Volume III of III.* May 2012.
Water Years 2001-02 and 2002-03 Hydrologic Report	SLO County Public Works	Summarizes the hydrological conditions for San Luis Obispo County for the 2001-02 and 2002-03 Wys. Data is presented for precipitation, evaporation, stream flow, groundwater and reservoir operations.													*Water Years 2001-02 and 2002-03 Hydrologic Report.* San Luis Obispo County Public Works Department. May 16, 2005
CASGEM Monitoring Plan for High and Medium Priority Groundwater Basins in the SLO County Flood Control and Water Conservation District	SLOCFCWCD														*CASGEM Monitoring Plan for High and Medium Priority Groundwater Basins in the SLO County Flood Control and Water Conservation District.* SLOCFCWCD. Sept. 2014

Appendix B: Detailed Summary of Proposed Projects

MONTEREY DCP MITIGATION MEASURE LIST

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
California American Water												
1	Monterey Peninsula Water Supply Project (MPWSP, CalAm)	Monterey Peninsula Water Supply Project	New Water Supplies	Structural	CalAm	The purpose of the MPWSP is to replace existing water supplies that have been constrained by legal decisions affecting the Carmel River and Seaside Groundwater Basin water resources. The MPWSP will consist of slant intake wells, a desalination plant and related facilities. Paired with the Groundwater Replenishment Project, the desalination plant will be sized at 6.4 mgd. Supply form the desalination plant will enter the CalAm water distribution system at the metering station from the north through the transfer pipeline.	Adjacent to Monterey One Water (M1W)(1) Regional Treatment Plant; Transmission lines to Seaside	$329 million (6.4mgd plant)	6,252 AFY	CalAm water distribution system	Final EIR has been released, March 2018	Q3 2018: EIR approval Q3 2019: Coastal Commission Decision, Construction begins 2021: Construction ends and plant operations begins
Monterey One Water / Monterey Peninsula Water Management District												
2	Pure Water Monterey Groundwater Replenishment Project	Pure Water Monterey Groundwater Replenishment Project	New Water Supplies	Structural	Monterey One Water (M1W) and Monterey Peninsula Water Management District (MPWMD)	This project will provide: (1) purified recycled water for replenishment of the Seaside Groundwater Basin; and (2) recycled water to augment the existing Castroville Seawater Intrusion Project (CSIP) agricultural irrigation supply. The purified water will be produced at a new Advanced Water Purification Facility at the M1W Wastewater Treatment Plant and be conveyed via new pipeline and well facilities. Sources of water include diversion of agricultural irrigation return flows from the Blanco Drain and Reclamation Ditch, south Salinas stormwater flows, produce washing waste flows, and domestic wastewater.	M1W's Regional Wastewater Treatment Plant, Seaside Basin	$112 million	3,500AFY - Seaside Basin (Groundwater Replenishment) 4500-4750 AFY - Recycled water, normal/wet year	Seaside Basin and CSIP	Under construction	Project startup planned Q3 2019
3	Pure Water Monterey Expansion	Pure Water Monterey Groundwater Replenishment Project	New Water Supplies	Structural	Monterey One Water (M1W) and Monterey Peninsula Water Management District (MPWMD)	The design and physical features of the AWPF currently under construction (the PWM Project as approved with 5 mgd AWPF) will allow operation of the AWPF at a peak capacity of 5.0 mgd. Expanding the AWPF to produce up to 7.0 mgd will require additional treatment and pumping equipment, pipelines and facility appurtenances within the 3.5-acre existing building area to provide the expansion capacity. The AWPF would be designed to produce a seasonal peak of 7.0 mgd; however, it may operate at 5.0 to 6.0 mgd during April through October. The 7.0 mgd operations during November through March allows for the maximum production and injection of advanced treated water during the winter months when irrigation demands are low and municipal wastewater is not needed for CSIP. During the period from April through October, municipal wastewater is primarily used to produce tertiary-treated recycled water for CSIP.	M1W's Regional Wastewater Treatment Plant, Seaside Basin	$53 million	2,250 AFY - Seaside Basin (brings Pure Water total up to 5,600 AFY)	CalAm water distribution system	Preliminary Design	Near term (3-10 years)
4	Lining Pond 3 at Salinas Industrial Wastewater Treatment Facility (SIWTF)	Pure Water Monterey Expansion Project	Infrastructure Improvements / Interties	Structural	Monterey One Water (M1W)	The SIWTF receives, treats and disposes of industrial wastewaters from the City of Salinas and surrounding areas. The SIWTF is comprised of an aeration basin, three (3) infiltration/evaporation ponds, and drying beds. M1W proposes to line Pond 3 of the SIWTF to reduce infiltration thereby storing more water for reuse during the peak demand time periods. Modifications to Ponds 1 and 2 are not proposed at this time. Pond 3 is approximately 38 acres in surface area and holds approximately 359 acre-feet of water. Pond 3 would be lined using a high-density polyethylene (HDPE) geomembrane liner. Water stored in Pond 3 would ultimately be diverted to the RTP via the existing Salinas Interceptor, treated through the existing primary and secondary treatment processes, and ultimately would be routed to the AWPF. Additional source water to the AWPF would result in additional production of purified recycled water available for groundwater replenishment and potable water replacement. This project is an element of the Pure Water Monterey Expansion project, but might be considered in the future if expansion does not occur.	Southwest of Salinas, next to Salinas River	$8.8 million	350 AFY	Seaside Basin and CSIP	Talk to the City of Salinas	Medium term (3-10 years)
5	Modifications to Existing Facilities to Meet Winter Irrigation Demands	CSIP	New Water Supplies	Structural	Monterey One Water (M1W) and Monterey County Water Resources Agency	This project consist of modifications to the existing chlorine contact basins including: Adding a sluice gate at each of the chlorine contact basins (East and West), adding a sluice gate at the end of the basins as the water enters into the storage pond, and installing a new pipe either underneath the pond liner or on top of the pond liner from the entrance of the pond to the discharge point of the storage pond. These modifications would help reduce pumping the Salinas Valley Groundwater Basin by approximately 1,200 AF in the winter by allowing wastewater currently discharged into the ocean to be reused for irrigation purposes. The modifications would improve the capacity and efficiency of a federal funded agriculture recycled water project. The existing chlorine contact basins (1.6 MG each) would act as storage basins for relatively small amounts of recycled water. During the late Fall and winter months, the need for recycled water drops dramatically due to demand, day length and precipitation. If there is a prolonged dry period in the winter months, the growers could use small amounts of recycled water daily to irrigate their fields. Traditionally, when demand of recycled water drops below 5 Million Gallons a Day (MGD) for longer than one week, the tertiary treatment plant is closed down for maintenance and the growers rely upon groundwater to meet their irrigation needs until the plant is back in service approximately four months later. When the demand of recycled water is called for, the water can be moved from the contact basins into the pipe along the bottom of the storage pond and then into the CSIP distribution system. The typical amounts that could be utilized through this process average about 300 AF a month or 10 AF a day or 3 MGD. Demands could be higher depending upon winter weather conditions.	M1W's Regional Wastewater Treatment Plant, Seaside Basin	$1.5 million	1,200 AFY	CSIP	Concept level, pending grant funding	Near term (3-10 years)
6	Lake El Estero Stormwater Diversion	Pure Water Monterey Groundwater Replenishment Project	New Water Supplies	Structural	Monterey One Water (M1W)	Construct new pipeline and install new pump to divert urban stormwater and dry weather runoff from Lake El Estero into the municipal wastewater system at a sanitary sewer manhole immediately adjacent to the existing Lake El Estero PS. The project will also reconnect existing box culverts at the corner of Figuero St. and Pearl Ave. to increase stormwater influent flows.	Lake El Estero to nearby wastewater system	$600,000	136 AFY	Groundwater Replenishment Project or CSIP	Unknown	Potentially 2019, Project would last ~ 1 year

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
7	Advance Water Purification Demonstration Facility	Pure Water Monterey Groundwater Replenishment Project	New Water Supplies	Structural	Monterey One Water (M1W), Monterey Peninsula Water Management District	Put in place a test facility to treat secondarily treated wastewater for indirect potable reuse for the Pure Water Monterey recycled water project to replace Carmel River diversions.	Marina - M1W Regional Treatment Plant	Capital: $430K O&M: $100K	15 gpm (demonstration only)	-	Online, will be used up through construction (2019 at least)	Proposed Start: 2/2015 Estimated Completion: 4/2015
Monterey Peninsula Water Management District / California American Water												
8a	Aquifer Storage & Recovery - Phase 1	Monterey Peninsula Water Supply Project	New Water Supplies	Structural	Monterey Peninsula Water Management District, California American Water	This project diverts excess Carmel River winter flows, treats it and transmits it via the CalAm distribution system to injection/recovery wells in the Seaside Groundwater Basin for recharge. The Seaside Basin serves as an underground reservoir which water can be pumped out of during dry periods. Phase I: includes 2 ASR wells (Wells 1 and 2) located in Seaside with recharge up to max diversion limit of 2,426 AFY.	Santa Margarita ASR Facility (1910 General Jim Moore Blvd, Seaside)	Phase 1: $3.3 million O&M/power ~ $1.5 million (wells 1-4)	Phase I: 2,424 AFY diversion, 2,028 AFY max extraction, 920 AFY average yield	-	Phase 1 wells in operation	Phase 1 complete in 2004
8b	Aquifer Storage & Recovery - Phase 2	Monterey Peninsula Water Supply Project	New Water Supplies	Structural	Monterey Peninsula Water Management District, California American Water	This project diverts excess Carmel River winter flows, treats it and transmits it via the CalAm distribution system to injection/recovery wells in the Seaside Groundwater Basin for recharge. The Seaside Basin serves as an underground reservoir which water can be pumped out of during dry periods. Phase 2: includes 2 ASR wells (wells 3 and 4) located at Seaside Middle School and is designed to recharge up to diversion limit of 2,900 AFY.	Seaside Middle School	Phase 2: $4.2 million	Phase 2: 2,900 AFY storage, 1,050AFY average yield	-	Phase 2 wells in operation	Phase 2 planning began in 2008. Wells completed in 2013.
9	Aquifer Storage & Recovery - Phase 3	Monterey Peninsula Water Supply Project	Storage	Structural	Monterey Peninsula Water Management District, California American Water	This project diverts excess Carmel River winter flows, treats it and transmits it via the CalAm distribution system to injection/recovery wells in the Seaside Groundwater Basin for recharge. The Seaside Basin serves as an underground reservoir which water can be pumped out of during dry periods. Phase 3: includes 2 additional ASR wells (wells 5 and 6). These wells are envisioned as part of the overall CalAm Monterey Peninsula Water Supply Project. The wells are planned to be installed at Fitch Park to accommodate/inject water produced by the proposed desal facility. These wells would provide operational flexibility and redundancy. If the CalAm project does not move forward, water would be pulled off the Carmel River in the winter, stored and injected via these wells and then pulled out in summer.	Fitch Park	Phase 3 ~ $4 million	Yield would be counted under CalAm's MPWSP (injecting desal water)	-	Permitting	Phase 3: 2020
10	Los Padres Dam Alternatives	-	Storage	Structural	Monterey Peninsula Water Management District, California American Water	Los Padres Dam forms a 148-foot high earth fill barrier along the river 25 miles upstream of the ocean and includes a 600-foot long concrete spillway with an apron before dropping into the river. Dredging – A 2013 study by Cal-Am proposed to dredge reservoir sediments and haul the material to areas within Cal-Am property that drain directly to the main stem. These areas are characterized by steep terrain and the benefit-cost analysis of the alternatives was considered to be high. AECOM has determined that placing dredged material upstream of the reservoir is not feasible; however, a site downstream of the reservoir on Cal-Am owned property is large enough to accommodate dredged material. Reservoir storage expansion – expand surface storage with a rubber dam.	Los Padres Dam at Mile 25 of the Carmel River	$1.8 million	1,500 - 3,200 AFY	-	Ongoing	Study complete in December 2019; Project timing Medium term (3-10 years)
11	High Efficiency Applied Retrofit Targets (HEART) Pilot Program -Phase 1 (MPWMD)		Conservation / Management	Non-Structural	Monterey Peninsula Water Management District, Ecology Action	This program consists of 1) a washing machine replacement program in multi-family property common-area laundry rooms, and 2) comprehensive water efficiency retrofits for low-income customer properties.	Monterey Peninsula Water Management District	Phase 1: $275,000	>21 AFY	-	Pending	Proposed start: 7/2018 Estimated completion: 12/2018
Marina Coast Water District Projects												
12a	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP)	Regional Urban Water Augmentation Project	New Water Supplies	Structural	Marina Coast Water District, Fort Ord Reuse Authority (FORA), M1W, CalAm	The Recycled Water element of RUWAP consists of the backbone facilities needed for a recycled water distribution system that will provide up to 3,000 AFY of recycled water to urban users in the MCWD service areas, specifically including the former Fort Ord. The project also includes a 10 mile transmission pipeline from the treatment plant to Marina and Fort Ord communities. M1W provided use of transmission pipeline up to 3700 AFY.	Cities of Marina and Seaside	$40.8 million	600 AFY (first phase of Pure Water Monterey advanced treated recycled water (non-potable))	Marina and Fort Ord	Under construction	Anticipated to come online Spring 2019
12b	Recycled Water Element of the Regional Urban Water Augmentation Project (RUWAP) Expansion	Regional Urban Water Augmentation Project	New Water Supplies	Structural	Marina Coast Water District, Fort Ord Reuse Authority (FORA), M1W, CalAm	The Recycled Water element of RUWAP consists of the backbone facilities needed for a recycled water distribution system that will provide up to 3,000 AFY of recycled water to urban users in the MCWD service areas, specifically including the former Fort Ord. The project also includes a 10 mile transmission pipeline from the treatment plant to Marina and Fort Ord communities.M1W provided use of transmission pipeline up to 3700 AFY.	Cities of Marina and Seaside	-	up to 1,359 AFY from advanced treated recycled water (non-potable)	Marina and Fort Ord	-	Pending Pure Water Monterey Expansion
13	Marina Coast Water District Well 33 Pump Station and Reservoir Project	-	Infrastructure Improvements / Interties	Structural	Marina Coast Water District, CalAm	The project consisted of the installation of a new test well (Well 33), replacement of a non-functioning (Well 32) with a new well (Well 34); installation of an additional new well (Watkins Gate Well); and installation of about 2.5-miles of 24-inch ductile iron pipe connecting Watkins Gate Well and Well 34 to the rest of the raw water transmission network.	Marina	$6.5 million	TBD.	Marina Coast Water District	Project Complete	Completed
14	Armstrong Ranch River Water Project - Southern Component	-	Storage	Structural	Marina Coast Water District, CalAm	Construct a 1.5 MGD Surface Water Treatment Plant on Armstrong Ranch property to treat Salinas River high flows for direct use. Flows higher than treatment capacity would be infiltrated via ponds into the Dune Sand Aquifer. During periods when there are not flows for diversion, such as summer, the stored water is extracted for treatment and use.	Armstrong Ranch, in Marina	$2,400 per AF	1,500 AFY	Marina Coast Water District	-	TBD (10+ years?)
15	Armstrong Ranch Stormwater Capture and Reuse Project	-	Storage	Structural	Marina Coast Water District, CalAm	This project would reduce the amount of stormwater flowing into the Salinas River and ocean and instead capture and treat it for water supply purposes. The Hopkins Groundwater 2016 TM showed that Armstrong Ranch would be a good location for a stormwater capture and groundwater recharge project. As of Nov 2016, there are 5 project options.	Armstrong Ranch, in Marina	Project options range from $800 AFY to $3800 AFY	Project options range from 1,500AFY to 4,600AFY	Marina Coast Water District	Project development stage	TBD (3-10 years?)

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
16	Sand City Desalination	-	New Water Supplies	Structural	Marina Coast Water District, Fort Ord Reuse Authority (FORA), CalAm	Recommission existing 300 afy desal plant at Sand City.	Marina/Ord	TBD	150 AFY	Marina Coast Water District	Complete	TBD
17	Projects under Evaluation as part of Three Party MOU with FORA, MCWD, and M1W	-	Storage	Non-Structural	Marina Coast Water District, Fort Ord Reuse Authority (FORA), M1W, CalAm	Exploring various projects for implementation including (but not limited to) the following projects: 1) Aquifer Storage Recovery (using RUWAP project water); 2) Brackish desalter; 3) Augmenting groundwater recharge using surface/storm water into existing storm basin sumps (basins) throughout Marina/Ord; and 4) Expansion of RUWAP beyond 1,427 AFY.	Marina/Ord	TBD	TBD	Marina Coast Water District	Under Evaluation	TBD (3-10 years?)
Monterey County Water Resources Agency / Salinas Valley Water Project												
18	Salinas Valley Water Project Phase I	Salinas Valley Water Project	Infrastructure Improvements / Interties	Structural	Monterey County Water Resources Agency	The Salinas Valley Water Project (SVWP) is a water supply infrastructure project designed to address the problem of seawater intrusion. The SVWP would transfer water from the Monterey County Water Resource Agency's reservoirs in the southern part of the Salinas Valley to the northern portion of the Salinas Valley groundwater basin. Phase I include the Nacimiento Dam Spillway Modification Component and the Salinas River Diversion Facility (SRDF).	East of City of Marina (Salinas River Diversion Facility) & Nacimiento Dam	$15-20 million	An average of 9,700 AFY of Salinas River is diverted and delivered to the Castroville Seawater Intrusion Project (CSIP) system.	Agricultural lands in CSIP service area (Zone 2B), Salinas Valley aquifers	Project is in operation.	Project was completed in 2010.
19	Interlake Tunnel and Spillway Modification Project	Interlake Tunnel and Spillway Modification Project	New Water Supplies	Structural	Monterey County Water Resources Agency	The project is to build an Interlake tunnel between Lake Nacimiento and Lake San Antonio. The tunnel will transfer flood control releases from Nacimiento to San Antonio to gain additional storage, groundwater recharge, abatement of saltwater intrusion, and the promotion of fish habitats.	Salinas River Basin, between Lake San Antonio and Lake Nacimiento	$93 million	TBD	Salinas River Basin	Planning	2020
20	CSIP Annexations	CSIP	New Water Supplies	Structural	Monterey One Water (M1W) and Monterey County Water Resources Agency	The Castroville Seawater Intrusion Project presently serves irrigation water to 12,225.85 acres. Non-irrigated acres in Zone 2B include 2,434.15 acres. Potential annexations to Zone 2B comprise 2,250.77 acres. If the Pure Water Monterey project brings consistently recurring new supplies to CSIP, Zone 2B annexations can be considered and groundwater pumping reduced.	North end of Salinas Valley; Castroville area	TBD	TBD	Salinas River Groundwater Basin	Planning	3-10 years
21	Salinas Valley Water Project Phase II	Salinas Valley Water Project	New Water Supplies	Structural	Monterey County Water Resources Agency	The SVWP Phase II is designed to address water supply issues in the Salinas River Groundwater Basin by constructing two additional water capture and diversion facilities along the Salinas River. The two water diversion points are the East Side Canal Intake (Soledad) and the Castroville Canal Intake (Castroville).	Castroville and Soledad	TBD	Up to 135,000 AFY of water diverted from Salinas River and supplied for municipal, industrial, and/or agricultural uses in Pressure and East Side subareas.	Agricultural lands in CSIP service area (Zone 2B), Salinas Valley aquifers	In planning stages, EIR	Notice of Preparation issued 2014, Final EIR schedule 3-10 years
22	Salinas River Diversion Facility Expansion (MCWRA)	Salinas Valley Water Project	New Water Supplies	Non-Structural	Monterey County Water Resources Agency	The MCWRA proposes to develop a feasibility analysis that would evaluate possible alternatives that could increase Salinas River Diversion Facility functionality, potentially through: 1) developing an urban water supply component, 2) expanding the availability of water for agricultural use, and 3) through other alternatives.	Salinas River	TBD	TBD	Salinas River Groundwater Basin	In 2014 Concept Proposals	10+ years
23	Salinas River Diversion Facility Solar Energy Enhancement Project (MCWRA)	Salinas Valley Water Project	Infrastructure Improvements / Interties	Non-Structural	Monterey County Water Resources Agency	The project includes construction of a solar energy field to power four 300 hp pumps to extract water from the Salinas River to be added into the recycled water storage pond for delivery to 12,000 acres of agricultural fields.	Field located on MCWRA property around Lake Nacimiento, near substation.	TBD	TBD	-	In 2014 Concept Proposals	3-10 years
24	Coastal Dedicated Monitoring Well Drilling (MCWRA)	Coastal Dedicated Monitoring Well Drilling	Infrastructure Improvements / Interties	Non-Structural	Monterey County Water Resources Agency	The project consists of drilling 12 dedicated monitoring wells for water quality monitoring and water level data at the intrusion fronts of the Pressure 180-ft and Pressure 400-ft aquifers.	Coastal Monterey County	Capital: $921K	N/A	Salinas Valley Groundwater Basin	Planning	2019-2020
25	Dedicated Monitoring Well Expansion Project (MCWRA)	Dedicated Monitoring Well Expansion Project	Infrastructure Improvements / Interties	Non-Structural	Monterey County Water Resources Agency	The project includes installation of up to 100 dedicated monitoring wells throughout the basin.	Salinas Valley	Capital: $11.4 million	N/A	Salinas Valley Groundwater Basin	Concept	3-10 years
26	Monterey County Water Supply Augmentation Program (MCWRA)	Salinas Valley Water Project	Watershed	Non-Structural	Monterey County Water Resources Agency	This project incorporates new surface water storage facilities, as well as surface water treatment, distribution systems for both agriculture and urban uses, and expanded utilization of recycled water.	Coastal Salinas Valley	TBD	TBD	Agricultural lands in CSIP service area (Zone 2B), Salinas Valley aquifers	In 2014 Concept Proposals	3-10 years
27	Water Supply Reliability Project (MCWRA)	Water Supply Reliability Project	Infrastructure Improvements / Interties	Non-Structural	Monterey County Water Resources Agency	This project addresses deferred maintenance and improvement of the MCWRA facilities. Maintenance tasks and improvements include: Nacimiento Dam and Hydroelectric Facility, San Antonio Dam, Rec Ditch, Castroville Seawater Intrusion Project, and Salinas River Diversion Facility. Goal of the project is to improve operations that provide conservation, flood control, recreation, fight seawater intrusion, and increase water source diversity.	Various locations	Capital: $3.5 million	N/A	Salinas Valley Groundwater Basin	Planning	On-going
28	Ground Water Conservation and Extraction Monitoring Expansion Project (MCWRA)	Ground Water Conservation and Extraction Monitoring Expansion Project	Conservation / Management	Non-Structural	Monterey County Water Resources Agency	This project funds the expansion of the Ground Water Conservation and Extraction Program (GWCE) into MCWRA Zone 2C. The GWCE provides critical data about water conservation practices and ground water extractions in Zones of Benefit.	Salinas Valley Groundwater Basin	TBD	N/A	Salinas Valley Groundwater Basin	Planning	3-10 years
29	Well Destruction Project (Salinas Valley Water Project)	Salinas Valley Water Project	Infrastructure Improvements / Interties	Non-Structural	-	Destroying wells that have been problematic in the CSIP and are contributing to vertical transfer of seawater.	-	-	N/A	-	-	3-10 years
Castroville Community Services District												
30	Castroville CSD: Well #5 Treatment Project	-	Infrastructure Improvements / Interties	Structural	Castroville Community Services District	Project consists of a well pump and arsenic removal treatment system for existing well in Castroville. In 2007 well No. 5 was drilled into the 900-ft aquifer because shallower wells were experiencing increased salinity. Water quality testing indicated that arsenic levels exceeded the MCL for drinking water.	Castroville	Well: $610,000 Treatment: $1.25 million	200 AFY	Castroville	Construction completed - Well #5 is on-line	Completed 2015

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
31	Castroville Interconnection to CalAm's MPWSP	-	Infrastructure Improvements / Interties	Structural	Castroville Community Services District	Castroville CSD (CCSD) submits that it is actively pursuing alternative water supplies and has applied to the State for funding to develop deeper groundwater wells and other projects to serve its customer demands. CCSD is also interested in taking delivery of a return water supply from the Monterey Peninsula Water Supply Project to replace all or part of CCSD's current reliance on groundwater from the Salinas Valley. Cal Am previously contemplated two separate pipelines delivering Return Water from the MPSWP desalination plant, one to CSIP ponds and one to CCSD's wellsite #3 ("CCSD Wellsite"). Through negotiations and discussions, the Parties determined the cost of new infrastructure could be decreased by connecting with existing CSIP infrastructure. That connection allows a single pipeline, rather than two pipelines, to be constructed from the desalination plant to the CCSD Wellsite #3 that will connect with an existing CSIP pipeline ("CSIP Connection"). If Cal-Am is unable to deliver water from the desalination facility, then CCSD will likely evaluate a new well to the deep aquifer (see Project #32 - Castroville Well #6).	Castroville	Pipeline: $6.0 million (total cost) $2.8 million (max Castroville would commit to paying) New well: $2.8 million	600-780 AFY (Water yield accounted for in CalAm's MPWSP, Project #1)	Pressure 180/400 & North SVGWB	California Public Utilities Commission approved certificate of Public Necessity late 2018.	Before 2021
32	Castroville Well #6 (in lieu of MPWSP interconnection, Project #31)	Well #6	New Water Supplies	Structural	Castroville Community Services District	Project consists of a New Deep well and arsenic removal treatment system for potential new well in Castroville. New wells are drilled into the 900-ft aquifer because shallower 400' wells were experiencing increased salinity. This projects would only occur if the Interconnection to CalAm's MPWSP does not occur.	Castroville	New Well + Treatment: $2.8 million	200-780 AFY	Castroville	On hold pending MPWSP outcome	2020-2025
33	Castroville Interconnection to DeepWater Desal's Monterey Bay Regional Water Supply Project	DEEP WATER DESAL	Infrastructure Improvements / Interties	Structural	Castroville Community Services District & DeepWater Desal	Castroville CSD has an Memorandum of Incorporation with DeepWater Desal should it come to fruition.	Moss Landing-Castroville	Unknown	1,000 AFY (Water yield accounted for in DeepWater Desal's Monterey Bay Regional Water Project, Project #46)	Pressure 180/400 & North SVGWB	On hold pending MPWSP	2020-2025
California Water Service												
34	New Water Supply Wells (3) and Treatment (Cal Water)	-	Infrastructure Improvements / Interties	Non-Structural	Cal Water Services	This project consists of drilling 3 new wells to replace older ones that have been impacted with poor water quality (arsenic, nitrates, etc.). The Oak Hills and Los Lomas wells have been impacted with Cr(VI) and the well in Salinas Hills is currently has difficulty meeting the max day demands. The project would replace these 3 wells with new ones (including treatment).	Oak Hills, Los Lomas, and Salinas Hills in the Pine Canyon Area	-	-	Cal Water service area	Permit application submitted July 2017. In permitting phase, pending regulatory approval.	Targeting PUC approval in 2019 and construction to begin 2019. Wells online by 2020
35	Feasibility Study Projects (Cal Water)	-	Conservation / Management	Non-Structural	Cal Water Services	Cal Water conducted a "Feasibility Study for a Long Term Water Supply Plan for the Salinas District." (Consultant: Camp, Dresser, and McKee) The study evaluated Cal Water's current water supplies and demands and identified potential future water supply sources (due to the degradation of its groundwater basin water quality) including DeepWater Desalination, additional groundwater wells, re-capturing groundwater well flushing water, and reclaimed water (source would be the Salinas WWTP which is 11 miles away from the Cal Water Service Area). The study concluded that the main water supply source is still its groundwater basin and that it was most economical to continue using groundwater supplies via additional new wells. Currently Cal Water is in the process of developing a new feasibility study that will re-evaluate water supply options and include considerations of projects identified with the local GSA.	Salinas	-	-	-	Study effort is underway. Expected completion in 2019.	0-3 years
36	Conservation Program (Cal Water)		Conservation / Management	Non-Structural	California Water Service, CA Department of Water Resources	This program consists of a number of conservation projects including the Turf Replacement Rebate (includes three integrated programs including a residential turf rebates program, an institutional turf replacement program, and a statewide campaign to promote drought tolerant landscapes), installation of low flow toilets, and conservation kits (low flow shower heads, aerators, etc.) The turf replacement rebate program funds have expired.	Salinas	Costs depend on Projects (Turf Replacement Program: Statewide - $24 million program. Up to $2 per sq. ft. rebate)	Conservation efforts have reduced water demands in Salinas by 18% from 2013 to 2017.	-	Ongoing, pending funding. (Turf Replacement funds have expired)	Ongoing, pending funding. Turf replacement planning initiated 2015, program expired
Miscellaneous Projects												
37	Salinas Multi-Benefit Floodplain Management (Monterey County Resource Conservation District; Grower-Shipper Association)	-	Watershed	Non-Structural	Grower-Shipper Association (oversight/guidance), Monterey County Resource Conservation District (routine maintenance), Monterey County Water Resources Agency (hold 401 and 404 Permit), Salinas River Channel Coalition	Multi-Benefit Salinas River Management Project is a collaborative partnership with growers, water resource managers, county, state and federal agencies, conservation groups and other stakeholders to develop an adaptive approach to flood risk reduction, groundwater recharge, community health and safety, and riparian and coastal biodiversity. Maintenance is conducted in 125 maintenance channels within the active floodplain. These conveyance channels are natural meander channels within the floodplain area. Implementation includes vegetation mowing, sediment removal and arundo removal. Important habitats and species are preserved through avoidance. The Nature Conservancy has created a HEC-RAS model of the area of inundation, and built a 2D model for the entirety of the 92 mile Salinas Floodplain to see/predict areas of inundation, water velocity, and water elevation.	Salinas Floodplain - 92 miles of Salinas River from Hwy 1 to San Ardo	Study: $1.2 million; Annual Maintenance costs: ~ $1.5 annually for the entire program area (for 10 years). Long term monitoring costs: ~$200,000 annually.	Unable to determine at this point.	Localized benefit to agricultural lands, benefits to public infrastructure including bridges, roads and wastewater treatment facilities (Salinas, Soledad, Gonzales, and Greenfield)	Ongoing - implementation began in 2014, 36 channels so far maintenance is conducted annually	Spring season for arundo removal is June - August 31. Fall season maintenance is September 1 - November 15.
38	Monterey Bay Friendly Landscaping Rebate Incentive and Direct Installation Program (Ecology Action)	-	Conservation / Management	Non-Structural	Ecology Action; Salinas Valley Solid Waste Authority, Cal-Water Salinas, Marina Coast Water District, Monterey Peninsula Water Management District; Monterey One-Water (MRSWMP); California Conservation Corps, Monterey Bay	This project (Monterey Bay Friendly Landscaping, MBFL) is a watershed-wide approach to reducing water demand that provides enhanced incentives and assistance to accelerate retrofits that meet standards of both the CA model efficient water ordinance and Central Coast Post-Construction Stormwater requirements. Implementation of MBFL projects provides long-term landscape water conservation benefits and increases the number of distributed stormwater infiltration BMPs. The project targets high priority commercial/institutional sites and expands direct install/rebate programs for residential turf replacement, irrigation efficiency upgrades, low impact development BMP retrofits, and simple greywater irrigation systems.	Monterey County: watershed wide	$350K	15-20 AFY (Target of 100,000 sq. ft.)	Residential, commercial, and Institutional customers of all water agencies in the region	Ongoing - MBFL recognition program is active. MBFL LID Incentives are currently not funded in Monterey County	Currently ongoing

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
39	WaterLink-Monterey Bay (Ecology Action)	-	Conservation / Management	Non-Structural	Ecology Action; Potential Partners Cal-Water Salinas, Marina Coast Water District, Monterey Peninsula Water Management District; Castroville Community Services District, Pajaro-Sunny Mesa Community Services District	WaterLink is a program that helps people and businesses located in under resourced communities of the Monterey Bay area save water and energy to reduce their monthly utility bills. Targets include canvassing and direct installation of water efficiency upgrades (faucet aerators, showerheads, toilets, clothes washers, and dishwashers in 5,000 single and multi-family residential homes over a 2 year period.	Monterey County: watershed wide	$2 million	232 AFY	Residential customers in DAC communities of all water agencies in the region	Currently funded by DWR Water-Energy Grant in Pajaro, Las Lomas, Salinas, Seaside and Marina through April 2019	WaterLink is ready to implement in any area of Monterey County pending available funding
40	Drought Tolerant Landscaping at Schools (Watershed Institute, Return of the Natives)	-	Conservation / Management	Non-Structural	Watershed Institute; Return of the Natives; Cal State Monterey Bay, Monterey Peninsula Unified School District	Return of the Natives in partnership with Monterey Peninsula Unified School District has created drought tolerant native gardens on 11 MPUSD school sites. David Chandler has done many water conservation projects saving the District hundreds of thousands of dollars.	Monterey County	-	-	-	Ongoing	0-3 years?
41	Educational Outreach/Conservation Projects (Return of the Natives)	-	Conservation / Management	Non-Structural	Return of the Natives, Cal State Monterey Bay, Bureau of Land Management, USFWS, CA State Parks, City of Salinas	Return of the Natives' education and outreach programs are more centered on water quality and conservation. Annually they work with ~ 5000 k-12 students for multiple experiences including restoration planting (natives) field trips to public lands. Our public lands partners are BLM, USFWS, CA State Parks and City of Salinas.	Monterey County	-	-	-	Ongoing	0-3 years?
42	Carmel Bay Area of Special Biological Significance (ASBS) Project (Pebble Beach CSD)	-	Watershed	Non-Structural	Pebble Beach CSD, Pebble Beach Company	This project implements BMPs to improve stormwater and non-stormwater discharges from Pebble Beach. The project will also protect marine life and increase recycled water supply. There are 4 phases to the project which involve characterizing stormwater and non-stormwater discharges, monitoring, designing systems and BMPs to improve discharges.	Carmel Bay	Capital: $12 million O&M: 100K	-	-	-	0-3 years?
43	Carmel River Floodplain Restoration and Environmental Enhancement (Carmel River FREE) (Big Sur Land Trust)	-	Watershed	Non-Structural	Big Sur Land Trust, Monterey County	The project consists of removing nearly 1,500 feet of riverbank levee on the south side of the Carmel River channel to allow storm flows back into the Odello East floodplain, restoring 100 acres of floodplain and riparian habitat (plantings and re-seedings), replacing a portion of Hwy 1 embankment with a 360 foot long causeway to improve floodwater movement under the highway and re-establish connection between the floodplain east of the highway and the Carmel Lagoon on the west, and grading of the floodplain to elevate approximately 23 acres to be maintained as an agricultural preserve.	Carmel River	Pre-construction: $3 million Construction Cost: $24.3 million + Long Term Mgmt.: $1.7 million ($26 million total) funding gap: $15 million	-	Flood control benefits to County Service Area 50, Carmel Area Wastewater District, drought resiliency to Carmel Lagoon and lower river watershed	EIR for public review fall 2018, certification early 2019, 60% plans complete	Construction expected to start in 2020 and completed within 18 months
44	Carr Lake Riparian Habitat Restoration Plan (Big Sur Land Trust, City of Salinas)	-	Watershed	Non-Structural	City of Salinas, Big Sur Land Trust	BSLT initiated the Carr Lake Project in 2017 with the acquisition of 73 acres within the Carr Lake Basin in the City of Salinas. The 480-acre basin was a key part of a historical lake and drainage area; it was converted to agricultural uses in the early 1900's. Three creeks that once flowed naturally through Carr Lake were converted to ditches to transport flows from four watersheds downstream. These drainages no longer have capacity to convey runoff from large storm events and the lakebed experiences seasonal flooding. The goal of the project is to work with the community and City of Salinas to co-design and repurpose the property from its existing agricultural use to serve the city's need for additional park and open space while also creating benefits related to storm water management, flood control and water quality improvements through restoration of natural hydrology, wetlands and other habitat related restoration. While the near term focus of the work is on the 73 acres in BSLT ownership, both the City and the Land Trust continue to look to potential future acquisition and eventual restoration of other significant portions of the Carr Lake basin.	BSLT Carr Lake property - 618 Sherwood Drive, Salinas, CA	Acquisition: $3.95M from public and private sources; $500-$750K for planning and community engagement; $750k-$1M for architect, restoration design, site plan, envrionmental review, permits; construction costs TBD	N/A	City of Salinas	Acquisition of 73 acres of Carr Lake by Big Sur Land Trust on January 25, 2017. Agricultural operations on 63 acres of ag land expected to continue for 3-7 years while site planning underway	Site planning initiated in 2017 after acquisition completed; final site plan, environmental review, permits expected in 2020-2021; implemention to follow
45	Monterey Bay Regional Water Project (DeepWater Desal)	Monterey Regional Desalination Project	New Water Supplies	Structural	DeepWater Desal LLC	MBRWP is a reverse osmosis desalination plant that has a deepwater intake. The project would be co-located with a 150MW data center campus and a 200MW power sub-station. The project is designed to serve the Salinas Valley, South Santa Cruz County and is a back up to the CalAm desalination project. Potential off-takers include City of Salinas, MPWMD, Soquel Creek Water District, Castroville CSD, and Pajaro Sunny Mesa Community Services. Potential project sponsors include large foreign water company - proposing a design-build-own-operate-transfer model.	Moss Landing (110-acre site, appx. 1.5 miles east of Moss Landing Harbor)	Planning/in-kind services: $45-50 million ($12.5 million to date) Construction: $350 million Water cost (desal plant only, no pipelines) $1,900 - $2,200 / AF Pipeline to Salinas: $33 million	25,000 AFY (space available for potential 100% redundancy - 50,000 AFY total) City of Salinas - 10,000-15,000 AF MPWMD - First right to 9,000 AF Soquel Creek - 1,500 AF Castroville CSD - 1,000 AF Pajaro Sunny Mesa - 1,000 AF	Current MOU's with Soquel Creek Water District, Pajaro Sunny Mesa Community Services District, California Water Service serving Salinas, Castroville Community Services District and Monterey Peninsula Water Management Agency	Completing Benthic Study which is final report to be submitted to Lead Agencies for EIR/EIS. Draft Subsurface Feasibility Study completed this week.	EIR Draft - Qtr 1 2018 Section 13142.5(b) Request - May 2018 Construction - 2021 (24 month duration) Online/water deliveries - 2023
46	The People's Water Desal	-	New Water Supplies	Structural	Moss Landing Harbor District	The project would rehabilitate existing facilities at Moss Landing Green Commercial Park and develop a desalination water supply of approximately 13,400 AFY. The project would also include a seawater intake and a brine outfall. The water would serve North Monterey County area and Monterey Peninsula.	Moss Landing, former Kaiser Refractories Plant (Dolan Rd and Hwy 1)	-	13,400 AFY	North Monterey County (Moss Landing, Pajaro Sunny Mesa Water District, Pajaro Valley Water Management Agency, City of Watsonville, Granite Ridge/Prunedale), Monterey Peninsula Area	2015: EIR scoping	10-May

No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
47	Pacific Grove Local Water Project	-	New Water Supplies	Structural	City of Pacific Grove, Monterey Peninsula Water Management District	The project would conserve up to an estimated 125 AFY by eliminating existing irrigation of the City Golf Links and El Carmelo Cemetery.	City of Pacific Grove	Capital: $7.7 million Annual O&M: $300,000	125 AFY	-	Came online in January 2018	Proposed Start: 8/2014, Estimated completion: 4/2015
48	Seaside City Wide Low Impact Development Projects	-	Conservation / Management	Non-Structural	City of Seaside, Seaside County Sanitation District	Various low impact development projects implemented on a case by base basis throughout the City of Seaside. These include stormwater diversion and low impact designs such as bioswales, permeable pavement, etc. Projects are ongoing as new development are constructed and existing ones are modified/retrofitted. Implemented projects: West Broadway Urban Village infrastructure, Auto center road rehabilitation. Planned/future projects: Redevelopment in former Fort Ord.	Various projects throughout the City of Seaside	varies, depending on project	Pending Hydrometrics Analysis	City of Seaside (groundwater supplies)	Ongoing	Ongoing
49	Seaside Local Water Project (Laguna Grande)	-	Infrastructure Improvements / Interties	Structural	City of Seaside, Seaside County Sanitation District	Design and construction of a system to provide non-potable water for public works activities such as sewer line cleaning, street sweeping, storm drain cleaning, other irrigation and construction needs, which currently use potable water. The project would involve modifications to an existing irrigation well located in Laguna Grande Park and would add motor controls, flow controls, below grade piping and a hydrant for filling vehicles. Water would be available year round with max filling rate of ~ 200 gpm.	City of Seaside, along Canyon Del Rey Blvd near Harcourt Ave (36°36'14.79"N, 121°51'16.93"W)	Design & Construction: $132,000 + O&M costs: ~$6,200/yr	5 AFY (w/ 200 gpm filling rate)	Cal Am and Seaside Municipal Water System	Grant application submitted Sept 2015 Grant from CalAm awarded	Once grant awarded, less than one year to design and construct. Projected completion: 2020
50	Del Monte Urban Water Diversion	-	Watershed	Structural	City of Seaside, Seaside County Sanitation District	Construction of trash capture device and diversion structure on a 90 inch storm drain for an approximate 1500 acre watershed. Project would divert all dry weather flows and potentially the 1 year 1 hour storm.	Del Monte Blvd at Clementina Ave.	$2 Million	100 AFY	Cal Am and Seaside Municipal Water System	95% design	2 - 5 years
51a	Agricultural Tail Water Recapture	GSA Project Concept	New Water Supplies	Non-Structural	-	Tail water recapture					Conceptual	
51b	Recycle Water (collect wastewater from River Road and Toro & Pipe to Hitchcock)	GSA Project Concept	New Water Supplies	Non-Structural	-	Recycle water - opportunity to collect waste water from River Road and Toro. Pipe to Hitchcock					Conceptual	
51c	Alternative Recycled Water Sources	GSA Project Concept	New Water Supplies	Non-Structural		Recycle agricultural, industrial, and winery process water.					Conceptual	
51d	Recycle Chualar Wastewater/South County	GSA Project Concept	New Water Supplies	Non-Structural		Recycle Chualar wastewater/South County					Conceptual	
51e	Capture and Recycle Municipal Well flushing water	GSA Project Concept	New Water Supplies	Non-Structural		Municipal wells require flushing for water quality, need to capture water to repurpose.					Conceptual	
51f	Construct Seawater Intrusion Barrier	GSA Project Concept	Infrastructure Improvements / Interties	Non-Structural		Seawater intrusion barrier					Conceptual	
51g	Reduce Pumping in Coastal Areas	GSA Project Concept	Conservation / Management	Non-Structural		Reduce pumping in coastal areas					Conceptual	
51h	Limit Groundwater Extraction (180 to 400 foot aquifer)	GSA Project Concept	Conservation / Management	Non-Structural		Limit extraction in 180/400 ft. aquifer					Conceptual	
51i	Better Manage Dams/Releases	GSA Project Concept	Storage	Non-Structural		Better Manage Dams					Conceptual	
51j	Increase Reservoir Storage by Increasing Release Capacity	GSA Project Concept	Storage	Non-Structural		Increase reservoir storage by increasing release capacity (and associated operations management)					Conceptual	
51k	Weather Responsive Dam Operations	GSA Project Concept	Storage	Non-Structural		Weather responsive dam operations					Conceptual	
51l	Build Small Groundwater or Storage Basins	GSA Project Concept	Storage	Non-Structural		Build other small basins (groundwater or storage basins), In situ/in river bed infiltration basins (small)					Conceptual	
51m	Use 11043 Permit Water to fill Cone of Depression in Natividad	GSA Project Concept	Storage	Non-Structural		Use 11043 permit water to fill Cone of Depression in Natividad					Conceptual	
51n	Create Extraction Barrier Well Field	GSA Project Concept	Storage	Non-Structural	-	Create Extraction Barrier Well field					Conceptual	
51o	Monterey One Water – Wintertime Effluent Storage	GSA Project Concept	Storage	Non-Structural		One Water – Wintertime effluent storage					Conceptual	
51p	North End Storage (Recharge)	GSA Project Concept	Storage	Non-Structural		North End Storage (Recharge)					Conceptual	
51q	Stormwater Capture (mouth of Salinas River)	GSA Project Concept	Watershed	Non-Structural		Stormwater capture at mouth of Salinas and use or injection near coast/intrusion area					Conceptual	
51r	Dam Arroyo Seco	GSA Project Concept	Storage	Non-Structural		Dam Arroyo Seco					Conceptual	
51s	Improve Farming Practices and Provide Incentives to Farmers	GSA Project Concept	Conservation / Management	Non-Structural		Incentives for farm practices including: money to implement ag projects; weather responsive irrigation; drought contingency crop decisions; irrigation monitoring, expansion of drip irrigation; crop conversion; fertilizer use efficiency; cover crops to promote healthy soils; vegetation treatment.					Conceptual	
51t	Re-evaluate Nitrate Regulations	GSA Project Concept	Conservation / Management	Non-Structural		Re-evaluate regulations (nitrate)					Conceptual	
51u	Wellhead Treatment (Brackish water)	GSA Project Concept	Infrastructure Improvements / Interties	Non-Structural		Wellhead brackish treatment					Conceptual	
51v	Watershed Management Practices (increase natural runoff flow)	GSA Project Concept	Watershed	Non-Structural		Watershed management practices to increase natural runoff flow controlled vegetation management-prescriptive-goat herds, burns.					Conceptual	
51w	Coordinate Outside Basin to incorporate watershed into Santa Lucia and Gabilan waters	GSA Project Concept	Watershed	Non-Structural		Coordinating outside basin to incorporate watershed into Santa Lucia and Gabilan surface run-offs, creeks, rivers.					Conceptual	

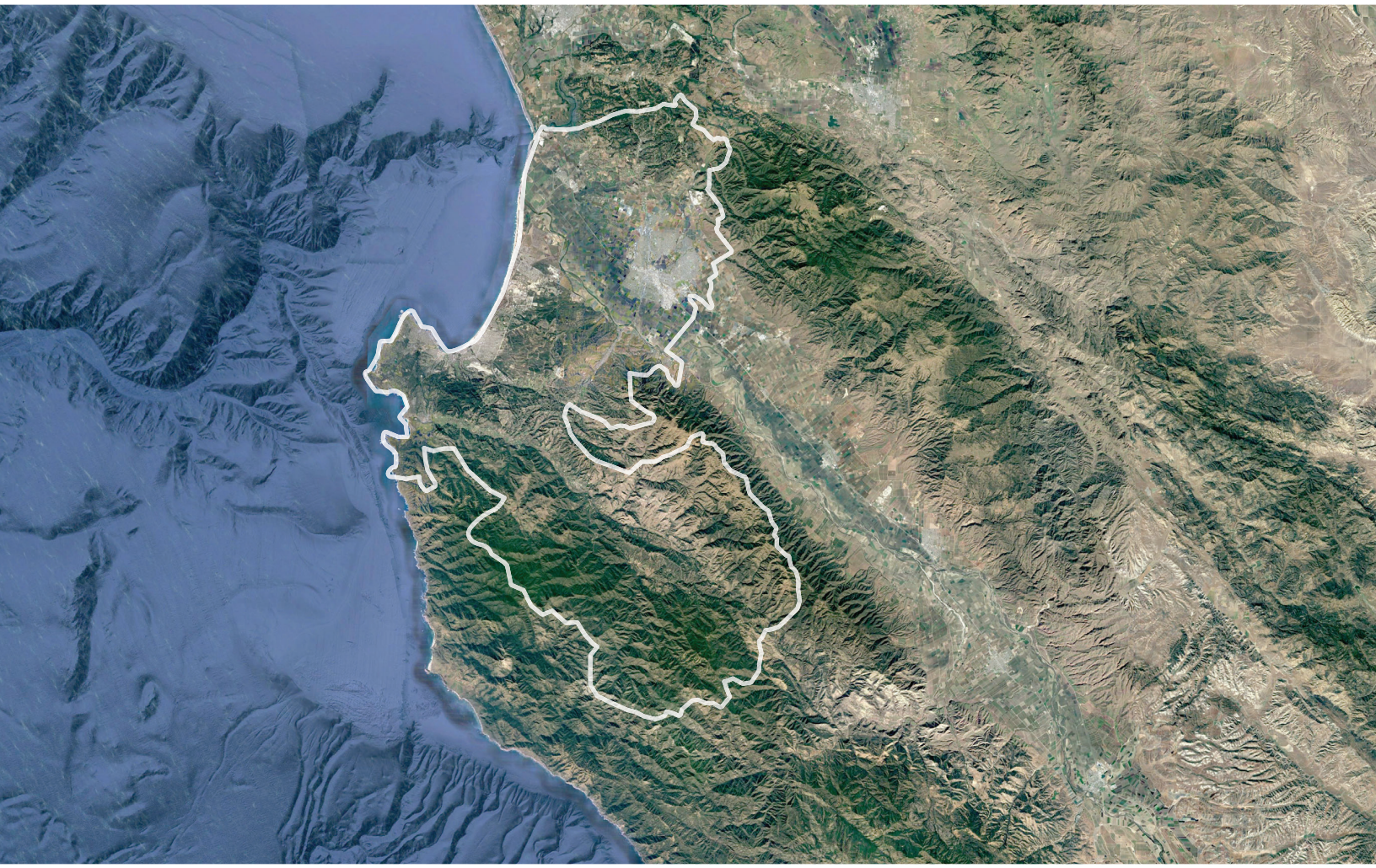
No.	Drought Mitigation Project	Overall Project	Primary Project Type	Structural or Non-structural	Engaged Agencies	Description and Implementability	Location	Cost	Availability and Yield of Water (AFY)	Beneficiary	Status	Timing of Project
51x	Maximize River to move Water (not pipeline)	GSA Project Concept	Watershed	Non-Structural		Maximize river to move water rather than constructing pipelines					Conceptual	
51y	Urban Conservation Programs	GSA Project Concept	Conservation / Management	Non-Structural		Continue Urban conservation programs					Conceptual	
51z	Incentives to foster land retirement/fallowing	GSA Project Concept	Conservation / Management	Non-Structural	-	Quotas/credits that would foster nurture land retirement/fallowing					Conceptual	
51aa	ET as a loss component for projects – ponds, native vegetation, urban greening	GSA Project Concept	Watershed	Non-Structural	-	ET as a loss component for projects – ponds, native vegetation, urban greening					Conceptual	
51ab	Integrate Habitat Conservation Plans into all Projects	GSA Project Concept	Watershed	Non-Structural	-	Habitat conservation plan integration all projects					Conceptual	
51ac	Land Use Policies Reviewed	GSA Project Concept	Conservation / Management	Non-Structural		Review land use policies re: water limitations on urban development					Conceptual	
51ad	Fast track CEQA/permitting for projects pertaining to water	GSA Project Concept	Conservation / Management	Non-Structural		Fast track permitting for projects pertaining to water					Conceptual	
51ae	Price Incentives	GSA Project Concept	Conservation / Management	Non-Structural		Price incentives for all water use					Conceptual	
51af	Baseline Data	GSA Project Concept	Conservation / Management	Non-Structural		Baseline data, modeling					Conceptual	
51ag	Better models that can be actively used as watershed management tool	GSA Project Concept	Conservation / Management	Non-Structural		Better models (hydrogeology, hydrologic communication) that can be actively used as management tool (with regional support/publicly vetted					Conceptual	
52a	Hartnell Gulch Restoration and Stormwater Diversion	Stormwater Resource Plan Projects	Conservation / Management	Structural	City of Monterey, Monterey One Water	The Hartnell Gulch project is comprised of two parts – creek rehabilitation and dry weather flow diversion to sanitary sewer.	City of Monterey, between Pacific St. and Hartnell St.	Capital: $1.3 million O&M: $35K/yr	51-60 AFY (April - October)	Groundwater Replenishment Project or CSIP		
52b	Monterey Tunnel Stormwater Diversion	Stormwater Resource Plan Projects	New Water Supplies	Structural	City of Monterey, Monterey One Water	The Monterey Tunnel project consists of diverting dry weather flows (April to October), including groundwater seepage (currently not quantified), to the sanitary sewer for recycling at the Monterey One Water Regional Treatment Plant to augment water supply.	Northernmost segment of Oliver Street south of Fisherman's Wharf	Capital: $190K O&M: $8K/yr	10-12 AFY (April - October)	Groundwater Replenishment Project or CSIP		
52c	Carmel-by-the-Sea Stormwater Diversion Project	Stormwater Resource Plan Projects	New Water Supplies	Structural	City of Carmel-by-the-Sea, Carmel Area Wastewater District	The project consists of diverting dry weather runoff (April to October) and first flush events to the Pebble Beach sanitary sewer main for recycling at the Carmel Area Wastewater Treatment Plant to augment water supply for the Pebble Beach golf courses in Del Monte Forest.	San Antonio Avenue from Second Avenue south to Santa Lucia Avenue	Capital: $750K O&M: $32K/yr	11-14 AFY			
52d	Pacific Grove Monterey ASBS Watershed - David Avenue Reservoir	Stormwater Resource Plan Projects	Storage	Structural	City of Pacific Grove, Monterey One Water, Cal-Am	The proposed Pacific Grove Monterey ASBS Watershed-David Avenue Reservoir project consists of collecting wet and dry weather runoff from the catchment area and storing it in an underground tank constructed within David Avenue Reservoir in Pacific Grove. The site would be backfilled and brought to grade, providing a surface that could be used for other purposes such as a community park. Stormwater would be detained during the wet season in David Avenue Reservoir and metered out during the dry season to the Monterey One Water Regional Treatment Plant to augment water supply.	David Avenue	Capital: $8.8 million O&M: $21K/yr	14-29 AFY	Groundwater Replenishment Project or CSIP		
52e	Dry Well Aquifer Recharge Program	Stormwater Resource Plan Projects	Conservation / Management	Non-Structural	City of Seaside	The Dry Well Aquifer Recharge Program in the City of Seaside, with support from regional partners, will focus on using dry wells to recharge urban runoff to the Seaside Groundwater Basin. The program focuses on treating and infiltrating runoff from residential areas within the City of Seaside.	Four proposed projects throughout City of Seaside	Capital: $4.3 million O&M: $59K/yr	50-67 AFY	Groundwater Replenishment Project		

Notes

(1) Monterey One Water (M1W) was formerly named Monterey Regional Water Pollution Control Agency (MRWPCA)

Cells colored gray indicate project is completed or under construction.

Cells colored in yellow indicate projects that are considered part of the base condition (Projects will be implemented)



Funding in part by the Department of the Interior, Bureau of Reclamation
Under a Water SMART Drought Contingency Planning Grant