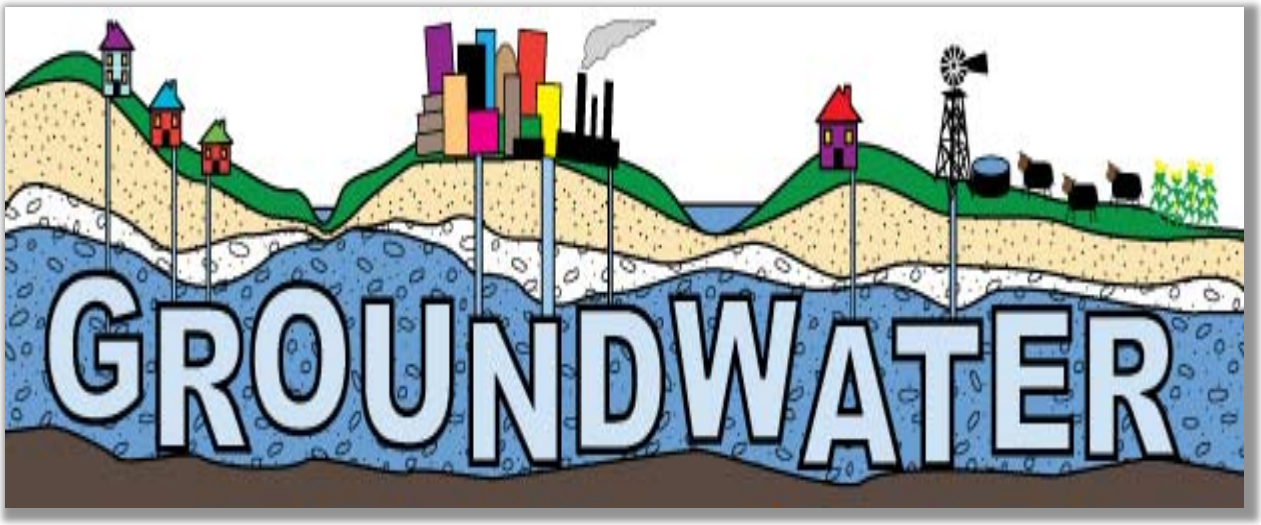
STRIVING FOR SUSTAINABILITY



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STRIVING FOR SUSTAINABILITY

SUMMARY

Monterey County is critically dependent on groundwater for both its agricultural and urban water demands. "An estimated 95 percent of all water used in Monterey County is derived from groundwater wells. With nearly 200,000 acres of land under cultivation in the Salinas Valley, agricultural pumping exceeds 495,000 acre-feet per year.[1] Combined with urban and other uses, total groundwater pumped in the Salinas Valley is approximately 520,000 acre-feet per year."[2] Groundwater wells pump water from underground aquifers.[3] Many of those aquifers are now experiencing "overdrafting", a condition where more water is pumped out of an aquifer than is returned to the aquifer on an average yearly basis. In aquifers located adjacent to coastal waters, overdrafting can allow seawater to intrude into the aquifer, resulting in salt-contaminated groundwater that is unsuitable for both urban and agricultural uses.

Groundwater is critical not only because of its limited availability. It's also critical to the economy of Monterey County, which depends heavily on its agricultural industry. "Monterey County is recognized as the Salad Bowl of the World. Its temperate climate, rich soils, and unparalleled infrastructure support system make this the ideal growing area for cool season vegetables, wine grapes, strawberries and flowers. The County is also the home of the packaged salad and pre-cut fresh vegetables, representing 90% market share of the fresh vegetable value added industry. Because the agriculture here is year round and highly labor intensive, Monterey County has the State's highest agricultural payroll at $408.6 million, comprising 9.5% of the State of California's $4.3 billion agricultural payroll".[4]

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1 One Acre Foot = 325851 gallons.

2 Monterey County Legislative Program 2015-2016, Water Resources Sustainability, p.25. Approved by Board of Supervisors, January 13, 2015.

3 An aquifer is an underground layer of water-bearing porous rock, rock fractures or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using water wells. More than one aquifer may be located within a groundwater basin.

4 University of California, Division of Agriculture & Natural Resources. June 2005. http://cemonterey.ucanr.edu/about/

LIST OF ACRONYMS

Ag	Agriculture
AMBAG	Association of Monterey Bay Area Governments
ARP	Arundo Removal Project
ASR	Aquifer Storage and Recovery
AWT	Advanced Water Treatment Plant
CASGEM	California Statewide Groundwater Elevation Monitoring program
CAWD	Carmel Area Wastewater District
CCR	California Code of Regulations
CPUC	California Public Utilities Commission
CSIP	Castroville Seawater Intrusion Project
DWD	DeepWater Desal
DWR	Department of Water Resources
EIR	Environmental Impact Report
FORA	Fort Ord Reuse Authority
GMA	Groundwater Management Act
GAMA	Groundwater Ambient Monitoring and Assessment
GEMS	Groundwater Extractions Monitoring System
GMCIRWMP	Greater Monterey County Integrated Regional Water Management Plan
GMP	Groundwater Management Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWR	Groundwater Replenishment
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Groundwater Management Plan
MBNMS	Monterey Bay National Marine Sanctuary
MCGMP	Monterey County Groundwater Management Plan
MCWMD	Marina Coast Water Management District
MCWRA	Monterey County Water Resources Agency
MPWMD	Monterey Peninsula Water Management District
MPWSP	Monterey Peninsula Water Supply Project
MRWMD	Monterey Regional Wastewater Management District
MRWPCA	Monterey Regional Water Pollution Control Agency
PG&E	Pacific Gas & Electric
PMLWDP	People's Moss Landing Water Desalination Project
PWMGRP	Pure Water Monterey Groundwater Replenishment Project
RCDMC	Resource Conservation District of Monterey County
RO	Reverse Osmosis
RTP	Regional Treatment Plant
SGB	Seaside Groundwater Basin
SGMA	Sustainable Groundwater Management Act
SGWB	Seaside Ground Water Basin
SGWBSA	Salinas Groundwater Basin Sustainability Agency
SRDF	Salinas River Diversion Facility
SVGB	Salinas Valley Groundwater Basin
SWRCB	State Water Resources Control Board

Because of its importance to Monterey County, the focus of this report is on groundwater management with special emphasis on the recently enacted Sustainable Groundwater Management Act (SGMA). We begin with a brief discussion of groundwater, its characteristics, groundwater rights, groundwater basins, and the specific groundwater basins located within Monterey County. Next, the concept of groundwater management is discussed, including a brief review of selected early groundwater legislation and local responses. We then review SGMA in some detail. Its key elements are presented and explored, followed by a discussion of SGMA's specific application to Monterey County basins and the status of preliminary steps taken to comply with its provisions. Finally, we explore local existing and proposed groundwater related projects that logically appear to be candidates for inclusion as components of local SGMA Groundwater Management Plans (GWMP).

INVESTIGATIVE METHODOLOGY

During the course of this investigation Jury members interviewed nineteen (19) high level officials and individuals whose work or position in the community is directly involved with one or more water- or wastewater-related issues. The Sustainable Groundwater Management Act of 2014 (as amended and codified) and certain of its predecessor enactments were studied, along with a variety of other legal sources including, among others, state and local agency orders, court decisions, adjudication documents, water rights law, legal definitions, and state mandated groundwater related program components. With respect to more technical matters we reviewed local project documentation for a number of existing and planned projects that are having, or will have, a direct impact on groundwater sustainability, and which might logically be incorporated into a Groundwater Sustainability Plan (GSP). In addition, the investigation included the reading of newspaper articles, website information, white papers, groundwater basin studies, and other technical source materials.

BACKGROUND

A. THE ORIGIN OF GROUNDWATER

Groundwater is water located beneath the land's surface, filling pore spaces between subsurface deposits of sand, clay, gravel, silt or other such materials. These porous deposits (known as aquifers) were left behind in geologic time as a form of sediment deposited by ancient sources of running water. Aquifers are found not only in the beds of ancient streams and rivers; they are also found in the floodplains and deltas of the ancient running waters.

Groundwater is part of the earth's hydrologic cycle. Water evaporates from surface waters (oceans, lakes, rivers, etc.) and from the small pores of plants (transpiration). Once in the atmosphere the vapor can condense into rain, snow or sleet and fall onto land. There, it runs off into rivers and streams or soaks into the earth. Part of the surface water penetrates deep into the earth, recharging groundwater aquifers. Once in an aquifer, groundwater can remain there for extended periods of time or it can be pumped to the land's surface and used for crop irrigation, drinking water and other purposes. **Figure 1** is a depiction of earth's continuous water cycle, scientifically termed the hydrologic cycle.

B. ACQUIRING THE RIGHT TO EXTRACT AND USE GROUNDWATER

In 1914, California created a system for acquiring surface water rights through a state regulated permitting process,[5] but no such process was created with respect to groundwater. Although they are treated differently in the law, groundwater and surface water are so closely interconnected in the hydrologic cycle that the use of one resource will generally affect the other. Nevertheless, prior to the recent passage SGMA, California was one of only two states, and the only state in the western United States, that did not regulate groundwater rights. Groundwater rights in California are legally acquired as "overlying rights", "appropriative rights", "prescriptive rights" or "adjudicated rights".

[5] California Statutes 1913, chapter 586.

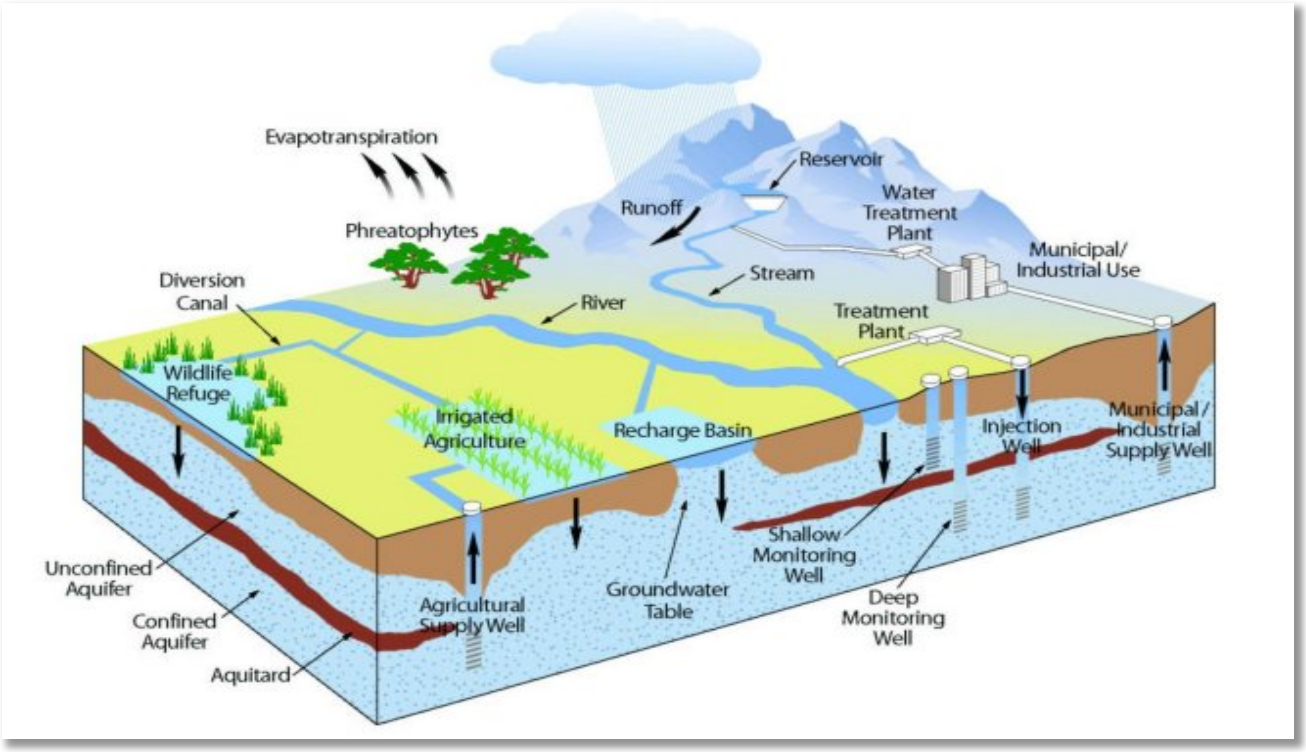

FIGURE 1

GROUNDWATER AND THE EARTH'S WATER CYCLE[6]

[6] California Department of Water Resources, Groundwater Information Center, Hydrologic Cycle. http://water.ca.gov/groundwater/groundwater_basics/hydrocycle.cfm, April 2016.

1. Overlying Rights

An overlying right allows landowners to use groundwater from basins located under their land. The extracted groundwater may only be used by the landowner on land that overlies the aquifer from which the water is extracted. The groundwater may not be transferred or used on any other property. The holder of an overlying right shares the aquifer's water resources, and may put an unspecified amount of groundwater to use so long as the use is reasonable, beneficial and not harmful to fellow right holders.

2. Appropriative Rights

Someone who extracts groundwater for use on non-overlying land may obtain an appropriative right to that groundwater. The right is acquired by the first person to take a specific quantity of water from a groundwater source for a "beneficial use", whether agricultural, industrial or household. The right continues so long as the water continues to be used for the same purpose. The amount allowed is sometimes defined by the pattern of use at the time the water was first taken.

Disputes sometimes arise between overlying landowners and someone claiming appropriative rights to the same water. That appears to have been the case recently when California American Water Company (Cal-Am) claimed the right to extract unspecified amounts of brackish groundwater from a Salinas Valley Basin aquifer. The extraction was reported to be an unavoidable result of the operating Cal-Am's planned desalination plant seawater intake wells.[7] Those with overlying groundwater rights argued that Cal-Am did not have the legal right to appropriate and export groundwater from the Salinas Valley Basin for use in another basin. Cal-Am countered that it could appropriate the water since it was brackish water, unsuitable for drinking or irrigation, and as a result it was no longer being put to a "beneficial use." That disagreement was ultimately resolved by a negotiated agreement between the parties.[8]

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[7] Cal-Am's desalination plant plans are discussed more fully later in this report.

[8] Johnson, Jim. "Cal-Am, Castroville, others reach deal on desal 'return' water." *Monterey Herald,* 1/12/2016.

3. Prescriptive Rights

If someone wrongfully takes water from a groundwater source for a period of five years, all the while claiming the right to do so, it's possible for that person to eventually acquire a legal right to the water. During the five-year period, the person must take the water openly, while obviously encroaching on the rights of another. For groundwater, taking water from an overdrafted[9] aquifer might be an example of adverse use that could become a prescriptive right to water from that aquifer.

4. Adjudicated Rights

Adjudication is a judicial process by which parties with competing claims to groundwater extraction rights can have a judge determine the extent of each party's right. For example, a portion of the Seaside Basin was adjudicated in 2006, during which the court determined the extraction rights of several overlying landowners.

C. GROUNDWATER BASINS

The primary concern of this report is groundwater management. Groundwater management refers to the planned and coordinated monitoring, operation, and administration of a groundwater basin or portion of a groundwater basin with the goal of long-term sustainability of the resource. A "groundwater basin" is defined as an area underlain by porous materials capable of furnishing a significant supply of groundwater to wells, or storing a significant amount of water, generally in one or more aquifers. A groundwater basin is three-dimensional and includes both the surface extent and all of the subsurface fresh-water-yielding material.

D. GROUNDWATER BASINS IN MONTEREY COUNTY AND BASIN PRIORITIES

In 1975 the California Department of Water Resources (DWR) published Bulletin 118, which was most recently updated in 2003.[10] Prior to its publication, the state legislature

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[9] The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years.

[10] State of California, Department of Water Resources. California's Ground Water Bulletin 118, 1975. Bulletin 118-75 contained a summary of technical information for 248 of the 461 identified groundwater

directed DWR to inventory all groundwater basins in the state, determine their boundaries, and collect all known technical information regarding each. A later legislative enactment directed DWR to prioritize each identified basin based upon their relative "health" and importance as a viable groundwater resource. This was accomplished as part of DWR's California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The prioritization was intended to help identify, evaluate, and determine the need for additional groundwater level monitoring. CASGEM priority levels[11] were assigned based upon the following eight criteria:

- Overlying population;
- Projected growth of overlying population;
- Public supply wells;
- Total wells;
- Overlying irrigated acreage;
- Reliance on groundwater as the primary source of water;
- Impacts on the groundwater; including overdraft, subsidence, saline intrusion, and other water quality degradation; and
- Any other information determined to be relevant by the Department.

- **FIGURE 2** depicts Monterey County's basin and subbasin boundaries as developed in Bulletin 118.[12] The basin map[13] is annotated to show those basins and subbasins within Monterey County that are classified as medium or high priority. Note that Carmel Valley is included as a high priority groundwater basin. However, the designation of Carmel Valley as a "groundwater basin" has been questioned, with significant consequences, as will be discussed later in this report.

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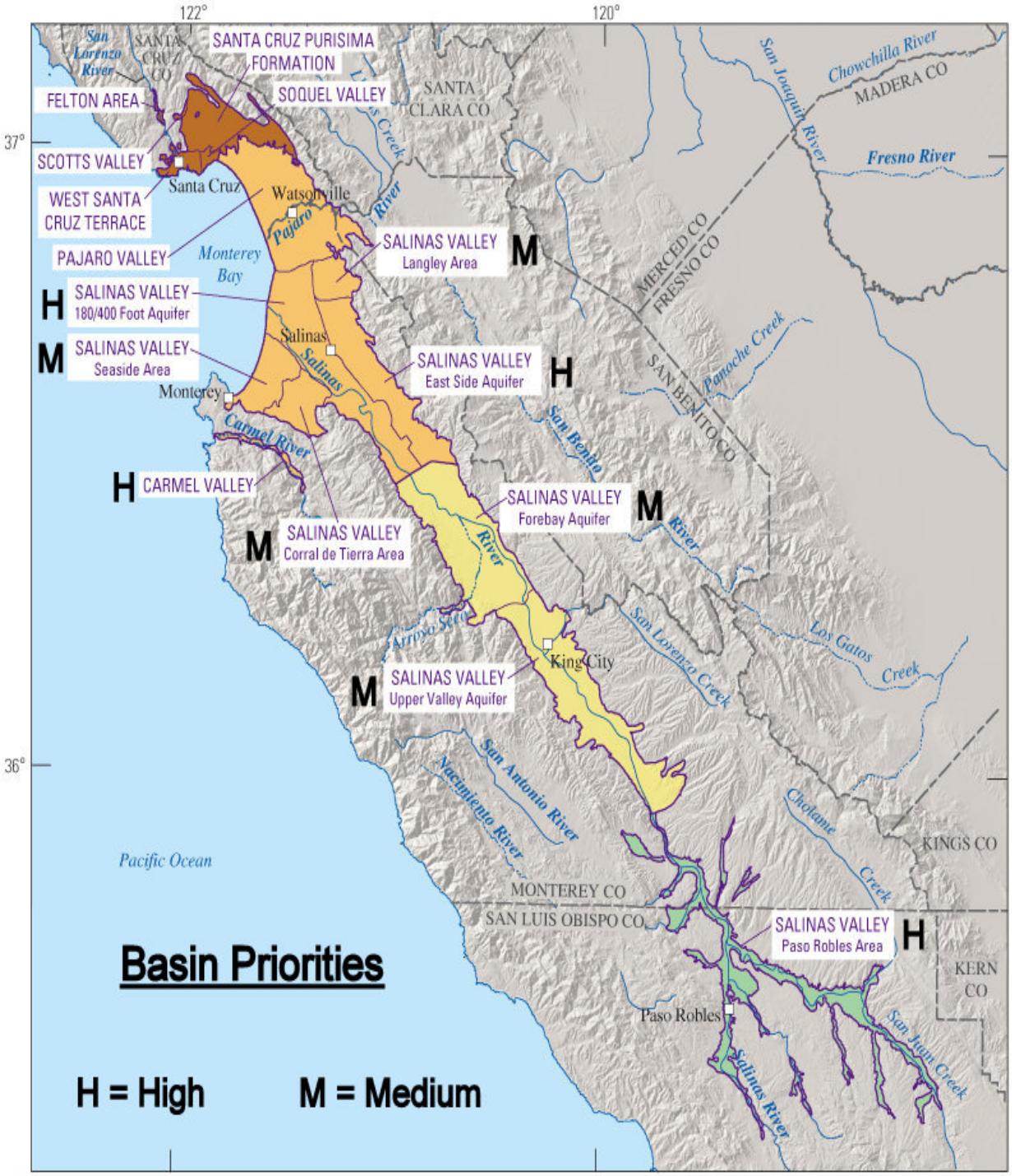
basins, subbasins and what were referred to as "areas of potential ground water storage" in California. The number of identified basins has since grown to 515.

[11] CASGEM classified basins as high, medium, low or very low priority.

[12] Note that FIGURE 2 depicts the "Seaside Area" to be a subbasin of the Salinas Valley Basin (orange). The same area is sometimes referred to as the "Seaside Basin" or as the Adjudicated Seaside Groundwater Basin". These terms appear to be used interchangeably by those involved with groundwater, but we will refer to the area as simply the "Seaside Basin" to lessen reader confusion.

[13] U.S. GEOLOGICAL SURVEY Data Series 258. See Figure 2. http://pubs.usgs.gov/ds/2007/258/figure2.html. April 2016.



Base from U.S. Geological Survey National Elevation Dataset, 2006, Albers Equal-Area Conic Projection

FIGURE 2

0 20 40 MILES
0 20 40 KILOMETERS

EXPLANATION

Study Areas

- Santa Cruz
- Salinas Valley
- Monterey Bay
- Paso Robles

SALINAS VALLEY — Ground-water basin
Upper Valley Aquifer — Ground-water subbasin
Ground-water basin boundary
Ground-water subbasin boundary

THE CONCEPT OF GROUNDWATER MANAGEMENT

Groundwater management refers to the planned and coordinated monitoring, operation, and administration of a groundwater basin or portion of a groundwater basin with the goal of long-term sustainability of the resource. In past years the state's approach to groundwater management was cautious. Given the nature of water rights in California, any attempt by the state to regulate groundwater was met with strong resistance. Nevertheless, there have been several attempts to find an effective groundwater management solution that would ensure groundwater sustainability. A few predecessors of the 2014-2015 Sustainable Groundwater Management Act (SGMA) are discussed below.

A. THE 1992 GROUNDWATER MANAGEMENT ACT

In 1992 the California legislature passed assembly bill AB 3030, entitled the Groundwater Management Act.[14] That act allowed and encouraged certain defined existing local agencies to develop a groundwater management plan (GMP) for those groundwater basins listed in Department of Water Resources Bulletin 118. Such plans, however, were not required. Then in 2002, the Legislature passed senate bill SB 1938. That bill required local agencies to develop and adopt a GMP, but only if the agency wanted certain financial assistance.

A search of available records suggests that no GMP was developed and enacted anywhere within Monterey County until 2006. At that time the Monterey County Water Resources Agency (MCWRA) prepared the *Monterey County Groundwater Management Plan,*[15] said to be in accordance with the requirements of the1992 Groundwater Management Act. According to the plan adoption resolution,[16] the plan formalized the management activities currently being conducted in the Salinas Valley Groundwater Basin.

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[14] Codified as California Water Code, Section 10750 et sec. Part 2.75.

[15] Monterey County Water Resources Agency, Monterey County Groundwater Management Plan, May 2006.

[16] Monterey County Water Resources Agency Resolution 06-R04, May 22, 2006.

B. INTEGRATED REGIONAL WATER MANAGEMENT PLANS (IRWMP)

Between 2002 and 2006 California voters passed Propositions 50, 84, and 1E, which in total made over $5 billion in financial assistance available for various water related programs. A significant amount of funding from those sources required that recipients develop and implement Integrated Regional Water Management Plans (IRWMP). An IRWMP was defined as a comprehensive planning document to be prepared collaboratively by water management entities and stakeholders[17] within a region. The plan was required to identify priority water resource projects and integrate regional planning efforts into a single plan.

Two IRWMPs were subsequently developed for Monterey County: the *Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP* (November 2007, updated June 2014) and the Salinas *Valley IRWM Functionally Equivalent Plan* (updated, May 2006). In April 2013 the Salinas Valley plan became what is now the *Greater Monterey County Integrated Regional Water Management Plan* (GMCIRWMP).[18] While the scope of both IRWMPs includes groundwater planning, the plans are directed toward all water related issues. The goal was integrated long-term water planning. Some of the projects mentioned later in this report were funded by IRWMP resources.

C. SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)

In September 2014, the California Legislature passed a series of three bills, which taken together constitute the Sustainable Groundwater Management Act. SGMA, as amended in 2015, is intended to provide a comprehensive framework for the sustainable management of groundwater by local (as opposed to state) authorities. However, there is the potential for state intervention if local authorities do not act as required by SGMA, and the state deems its intervention necessary to properly protect local groundwater resources. The key provisions of SGMA will now be summarized.

[17] "Stakeholders" are those individuals, groups, or organizations in the community that have a special interest in decisions relating to water or its uses.

[18] While the name of GMCIRWMP suggests that it deals with all of Monterey County, it specifically excludes the Monterey Peninsula, Carmel Bay, and South Monterey Bay IRWM region.

SGMA requires the formation of a local Groundwater Sustainability Agency (GSA) for each groundwater basin within its jurisdiction, subject to certain exceptions. The GSA is responsible for eventually developing and implementing a local Groundwater Sustainability Plan (GSP) for each of its basins. The GSA can be a local public agency that has water supply, water management, or land use responsibilities within the basin area. Alternatively, it may be a combination of local agencies using a joint powers agreement, memorandum of agreement, or other legal document. If there is an area overlying a groundwater basin that is not in the management area of a GSA, the local county is presumed to be the basin GSA unless it opts out of that responsibility.

Originally, only local agencies could form, be part of, or participate in a GSA, but by a 2015 amendment to the Act, a water corporation such as California American Water Company (Cal-Am) or a mutual water company may participate in a GSA through legal agreement. While a private water entity can be part of a GSA, it would not have any of the powers conferred by SGMA on a GSA.

The SGMA includes various milestones that must be met, including among others the following critical deadlines:

- June 30, 2017: Deadline for forming GSAs.
- January 31, 2020: GSPs must be adopted for "critically overdrafted"[19] basins.
- January 31, 2022: GSPs must be adopted for high and medium priority basins[20] not currently in overdraft.
- 20 years after adoption: All high and medium priority groundwater basins must achieve "sustainability".

[19] The term "critically overdrafted" has the meaning specified in SGMA and will be provided later in this report.

[20] California Water Code section 10720.7 subsection (b) provides that basins designated as low or very low priority are legislatively encouraged and authorized to be managed by SGMA, but that state intervention would not be an available penalty for such basins. No deadlines are mentioned.

DWR is the named state agency responsible for setting the priority levels for all basins within the state, adopting regulations for basin boundary adjustments where appropriate, adopting regulations for evaluating the adequacy of GSPs and GSA agreements, publishing a report estimating water available for groundwater replenishment, and publishing "best management" practices for achieving groundwater sustainability. The DWR is also required to periodically evaluate GSPs to see if they meet SGMA requirements and are likely to achieve sustainability. SGMA specifies those requirements that must be met for a GSP to be found compliant with the Act. The California State Water Resources Control Board (SWRCB) has the authority to intervene if a GSA is not formed, or if it fails to adopt a legally sufficient plan by the stated deadlines.

Perhaps most significant, SGMA gives each GSA significant new local powers to:

- Conduct investigations to carry out the Act's requirements.
- Require the registration of groundwater wells.
- Require the installation of water volume measuring devices on all groundwater wells at the owner's expense.
- Control groundwater extractions by limiting, suspending or otherwise regulating extractions from individual groundwater wells.
- Assess fees to establish and implement local GWMPs.

Notably, SGMA specifically states that it does not determine or alter "surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."[21]

[21] California Water Code, Section 10720.5 subsection (b).

D. IMPORTANT SGMA DEFINITIONS

1. Groundwater

SGMA defines “Groundwater” in a manner that, on its face, is somewhat unclear to those not versed in water law. For purposes of SGMA, “Groundwater” means water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water, but does not include water that flows in known and definite channels.”[22] The significance of this definition’s exclusionary language will be explored later in this report.

2. The Concept of Sustainable Groundwater Management

SGMA defines “Sustainable Groundwater Management” to mean the management and use of groundwater sources by a GSA in a manner that can be maintained for at least 50 years without causing “undesirable results” and without exceeding the “sustainable yield” of the groundwater sources. This definition is better understood by looking at SGMA’s definitions of “undesirable results” and “sustainable yield”.[23] It seems logical, however, that effective groundwater management must also consider surface water supplies and uses, since the use of one resource will often affect the other.

3. Sustainable Yield

"Sustainable Yield” is defined as the maximum quantity of water, calculated over a period of time representative of long-term conditions in the basin, including any temporary surplus, which can be withdrawn each year from a groundwater source without causing any undesirable results.

4. Undesirable Results

“Undesirable Results"[24] as defined by SGMA means any of the following effects caused by basin groundwater conditions:

[22] California Water Code, Section 10721 subsection (g).
[23] California Water Code, Sections 10721 subsection (x) and 10721 subsection (w).
[24] California Water Code, Section 10721 subsection (x).

- Chronic lowering of groundwater levels, but excluding reductions in groundwater levels during a drought if they are offset by increases in groundwater levels during other periods;
- Significant and unreasonable reductions in groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degradation of water quality;
- Significant and unreasonable land subsidence; and
- Surface water depletions that have significant and unreasonable adverse impacts on beneficial uses.

5. The Sustainability Goal

The "Sustainability Goal" of SGMA is to create for each basin "one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing the implementation of measures targeted to ensure that the applicable basin is operated within its sustainable yield."[25]

6. Critical Basin Overdraft

The focus of SGMA is on individual groundwater basins[26] and on preventing each basin from reaching a critical overdraft condition due to long term groundwater mismanagement or lack of sound planning. Groundwater overdraft is "The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years…"[27] A basin is susceptible to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.[28] Conditions of critical overdraft can result in seawater

[25] California Water Code, Section 10721 subsection (u).
[26] A groundwater basin is an underground reserve of water which may take the form of a single aquifer or a group of linked aquifers.
[27] California Department of Water Resources, Groundwater Bulletin 118, Update 2003, Glossary p.214.
[28] California Department of Water Resources, Groundwater Bulletin 118, Update 2003, p.98.

intrusion, land subsidence, groundwater depletion, and/or the chronic lowering of groundwater levels.

To avoid confusion, it is important to distinguish between the terms “critical overdraft” (as used, for example, to set one of the SGMA compliance deadlines) and “high priority” (as used in Bulletin 118). These are different concepts and depend on different factors as can be seen by comparing the above definition with the CASGEM basin priority-setting criteria set forth in Section III.D of this report. Overdraft is but one of eight criteria used in the Bulletin 118 studies to determine the priority level of a groundwater basin.

Currently, there are twenty-one (21) groundwater basins in California that have been designated as being in Critical Overdraft and, therefore, subject to the earlier GSP adoption deadline. Two of those twenty-one (21) “Critically Overdrafted Basins” are Salinas Valley subbasins: the 180/400-Foot Aquifer and the Paso Robles subbasin. In reality, however, it could also logically be argued that the Carmel Valley Basin is in the equivalent of overdraft as evidenced by the fact that Cal-Am is under order of the PUC to reduce its extraction of groundwater by over 70%. The PUC pointed out that “There continues to be an annual drawdown or drying of the Carmel River in the area upstream of the Highway 1 bridge. Because Cal-Am is the largest diverter of water on the river, this drawdown of the river is attributable, at least in part, to Cal-Am’s illegal diversions from the Carmel River. Cal-Am’s pumping from the subterranean stream contributes to the reduction of surface flow.”[29]

The same is true of the Seaside Basin as evidenced by the fact that the Superior Court that adjudicated the water rights for that basin ordered the reduction of overall pumping from that basin and found that “…groundwater production has exceeded the Natural

[29] State of California, Department of Water Resources. Cease and Desist Order WR 2008–00XX-DWR, p.2, Finding 8.

Safe Yield during the preceding five (5) years throughout the Seaside Basin and in each of its subareas.[30]

7. Exemptions from SGMA Compliance

SGMA specifies two conditions that can exempt a basin from required compliance with its provisions. The first exemption is for groundwater basins that have had the competing groundwater rights of co-users adjudicated.[31] The second exemption is for basin aquifers having below surface "water that flows in known and definite channels".[32]

Although SGMA does not directly attempt to control adjudicated basins, a 2015 amendment to the act added section 10737.8, which forbids judges in future adjudication proceedings from entering a judgment involving any basin required by SGMA to otherwise prepare a GSP, unless the court first finds that the judgment will not substantially impair the ability of a GSA or related officials to comply with the requirements of SGMA, and to achieve sustainable groundwater management.

8. SGMA Provision for Basin Boundary Adjustments

SGMA directs GSAs to use the boundary and priority classifications listed in DWR Bulletin 118 (2003) for GWMP development. Although the principal reliance is on Bulletin 118 boundary descriptions, SGMA allows local agencies to request a DWR modification of a Bulletin 118 basin boundary to adjust the spatial locations of a high or medium priority groundwater basin to more accurately correspond with waterways, county lines, agency boundaries, or known geologic boundaries.[33]

As previously mentioned, a portion of the Seaside Basin has been adjudicated. As a result, a basin boundary modification has been requested by the Monterey Peninsula Water Management District (MPWMD) to create an independent basin named the

[30] Cal-Am vs. City of Seaside, et al., Superior Court of California, County of Monterey. Case No. M66343. Decision filed Mar. 27, 2006, p. 8-9, Finding 2.
[31] California Water Code, section 10720.8.
[32] California Water Code 10721 subsection (g).
[33] California Water Code 10722.2.

"Adjudicated Seaside Groundwater Basin". Doing so would appear to require altering the boundaries of two subbasins: the current Seaside and Corral De Tierra area subbasins. The stated purpose of the proposed modification is to adjust the boundary of the proposed Adjudicated Seaside Groundwater Basin to match that portion of the existing Seaside subbasin over which the Superior Court has exercised "adjudication" authority.

GSP EMERGENCY REGULATIONS

SGMA became effective on January 1, 2015. DWR is charged with reviewing local GSPs for SGMA compliance. Therefore, on February 18, 2016 DWR released draft emergency regulations applicable to local GSPs for public comment. On May 10, 2016 DRW released its proposed final version of the GSP Emergency Regulations.[34] These regulations are intended to specify how DWR will evaluate GSPs.[35] They include the process, methodology, and criteria for evaluating the development and implementation of GSPs, alternatives, and coordination agreements. DWR's proposed final version was presented to the California Water Commission for consideration and adopted on May 18, 2016.[36]

STATUS OF LOCAL BASIN GSA FORMATION

Any local agency or combination of local agencies overlying a groundwater basin may become a GSA for that basin unless a local agency exists that already has groundwater responsibility.

A. SEASIDE BASIN

The Seaside Basin is designated as a "medium priority" basin within the meaning of DWR Bulletin 118. However, much of the Seaside Basin has been adjudicated and is, therefore, excluded from SGMA's requirements to form a GSA and to implement a GSP.

[34] DRW SGMA subscription list email dated May 10, 2016.
[35] SGMA requires DWR to adopt final regulations by June 1, 2016.
[36] The final Emergency Regulations can be found at http://water.ca.gov/groundwater/sgm/gsp.cfm

Nevertheless, there remains a portion of the basin that was not adjudicated and will presumably remain within SGMA's jurisdiction.

In February 2016, the MPWMD filed a request with DWR to have the Seaside area basin (or subbasin) boundary adjusted so that it would only include that area of the Seaside Basin that has been adjudicated. The adjudicated area would be called the Adjudicated Seaside Groundwater Basin.

MPWMD was designated by SGMA to be the exclusive GSA[37] for all basins within the District's jurisdiction (except for the adjudicated area) unless it opts out of that responsibility.[38] Part of the Seaside area does lie within the District's jurisdictional boundary, but the District has resolved to "…opt out of being the exclusive groundwater management agency for that area north of the adjudicated Seaside Groundwater Basin that is within the MPWMD statutory boundaries…"[39]

FIGURE 3 is a regional map prepared by MPWMD that shows the recommended boundary for the Adjudicated Seaside Groundwater Basin. It also shows the two remaining areas of the basin that would remain after the requested boundary adjustment. The District has termed these residual areas the Salinas Valley Marina Area and the Salinas Valley Corral De Tierra Area. If the part of the basin not adjudicated is, in fact, a Salinas Valley subbasin, it must be included in a Salinas Valley Basin GSA's GSP. If not, then it may ultimately require a separate GSA and GSP, assuming its designation remains "medium priority".

[37] California Water Code section 10723 subsection (C)(1)(l).
[38] California Water Code section 10723 subsection (C)(2).
[39] Monterey Peninsula Water Management District Resolution No. 2016-01, February 3, 2016.

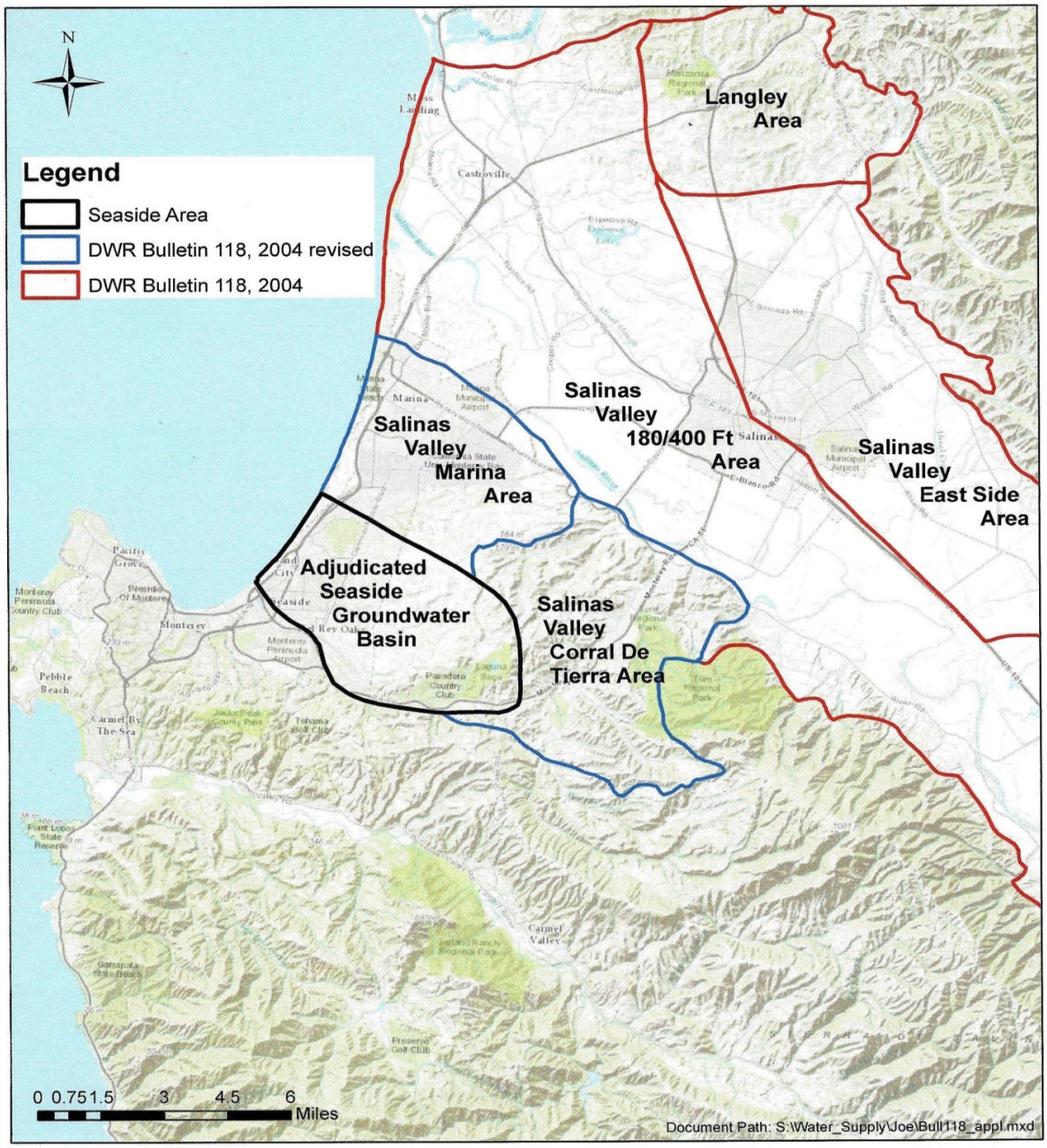

Plate 1: Regional Map showing location of Seaside Groundwater Basin Boundary

MONTEREY PENINSULA WATER MANAGEMENT DISTRICT

FIGURE 3

B. CARMEL VALLEY BASIN

The Carmel Valley Basin is designated as a "high priority" basin within the meaning of DWR Bulletin 118. It's located within the jurisdictional boundaries of MPWMD, a water district that already had groundwater responsibility prior to the enactment of SGMA. For that reason, Water Code Section 10723(c) (1) specifically designated MPWMD to be the exclusive GSA for the Carmel Valley basin.

Consequently, in October 2014, MPWMD filed the required notice with DWR of the District's intent to become the exclusive GSA for the Carmel Valley Basin (also known as the Carmel Valley Alluvial Aquifer) and to undertake its sustainable groundwater management. MPWMD confirmed that when carrying out its responsibilities under the Act, it would take into consideration the interests of all beneficial users, groundwater users and other interested parties. At the time of its notification to the DWR, MPWMD had already identified over 250 users and other interested stakeholders whose input would be considered.

More recently, MPWMD analyzed SGMA's language and that of a 1995 SWRCB ruling regarding competing Carmel River water right claims of Cal-Am and others.[40] Based on that comparative analysis, MPWMD concluded that the Carmel Valley Basin is actually exempt from SGMA compliance requirements.[41]

SGMA applies only to groundwater, and SGMA's definition of groundwater specifically excludes underground "water that flows in known and definite channels."[42] The ultimate result of the 1995 proceeding was that SWRCB issued its Order 95-10. In that order, the court made a finding that "Downstream of [river mile] 15 of the Carmel River, the aquifer underlying and closely paralleling the surface water course of the Carmel River is water flowing in a subterranean stream and, therefore, subject to the jurisdiction of

[40] State Water Resources Control Board Order 95-10, July 6, 1995.
[41] E-mail to Civil Grand Jury from Monterey Peninsula Water Management District. March 21, 2016.
[42] California Water Code 10721 subsection (g).

the SWRCB."[43] MPWMD based its determination of SGMA inapplicability on the comparison of SGMA's language to that of Order 95-10.

SGMA's exclusion of underground "water that flows in known and definite channels" beneath a river seems illogical since Bulletin 118 and other technical sources state that surface water and groundwater are interconnected resources. They point out that 1) groundwater originates as surface water, 2) groundwater extraction can affect flow in streams, and 3) changes in surface water flow can affect groundwater levels. Treating underground water flows and groundwater differently for purposes of SGMA, then, creates an anomaly that may eventually need to be addressed by a SGMA amendment.

C. PAJARO VALLEY GROUNDWATER BASIN

The Pajaro Valley Basin is designated as a "high priority" basin within the meaning of DWR Bulletin 118. Like the Carmel Valley Basin, SGMA specifically designated the Pajaro Valley Water Management District as the exclusive GSA, and that entity is presumably beginning the implementation process for its required GSP.

D. SALINAS VALLEY GROUNDWATER BASIN (SVGB)

Virtually all subbasins within the Salinas Valley Basin are designated as either "high priority" or "medium priority" basin within the meaning of DWR Bulletin 118. Thus its compliance with SGMA is required.

No single agency was designated by SGMA to become the exclusive GSA for the Salinas Valley Groundwater Basin and no eligible entity has yet officially notified the DWR of its intent to become the GSA for SVGB. However, in October of 2014, MCWRA Board of Directors recommended that MCWRA become the GSA for the Salinas Valley basin, and the Monterey County Board of Supervisors recommended beginning a public process to gain input from interested members of the community. That process was initiated in December of 2014, and in January 2015, the Agency held

[43] State Water Resources Control Board Order 95-10, July 6, 1995.

a public meeting to inform interested parties about the need to form a GSA for the SVGB. In the weeks that followed, several other local agencies and interested parties advised DWR that they did not want a GSA comprised of just one local agency, and a number indicated that they wanted to participate directly in the GSA that was ultimately to be formed.[44]

Given the lack of unanimity regarding GSA membership, and facing a specific deadline for forming a GSA that would avoid state intervention, a small group of interested parties, including the City of Salinas, hired the privately owned Consensus Building Institute (CBI) to investigate the concerns and competing groundwater related interests of potentially affected parties. That effort is currently under way. CBI anticipates that a consensus regarding GSA participation can be developed that will be satisfactory to all concerned public agencies and community stakeholders.[45] The ultimate goal of this effort is the development and implementation of a Salinas Groundwater Basin Sustainability Agency (SGBSA), which will then have the responsibility of creating and implementing a GWMP for the entire basin.

The consensus building process currently underway primarily involves two agency and stakeholder groups: the Groundwater Stakeholder Forum and the Collaborative Work Group**.** According to CBI's project website, "The Collaborative Work Group, in consultation with the Groundwater Stakeholder Forum, will recommend the GSA structure to the GSA eligible entities in the basin. If more than one agency chooses to participate in the GSA, each agency's governing board would adopt or approve the GSA. If the Collaborative Work Group proved unable to reach consensus on the recommended structure, each GSA-eligible agency could move forward to comply with SGMA by forming one or more GSAs and the required coordination agreements."[46] If

[44] City of Salinas, FORA, Castroville Community Service District, City of Soledad, Marina Coast Water District, California Water Service, etc.

[45] A stakeholder is an individual or organization that has an interest in water management activities. Typically, stakeholders are anyone involved in protecting, supplying, or using water for any purpose, who have a vested interest in water-related decisions.

[46] www.salinasgroundwater.org

agreement is not reached by SGMA's deadline, the County of Monterey will become the GSA unless it chooses to opt out.

The Groundwater Stakeholder Forum is "designed to share information and gather public input on the GSA formation process."[47] The Collaborative Work Group's initial membership is shown in **Appendix 1.** The meetings of the Forum and the meetings of the Work Group are open to the public. **Appendix 2** details CBI's initial findings and more fully describes the consensus building process. Given the consensus building process, it seems likely that no GSP will be forthcoming for some time.

TYPES OF ACTIVITIES THAT HAVE A POSITIVE IMPACT ON GROUNDWATER SUSTAINABILITY

Sustainability can most easily be achieved when there are adequate sources of water during successive years to fill basin aquifers with enough groundwater to meet evolving community water demands. In a county subject to periodic droughts, competing groundwater interests and appetites, and a number of independently managed water plans and projects, how can sustainability be achieved most efficiently and effectively? SGMA presents a logical framework for achieving sustainability by fostering the integration of water-related efforts on a local level. The types of local sustainability activities to be integrated and centrally managed include, among others:

- Urban and agricultural water conservation
- Creation of new sources of water
- Reclamation and reuse of existing non-potable water sources
- Effective management of river and stream flows
- Recharging depleted aquifers
- Reducing the need for agricultural groundwater pumping
- Stopping seawater intrusion into coastal aquifers
- Monitoring of groundwater elevations
- Monitoring the volume of basin extractions in relation to that of basin recharging

[47] The first Groundwater Stakeholder Forum was scheduled for May 19, 2016 from 5:30-7:30 pm.

EXISTING, PLANNED and PROPOSED PROJECTS

There are a number of water projects and programs in Monterey County that appear suitable for inclusion as components of one or more GSPs. In this section we review a number of such projects, both large and small in scope. While many of the projects benefit the Salinas Valley Basin, some benefit the Seaside Basin and/or the Carmel Valley Basin as well.

Even though the Seaside and Carmel Valley Basins appear to be excluded from the SGMA's reach, multi-basin projects are included here for three reasons: First, there is at least one earlier local area water management plan which should still be viable for purposes of groundwater sustainability. Second, SGMA strongly encourages planning coordination between adjacent basins.[48] Finally, basins that are not required to participate in SGMA planning are nevertheless encouraged to do so.

With regard to previously existing groundwater related plans, the *Monterey Peninsula, Carmel Bay and South Monterey Bay IRWMP* (November 2007, updated June 2014) has a number of objectives that closely parallel the SGMA objective of sustainability. The Monterey Peninsula Regional Water Management Group (RWMG) is the body responsible for the development and implementation of the IRWMP and includes seven local agencies and organizations.[49] The geographic coverage of this regional plan is approximately 350 square miles and includes the coastal cities of Carmel-by-the-Sea, Del Rey Oaks, Monterey, Pacific Grove, Sand City, and Seaside. Also included are the unincorporated portions of Monterey County in Carmel Valley, Pebble Beach, the Carmel Highlands, the Laguna Seca area, and a portion of the Ord Community.

[48] California Water Code 10727.6.

[49] Initially, RWMG was comprised of representatives from the Big Sur Land Trust (BSLT), the City of Monterey, MCWRA, MRWPCA, and MPWMD. In 2014 MCWD and RCDMC became added participants.

The purpose of RWMG is to plan and facilitate funding for appropriate local water and environmental projects. Stated IRWMP objectives[50] include:

- Meet existing water supply replacement needs of the Carmel River system and Seaside Groundwater Basin.
- Maximize use of recycled water and other reuse opportunities, such as gray-water and storm-water capture and use.
- Seek long-term, sustainable water supplies for estimated future demand estimates.
- Optimize conjunctive use of surface and ground-water.
- Create, evaluate, and advance water conservation throughout the Region.
- Protect and improve water quality in groundwater basins.

Finally, we note that although not a component of any public agency, the agriculture industry in Salinas has strongly supported many of the projects that are discussed in the following sections of this report.

As previously suggested, there are a number of independent projects and programs in Monterey County that appear suitable for inclusion as components of one or more GSPs. In this section we review a number of such projects, both large and small in scope. Included are projects that benefit the Seaside and Carmel Valley Basins. Even though those projects are excluded from SGMA's requirements, at least one other local area water management plan remains viable.

A. WASTEWATER RECYCLING PROJECTS

Using recycled wastewater for irrigation and other purposes is intended to reduce the amount of groundwater extraction otherwise necessary for such uses.

[50] The Civil Grand Jury lacked sufficient time and resources to investigate the extent to which these plan objectives are actually being met.

1. The Salinas Valley Reclamation Plant (SVRP) and Castroville Seawater Intrusion Project (CSIP)

Long term over-pumping of Salinas Valley Basin aquifers nearest the ocean allowed seawater to intrude into those aquifers, resulting in the creation of salty, unpleasant-tasting water, unfit for either drinking or agricultural irrigation. MCWRA monitors the movement and extent of seawater intrusion by testing a series of wells located in the coastal northwestern portion of Monterey County. The degree to which seawater has intruded into basin aquifers can be seen in **FIGURES 4** and **5**.

SVRP and CSIP are a linked pair of existing projects developed to halt the inland spread of seawater into the Salinas Valley coastal aquifers by supplying overlying agricultural lands with clean irrigation water from a source other than groundwater. Project managers anticipated that providing an alternate source of irrigation water would result in a corresponding reduction in groundwater pumping, thus slowing or stopping the seawater intrusion. **FIGURE 4** and **FIGURE 5**, below, provide evidence that this program seems to be working.

For SVRP and CSIP, the alternate source of the irrigation water is currently urban wastewater from local municipalities that has been treated at the Monterey Regional Wastewater Treatment facility in Marina and its component Salinas Valley Reclamation Plant (SVRP), where the wastewater is treated to "tertiary" levels. The tertiary recycled water is tested to assure that it meets state standards for unrestricted use on freshly edible food crops.[51] From the reclamation plant, the recycled water is distributed for irrigation use to 12,000 acres of farmland in northern Monterey County by means of the CSIP "purple pipeline" system. The system consists of 45 miles of pipeline and 22 supplemental wells. These wells supply supplemental amounts of basin groundwater to meet area irrigation demands not fully satisfied by the quantity of recycled water produced.

[51] Tertiary treated water is not suitable for drinking. However, an extensive industry testing program concluded it was safe to use on crops.

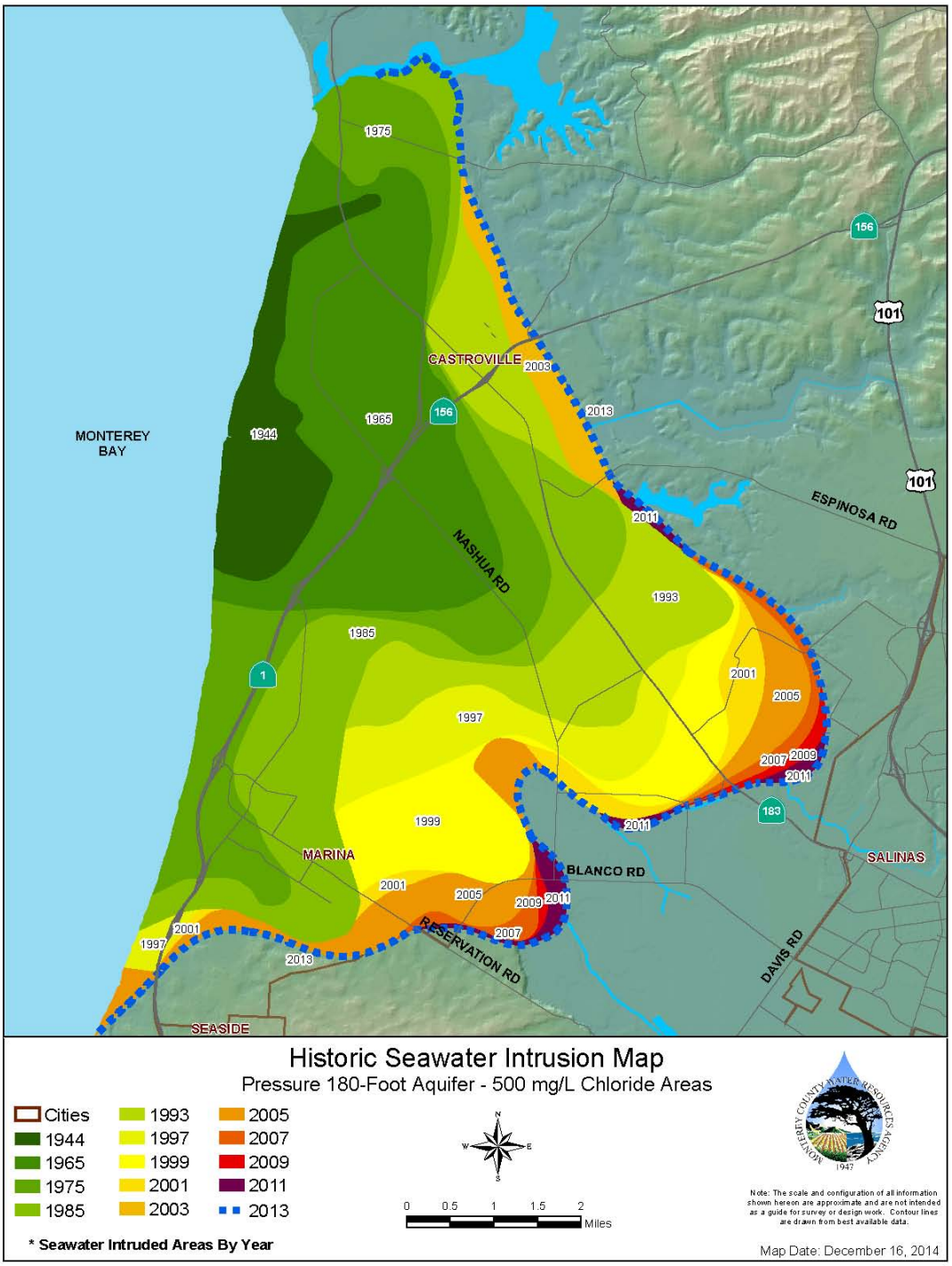

FIGURE 4

Salinas Valley Basin 180 Foot Aquifer

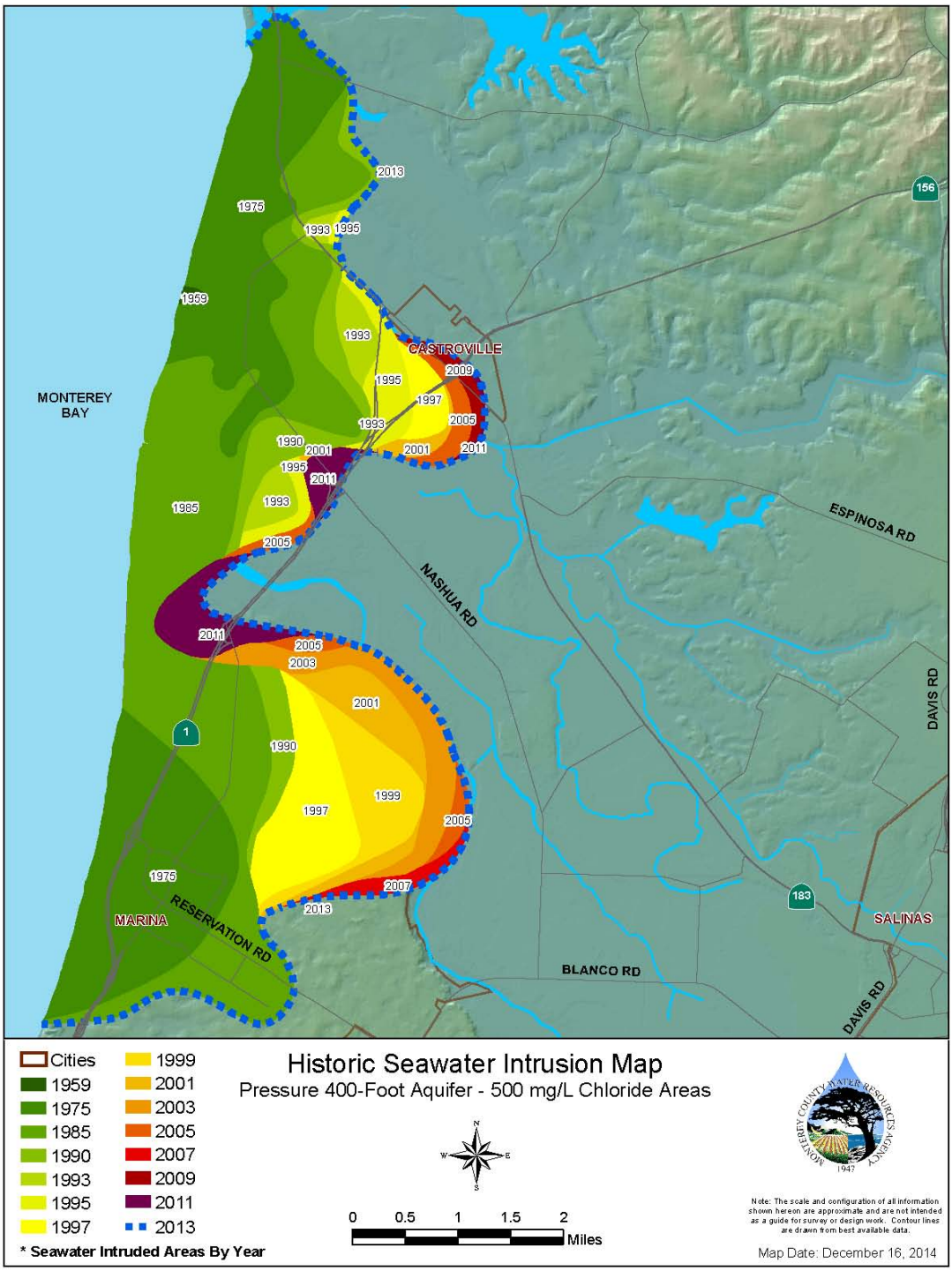

FIGURE 5

Salinas Valley Basin 400 Foot Aquifer

2. The Pure Water Monterey Groundwater Replenishment Project

The proposed Pure Water Monterey Groundwater Replenishment Project is a water recycling project developed through the joint efforts of the MPWMD and the MRWPCA. In essence, it is a multi-component program intended to benefit both the Seaside and Carmel Valley groundwater basins by creating a new source of potable water. In so doing, the program would result in reduced groundwater demand and resultant reduced stress on both basins. The project's Final Environmental Impact Report explains the project as follows:

> *Replenishment of the Seaside Groundwater Basin*. The project would enable California American Water Company (Cal-Am) to reduce its diversions from the Carmel River system by up to 3,500 acre-feet per year by injecting the same amount of purified recycled water into the Seaside Basin. The purified recycled water would be produced at a new [advanced purification] facility at the MRWPCA Regional Wastewater Treatment Plant and would be conveyed to and injected into the Seaside Groundwater Basin via a new pipeline and new well facilities. The injected water would then mix with the existing groundwater and be stored for future urban use by Cal-Am, thus enabling a reduction in Carmel River system diversions by the same amount.
>
> *Additional recycled water for agricultural irrigation in northern Salinas Valley*. An existing water recycling facility at the Regional Treatment Plant (the Salinas Valley Reclamation Plant) would be provided additional source waters in order to provide additional recycled water for use in the Castroville Seawater Intrusion Project's agricultural irrigation system. It is anticipated that in normal and wet years approximately 4,500 to 4,750 acre-feet per year of additional recycled water supply could be created for agricultural irrigation purposes. In drought conditions, the Proposed Project could provide up to 5,900 acre feet per year for crop irrigation."[52]

Figure 6 is a diagram of the Projects intended water recycling path. Pure Water's Environmental Impact Report has been completed and operations are estimated to begin by the end of 2017.

[52] Denise Duffy & Associates, Inc. Consolidated Final Environmental Impact Report for the Pure Water Monterey Groundwater Replenishment Project, January 2016.

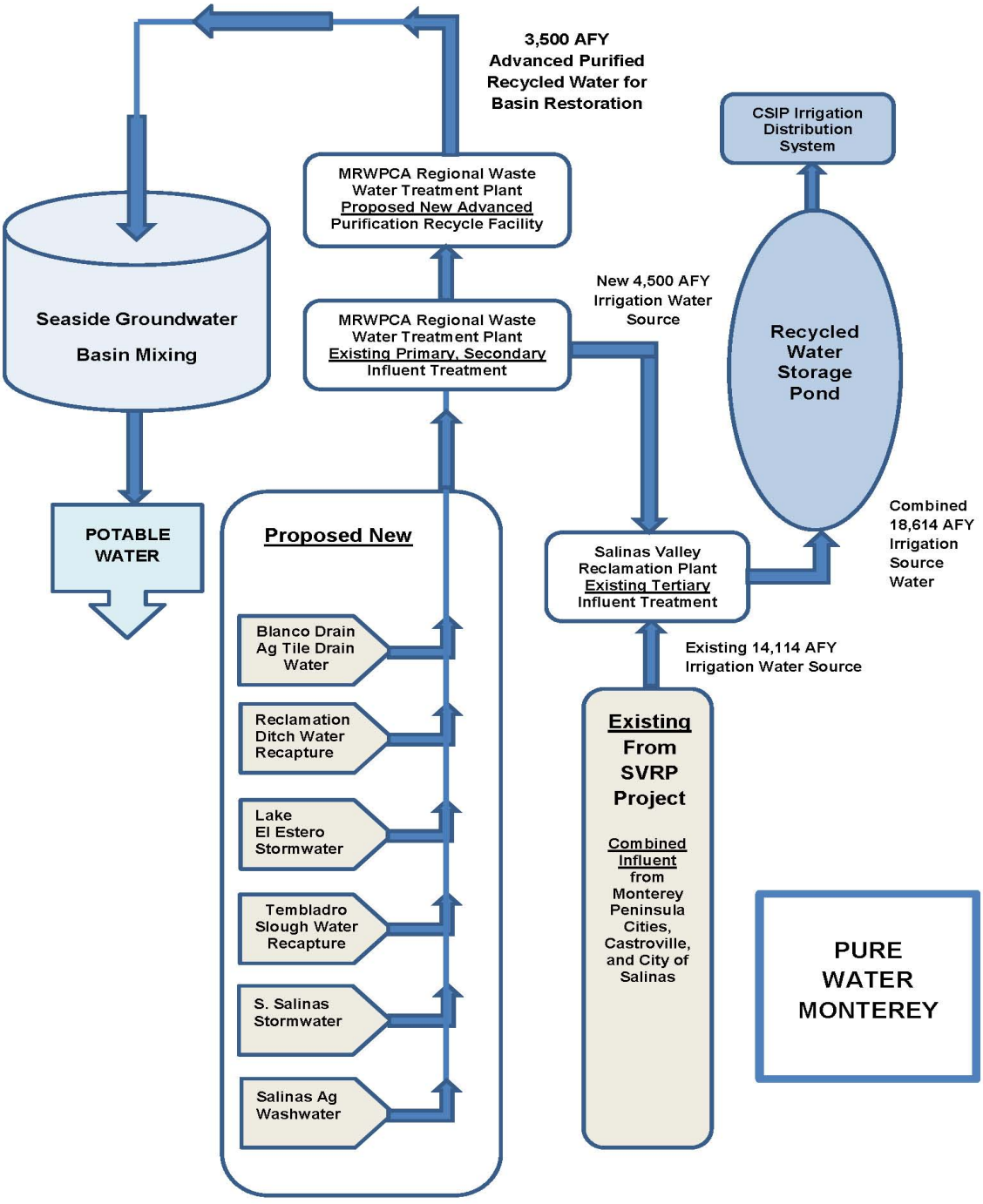
3,500 AFY
Advanced Purified
Recycled Water for
Basin Restoration
CSIP Irrigation
Distribution
System
MRWPCA Regional Waste
Water Treatment Plant
Proposed New Advanced
Purification Recycle Facility
Seaside Groundwater
Basin Mixing
New 4,500 AFY
Irrigation Water
Source
MRWPCA Regional Waste
Water Treatment Plant
Existing Primary, Secondary
Influent Treatment
Recycled
Water
Storage
Pond
POTABLE
WATER
Proposed New
Salinas Valley
Reclamation Plant
Existing Tertiary
Influent Treatment
Combined
18,614 AFY
Irrigation
Source
Water
Existing 14,114 AFY
Irrigation Water Source
Blanco Drain
Ag Tile Drain
Water
Reclamation
Ditch Water
Recapture
Lake
El Estero
Stormwater
Tembladro
Slough Water
Recapture
S. Salinas
Stormwater
Salinas Ag
Washwater
Existing
From
SVRP
Project
Combined
Influent
from
Monterey
Peninsula
Cities,
Castroville,
and City of
Salinas
PURE
WATER
MONTEREY

FIGURE 6

3. The Soledad Water Recycling/Reclamation Project

The City of Soledad's Water Reclamation Facility receives all wastewater from the City and surrounding community, including the nearby Salinas Valley State Prison. At the Reclamation Facility, the wastewater is treated and recycled into a pond. The recycled water then seeps into the groundwater basin. The Salinas Valley IRWMP includes proposed funds to build a pipeline to link the Soledad's Water Reclamation Facility with the City water system to irrigate all City parks and landscaping, neighboring farmlands and future planned development landscaping needs within City limits. Overall, the project helps to improve groundwater quality and conserves the potable groundwater sources.

B. SURFACE WATER DIVERSION PROJECTS

1. The Salinas Valley Water Project

The Salinas Valley Water Project (SVWP) was designed to assist with the long-term management and protection of groundwater resources in the Salinas Valley Basin. At the time of project planning, recycled water was being treated and used for farmland irrigation in the area now served by CSIP. The new project was designed to blend surface water from the Salinas River to the existing program's recycled water, thereby increasing the volume of water available for irrigation. If successful, groundwater pumping from wells drawing from the valley's coastal aquifers would be reduced, which should help the basin aquifers to recharge.

The mixing of recycled water and river water begins at the Salinas River Diversion Facility (SRDF) located along the Salinas River, roughly five miles from the ocean. It consists of an inflatable rubber dam and pump station to withdraw flowing river water, a pipeline to an 80-acre recycled water storage pond, and facilities for filtration and chlorination. Once in the storage pond, the river water is combined with tertiary treated recycled water to be delivered to Castroville farmlands via the CSIP distribution system. A second component of SVWP's initial phase included the modification of the Nacimiento Reservoir to handle larger flood flows and better control dry season Salinas River flows.

A second phase of SVWP is currently planned to provide for two additional diversion points for river water, again intended to reduce the need for groundwater pumping as a source for irrigation waters.

2. Seaside Aquifer Storage & Recovery Project (ASR)

Cal-Am distributes water from both the Carmel Valley and Seaside groundwater basins. It's been estimated that Monterey Peninsula gets approximately 70 percent of its water from the Carmel River groundwater basin and 25 percent from the Seaside Basin. While these basins are separate, they are physically connected by Cal-Am's water distribution system. Both basins have suffered from over pumping. In the case of the Carmel Valley Basin, over pumping has led to reduced flows in the Carmel River, depleted aquifer storage, and damage to wildlife habitat. In the case of the Seaside Basin, continued over pumping and ongoing seawater intrusion in the nearby Salinas Valley basin indicates that the Seaside aquifers are also vulnerable to seawater intrusion. Fortunately, as of 2012, seawater intrusion had not yet occurred.[53]

The Seaside Basin aquifer system is much larger and deeper than the Carmel Valley aquifer. As a result of its over pumping and related lowering of groundwater levels, there has been a significant amount of unused storage volume in the Seaside Basin. To take advantage of the unused storage capacity and increase the amount of fresh water available for peninsula users, the Monterey Peninsula Water Management District (MPWMD) with the cooperation of Cal-Am, instituted its Aquifer Storage and Recovery (ASR) project. After a testing phase, the ASR system became operational in 1998 and has been expanding in scope since that time.

In years when there are heavy winter flows in the Carmel River, the result is the loss of unused surface waters flowing to the ocean. ASR consists of diverting portions of heavy winter flows to Cal-Am's distribution system where it is then treated and injected into the Seaside Basin, which functions as an underground storage reservoir. Later,

[53] HydroMetrics, Water Year 2012 Seawater Intrusion Analysis Report, Seaside Basin, Monterey County, California, November 30, 2012.

during the dry season, the stored water can be pumped out of the “reservoir” to help reduce pumping from the Carmel Valley aquifer, while retaining a substitute source of usable water. In recent drought years ASR has not been as productive as it has in more normal rainfall years.

C. GROUNDWATER MONITORING PROGRAMS

1. California Statewide Groundwater Elevation Monitoring (CASGEM) Program

In 2009, the State legislature added provisions to the Water Code that required DWR to establish the CASGEM program to periodically monitor groundwater elevations in groundwater basins throughout the state. The purpose of the program is to track seasonal and long term trends in the state’s groundwater basins. CASGEM requires local water management entities to collect groundwater elevation data in their area and provide that data to DWR for analysis. Locally, MCWRA is the monitoring entity for seven high and medium priority basins in Monterey County.

Participation in the CASGEM program by groundwater well owners is voluntary. The MCWRA currently monitors 48 wells scattered throughout the County, some of which are privately owned and some publicly owned. Keeping track of basin groundwater levels over time enables officials to evaluate the basin’s relative health.

2. Groundwater Extractions Monitoring System (GEMS)

In 1993, the Monterey County Board of Supervisors adopted ordinances 3663 and 3717. These ordinances required water suppliers in specified zones of the county to report water use information for groundwater extraction wells and water service connections. MCWRA collects the data annually from over 300 wells and inputs the data into a computerized data base maintained by the agency. Until recently, in order to encourage participating well owners to accurately divulge the extent of their extractions, that data was reportedly not available to the public.

D. SALINAS RIVER FLOW ENHANCEMENT PROJECTS

1. Salinas River Arundo Removal Project

The Resource Conservation District of Monterey County (RCD), MCWRA, and landowners along the Salinas River are coordinating efforts to remove Arundo plants from the Salinas River. Arundo, commonly known as *giant reed*, is a tough invasive "perennial grass that grows from nine to thirty feet tall. It grows in many-stemmed, cane-like clumps, and often forms large colonies many meters across. Individual stems are tough and hollow, divided by partitions at nodes like bamboo." Arundo is primarily a problem in waterways. Its "dense stands often displace native vegetation; diminish wildlife habitat, and increase flooding and siltation in natural areas." Most importantly for groundwater sustainability, stands of Arundo "increase water loss from underground aquifers because of the rate at which they use water. The rate of water loss has been estimated at roughly three times more than that of the native riparian vegetation."[54]

Arundo has been accumulating in the Salinas River corridor and its tributaries for several years. The Arundo Removal Project is being carried out in two phases. The first phase cleared 11.5 miles along the river as a demonstration project. Phase two will include an additional 94-mile stretch and is scheduled to begin in the fall of 2016.

2. Interlake Tunnel Project

According to MCWRA project information, the Nacimiento River watershed, on average, produces nearly three times as much water volume as the San Antonio River watershed. As a result, the Nacimiento Lake reservoir fills three times faster than the Lake San Antonio reservoir. During heavy flows, the Nacimiento dam is legally required to release large amounts of water over its spillway for reasons of flood control. However, while the Nacimiento reservoir is releasing water over its spillway, there remains a large volume of unused storage capacity in the Lake San Antonio reservoir. If the spillway water from the Nacimiento reservoir were diverted to the San Antonio Reservoir, then water could be released at strategic times from the San Antonio

[54] DiTomaso, J.M., G.B. Kyser et al. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 2013, 544 pp.

Reservoir into the Salinas River to recharge Salinas Valley basin aquifers and to supplement waters delivered to the Salinas River Diversion Facility.

The controversial Interlake Tunnel Project is the means by which the inter-lake water diversion is intended to occur. The project calls for drilling a tunnel between the two reservoirs and inserting a pipeline that would allow water transfer to occur using a downhill gradient. In mid-2014 the Monterey County Board of Supervisors approved funds for a full engineering analysis and preliminary project planning.

E. DESALINATION PROJECTS

There are currently four planned or proposed seawater desalination projects under discussion for Monterey County, each of which differs from the others in its technology features and stage of development. There is no way of knowing at this point which, if any, will:

- Survive all required state and federal permitting processes.
- Obtain all necessary project funding.
- Satisfy all local ordnance requirements.
- Be the first to produce desalinated water for community distribution.
- Be allowed to proceed, even if another project has already begun to produce desalinated water.

1. The Monterey Peninsula Water Supply Project (MPWSP)

MPWSP is a multi-faceted plan, the components [55] of which are intended to help develop a sustainable water supply for the Monterey Peninsula communities. A critical component of the plan calls for a new seawater desalination plant, to be located in Moss Landing. The plant is to be designed and constructed by Cal-Am, with public participation and oversight by MPWMD and others.[56] Depending on the success or

[55] Other program elements include the Aquifer Storage and Recovery project and the Groundwater Replenishment project, both of which are discussed elsewhere in this report.

[56] MPWSP is overseen by a Governance Committee comprised of representatives of California American Water, the Monterey Peninsula Regional Water Authority, the Monterey Peninsula Water Management District, and the County of Monterey. http://www.mpwmd.net/GovernanceCommittee /GovernanceCmte.htm

failure of the MRWPCA's Pure Water Monterey project,[57] the desalination plant will be sized at either 6.4 mgd or 9.6 mgd (million gallons per day). Its intake system will use "slant wells", a relatively new technology.

The goal of MPWSP is to construct a desalination facility with an output capacity sufficient to meet the water use demands of Monterey Peninsula communities for the foreseeable future. A successful conclusion to MPWSP would allow Cal-Am to greatly reduce its groundwater pumping from the Carmel Valley (River) Basin and the Seaside Basin aquifers. The pumping reductions are required by existing state and judicial orders. Cal-Am has stated that it would no longer be able to continue its present level of water service to Peninsula communities unless a new source of potable water, in sufficient quantities, can be developed in the near future.

Cal-Am has moved its desalination project forward on a number of fronts, but it has also suffered setbacks. After earlier delays, the California Coastal Commission voted unanimously, on October 6, 2015, to approve an amendment to Cal-Am's permit, allowing it to operate a test slant well for its proposed seawater desalination project. Later in the year, contractors were awarded contracts for the construction of 22 miles of planned desalinated water delivery pipelines and construction of the planned slant seawater intake wells.

There have been a number of delays and a series of missteps involving Cal-Am's completion and submission of necessary Environmental Impact Reports (EIRs). The latest of these delays was announced in March 2016, when the California Public Utilities Commission (CPUC) postponed the planned date for the release of its "draft environmental impact report and environmental impact assessment" until December 21, 2016. Cal-Am predicted that the CPUC's rescheduling would set the project back for one year, delaying the availability of the project's desalinated water until the first half of 2020. According to a recent news article, CPUC officials have promised to consider ways to speed up its review process.

[57] http://www.purewatermonterey.org

2. DeepWater Desal

Like Cal-Am, DeepWater Desal LLC is planning to build a desalination facility in Moss Landing. Unlike Cal-Am's project, however, the DeepWater project is intended to have a broader geographic reach, making a new supply of potable water available north to Santa Cruz, east to Salinas and south to the Monterey Peninsula. Also unlike Cal-Am's project, the proposed DeepWater desalination facility will be co-located with a seawater-cooled computer data center.

The planned desalination plant will employ a reverse osmosis desalinating process and have the capability of producing up to 25,000 AFY of potable water. The co-located data center facility will be capable of producing 150-megawatts of power. Intake seawater will be used to cool the data center facility before being piped through the desalination process. The seawater is intended to absorb unwanted heat from the data center building, eliminating the need for energy-inefficient chillers and evaporative cooling systems.

As an added benefit, the desalination plant, as designed, should also be energy-efficient, since the seawater piped to the plant after being warmed in the data center is expected to reduce the energy required to operate the reverse osmosis process. The energy requirements for the project will be supplemented by solar power to be supplied by PV2 Energy, a planned solar farm in the nearby Panoche Valley.

DeepWater Desal officials have stated that their project is not in direct competition with the Cal-Am desalination project, even though MPWMD has indicated that DeepWater Desal is considered the "backup" to Cal-Am's project should Cal-Am's project not be viable.

Preparation of environmental reviews was initiated in the fall of 2015 for both state and federal agencies. The federal permit review process will be conducted concurrently with the state process. DeepWater Desal's initial time projection called for desalinated water availability in 2017. However, funding for the project has not yet been resolved.

Recent updates indicate that the project's draft EIR will not be ready until late 2016 or early 2017, delaying the start of water production until 2019.

Upon project completion, it is anticipated that the desalination facility will be sold to a Joint Powers Agency (JPA) formed from municipal agencies in the Monterey Bay area region. Those agencies would subscribe for the plant's output in the amount of their respective needs, and possibly contract with DeepWater Desal to operate the facility, with oversight provided by the JPA.

3. Marina Coast Water District (MCWD) Desal Project

MCWD has stated its intent to complete two water projects during the next decade, one of which is to build and operate a 2700 AFY seawater desalination plant. On January 21, 2015, its Board of Directors authorized securing firms to conduct an environmental review, prepare a financing plan, and design/build a 2700 acre foot desalination facility. On March 2, 2015 the Board of Directors revised that plan, calling for the solicitation of proposals to complete a 10% design of a 2700 acre foot desalination facility and solicitation of proposals to begin environmental analysis and participation in the conceptual design. On February 8, 2016, the MCWD Executive Committee reviewed a list of District priorities that included moving the desalination project along "by getting the engineering firm and environmental firm under contract."[58] From the foregoing, it appears that a MCWD desalination plant will not be available for inclusion in near term groundwater sustainability planning.

4. The People's Moss Landing Water Desalination Project (PMLWDP)

The PMLWDP is a proposed desalination facility to be built in Moss Landing, California. According to its website,[59] the project team[60] published its Draft Process Design Report and Cost Information in March 2015. The report projected that the plant will provide 9,752 acre feet per year ("AFY") of potable water to the Monterey Peninsula and 3,652

[58] Marina Coast Water District, Executive Meeting Minutes, 2/8/2016, Approved 03/14/2016.
[59] http://www.thepeopleswater.com
[60] http://www/thepeopleswater.com/the-team/

AFY of potable water to North County. Construction costs were estimated at $140 million. With the inclusion of pipeline construction and operating costs, the desalinated water cost is projected to be $1900-$2000 per acre foot. In a recent *Monterey Herald* article, project officials stated that their draft EIR would be ready for public release in July 2016 and that they expect to deliver water sometime in 2019.[61]

5. The Existing Sand City Water Supply Project

Discouraged by the lack of progress in developing new sources of water within Monterey County, the City of Sand City, with the cooperation of Cal-Am, built and put into operation a small 300 AFY desalination facility for City use. The facility acquires brackish water from four (4) local wells, and treats it by a reverse osmosis process. The facility is operated by Cal-Am under contract with Sand City.

CONSERVATION MEASURES

It goes without saying that conservation measures assist in achieving groundwater sustainability. By now, after several years of drought, virtually every household and business in Monterey County is aware of the many ways in which water can be conserved on a day-to-day basis in homes, office buildings, and other business facilities. At the same time, ag growers have begun to switch from sprinkler irrigation to drip tape irrigation for crops that can do well with that irrigation method. According to figures reported in MCWRA annual Groundwater Extraction Reports, in 2009, out of 176,463 net ag acres, 53.85 % were irrigated by drip irrigation.[62] By 2015, out of 179,521 net ag acres, 70.02% were irrigated by drip irrigation.[63]

No doubt there are still more ways to conserve water in Monterey County, but this report is not intended to present an informed discussion of such possible measures. A reminder of the role that conservation plays in groundwater sustainability, however, is

[61] Johnson, Jim. "Desal proposals expect draft EIRs." *Monterey Herald*, April 7, 2016.
[62] Monterey County Water Resources Agency, 2005 Groundwater Extraction Report. April 2007.
[63] Monterey County Water Resources Agency, 2014 Groundwater Extraction Report. October 2015.

appropriate in a county that depends so heavily on groundwater as its primary water source.

STRUGGLE AHEAD?

The California State Water Resources Control Board is currently hearing testimony in enforcement actions ENF01949 and ENF01951.[64] That dispute arose because of the Board's issuance of enforcement orders, limiting the amount of water that two irrigation districts near Tracy, California, could pump from the Delta. The matter at issue is whether the SWRCB has the authority to restrict such pumping. Although these actions deal with surface water pumping rather than groundwater pumping, when ultimately resolved (most likely in court) the result may well have consequences for the state's ability to restrict long held water rights, including groundwater rights. It may also have consequences for SGMA's viability. On March 25, 2016 the consolidated hearing on these matters was suspended for an unspecified period of time while the factual and legal issues were taken under consideration by the Hearing Officers.[65]

During our interviews, those concerned with agricultural made clear their opposition to any GWMP that resulted in mandatory restrictions on groundwater pumping for irrigation purposes. Nevertheless, SGMA authorizes GMAs, among other things, to control groundwater extractions by limiting, suspending or otherwise regulating extractions from individual groundwater wells.[66] The inherent tension caused by the potential for restrictions on pumping will be an important hurdle for the Salinas Valley GSA formation and eventual GSP.

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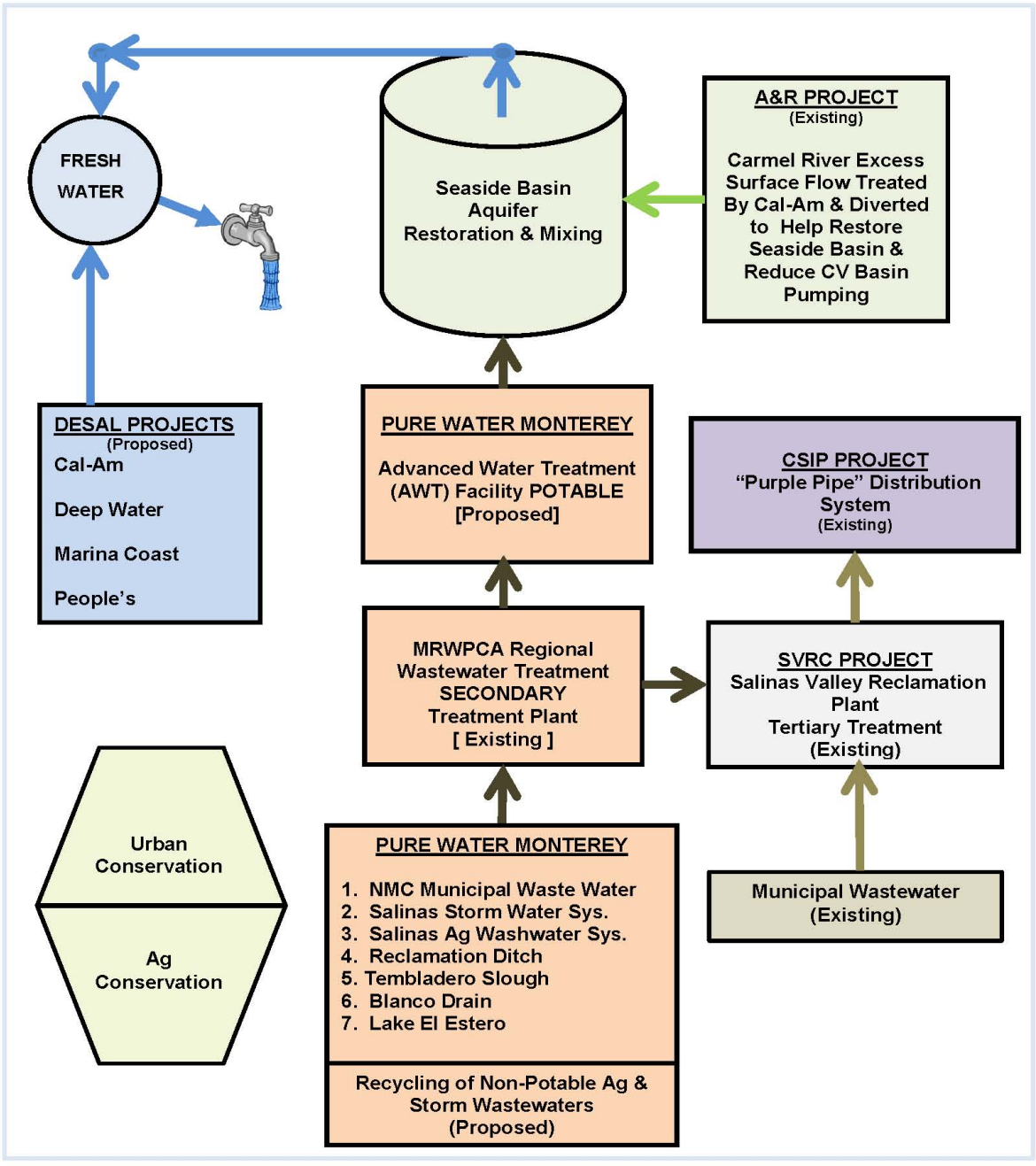
[64] In the Matter of Enforcement Action Enf01949, SWRCB Enforcement Action Draft Cease And Desist Orders Enf01951 And Enf01949 Regarding Unauthorized Diversions or Threatened Byron-Bethany Irrigation Unauthorized Diversions of Water From Old River In San Joaquin County and In the Matter of Enforcement Action Enf01951, Administrative Civil Liability Complaint Regarding Unauthorized Diversion Of Water From The Intake Channel To The Banks Pumping Plant (Formerly Italian Slough) In Contra Costa County.

[65] State Water Resources Control Board, Ruling issued March 25, 2016.

[66] California Water Code Section 10726.4 subsection (A)(2).

POTENTIAL INTEGRATION OF GWMP COMPONENTS

Viewed independently, it's very easy to lose track of how the various existing and proposed groundwater-saving projects and desalination plans work together toward common goals. While not all-inclusive, **FIGURE 7** demonstrates how several of the projects integrate in a way that that promotes sustainability, provides non-groundwater sources of water for agricultural irrigation, restores the Seaside Basin aquifer, and (hopefully) provide one or more new sources of potable water for Monterey County communities in the not-too-distant future.



ENVISIONING THE OLD AND NEW WORKING TOGETHER
FIGURE 7

Revised 4/25/2016

FINDINGS

F1. Monterey County is critically dependent on groundwater for both its agricultural and urban water demands.

F2. Groundwater is critically important to Monterey County's economy.

F3. Several groundwater basin aquifers in Monterey County are now in overdraft.

F4. Overdrafting has resulted in seawater intrusion into the 180 and 400 foot aquifers in the northern Salinas Valley Basin.

F5. Seawater intrusion results in localized salt-contaminated groundwater that is unsuitable for both urban and agricultural uses.

F6. If no Groundwater Sustainability Agency (GSA) is formed by June 30, 2017 for the Salinas Valley Basin, the County of Monterey could then choose to become the GSA for that basin.

F7. If the County of Monterey chose to become the GSA for the Salinas Valley Basin that choice would prevent the State Water Resources Control Board (SWRCB) from intervening in the local Groundwater Sustainability Plan (GSP) planning process except for overseeing and insuring GSP compliance.

F8. Prior to the Sustainable Groundwater Management Act (SGMA), local groundwater management plans lacked sufficient enforcement authority to fully manage groundwater sustainability.

F9. SGMA confers on GSAs stronger enforcement authority than had existed under previous groundwater management enactments or local plans.

F10. The non-adjudicated Salinas Valley Marina Area and the Salinas Valley Corral De Tierra Area should be included under the authority of the Salinas Valley Basin GSA and part of the GSA's Groundwater Management Plan (GMP).

F11. Consensus Builders, Inc. has been retained by the City of Salinas, on behalf of itself and others, in an attempt to integrate competing Salinas Valley groundwater interest's in order to arrive at a consensus GSA before June 30, 2017.

F12. Many local individuals and entities have for several years been vitally interested in preserving, enhancing, and sustaining both groundwater and surface water availability in the Monterey Peninsula-Salinas Valley areas.

F13. As a result of past efforts, there are several existing and planned projects that could logically be included in any GSPs adopted within the Monterey Peninsula-Salinas Valley areas, since each such project impacts groundwater sustainability.

F14. Some of the existing and planned projects for logical inclusion in a local GSP include:

a. The Salinas Valley Reclamation Plant (SVRP) and the Castroville Seawater Intrusion Project (CSIP) Distribution System.
b. The Pure Water Monterey Groundwater Replenishment Project.
c. The Soledad Water Recycling / Reclamation Project.
d. The Salinas Valley Water Project.
e. The Seaside Aquifer Storage & Recovery Project.
f. The California Statewide Groundwater Elevation Monitoring Program.
g. The Groundwater Extractions Monitoring System.
h. The Salinas River Arundo Removal Project.
i. The Interlake Tunnel Project.
j. The Cal-Am Monterey Peninsula Water Supply Project.
k. The DeepWater Desal Desalination/Data Center Project
l. The Marina Coast Water District Desalination Project
m. The People's Moss Landing Water Desalination Project
n. The Sand City Water Supply Project
o. Urban Water Conservation
p. Agricultural Water Conservation

F15. As with other legislation that impacts those with divergent interests, legal maneuvering and delaying tactics can, in the case of SGMA, cause the loss of local controls over groundwater planning and management.

F16. As with other legislation that impacts those with divergent interests, legal maneuvering and delaying tactics can, in the case of SGMA, cause already critical groundwater conditions in Monterey County to get much worse, to the detriment of all concerned.

RECOMMENDATIONS

R1. That every public and private entity interested in the formation of a GSA and the adoption of a GSP for the Salinas Valley Basin pledge to consider the groundwater needs of every other interested party with an open mind and a commitment to fairness.

R2. That if the June 30, 2017 deadline for forming one or more GSAs for the Salinas Valley Basin is not met by other interested parties, the County of Monterey agree to become the GSA for that basin in order to prevent state intervention in local groundwater planning.

R3. That the County of Monterey actively participate in the currently ongoing effort by Consensus Builders, Inc. to help achieve the formation of one or more GSAs for the Salinas Valley Basin before the June 30, 2017 deadline.

R4. That the County of Monterey remain mindful of the possibility that it may become the GSA for the Salinas Valley Basin and, with that in mind, take all steps as far in advance of the June 30, 2017 deadline as necessary for it to assume that role prior to that deadline.

R5. That the County of Monterey remain mindful of the possibility that it may become the GSA for the Salinas Valley Basin and, with that in mind, begin immediately to consider GSP optional components.

REQUIRED AND REQUESTED RESPONSES

Pursuant to Penal Code Section 933.05, the Civil Grand Jury requires responses from each of the following public entities:

Monterey County Water Resources Agency
Findings F1-16 and Recommendations R1-R5

Monterey Peninsula Water Management District
Findings F1-16 and Recommendations R1-R5

Monterey Peninsula Water Pollution Control Agency
Findings F1-16 and Recommendations R1-R5

Marina Coast Water District
Findings F1-16 and Recommendations R1-R5

Monterey County Board of Supervisors
Findings F1-16 and Recommendations R1-R5

As a matter of good faith, the Civil Grand Jury requests responses from each of the following entities to Findings F1-F16 and Recommendations R1-R5

Grower-Shipper Association of Central California
Monterey County Farm Bureau
Fort Ord Reuse Authority
California American Water Co.
Salinas Valley Water Coalition

LIST OF REFERENCED AUTHORITIES

Cal-Am vs. City of Seaside, et al., Superior Court of California, County of Monterey. Case No.M66343. Decision filed Mar.27, 2006, p.8-9, Finding 2.

California State Water Resources Control Board. In the Matter of Enforcement Action Enf01949, SWRCB Enforcement Action Draft Cease and Desist Orders Enf01951 and Enf01949 Regarding Unauthorized Diversions or Threatened Byron-Bethany Irrigation Unauthorized Diversions of Water from Old River in San Joaquin County.

California State Water Resources Control Board. In the Matter of Enforcement Action Enf01951, Administrative Civil Liability Complaint Regarding Unauthorized Diversion of Water from the Intake Channel to the Banks Pumping Plant (Formerly Italian Slough) In Contra Costa County.

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California Water Code Section 10721 subsection (r).

California Water Code Section 10721 subsection (u).

California Water Code Section 10721 subsection (w).

California Water Code Section 10721 subsection (x).

California Water Code Section 10722.2.

California Water Code Section 10726.4 subsection (A) (2).

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http://cemonterey.ucanr.edu/about, March 2016.

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Johnson, Jim. "Desal proposals expect draft EIRs." *Monterey Herald*, April 7, 2016.

Marina Coast Water District, Executive Meeting Minutes, 2/8/2016, Approved 03/14/2016.

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Monterey Peninsula Water Management District. Resolution No. 2016-01, February 3, 2016.

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State of California, Department of Water Resources. California's Groundwater Bulletin 118, Update 2003, p.98.

State of California, Department of Water Resources. Cease and Desist Order WR 2008–00XX-DWR, p.2, Finding 8.

State Water Resources Control Board Order 95-10, July 6, 1995.

State Water Resources Control Board, Ruling issued March 25, 2016.

University of California, Division of Agriculture & Natural Resources. June 2005.

APPENDIX 1

Collaborative Work Group Current Membership

Alco

Cal Water Service

Castroville Community Service District

CHISPA

City of Salinas

Driscoll Strawberry Associates

Environmental Justice Coalition for Water

California Native Plant Society

City of Gonzales

Grower-Shipper Association of Central California

LandWatch

Marina Coast Water District

Monterey County Regional Water Pollution Control Agency

Monterey County Farm Bureau

Monterey County Vinters & Growers

Monterey County

Salinas Valley Sustainable Water Group

San Luis Obispo County

Salinas Valley Water Coalition

Water Resources Agency

Consensus Building Institute

Sustainable Groundwater Management Act Implementation

Salinas Valley Groundwater Stakeholder Issue Assessment

Developed by Senior Mediators Gina Bartlett and Bennett Brooks, Consensus Building Institute
February 29, 2016

Executive Summary

In fall 2015, the Consensus Building Institute, a neutral nonprofit that helps groups collaborate, conducted a stakeholder issue assessment on forming a groundwater sustainability agency in the Salinas Valley Basin. California's Sustainable Groundwater Management Act requires that the basin identify an agency or group of agencies to oversee groundwater management by 2017 and then develop a plan to manage groundwater by 2020. CBI's role is to *help facilitate* local decision-making, recommending and leading a process that brings together all affected parties in productive dialogue, on forming the groundwater sustainability agency (GSA).

To understand and reflect the range of perspectives and to develop recommendations for the process to form a GSA, CBI conducted 35 in-depth interviews and received 86 individual surveys from a range of stakeholder interests in the Salinas Valley, including governmental (cities and counties), water agencies, agriculture, disadvantaged communities, environmental, business, and community representatives. Given the importance of groundwater in the region's water supply and economy, CBI's methodology is grounded in three core principles: (1) being comprehensive in soliciting input from the range of potentially impacted stakeholders; (2) being transparent in the nature of the feedback and recommendations provided; and (3) drawing on CBI experience and best practices to recommend an approach likely to foster effective and inclusive deliberations. This report presents CBI's assessment findings and recommendations for a transparent, inclusive process on forming a GSA in the Salinas Valley.

Findings

Findings reflect a range of feedback on GSA formation, the process, challenges, and critical issues. In brief, stakeholders articulate:

- Groundwater supply is high stakes; everyone recognizes the importance of forming the GSA successfully.

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- Interviewees cannot identify any one organization as a likely candidate to serve as the GSA. Many envision multiple organizations coming together under a Joint Power Authority to form a singular GSA.
- The GSA must have the trust of all the interested parties and the technical expertise to develop the plan. The GSA should draw on existing data and studies wherever possible.
- Stakeholders strongly support inclusivity and diversity to build success in the process. Fairly representing all interests would support creating a shared framework of mutual benefit.
- Given that agriculture is the primary economic driver in the area, stakeholders recommend that agriculture have a significant voice in governance and decision-making on GSA formation, yet balancing that voice with urban, cities, county, and other interests.
- Many recognize the need to act to avoid both undesirable results and state intervention.
- Interviewees readily talk about historic tensions and sources of distrust in the region that the process must manage.
- Critical issues are tied to land use and small communities losing water supply because of poor water quality.
- "The Valley is innovative and progressive – it moves ahead to address problems." While interviewees define and view groundwater supply quite differently, everyone concurs that a range of stakeholders must agree on the GSA.

Consensus Building Institute Process Recommendations

Create a Transparent, Inclusive Collaborative Process for Groundwater Sustainability Agency Formation

Stakeholders are broadly unified on several core aspects related to a process for identifying a GSA. It must be transparent. It must be inclusive. It must be accompanied by broad outreach. And it should draw on the best available data.

Convene a Groundwater Stakeholder Forum and Collaborative Work Group

The Groundwater Stakeholder Forum would be a periodic public forum with a range of interests participating that advises on GSA formation. The forum's role would be to shape the overall process. Forum membership would encompass all stakeholders who are interested in groundwater and must be considered under SGMA. The Collaborative Work Group would develop consensus on the proposed GSA structure and recommend adoption by the GSA-eligible agencies. The work group would be a representative body with a focused number of participants (12-20) representing the interests of GSA-eligible agencies and groundwater users. CBI would work with interest groups to identify work group participants. The work group would develop detailed proposals and meet regularly with the Groundwater Stakeholder Forum to share ideas and solicit feedback on proposals. The work group would commit to incorporating forum feedback to the greatest degree possible. The work group could also form ad hoc committees to carry out detailed work. For example, CBI would recommend forming an engagement committee to develop the public engagement plan and a technical committee to begin to prepare for plan development.

Confirm Work Plan
The forum and the work group would have a decision-making work plan to outline its discussion topics. Between February and November 2016, these bodies would work diligently to develop a proposal for GSA formation. These conversations would be punctuated by public engagement activities. In winter 2016/17, the Collaborative Work Group would consult with agency governing boards and the public on the proposals. In spring 2017, the forum and work group would refine the GSA structure based on those consultations. Once the GSA structure was set, the responsible entities forming the GSA would issue public notice and hold a public hearing by spring 2017 before notifying the state in advance of the June 2017 deadline.

Design and Implement a Public Engagement Plan
Given the paramount importance and level of interest in groundwater in the Salinas Valley, CBI would recommend designing and implementing a public engagement plan and suite of activities to create transparency and information about GSA formation for the general public, translating materials and creating radio spots to reach Spanish-speaking communities.

Conclusion
The overarching goal of this effort would be to reach widespread support on forming the groundwater sustainability agency for the Salinas Valley and complying successfully with the Sustainable Groundwater Management Act. The keys to success are creating a transparent, inclusive process that engages interested stakeholders, designing a governance structure that balances interests, supports a vibrant economy, manages groundwater sustainably, and meets SGMA requirements. A viable and broadly supported GSA is the essential first step towards long-term sustainable groundwater management.