

SAN GORGONIO PASS WATER AGENCY
1210 Beaumont Avenue, Beaumont, CA
Board of Directors Meeting
Agenda
February 21, 2017 at 7:00 p.m.

1. Call to Order, Flag Salute, Moment of Silence, and Roll Call

2. Adoption and Adjustment of Agenda

3. Public Comment

Members of the public may address the Board at this time concerning items relating to any matter within the Agency's jurisdiction. To comment on specific agenda items, please complete a speaker's request form and hand it to the board secretary.

4. Consent Calendar:

If any board member requests that an item be removed from the Consent Calendar, It will be removed so that it may be acted upon separately.

- A. Approval of the Minutes of the Regular Board Meeting, February 6, 2017* (Page 2)
- B. Approval of the Minutes of the Engineering Workshop, February 13, 2017* (Page 8)

5. Reports (Discussion and Possible Action)

- A. General Manager's Report
 - 1. Operations Report
 - 2. Report on Oroville Spillway
 - 3. General Agency Updates
- B. General Counsel Report
- C. Directors' Reports

6. New Business

- A. Public Hearing on Draft Urban Water Management Plan* (Page 10)
- B. Consideration and Possible Action of USGS Program Letter* (Page 108)
- C. Further Discussion and Possible Action regarding Invocation Policy
(Requested by Director Thompson)

7. Topics for Future Agendas

8. Announcements

- A. San Gorgonio Pass Regional Water Alliance, February 22, 2017
 - 1. IRWMP at 4:30 p.m. – Banning City Council Chambers
 - 2. Regular Meeting at 5:30 p.m. – Banning City Council Chambers
- B. Finance and Budget Workshop, February 27, 2017 at 4:00 p.m.
- C. Regular Board Meeting, March 6, 2017 at 7:00 p.m.

9. Adjournment

***Information included in Agenda Packet**

(1) Materials related to an item on this Agenda submitted to the Board of Directors after distribution of the agenda packet are available for public inspection in the Agency's office at 1210 Beaumont Avenue, Beaumont during normal business hours. (2) Pursuant to Government Code section 54957.5, non-exempt public records that relate to open session agenda items and are distributed to a majority of the Board less than seventy-two (72) hours prior to the meeting will be available for public inspection at the Agency's office, located at 1210 Beaumont Avenue, Beaumont, California 92223, during regular business hours. When practical, these public records will also be made available on the Agency's Internet Web site, accessible at: www.sgpwa.com (3) Any person with a disability who requires accommodation in order to participate in this meeting should telephone the Agency (951 845-2577) at least 48 hours prior to the meeting in order to make a request for a disability-related modification or accommodation.

SAN GORGONIO PASS WATER AGENCY
1210 Beaumont Avenue, Beaumont, California 92223
Minutes of the
Board of Directors Meeting
February 6, 2017

Directors Present: David Fenn, President
Lenny Stephenson, Treasurer
Blair Ball, Director
Stephen Lehtonen, Director
David Castaldo, Director
Michael Thompson, Director

Director Absent: Ron Duncan, Vice President

Staff Present: Jeff Davis, General Manager
Jeff Ferre, General Counsel
Cheryle Rasmussen, Executive Assistant

1. **Call to Order, Flag Salute and Moment of Silence:** The meeting of the San Gorgonio Pass Water Agency Board of Directors was called to order by Board President David Fenn at 7:00 p.m., February 6, 2017 in the Agency Boardroom at 1210 Beaumont Avenue, Beaumont, California. Director Stephenson led the Pledge of Allegiance to the flag. President Fenn requested a moment of silence. *President Fenn requested a roll call.*

<u>Roll Call:</u>	Present	Absent
Director Stephenson	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Ball	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Lehtonen	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Castaldo	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Duncan	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Director Thompson	<input checked="" type="checkbox"/>	<input type="checkbox"/>
President Fenn	<input checked="" type="checkbox"/>	<input type="checkbox"/>

A quorum was present.

2. **Adoption and Adjustment of Agenda:** *President Fenn asked if there were any adjustments to the agenda.* General Manager Davis stated that an item came to the attention of the Agency after the Agenda had been published, in addition a time limitation is associated with it. The Board will need to approve adding the item to the agenda. The new item would be listed as 6D: Consideration of Agreement with Roy McDonald to Perform Services Related to Developing Science-Based Flow Release Scenarios for the Whitewater River. It is urgent because a letter was received from the U.S. Forest Service Thursday or Friday responding to the Special Use Permit application, in which they are rejecting the flow releases that were included in the application. The U.S. Forest Service is requesting additional flow releases that are based on science and that a number of studies take place in the future. A revised application needs to be resubmitted by March 3, 2017. Should the Participating Entities desire to use the consultant's studies the Board would need to authorize the agreement tonight, this would be contingent upon whether or not the Participating Entities choose to use the studies. Legal Counsel

Ferre provided insight on the Government Code allowing the addition to the agenda. It would take a two-thirds vote, or if less than two-thirds are present than a unanimous vote of the board to add item 6D to the agenda as written. Director Castaldo made a motion, seconded by Director Stephenson, to add item 6D as written. Director Ball requested a 15 minute recess prior to item 6D, allowing board members to read through the material. President Fenn was in agreement with Director Ball's request. *President Fenn requested a roll call vote.*

Roll Call:	Aye	Noes	Absent	Abstain
Director Stephenson	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Ball	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Lehtonen	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Castaldo	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Duncan	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Thompson	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
President Fenn	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Motion passed 6-0, with Director Duncan absent.

3. **Public Comment:** *President Fenn asked if there were any members of the public that wished to make a public comment on items that are within the jurisdiction of the Agency. There were no members of the public that wished to comment at this time.*

4. **Consent Calendar:**

- A. Approval of the Minutes of the Regular Board Meeting, January 17, 2017
- B. Approval of the Minutes of the Finance and Budget Workshop, January 23, 2017
- C. Approval of the Finance and Budget Workshop Report, January 23, 2017

Director Stephenson made a motion, seconded by Director Ball, to adopt the consent calendar as presented. Motion passed 6-0, with Director Duncan absent.

5. **Reports:**

A. General Manager's Report:

(1) Operations Report: General Manager Davis reported on the following: **A.** The Agency delivered 1340 acre-feet to the Noble connection for the month of January. Deliveries are being directed solely to Yucaipa Valley Water District at this time, as Beaumont Cherry Valley Water District is doing maintenance on its ponds. It is anticipated the deliveries to BCVWD will resume next Monday at 10 cfs, then gradually increase.

(2) Water Supply Report: General Manager Davis reported on the following: **A.** SWP Table A water allocation is still at 60%. **B.** Eleven inches of additional precipitation is expected this week in the Feather River Basin. **C.** Water is spilling at Lake Oroville as much as 80,000 cfs. **D.** The San Joaquin River is running high, which

means we can have high exports from the South Delta. **E.** The SWP share of the San Luis Reservoir is expected to fill this week. **F.** Total San Luis Reservoir storage is likely to be full by the end of February or early March. **G.** Article 21 water may be available sometime this month. **H.** February 1st snowpack was the best reading since 1995 – 173% of average for the date. January 1st snowpack was 64% of normal. **I.** Mark Anderson predicts that DWR will break their all-time record of 3.7 MAF this year. **J.** General Manager Davis provided a review of the current California snow water content for the North, Central and South; as well as the storage levels for Lake Oroville and San Luis Reservoir.

(3) General Agency Updates:

1. Flume Update: SCE still needs to obtain a surrender license that is issued by the Federal Energy Regulatory Commission. The commission is a five member quorum that currently only has two members. Therefore there is no quorum at this time to take an action.

2. Beaumont Basin Watermaster Application: A Watermaster meeting took place last Wednesday; the agenda include discussion on the Agency's storage account application. Discussions are taking place on the conditions. The next meeting will take place on April 5th. General Manager Davis will bring to the Board the conditions for approval.

3. SGMA Update: There is a draft MOA for the San Geronio Pass Sub-basin. A group meeting is scheduled to take place next week to review the draft in detail. Upon completion of the draft document it will be brought to the respective boards for approval, as will the draft MOA for the San Timoteo Basin in March or April.

4. Beaumont Avenue Recharge Facility Update: There are three parts to the project; the recharge facility, the pipeline from EBX, and the connection to EBX. The pipeline has been built. The connection and facility design is complete and ready to advertise for construction. The Agency has been waiting for Prop 1 funds to become available in order to submit an application for funding. Calls for proposals will commence either late 2017 or early 2018.

5. Registration for the 2015 ACWA Spring Conference is open.

B. General Counsel Report: General Counsel Ferre passed on reporting.

C. Directors Reports:

1) Director Thompson reported on the SGPRWA meeting that took place on January 25, 2017. Director Thompson also reported on the Water Education Foundation Water 101 Workshop that he attended in Sacramento, stating that it was extremely informative and encouraged others to attend.

2) Director Ball reported on the BCVWD Special Engineering Workshop meeting that took place on February 2, 2017.

3) Director Castaldo reported on the SGPRWA meeting that took place on January 25, 2017. Director Castaldo also reported on the Water 101 Workshop that he attended in Sacramento.

4. Director Lehtonen regretted that he was not able to attend the Water 101 Workshop.

5. President Fenn reported that he attended the Banning City Council meeting. He announced that the City Council meeting time has been moved to 5:00 p.m. During the meeting Debbie Franklin (City of Banning Councilwoman) and Julie Hutchinson (President, BHMWC) invited President Fenn to attend a Flume teleconference meeting. At that meeting President Fenn asked for another opinion of what has and is taking place relating to the Flume. He noted that this is not to deter from what General Manager Davis has done for the Agency pertaining to this matter. He shared an email from Scott White (City of Banning and BHMWC Consultant) that summarized the issues from 1913 to the most recent activities. He noted that this will help the new board members to understand where we are, and to also help enlighten why item 6D that was added to the agenda.

6. New Business:

A. Consideration of Acceptance of 2015 Water Conditions Report: A staff report and a copy of the 2015 Water Conditions Report were included in the agenda packet. General Manager Davis stated that a considerable amount of time was spent during the January Engineering workshop reviewing this report. Due to a court settlement, the Board needs to formally receive and file this document. General Manager Davis pointed out that that in Table 1 it shows that in 2014 there was a total of 30,671 acre feet in production, whereas in 2015 there was 22,835 acre feet in production, resulting in about 24.5% reduction in production within the boundaries of the Agency. Director Stephenson made a motion, seconded by Director Ball, to receive and file the 2015 Water Conditions Report. Motion passed 6-0, with Director Duncan absent.

B. Presentation on Revised Water Conservation Regulations: A PowerPoint slide presentation was included in the agenda packet. General Manager Davis stated that there are two separate issues. #1: The temporary emergency regulations put into place by the State Water Resources Control Board in response to three separate executive orders by the Governor, which will be voted upon to be extended for another 270 days, portions of which will be permanent. #2: Proposed permanent regulations that have not been adopted yet, but will probably be adopted later on this year, which is what the presentation is on. After providing explanation on the temporary emergency regulations, General Manager Davis reviewed with the Board during his presentation the Implementation of Executive Order B-37-16 (which is the last of the three executive orders) and its objectives, as well as the Water Industry concerns and what the Industry is doing. ACWA has formed committees to review and submit comments and speak at public hearings in Sacramento.

C. Consideration and Possible Action to Rescind or Revise Resolution No. 2014-02: General Counsel Ferre stated that this item was discussed at length at a previous board meeting. Director Ball requested that this item be placed on today's agenda for possible action. In the staff report there are three options that the board can take. #1: Adopt Resolution No. 2017-02, thereby rescinding Resolution No. 2014-02; or #2: Take action to adopt a revised version of Resolution No 2014-02; or #3: Take no action, then Resolution No. 2014-02 remains in effect. General Counsel Ferre referred to Director Ball for his comments. Director Ball commented that his letter states that in a public meeting at BCVWD he listened to a discussion between BCVWD Board, staff, a home builder company's representatives and its attorney. The Agency's Resolution No. 2014-02 was discussed and in essence their sentiment was that this Agency would "make good" on all their water needs. He personally does not feel that this Board can make such broad sweeping statements. He noted that Resolution 2014-02 was enacted by a prior Board. Director Ball stated that he did not feel that we have the capability to provide all of the water needs as there are so many other uncontrollable variables, such as weather patterns, DWR allocations, and that we are not a land planning use agency. President Fenn opened the floor to Board discussion. After discussion, President Fenn asked for John Covington's (Director, BCVWD) public comment. Mr. Covington spoke in opposition of rescinding Resolution No. 2014-02. After further discussion, Director Ball made a motion, seconded by President Fenn, to rescind Resolution No. 2014-02 and form an ad hoc committee of three directors to bring back a revised resolution in 90 days for discussion. President Fenn requested a roll call vote.

<u>Roll Call:</u>	Aye	Noes	Absent	Abstain
Director Stephenson	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Ball	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Lehtonen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Castaldo	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Director Duncan	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Director Thompson	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
President Fenn	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Motion did not pass. Vote 2-4, with Director Duncan absent.

Director Stephenson made a motion, seconded by Director Castaldo, to leave Resolution No. 2014-02 in place and to bring this item back at a future meeting. Motion passed 6-0, with Director Duncan absent.

President Fenn requested a fifteen minute recess to allow the Board to review item 6D.
Time: 9:05 Reconvened: Time: 9:21.

D. Consideration of Agreement with Roy McDonald to Perform Services Related to Developing Science-Based Flow Release Scenarios for the Whitewater River: A staff report and related material including a proposal to perform services by Roy McDonald were included in the agenda packet. General Manager Davis informed the Board that the Participating Entities received a letter from the US Forest Service last week related to a Special Use Permit application submitted by the PE's on January 3rd. The letter calls for additional studies to be performed in order to define managed flow releases that meet the Forest Service's criteria. The purpose of this proposed Board action is to utilize studies that have already been performed for this exact task, and to make the results of these studies available to the PE's should they wish to use them. The PE's have long maintained that the Forest Service does not have the authority to require such flows. However, the Forest Service indicates that these studies need to be done and paid for by the PE's. These studies are likely going to cost upwards of a hundred thousand dollars and take a year or more to complete. The Forest Service has asked that a revised permit application be submitted by March 3, so the PE's have very little time to make a decision on how to deal with this issue. Staff believes that such studies have already been completed and that the completed studies will meet the Forest Service criteria. Art Vela (City of Banning, Public Works Director) provided input and agreed that this does give the PE's another option. Director Stephenson made a motion, seconded by Director Thompson, authorizing the General Manager to execute a contract with Roy McDonald, in an amount not to exceed \$26,250. Motion passed 6-0, with Director Duncan absent.

- 7. Topics for Future Agendas:** Revisit Resolution No. 2014-02. Director Thompson requested a discussion and possible action at the March 6th Board meeting on the following items: Revising Moment of Silence. Pursue water transfer with neighboring coastal cities who deal with desalination.

8. Announcements:

- A. Engineering Workshop, February 13, 2017 at 4:00 p.m.
- B. Office closed February 20, 2017 in observance of Presidents' Day
- C. Regular Board Meeting, **Tuesday**, February 21, 2017 at 7:00 p.m.
- D. Finance and Budget Workshop, February 27, 2017 at 4:00 pm

9. Adjournment

Time: 9:48 pm

Draft - Subject to Board Approval

Jeffrey W. Davis, Secretary of the Board

SAN GORGONIO PASS WATER AGENCY
1210 Beaumont Avenue, Beaumont, CA 92223
Minutes of the
Board of Directors Engineering Workshop
February 13, 2017

Directors Present: David Fenn, President
Blair Ball, Director (arrived 4:13 pm)
Ron Duncan, Director
Steve Lehtonen, Director
Leonard Stephenson, Director
Mike Thompson, Director

Directors Absent: David Castaldo

Staff Present: Jeff Davis, General Manager
Jeff Ferre, General Counsel
Cheryle Rasmussen, Executive Assistant

1. Call to Order, Flag Salute and Roll Call. The Engineering workshop of the San Gorgonio Pass Water Agency Board of Directors was called to order by Vice President Ron Duncan at 4:00 p.m., February 13, 2017 in the Agency Board room at 1210 Beaumont Avenue, Beaumont, California. President Fenn led the Pledge of Allegiance to the flag. A quorum was present.

2. Public Comment. No member of the public wished to speak at this time.

3. Discussion of USGS Program Letter. A copy of the program letter was included in the agenda package. General Manager Davis reviewed the history of the Agency's partnership with the United States Geological Survey and noted that he has gradually reduced the scope of work over the past three years. He reviewed the proposed scope for the next year, noting that the Agency must approve this outside the normal budgeting process because of the USGS's fiscal year timetable and the fact that the Agency wants to take advantage of available matching funds. After discussion, it was the consensus of the Board that the program letter should be brought to the Board for consideration at the February 21 Board meeting.

4. Discussion of Draft Agreement with Beaumont Cherry Valley Water District Regarding Capacity in Sites Reservoir. A copy of a draft agreement and of three pieces of correspondence between the Agency and the District were included in the agenda package. General Manager Davis reviewed the history of the Agency committing to purchase 10,000 AF of capacity in Sites Reservoir, and BCVWD accepting the Agency's invitation to participate by purchasing 4000 AF of capacity. The Sites counteroffer to the Agency included both Class 1 and

Class 2 water, with Class 2 water having a higher risk than Class 1. BCVWD indicated that it wanted only Class 1 water for its 4000 acre-feet. The draft agreement, as presented, included offering BCVWD the same percentage of Class 1 water as the Agency. General Manager Davis asked the Board for direction regarding what should be offered to BCVWD. After discussion, it was the consensus of the Board that General Manager Davis talk to General Manager Fraser regarding the possibility of BCVWD's Board considering something other than only Class 1 water.

5. Discussion of Wheeling and Possible Development of a Wheeling Policy. General Manager Davis presented a Power Point summarizing some key issues that the Board may want to consider if it adopts a wheeling policy, some potential components of a wheeling charge, and the portion of the water code that covers wheeling. He asked the Board for direction on how to proceed. After discussion, it was the consensus of the Board that the General Manager should put together an outline of a wheeling policy and to bring it back to the Board for discussion prior to going any further.

6. Announcements:

- A. Office closed February 20, 2017 in observance of Presidents Day
- B. Regular Board Meeting, **Tuesday**, February 21, 2017 at 7:00 pm.
- C. Finance and Budget Workshop, February 27, 2017 at 4:00 pm.

7. Adjournment: Vice President Duncan adjourned the meeting at 5:26 pm.

DRAFT - SUBJECT TO BOARD APPROVAL

Jeffrey W. Davis, Secretary to the Board

MEMORANDUM

TO: Board of Directors

FROM: General Manager

RE: 2015 Urban Water Management Plan

DATE: February 21, 2017

Summary:

Under the Urban Water Management Planning Act, the Agency must adopt an Urban Water Management Plan every five years. Each Agency adopting a Plan must hold a public hearing that is advertised twice in local newspapers, thus providing the public and interested stakeholders ample opportunity to review and comment on the Plan. Such ads appeared in the Record Gazette on February 3 and 10. In addition, electronic copies of the draft UWMP were mailed to local water districts and land use planning agencies on January 17.

At tonight's Board meeting, the Agency will hold its public hearing on the Plan. There will be no Board action taken at the meeting. Board action on the Plan will take place at a future Board meeting, thus providing Agency staff with time to make revisions if necessary or desired, based on input received at the public hearing.

Detailed Report:

Agency consultant Mary Lou Cotton will be at the Board meeting to present a summary of the draft UWMP. Mary Lou Cotton specializes in urban water management plans and has prepared dozens of them for State Water Contractors over the years. She has also worked closely with the Department of Water Resources to help implement changes in UWMP requirements based on new legislation.

In 2015, the Board directed staff to wait until the retailers' UWMPs were complete prior to completing the Agency UWMP. The purpose of this decision was to ensure that the Agency's UWMP was able to

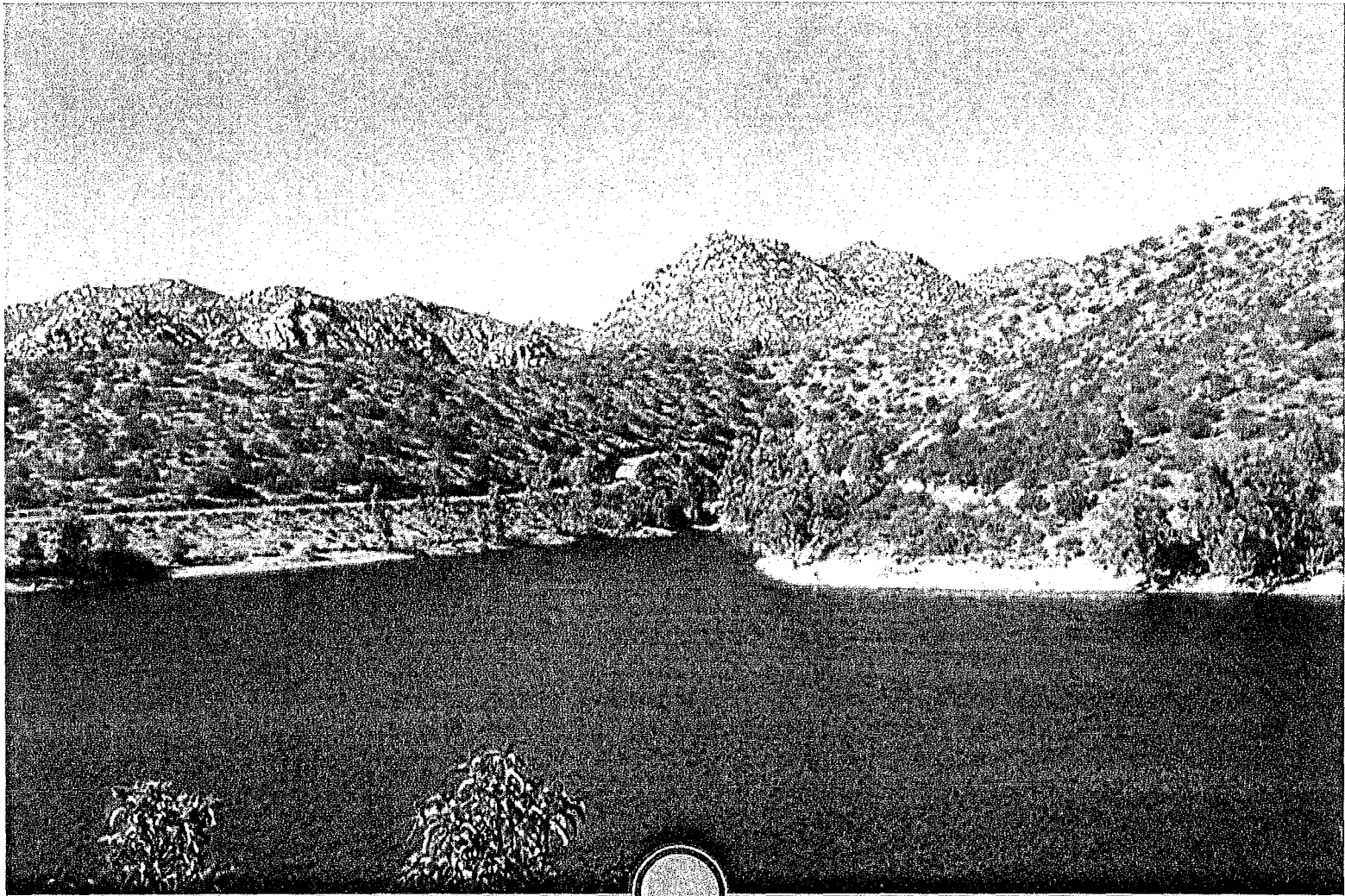
consider the data from the retailers' plans. The draft UWMP, as produced, does so.

One aspect of the Agency's draft UWMP is that it provides a range of projected water demands for the next 20 years. The details of that approach are fully set forth in the draft UWMP.

A copy of the draft UWMP and the Power Point presentation are included in the agenda package. The appendices of the draft UWMP can be reviewed at the Agency offices and online at the Agency's website.

Recommendation:

There is no action to be taken tonight. Consideration of adoption of the UWMP will take place at a future Board meeting.



A PUBLIC DRAFT

2015 Urban Water Management Plan *for* San Geronio Pass Water Agency



January 2017

Prepared by

Kennedy/Jenks Consultants

Kennedy/Jenks Consultants

2775 North Ventura Road, Suite 100
Oxnard, California 93036
805-973-5700
FAX: 805-973-1440

2015 San Geronio Pass Water Agency Urban Water Management Plan

Public Draft

5 January 2017

Prepared for

San Geronio Pass Water Agency

1210 Beaumont Avenue
Beaumont, CA 92223

K/J Project No. 1544217*00

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List of Acronyms

µg/L	micrograms per liter
AB	Assembly Bill
ACS	American Community Survey
AF	acre-feet
AFY	acre-feet per year
AWWA	American Water Works Association
BCVWD	Beaumont-Cherry Valley Water District
BDCP	Bay Delta Conservation Plan
BHMWC	Banning Heights Mutual Water Company
BO	Biological Opinion
Cal OES	California Office of Emergency Services
CEQA	California Environmental Quality Act
CFS	cubic feet per second
CIMIS	California Irrigation Management Information System
CLAWA	Crestline-Lake Arrowhead Water Agency
CVP	Central Valley Project
CWC	California Water Code
CWD	Cabazon Water District
CWP	California Water Plan
DCR	Delivery Capability Report
DDW	Division of Drinking Water
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ELT	Early Long Term
ETo	evapotranspiration
F	Fahrenheit
GSP	Groundwater Sustainability Plan
HVWD	High Valley Water District
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
MSWD	Mission Springs Water District
MWQI	Municipal Water Quality Investigations
NMFS	National Marine Fishery Service
PHG	Public Health Goal

Table of Contents (cont'd)

ppm	parts per million
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBVMWD	San Bernardino Valley Municipal Water District
SGMA	Sustainable Groundwater Management Act
SGPWA	San Gorgonio Pass Water Agency
SMWC	South Mesa Water Company
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan
YVRWFF	Yucaipa Valley Regional Water Filtration Facility
YVWD	Yucaipa Valley Water District

Section 1: Introduction

1.1 Overview

This document presents the wholesale Urban Water Management Plan 2015 (Plan) for the San Geronio Pass Water Agency (Agency, SGPWA) service area. This chapter describes the general purpose of the Plan, discusses Plan implementation, and provides general information about SGPWA, retail water purveyors, and service area characteristics.

The State of California mandates that all urban water suppliers within the state prepare an Urban Water Management Plan (UWMP). Detailed information on what must be included in these plans as well as who must complete them can be found in California Water Code sections 10610 through 10657. According to the UWMP Act of 1983, an urban water supplier is defined as a supplier, either public or private, that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 acre-feet (AF) annually.

1.2 Purpose

An UWMP is a planning tool that generally guides the actions of water management agencies. It provides managers and the public with a broad perspective on a number of water supply issues. It is not a substitute for project-specific planning documents, nor was it intended to be when mandated by the State Legislature. For example, the Legislature mandated that a plan include a Section which “describes the opportunities for exchanges or water transfers on a short-term or long-term basis.” (California Urban Water Management Planning Act, Article 2, Section 10630(d).) The identification of such opportunities, and the inclusion of those opportunities in a general water service reliability analysis, neither commits a water management agency to pursue a particular water exchange/transfer opportunity, nor precludes a water management agency from exploring exchange/transfer opportunities not identified in the plan. When specific projects are chosen to be implemented, detailed project plans are developed, environmental analysis, if required, is prepared, and financial and operational plans are detailed.

“A plan is intended to function as a planning tool to guide broad-perspective decision making by the management of water suppliers.” (*Sonoma County Water Coalition v. Sonoma County Water Agency* (2010) 189 Cal. App. 4th 33, 39.) It should not be viewed as an exact blueprint for supply and demand management. Water management in California is not a matter of certainty and planning projections may change in response to a number of factors. “[L]ong-term water planning involves expectations and not certainties. The State Supreme Court has recognized the uncertainties inherent in long-term land use and water planning and observed that the generalized information required . . . in the early stages of the planning process are replaced by firm assurances of water supplies at later stages.” (*Id.*, at 41.) From this perspective, it is appropriate to look at the UWMP as a general planning framework, not a specific action plan. It is an effort to generally answer a series of planning questions including:

- What are the potential sources of supply and what is the reasonable probable yield from them?

- What is the probable demand, given a reasonable set of assumptions about growth and implementation of good water management practices?
- How well do supply and demand figures match up, assuming that the various probable supplies will be pursued by the implementing agency?

Using these “framework” questions and resulting answers, the implementing agency will pursue feasible and cost-effective options and opportunities to meet demands. SGPWA will explore enhancing basic supplies from traditional sources such as the State Water Project (SWP) as well as other options.

The California Urban Water Management Planning Act (Act) requires preparation of a plan that:

- Accomplishes water supply planning over a 20-year period in five year increments. (SGPWA is going beyond the requirements of the Act by developing a plan which spans 25 years.)
- Identifies and quantifies adequate water supplies, including recycled water, for existing and future demands, in normal, single dry, and multiple dry years.
- Implements conservation and efficient use of urban water supplies.

Significant new requirements for quantified demand reductions have been added by the enactment of SBX7-7, which amends the Act; a portion of this law applies to SGPWA. In addition, a number of changes to the Water Code have been enacted since 2010 that affect implementation of the 2015 Plan updates. These changes apply to:

- Demand Management Measures CWC (CWC) Section 10631(f)(1) and (2) Assembly Bill (AB) 2067, 2014
- Submittal Date CWC Section 10621 (d) AB 2067, 2014
- Electronic Submittal CWC Section 10644 (a)(2) Senate Bill (SB) 1420, 2014
- Standardized Forms CWC Section 10644(1)(2) SB 1420, 2014
- Water Loss CWC Section 10631 (e)(1)(J) and (e)(3)(A) and (B) SB 1420, 2014
- Estimating Future Water Savings CWC Section 10631 (e)(4) SB 1420, 2014
- Voluntary Reporting of Energy Intensity CWC Section 10631.2 (a) and (b) Senate Bill 1036, 2014
- Defining Water Features CWC Section 10632 (b) Assembly Bill 2409, 2014

A checklist to ensure compliance of this Plan with the Act requirements is provided in Appendix A. A copy of the required standardized data tables is provided as Appendix B.

In short, the Plan answers the question: *Will there be enough water for the communities within the SGPWA service area in future years?* It also addresses what mix of programs should be explored for making this water available, and sets a framework for discussion of the priority of these programs.

It is the stated goal of SGPWA to import supplemental water and to protect and enhance local water supplies for use by present and future water users and to sell imported water at wholesale to local retail water purveyors within its service area. Based on conservative water supply and demand assumptions over the next 25 years in combination with conservation of non-essential demand during certain dry years, the Plan successfully achieves this goal. It is important to note that this document has been completed to address regional resource management and does not address the particular conditions of any specific retail water agency or entity within the SGPWA service area. The retail urban water suppliers within SGPWA service area are preparing their own separate UWMPs, but SGPWA has coordinated with the retailers during development of this Plan to ensure a level of consistency with the retailers to the extent possible.

1.3 Basis for preparing a plan

In accordance with the California Water Code, urban water suppliers with 3,000 or more service connections, or supplying 3,000 or more AF of water per year, are required to prepare a UWMP every five years. The 2015 UWMP shall be updated and submitted to the California Department of Water Resources (DWR) by July 1, 2016.

1.4 Implementation of the Plan

The SGPWA service area encompasses a number of different local water agencies, three (3) of which are required to prepare individual UWMPs because they meet the threshold requirement. The three retail purveyors within SGPWA service area required to prepare their own UWMP include:

- City of Banning
- Beaumont-Cherry Valley Water District (BCVWD)
- Yucaipa Valley Water District (YVWD)

Other retail water agencies within the SGPWA service area that fall under the threshold for preparation of an UWMP (less than 3,000 connections or provide less than 3,000 AFY) include the following:

- South Mesa Water Company (SMWC)
- Cabazon Water District (CWD)
- Banning Heights Mutual Water Company (BHMWC)
- High Valleys Water District (HVWD)

- Mission Springs Water District (MSWD)
- Morongo Band of Mission Indians

1.5 Cooperative Preparation of the Plan

Wholesale water agencies are permitted by the State to either work independently to develop a wholesale UWMP or they can coordinate their planning with retail agencies within their service area to develop a cooperative regional plan. The former approach has been adopted by the SGPWA; however, the Plan was developed in coordination with the retail water agencies within the SGPWA service area. Water resource specialists with expertise in water resource management were retained to assist the local water agencies in preparing the details of their Plans. Agency coordination for this Plan is summarized in Table 1-1.

**TABLE 1-1
AGENCY COORDINATION SUMMARY**

	Participated in UWMP Development	Received Copy of Draft	Commented on Draft	Attended Public Meetings	Contacted for Assist	Sent Notice of Intent to Adopt
City of Banning Water Department	✓	✓			✓	
Beaumont-Cherry Valley Water District	✓	✓			✓	
Yucaipa Valley Water District	✓	✓			✓	
Cabazon Water District	✓	✓			✓	
South Mesa Water Company	✓	✓			✓	
Banning Heights Mutual Water Company	✓	✓			✓	
High Valleys Water District	✓	✓			✓	
Mission Springs Water District	✓	✓			✓	
Morongo Band of Mission Indians	✓	✓			✓	
City of Calimesa		✓				
City of Beaumont		✓				
Riverside County		✓				
San Bernardino County		✓				

1.5.1 Plan Adoption

SGPWA began preparation of this Plan for its service area in October 2015. The final draft of the Plan was adopted by the SGPWA Board in March 2017 and submitted to DWR within 30 days of Board approval. This Plan includes all information necessary to meet the requirements of Water Conservation Act of 2009 (Wat. Code, §§ 10608.12-10608.64) and the Urban Water Management Planning Act (Wat. Code, §§ 10610-10656).

1.5.2 Public Outreach

The SGPWA has encouraged community participation in water planning. Interested groups were informed about the development of the Plan along with the schedule of public activities. Notices of the Public Hearing were published in the local press. Copies of the Draft Plan were made available at the water agency's office, local public libraries and sent to the County of San Bernardino as well as interested parties.

SGPWA coordinated the preparation of the Plan with the local land use planning agencies; SGPWA notified the cities and counties within its service area of the opportunity to provide input regarding the Plan. Table 1-2 presents a timeline for public participation during the development of the Plan. A copy of the public outreach materials are provided in Appendix C.

**TABLE 1-2
PUBLIC PARTICIPATION TIMELINE**

Date	Event	Description
October 20, 2015	UWMP Kick-off	Describe UWMP requirements and process
January 17, 2017	Draft UWMP	Draft UWMP released to solicit input
February 21, 2017	Public Hearing	Review contents of Draft UWMP and take comments
March 6, 2017	Board Adoption	Final Draft UWMP considered for approval by the Board of Directors

The components of public participation include local media, water agency public participation, city and county government outreach, and public availability of documents.

Local Media

- Paid advertisements in local newspapers

Water Agencies Public Participation

- Draft UWMP sent to retail purveyors for review (see Table 1-1)

City/County and Other Government Outreach

- Notice sent to various Local, County, and State agencies

Public Availability of Documents

- SGPWA website
- Local libraries

1.5.3 Resources Maximization

Several documents were developed to enable the water suppliers to maximize the use of available resources and minimize use of imported water, including the 2010 SGPWA UWMP, the Integrated Regional Water Management Plan for the Upper Santa Ana River Watershed (2015), DWR's 2015 State Water Project Delivery Capability Report (2015 DCR), SGPWA's Reports on Water Conditions (2010 to 2014), the 2012 SGPWA Strategic Plan, and discussions with SGPWA staff. Chapter 3 of this Plan describes in detail the water resources available to SGPWA and the retail purveyors for the twenty-five-year period covered by the Plan. A complete reference list is provided in Section 8 of this Plan.

1.5.4 Fiscal or Calendar Year

A water supplier may report on a fiscal year or calendar year basis, but must clearly state in its UWMP the type of year that is used for reporting. The type of year should remain consistent throughout the Plan. This plan provides data consistent with a calendar year, in acre-feet per year (AFY).

1.6 Water Management within the SGPWA Service Area

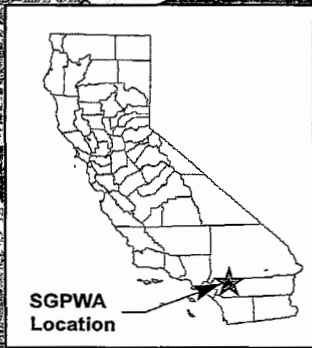
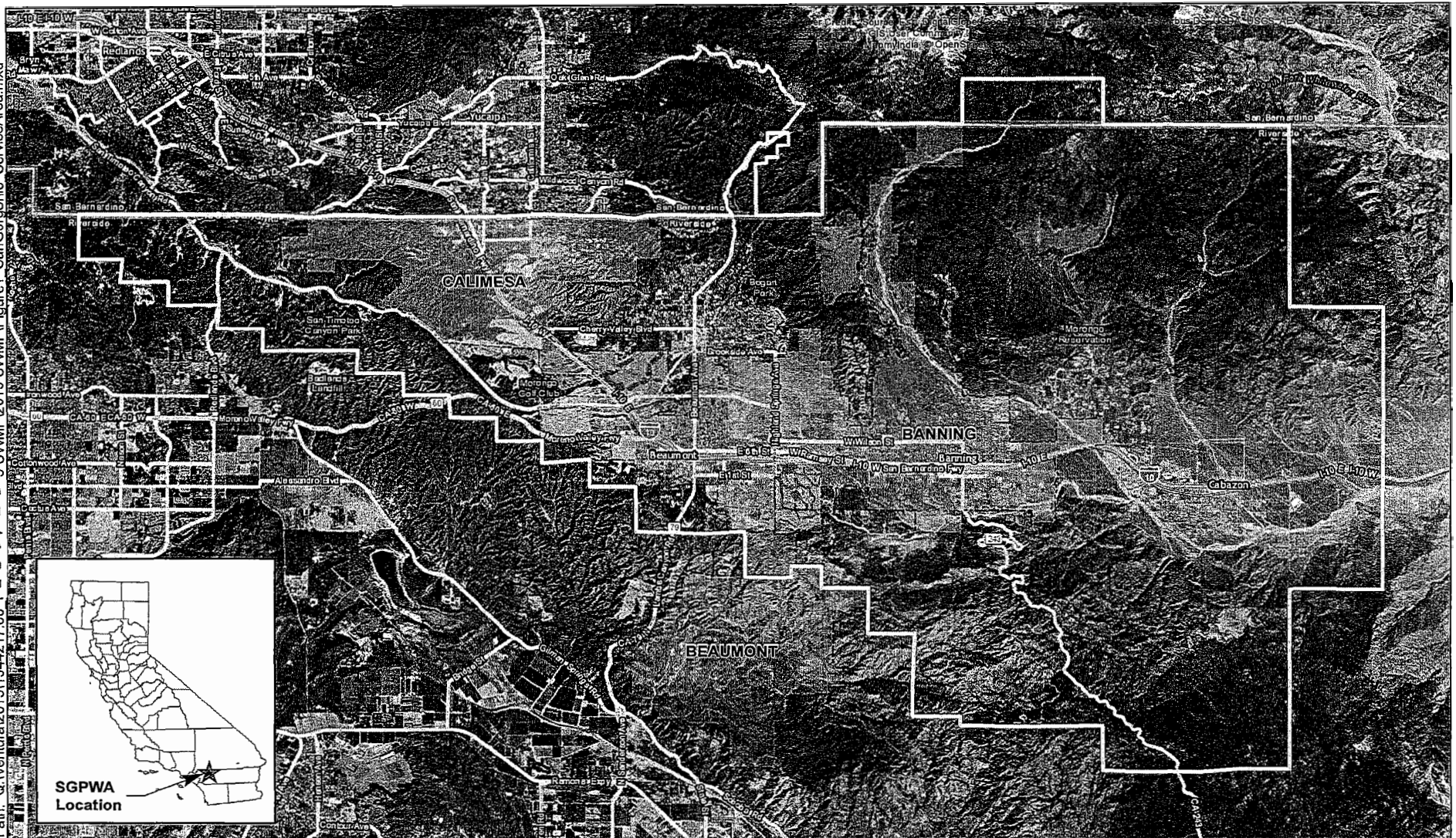
1.6.1 San Gorgonio Pass Water Agency

The SGPWA was established by the SGPWA Act, passed by the California Legislature in 1961 and signed by Governor Pat Brown in July of 1961. At its inception, the agency service area had a population of approximately 21,000 (today is closer to 95,000).






The San Gorgonio Pass is located between the San Bernardino Mountains on the north and the San Jacinto Mountains on the south, connecting the San Bernardino Valley on the west to the Coachella Valley on the east. The Cities of Calimesa, Beaumont, and Banning are within the SGPWA's service area (Figure 1-1). The municipalities located within the service areas of water agencies in the SGPWA service area are summarized below.

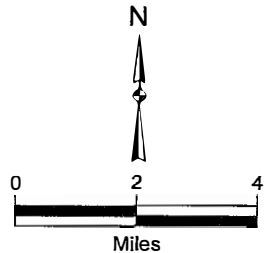
The principle drainage basins and streams within the service area are shown on Figure 1-2.

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Legend

-  San Gorgonio Pass Water Agency (SGPWA) Boundary
-  County Boundary
-  City of Banning
-  City of Beaumont
-  City of Calimesa



Kennedy/Jenks Consultants

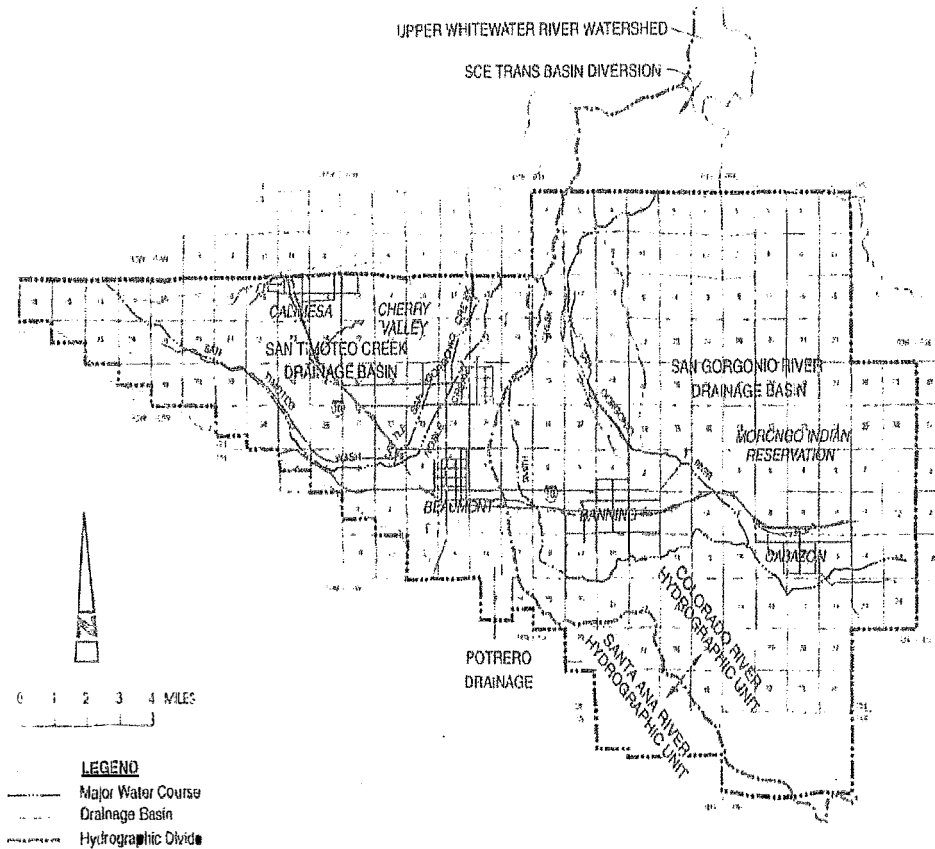
San Gorgonio Pass Water Agency
2015 Urban Water Management Plan
Riverside County, California

**San Gorgonio Pass Water Agency
Service Area Boundary**

KJ 1544217*00
January 2016

Figure 1-1

FIGURE 1-2 PRINCIPLE DRAINAGE BASINS AND STREAMS



Source: SGPWA 2014 Report on Water Conditions

1.6.2 Exclusively or Primarily Wholesale Urban Water Supplier

If an urban water supplier meets the definition of an urban wholesale water supplier, as found in 10608.12 (r), it is considered a wholesale urban water supplier. Only the water code requirements that apply to wholesale suppliers must be addressed. SGPWA is a wholesale urban water supplier.

1.6.3 Retail Water Purveyors

Nine retail purveyors provide water services to most residents and businesses within the SGPWA service area. While only the City of Banning, BCVWD, and YVWD currently receive SWP water directly from the SGPWA, all nine retailers supply water to their customers from

local groundwater, which is replenished by SWP water imported by SGPWA. In addition, the YVWD serves water to its customers through direct deliveries from its surface water filtration plant.

City of Banning supplies water and wastewater services to the City of Banning. The City currently comprises a total land area of approximately 23 square miles in northern Riverside County. The City's water system is currently part of the City of Banning Public Works Department and Water Division.

Beaumont-Cherry Valley Water District's service area covers approximately 28 square miles, in Riverside and San Bernardino Counties, and includes the City of Beaumont and the community of Cherry Valley. The District purchases imported water from the SWP through the SGPWA for recharge of the Beaumont groundwater basin. The District also jointly owns and operates three groundwater wells with the City of Banning.

Yucaipa Valley Water District provides drinking water, recycled water, sewer collection, sewer treatment, and brine disposal services to the City of Yucaipa and the City of Calimesa in both San Bernardino and Riverside Counties. Yucaipa's service area encompasses approximately 40 square miles. YVWD also receives water from the San Bernardino Valley Municipal Water District (SBVMWD). Water demands and supplies within this portion of YVWD's service area are excluded from this UWMP.

South Mesa Water Company's service area includes parts of both the City of Calimesa and the City of Yucaipa.

Cabazon Water District's service area includes the unincorporated community of Cabazon in the eastern portion of SGPWA's service area.

Banning Heights Mutual Water Company's service area is the unincorporated community of Banning Bench, north of the City of Banning.

High Valleys Water District provides service to residents of the Twin Pines and Poppet Flats communities. HVWD receives all of its water from the City of Banning.

Mission Springs Water District's service area includes Desert Hot Springs and surrounding areas.

Morongo Band of Mission Indians' service area is approximately 35,000 acres northeast of the City of Banning.

1.6.4 Public Water Systems

Public water systems are the systems that provide drinking water for human consumption and these systems are regulated by the State Water Resources Control Board (SWRCB), Division of Drinking Water. Reporters file electronic Annual Reports to the Drinking Water Program to the Board, which include annual reports of water usage and other information.

The service areas of SGPWA and the major retail water purveyors are shown on Figure 1-3. As of 2015, retail water purveyors with demands on SGPWA, which are also agencies required to complete UWMPs, served approximately 25,000 connections, as presented in Table 1-3.

**TABLE 1-3
RETAIL PUBLIC WATER SYSTEMS^(a)**

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AFY)
3310002	BCVWD ^(b)	16,799	9,293
3310006	City of Banning ^(c)	10,650	5,971
3610055	YVWD ^(d)	12,304	9,595
Total		39,753	24,859

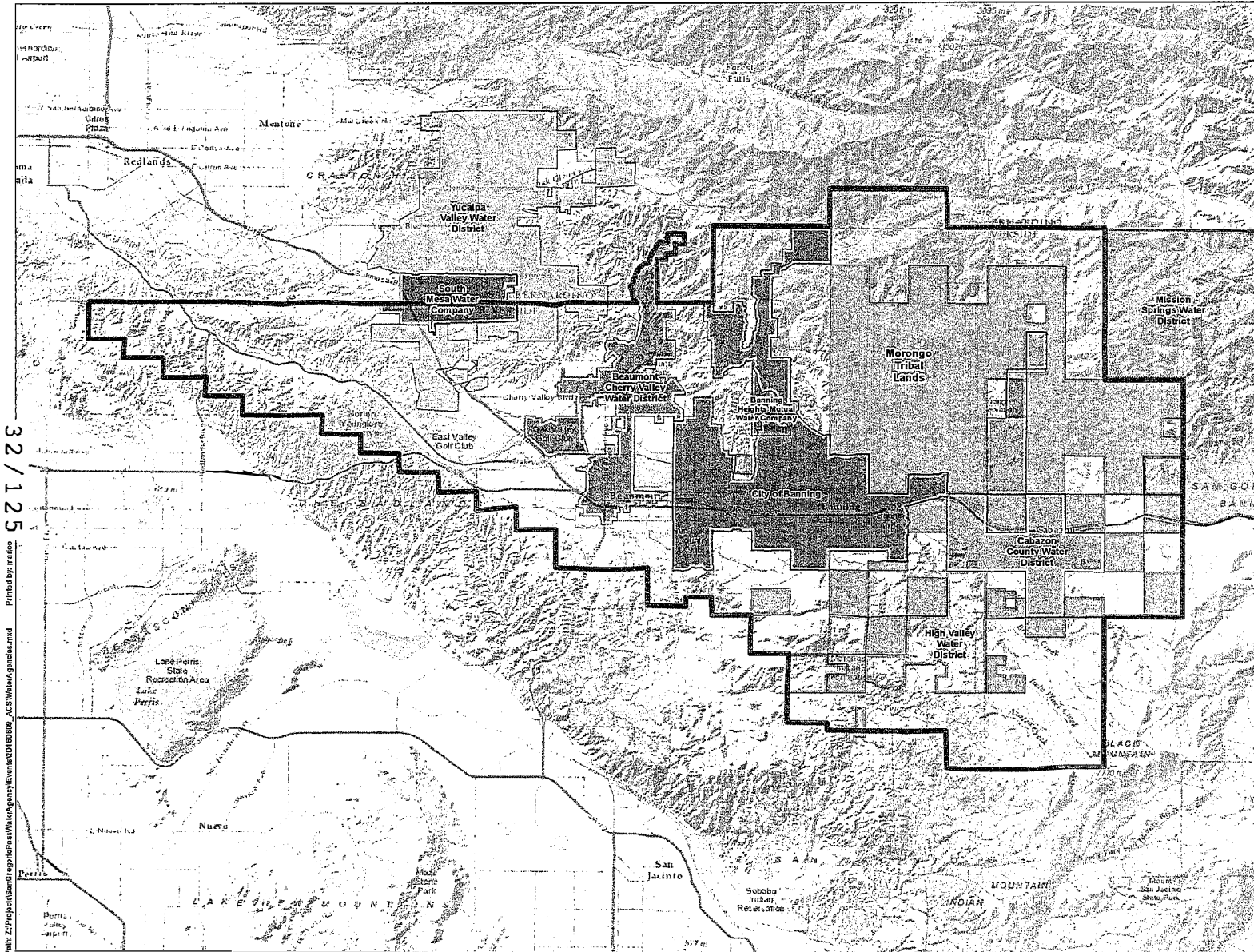
Notes:

- (a) Data provided only for those retail agencies with 2015 demands on SGPWA
- (b) BCVWD 2015 UWMP
- (c) City of Banning 2015 UWMP
- (d) San Bernardino Valley Regional 2015 UWMP; includes supply from both SGPWA and San Bernardino Valley Municipal Water District.

1.7 Climate

The SGPWA service area experiences a semi-arid climate with hot, dry summers and cool winters (Table 1-3). Temperatures in the summer can exceed 95 degrees Fahrenheit (F), but with low humidity. In the winter, high temperatures may not rise above 55 degrees F during rainy days. On average, January is the coldest month with an average high/low of 61degrees F/39 degrees F while August is the hottest with a high/low of 96 degrees F/58 degrees F. SGPWA receives about 17 inches of precipitation annually with most of it occurring from January through March, with February being the wettest month. Average rainfall within the lower lying areas of the region is roughly five to seven inches per year. The large variation in annual rainfall within the surrounding mountains directly affects the annual water supply of the region. During El Niño years, southern California can receive considerably more precipitation and cooler temperatures than average. Evapotranspiration follows a similar trend as temperature, peaking in July, and decreasing in December.











Representative precipitation, temperature, and average evapotranspiration (ET_o) data are reported in Table 1-4, as recorded at Beaumont Station (040609) and Hemet Station (Station 239).

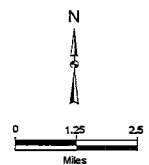


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Legend

-  San Gorgonio Pass Water Agency Service Area
-  City of Banning
-  Beaumont Cherry Valley Water District
-  Cabazon County Water District
-  South Mesa Water Company
-  Yucalpa Valley Water District
-  Banning Heights Mutual Water Company
-  High Valley Water District
-  Mission Springs Water District
-  Morongo Tribal Lands



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San Gorgonio Pass Water Agency
Riverside County, California

**Water Agencies within
San Gorgonio Pass Water
Agency Service Area**

1544217'00
September 2016
Figure 1-3

TABLE 1-4
MONTHLY AVERAGE CLIMATE DATA SUMMARY

Month	Standard Monthly Average ETo (inches) ^(a)	Average Total Rainfall (inches) ^(b)	Average Temperature (degrees Fahrenheit) ^(b)	
			Max	Min
January	2.3	4.5	60	38
February	2.6	3.8	63	39
March	4.2	3.3	67	40
April	5.0	1.4	72	43
May	6.7	0.6	79	48
June	7.2	0.1	88	52
July	7.9	0.2	96	58
August	7.6	0.3	95	59
September	6.1	0.5	90	56
October	4.1	0.7	80	49
November	2.6	1.8	69	43
December	1.9	2.5	62	39

Notes:

- (a) ETo data was obtained from the California Irrigation Management Information System (CIMIS) website at <http://www.cimis.water.ca.gov/> for the Hemet Station (Station 239).
- (b) Average rainfall data and average temperature data were obtained from the Western Regional Climate Center website at <http://www.wrcc.dri.edu/> for the Beaumont #2 Station (040609) for the period of record 08/01/1939 to 1/20/2015.

1.8 Potential Effects of Climate Change

DWR's California Water Plan Update 2013 (CWP) considers how climate change may affect water availability, water use, water quality, and the ecosystem.¹

Volume 1, Chapter 5 of the CWP, "Managing an Uncertain Future," evaluated how statewide and regional water demands that might change by 2050 in response to uncertainties both gradual and sudden. Gradual or long term factors include population growth, land use changes, and climate change. Sudden or short term changes include drought, flooding, earthquakes, the vulnerable condition of the Delta, fire, the economy, accidents, terrorist acts, and changes in policies, regulations, and laws. The uncertainties will play out differently across the regions of California. Each region will need to develop a portfolio of resource management strategies that consider regional water-management challenges and can be implemented to address regional issues.

In its 2015 State Water Project Delivery Capability Report (DCR), DWR included the potential effects of climate change in its analysis of SWP delivery reliability under future conditions. For that report, DWR selected a climate change scenario with median effects out of a number of climate change scenarios it analyzed in 2014.

¹ California Water Plan Update 2013 Investing in Innovation & Infrastructure: Bulletin 160-13.

Even without population changes, water demand could increase. Precipitation and temperature influence water demand for outdoor landscaping and irrigated agriculture. Outdoor water use is a large component of water demands in the service area. Lower spring rainfall increases the need to apply irrigation water. Further, warmer temperatures increase crop evapotranspiration, which increases consumptive use of water.

These effects and their potential to impact the supplies available to SGPWA have been evaluated indirectly in the DWR 2015 DCR, and their potential to impact demand is considered in SGPWA's assessment of demands in Chapter 2 of this UWMP.

1.9 Climate Change Vulnerability Analysis

Identification of watershed characteristics that could potentially be vulnerable to future climate change is the first step in assessing the climate change vulnerabilities in the Region. In the context of this analysis, vulnerability is defined as the degree to which a system is exposed to, susceptible to, and able to cope with and adapt to, the adverse effects of climate change, consistent with the definition in the recently issued Climate Change Handbook for Regional Water Planning (USEPA and DWR, 2011).

Water-related resources that are considered important in the Region and potentially sensitive to future climate change include water demands, water supplies, water quality, sea level rise, flooding, and ecosystem and habitat. A qualitative assessment of each of these resources with respect to anticipated climate change impacts has been prepared in the 2015 Integrated Regional Water Management Plan for the Upper Santa Ana River Watershed, in which SGPWA is a participant. The assessment follows the climate change vulnerability checklist assessment as defined in the Climate Change Handbook for Regional Water Planning and highlights those water-related resources that are important to the Region and are sensitive to climate change. This checklist is provided as Appendix D.

1.10 Other Demographic Factors

The past several years have been marked by both an economic recession and drought conditions in California, which have combined to substantially reduce water consumption in the SGPWA service area. The Governor issued an Executive Order in 2015 for mandatory water conservation calling for a 25 percent reduction in water consumption across the state in response to the severity of the drought.

It is anticipated that per capita water consumption will continue to decrease in the future, even with an economic recovery. This is due to the actions taken by local and state water agencies in response to the drought and the Governor's mandate, which are anticipated to remain in place moving into the future, as well as passive savings that will be realized through legislated codes, fixture and appliance standards, ordinances and education coupled with changing water use habits. Overall water consumption may stay relatively flat in the future as lower per capita water consumption is offset by increased population and economic activity.

Section 2: Water Use

2.1 Overview

This chapter describes past, current and projected water demands on SGPWA, including the methodology used to project future demands. Sales to other agencies, specifically BCVWD, City of Banning, and YVWD currently account for 100 percent of SGPWA's water demands. Additional smaller agencies and the Morongo Band of Mission Indians do not currently purchase water from the SGPWA, but may potentially request supplies in the future.

Numerous factors, including but not limited to, weather, conservation, population growth and land use changes, can affect the amount of water needed, as well as the timing of when it is needed. In addition, during an economic recession, there is a major downturn in development and a subsequent slowing of the projected demand for water. The projections in this Plan do not attempt to forecast recessions or droughts. Likewise, no speculation is made about future building and plumbing codes or other regulatory changes.

To the extent possible, relevant data was obtained from individual purveyor UWMPs that were completed for the 2015 cycle.

2.2 Demographics

Water service within the SGWPA service area is provided by retail purveyors to residential, commercial, industrial, institutional, recreational, and agricultural customers and for environmental and other uses, such as fire protection and landscaping. The total water demand trend is expected to continue to rise within the SGPWA's service area (along with most of California) because of population growth, economic activity, environmental and water quality needs and regulatory requirements.

2.3 Population

Table 2-1 shows the population projections for the SGPWA service area through 2040. The 2015 population is based on a 5-year American Community Survey (ACS) estimate for 2010-2014. Projections to 2040 were estimated using an average growth rate for the area based on available population projections for agencies within the SGPWA service area. When looking at individual agency projections, including BCVWD, City of Banning, YVWD and SMWC, projections are collectively higher than population projections estimated for the SGPWA service area using ACS data. This could be based on higher 2015 estimates for the individual agencies, as well as the fact that the SGPWA service area does not fully encompass the boundaries of all the individual agencies. Refer to Figure 1-1 for the purveyor service area boundaries.

**TABLE 2-1
POPULATION PROJECTIONS FOR THE SGPWA SERVICE AREA**

Subarea	2015	2020	2025	2030	2035	2040
SGPWA	87,192 ^(a)	96,954	107,809	119,880	133,302	148,226

Notes:

(a) 2015 population based on 2010-2014 ACS 5-year estimate.

2.4 Historic Water Use, Sales to Other Agencies

SGPWA is a State Water Project Contractor and provides imported SWP water to the retail water purveyors within its service area. Purveyor demands on SGPWA generally showed a significant decrease between 2010 and 2015, primarily as a result of severe drought conditions and implementation of effective conservation measures. Table 2-2 shows historical (2010) and current (2015) water demands on SGPWA.

**TABLE 2-2
HISTORICAL (2010) AND CURRENT (2015) WATER DEMANDS ON SGPWA (AF)^(a)**

Agency Name	2010	2015
BCVWD ^{(b)(c)}	5,727	2,773
City of Banning ^(c)	1338	694
YVWD ^(c)	713	454
Total Demands	7,778	3,921

Notes:

- (a) Volumes shown are actual deliveries.
- (b) 2010 Data provided by BCVWD; 2015 data from BCVWD 2015 UWMP.
- (c) Data from retailer 2015 UWMPs.

2.4.1 Historical Other Water Uses

In general, distribution systems experience system losses, being the difference between the amount of water supplied and the amount of authorized consumption. New legislation requires the analysis for the 2015 UWMP to include the reporting of distribution system water loss for the most recent 12-month period available. For future UWMP updates (i.e., 2020, 2025, etc.) the distribution system water loss shall be quantified for each of the five years preceding the plan update. It should be noted that recent legislation requires that as of January 1, 2017, distribution water loss must be reported on an annual basis. The data from these audits will be reported in future UWMP cycles.

SGPWA does not own or operate a distribution system; the water received from the SWP goes directly into groundwater recharge without treatment or distribution. However, in compliance with UWMP guidelines, SGPWA completed a water audit using the American Water Works Association (AWWA) water audit tool (provided in Appendix E), which is summarized in Table 2-3.

**TABLE 2-3
12 MONTH WATER LOSS AUDIT REPORT SUMMARY**

Reporting Period Start Date	Volume of Water Loss (AFY) ^(a)
January 2015	5

Notes:

(a) Sum of real and apparent losses based on AWWA water audit software output.

The SGPWA does not have any other sales to other water agencies to report in this UWMP.

2.5 Projected Water Use, Sales to Other Agencies

Table 2-4, below, shows retail purveyor demands that reflect reasonably anticipated demands on SGPWA supplies through the planning period. The distribution of water demands by water use sectors was not performed in this wholesale UWMP, but is detailed in each of the retail water purveyors' UWMPs. These demands take into account non-SGPWA supplies available to retail purveyors, such as local groundwater, local surface water, recycled water, and other imported water sources.

As discussed in Section 2.4, only three retail agencies within the SGPWA service area had demands on SGPWA in 2015, as noted in their respective UWMPs. However, additional retail agencies within the service area such as SMWC, CWD, BHMWC, HVWD, MSWD, and the Morongo Band of Mission Indians may have demands on the SGPWA in the future. Collective demands from those entities are estimated at 5,000 AF by 2040, as shown in Table 2-4 under "Other". These estimates will be revised every five years as the UWMP is updated.

Table 2-5, below, shows the projected imported water demands on SGPWA through the planning period, based on the potential maximum that can be expected. Future retail purveyor demands on SGPWA may differ based on the availability and actual use of non-SGPWA supplies, as well as actual "Other" demands.

**TABLE 2-4
PROJECTED WATER DEMANDS ON SGPWA (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD ^(a)	10,860	12,476	14,087	15,886	17,334
City of Banning ^(b)	-	501	1,344	2,237	2,718
YVWD ^(c)	1,809	1,967	2,162	2,391	2,644
Other ^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	13,169	16,544	20,393	24,414	27,696

Notes:

- (a) These demands are calculated by subtracting total BCVWD demands (BCVWD 2015 UWMP Table 4-2) from total non-SGPWA supplies (BCVWD 2015 UWMP Table 6-26 less the assumed imported supply from SGPWA). The remainder is assumed to be the demand for SGPWA supplies only. For example, for year 2025 demands were 20,450 AF (Table 4-2). Total supply in 2025 was 20,881 AF (Table 6-26) less 12,907 AF (Table 6-26) assumed supply from SGPWA for 7,974 AF. Total adjusted supply 7,974 AF less total adjusted demand 20,450 is -12,476 AF; therefore 12,476 AF is the assumed demand for imported SGPWA supplies. This assumes that BCVWD will prioritize non-SGPWA supplies, hence using SGPWA imported water to meet demands in excess of non-SGPWA supplies. Drinking water and banking demands are lumped together for purposes of this table, as the split for these demands is unknown.
- (b) These demands are calculated by subtracting total adjusted Banning demands (City of Banning 2015 UWMP Table 3-3 plus system water losses from Table 3-1) from total non-SGPWA supplies, (City of Banning 2015 UWMP Table 5-4 less the assumed 2,718 AF from SGPWA). The remainder is assumed to be the demand for SGPWA supplies only. For example, for year 2025 demands were 10,199 AF (Table 3-1) plus 1,122 AF system water loss (Table 3-2) for 11,321 AF. Total supply in 2025 was 13,538 AF (Table 5-4) less 2,718 AF assumed supply from SGPWA for 10,820 AF. Total adjusted supply 10,820 AF less total adjusted demand 11,321 is -501 AF; therefore 501 AF is the assumed demand for imported SGPWA supplies. It assumed that City of Banning demands shown in UWMP Table 3-3 are accurate and calculations assume that the City of Banning will prioritize non-SGPWA supplies, hence using SGPWA imported water to meet demands in excess of non-SGPWA supplies.
- (c) Projected imported SGPWA supply needs to meet drinking water demands from the Yucaipa Valley Water Filtration Facility and drinking water demands (referred to in the SBVRUWMP as conjunctive use demands) from 2015 SBVRUWMP, Table 12-15.
- (d) Conservative projections of future demand on SGPWA from agencies within the service area that do not have current demands on the Agency, including SMWC, CWD, BHMWC, HVWD, MSWD, and Morongo Band of Mission Indians. This value may increase through time as service area demands are re-evaluated.

**TABLE 2-5
PROJECTED MAXIMUM WATER DEMANDS ON SGPWA (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD^(a)					
Drinking Water Demands	10,150	11,127	12,503	13,843	15,362
Banking Demands	1,000	1,500	2,000	2,500	2,500
City of Banning^(b)	2,718	2,718	2,718	2,718	2,718
YVWD^(c)					
Drinking Water Demands	609	767	962	1,191	1,444
Conjunctive Use Demands	1,200	1,200	1,200	1,200	1,200
New Development Supply Sustainability Program	2,504	3,040	3,596	4,344	3,407
Other^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	18,681	21,952	25,779	29,696	31,631

Notes:

- (a) From BCVWD 2015 UWMP, Table 6-26 (DWR Table 6-9).
- (b) Total imported SGPWA supply projections from City of Banning 2015 UWMP; based on draft "Regional Water Allocation Agreement" for Water Imported by the SGPWA.
- (c) Total imported SGPWA supply projections from 2015 SBVRUWMP, Table 12-15.
- (d) Same as Table 2-4.

Table 2-5 shows demands on SGPWA that are considered to be potential maximum water demands, as they incorporate demand management assumptions beyond the need to only meet municipal demands, as described in the following.

BCVWD in its 2015 UWMP shows projections for SGPWA supplies needing to meet municipal demands and also to meet groundwater banking needs. The demands are based on the District's 2015 Potable Water Master Plan Update. BVCWD intends to use imported SGPWA supplies to supplement groundwater recharge to build-up or maintain BCVWD's Beaumont Basin groundwater storage account. If imported water from SGPWA is not available in a given year, the District says no groundwater recharge would occur. But when imported water is available, any deficiencies from previous years would be "carried over" and made up (BCVWD 2015 UWMP pg. 4-8).

In its 2015 UWMP, the City of Banning shows projections for SGPWA supplies based on a draft "Regional Water Allocation Agreement for Water Imported by SGPWA." The draft allocation agreement states that the City of Banning would receive 27.3% of the SGPWA Annual Table A Amount allocation, assuming 58% SWP delivery reliability (City of Banning 2016). The draft allocation agreement has not been adopted by SGPWA. Those demands are shown in Table 2-5.

YVWD demand projections in its 2015 UWMP are based on various potential needs, including drinking water demands, conjunctive use demands for local water banking, and demands by new development projects as part of the District's "New Development Supply Sustainability Program." The sustainability program requires developers to purchase a 20-year water supply for each new house built, in order to ensure that long-term supplies will be available for new developments prior to construction. These sustainability demands would be contingent upon

availability of supplies and the timing of such supplies (J. Zoba, personal communication 2016). These demand projections are also shown as potential maximum demands in Table 2-5.

Demands shown in Tables 2-4 and 2-5 are anticipated demands in average/normal hydrologic years.

2.6 Demands in Dry Years

Tables 2-6 through 2-9 show anticipated retail water demands on SGPWA in single-dry and multiple-dry years.

**TABLE 2-6
PROJECTED WATER DEMANDS ON SGPWA – SINGLE-DRY YEAR (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD ^(a)	520	570	630	690	770
City of Banning ^(b)	-	501	1,344	2,237	2,718
YVWD ^(c)	600	600	700	700	700
Other ^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	1,620	3,271	5,474	7,527	9,188

Notes:

- (a) From BCVWD 2015 UWMP, Table 7-9.
- (b) City of Banning dry year supplies and demands are the same as normal years (City of Banning 2015 UWMP Tables 6-4 to 6-6). Demands here are the same as water demands for normal years (Table 2-4).
- (c) YVWD demand projections in dry years are based on demands shown in the YVWD 2015 UWMP, Table 12-18, and assuming 10% of all of YVWD's demands are met through SGPWA.2
- (d) Projections of future demand from "other" agencies is assumed to be the same as during normal/average water years.

**TABLE 2-7
PROJECTED MAXIMUM WATER DEMANDS ON SGPWA – SINGLE-DRY YEAR (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD ^(a)	520	570	630	690	770
City of Banning ^(b)	2,718	2,718	2,718	2,718	2,718
YVWD ^(c)	600	600	700	700	700
Other ^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	4,338	5,488	6,848	8,008	9,188

Notes:

- (a) From BCVWD 2015 UWMP, Table 7-9.
- (b) City of Banning dry year supplies and demands are the same as normal years (City of Banning 2015 UWMP Tables 6-4 to 6-6). Demands here are the same as projected maximum water demands for normal years (Table 2-5).
- (c) YVWD demand projections in dry years are based on demands shown in the YVWD 2015 UWMP, Table 12-18, and assuming 10% of all of YVWD's demands are met through SGPWA.²
- (d) Projections of future demand from "other" agencies is assumed to be the same as during normal/average water years.

**TABLE 2-8
PROJECTED WATER DEMANDS ON SGPWA – MULTIPLE-DRY YEAR (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD ^(a)	2,060	2,280	2,500	2,780	3,070
City of Banning ^(b)	-	501	1,344	2,237	2,718
YVWD ^(c)	600	600	700	700	700
Other ^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	3,160	4,981	7,344	9,617	11,488

Notes:

- (a) From BCVWD 2015 UWMP, Table 7-11 and Appendix C UWMP Table 7-4.
- (b) City of Banning dry year supplies and demands are the same as normal years (City of Banning 2015 UWMP Tables 6-4 to 6-6). Demands here are the same as water demands for normal years (Table 2-4).
- (c) YVWD demand projections in dry years are based on demands shown in the YVWD 2015 UWMP, Table 12-18, and assuming 10% of all of YVWD's demands are met through SGPWA.²
- (d) Projections of future demand from "other" agencies is assumed to be the same as during normal/average water years.

² Approximately 10% of YVWD's supplies are provided by SGPWA; the remaining 90% is supplied by SBVMWD.

**TABLE 2-9
PROJECTED MAXIMUM WATER DEMANDS ON SGPWA – MULTIPLE-DRY YEAR (AF)**

Agency Name	2020	2025	2030	2035	2040
BCVWD ^(a)	2,060	2,280	2,500	2,780	3,070
City of Banning ^(b)	2,718	2,718	2,718	2,718	2,718
YVWD ^(c)	600	600	700	700	700
Other ^(d)	500	1,600	2,800	3,900	5,000
Total Water Demands	5,878	7,198	8,718	10,098	11,488

Notes:

- (a) From BCVWD 2015 UWMP, Table 7-11 and Appendix C UWMP Table 7-4.
- (b) City of Banning dry year supplies and demands are the same as normal years (City of Banning 2015 UWMP Tables 6-4 to 6-6). Demands here are the same as potential maximum water demands for normal years (Table 2-5).
- (c) YVWD demand projections in dry years are based on demands shown in the YVWD 2015 UWMP, Table 12-18, and assuming 10% of all of YVWD's demands are met through SGPWA.2
- (d) Projections of future demand from "other" agencies is assumed to be the same as during normal/average water years.

2.7 Conservation Effects on Water Usage

Major factors that can affect water usage include weather and demand reducing behaviors. Historically, when the weather is hot and dry, water usage generally increases. The amount of increase varies according to the number of consecutive years of hot, dry weather and the conservation activities imposed. During cool, wet years, water usage generally decreases, reflecting less water usage for exterior landscaping.

In recent years, water conservation has become an increasingly important factor in water supply planning and management in California. Over the past ten years there have been a number of regulatory changes related to conservation including new standards for plumbing fixtures, a new landscape ordinance, a state universal retrofit ordinance, new Green Building standards, mandatory demand reduction goals and more. The California plumbing code has also instituted requirements for new construction that mandate the installation of ultra-low-flow toilets and low-flow showerheads.

During the 1987 to 1992 drought period, overall demands due to the effects of hot, dry weather were projected to increase by approximately ten percent. As a result of extraordinary conservation measures enacted during the period, the overall water demand actually decreased by more than ten percent.

During the current drought, Governor Brown issued a January 2014 drought proclamation and April 2014 emergency declaration, calling on urban water suppliers to implement their local water shortage contingency plans. In April 2015, following the lowest snowpack ever recorded, Governor Brown directed the SWRCB to implement mandatory water reductions to reduce water usage by 25 percent.

In May 2015, the SWRCB adopted an emergency regulation requiring an immediate 25 percent reduction in overall potable urban water use. (See SWRCB Resolution No. 2015-0032.) The SWRCB began to track water conservation for each of the state's larger urban retail water suppliers (those with more than 3,000 connections) on a monthly basis; compliance with individual water supplier conservation requirements and the statewide 25 percent mandate is based on cumulative savings.

In February 2016, the SWRCB approved an updated and extended emergency regulation that will continue mandatory reductions through October 2016, unless revised before then. The extended regulation provides more flexibility to urban water suppliers in meeting their conservation requirements and provides credits for certain factors that affect water use such as hotter-than-average climates, population growth, and significant investments in new local drought resilient water sources such as recycled water. Locally, these mandates translated into water conservation standards ranging from 28 to 36 percent for the retail purveyors.

In 2015, the three retailers (BCVWD, City of Banning, and YVWD) reduced their total groundwater production by 24.5% over the previous year (2014). Assuming the focus on conservation continues it is conceivable that demands would continue to be reduced.

On May 18, 2016, the SWRCB adopted a new approach, which replaced the percentage reduction-based water conservation standard with a localized "stress test" approach. The new approach mandated urban water suppliers to ensure a three year supply of water under drought conditions. The regulation requires locally developed conservation standards based on each agency's specific circumstances and is currently in effect through January 2017.

In addition to, and in combination with, statewide regulations and mandates, demand management measures implemented by SGPWA and purveyors are contributing to increased water conservation in the service area. Details on ongoing and future water conservation actions are provided in Section 7, Demand Management Measures.

2.8 SBX7-7 Baseline and Targets

This section is not required for SGPWA as a wholesale water supplier. Measures, programs, and policies that SGPWA has adopted to help the retail water suppliers within its service area to achieve their SBX7-7 water use reduction targets are discussed in Section 7.

Section 3: Water Resources

3.1 Overview

This section describes the water resources available to SGPWA for the 25-year period covered by the Plan and provides a high-level overview of the local water supplies used by purveyors within the SGPWA service area. SGPWA receives exclusively water supplies from the SWP to meet purveyor demands. Retail agencies within the SGPWA service area also use local water supplies, including surface water, groundwater, and recycled water. SGPWA supplies are summarized in Table 3-1 and discussed in more detail below.

**TABLE 3-1
SUMMARY OF CURRENT AND PLANNED WATER SUPPLIES (AFY)**

Water Supply Source	2015	2020	2025	2030	2035	2040
Existing Supplies						
Imported SWP ^(a)	10,700	10,700	10,700	10,700	10,700	10,700
Yuba Accord ^(b)	300	300	300	300	300	300
Total Existing Supplies	11,000	11,000	11,000	11,000	11,000	11,000
Planned Supplies						
SBVMWD Purchased Supply ^(c)	-	2,000	2,000	2,000	2,000	2,000
Available Purchases of Supply ^(d)	-	1,500	3,800	7,700	11,700	15,000
Total Planned Supplies	-	3,500	5,800	9,700	13,700	17,000
Total Existing and Planned Supplies	11,000	14,500	16,800	20,700	24,700	28,000

Notes: Values are rounded to the nearest hundred.

- (a) Assumes 62% of Table A amount (17,300 AFY) based on the California Department of Water Resources Final Delivery Capability Report 2015 (DWR 2015 DCR).
- (b) See Section 3.2.4.1.
- (c) An average of 2,000 AF is assumed over a five year period through a future agreement with SBVMWD. See Section 3.3.1.2.
- (d) The Agency has a financial plan in place to obtain additional supplies necessary to meet projected demands within its service area (shown in Table 2-5). These future supplies are described in Section 3.3. Sources include the dry-year water purchase program, exchanges with CLAWA, and other supplemental water as available. The Agency is expected to purchase additional supplies by 2020 in order to meet demands shown in Table 2-5. Volumes shown assume the DWR 2015 DCR average reliability of 62%.

This section assesses supplies in an average year, a single dry year, and during multiple dry years.

- An average year (also called a normal year) is the average supply over a range of years and represents the median water supply available to SGPWA.
- The single-dry year is the year that represents the lowest water supply available to SGPWA.
- The multiple-dry year period is the lowest average water supply available to SGPWA for three or more consecutive dry years.

The term "dry" is used throughout this section and in subsequent sections concerning water resources and reliability as a measure of supply availability. As used in this Plan, dry years are those years when supplies are the lowest and demands are the highest, which occurs primarily when precipitation is lower than the long-term average precipitation. The impact of low precipitation in a given year on a particular source of supply may differ based on how low the precipitation is, or whether the year follows a high-precipitation year or another low-precipitation year. For the SWP, a low-precipitation year may or may not affect supplies, depending on how much water is in SWP storage at the beginning of the year. Also, dry conditions can differ geographically. For example, a dry year can be local to the San Geronio Pass Area (thereby affecting local groundwater replenishment and production), local to northern California (thereby affecting SWP water deliveries), or statewide (thereby affecting both local groundwater and the SWP). When the term "dry" is used in this Plan, statewide drought conditions are assumed, affecting both local groundwater and SWP supplies at the same time.

3.2 Imported Water Supplies

3.2.1 SWP Facilities

Water supplies available to SGPWA are imported from the SWP – the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most facilities completed by 1973. Today, the SWP includes 28 dams and reservoirs, 26 pumping and generating plants, and approximately 660 miles of aqueducts. The primary water source for the SWP is the Feather River, a tributary of the Sacramento River. Storage released from Oroville Dam on the Feather River flows down natural river channels to the Sacramento-San Joaquin River Delta (Delta). While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the California Aqueduct then divides into the East and West Branches. SGPWA delivers its SWP supplies through the East Branch to use within the local groundwater basins through extensive transmission pipeline systems and direct releases from Silverwood Lake, a SWP regulating reservoir.

3.2.2 SWP Supplies Available to SGPWA

In the early 1960s, DWR began entering into individual SWP Water Supply Contracts with urban and agricultural public water supply agencies located throughout northern, central, and southern California for SWP water supplies. SGPWA is one of 29 water agencies (commonly referred to as "contractors") that have a SWP Water Supply Contract with DWR.

The SWP Contracts entered into in the 1960s had initial 75-year terms, which thus would begin to expire in 2035. While the SWP Contracts provide for continued water service to the contractors beyond the initial term, efforts are currently underway to extend the SWP Contracts to improve financing for the SWP.

Negotiations on extending the SWP Contracts took place between DWR and the contractors during 2013 and 2014, and were open to the public. The following terms were agreed to and

are currently the subject of analysis under the requirements of the California Environmental Quality Act (CEQA) (Notice of Preparation dated September 12, 2014):

- Extend the term of the 29 SWP Contracts to December 31, 2085.
- Provide for increased SWP financial operating reserves during the extended term of the SWP Contracts.
- Provide additional funding mechanisms and accounts to address SWP needs and purposes.
- Develop a revised payment methodology with a corresponding billing system that better matches the timing of future SWP revenues to future expenditures.

It is anticipated that the term of the SWP Contracts will be extended to December 31, 2085. The Contracts and associated amendments are scheduled to be finalized summer 2017. To improve coordination between supply and demand projections beyond the year 2035, the data and information contained in this UWMP reflect that assumption, as provided in the Urban Water Management Planning Act. (CWC Section 10631(b).)

Each SWP contractor's SWP Water Supply Contract contains a "Table A," which lists the maximum amount of water an agency may request each year throughout the life of the contract. Table A is used in determining each contractor's proportionate share, or "allocation," of the total SWP water supply DWR determines to be available each year. The total planned annual delivery capability of the SWP and the sum of all contractors' maximum Table A amounts was originally 4.23 million acre-feet (AF). The initial SWP storage facilities were designed to meet contractors' water demands in the early years of the SWP, with the construction of additional storage facilities planned as demands increased. However, essentially no additional SWP storage facilities have been constructed since the early 1970s. SWP conveyance facilities were generally designed and have been constructed to deliver maximum Table A amounts to all contractors. After the permanent retirement of some Table A amount by two agricultural contractors in 1996, the maximum Table A amounts of all SWP contractors now totals about 4.17 million AF.

While Table A identifies the maximum annual amount of water an SWP contractor may request, the amount of SWP water actually available and allocated to SWP contractors each year is dependent on a number of factors and can vary significantly from year to year. The primary factors affecting SWP supply availability include hydrology, the amount of water in SWP storage at the beginning of the year, regulatory and operational constraints, and the total amount of water requested by SWP contractors.

According to the water supply contract between DWR and the SGPWA, SGPWA's maximum annual entitlement from the SWP ("Table A Amount") is 17,300 AFY. Table 3-2 presents historical SWP deliveries to SGPWA.

**TABLE 3-2
HISTORICAL SWP DELIVERIES TO SGPWA**

Year	Deliveries (AFY)
2003	116
2004	814
2005	687
2006	4,420
2007	4,815
2008	4,905
2009	6,609
2010	8,403
2011	10,730
2012	10,974
2013	9,695
2014	5,131
2015	3,930

Notes:

(a) Source: 2014 San Gorgonio Pass Water Agency Report on Water Conditions; 2015 data provided by SGPWA.

In addition to Table A supplies, the SWP Contracts provide for additional types of water that may periodically be available, including “Article 21” water and Turnback Pool water. Article 21 water (which refers to the SWP Contract provision defining this supply) is water that may be made available by DWR when excess flows are available in the Delta (i.e., when Delta outflow requirements have been met, SWP storage south of the Delta is full and conveyance capacity is available beyond that being used for SWP operations and delivery of allocated and scheduled Table A supplies). Article 21 water is made available on an unscheduled and interruptible basis and is typically available only in average to wet years, generally only for a limited time in the late winter. The Turnback Pool is a program through which contractors with allocated Table A supplies in excess of their needs in a given year may “turn back” that excess supply for purchase by other contractors who need additional supplies that year. The Turnback Pool can make water available in all types of hydrologic years, although generally less excess water is turned back in dry years. As urban contractor demands have increased, the amount of water turned back and available for purchase has diminished.

The availability of Article 21 water and Turnback Pool water is uncertain. When available, these supplies provide additional water that SGPWA may be able to use, either directly to meet demands or for later use after storage in its groundwater banking programs. Due to the uncertainty in availability of Article 21 water and Turnback Pool water, supplies of these types of SWP water are not included in this report. However, to the extent SGPWA is able to make use of these supplies when available, SGPWA may be able to improve the reliability of its SWP supplies beyond the values used throughout this Plan.

While not specifically provided for in the SWP Contracts, DWR has in critically dry years created Dry Year Water Purchase Programs for contractors needing additional supplies. Through these programs, water is purchased by DWR from willing sellers in areas that have available supplies and is then sold by DWR to agencies willing to purchase those supplies. The availability of these supplies is generally uncertain. However, SGPWA’s access to these supplies when they

are available would enable it to improve the reliability of its dry-year supplies beyond the values used throughout this report.

3.2.3 Factors Affecting SWP Table A Supplies

Primary factors affecting SWP supply availability include: the availability of water at the source of supply in northern California, the ability to transport that water from the source to the primary SWP diversion point in the southern Delta and the magnitude of total contractor demand for that water, as summarized below.

Availability of SWP Source Water

SWP supplies originate in northern California, primarily from the Feather River watershed. The availability of these supplies is dependent on the amount of precipitation in the watershed, the amount of that precipitation that runs off into the Feather River, water use by others in the watershed and the amount of water in storage in the SWP's Lake Oroville at the beginning of the year. Variability in the location, timing, amount and form (rain or snow) of precipitation, as well as how wet or dry the previous year was, produces variability from year to year in the amount of water that flows into Lake Oroville. However, Lake Oroville acts to regulate some of that variability, storing high inflows in wetter years that can be used to supplement supplies in dry years with lower inflows.

As discussed in Section 1.8 and in DWR's 2015 State Water Project Delivery Capability Report (2015 DCR), climate change adds another layer of uncertainty in estimating the future availability of SWP source water. Current literature suggests that global warming may change precipitation patterns in California from the patterns that occurred historically. While different climate change models show differing effects, potential changes could include more precipitation falling in the form of rain rather than snow and earlier snowmelt, which would result in more runoff occurring in the winter rather than spread out over the winter and spring.

Ability to Convey SWP Source Water

As discussed previously, water released from Lake Oroville flows down natural river channels into the Delta. The Delta is a network of channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The SWP and the federal Central Valley Project (CVP) use Delta channels to convey water to the southern Delta for diversion, making the Delta a focal point for water distribution throughout the state.

A number of issues affecting the Delta can impact the ability to divert water supplies from the Delta, including water quality, fishery protection and levee system integrity. Water quality in the Delta can be adversely affected by both SWP and CVP diversions, which primarily affect salinity, as well as by urban discharge and agricultural runoff that flows into the Delta, which can increase concentrations of constituents such as mercury, organic carbon, selenium, pesticides, and toxic pollutants, and reduce dissolved oxygen. The Delta also provides a unique estuarine habitat for many resident and migratory fish species, some of which are listed as threatened or endangered. The decline in some fish populations is likely the result of a number of factors, including water diversions, habitat destruction, degraded water quality and the introduction of non-native species. Delta islands are protected from flooding by an extensive levee system.

Levee failure and subsequent island flooding can lead to increased salinity requiring the temporary shutdown of SWP pumps.

In order to address some of these issues, SWP and CVP operations in the Delta are limited by a number of regulatory and operational constraints. These constraints are primarily incorporated into the SWRCB Water Rights Decision 1641 (D-1641), which establishes Delta water quality standards and outflow requirements that the SWP and CVP must comply with. In addition, SWP and CVP operations are further constrained by requirements included in Biological Opinions (BOs) for the protection of threatened and endangered fish species in the Delta, issued by the United States Fish and Wildlife Service (FWS) in December 2008 and the National Marine Fishery Service (NMFS) in June 2009. The requirements in the BOs are based on real-time physical and biological phenomena (such as turbidity, water temperature and location of fish), which results in uncertainty in estimating potential impacts on supply of the additional constraints imposed by the BOs.

Demand for SWP Water

The reliability of SWP supplies is affected by the total amount of water requested and used by SWP contractors, since an increase in total requests increases the competition for limited SWP supplies. As previously mentioned, contractor Table A Amounts in the SWP Contracts ramped up over time, based on projected increases in population and water demand at the time the contracts were signed. Urban SWP contractors' requests for SWP water were low in the early years of the SWP, but have increased steadily over time, although more slowly than the ramp-up in their Table A Amounts, which reached a maximum for most contractors in the early to mid-1990s. Since that time, urban contractors' requests for SWP water have continued to increase until recent years when nearly all SWP contractors are requesting their maximum Table A Amounts.

Consistent with other urban SWP contractors, SWP deliveries to SGPWA have increased as its requests for SWP water have increased. Historical total SWP deliveries to SGPWA are shown in Table 3-2.

3.2.3.1 SWP Table A Supply Assessment

DWR prepares a biennial report to assist SWP contractors and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update, the 2015 DWR SWP Delivery Capability Report (2015 DCR), in July 2015. In the 2015 DCR, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2015 UWMPs.

3.2.3.1.1 Analysis Assumptions

DWR's estimates of SWP deliveries are based on a computer model that simulates monthly operations of the SWP and CVP systems. Key assumptions and inputs to the model include the facilities included in the system, hydrologic inflows to the system, regulatory and operational constraints on system operations, and projected contractor demands for SWP water.

In the 2015 DCR, DWR uses the following assumptions to model current conditions: existing facilities; hydrologic inflows to the model based on 82 years of historical inflows (1922 through 2003), adjusted to reflect current levels of development in the supply source areas; current regulatory and operational constraints, including D-1641, the 2008 FWS BO, and the 2009 NMFS BO; and contractor demands for SWP water at maximum Table A Amounts.

To evaluate SWP supply availability under future conditions, the 2015 DCR included four model studies. The first of the future-conditions studies, the Early Long Term (ELT) scenario, used all of the same model assumptions for current conditions, but reflected changes expected to occur from climate change, specifically, a 2025 emission level and a 15 cm sea level rise. The other three future-conditions studies also include varying model assumptions related to the Bay Delta Conservation Plan (BDCP)/California Water Fix (Cal WaterFix), such as changes to facilities and/or regulatory and operational constraints.

BDCP/Cal WaterFix plans are currently in flux, environmental review is ongoing, and several regulatory and legal requirements must be met prior to any construction.

This UWMP uses the ELT scenario to estimate future SWP supply availability because it is based on existing facilities and regulatory constraints, with hydrology adjusted for the expected effects of climate change. This scenario is consistent with the studies DWR has used in its previous SWP Delivery Reliability Reports for supply availability under future conditions. Therefore, in this UWMP, future SWP supply availability is based on the ELT study included in the 2015 DCR.

3.2.3.1.2 Analysis Results

In the 2015 DCR, DWR estimates that for all contractors combined, the SWP can deliver on a long-term average basis a total Table A supply of 62 percent of total maximum Table A Amounts. In the worst-case single critically dry year, DWR estimates the SWP can deliver a total Table A supply of 11 percent of total maximum Table A Amounts. DWR estimates the SWP can deliver a total Table A supply during a four-year dry period averaging 33 percent of total maximum Table A Amounts.

DWR's analysis of current (2015) conditions is used in this Plan to estimate 2015 SWP supplies and its analysis of future (2035) conditions is used to estimate 2035-2050 SWP supplies. As has been suggested by DWR, SWP supplies for the five-year increments between 2015 and 2035 are interpolated between these values. SWP supplies for years beyond 2035 are assumed to be the same as for 2035.

The extremely dry sequence from the beginning of January 2013 through the end of 2015 was one of the driest two-year periods in the historical record. Water year 2013 was a year with two hydrologic extremes.³ October through December 2012 was one of the wettest fall periods on record, but was followed by the driest consecutive 12 months on record. Accordingly, the 2013 SWP supply allocation was a low 35 percent of SWP Table A Amounts. The 2013 hydrology ended up being even drier than DWR's conservative hydrologic forecast, so the SWP began 2014 with reservoir storage lower than targeted levels and less stored water available for 2014

³ A water year begins in October and runs through September. For example, water year 2013 is October 2012 through September 2013.

supplies. Compounding this low storage situation, 2014 also was an extremely dry year, with runoff for water year 2014 the fourth driest on record. Due to extraordinarily dry conditions in 2013 and 2014, the 2014 SWP water supply allocation was a historically low 5 percent of Table A Amounts. The dry hydrologic conditions that led to the low 2014 SWP water supply allocation were extremely unusual, and to date this hydrology has not been included in the SWP delivery estimates presented in DWR's 2015 DCR. It is anticipated that the hydrologic record used in the DWR model will be extended to include the period through 2014 during the next update of the model, which is expected to be completed prior to issuance of the next update to the biennial DCR. For purposes of this UWMP, the historical single dry year of 1977 is used to estimate single dry year supplies.

Table 3-3 shows SWP supplies projected to be available to SGPWA in average/normal years, a single dry year, and over a multiple dry year period, based on the supply reliability analyses provided in the 2015 DCR.

TABLE 3-3
SWP TABLE A AMOUNT SUPPLY RELIABILITY (AF)^(a)

SWP Supply	2020	2025	2030	2035	2040
<i>Average Water Year^(b)</i>					
Table A Supply	10,700	10,700	10,700	10,700	10,700
% of Table A Amount ^(c)	62%	62%	62%	62%	62%
<i>Single Dry Year^(d)</i>					
Table A Supply	1,900	1,900	1,900	1,900	1,900
% of Table A Amount ^(c)	11%	11%	11%	11%	11%
<i>Multi-Dry Year^(e)</i>					
Table A Supply	5,700	5,700	5,700	5,700	5,700
% of Table A Amount ^(c)	33%	33%	33%	33%	33%

Notes: Values rounded to nearest hundred.

- (a) Projected SWP supplies to SGPWA based on analyses presented in DWR's "2015 Delivery Capability Report (DCR)."
- (b) Based on average deliveries over the DCR's historic hydrologic period of 1921 through 2003.
- (c) Supply as a percentage of SGPWA's Table A Amount of 17,300 AF.
- (d) Based on a repeat of the worst case historic single dry year of 1977 (from DWR 2015 DCR).
- (e) Supplies are annual averages over four consecutive dry years, based on the historic four-year dry period of 1931-1934.

3.2.3.1.1 Potential Future SWP Supplies

An ongoing planning effort to increase long-term supply reliability for both the SWP and CVP is taking place through the California Water Fix and EcoRestore (Cal Water Fix) process. The co-equal goals of the Cal Water Fix are to improve water supply reliability and restore the Delta ecosystem. The Cal Water Fix is being prepared through a collaboration of state, federal and local water agencies, state and federal fish agencies, environmental organizations and other interested parties. Several "isolated conveyance system" alternatives are being considered in the plan that would divert water from the north Delta to the south Delta where water is pumped into the south-of-Delta stretches of the SWP and CVP. The new conveyance facilities would allow for greater flexibility in balancing the needs of the estuary with the reliability of water supplies. The plan could also provide other benefits, such as reducing the risk of long outages from Delta levee failures.

Cal Water Fix has been in development since 2006, initially as the BDCP and is currently undergoing extensive environmental review. The Draft BDCP and its associated Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) were released for public review in December 2013. In response to public comments, the Cal Water Fix was reevaluated, and in April 2015 the lead agencies announced a modified alternative which effectively split the project into two parts: the conveyance portion (known as Cal WaterFix), and the restoration portion (known as EcoRestore). The Cal WaterFix alternative is evaluated in a partially recirculated draft environmental document (Recirculated Draft EIR/Supplemental Draft EIR) that was released for public review in July 2015. That environmental document is not anticipated to be final until at least 2016.

While there is support for the BDCP/Cal WaterFix project, plans are currently in flux and environmental review is ongoing. Additionally, several regulatory and legal requirements must be met prior to any construction. Because of this uncertainty, any improvements in SWP supply reliability or other benefits that could result from this proposed project are not included in this Plan.

3.2.4 Other Imported Supplies

3.2.4.1 Yuba Accord Water

SGPWA entered into the Yuba Accord Agreement (Appendix F), which allows for the purchase of water from the Yuba County Water Agency through DWR to 21 SWP contractors (including SGPWA) and the San Luis and Delta- Mendota Water Authority. Yuba Accord water comes from north of the Delta, and the water purchased under this agreement is subject to losses associated with transporting it through the Delta. While the amount of this water varies each year depending on hydrologic conditions, the average amount that the Agency has received has been approximately 300 AFY. The Agency recently signed an extension to this agreement allowing it to purchase this water well into the future.

3.2.4.2 Multi-Year Pool Demonstration Project

In 2013, DWR and the State Water Contractors developed a multi-year pool in which Contractors could purchase unused Table A water from a pool formed by several Contractors. The price of this water varied on a sliding scale depending on hydrologic conditions. The Agency, through this program, purchased 1,000 AF of water and delivered it to retail water agencies in its service area. This is not a long-term reliable supply and is only available in some years.

3.2.5 SGPWA SWP Supply Facilities

3.2.5.1 Conveyance

SGPWA receives SWP supplies via the East Branch Extension of the SWP. The East Branch Extension begins at Devil Canyon Power Plant in San Bernardino and ends in Cherry Valley. Efforts to increase the conveyance capacity of the East Branch extension to 48 cubic feet per second (CFS) are currently ongoing, with construction scheduled to be complete by the end of 2016 and startup testing to be concluded in the first half of 2017. This East Branch Extension,

Phase 2 project will provide the additional capacity necessary to convey the full allocation of SWP supplies, as available.

SGPWA plans to purchase an additional 16 CFS of capacity from the East Branch Extension Phase 2 expansion from SBVMWD, bringing the conveyance capacity to 64 CFS or approximately 35,000 AFY at a 75 percent frequency of operation, sufficient to meet regional demand through 2035, assuming SGPWA obtains supplemental sources of imported water.

3.2.5.2 Treatment

SWP supplies delivered to the SGPWA service area are treated at the Yucaipa Valley Regional Water Filtration Facility (YVRWFF), with a capacity of 12 million gallons per day (MGD). Treated water from the YVRWFF is used to meet demands in both the SBVMWD and SGPWA service areas.

3.3 Transfers, Exchanges, and Groundwater Banking Programs

In addition to existing SWP water supplies, SGPWA is currently exploring opportunities to purchase water supplies from other water agencies and sources. Transfers, exchanges, and groundwater banking programs, such as those described below, are important elements to enhancing the long-term reliability of the total mix of supplies currently available to meet water demand.

3.3.1.1 Exchanges

Since 2010, the Agency has been involved in three exchanges with the Crestline-Lake Arrowhead Water Agency (CLAWA). In 2010, the Agency received 1,000 AF of CLAWA's Table A amount in exchange for a like amount to be returned by 2020. In 2013, the Agency received 2,000 AF of CLAWA's Table A amount in exchange for 1,300 AF to be returned by 2023. In 2016 the Agency is receiving 1,200 AF of CLAWA's Table A amount in exchange for 600 AF to be returned by 2026. The latter two exchanges are unbalanced exchanges approved by DWR.

3.3.1.2 Purchases

The Agency has a number of plans to procure additional water supplies. The Agency is currently in final negotiations with the SBVMWD to purchase up to 5,000 AF of its Table A water in years in which SBVMWD's Board declares a surplus. Based on past hydrologic conditions, that is likely to occur approximately two years out of every five. Thus, on the average, this will amount to approximately 2,000 AFY. The SBVMWD Board of Directors has approved the concept; both Boards still need to approve the final terms, which should be finalized in calendar year 2017. This supply is reflected in Table 3-1. The term of this agreement is expected to be at least 20 years.

The Agency's Board has committed to keeping ahead of the regional water demand curve and implementation of the capacity fee will enable it to do so financially. The Agency has updated a study identifying additional supplemental supplies that are for sale around the state, particularly

south of the Delta, and will move quickly to negotiate a deal for one or more of these sales in 2016 or early 2017.

3.3.1.3 Other Supplies

The Agency's Board has voted to participate as an owner of capacity in the proposed Sites Reservoir project, and submitted a proposal to the Sites Joint Powers Association to that effect in July 2016. The proposal was for 14,000 acre-feet of yield from the reservoir. It is anticipated that this will be a long-term investment whose returns will not become tangible for at least 10 years, if at all.

In addition to these efforts, the Agency has completed the design of a conjunctive use storage facility in its service area that will enable it to take advantage of additional supplies, including Article 21 water from the SWP when available. The Agency has the funds on hand to construct this facility and will do so within the next few years. This will ensure that there is ample space to store all new water supplies procured by the Agency to meet the projected demands within its service area.

A summary of planned supplies is provided in Table 3-4.

TABLE 3-4
SUMMARY OF POTENTIAL WATER TRANSFER AND EXCHANGE OPPORTUNITIES FOR SGPWA

Supplemental Water Source	Description	Type and Reliability	Potential Partners
Table A Transfers	Purchase of Table A allocations from agencies with allocations in excess of demand	Permanent, 60%	Kern County Water Agency (KCWA); Tulare Lake Basin Water District; Dudley Ridge Water District; Empire West Side Irrigation District; MWDSC; San Bernardino Valley Municipal Water District
Kern River Exchanges	Water agencies obtain diversion rights from the Kern River, making available Table A SWP supplies for exchange	Permanent, 100%	Nickel Family Farms via KCWA exchange; Buena Vista Water Storage District (WSD) via Buena Vista WSD or Rosedale-Rio Bravo WSD exchange
Banked Groundwater Exchanges	Purchases of banked groundwater delivered in-lieu from unused Table A deliveries	Short-term, 100%	Rosedale-Rio Bravo WSD; Water agencies participating in the Semitropic WSD Groundwater Storage Program; Water agencies south of Edmonston Pumping Plant
Banked Groundwater Pumpback	Purchase of banked groundwater delivered via "pumpback" to the California aqueduct	Short-term, 100%	Rosedale-Rio Bravo WSD; Kern Delta Water District; Semitropic WSD Stored Water Recovery Unit
Excess SWP Purchases	Purchase excess SWP supply from SWP or water agencies with a surplus	Short-term, 100%	SWP Article 21; SWP Turnback Pool (Table A); San Bernardino Valley Municipal Water District; Crestline-Lake Arrowhead Water Agency; West Side San Joaquin Valley Districts
Dry Year Water Purchases or Transfer Programs	Purchase or transfer of unused water from water agencies with a surplus to water agencies requesting supplemental dry year supply	Short-term in dry years, 100%	SWP Contractors (buyers and sellers are treated as singular entities); SWP Turnback Pool (Table A); Western Canal Water District; Yuba County Water Agency Dry Year Water Transfer Program

Source: Provost & Pritchard, 2016.

3.3.2 Plans to Acquire Additional Supplies

As discussed in Section 3.3, the Agency is planning to develop a diverse portfolio of water supplies that include a mix of dry year supplies, SWP Table A allocation purchased from or exchanged with other SWP Contractors, purchase of surplus water from a neighboring State Water Contractor, and other supplemental water as available. The Agency has put a financial plan in place to purchase additional supplemental water supplies from various sources, including Table A water, riparian water rights, or other various sources. This financial plan includes four sources of revenue: withdrawal from reserves, dedication of a portion of general fund and *ad valorem* tax revenues as needed and appropriate, a component of the wholesale water rate, and a recently adopted capacity fee on new growth in the region. The Agency currently has \$5.7 million in reserves to purchase new water rights.

In order to collect the capacity fee, the Agency would have to sign cooperative agreements with retail water agencies or land use planning agencies. In areas where the Agency can collect the fee, it is assuring its retail customers that it will have the financial resources to procure the needed additional water supplies. As this report is being written, the Agency is in final negotiations with the YVWD and the City of Calimesa to sign a cooperative agreement to enable it to collect the fee and thus assure future water supplies for the YVWD service area. Meeting future water demands within the service area of the City of Banning and the BCVWD will be more difficult until cooperative agreements are signed with these entities. In the meantime, the Agency still has some financial resources to use to procure additional water for these areas, including the sources listed above (with the exception of the capacity fee).

3.4 Groundwater

Local groundwater does not provide a source of water to SGPWA, however the predominant means of providing SWP supply to retail agencies is to recharge the Beaumont groundwater Basin. The storage capacity of the Beaumont Basin (adjudicated at 200,000 AF, practically estimated to be 100,000 AF) exceeds the total annual demand for water at build-out. Storage capacity is not likely to be a limiting factor for importing SWP supplies and any additional supplemental imported water. The capacity to store imported water in the Beaumont Basin by spreading water in recharge basins is a key component of SGPWA's role as a wholesaler of SWP supply.

It is noted that local runoff of surface water accounts for a small portion of local water resources utilized by the retail agencies. Most of this runoff is typically recharged into local groundwater basins where it becomes part of the groundwater supply. Storm water capture represents a potential new source of water within the service area, however it is not currently considered a large supply source. Capturing storm water would present a water quality benefit to the groundwater if recharged.

3.4.1 Groundwater Recharge Facilities

BCVWD's Noble Creek facility is used to recharge SWP deliveries. The facility consists of recharge basins (eight cells) with a long-term recharge capacity of approximately 20,000 AFY. SWP deliveries to this facility will consist of BCVWD's imported water supply requirements, plus any water purchased for long-term banking prior to completion of additional basins. BCVWD has recently completed Phase 2, increasing the capacity.

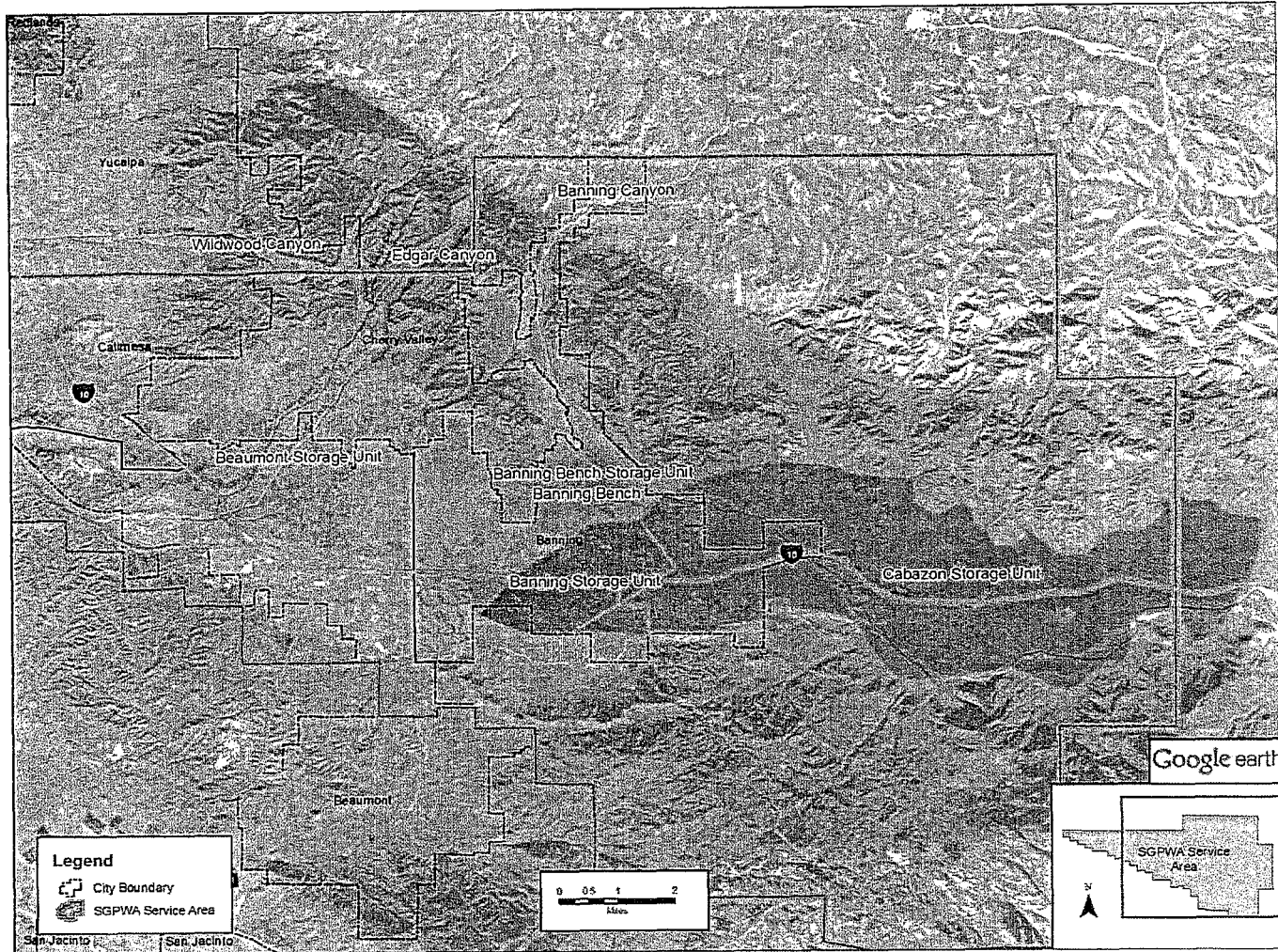
The Beaumont Avenue Recharge Facility, expected to be completed in 2017, enables SGPWA to import more water in wet years when available and to store it in the local groundwater basin. The facility consists of five large ponds, a pipeline connecting the ponds to the East Branch Extension and a new connection to the East Branch Extension.

3.4.2 Groundwater Basins

SGPWA is underlain by portions of two large groundwater basins, the Upper Santa Ana Valley Basin and Coachella Valley Basin, both of which are divided into subbasins. Of the many subbasins, three fall within the SGPWA boundaries, including the Yucaipa, San Timoteo, and San Gorgonio Pass Subbasins. The latter two subbasins are in turn divided into water storage

units, (also colloquially termed “basins”). The principal storage units and basins that are used by the water purveyors are the Beaumont, Banning, Yucaipa, and Cabazon groundwater basins. A summary of these local groundwater basins is provided below and shown on Figure 3-1. Details on basin characteristics, groundwater pumping, and basin management are provided in individual purveyor UWMPs.

**FIGURE 3-1
GROUNDWATER BASINS WITH PUMPING BY SGPWA RETAIL AGENCIES**



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Source: SGPWA 2010 Urban Water Management Plan, prepared by CDM.

3.4.2.1 Beaumont Basin

The Beaumont Basin (storage unit) encompasses approximately 28 square miles and underlies the Cities of Calimesa, Beaumont, and Banning. Generally, hydro-geologic studies have identified major inflows to the Beaumont storage unit as runoff from Edgar Canyon (Little San Gorgonio and Noble Creeks) and from infiltration of rainfall within the groundwater basin boundary. The Beaumont Basin is the only adjudicated groundwater basin within the SGPWA service area. The Judgment for the adjudication (provided in Appendix G) allocates pumping rights to both overlayers and appropriators, and provides guidelines for conversion of pumping rights from overlayers to appropriators. Overlayers are parties that own land overlying the Beaumont Basin and have exercised pumping rights. Appropriators are the water purveyors who serve water to serve demands within the Beaumont Basin, including the City of Banning, BCVWD, SMWC, and YVWD. Appropriators can obtain additional pumping rights from an overlayer by providing water service, either potable or recycled. The Beaumont Basin Water Master develops annual projections of pumping rights conversion from overlayers to appropriators.

According to the stipulated judgment, the long-term safe yield of the Basin is 8,650 AFY, recently (2013) updated to 6,700 AFY. Since 2003, SGPWA has purchased a portion of its Table A allocation to sell to retailers within its service area, including BCVWD, and the City of Banning.

3.4.2.2 Banning Groundwater Basin

The Banning Basin consists of the East Banning and West Banning storage units. The East Banning and Banning Bench storage units are separated from the West Banning storage unit by the McMullen fault (Bloyd 1971). The East Banning storage units encompass approximately 7 square miles and the West Banning storage unit encompasses approximately 4 square miles. The City of Banning is the only water purveyor that extracts water from the East Banning and West Banning storage units. The average of the estimated maximum perennial yield from the East Banning storage units is 1,050 AFY, and 350 AFY from the West Banning storage unit (Geoscience, 2003). Historical trends in water level have declined in the Banning groundwater basin, especially in the West Banning storage unit, where most well pumping occurs. The Banning groundwater basin is not adjudicated.

3.4.2.3 Yucaipa Basin

The Yucaipa Basin encompasses approximately 40 square miles and underlies the southeast part of San Bernardino Valley. The Basin is not adjudicated; sustainable yield is estimated to be approximately 9,600 AFY with a storage capacity of more than 800,000 AF (DWR Bulletin 118). Extractions from the basin are approximately 14,000 AFY (DWR Bulletin 118, California's Groundwater, 2004). DWR identifies the basin in overdraft in its Bulletin-118, however water levels have been historically rising. Moreover, the amount of groundwater pumping from the basin has significantly decreased being attributable to the supplemental supply of SWP and the use of recycled water.

The Basin is conjunctively managed by the Agency, SBVMWD, YVWD, SMWC, Western Heights Water Company, and the City of Yucaipa.

3.4.2.4 Cabazon Basin

The Cabazon Basin (storage unit) is located on the eastern boundary of SGPWA's service area. City of Banning, CWD, Mission Springs Water District, and the Morongo tribes rely on pumping from this basin to serve a portion of their respective water demands. The safe yield estimate of the Cabazon storage unit is estimated to be 1,770 AFY (Geoscience 2010).

3.4.2.5 Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires all groundwater basins in California to be managed sustainably by 2022. The legislation requires that a Groundwater Sustainability Plan (GSP) be prepared by 2022 in those basins the DWR has identified as medium to high priority. The San Gorgonio Pass, San Timoteo and Yucaipa Subbasins are listed as medium priority basins (per DWR's Final CASGEM Basin Prioritization Reports, June 2014). SGMA does not apply to basins that are managed through adjudication.

SGPWA is currently working with other water agencies that overly the San Gorgonio Pass Subbasin to develop a cooperative agreement to manage the subbasin in accordance with the legislation. The other agencies involved include Desert Water Agency, MSWD, HVWD, Morongo Band of Mission Indians, City of Banning, and BHMWC.

3.4.3 Recycled Water

The Agency does not provide supplemental treatment to recycled water and does not distribute recycled water, nor does the Agency have plans to provide recycled water as a part of its deliveries. As a result, UWMP Act Guideline Tables 6-3, 6-4 and 6-5 will not be completed.

The Cities of Beaumont and Banning, YVWD, and the Morongo Band of Mission Indians discharge treated wastewater within the SGPWA service area. The use of recycled water to offset potable water demands and for groundwater replenishment is a major component in the supply plans for most of the retail agencies and therefore is discussed briefly below.

BCVWD has an extensive non-potable water system, which provides non-potable water for landscape irrigation throughout the City of Beaumont. In the BCVWD 2015 UWMP, recycled water demands are estimated to range from 1,154 FY to 3,363 AFY between 2020 and 2040 (BCVWD 2015 UWMP Table 6-19).

YVWD operates an 8 MGD Wochholz Water Recycling Facility that provides advanced tertiary treatment of wastewater from its sewer system. Recycled water is used to meet approximately 10-15 percent of YVWD's overall water demands. YVWD plans to implement aggressive recycled water use for new development in the City of Calimesa, requiring dual plumbing for front yard irrigation on Single-family residential properties. Ultimately their facility will be capable of treating up to 11 MGD of wastewater. YVWD currently operates a 2.5 MGD reverse osmosis treatment system to purify the recycled water produced at their facility and a brineline to dispose of the salts removed by the treatment system. A 4.0 million gallon (MG) recycled water storage reservoir and pump station is used to store the recycled water. YVWD will be constructing a Regional Recycled Water Conveyance System which will allow it to provide surplus recycled water to BCVWD and the City of Banning.

The City of Banning currently spreads treated wastewater effluent in ponds overlying the Cabazon storage unit which has limited storage capacity to allow for indirect potable reuse of

this effluent. Banning has plans to upgrade its wastewater treatment plant to meet Title 22 requirements and increase capacity by 2025. Once on-line, this upgrade would make approximately 1,680 AFY of recycled water available to the City for irrigation use⁴.

3.5 Development of Desalination

The California UWMP Act requires a discussion of potential opportunities for use of desalinated water (Water Code Section 10631[i]). SGPWA has explored such opportunities, and they are described in the following section, including opportunities for desalination of brackish water, groundwater and seawater. However, at this time, none of these opportunities are practical or economically feasible for SGPWA and SGPWA has no current plans to pursue them. Therefore, desalinated supplies are not included in the supply summaries in this Plan.

3.5.1 Opportunities for Brackish Water and/or Groundwater Desalination

As discussed in Section 4, groundwater supplies within the SGPWA service area impacted by total dissolved solids, and desalination could be implemented by the individual retail agencies to address this issue. YVWD for example is close to obtaining a permit to serve desalted recycled wastewater for non-potable uses.

It is noted that SGPWA could team with other SWP contractors and provide financial assistance in construction of other regional groundwater desalination facilities in exchange for SWP supplies. The desalinated water would be supplied to users in communities near the desalination plant, and a similar amount of SWP supplies would be exchanged and allocated to SGPWA from the SWP contractor. A list summarizing the groundwater desalination plans of other SWP contractors is not available; however, SGPWA would begin this planning effort should the need arise.

In addition, should an opportunity emerge with a local agency other than a SWP contractor, an exchange of SWP deliveries would most likely involve a third party, such as Metropolitan. Most local groundwater desalination facilities would be projects implemented by retail purveyors of SWP contractors and, if an exchange program was implemented, would involve coordination and wheeling of water through the contractor's facilities to SGPWA.

3.5.2 Opportunities for Seawater Desalination

Because the SGPWA service area is not in a coastal area, it is neither practical nor economically feasible for SGPWA to implement a seawater desalination program. However, similar to the brackish water and groundwater desalination opportunities described above, SGPWA and the purveyors could provide financial assistance to other SWP contractors in the construction of their seawater desalination facilities in exchange for SWP supplies.

SGPWA has been following the existing and proposed seawater desalination projects along California's coast. Table 3-5 provides a summary of the status of several of California's

⁴ City of Banning 2015 UWMP

municipal/domestic seawater desalination facilities. As of December 2015, there was an estimated 10 active proposals for seawater desalination plants along the California Coast, as well as two additional proposed plants in Baja California, Mexico that would provide water to southern California communities (Pacific Institute, 2015). This is down from an estimated 21 proposals in 2006 and 19 in 2012 (Pacific Institute, 2015).

As shown Table 3-5, most of the existing and proposed seawater desalination facilities are/would be operated by agencies that are not SWP contractors. However, in these cases as described above, an exchange for SWP deliveries would most likely involve a third party (SWP contractor), the local water agency and SGPWA.

**TABLE 3-5
EXISTING AND PROPOSED SEAWATER DESALINATION FACILITIES IN CALIFORNIA**

Project	Member Agency Service Area or Project Developer	MGD	Status
Carlsbad Seawater Desalination Project	San Diego County Water Authority/Poseidon Water	50	Operational
Marina Desalination Plant	Marina Coast Water District	0.27	Idle
Sand City Coastal Desalination Facility	City of Sand City	0.3	Operational
Monterey Bay Aquarium	Monterey Bay Aquarium	0.008	Operational
Morro Bay Desalination Facility	City of Morro Bay	0.6	Idle
Diablo Canyon Power Plant	Pacific Gas and Electric	0.58	Operational
Gaviota Oil Heating Facility	Chevron Corporation	0.41	Operational
Santa Catalina Island	City of Avalon/Southern California Edison	0.325	Operational
San Nicholas Island	U.S. Navy	0.024	Operational
West Basin Seawater Desalination Project	West Basin Municipal Water District	20-60	Proposed
Huntington Beach Seawater Desalination Project	Orange County Water District	50	Proposed
DeepWater Desalination Project	DeepWater Desal, LLC	25	Proposed
Charles Meyer Desalination Plant	City of Santa Barbara	2.8	Idle
Expanding Diablo Canyon Nuclear Power's Desalination Plant	PG&E and San Luis Obispo County	1.5	Proposed
Monterey Peninsula Water Supply Project	Cal Am, Monterey County, Monterey Peninsula Regional Water Authority, Monterey Peninsula Water Management District	6.4 to 9.6	Proposed
The People's Moss Landing Water Desalination Project	Nader Agha	12	Proposed
Doheny Ocean Desalination Project	South Coast Water District and Laguna Beach County Water District	15 to 20	Proposed
City of Oceanside	City of Oceanside	5 to 10	Proposed
Rosarito Beach Seawater Desalination Plant	San Diego County Water Authority	25 to 75	Proposed
Binational Rosarito Desalination Project	NSC Agua and Otay Water District	100	Proposed
Total MGD		315 – 418 MGD	

Source: Pacific Institute, December 2015, Available at: <http://pacinst.org/publication/key-issues-in-seawater-desalination-proposed-facilities>

Section 4: Water Quality

4.1 Overview

The quality of any natural water is dynamic in nature. This is true for the SWP water brought into the SGPWA service area. During periods of intense rainfall or snowmelt, routes of surface water movement are changed; new constituents are mobilized and enter the water while other constituents are diluted or eliminated. The quality of water changes over time. These same basic principles apply to groundwater. Depending on water depth, groundwater will pass through different layers of rock and sediment and leach different materials from those strata. Water quality is not a static feature of water, and these dynamic variables must be recognized.

Water quality regulations also change. This is the result of the discovery of new contaminants, changing understanding of the health effects of previously known as well as new contaminants, development of new analytical technology, and the introduction of new treatment technology. All retail water purveyors are subject to drinking water standards set by the Federal EPA and the California Department of Public Health. SGPWA imports SWP water primarily for groundwater basin recharge. Retail purveyors extract groundwater from these groundwater basins for delivery, with the exception of YVWD, who treats the imported water and delivers it directly to its customers.

This Section provides a general description of the water quality of both imported water and groundwater supplies. A discussion of potential water quality impacts on the reliability of these supplies is also provided.

The Agency prepares an annual Report on Water Conditions that generally describes the water quality of imported SWP water and local groundwater. Several state, regional and county agencies have jurisdiction and responsibility for monitoring water quality and contaminant sites. Programs administered by these agencies include basin management, waste regulation, contaminant cleanup, public outreach, and emergency spill response.

4.2 Imported Water Quality

SGPWA provides imported SWP water to its service area. The source of SWP water is rain and snow from the Sierra Nevada, and Coastal mountain ranges. This water travels to the Sacramento-San Joaquin Delta, which is a network of natural and artificial channels and reclaimed islands at the confluence of the Sacramento and San Joaquin rivers. The Delta forms the eastern portion of the San Francisco estuary, receiving runoff from more than 40 percent of the state's land area. It is a low-lying region interlaced with hundreds of miles of waterways. From the Delta, the water is pumped into a series of canals and reservoirs, which provides water to urban and agricultural users throughout the San Francisco Bay Area and Central and Southern California. SGPWA samples its water quality at the Devil Canyon sampling station in San Bernardino. This is the closest sampling station to the Agency and is representative of the water that the Agency receives from the SWP.

One important property of SWP water is the mineral content. SWP water is generally low in dissolved minerals, such as calcium, magnesium, sodium, potassium, iron, manganese, nitrate,

and sulfate. Most of these minerals do not cause health concerns. Nitrate is the main exception, as it has significant health effects for infants in high concentrations; however, the nitrate content of SWP water is very low. Also of significance is the chloride content. Although not a human health risk, chloride can have a negative impact on agricultural activities and regulatory compliance for local sanitation agencies. The chloride content of SWP water varies widely from well over 100 milligrams per liter (mg/L) to below 40 mg/L, depending on Delta conditions.

Salinity is becoming more heavily regulated by Regional Water Quality Control Boards (RWQCBs) throughout the State, especially as water agencies construct recycled water systems. In order to maintain reasonable total dissolved solids (TDS) (also known as salinity or salts) levels in the lower reaches of the Santa Ana watershed, the Santa Ana RWQCB must set standards for TDS at relatively low concentrations in the upper reaches of the watershed, where the western portion of the Agency's service area is located. This watershed already has among the highest levels of TDS in the State. Sewage treatment plant effluent from Beaumont, Yucaipa, and Calimesa is discharged into tributaries to the Santa Ana River and is regulated by the Santa Ana RWQCB; effluent from Banning is currently regulated by the Colorado River RWQCB, though it is likely that the Santa Ana RWQCB may at some time regulate this discharge or portions thereof. This is due to the fact that the City of Banning has plans for a recycled water system, parts of which will overlie a portion of the Santa Ana watershed.

Since SWP water imports to the underlying groundwater basins will be persistent, long term, and increasing, these imports are deemed to be a significant factor in the long term salt balance in the region. Data regarding the quantity and quality of SWP water delivered to the SGPWA service area are available from Santa Ana Regional Board, and are also reported in the Agency's annual Report on Water Conditions. As discussed for groundwater quality, TDS is the most significant constituent in the SWP water. The concentration of TDS is very dependent on hydrologic conditions, and during dry years, the concentration of TDS increases. In January of 2011, which was a relatively wet hydrologic year in California, TDS concentrations were found to greatly decrease. This is significant because the ambient salinity concentration of the Beaumont Basin is benefited by the recharge of SWP water.

4.2.1 Municipal Water Quality Investigations Program

SGPWA participates in the DWR Municipal Water Quality Investigations (MWQI) Program. The MWQI Program is funded by the sixteen SWP Contractors that provide water to their customers for municipal and industrial uses. The mission of the MWQI Program is to: a) support the effective and efficient use of the Sacramento-San Joaquin Delta (Delta) and the SWP as a source water supply for municipal purposes through monitoring, forecasting, and reporting water quality; b) provide early warning of changing conditions in source water quality used for municipal purposes; c) provide data and knowledge based support for operational decision-making on the SWP; d) conduct scientific studies of drinking water importance; and e) provide scientific support to DWR, the State Water Project Contractors Authority MWQI-Specific Project Committee, and other governmental entities.

The MWQI Program conducts extensive monitoring in the Delta and the outlet to San Luis Reservoir. The data from this program, combined with data collected throughout the SWP by the DWR Division of Operations and Maintenance, are used to understand how water quality changes from the Delta to the turn outs of the SWP Municipal and Industrial (M&I) Contractors.

The MWQI Program has also developed a forecasting model to forecast organic carbon concentrations and salinity levels throughout the SWP. A daily report is sent out via email to the M&I Contractors with recent water quality data at key locations and information on Delta conditions and pumping at the Banks and Jones pumping plants.

Ongoing work includes refinement of the forecasting model to more accurately predict water quality conditions and to better model the impacts of groundwater and surface water pump-ins. The MWQI Program is also conducting studies to better understand the dynamics of algal and aquatic plant growth in the SWP. Algae and aquatic plants create a number of problems, including taste and odor issues, wide swings in pH, filter clogging, and clogging of conveyance structures. The MWQI Program also conducts the sanitary survey of the SWP, which must be submitted to the State Water Resources Control Board, Division of Drinking Water every five years.

4.3 Groundwater Quality

Groundwater quality in the region is very high. There is no known historical industrial or mining activity in the region that has generated harmful plumes of pollutants. The Santa Ana RWQCB has a "maximum benefit" goal of 330 parts per million (ppm) for TDS (or salinity) for the Beaumont Basin. The current ambient TDS concentration in the Beaumont Basin is approximately 280 ppm (Report on Water Conditions, 2013). The Basin Plan requires local entities to begin planning desalters when the ambient TDS increases to 320 ppm. YVWD has constructed a desalination plant and brine disposal pipeline to address the TDS issue.

In addition to salinity or TDS, nitrate is also monitored closely. This too is regulated by the RWQCB, but nitrate concentrations are currently well within the maximum benefit standards. Over the past few years there have been isolated incidents of high nitrates at individual wells for short periods of time, typically after a large rainstorm that causes flushing of the system. These have not proven to be a health hazard.

Total chromium has been regulated by the SWRCB at an MCL of 50 microgram per liter ($\mu\text{g/L}$), which includes both chromium-3 and chromium-6. In 2011, California EPA Office of Environmental Health Hazard Assessment set a Public Health Goal (PHG) of 0.02 $\mu\text{g/L}$ for chromium-6. California Department of Public Health then reviewed the PHG and recommended an MCL for chromium-6 at the level of 10 $\mu\text{g/L}$, which went into effect July 1st, 2014. In 2015, SB385 was passed and signed by Governor Jerry Brown that effectively pushed the enforcement of the new chromium-6 MCL out to 2020, if the water purveyor submitted a compliance plan to their local Division of Drinking Water (DDW).

Within the SGPWA service area, chromium-6 concentrations have been measured at levels above the MCL in several wells owned by the City of Banning and BCVWD, forcing some wells to be taken out of production temporarily, pending implementation of a fix to the problem.

More detail on groundwater quality management actions are identified in the retail water agencies' UWMs.

4.4 Groundwater Protection

The general goal of groundwater protection activities is to maintain the groundwater and the aquifer to ensure a reliable high quality supply. Activities to meet this goal include continued and increased monitoring, data sharing, education and coordination with other agencies that have local or regional authority or programs. To increase its groundwater protection activities, SGPWA, YVWD, and BCVWD have been taking the actions to manage salinity in the Yucaipa, Beaumont, and San Timoteo Basins. The City of Banning is also planning to reduce TDS in recycled water for irrigation use.

4.5 Water Quality Impacts on Reliability

The quality of water dictates numerous management strategies a water purveyor will implement, including, but not limited to, the selection of raw water sources, treatment alternatives, blending options, and modifications to existing treatment facilities. Maintaining and utilizing high quality sources of water simplifies management strategies by increasing water supply alternatives, water supply reliability, and decreasing the cost of treatment. Maintaining high quality source water allows for efficient management of water resources by minimizing costs.

Maintaining the quality of water supplies increases the reliability of each source by ensuring that deliveries are not interrupted due to water quality concerns. A direct result from the degradation of a water supply source is increased treatment cost before consumption. The poorer the quality of the source water, the greater the treatment cost. Groundwater may degrade in quality to the point that is not economically feasible for treatment. In this scenario the degraded source water is taken off-line. This in turn can decrease water supply reliability by potentially decreasing the total supply and increasing demands on alternative water supplies.

Overall, the quality of imported water is not anticipated to affect water reliability. Water quality issues are constantly evolving, the Agency will continue to take action to protect supplies when needed, however it is recognized water quality treatment can have significant costs.

Section 5: Reliability Planning

5.1 Overview

The Act requires urban water suppliers to assess water supply reliability that compares total projected water use with the expected water supply over the next twenty years in five year increments. The Act also requires an assessment for a single-dry year and multiple-dry years. This chapter presents the reliability assessment for SGPWA's service area through 2040.

As stated in SGPWA's mission statement, the goal of SGPWA is to "is to import supplemental water and to protect and enhance local water supplies for use by present and future water users and to sell imported water to local water districts within the service areas of the San Geronio Pass Water Agency." This Plan helps SGPWA to achieve this goal even during dry periods based on a conservative water supply and demand assumptions over the next 25 years, as discussed in the following sections.

5.2 Supply And Demand Comparisons

The available supplies and water demands for SGPWA's service area were analyzed to assess the region's ability to satisfy demands during three scenarios: an average water year, single-dry year, and multiple-dry years. Table 5-1 presents the base years for the development of water year data. Tables 5-2, 5-3, and 5-4 summarize, respectively, Average Water Year, Single-Dry Water Year, and Multiple-Dry Year supplies.

**TABLE 5-1
BASIS OF WATER YEAR DATA**

Water Year Type	Base Years	Historical Sequence
Average Water Year	Average	1921-2003
Single-Dry Water Year	1977	--
Multiple-Dry Water Years	1931-1934	--

5.2.1 Normal Water Year

Table 5-2 summarizes SGPWA's water supplies available to meet demands over the 25-year planning period during an average/normal year. For SWP supplies it is assumed 62 percent of Table A will be available as the long-term average supply. As presented in the table, SGPWA's water supply is broken down into existing and planned water supply sources.

**TABLE 5-2
PROJECTED AVERAGE/NORMAL YEAR SUPPLIES AND DEMANDS (AFY)**

Water Supply Source	2020	2025	2030	2035	2040
<i>Existing Supplies</i>					
Imported SWP ^(a)	10,700	10,700	10,700	10,700	10,700
Yuba Accord ^(b)	300	300	300	300	300
Total Existing Supplies	11,000	11,000	11,000	11,000	11,000
<i>Planned Supplies^(c)</i>					
SBVMWD Purchased Supply	2,000	2,000	2,000	2,000	2,000
Available Purchases of Supply ^(d)	1,500	3,800	7,700	11,700	15,000
Total Planned Supplies	3,500	5,800	9,700	13,700	17,000
Total Existing and Planned Supplies	14,500	16,800	20,700	24,700	28,000
Total Demands^(e)	13,200	16,500	20,400	24,400	27,700
Total Maximum Demands^(f)	18,700	22,000	25,800	29,700	31,600

Notes: Values are rounded to the nearest hundred.

- (a) Assumes 62% of Table A amount (17,300 AFY) based on the California Department of Water Resources Final Delivery Capability Report 2015 (DWR 2015 DCR).
- (b) See Section 1.2.3.
- (c) See Section 1, Table 3-1.
- (d) The Agency is expected to purchase additional supplies by 2020 to meet projected demands during average years.
- (e) SWP is the assumed source of planned supplies. Volumes shown assume 62% reliability of planned supplies based on the DWR 2015 DCR. Refer to Table 3-1.
- (f) Demands from Table 2-4.
- (g) Demands from Table 2-5.

5.2.2 Single-Dry Year

The water supplies and demands for SGPWA's service area over the 25-year planning period were analyzed in the event that a single-dry year occurs, similar to the drought that occurred in California in 1977. During a single-dry year, SWP supply availability is anticipated to be reduced to 11 percent. Table 5-3 summarizes the existing and planned supplies available to meet demands during a single-dry year. Demand during single-dry years are presented in section 2.6 and shown below. Dry year demand is lower than average year demand, as shown in Table 5-3.

**TABLE 5-3
PROJECTED SINGLE-DRY YEAR SUPPLIES AND DEMANDS (AFY)**

Water Supply Source	2020	2025	2030	2035	2040
Existing Supplies					
Imported SWP ^(a)	1,900	1,900	1,900	1,900	1,900
Yuba Accord ^(b)	300	300	300	300	300
Total Existing Supplies	2,200	2,200	2,200	2,200	2,200
Planned Supplies					
Future Dry Year Supplies ^(c)	400	600	1,100	1,500	1,900
Total Planned Supplies	400	600	1,100	1,500	1,900
Total Existing and Planned Supplies^(d)	2,600	2,800	3,300	3,700	4,100
Total Demands^(e)	1,600	3,300	5,500	7,500	9,200
Total Maximum Demands^(f)	4,300	5,500	6,800	8,000	9,200

Notes: Values are rounded to the nearest hundred.

- (a) Assumes 11% of Table A amount (17,300 AFY) based on the California Department of Water Resources Final Delivery Capability Report 2015 (DWR 2015 DCR).
- (b) See Section 1.2.3.
- (c) As described for average year supplies, the Agency is expected to purchase additional supplies by 2020 to meet projected demands during average years. SWP is the assumed source of planned supplies. Future dry year supplies shown here assume 11% availability of those planned supplies based on the DWR 2015 DCR.
- (d) The Agency is negotiating a cooperative agreement with YVWD and the City of Calimesa to provide as-needed supplies as discussed in Section 3.3.2. Therefore, supplies shown are projected to meet those demands at a minimum. Procurement of additional dry year supplies will be ongoing to meet additional dry year demands, as discussed in Section 3.3.
- (e) Demands from Table 2-6.
- (f) Demands from Table 2-7.

5.2.3 Multiple-Dry Year

The water supplies and demands for SGPWA's service area over the 25-year planning period were analyzed in the event that a four-year multiple-dry year event occurs, similar to the drought that occurred during the years 1931 to 1934. During multiple-dry years, SWP availability is anticipated to be reduced to 33 percent. Table 5-4 summarizes the existing and planned supplies available to meet demands during multiple-dry years.

**TABLE 5-4
PROJECTED MULTIPLE-DRY YEAR SUPPLIES AND DEMANDS (AFY)**

Water Supply Source	2020	2025	2030	2035	2040
Existing Supplies					
Imported SWP ^(a)	5,700	5,700	5,700	5,700	5,700
Yuba Accord ^(b)	300	300	300	300	300
Total Existing Supplies	6,000	6,000	6,000	6,000	6,000
Planned Supplies					
Future Dry Year Supplies ^{(c) (d)}	1,200	1,900	3,200	4,500	5,600
Total Planned Supplies	1,200	1,900	3,200	4,500	5,600
Total Existing and Planned Supplies	7,200	7,900	9,200	10,500	11,600
Total Demands^(e)	3,200	5,000	7,300	9,600	11,500
Total Maximum Demands^(f)	5,900	7,200	8,700	10,100	11,500

Notes: Values are rounded to the nearest hundred.

- (a) Assumes 33% of Table A amount (17,300 AFY) based on the DWR 2015 DCR.
- (b) See Section 1.2.3.
- (c) As described for average year supplies, the Agency is expected to purchase additional supplies by 2020 to meet projected demands during average years. SWP is the assumed source of planned supplies. Future dry year supplies shown here assume 33% availability of those planned supplies based on the DWR 2015 DCR.
- (d) The Agency is negotiating a cooperative agreement with YVWD and the City of Calimesa to provide dry year supplies as discussed in Section 3.3.2. Therefore, supplies shown are projected to meet those demands at a minimum; other retail agencies are assumed to meet dry year demands with local supplies. Procurement of additional dry year supplies will be ongoing.
- (e) Demands from Table 2-8.
- (f) Demands from Table 2-9.

5.2.4 Summary of Comparisons

As shown in the analyses above, SGPWA has planned adequate supplies to meet demands during average and multiple-dry years throughout the 25-year planning period. However, the Agency will need to procure additional water supplies to meet projected future needs in single-dry year conditions. As discussed in Section 3.3, these additional supplies will represent a diverse portfolio of water, including dry year supplies, SWP Table A water purchased from or exchanged with other SWP Contractors, purchase of surplus water from a neighboring SWP Contractor, and other supplemental water as available. Refer to Section 3.4 for the Agency's plans to procure these additional supplies.

Section 6: Water Demand Management Measures

6.1 Demand Management

The purpose of the Demand Management Measures (DMM) section of this UWMP is to (a) provide a description of the past wholesaler water conservation programs that the Agency has implemented since 2010 and (b) describe the activities and actions the Agency plans to use in the future to assist its retailers in meeting their urban water use reduction targets. For the purposes of this UWMP the DMMs are categorized as “Foundational” and “Other”. Foundational DMMs, listed below, are those DMMs that the UWMP Act and Water Code specifically mention that apply to a wholesaler such as SGPWA:

- a) Metering
- b) Public education and outreach
- c) Water conservation program coordination and staffing support
- d) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.
- e) A narrative description of the wholesale supplier’s distribution system asset management program
- f) Wholesale supplier assistance programs

SGPWA does not have an internal distribution system. The Agency currently has three retail customers: the YVWD, the BCVWD, and the City of Banning. The YVWD is the only entity that purchases water for direct deliveries.

6.1.1 Metering

The Agency does not provide water directly to water users, hence it does not have a traditional metering system. The Agency does replenish the groundwater basin by recharging imported SWP water at several locations throughout the service area, as described in Section 3. The SWP water is metered at the turnouts where the Agency receives the water into its service area. All connections to the retailers listed above are metered.

6.1.2 Public Education and Outreach

The Agency recognizes the importance of public education and outreach for water resource conservation, and works towards providing materials to its customers informing them on ways to conserve water. A number of different resources including “Save our Water”, “EPA Water Sense”, “Be Water Wise”, “Conservation Garden Brochure”, and other activities related to conservation for children are made available on the Agency website (<http://www.sgpwa.com/conservation>) free of charge for the benefit of its customers and the public.

The Agency is involved in a number of outreach and education programs geared towards both children and adults.

Each year, the Agency sponsors a local high school in a regional solar boat race. During this weekend event, each high school team is required to write a paper and make a presentation on water conservation, and the Agency Board brings the high school to a Board meeting to hear from the students what they learned. Board members are judges for the event, which has raised the profile of water conservation considerably among high school students in the region. Approximately eight high schools compete each year.

The Agency has partnered with the Inland Empire Resource Conservation District to provide water conservation themed presentations in local schools for the three school districts within the Agency's service area. The programs focus on groundwater using a physical tabletop groundwater model purchased by the Agency. The program also describes the local retail water supplier that serves the school, where its water comes from, where the Agency's water comes from, how much water is used for everyday activities and to grow food, and other conservation-themed subjects. 2015 is the second year that the Agency began implementing this program. During the first year, 62 presentations were made to 48 different classes at eight different schools. These programs reached approximately 1,700 students. We anticipate similar numbers for 2015 and in subsequent years as the program continues.

The Agency has also contracted with a local small business, Drought Solutions, to provide workshops to gardening clubs, homeowners' associations, service organizations, and other adult groups. These typically focus on outdoor water use, though there are six separate topics that are offered. In 2015, approximately eight programs were given. Several hundred adults have attended these programs. The Agency will continue to build on this outreach program.

Finally, the Agency, its staff, and its Board of Directors participate in numerous speaking engagements in the communities of the service area whereby the importance of water conservation and investments in infrastructure and water supplies for the future are consistent themes that are emphasized.

6.1.3 Water Conservation Program Coordination and Staffing Support

The General Manager acts as the conservation coordinator. In addition to the above programs, he has direction from the Board to examine other conservation programs that meet the needs of the region and the retailers.

The Agency has set an example for other public agencies by re-landscaping its administration building with low water use vegetation and other hardscape. It has created a demonstration "back yard" that is a true conservation garden. Garden clubs and schools students have visited this garden. Flyers are available with the names of each of the plants so that the public is aware of what to purchase. The garden includes artificial turf, a winding pathway, and seats. This was done well before the recent drought, thus setting an example for other local public agencies, which have since begun to take similar actions.

6.1.4 Conservation pricing

SGPWA Ordinance No. 8 mandates that the Agency, at a minimum, shall establish and charge rates for the delivery of water sufficient to cover SGPWA's variable costs for delivery of imported water, internal SGPWA costs and other amounts as determined by the Board of Directors. Cost of delivery includes operations, administrative overhead, SBVMWD pass-through, dry year transfer costs, rate stabilization surplus reserves, new water purchase surplus reserve contributions, and DWR imported water purchase.

Currently, SGPWA charges a volumetric rate of \$317/AF to its retailers. The wholesale water rate was established via Resolution No. 2009-3. The rate structure is supported by the 2009 Water Rate Study prepared for SGPWA (David Taussig Associates, Inc., 2009).

6.1.5 Wholesale Supplier Assistance Programs

SGPWA regularly explores potential support options for its retailers to assist them in meeting their SBX7-7 demand reduction targets. Where possible, SGPWA identifies partnerships to support DMM implementation. For example, SGPWA has contracted with the local Inland Empire Resource Conservation District to implement some of the Agency's education programs, and makes this program available to the retailers.

6.2 Asset Management Program

The Agency does not at this time have an internal distribution system or any other physical facilities. It anticipates constructing a distribution system in the future. Since it does not have an internal distribution system but rather sells water directly from the SWP to local retail water agency systems, no asset management program is required. At such time as the Agency constructs an internal distribution system, it will implement an asset management program.

6.3 Planned Wholesale Supplier Assistance Programs

Over the next five years, the Agency will continue to implement the Foundational DMMs as described in Section 6.1 and will offer to provide help to its retail agencies in meeting their water use targets. The Agency staff will continue to provide residents (adults and children) with educational information and outreach and other DMMs as feasible and appropriate.

The Agency General Manager is Chair of the Conservation Committee of the San Geronio Pass Regional Water Alliance, a consortium of water agencies and cities in the region, including the retail agencies with demands on SGPWA. Through this committee, the Agency is providing technical support and information to the smaller retail agencies that do not have staff to implement conservation programs or even to understand the implications of the State Board's recently-enacted emergency conservation regulations. It is also ensuring that local retail agencies are aware of the regulations and all public hearings associated with them so that the water agencies in the region can provide input on the emergency regulations as well as understand them. This is a valuable resource, especially for the smaller retail water agencies.

Monthly meetings include presentations on local, regional and state water issues, committee reports and individual agency presentations and updates. Topics have included California Water Plan Update, Integrated Regional Water Management Plans, Urban Water Management Plans,

water conservation programs, 2014 water bond, storm water resources, salinity management, State Water Project, and drought conditions presented by a representative of the California Department of Water Resources.

The Committee's website can be accessed at <http://www.passwateralliance.com/conservation/>.

6.3.1 Planned Implementation of DMMs to Achieve Water Use Targets

SGPWA will continue to implement the DMMs described in this section, and will continue to collaborate with the other retail purveyors to implement the measures outlined in this UWMP. These programs, taken together, will assist SGPWA in helping its retail agencies achieve their SBX7-7 2020 targets as described in their respective UWMPs.

Section 7: Water Shortage Contingency Planning

7.1 Overview

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought which limits supplies, an earthquake which damages water delivery or storage facilities, a regional power outage, or a toxic spill that affects water quality. This chapter of the Plan describes how SGPWA plans to respond to various stages of shortage.

Cities and water agencies within SGPWA rely on large groundwater reserves to meet potable water supply needs. During previous drought periods, municipal water suppliers continued to draft from these reserves to meet customer needs without imposing restrictions on water use, but at rates exceeding natural replenishment in most areas. Large groundwater basins in the region serve as reservoirs and buffer the impacts of seasonal and year-to-year variations in precipitation and imported and natural surface water deliveries. This has been demonstrated during the recent drought, as groundwater supply was available to meet demands; in addition, the retailers have complied with the Governor's emergency and executive orders requiring mandatory conservation actions statewide. The area aquifers are either currently in balance or expected to be in balance in the near future due to the combination of water imports, State-mandated conservation requirements, and/or court ordered production "ramp-down." During multiple-year droughts or State Water Project outages, adequate groundwater supplies will be available to meet demands through the use of conjunctively banked pre-stored imported water.

The SGPWA adopted Ordinance No. 10 establishing a water shortage contingency plan in July 2014. The ordinance established procedures for allocating reduces deliveries of water to Purchasers in the event of single and multiple dry years and a shortage of water available to meet the demands of the Purchasers. SGPWA produced a draft update to Ordinance No. 10 in August 2016 to further guide its actions in the event of a water shortage emergency. This new draft Ordinance (provided in Appendix H) includes stages of action to be undertaken by the Agency in response to shortages in wholesale water supplies available for purchase by the Agency, including up to a 50 percent reduction in those supplies and to provide an outline of the specific water supply conditions that are applicable to each stage of action by reference to the allocation scenarios established in Agency Ordinance No. 10. It is also noted that the SGPWA's role is limited to the use of imported water to replenish local groundwater basins for subsequent pumping by its retail agencies. As such, direct delivery of water provided by SGPWA is minimal.

Therefore, the majority of the water shortage contingency planning in the SGPWA service area is undertaken by retail agencies, Riverside County, and the cities throughout the County. This section summarizes water shortage contingency plans developed by SGPWA retail agencies.

Actions of the SGPWA to address water shortages are summarized below.

7.2 SGPWA Stages of Action to Respond to Water Shortages

SGPWA's Board of Directors determines when to declare a level 0, 1, 2, or 3 water supply shortage in response to drought, regulatory requirements, or other water supply conditions, and what reduction in water use is necessary to make the most efficient use of water, protect public health and safety, and respond to existing water supply and/or regulatory conditions.

Table 7-1 presents the three-stage water supply shortage action plan for the Agency.

These stages are outlined in SGPWA Draft Resolution No. XX, and described in further detail below. See Appendix H for the complete Draft Resolution.

As a wholesale agency, SGPWA does not have the authority to impose mandatory restrictions on retail customers due to water shortages. Therefore, this level of contingency planning is conducted by the retail water agencies.

**TABLE 7-1
RATIONING AND REDUCTION GOALS**

Stage	Percent Supply Reduction ^(a)	Water Supply Condition	Stages of Action
0	0%	Year when at least 62% of contractual SWP Table A imported supplies are available to the Agency	<ul style="list-style-type: none"> • Coordination. Meet and coordinate with retail water agencies and other entities in the San Gorgonio Pass area regarding current and projected water supplies and demands. • Public Messaging. Encourage the public to avoid water waste and increase water use efficiency. • Manage Water Supplies in Excess of Demands. Pursue programs and projects to manage water supplies in excess of demands, including, but not limited to, placing such water in storage or water banking or exchange programs.
1	25%	47%	<ul style="list-style-type: none"> • Water Shortage Plan. The Agency will determine whether a Water Shortage Year exists in accordance with Ordinance 10 and the extent to which imported water supplies available for purchase by the Agency will need to be allocated in accordance with Ordinance No. 10. • Coordination. Meet and coordinate with retail water agencies and other entities in the San Gorgonio Pass area regarding current and projected water supplies and demands, and the extent to which other agencies may implement the appropriate stages and actions under their respective water shortage contingency plans. • Continue to undertake other applicable actions identified above under a Stage 0 Water Supply Condition.

Stage	Percent Supply Reduction ^(a)	Water Supply Condition	Stages of Action
2	26-45%	46-34%	<ul style="list-style-type: none"> • Water Shortage Plan. The Agency will determine whether a Water Shortage Year exists in accordance with Ordinance 10 and the extent to which imported water supplies available for purchase by the Agency will need to be allocated in accordance with Ordinance No. 10. • Shift and Increase in Public Messaging. The Agency will utilize its own website and other local media and communication efforts to educate the public on the shortage and to encourage greater conservation on the part of individuals, businesses, and institutions. • Dry Year Supplies. Determine from its customers if they desire additional dry-year supplies at an additional cost and, if so, to make reasonable and practicable attempts to obtain and deliver such supplies to customers who request and ensure payment for them. • Continue to undertake other applicable actions identified above under Stage 0 and Stage 1 Water Supply Conditions.
3	Greater than 45%	Greater than 34%	<ul style="list-style-type: none"> • Water Shortage Plan. The Agency will determine whether a Water Shortage Year exists in accordance with Ordinance 10 and the extent to which imported water supplies available for purchase by the Agency will need to be allocated in accordance with Ordinance No. 10. • Shift and Increase in Public Messaging. The Agency will utilize its own website and other local media and communication efforts to educate the public on the shortage and to encourage greater conservation on the part of individuals, businesses, and institutions. • Dry-Year Supplies. Determine from its customers if they desire additional dry-year supplies at an additional cost and, if so, to make reasonable and practicable attempts to obtain and deliver such supplies to customers who request and ensure payment for them. • Transfers. Evaluate and solicit input from its customers whether the Agency should pursue any transfers to augment supplies during the Stage 3 Condition, including related considerations of potential impacts to future water supplies. • Continue to undertake other applicable actions identified above under Stage 0, Stage 1, and Stage 2 Water Supply Conditions.

Source: SGPWA Ordinance No. XX, Ordinance Adopting a Wholesale Water Shortage Contingency Plan for Purposes of the Urban Water Management Planning Act (in Appendix H).

7.3 Minimum Water Supply Available During Next Three Years

The minimum water supply available during the next three years would occur during a three-year multiple-dry year event between the years 2016 and 2018. As shown in Table 7-3, the minimum regional water supply for agencies in the SGPWA service area for the next three years is about 6,000 AF. The water supply and demand are based on dry-year assumptions for the SWP and annual supply available for groundwater.

When comparing these supplies to the demand projections provided in Chapters 2 and 5 of this Plan, SGPWA does not have adequate supplies available to meet projected demands should a multiple-dry year period occur during the next three years, assuming SWP imported supply deliveries would be reduced to 33 percent, and based on realization of retail agency demand projections on SGPWA, as shown below. SGPWA will actively pursue transfers and exchanges in order to help meet demands.

**TABLE 7-3
ESTIMATE OF MINIMUM SUPPLY FOR THE NEXT THREE YEARS**

Water Supply Source	2016	2017	2018
Existing Supplies			
Imported SWP ^(a)	5,700	5,700	5,700
Yuba Accord ^(b)	300	300	300
Total Existing Supplies	6,000	6,000	6,000

Notes: Values rounded to the nearest hundred.

(a) SWP supplies are calculated by multiplying SGPWA's Table A amount of 17,300 AF by 33 % of total deliveries projected to be available based on the worst-case historic four-year drought of 1931-1934 (DWR 2015 DCR).

(b) See Section 3, Table 3-1. Assumes Yuba Accord supply available to meet demands.

7.4 Actions to Prepare For Catastrophic Interruption

7.4.1 General

The SGPWA service area is bounded on the east by a major portion of the San Andreas Fault. A major earthquake along the southern portion of the San Andreas Fault would affect the SGPWA service area.

The California Division of Mines and Geology has stated two of the aqueduct systems that import water to southern California (including the portion of the California Aqueduct that traverses the San Joaquin Valley) could be ruptured by displacement on the San Andreas Fault, and supply may not be restored for a three to six-week period. The situation would be further complicated by physical damage to pumping equipment and local loss of electrical power. DWR has a contingency aqueduct outage plan for restoring the California Aqueduct to service should a major break occur, which it estimates would take approximately four months to repair.

In the case of the southern portion of the fault, experts agree it may be at least three days after the earthquake before outside help could get to the area. Extended supply shortages of both groundwater and imported water, due to power outages and/or equipment damage, would have to be managed although local effects of these types of outages would not materially affect the region based on local native groundwater and banked imported water supplies.

Power outages currently do not affect SGPWA because it does not own or operate any wells or distribution systems. However, for the retailer water agencies, all of the water systems have some form of storage as both regulating reservoirs and emergency supply. It is assumed that in an emergency the public would be asked to reduce consumption to minimum health and safety levels, extending the supply. This would provide sufficient time to restore a significant amount of groundwater production. After the groundwater supply is restored, the pumping capacity of the retail purveyors could meet the reduced demand until such time that the imported water supply was reestablished. Updates on the water situation would be made as often as necessary. In addition, the County of San Bernardino has an Emergency Response Plan (2005) which further defines functions, assigns responsibilities, specifies policies and general procedures for coordination of planning efforts of various department and staff to assist in an emergency situation.

The area's water sources are generally of good quality, and no insurmountable problems resulting from industrial or agricultural contamination are foreseen. If contamination did result from a toxic spill or similar accident, the contamination would be isolated and should not significantly impact the total water supply. In addition, such an event would be addressed in the retailers' emergency response plan.

7.4.2 SWP Emergency Outage Scenarios

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Banos), flood damage to the East Branch of the Aqueduct in 2015, and various subsidence and leakage repairs needed along the Main Branch and East Branch of the Aqueduct since the 1980s. All these outages were short-term in nature (on the order of weeks to several months), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation and continue SWP deliveries while repairs were made. Thus, the SWP contractors generally experienced no interruption in total annual deliveries.

One of the SWP's important design engineering features is the ability to isolate parts of the system. The Aqueduct is divided into "pools." Thus, if one reservoir or portion of the California Aqueduct is damaged in some way, other portions of the system can still remain in operation. The primary SWP facilities are shown on Figure 7-1.

Other events could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood or earthquake event that severely damages the Aqueduct along its San Joaquin Valley traverse, or an earthquake event along either the West or East Branches. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR, SGPWA, and other SWP contractors to such events would be highly dependent on the type and location of any such event. In typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands, and the excess is stored in San Luis Reservoir. SWP aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, are also replenished during these periods. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to make up the difference in deliveries to contractors. The SWP share of maximum storage capacity at San Luis Reservoir is 1,062,000 AF.

SGPWA receives its SWP deliveries through the East Branch of the California Aqueduct. The other contractors receiving deliveries from the East Branch are Metropolitan Water District of Southern California, Antelope Valley-East Kern Water Agency, Palmdale Water District, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, San Gabriel Valley Municipal Water District, San Bernardino Valley Municipal Water District, and Mojave Water Agency. The East Branch has two terminal reservoirs, Silverwood Lake and Lake Perris, which were designed to provide emergency storage and regulatory storage (i.e., storage to help meet peak summer deliveries) for several of the East Branch contractors. However, SGPWA does not have contract rights to storage capacity in those reservoirs.

In addition to SWP storage south of the Delta in San Luis and the terminal reservoirs, a number of contractors have stored water in groundwater banking programs in the San Joaquin Valley and more recently along the East Branch, and many also have surface and groundwater storage within their own service areas.

Three scenarios that could impact the delivery to SGPWA of its SWP supply or other supplies delivered to it through the California Aqueduct are described below. For each of these scenarios, it was assumed that an outage of six months could occur. SGPWA's ability to meet demands during the worst of these scenarios is presented following the scenario descriptions.

**FIGURE 7-1
PRIMARY SWP FACILITIES**



7.4.2.1 Scenario 1: Emergency Freshwater Pathway

DWR has estimated that in the event of a major earthquake in or near the Delta, regular water supply deliveries from the SWP could be interrupted for up to three years, posing a substantial risk to the California business economy. Accordingly, a post-event strategy has been developed which would provide necessary water supply protections. The plan has been coordinated through DWR, the Army Corps of Engineers (Corps), Bureau of Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors. Full implementation of the plan would enable resumption of at least partial deliveries from the SWP in less than six months.

DWR Delta Flood Emergency Management Plan. DWR has developed the Delta Flood Emergency Management Plan to provide strategies for a response to Delta levee failures, which addresses a range of failures up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and salt water intrusion are large. Under such severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the pre-positioning of emergency construction materials at existing and new stockpiles and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, water quality conditions, and timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, regularly conduct simulated and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to an overall Cal OES structure. Cal OES is preparing its Northern California Catastrophic Flood Response Plan that incorporates the DWR Delta Flood Emergency Management Plan. These agencies utilize a unified command structure and response and recovery framework. DWR and the Corps, through a Draft Delta Emergency Operations Integration Plan (April 2014), would integrate personnel and resources during emergency operations.

Levee Improvements and Prioritization. The DWR Delta Levees Subvention Program has prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta region. These efforts have been complementary to the DWR Delta Flood Emergency Management Plan, which along with use of pre-positioned emergency flood fight materials in the Delta, relies on pathway and other levees providing reasonable seismic performance to facilitate restoration of the freshwater pathway after a severe earthquake. Together, these two DWR programs have been successful in implementing a coordinated strategy of emergency preparedness for the benefit of SWP and CVP export systems.

Significant improvements to the central and south Delta levee systems along Old and Middle Rivers began in 2010 and are continuing to the present time at Holland Island, Bacon Island, Upper and Lower Jones Tracts, Palm Tract and Orwood Tract. This complements substantially improved levees at Mandeville and McDonald Islands and portions of Victoria

and Union Islands. Together, levee improvements along the pathway and Old River levees consisting of crest raising, crest widening, landside slope fill and toe berms, meet the needs of local reclamation districts and substantially improve seismic stability to reduce levee slumping and create a more robust flood-fighting platform. Many urban water supply agencies have participated or are currently participating in levee improvement projects along the Old and Middle River corridors.

Assuming that the Banks Pumping Plant would be out of service for six months, DWR could continue making at least some SWP deliveries to all southern California contractors from water stored in San Luis Reservoir. The water available for such deliveries would be dependent on the storage in San Luis Reservoir at the time the outage occurred and could be minimal if it occurred in the late summer or early fall when San Luis Reservoir storage is typically low. In addition to supplies from San Luis Reservoir, water from the East Branch terminal reservoirs would also be available to the East Branch contractors, including SGPWA. SGPWA water stored in groundwater banking programs in the San Joaquin Valley may also be available for withdrawal and delivery to SGPWA.

7.4.2.2 Scenario 2: Complete Disruption of the California Aqueduct in the San Joaquin Valley

The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the California Aqueduct (the portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the aqueduct, deliveries from San Luis Reservoir could be interrupted for a period of time. DWR has informed the SWP contractors that a four-month outage could be expected in such an event. SGPWA's assumption for this Plan is a more conservative six-month outage.

Arroyo Pasajero is located downstream of San Luis Reservoir and upstream of the primary groundwater banking programs in the San Joaquin Valley. Assuming an outage at a location near Arroyo Pasajero that takes the California Aqueduct out of service for six months, supplies from San Luis Reservoir would not be available to those SWP contractors located downstream of that point. It is likely that in such an emergency, water from the East Branch terminal reservoirs would be made available to the East Branch contractors, including SGPWA.

7.4.2.3 Scenario 3: Complete Disruption of the East Branch of the California Aqueduct

The East Branch of the California Aqueduct begins at a bifurcation of the Aqueduct south of Edmonston Pumping Plant, which pumps SWP water through and across the Tehachapi Mountains. From the point of bifurcation, the East Branch is an open canal passing through Alamo Power Plant, Pearblossom Pumping Plant, and on to Silverwood Lake and Lake Perris.

If a major earthquake (an event similar to or greater than the 1994 Northridge earthquake) were to damage a portion of the East Branch, deliveries could be interrupted. The exact location of such damage along the East Branch would be key to determining emergency operations by DWR and the East Branch SWP contractors. For this scenario, it was assumed that the East Branch would suffer a single-location break and deliveries of SWP water from north of the Tehachapi Mountains would not be available. It was also assumed that Lake Perris and Silverwood Lake reservoirs would not be damaged by the event and that water in Lake Perris and Silverwood Lakes would be available to the East Branch SWP contractors, including SGPWA.

In any of these three SWP emergency outage scenarios, DWR and the SWP contractors would coordinate operations to minimize supply disruptions. Depending on the particular outage scenario or outage location, some or all of the SWP contractors south of the Delta might be affected. But even among those contractors, potential impacts would differ given each contractor's specific mix of other supplies and available storage. During past SWP outages, the SWP contractors have worked cooperatively to minimize supply impacts among all contractors. Past examples of such cooperation have included certain SWP contractors agreeing to rely more heavily on alternate supplies, allowing more of the outage-limited SWP supply to be delivered to other contractors, and exchanges among SWP contractors, allowing delivery of one contractor's SWP or other water to another contractor, with that water being returned after the outage was over.

Of these three SWP outage scenarios, the East Branch outage scenario presents the worst-case scenario for the SGPWA service area. In this scenario, the retail water suppliers would rely on local supplies and water available to SGPWA from Lake Perris and Silverwood Lakes. See Section 7.4.2 regarding recommendations for emergency outage storage using cooperative agreements with other East Branch SWP contractors and individual groundwater banking programs.

During such an outage, the local supplies available would consist of native and banked groundwater. It was assumed that local well production would be unimpaired by the outage and that the outage would occur during a year when average/normal supplies would be available. Note that adequate well and aquifer capacity exists to pump at levels higher than those assumed in this assessment, particularly during a temporary period such as an outage.

7.4.3 Regional Power Outage Scenarios

For a major emergency such as an earthquake, Southern California Edison (Edison) has declared that in the event of an outage, power would be restored within a 24 hour period. For example, following the 1994 Northridge earthquake, Edison was able to restore power within 19 hours. Edison experienced extensive damage to several key power stations, yet was still able to recover within a 24-hour timeframe.

SGPWA is committed to providing regular service and meeting the needs of the community during any emergency situation. SGPWA is obligated to respond to emergencies by using all available resources in the most effective way possible. Additionally, the East Branch Phase II Extension includes emergency and operational storage for the region.

7.5 Mandatory Prohibitions During Shortages

SGPWA is not a direct purveyor of retail water supplies and does not have any emergency powers or the authority to implement water shortage plans within its boundaries. It relies instead on efforts of the individual cities and water agencies. However, SGPWA does have an Ordinance No. 10 establishing a water shortage plan that allows the Agency to sell and deliver SWP water to these entities. SGPWA's Ordinance 10 requires customers taking direct delivery of SWP water from SGPWA to maintain a backup supply in the event of outages or shortages in supply from the SWP. SGPWA informs customers under Ordinance 10 that supplies are variable and interruptible, with no guarantee of a specified delivery quantity. Ordinance 10 is SGPWA's only authority to reduce water supplies to its customers during shortages. However, customers under Ordinance 10 represent only a small portion of the overall water

use within the SGPWA service area, with a majority of water users receiving water supply from groundwater production.

7.6 Consumption Reduction Methods During Restrictions

As explained in the previous section, SGPWA does not have the power to implement mandatory prohibitions during water supply shortages, with the exception of customers receiving direct SWP supplies under SGPWA Ordinance No. 10.

SGPWA will however manage water supplies to minimize the social and economic impact of water shortages. The Water Shortage Plan is designed to establish procedures for allocating reduced deliveries of water to Purchasers in the event of single or multiple-dry year and a shortage of water available to meet demands of Purchasers.

7.7 Penalties for Excessive Use

The penalties for excessive water use are stated in the text of the resolutions and ordinances outlined in Table 7-1 for the SGPWA and the regional retail agencies.

7.8 Financial Impacts of Actions During Shortages

During periods of reduced consumption, revenue from water sales will decline. Also, a natural disaster may entail unpredicted expenditures for repairs. Therefore, each retail water agency has plans to address financial challenges of water shortages that include a mix of temporary base rate adjustment, use of reserves, fines for violation of mandatory water use restrictions, and deferring of non-critical maintenance items and filling of some personnel vacancies.

SGPWA has sufficient operating funds to supplement any deficiencies in revenue caused from a water shortage.

7.9 Water Shortage Contingency Resolution

SGPWA has prepared a draft Water Shortage Contingency Plan, which is included in Appendix H.

7.10 Mechanism to Determine Reductions in Water Use

As explained in Section 7.5, SGPWA does not have the power to implement mandatory prohibitions during water supply shortages, with the exception of customers receiving direct SWP supplies under SGPWA Ordinance No. 10.

Section 8: References

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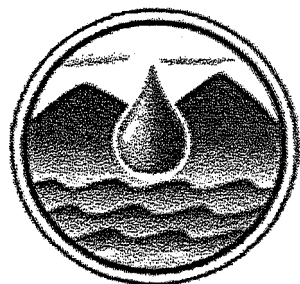
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2015 Urban Water Management Plan

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SAN GORGONIO PASS
WATER AGENCY

• *Established 1961* •

February 21, 2017

Kennedy/Jenks Consultants



Urban Water Management Plan Public Hearing Agenda

- UWMP Act Overview and Legislative Update
- Population Projections
- Water Supply and Demand Projections
- Water Quality and Reliability
- Water Shortage Contingency Planning
- Next Steps
- Public Comment Period and Q&A

What is an Urban Water Management Plan?

- Plan that provides a general framework for long-term water resource planning (20 to 25 years)
- Required by all urban water suppliers with $\geq 3,000$ service connections or supplying $\geq 3,000$ acre-feet per year (AFY)
- Completion required for State grant and loan eligibility
- Update required every five years
- UWMP Submittal Date: July 1, 2016 (no penalties for late submittal)

Why are UWMPs Developed?

- 1983 Urban Water Management Planning Act
- To identify relationships between supply and demand
- To provide detailed description of all supply sources
- To identify conservation programs and progress
- To present Water Shortage Contingency Plan
- To address water quality issues
- To describe how demand will be met through time, in all hydrologic year types



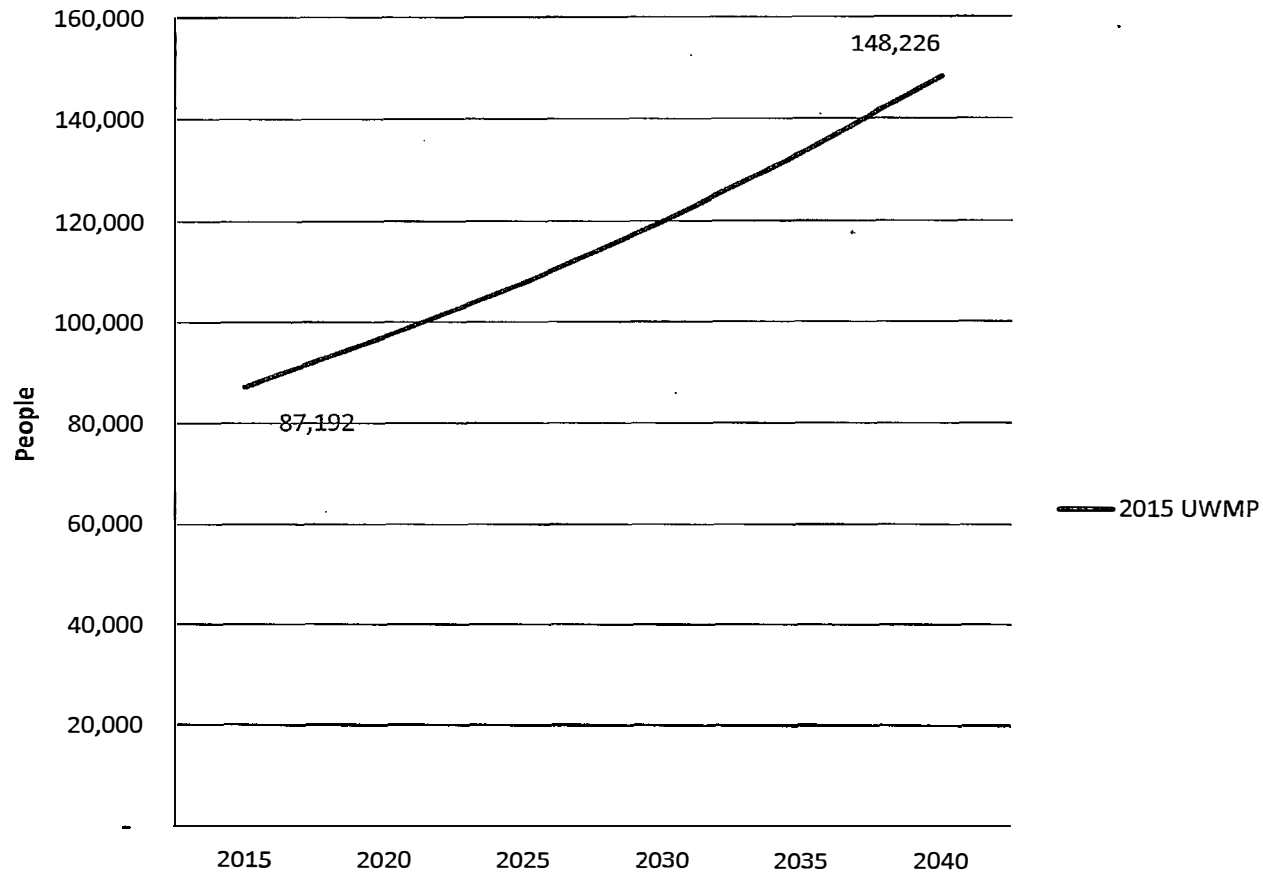
UWMP Requirements

- Description of existing and planned water supplies
- Demonstrate how demands will be met in all hydrologic year types
- Assessment of water quality conditions
- Demand Management Measures (water conservation programs) – past, present, future
- Report progress in meeting 20x2020 targets (not applicable to SGPWA)
- Description of water shortage contingency planning

New and Different Wholesaler 2015 UWMPs

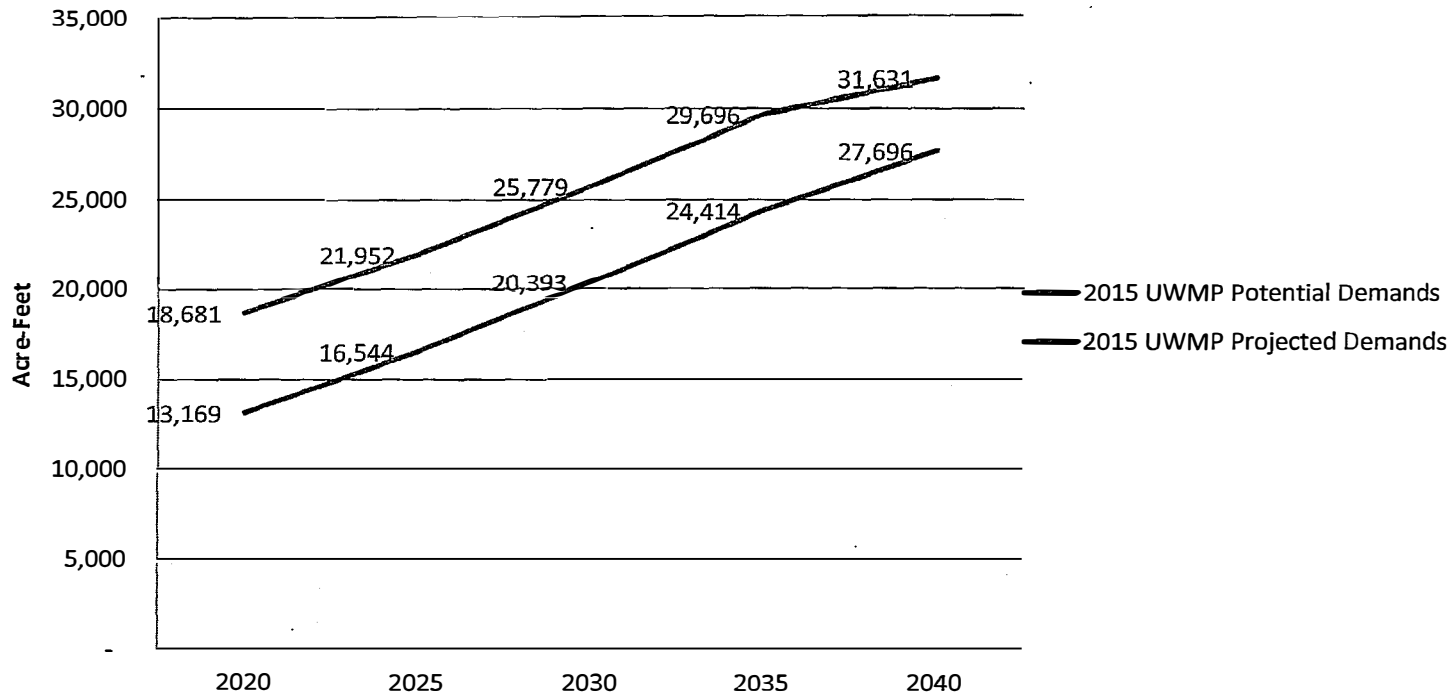
- UWMP Submittal Date: July 1, 2016
- Plan and Data Submittal Format (electronic)
- Demand Management Measures*
- Water Loss Reporting*
- Estimation of future water savings in demand projections (voluntary)

Projected Population



The 2015 population is based on a 5-year American Community Survey (ACS) estimate for 2010-2014. Projections to 2040 were estimated using an average growth rate for the area based on available population projections for agencies within the SGPWA service area.

Demand Projections



Projected Demands from BCVWD (2015 UWMP Table 6-26), City of Banning (2015 UWMP Table 5-4), and Yucaipa (2015 San Bernardino Regional UWMP Table 12-15).

Water Supply Portfolio

SUMMARY OF CURRENT AND PLANNED WATER SUPPLIES (AFY)

Water Supply Source	2015	2020	2025	2030	2035	2040
Existing Supplies						
Imported SWP ^(a)	10,700	10,700	10,700	10,700	10,700	10,700
Yuba Accord ^(b)	300	300	300	300	300	300
Total Existing Supplies	11,000	11,000	11,000	11,000	11,000	11,000
Planned Supplies						
SBVMWD Purchased Supply ^(c)	-	2,000	2,000	2,000	2,000	2,000
Available Purchases of Supply ^(d)	-	1,500	3,800	7,700	11,700	15,000
Total Planned Supplies	-	3,500	5,800	9,700	13,700	17,000
Total Existing and Planned Supplies	11,000	14,500	16,800	20,700	24,700	28,000

Notes: Values are rounded to the nearest hundred.

(a) Assumes 62% of Table A amount (17,300 AFY) based on the California Department of Water Resources Final Delivery Capability Report 2015 (DWR 2015 DCR).

(b) See Section 3.2.4.1.

(c) An average of 2,000 AF is assumed over a five year period through a future agreement with SBVMWD. See Section 3.3.1.2.

(d) The Agency has a financial plan in place to obtain additional supplies necessary to meet projected demands within its service area (shown in Table 2-5). These future supplies are described in Section 3.3. Sources include the dry-year water purchase program, exchanges with CLAWA, and other supplemental water as available. The Agency is expected to purchase additional supplies by 2020 in order to meet demands shown in Table 2-5. Volumes shown assume the DWR 2015 DCR average reliability of 62%.

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SGPWA 2015 UWMP, Table 3-1

Potential Transfer and Exchange Opportunities

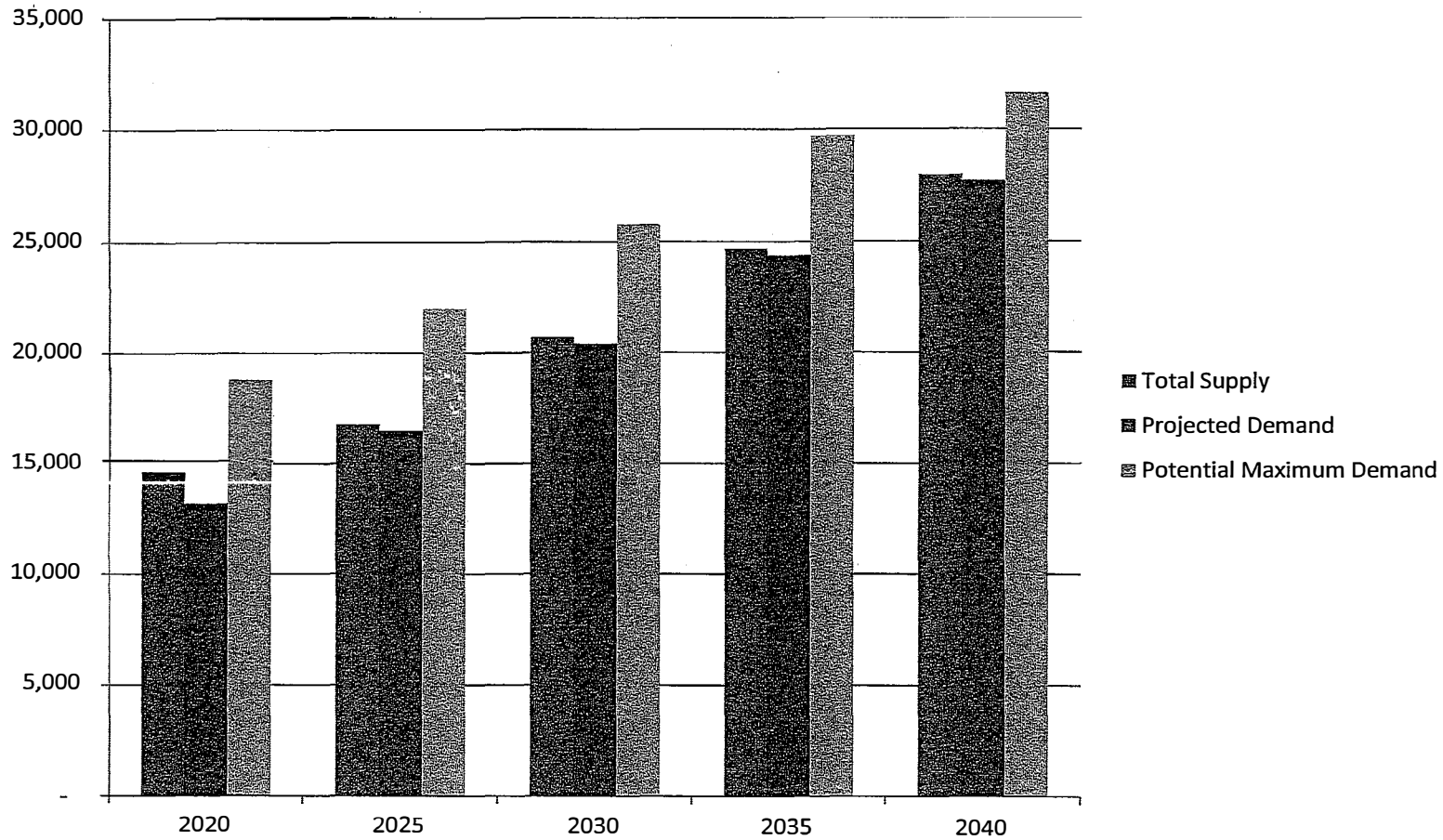
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Supplemental Water Source	Description	Type and Reliability	Potential Partners
Table A Transfers	Purchase of Table A allocations from agencies with allocations in excess of demand	Permanent, 60%	Kern County Water Agency (KCWA); Tulare Lake Basin Water District; Duddle Ridge Water District; Empire West Side Irrigation District; MWDC; San Bernardino Valley Municipal Water District
Kern River Exchanges	Water agencies obtain diversion rights from the Kern River, making available Table A SWP supplies for exchange	Permanent, 100%	Nickel Family Farms via KCWA exchange; Buena Vista Water Storage District (WSD) via Buena Vista WSD or Rosedale-Rio Bravo WSD exchange
Banked Groundwater Exchanges	Purchases of banked groundwater delivered in-lieu from unused Table A deliveries	Short-term, 100%	Rosedale-Rio Bravo WSD; Water agencies participating in the Semitropic WSD Groundwater Storage Program; Water agencies south of Edmonston Pumping Plant
Banked Groundwater Pumpback	Purchase of banked groundwater delivered via a "pumpback" to the California aqueduct	Short-term, 100%	Rosedale-Rio Bravo WSD; Kern Delta Water District; Semitropic WSD - Stored Water Recovery Unit
Excess SWP Purchases	Purchase excess SWP supply from SWP or water agencies with a surplus	Short-term, 100%	SWP Article 21; SWP Turnback Pool (Table A); San Bernardino Valley Municipal Water District; Crestline-Lake Arrowhead Water Agency; Westside Districts
Dry Year Water Purchases or Transfer Programs	Purchase or transfer of unused water from water agencies with a surplus to water agencies requesting supplemental dry year supply	Short-term in dry years, 100%	SWP Contractors (buyers and sellers are treated as singular entities); SWP Turnback Pool (Table A); Western Canal Water District; Yuba Dry Year Water Transfer Program

SGPWA 2015 UWMP, Table 3-4

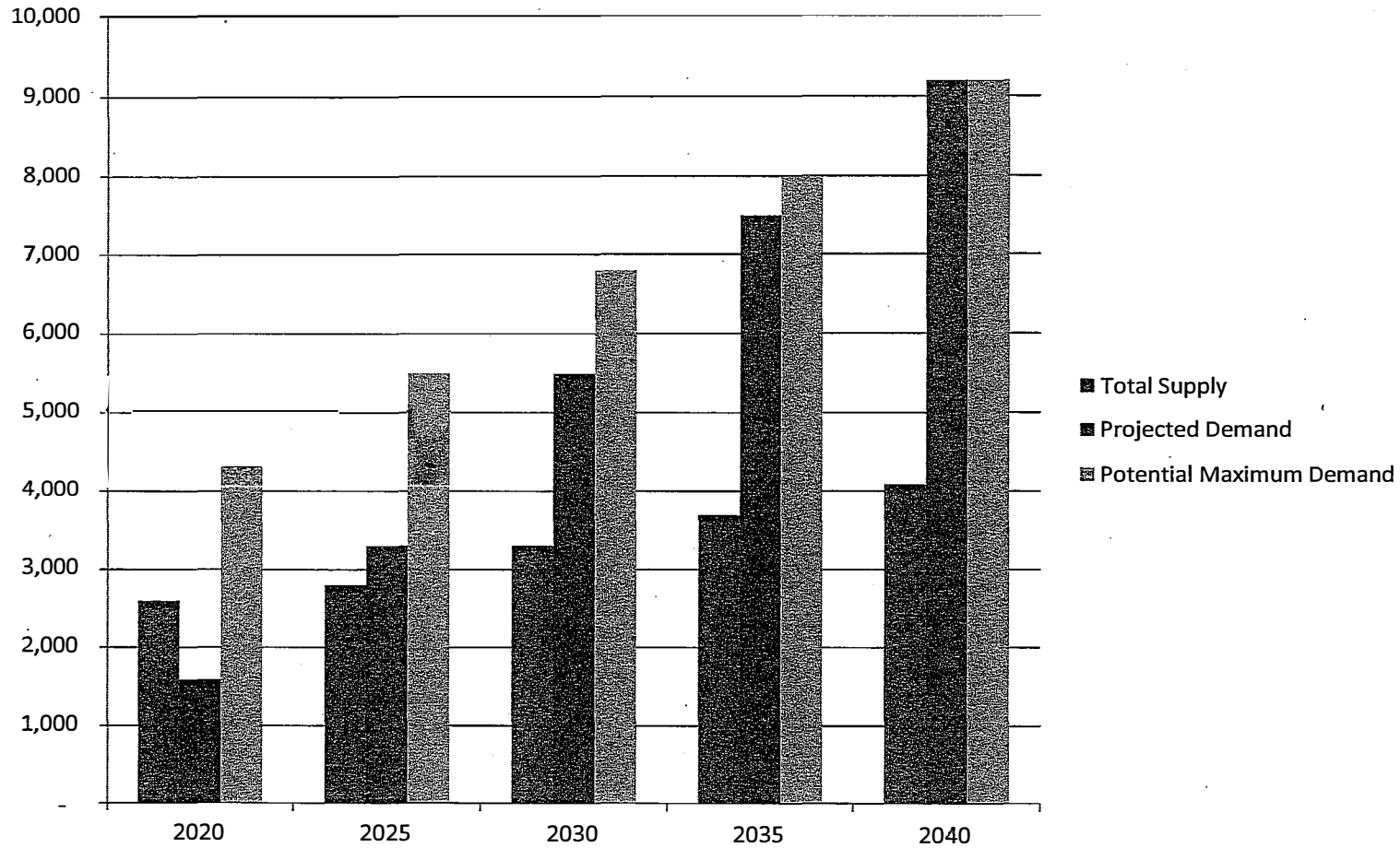
Normal Year Supply and Demand

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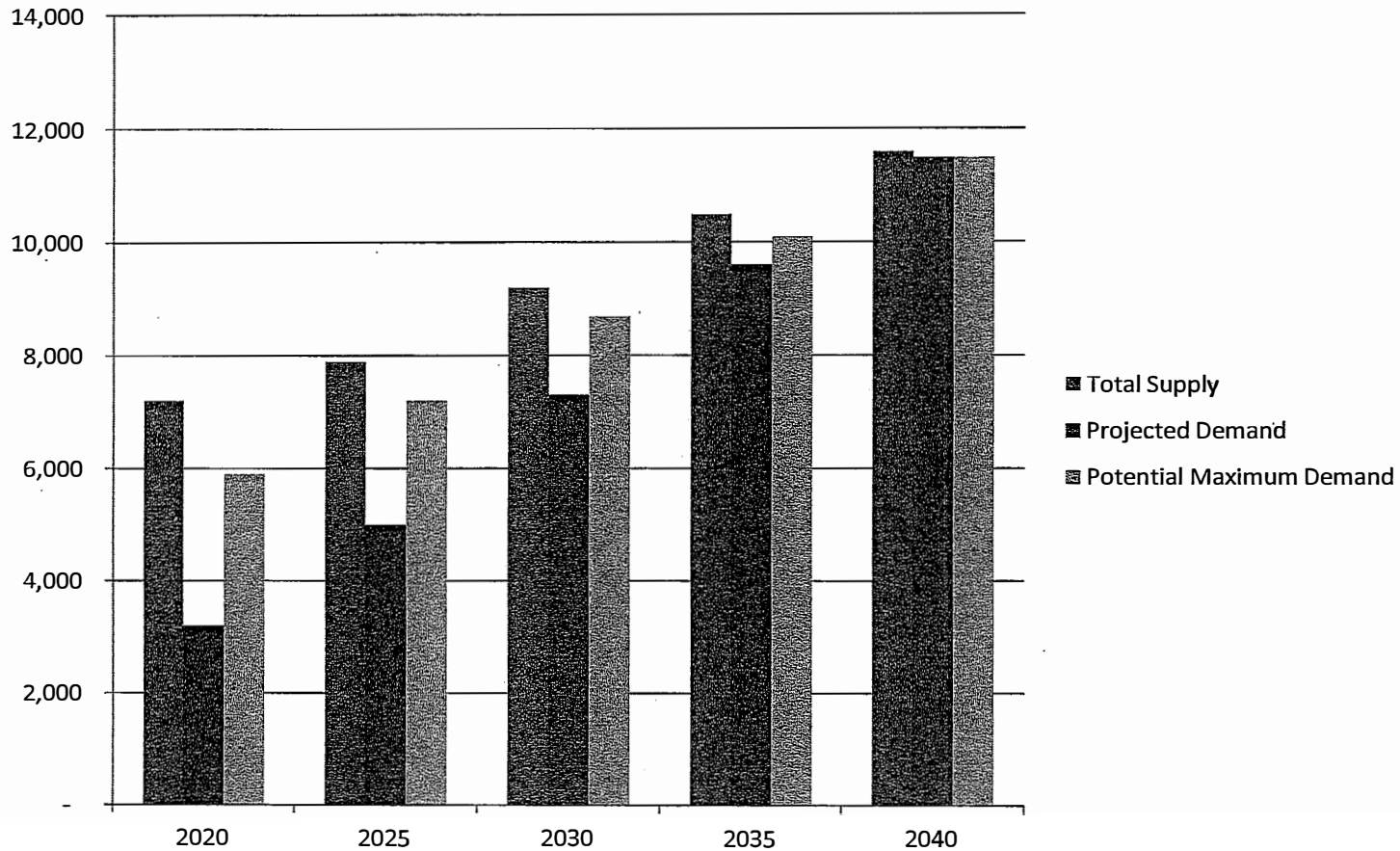
Single-Dry Year Supply and Demand

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Multiple-Dry Year Supply and Demand

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*Demand Management Measures Requirements

- SGPWA must describe the Foundational DMMs:
 - Metering
 - Public Education and Outreach
 - Water Conservation Program Coordination and Staffing Support
 - Wholesale Supplier Assistance Programs
 - *Programs to Assess and Manage Distribution System Real Loss
 - ✓ Done through the AWWA Water Loss Audit
 - Other DMMs that may have a significant effect on water use



Water Shortage Contingency Planning

- Plan must have stages of action that address up to a 50% reduction in water supply
- Draft Ordinance/Resolution adopting the WSCP
- Must show minimum supply for the next three years
- SWP Emergency Outage Scenarios
- Assess Worst-Case Scenario
- Regional Emergency and Power Outage Scenarios


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Next Steps

- Public Comment Period
- Consider Adoption
- Submittal to:
 - ✓ Department of Water Resources
 - ✓ State Library
 - ✓ Cities of Calimesa, Banning, and Beaumont
 - ✓ Riverside County Planning Department
- Q&A

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Public Comment Period and Q&A

MEMORANDUM

TO: Board of Directors

FROM: General Manager

RE: USGS Program Letter 2017-2018

DATE: February 21, 2017

Summary:

Staff reviewed the proposed United States Geological Survey (USGS) program letter with the Board at the Engineering workshop on February 13. The purpose of this proposed Board action is to determine if the Board wishes to accept the program letter as presented.

Background:

The Agency has partnered with the USGS for many years to obtain groundwater data, to measure flows, and to develop groundwater models. Over time, staff has gradually reduced the role of the USGS in order to expend funds in more important areas. However, the role that the USGS plays is still important to the Agency and to the region.

Detailed Report:

Working with other local public agencies (the Cities of Beaumont and Banning, the Yucaipa Valley Water District, and the Beaumont Cherry Valley Water District), the Agency has made commitments to the Santa Ana Regional Water Quality Control Board (Regional Board) to maintain water quality in the Beaumont Management Zone. One of the commitments that the Agency has made is the water quality monitoring described in the USGS program letter. This enables the Regional Board to maintain a database of local groundwater quality.

In addition, the Agency works with USGS staff to monitor groundwater levels in local groundwater basins twice a year. This partnership gives the Agency additional credibility in reporting its data, enables the work to be done more quickly and efficiently, and

allows the USGS to post the data on its web site. These two programs together comprise Task 1 of the attached program letter.

Task 2 relates to metering the flow at the top and bottom of Burnt Canyon. This task enables the three Participating Entities (the Agency, the City of Banning, and Banning Heights Mutual Water Company) to determine the volume of water lost in Burnt Canyon from the flume system. This data will be important in a number of ways as the flume program nears the end game.

Fiscal Impact:

One advantage of working with the USGS is the cost-sharing that it provides. The USGS will provide approximately 19% of the total funding requested. A disadvantage is that the USGS operates on a different fiscal year, and thus seeks funding outside of the Agency's typical fiscal year budgeting process. Most of the \$107,000 expended under this agreement would be in the 2017-2018 fiscal year. Should the Board approve the Program Letter, it would commit the Agency to certain costs next year. This is not a problem for the Agency; it is merely outside of the normal budget process.

The Agency has done this with the USGS each year for the past several years and it has not had any negative impacts. The cost of this is such a small percentage of the Agency's general fund budget that it is not a concern to staff.

Recommendation:

Staff recommends that the Board approve the Program Letter and authorize the General Manager to sign it, continuing the Agency's partnership with the USGS for another year.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
California Water Science Center
6000 J Street, Placer Hall
Sacramento, CA 95819
Phone: (916) 278-3026 Fax: (916) 278-3045
<http://water.wr.usgs.gov>

January 10, 2017

Mr. Jeff Davis
General Manager and Chief Engineer
San Geronio Pass Water Agency
1210 Beaumont Avenue
Beaumont, California 92223

Dear Mr. Davis:

This letter confirms discussions between our respective staffs, concerning the cooperative program between the San Geronio Pass Water Agency (SGPWA) and the U.S. Geological Survey (USGS) during the period March 15, 2016 to November 30, 2017. The work proposed under the enclosed Joint Funding Agreement (JFA) is a continuation of the cooperative basin-wide monitoring network and study to identify, characterize and evaluate potential artificial-recharge sites for conjunctive use in the San Geronio Pass area. The program consists of two main tasks: (1) basin-wide monitoring, (2) Burnt Canyon flow analysis. A detailed description of progress on these tasks is included as an attachment to this letter.

The total cost of the proposed cooperative water-resources program amendment A1 only is \$131,761.00. Of this total, SGPWA will contribute \$106,746.00 and, subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$25,015.00. The proposed period for this program is March 15, 2015 to November 30, 2018. Summary of costs attached.

Table 1. FFY16 Budget

Program element	USGS	SGPWA	Total
Task 1: Basin-Wide Monitoring			
A. Water-Level Monitoring	\$12,550	\$50,406	\$62,956
B. Water-Quality Monitoring	\$10,450	\$46,605	\$57,055
subtotal	\$23,000	\$97,011	\$120,011
Task 2: Burnt Canyon Flow Analysis	\$2,015	\$9,735	\$11,750
Total FFY16	\$25,015	\$106,746	\$131,761

Enclosed are two copies of Joint Funding Agreement (JFA) 16WSCA600096710_A1 for your approval. Work performed with funds from this agreement will be conducted on a fixed-price basis. If the JFA is acceptable, please return one of the signed copies with original signatures to our office for further processing. The other is for your files.

If you have any questions concerning the program described above, please contact Allen Christensen at (619) 225-6175 or Claudia Faunt at (619) 225-6142 in or San Diego Office. If you have any administrative questions, please contact Nancy Mora at (619) 225-6428.

Sincerely,

Eric Reichard
Director, USGS California Water Science Center

Enclosures:

Cc Allen Christensen, USGS CAWSC
Claudia Faunt, USGS CAWSC

San Gorgonio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

Task 1A – Groundwater-Level Monitoring

Progress

A basin-wide groundwater-level monitoring network was established in the San Gorgonio Pass area in Federal Fiscal Year 1997 (FFY97) to evaluate existing hydrologic conditions and to monitor the effects of pumping and artificial recharge on the groundwater system. A key component of the network is collecting data from the multiple-well monitoring sites, which provide information on water-level changes and vertical gradient in the different aquifers.

In FFY16, U.S. Geological Survey (USGS) personnel accompanied San Gorgonio Pass Water Agency (SGPWA) personnel in the spring and fall to measure water levels in 107 wells. Data collected as part of the water-level network are available through the USGS National Water Information System (NWIS) online database (table 2).

Water-Level Change

Water-level changes measured in the monitoring wells between fall 2014 and fall 2015 and spring 2015 and spring 2016 are shown on figures 1 and 2, respectively. Of the 88 wells with water-level change between fall 2014 and 2015, 8 wells recorded a water-level rise greater than 5 ft, 60 wells recorded little or no change (rise or decline less than 5 ft), and 20 wells recorded a water-level decline greater than 5 ft (fig. 1). Of the 82 wells with water-level change between spring 2014 and 2015, 19 wells recorded a water-level rise greater than 5 ft, 55 wells recorded little or no change (rise or decline less than 5 ft), and 8 wells recorded a water-level decline greater than 5 ft (fig. 2).

Multiple-Well Monitoring Sites

A total of 15 transducers recorded continuous water-level data at multiple-well monitoring sites 1, 3, 6, 8, 9, and 10 during FFY15 (fig. 1). These data were used to help determine vertical gradients in the aquifer system and document long-term water-level changes in the SGPWA service area. Sites 1 and 3 are discussed in the recharge monitoring task.

Site 6—Site 6 (002S001W35J001-4) is in the northeastern part of the Beaumont storage unit, and includes four 2-inch piezometers installed in the same borehole: 35J1 perforated between 860-900 ft bls; 35J2 perforated between 750-770 ft bls; 35J3 perforated between 610-630 ft bls; and 35J4 perforated between 240-260 ft bls (dry). Prior to late 2008 the water levels measured in the different piezometers at Site 6 (fig. 3) were similar; however, after late 2008 the depth to water in the piezometers increases with the depth of the perforated interval. This change is likely a response to pumping from the nearby BCVWD production well 25. BCVWD well 25 (shown on figure 1 in blue) is about 0.7 mile southwest of Site 6 and started regular groundwater production for municipal supply in October 2008. Water levels at the site have declined between 34 and 40 ft during the period February 2002 and November 2015. The rate of decline was greater than 5 ft per year (ft/yr) prior to 2010. Since late 2010, all 3 wells have shown recovery of about 17ft between the

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seasonal highs measured during spring of 2010-2015. All wells at the site have continued to show overall year-to-year recovery since 2010, with the greatest recovery occurring between late 2012 and late 2015. The water levels at the site continued to recover about 2 ft between seasonal highs in 2015 and 2016. The recent recovery at this site may have resulted from changes in pumping patterns in the area, natural recharge from recent wet years, artificial recharge at the SGPWA and BCVWD recharge facilities, or a combination of these factors. Since late 2014, the character of the hydrographs of the wells at the site show less seasonal variation. This is likely a response to reduced pumping a well 25. The transducer in well 35J3 failed in May 2016 and needs to be replaced. The USGS has installed a temporary transducer until the replacement transducer is available. The cost of the transducer is not included in this agreement.

Site 8—Site 8 (003S002E07P001-4) is in the central part of the Cabazon storage unit, and includes four 2-inch piezometers installed in the same borehole: 7P1 perforated between 980-1,000 ft bls; 7P2 perforated between 790-810 ft bls; 7P3 perforated between 640-660 ft bls; and 7P4 perforated between 550-570 ft bls. The hydrographs for site 8 show variations in water levels with depth at the site (fig. 3). In general, the water-level altitude increases with depth at the site with an upward groundwater gradient between the lower and upper aquifer system. The deepest well (7P1) has the highest water level altitude, more than 25 ft higher than water-level altitude in the shallower wells. This large difference in water-level altitudes indicates that well 7P1 is perforated in a different aquifer than the other wells. Wells 7P2 and 7P3 also show greater daily variation than wells 7P1 and 7P4. This variation likely is a response to pumping by the nearby supply well used by the Cabazon County Water District, shown as a black dot (fig. 1) 0.3 miles east of Site 8. The water-level decline measured at the site between May 2007 and August 2016 was 34, 31, 29, and 30 ft at wells 7P1, 7P2, 7P3, 7P4, respectively. The rate of decline at these wells has risen from 2.8 ft/yr, reported in 2014 to 3.7ft/yr for well 7P1 and 3.3 ft/yr at well 7P1-3 during the period mid-2007 to late-2016. Since mid-2013, all wells show a general increase in the rate of decline during the period mid-2013 to late-2016 as compared with the period mid-2012 to early-2014. The steady decline in water level at the site is likely a response to lower than average natural recharge in the area as result of the ongoing drought.

Site 9—Site 9 (003S002E15P001-3) is in the eastern part of the Cabazon storage unit, and includes three 2-inch piezometers: 15P1 perforated between 373-383 ft bls; 15P2 perforated between 330-350 ft bls; and 15P3 perforated between 240-260 ft bls. Prior to early 2011, water-level altitude in well 15P1 is slightly higher than the water-level altitude in well 15P2, indicating an upward groundwater gradient conditions at the site. (fig. 4). The water-level decline measured at the site between May 2007 and April 2011 was 9.3 ft (about 2.4 ft/yr) at well 15P1 and 8.5 ft (about 2.2 ft/yr) at 15P2. In April-May, 2011 both wells show rapid increases in water-level altitude at the site. The transducer in well 15P1 recorded a 4.6 ft rise in water table between late-April and late-August, 2011. The transducer in well 15P2 recorded a 10.3 ft rise in water table between mid-May and mid-August, 2011. It is important to note that this water-level rise event occurred in the deeper well (15P1) first then approximately 1 month later started in the shallower well (15P2). This event also reverses the vertical gradients at the site. This recharge event was likely the

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result of natural recharge in the area. Since this event in 2011, both wells show nearly parallel water-level decline and continue to show a downward gradient between the two wells. Prior to May, 2011 manual water-level measurements collected from the shallow well (15P3) were dry. Manual measures in well 15P3 also captured this water-level rise event with a measured water level at 220.8 ft below land surface or about 115 ft above the water levels measured in wells 15P1 and 15P2. The USGS installed a transducer in well 15P3 in June 2014, and the well has been dry since November 2011. The overall decline at well 15P1 is approximately 23 ft and the overall rate of decline is 2.9 ft per year since 2007. The overall decline at well 15P2 is 11.2 ft and the overall rate of decline is 1.5 ft per year during the period mid-2007 and early-2015 when the well went dry.

Site 10—Site 10 (003S001E11F001-4) is in the western part of the Cabazon storage unit, and includes four 2-inch piezometers installed in the same borehole: 11F1 perforated between 1060 and 1040 ft bls; 11F2 perforated between 860 and 840 ft bls; 11F3 perforated between 660 and 680 ft bls; and 11F4 perforated between 600 and 580 ft bls. The water-level decline measured at the site between August 2009 and November 2011 was 8.8, 8.7, 8.9, and 9.25 ft at wells 11F1, 11F2, 11F3, and 11F4, respectively (fig. 4). During the period November 2011 to June 2013 water-level altitudes at the site increased. The water-level rise measured at the site between November 2011 and June 2013 was 5.5, 5.3, 5.1, and 5.2 ft at wells 11F1, 11F2, 11F3, and 11F4, respectively (fig. 4). Wells 11F3 and 11F4 have nearly identical depth to water and water-level change indicating these wells are in the same aquifer. Since mid-2013, when water levels at the site reached recent highs, water levels have declined between 17 and 21 ft at the site. Since mid-2013 the rate of decline at the site has increased as compared with the rate of decline measured during the period mid-2009 to 2012. Since late 2013 all wells at the site have shown decline of about 16 ft and rate of decline of 5.3 ft/yr. The transducer in well 11F4 failed in April 2016 and needs to be replaced. The USGS has installed a temporary transducer until the replacement transducer is available. The cost of the transducer is not included in this agreement.

Plans

During FFY16, SGPWA personnel will collect water-level data from groundwater-level monitoring-network wells (fig. 2) on a semi-annual basis. The USGS will continue to canvass new wells, and verify well information for wells in the network. Water-level data will be collected at one-hour intervals at all sites equipped with pressure transducers (table 2); these sites will be downloaded on a quarterly basis by the USGS. The USGS will continue to enter water-level and well-site data collected by SGPWA and USGS personnel into the USGS database with appropriate quality-control checks, including accompanying SGPWA personnel during both spring and fall measurement periods. Water-level data are available through the USGS NWIS online database. As part of the calibration process completed in FFY14, it was noted that many of the transducers are near or have exceeded expected serviceable lifetime of the transducers. The factory expected serviceable lifetime of the transducers used at the continuous monitoring sites is between 7-10 years. The USGS will continue to monitor each transducer and recommend replacement as needed. Currently the SGPWA has 15 transducers deployed and the replacement cost is approximately

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\$1,100. As noted above two pressure transducers failed and need to be replaced. The USGS will provide a quote for the replacement of the transducers. The cost of replacement is not included in this agreement. SGPWA should expect one or two transducer failures per year for the next 5-10 years until all transducers are replaced. Data collection at the transducer located at the San Gorgonio Recharge facility is included as part of this task.

Total cost for the above work is \$62,956. Of this total, San Gorgonio will contribute \$50,406 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$12,550, as reflected in the summary funding table.

Total FFY 2016 cost for water-level monitoring **\$ 62,956**

Task 1B – Water-Quality Monitoring

Progress

In FFY16, 9 water-quality network wells were sampled. The samples were analyzed for major ions, nutrients, selected trace elements, stable isotopes of oxygen and hydrogen. Complete results for all samples collected as part of the water-quality monitoring network are available through the USGS NWIS online database. NWIS links to individual wells are provided in table 3. Note, wells denoted with “X*” on table 3, column 2016 are scheduled to be sampled in 2017 as part of FFY16 funding carried over from the previous cooperative agreement. These wells were not available for sampling during the summer of 2015.

Plans

The current water-quality monitoring network includes 37 wells (fig. 5 and table 3). About one third of the wells are sampled on a triennial basis. Water-quality samples will be collected and analyzed from 13 wells in FFY17. The samples will be analyzed for major ions, nutrients, selected trace elements, stable isotopes of oxygen and hydrogen. All data collected will be entered into the USGS database with appropriate quality control, and are available upon request.

Total cost for the above work is \$57,055. Of this total, San Gorgonio will contribute \$46,605 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$10,450, as reflected in the summary funding table.

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Total FFY 2016 cost for water-quality monitoring **\$ 57,055**

Total FFY 2016 cost for task 1 - **\$ 120,011**

Task 2: Burnt Canyon Flow Analysis

Progress

In FFY07, the USGS completed a series of investigations to determine flow characteristics within the Burnt Canyon stream section between Raywood Flat and the lower Burnt Canyon weir (Figure 5). Based on data collected between August 2007 and November 2007 cumulative losses along the Burnt Canyon reach to the lower weir were approximately 11.3 million cubic feet or 80 acre feet. In FFY13, the USGS reconstructed and re-installed the temporary weir at the lower collection pond to compare flow between the turnout at upper Burnt Canyon and the collection pond at lower Burnt Canyon. The USGS also installed a new transducer at the lower weir site and factory-recalibrated the transducer used at the upper weir to collect stage at 15 minute intervals. Data collected at the upper Burnt Canyon weir and the lower Burnt Canyon weir have been reviewed and uploaded to the USGS on-line data base. Discharge data derived from stage measurements are shown on figure 5. The maximum rated (calibrated) flow at Upper and Lower Burnt Canyon weirs is 6.09 cfs. Flows in excess of 6.09 cfs will over top the weir, flows greater than 6.09 cfs were filtered out of the data used to generate figure. The graph also shows cumulative flows, based on daily values, for the upper and lower weirs. Cumulative daily flow during the period of April 2013 and August 2016 is 1481 and 893 acre feet for the upper and lower weirs, respectively. The complete data set is available upon request or by download using the USGS online database. Data in excess of 6.09 cfs are estimated from stage reported by the transducer and stream geometry these values should be considered poor. Comparing flows between the Upper Burnt and Lower Burnt Canyon shows continual losses between the upper and lower weirs, except for a few periods of storms as noted above. Generally, the loss is approximately 0.25-0.5 cfs. During the summer of 2015, flows from the upper weir were less than 0.5 cfs. At that rate and during summer conditions little or no flow was measured at the lower weir. Based on analysis of flows, losses are generally constant between October to January, then tend to increase during spring and summer months (April to September). This is expected as evapotranspiration rate increases in spring and summer in the canyon reach between the upper and lower weirs. Since September 2015, there has been little or no flow at the lower weir.

Plans

During FFY16, the USGS is proposing to continue to maintain the sites. In addition, the USGS will complete quarterly (access permitting) detailed flow measurements to insure accurate flow ratings. Site maintenance includes; quarterly data downloads (access permitting), site inspection, and complete leveling surveys between reference marks annually. Since the lower weir is subject to periodic removal during high flow events, the

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USGS will complete detailed flow measurements and leveling surveys after the lower weir is periodically replaced to insure accurate flow measurements are maintained. Data collected will be added to the USGS database with appropriate quality-control checks. Data collected as a result of this study will be used to determine daily and seasonal losses or gains along the Burnt Canyon reach. The City of Banning intends to monitor the flows at the upper weir and in the lower portion of Burnt Canyon. It is anticipated that they will begin to monitor flows in spring of 2017. The estimated cost to monitor these sites until spring 2017 is \$11,750

Total cost for the above work is \$11,750. Of this total, San Gorgonio will contribute \$9,735 and subject to the availability of Cooperative Matching Funds (CMF), the USGS will contribute \$2,015, as reflected in the summary funding table.

Total FFY 2016 cost for task 2 -

\$ 11,750

Future Work

To assist in future planning for the USGS and SGPWA cooperative program. The USGS has proposed work for FFY 2017. As stated in past agreements the CAWSC policy with respect to matching funds is on a first come basis, with priority going to multi-year agreements. This multi-year program will help the USGS plan for future Federal Matching Funds, the current program between the USGS and SGPWA is year to year and does not allow for the USGS to plan the allocation of future matching funds. The USGS is suggesting that the cooperative agreement be change to a multi-year agreement. This change does not obligate future funds for the USGS or the SGPWA and is for planning purposes only (Table 2.). In order to address questions concerning the interactions between the Cabazon Basin and the Coachella Basins, the USGS is proposing several monitoring wells, one monitoring well near the eastern boundary of the Cabazon basin, and one well near the western boundary of the Coachella Basin. These wells are needed to help determine groundwater gradients and better estimate groundwater interactions between basins. There are other locations within the basin where the understanding of the groundwater system could greatly improve with the installation of additional monitoring wells, including the proposed recharge facility near Beaumont Avenue. Further discussion between respective staffs is need to determine the best approach to meet the research goals of the USGS and the groundwater management needs of the SGPWA.

San Geronio Pass Water Agency Cooperative Program: Progress, Plans, and Costs

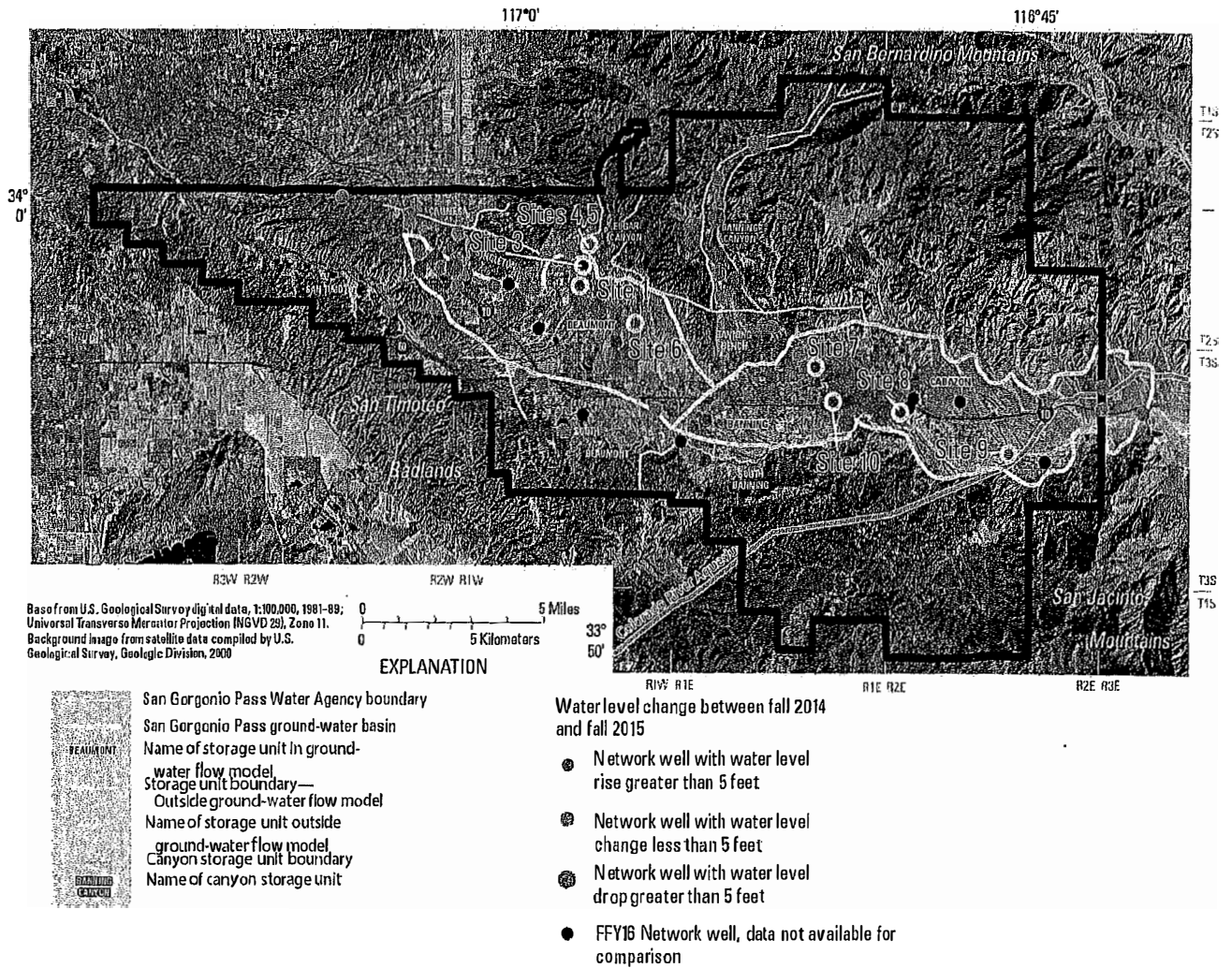


Figure 1. Map showing the water-level network and water-level change between fall 2014 and fall 2015 at selected wells.

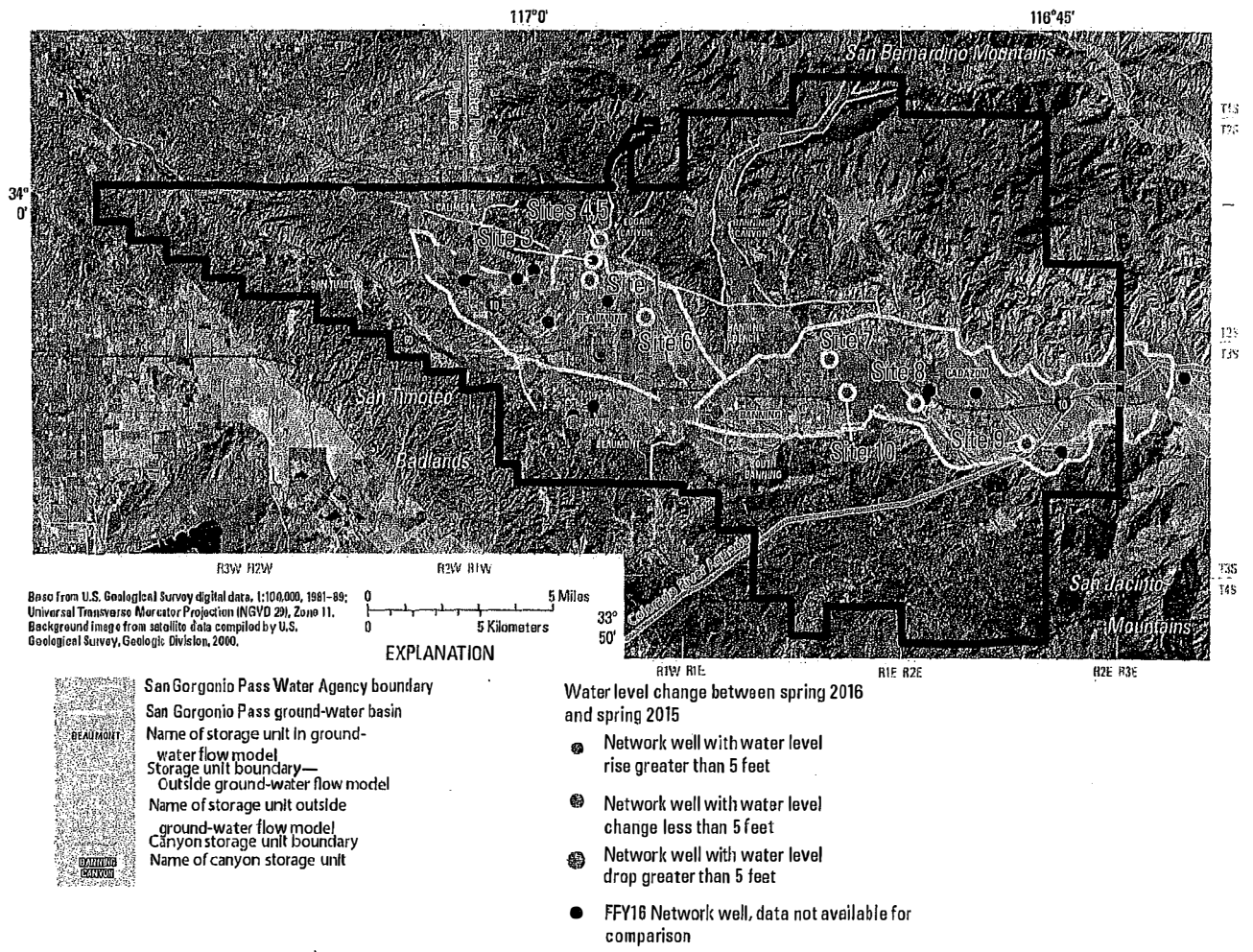


Figure 1. Map showing the water-level network and water-level change between spring 2016 and spring 2015 at selected wells.

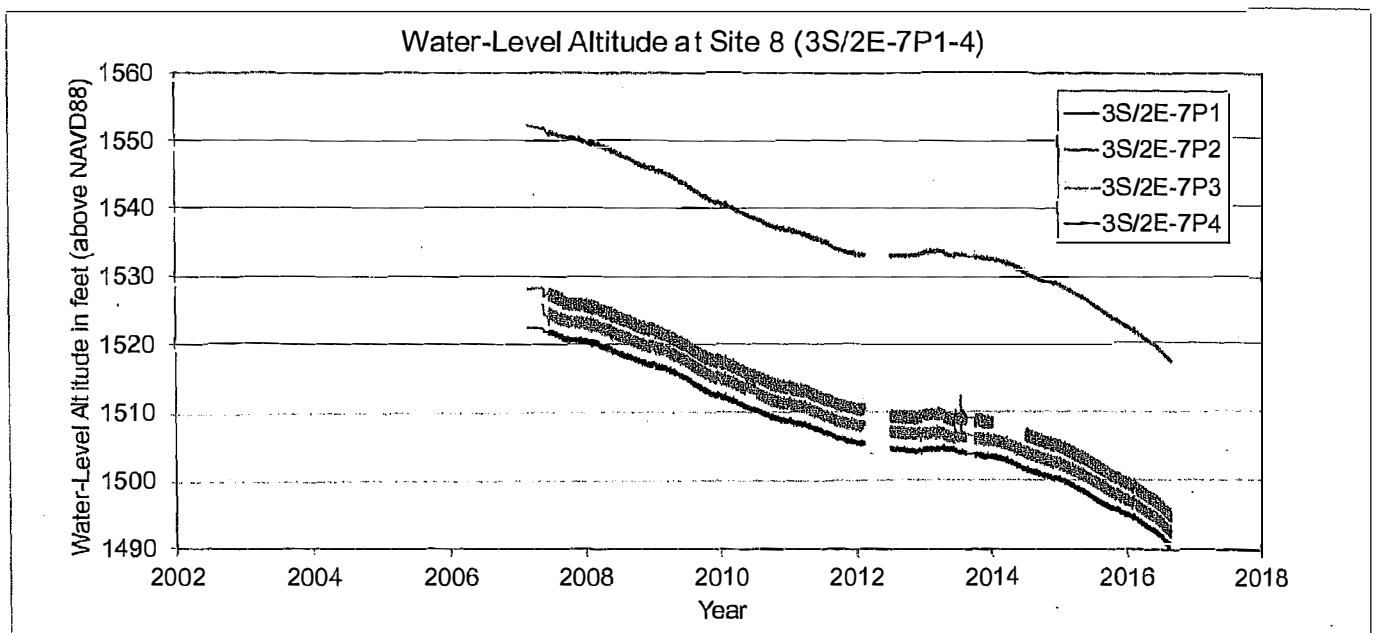
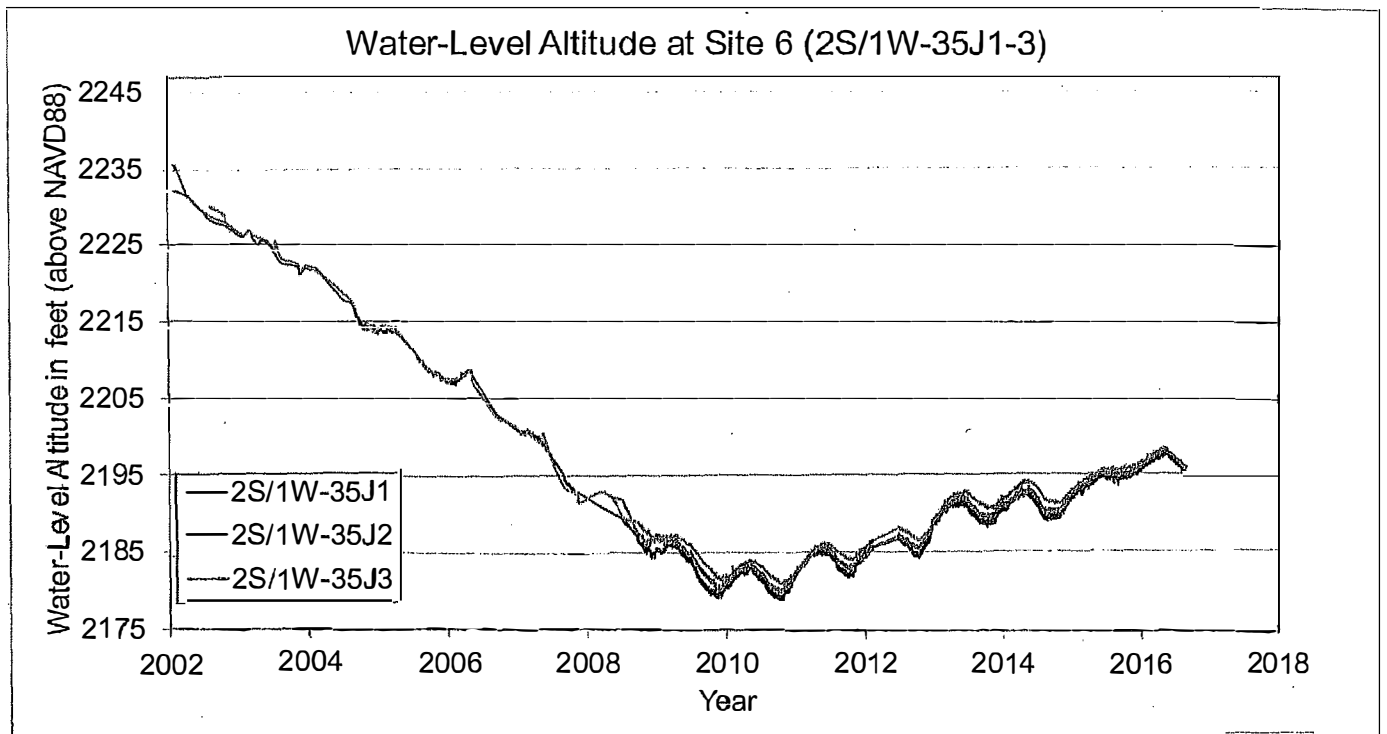


Figure 3. Graph showing water-level hydrographs for wells at sites 6 and 8.

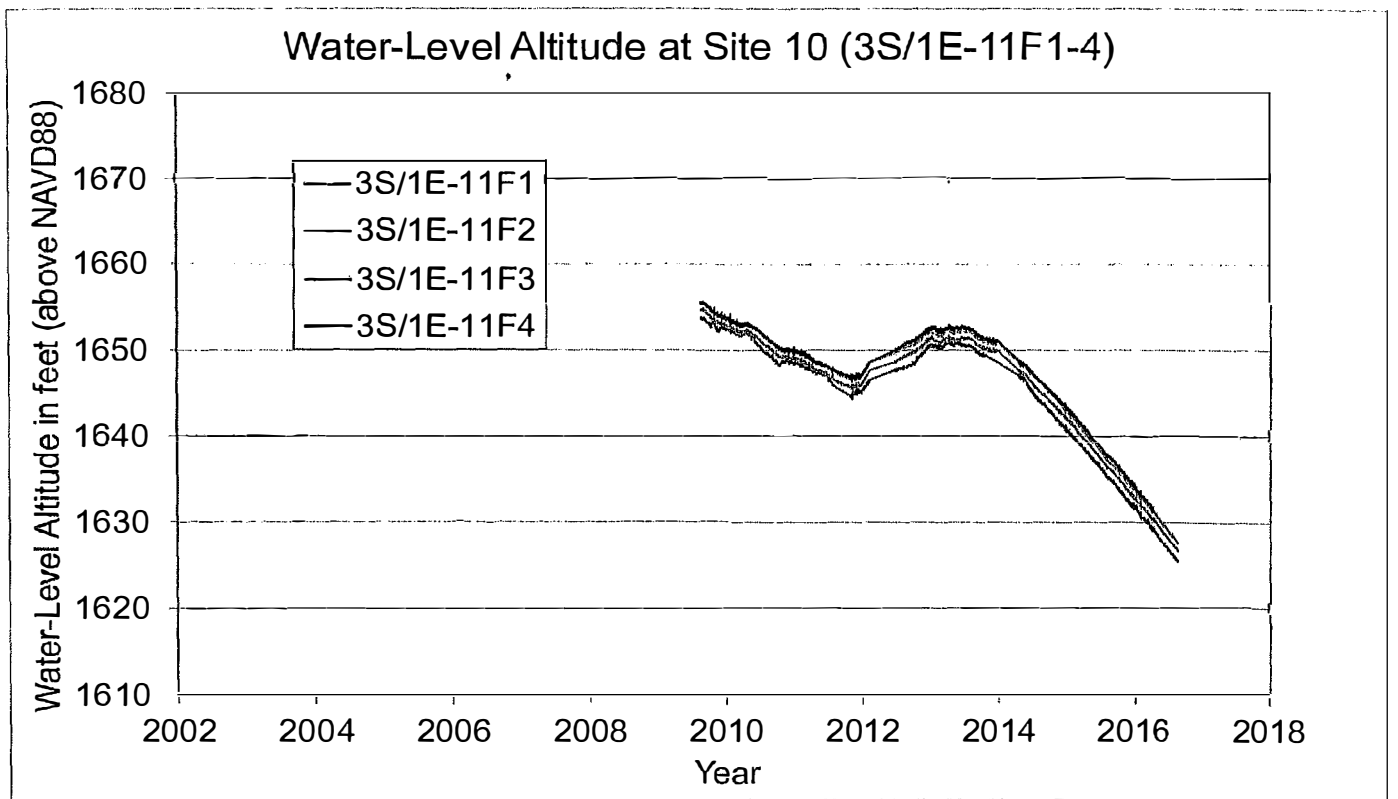
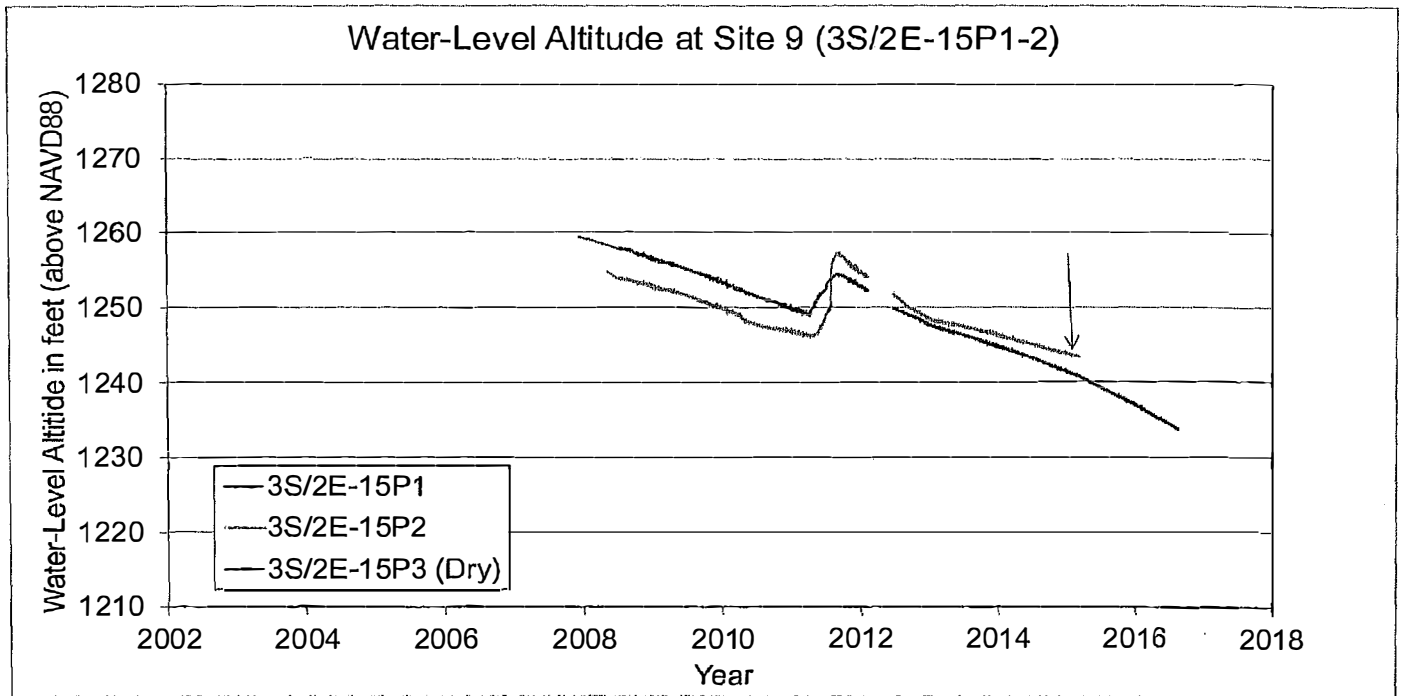
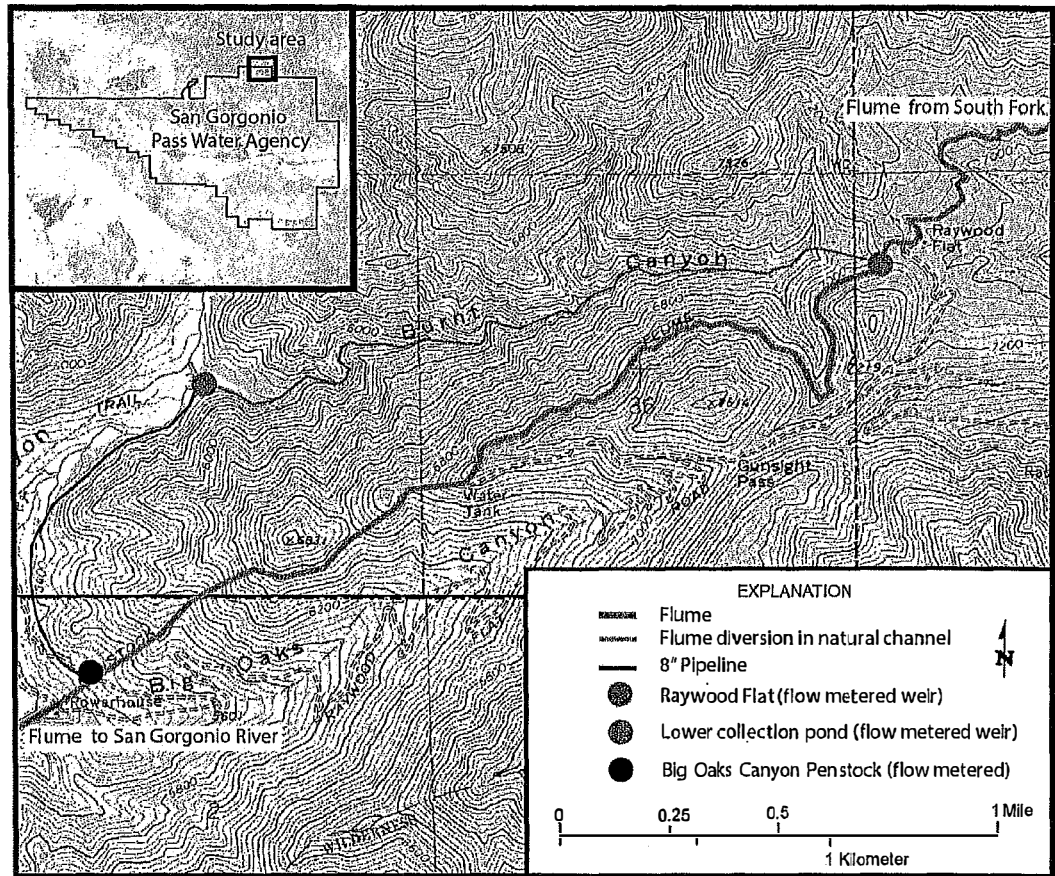


Figure 4. Graph showing water-level hydrographs for wells at sites 9 and 10.



Cumulative and Daily flow at Upper and Lower Burnt Canyon

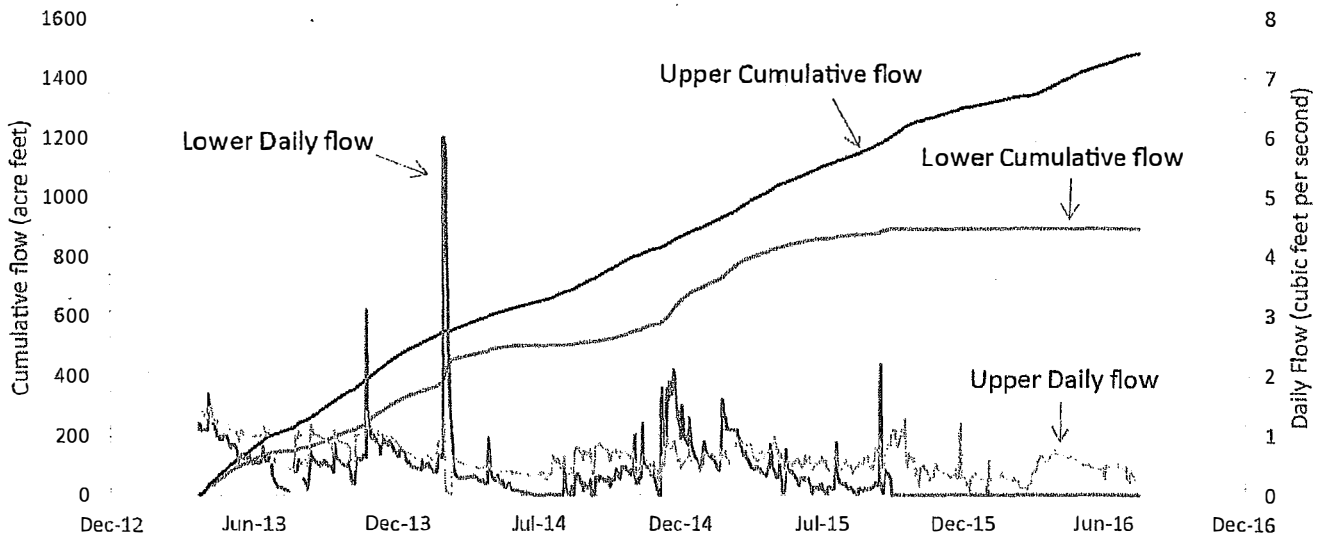


Figure 5. Graph showing cumulative and daily flow at upper and lower Burnt Canyon weirs.

Table 4 Water-quality network

Table 3. Water-quality network

State Well Number	Well Type	Site Number	Storage Unit	Year						Latitude (NAD83)	Longitude (NAD83)	Date sampled	Link to USGS online data containing site, water quality, and water level data	Notes
				2012	2013	2014	2015	2016	2017					
002S001V2M001S	Production well		Beaumont			X			33.9526139	-117.0140528	9-Jul-14	http://waterdata.usgs.gov/nwis/inventory/?site_no=335709117004701		
002S001W35J001S	SGPWA monitoring well	Site 6	Beaumont	X		X			33.9540139	-116.9472111	3-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565001		
002S001W35J002S	SGPWA monitoring well	Site 6	Beaumont	X		X			33.9540139	-116.9472111	6-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565002		
002S001W35J003S	SGPWA monitoring well	Site 6	Beaumont	X		X			33.9540139	-116.9472111	7-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335714116565003		
002S002W14C001S	Production well		Calimesa		X			X	34.0038972	-117.0627167	19-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=3340014117034301		
002S002W24L001S	Production well		Beaumont	X			X		33.9799417	-117.0451889	6-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335848117024301		
003S001E07E002S	Production well		Beaumont			X		X	33.9278361	-116.9289833	3-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335540116553901		
003S001E12D001S	Production well		Beaumont		X			X	33.8311264	-116.8366963	18-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335552116500901		
003S001E17C001S	Production well		Banning			X		X	33.9177528	-116.9060369	3-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116541501		
003S001E18D001S	Production well		Banning	X			X		33.9176899	-116.9289250	4-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335504116554101		
003S001W03K002S	Production well		Beaumont		X			X	33.9386810	-116.9680970	19-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335621116581701		
003S001W10R004S	Production well		South Beaumont		X			X	33.9182167	-116.9641806	18-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335509116575201		
003S001W12B002S	Production well		Beaumont			X		X	33.9321750	-116.9356194	3-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335556116590701		
003S001W12K001S	Production well		Beaumont		X			X	33.9250026	-116.8332583	20-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335530116555901		
003S001E11F001S	SGPWA monitoring well	Site 10	Cabazon	X			X		33.9252970	-116.8513470	5-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335631116510401		
003S001E11F002S	SGPWA monitoring well	Site 10	Cabazon	X			X		33.9252970	-116.8513470	3-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335631116510402		
003S001E11F003S	SGPWA monitoring well	Site 10	Cabazon	X			X		33.9252970	-116.8513470	5-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335631116510403		
003S001E11F004S	SGPWA monitoring well	Site 10	Cabazon	X			X		33.9252970	-116.8513470	5-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335631116510404		
003S002E07G002S	Production well		Cabazon			X		X	33.9264042	-116.8114075	1-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335535116483801		
003S002E07G001S	Production well		Cabazon		X		X		33.9231111	-116.8135000	1-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335523116484601		
003S002E09E001S	Production well		Cabazon	X		X	X*		33.9256344	-116.7897500	1-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335532116471701		
003S003E07D001S	Production well		Cabazon		X			X	33.9322222	-116.7194444	20-Jun-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335556116431001		
003S003E07M001S	Production well		Cabazon	X			X		33.9230705	-116.7197378	3-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335472116430701		
003S003E08M001S	Production well		Cabazon		X		X		33.9222222	-116.6983889	4-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335522116415201		
002S001W27P001S	Production well		Beaumont			X		X	33.9621260	-116.9734444	2-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335743116582401		
002S001W23D002S	Production well		Beaumont	X			X		33.9613689	-116.8977778	4-Aug-15	http://waterdata.usgs.gov/nwis/inventory/?site_no=335741116595201		
003S001E03J001S	SGPWA monitoring well		Cabazon		X		X	X*	33.9383333	-116.8534722	8-Aug-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335618116513401	Scheduled Nov 2016	
002S001W28H001S	Production well		Single ten		X			X	33.9721920	-117.0056110	5-Sep-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335820116595901		
002S001W35P001S	Production well		Beaumont	X			X	X*	33.9473300	-116.9560280	2-Aug-16	http://waterdata.usgs.gov/nwis/inventory/?site_no=335650116572101		
003S001W02M001S	Production well		Beaumont		X			X	33.9379440	-116.8636670	30-Oct-14	http://waterdata.usgs.gov/nwis/inventory/?site_no=335616116574901	Off line due to elevated Chrome 6, removed from network	
003S002E07P001S	SGPWA monitoring well	Site 8	Cabazon		X			X	33.9214633	-116.8184167	7-Aug-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490601		
003S002E07P002S	SGPWA monitoring well	Site 8	Cabazon		X			X	33.9214633	-116.8184167	9-Aug-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490602		
003S002E07P003S	SGPWA monitoring well	Site 8	Cabazon		X			X	33.9214633	-116.8184167	9-Aug-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490603		
003S002E07P004S	SGPWA monitoring well	Site 8	Cabazon		X			X	33.9214633	-116.8184167	7-Aug-13	http://waterdata.usgs.gov/nwis/inventory/?site_no=335513116490604		
003S002E15P001S	SGPWA monitoring well	Site 9	Cabazon		X		X	X*	33.9084170	-116.7648890	30-Oct-14	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455301	Scheduled Nov 2016	
003S002E15P002S	SGPWA monitoring well	Site 9	Cabazon		X		X		33.9064170	-116.7648890	23-Aug-11	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455302	Dry	
003S002E15P003S	SGPWA monitoring well	Site 9	Cabazon		X		X		33.9084170	-116.7648890	2-Sep-11	http://waterdata.usgs.gov/nwis/inventory/?site_no=335423116455303	Dry	
003S001E10N001S	Production well		Banning			X		X	33.9064170	-116.7648890	7-Jul-14	http://waterdata.usgs.gov/nwis/inventory/?site_no=335515116522801		

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Form 9-1366
(April 2015)

**U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

JOINT FUNDING AGREEMENT

FOR

SAN GORGONIO PASS WATER AGENCY

Customer #: 6000000967
Agreement #: 16WSCA600096710_A1
Project #:
TIN #: 95-2216065
Fixed Cost
Agreement YES

THIS AGREEMENT is entered into as of the, 12 day of January, 2017 by the U.S. GEOLOGICAL SURVEY, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the San Gorgonio Pass Water Agency (SGPWA), party of the second part.

1. The parties hereto agree that subject to availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation San Gorgonio Pass Water Agency herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50; and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) includes In-Kind Services in the amount of \$0.00

(a) by the party of the first part during the period

Amount	Date	to	Date
\$25,015.00	March 15, 2016		November 30, 2018

(b) by the party of the second part during the period

Amount	Date	to	Date
\$106,746.00	March 15, 2016		November 30, 2018

USGS DUNS Is 1761-38857. The amount in both 2(a) and 2(b) above are for this agreement only. Total USGS funding for this agreement is \$50,030.00. Total SGPWA funding for this agreement is \$206,356.00

(c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$0.00

Description of the USGS regional/national program:

No additional contributions

(d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.

(e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

9-1366 (Continuation) Customer #: 6000000967 Agreement #: 16WSCA600096710_A1

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.
8. The maps, records, or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records, or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program and, if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at costs, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records, or reports published by either party shall contain a statement of the cooperative relations between the parties.
9. USGS will issue billings utilizing Department of the Interior Bill for Collection (form DI-1040). Billing documents are to be rendered QUARTERLY. Payments of bills are due within 60 days after the billing date. If not paid by the due date, interest will be charged at the current Treasury rate for each 30 day period, or portion thereof, that the payment is delayed beyond the due date. (31 USC 3717; Comptroller General File B-212222, August 23, 1983).


**U.S. Geological Survey
United States
Department of the Interior
USGS Point of Contact**

Name: Nancy Mora
Address: 4165 Spruance Rd, Suite 200
 San Diego, CA 92101
Telephone: (619) 225-6428
Email: nmora@usgs.gov

Customer Point of Contact

Name: Jeff Davis
Address: 1210 Beaumont Avenue
 Beaumont, CA 92223
Telephone: (951) 845-2577
Email: jdavis@sgpwa.com

Signatures and Date

Signature: 	Date: 1-12-17
Name: Eric G. Reichard	Name: Jeff Davis
Title: Director, USGS California Water Science Center	Title: General Manager