

**SOQUEL/APTOS GROUNDWATER MANAGEMENT PLAN
BASIN IMPLEMENTATION GROUP (BIG)**

**Wednesday, March 25, 2015 - 7:00 p.m.
Soquel Creek Water District Board Room
5180 Soquel Dr., Soquel, CA**

AGENDA

- 1. CALL TO ORDER**
- 2. ROLL CALL**
- 3. APPROVAL OF MINUTES – None**
- 4. ORAL COMMUNICATIONS**
- 5. ADMINISTRATIVE BUSINESS**
 - 5.1 Set 2015 Meeting Schedule
 - 5.2 Review and Approve Third Amendment to Joint Exercise of Powers Agreement (JPA)
 - 5.3 Soquel-Aptos Area Groundwater Management Annual Budget FY 2015/16
 - 5.4 Soquel-Aptos Groundwater Model Work Plan
 - 5.5 Groundwater Sustainability Agency (GSA) Formation
- 6. INFORMATION ITEMS**
 - 6.1 Quarterly Monitoring Reports
 - 6.2 Meeting with Department Of Water Resources to Discuss Local Issues Pertaining to Implementing the Sustainable Groundwater Management Act
 - 6.3 Department of Water Resources Groundwater - Sustainability Program Draft Strategic Plan
- 7. MANAGER'S REPORTS**
 - 7.1 Central Water District - oral
 - 7.2 City of Santa Cruz - oral
 - 7.3 County of Santa Cruz - oral
 - 7.4 Soquel Creek Water District - oral
 - 7.5 PVWMA - oral
- 8. ADJOURNMENT**

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March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 5.1

Set 2015 Meeting Schedule

In the past, Basin Implementation Group (BIG), met twice each year. Meetings were held in spring and fall focusing mainly on the Annual Review and Report of the Basin and the AB3030 Groundwater Management Plan. As stated in the Joint Exercise of Powers Agreement (JPA), Item 8. Functions of the Committee: “..... *the Committee shall have the ability to recommend to their respective Boards of Directors, policies and programs which will enhance the Groundwater Management Plan. The committee shall meet at least once annually, or more as needed, and the minutes of their meetings shall be maintained and furnished to the Boards of Directors of the members.*”

With upcoming joint studies and efforts on groundwater management that are more collaborative, such as the groundwater model, the freshwater-seawater interface, and groundwater replenishment as well as the new Groundwater Sustainability Act it became prudent to meet more often. At the September 23, 2014 meeting, the Committee moved to hold future meetings every other month as needed.

The partner agencies (including newly joining or appointed members) meet on the following schedules:

Soquel Creek Water District	First and Third Tuesday
Central Water District	Third Tuesday
City of Santa Cruz	Second and Fourth Tuesday
Santa Cruz County	Tuesday (daytime)
Pajaro Valley Water Management Agency	Third Wednesday

Meetings have traditionally been scheduled for Thursday evenings and held in the SqCWD Board Room. The Board Room will no longer be available shortly so alternate locations must be arranged. A regular meeting schedule will make these arrangements easier as well as making the Committee more accessible to the Public. Staff recommends the third Thursday for meetings. This allows BIG meeting preparation to take place during a week that doesn't also include final preparation for SqCWD Board meetings. This would result in a 2015 meetings scheduled for May 21, July 16, September 17 and November 19. Additional meeting can be scheduled as needed and regular meetings may be cancelled if they are not necessary.

POSSIBLE ACTION:

1. By MOTION, provide staff with direction for regular bi-monthly meeting date and time.

By 
Kim Adamson, General Manager
Soquel Creek Water District

March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 5.2

Review and Approve Third Amendment to
the Joint Exercise of Powers Agreement
(JPA)

- Attachments:
1. Executed Joint Exercise of Powers Agreement
 2. Executed First Amendment to the Joint Exercise of Powers Agreement
 3. Executed Second Amendment to the Joint Exercise of Powers Agreement
 4. Draft Third Amendment to the Joint Exercise of Powers Agreement for the Purpose of Groundwater Management

On July 28, 2009, the Basin Implementation Group (BIG) approved the First Amendment to the Joint Exercise of Powers Agreement (JPA) (Attachment 1). Subsequent to the BIG approval, a joint resolution (SqCWD 09-29 and CWD 04-09) was adopted by each board of directors, approving and executing the first amendment in August of 2009.

Annually, the Board of Directors for SqCWD and CWD each appoint two committee members to serve on the BIG. The 5th committee member is to be selected by the boards of both CWD and SqCWD and shall be a person served by, owning, or managing a private well or a person residing in either district who has broad experience in water supply. The 5th committee member now serves a two year term.

Every committee member has a single vote and all votes are decided by a majority with the exception of financial decisions which are decided only by representatives of Central and Soquel.

At the February 10, 2014 BIG Meeting, committee members voted to invite both the City of Santa Cruz and Santa Cruz County to join the BIG. The Districts of Central and Soquel were partnering with the county to facilitate a discussion with other pumpers in the basin about the shared problems of the overdrafted basin and seawater intrusion. This effort originally started as a way to explore enactment through the BIG of Replenishment District powers allowed under AB3030. But with the passage of the Sustainability Groundwater Management Act (“Act”) (codified at Sections 10720 et seq. of the California Water Code), the effort has shifted to exploration of the mandatory creation of Groundwater Sustainability Agency. The City was invited as a member because they are also a municipal pumper in the basin, with 10% of their supply in drought years being pumped from the Purisima.

At the June 20, 2014 BIG meeting, information was presented to the BIG that the Pajaro Valley Water Management Agency (PVWMA) jurisdiction extends into the lower portion of the basin's Aromas Red Sands formation where there are a couple existing agricultural users. Santa Cruz County well studies attribute 300 acre-feet per year to agriculture in the Aromas formation. In addition, it's believed that approximately 370 acre-feet flows out of the basin to the Pajaro Valley in this area each year. The PVWMA was at the time a member of the Basin Advisory Group, but they were not a member of the BIG. Committee members voted to extend an invitation to PVWMA as well.

The City and County accepted the invitations and representatives were appointed by their respective agencies. PVWMA is still considering participation but requested it be as an appointed member rather than a partner to the agreement.

In light of the Sustainable Groundwater Management Act, it is not yet known if the BIG will continue on as a Groundwater Sustainability Agency or if the exploration process will result in some other entity all together. But in the interim the BIG will facilitate that exploration while continuing important groundwater management efforts such as the completion of the current water model. An Amendment to the current JPA agreement will allow all the agencies with an interest in the Soquel-Aptos Basin to share in these efforts and be involved in the decision making process for future efforts.

A draft was presented to the BIG on January 29th with several important discussion points identified. The items considered along with the staff direction provided at that meeting are as follows:

1. *Should the BIG be renamed?*

The Soquel Aptos Groundwater Management Committee was recommended as a new name.

2. *Should BIG decisions have to be approved by the all member Boards?*

Direction was provided to leave this item unchanged.

3. *Should each financial supporting agency still have two representatives or one representative and one alternate due to committee size?*

The committee will continue to be made up of two representatives from each partner agency. An addition appointed position for a small well owner was added and PVWMA was changed to a single, appointed position.

4. How should voting be structured for fairness?

Voting will continue to be one vote per representative. For financial matters only the partner agencies will vote. All financial votes must be confirmed by the partner agencies full legislative Board.

5. Who provides staff support and is it compensated by the other members?

The water managers will provide staff support with Soquel Creek continuing to provide clerical support and contract management.

6. At what level is the County a financial member?

SqCWD – 70%, CWD – 10%, City – 10%, County – 10%

A revised draft agreement is attached. Please review and recommend presentation to member agency Boards for final approval.

POSSIBLE ACTION

1. By MOTION, approve Draft Third Amendment of the JPA and recommend approval to respective member agencies.
2. By MOTION, approve Draft Third Amendment of the JPA and recommend approval to respective member agencies with the inclusion of additional changes.

By



Kim Adamson, General Manager
Soquel Creek Water District

COPY**JOINT EXERCISE OF POWERS AGREEMENT**

The parties to this Agreement are the CENTRAL WATER DISTRICT, a County Water District organized pursuant to California Water Code Sections 30000, et. seq. (hereinafter referred to as "CENTRAL") and the SOQUEL CREEK WATER DISTRICT, a County Water District organized pursuant to California Water Code Sections 30000, et. seq. (hereinafter referred to as "SOQUEL").

RECITALS

- A. CENTRAL is a County Water District whose service area is in Santa Cruz County roughly extending from Rob Roy Junction to Corralitos.
- B. SOQUEL is a County Water District whose service area extends roughly from 41st Avenue to the eastern boundary of CENTRAL.
- C. Both districts draw groundwater from two ground water formations: the Purisima Formation and the Aromas Red Sands Formation which are the sources of groundwater for the mid-county area of Santa Cruz County.
- D. On or about July 19, 1994 each of the Board of Directors of Central and Soquel in

each of their respective meetings enacted a joint resolution of intention to draft a ground water management plan pursuant to Assembly Bill 3030 (now part 2.75 of Division 6 of the California Water Code). A copy of the joint resolution is attached as Exhibit A.

E. Each of the Districts wishes to establish a joint exercise of powers entity (pursuant to California Government Code Section 6500 et. seq.) to draft the ground water management plan.

NOW, THEREFORE, IT IS HEREBY AGREED:

1. Establishment of Committee. There is hereby established a groundwater management plan committee composed two board members from SOQUEL and two board members from CENTRAL, each of whom shall be appointed by their respective boards and one member from a mutual water company who will serve as the public member of the committee to give voice to the concerns of those water extractors who are not part of the joint exercise of powers authority. The committee shall select a chairperson from among its ranks.

The general managers of CENTRAL and SOQUEL shall serve as staff to the committee.

2. Compensation. Each board member attending the meetings of the committee shall be compensated by his or her respective board as that board so decides. No compensation shall be paid to any member of the committee by the committee. The respective managers shall be compensated by their respective entities as they shall agree.

3. Powers of the Committee. The Committee shall be empowered to draft a groundwater management plan in accordance with the joint resolution of the respective

boards. In drafting the plan, the Committee shall be authorized to hire and pay consultants to assist in the drafting of the ground water management plan and the costs of such consultants shall be paid by the respective districts on a formula based on 92% paid by SOQUEL and 8 % paid by CENTRAL. Costs of implementation of the plan shall be decided with respect to each implementation by the respective boards.

The Committee shall draft a ground water management plan which shall include, but not be limited to, the following:

- a. Monitoring and control of saline intrusion.
- b. Identification and management of wellhead protection areas and recharge areas.

- c. Identification of well construction policies.
- d. Monitoring of groundwater levels and storage.
- e. Facilitating conjunctive use operations.
- f. Development and fostering of relationships with other public entities, local,

State and Federal that monitor ground water matters.

g. Review of land use plans and coordination with land use planning agencies to assess activities and potential impacts of activities which have an impact on groundwater quantity and quality.

- h. Monitoring groundwater production.
- i. Contact State and Federal agencies concerning groundwater matters.

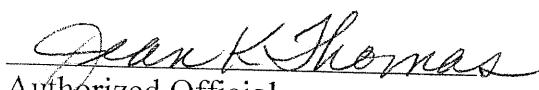
- j. Take any and all necessary actions to protect groundwater basins.
- k. Any other item which can be included in such a plan under the provisions of AB3030.

The Committee shall report to the respective Boards on an ongoing basis as to the status of their draft plan. The final plan shall be approved by a majority of both Boards of Directors.

- 4. Meetings of the Committee. The Committee shall meet as frequently as necessary to carry out its duties, but no less than quarterly.
- 5. Time Lines. The Committee shall submit to the respective boards of directors no later than June 1, 1995, a time line for completion of the ground water management plan. The draft of the proposed plan shall be submitted to the respective boards of directors no later than January 15, 1996. The final plan shall be submitted to the respective boards for adoption no later than April 15, 1996 and adopted prior to July 1, 1996.

- 6. Amendment. This Agreement may be amended by resolution of both the Board of Directors of Central and Soquel.

DATED: 3/30, 1995 CENTRAL WATER DISTRICT


Frank K. Thomas
Authorized Official

SOQUEL WATER DISTRICT


Authorized Official

**SOQUEL CREEK WATER DISTRICT
RESOLUTION NO. 09-29**

AND

**CENTRAL WATER DISTRICT
RESOLUTION NO. 04-09**

**JOINT RESOLUTION ADOPTING FIRST AMENDMENT TO
JOINT EXERCISE OF POWERS AGREEMENT
FOR THE PURPOSE OF GROUNDWATER MANAGEMENT**

WHEREAS, the Boards of Directors of the SOQUEL CREEK WATER DISTRICT and CENTRAL WATER DISTRICT, meeting in separate sessions, have considered First Amendment to Joint Exercise of Powers Agreement (attached hereto as Exhibit A); and

WHEREAS, representatives from each Board discussed and approved said amendment at a meeting of the Basin Implementation Group on July 28, 2009;

NOW, THEREFORE, BE IT RESOLVED by the Boards of Directors of Soquel Creek Water District and Central Water District to adopt the First Amendment to the Joint Exercise of Powers Agreement executed on March 30, 1995.

PASSED AND ADOPTED on the dates shown, which were regular meetings of the Board of Directors of the SOQUEL CREEK WATER DISTRICT and the CENTRAL WATER DISTRICT, by the following votes:

SOQUEL CREEK WATER DISTRICT

AYES: Directors Daniels, Krieger, Jaffe, Hoernschemeyer

NOES: None

ABSENT: Director LaHue

APPROVED:

Date: Aug 4, 2009

Bruce Daniels

Bruce Daniels, Vice President
Soquel Creek Water District
Board of Directors

ATTEST:

Denise Alexander

Denise Alexander, Board Clerk
of Said Board

Soquel Creek Water District Resolution No. 09-29
Central Water District Resolution 04-09

CENTRAL WATER DISTRICT

AYES: Directors Hume, Marani, Monkerud, Titus

NOES: None

ABSENT: Director Sharp

APPROVED:

Date: August 18 2009

Christy Leach Marani
Christy Leach Marani, President
Central Water District
Board of Directors

ATTEST:

Jacquelyn Cornick
Jacquelyn Cornick, Secretary
of Said Board

FIRST AMENDMENT
TO
JOINT EXERCISE OF POWERS AGREEMENT

The parties to this First Amendment to Joint Exercise of Powers Agreement are CENTRAL WATER DISTRICT, a County Water District organized pursuant to California Water Code Section 30,000 et. seq. (hereinafter CENTRAL) and the SOQUEL CREEK WATER DISTRICT, a County Water District organized pursuant to California Water Code Section 30,000 et. seq. (hereinafter SOQUEL).

RECITALS

A. The parties have heretofore entered into a Joint Exercise of Powers Agreement (hereinafter sometimes referred to as JPA) for the purpose of creating a Groundwater Management Plan (hereinafter sometimes referred to as GMP) concerning the management of the groundwater basins which the respective parties share.

B. Pursuant to that Joint Exercise of Powers Agreement, the parties appointed a committee which drafted a Groundwater Management Plan and subsequently amended that plan in accordance with applicable law all of which action was adopted and ratified by the respective Boards of Directors of each of the parties.

C. With the establishment of the GMP, the parties recognize the need to continue the Joint Exercise of Powers Agreement to provide for governance to oversee the implementation of the GMP, cost sharing provisions with respect to the activities required by the GMP, the identification of mutually-beneficial projects, and provisions for the addition or withdrawal of parties from the JPA.

Now Therefore, upon the adoption of resolutions by the Board of Directors of CENTRAL and the Board of Directors of SOQUEL, it is hereby agreed:

1. The Committee. The Ground Water Management Committee, established under the original JPA is hereby made a permanent committee known as the Basin Implementation Group (BIG). The duties of the BIG shall include, but not be limited to:

- a) assuring that the goals and objectives identified in the Groundwater Management Plan are pursued in a reasonable and timely manner;

- b) reviewing the annual report on the status of the basin and reviewing progress made to meet the Groundwater Management Plan's goals and objectives;
- c) modifying the Groundwater Management Plan as needed to address any new or escalated issues within the groundwater basin;
- d) directing future updates to the Groundwater Management Plan every five years or more frequently if needed to reflect changes in State law or in local conditions/programs;
- e) recommending joint projects to the respective governing bodies which are of regional benefit, e.g. general subsidence monitoring, recharge within shared portions of the basin, etc.

Said committee shall continue to be composed of two members from the CENTRAL Board of Directors and two members from the SOQUEL Board of Directors, each of whom shall be appointed by their respective boards and one public member who shall be selected by the boards of both CENTRAL and SOQUEL who shall be a person served by, owning, or managing a private well or a person residing in either the CENTRAL or SOQUEL District who has broad experience in water supply. The Committee shall select a chair from among its elected members with the chair alternating every two years between a director of Central and a director of Soquel. All votes of the committee shall be decided by a majority vote of the committee except for fiscal decisions (those decisions involving the incurring of debt or expenditure of funds) which shall be decided only by the members of the Committee who are elected representatives of Central and Soquel. Those fiscal decisions shall also be decided by a majority vote of those persons eligible to vote on those matters.

2. Staff. The general managers of CENTRAL and SOQUEL shall serve as staff to the committee.

3. Compensation. Each board member attending meetings of the committee shall be compensated by his or her respective board as each board so decides. No compensation shall be paid by the committee. The staff shall be paid by their respective entities as they so agree.

4. Funding. The Committee is authorized to hire consultants to assist in the management and implementation of the GMP. The costs of reports prepared under this agreement and other management and implementation expenses agreed upon by the BIG shall be shared on a proportional basis of the total annual groundwater use as measured by each agency for the preceding water year. Based on use for 2008, the percentage cost to each agency would be as follows:

CENTRAL 11%

SOQUEL 89%

In the event that additional members are added to the JPA, all of the members shall agree on a new cost sharing to fund the costs of the JPA.

5. Withdrawal. Any party may withdraw as a participant in the JPA, with the understanding that the remaining party or parties may continue to fund and implement the GMP for the benefit of the ground water basin. Notice of withdrawal shall be by a resolution of the respective board of directors and provide thirty (30) day written notice of intent to withdraw. Any funds due or obligations to pay incurred as of the date of withdrawal shall be due and payable irrespective of the withdrawal.

6. Additional Members. On the approval of the Boards of Directors of both parties to this agreement, and that of any subsequent party added to this agreement, additional parties may be added to this JPA.

7. Additional Goals. An additional goal of the Committee shall be to identify and develop groundwater projects which are mutually beneficial to all members.

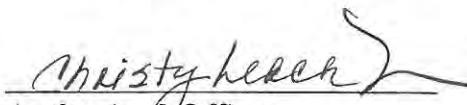
8. Functions of the Committee. In addition to the functions previously described in this agreement, the Committee shall have the ability to recommend to their respective Boards of Directors, policies and programs which will enhance the GMP. The Committee shall meet at least once annually, or more as needed, and minutes of their meetings shall be maintained and furnished to the Boards of Directors of the members.

9. Non-Restrictive of Independent Activities. This agreement does not preclude any agency from pursuing programs and projects related to groundwater management either independently or in cooperation with other agencies that may or may not be a party to the Soquel-Aptos Area Groundwater Management Joint Powers Agreement.

10. Amendment. This Agreement may be amended by resolution of the Board of Directors of all members of the JPA.

Dated: _____ 2009

CENTRAL WATER DISTRICT



Misty Leach
Authorized Officer

SQUEL CREEK WATER DISTRICT



Nancy L. Baker
Authorized Officer

**SECOND AMENDMENT
TO
JOINT EXERCISE OF POWERS AGREEMENT**

The parties to this Second Amendment to Joint Exercise of Powers Agreement are CENTRAL WATER DISTRICT, a County Water District organized pursuant to California Water Code Section 30,000 et. seq. (hereinafter CENTRAL) and the SOQUEL CREEK WATER DISTRICT, a County Water District organized pursuant to California Water Code Section 30,000 et. seq. (hereinafter SOQUEL).

RECITALS

A. The parties have heretofore entered into a Joint Exercise of Powers Agreement (hereinafter sometimes referred to as JPA) for the purpose of creating a Groundwater Management Plan (hereinafter sometimes referred to as GMP) concerning the management of the groundwater basins which the respective parties share.

B. Pursuant to that Joint Exercise of Powers Agreement, the parties appointed a committee which drafted a Groundwater Management Plan and subsequently amended that plan in accordance with applicable law all of which action was adopted and ratified by the respective Boards of Directors of each of the parties.

C. With the establishment of the GMP, the parties recognize the need to continue the Joint Exercise of Powers Agreement to provide for governance to oversee the implementation of the GMP, cost sharing provisions with respect to the activities required by the GMP, the identification of mutually beneficial projects, and provisions for the addition or withdrawal of parties from the JPA.

Now Therefore, upon the adoption of resolutions by the Board of Directors of CENTRAL and the Board of Directors of SOQUEL, it is hereby agreed:

1. The Committee. The Ground Water Management Committee, established under the original JPA is hereby made a permanent committee known as the Basin Implementation Group (BIG). The duties of the BIG shall include, but not be limited to:

- a) assuring that the goals and objectives identified in the Groundwater Management Plan are pursued in a reasonable and timely manner;

Second Amendment To
Joint Exercise Of Powers Agreement
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- b) reviewing the annual report on the status of the basin and reviewing progress made to meet the Groundwater Management Plan's goals and objectives;
- c) modifying the Groundwater Management Plan as needed to address any new or escalated issues within the groundwater basin;
- d) directing future updates to the Groundwater Management Plan every five years or more frequently if needed to reflect changes in State law or in local conditions/programs;
- e) recommending joint projects to the respective governing bodies which are of regional benefit, e.g. general subsidence monitoring, recharge within shared portions of the basin, etc.

Said committee shall continue to be composed of two members from the CENTRAL Board of Directors and two members from the SOQUEL Board of Directors, each of whom shall be appointed by their respective boards and one public member who shall be selected by the boards of both CENTRAL and SOQUEL who shall be a person served by, owning, or managing a private well or a person residing in either the CENTRAL or SOQUEL District who has broad experience in water supply. The 5th committee member shall be appointed to serve a two year term. The Committee shall select a chair from among its elected members with the chair alternating every two years between a director of Central and a director of Soquel. All votes of the committee shall be decided by a majority vote of the committee except for fiscal decisions (those decisions involving the incurring of debt or expenditure of funds) which shall be decided only by the members of the Committee who are elected representatives of Central and Soquel. Those fiscal decisions shall also be decided by a majority vote of those persons eligible to vote on those matters.

2. Staff. The general managers of CENTRAL and SOQUEL shall serve as staff to the committee.

3. Compensation. Each board member attending meetings of the committee shall be compensated by his or her respective board as each board so decides. No compensation shall be paid by the committee. The staff shall be paid by their respective entities as they so agree.

4. Funding. The Committee is authorized to hire consultants to assist in the management and implementation of the GMP. The costs of reports prepared under this agreement and other management and implementation expenses agreed upon by the BIG shall be shared on a proportional basis of the total annual groundwater use as measured by each agency for the preceding water year. Based on use for 2008, the percentage cost to each agency would be as follows:

CENTRAL 11%

SOQUEL 89%

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In the event that additional members are added to the JPA, all of the members shall agree on a new cost sharing to fund the costs of the JPA.

5. Withdrawal. Any party may withdraw as a participant in the JPA, with the understanding that the remaining party or parties may continue to fund and implement the GMP for the benefit of the ground water basin. Notice of withdrawal shall be by a resolution of the respective board of directors and provide thirty (30) day written notice of intent to withdraw. Any funds due or obligations to pay incurred as of the date of withdrawal shall be due and payable irrespective of the withdrawal.

6. Additional Members. On the approval of the Boards of Directors of both parties to this agreement, and that of any subsequent party added to this agreement, additional parties may be added to this JPA.

7. Additional Goals. An additional goal of the Committee shall be to identify and develop groundwater projects which are mutually beneficial to all members.

8. Functions of the Committee. In addition to the functions previously described in this agreement, the Committee shall have the ability to recommend to their respective Boards of Directors, policies and programs which will enhance the GMP. The Committee shall meet at least once annually, or more as needed, and minutes of their meetings shall be maintained and furnished to the Boards of Directors of the members.

9. Non-Restrictive of Independent Activities. This agreement does not preclude any agency from pursuing programs and projects related to groundwater management either independently or in cooperation with other agencies that may or may not be a party to the Soquel-Aptos Area Groundwater Management Joint Powers Agreement.

10. Amendment. This Agreement may be amended by resolution of the Board of Directors of all members of the JPA.

Dated: _____ 2013

CENTRAL WATER DISTRICT

Authorized Officer

SOQUEL CREEK WATER DISTRICT

Authorized Officer

THIRD AMENDMENT

TO

JOINT EXERCISE OF POWERS AGREEMENT

The parties to this Third Amendment to Joint Exercise of Powers Agreement are CENTRAL WATER DISTRICT, (hereinafter referred to as CENTRAL) and the SOQUEL CREEK WATER DISTRICT, (hereinafter referred to as SOQUEL), City of Santa Cruz (hereinafter referred to as CITY), ~~Pajaro Valley Water Management Agency (hereinafter referred to as PVWMA)~~, and the County of Santa Cruz (hereinafter referred to as COUNTY), all of which represent agencies (*hereinafter referred to as PARTNER AGENCIES*) with interests in groundwater management within the area known regionally as the Soquel-Aptos Basin, hereby join together for a common and specific purpose.

RECITALS

- A. Soquel Creek Water District and the Central Water District ~~formed a Joint Powers Authority entered into a Joint Powers Agreement~~ (“JPA”) pursuant to Sections 6500 et seq. of the Government Code on March 30, 1995 (*first* amended *on* August 18, 2009 *and second amended on November 19, 2013*) for the purpose of developing and implementing a groundwater management plan under Sections 10750 et seq. of the Water Code (commonly referred to as an “AB 3030 plan”) for the Soquel-Aptos Groundwater Basin (“Basin”) within Santa Cruz County.

- ~~B. The JPA is governed by a committee referred to as the Basin Implementation Group.~~

- ~~C.B. The JPA Soquel and Central jointly produced and implemented an AB 3030 Plan for the Basin under the JPA (the Soquel-Aptos Groundwater Management Plan) in 1996 and 2007; and has prepared an Annual Review and Report (ARR) each year since 2007.~~

- ~~D.C. Governor Jerry Brown signed into law the Sustainable Groundwater Management Act (“Act”) (codified at Sections 10720 et seq. of the California Water Code) on September 16, 2014.~~

- ~~E.D. The Act requires that a local agency or combination of local agencies form (or elect to be) a Groundwater Sustainability Agency and to develop a Groundwater Sustainability Plan for all basins ranked as a medium or high priority basin by the Department of Water~~

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Resources under the California Statewide Groundwater Elevation Monitoring Program (“CASGEM”).

F.E. The Act requires that Groundwater Sustainability Plan include elements that are additive to the elements of an AB 3030 Plan, and that a Groundwater Sustainability Plan be developed to replace an existing AB 3030 Plan for medium and high priority basins.

G.F. The Basin's boundaries may be modified consistent with the Act.

H.G. Subbasins comprising the Basin are ranked as medium and high priority basins under CASGEM, and therefore a Groundwater Sustainability Agency must be elected and a Groundwater Sustainability Plan must be developed for the Basin within the deadlines prescribed in the Act.

I.H. The JPA as modified pursuant to this resolution, together with potential future appropriate modifications, is well suited to be, or be part of, a Groundwater Sustainability Agency for the Basin as required by the Act.

J.I. For the purpose of serving in the role of the Groundwater Sustainability Agency for the Basin, or as a member thereof, it is appropriate to join other local public agencies that are affected by the future management of the Basin Agency as members of the JPA.

K.J. The other local public agencies that should be joined as members of the JPA are the County of Santa Cruz, *and* the City of Santa Cruz,~~and the Pajaro Valley Water Management Agency~~.

Now Therefore, upon the adoption of resolutions by the Board of Directors of Central Water District, Soquel Creek Water District, ~~and Pajaro Valley Water Management Agency~~, the Santa Cruz City Council and the Santa Cruz County Board of Supervisors, it is hereby agreed:

1. The Committee. The Ground Water Management Committee, established under the original JPA is hereby made a permanent committee known as the ***Basin Implementation Group (BIG) Soquel Aptos Groundwater Management Committee (SAGMC)***. The duties of the ***BIG SAGMC*** shall include, but not be limited to:

- a) assure that the goals and objectives identified in the current Groundwater Management Plan are pursued in a reasonable and timely manner;

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- b) review data and coordinate groundwater pumping to the extent possible to meet both meet demand and avoid exacerbating undesirable coastal groundwater conditions;
- c) undertake ongoing and comprehensive efforts to collect, maintain, and share groundwater data with respect to water levels and quality;
- d) undertake cooperative research and resource management initiatives that are regional in scope and disseminate information resulting from these activities;
- e) recommend joint ~~projects-efforts~~ to the respective governing bodies which are of regional benefit, e.g. general seawater intrusion monitoring, recharge within shared portions of the basin, etc.;
- f) jointly pursue groundwater management grants or studies, such as planning or project grants available from the State under Proposition 1, and hydrological modeling and studies undertaken by United States Geological Survey;
- g) coordinate Urban Water Management Plans and Groundwater Emergency Plans;
- h) facilitate formation of a Groundwater Sustainability Agency (or Agencies) required by the Act for development and implementation of the required Groundwater Sustainability Plan for the basin, ~~upon which time the Agency may take responsibility for the regular activities of the Committee;~~

Said ~~committee~~*Committee* shall be composed of *11 members*:

- ~~Two~~ members from each of the partner agencies, each of whom shall be appointed by their respective boards.
- ~~and one~~ ~~Two~~ public members who ~~shall be selected by the agency committee members, who~~ shall be ~~a~~ persons served by, owning, or managing a private well. The private well committee members shall *be selected by the partner agency committee members and shall be* ~~be~~ appointed to serve a two year term.
- *In addition, one member shall be appointed representing the Pajaro Valley Water Management Agency (PVWMA). The PVWMA representative shall be an agency Director chosen by their Board of Directors and appointed by the SAGMC.*

~~The Committee shall select a chair from among its *elected* ~~partner agency~~ members with the chair alternating every two years between agencies. All votes of the committee shall be decided by a majority vote of the committee except for fiscal decisions (those decisions *involving* ~~that involve~~ the incurring of debt or expenditure of funds) which shall be decided only by the members of the Committee who are elected representatives of Central, Soquel, the City and the County. Those~~

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fiscal decisions shall also be decided by a majority vote of those persons eligible to vote on those matters *and by the entities involved in the projects. All votes with a fiscal impact on the member agencies shall also be approved by the Board or Council of each agency.*

2. Staff. The ~~general managers~~ *water agency managers* of ~~CENTRAL and SOQUEL~~ *member partner agencies* shall serve as staff to the committee *with clerical duties provided by Soquel.*

3. Compensation. Each board member attending meetings of the committee shall be compensated by his or her respective board as each board so decides. No compensation shall be paid by the committee. The staff shall be paid by their respective entities as they so agree.

4. Funding. The Committee is authorized to hire consultants to assist in the management and implementation of goals of the ~~BIG~~ *SAGMC*. The costs of work done under this agreement and other management and implementation expenses agreed upon by the ~~BIG~~ *SAGMC* shall be shared on a proportional basis of the total annual groundwater use as measured by each agency for the preceding water year. Based on use for 2013, the percentage cost to each agency would be as follows:

Soquel Creek Water District	80 <i>70%</i>
Central Water District	10.5 <i>10%</i>
City of Santa Cruz	9.5 <i>10%</i>
Santa Cruz County	XX <i>10%</i>

In the event that additional members are added to the JPA, all of the members shall agree on a new cost sharing to fund the costs of the JPA.

5. Withdrawal. Any party may withdraw as a participant in the JPA, with the understanding that the remaining party or parties may continue to fund and implement the GMP for the benefit of the ground water basin. Notice of withdrawal shall be by a resolution of the respective board of directors and provide thirty (30) day written notice of intent to withdraw. Any funds due or obligations to pay incurred as of the date of withdrawal shall be due and payable irrespective of the withdrawal.

6. Additional Members. On the approval of the Boards of all parties to this agreement, and that of any subsequent party added to this agreement, additional parties may be added to this JPA.

7. Additional Goals. An additional goal of the Committee shall be to identify and develop groundwater projects which are mutually beneficial to all members.

8. Functions of the Committee. In addition to the functions previously described in this agreement, the Committee shall have the ability to recommend to

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their respective Boards, policies and programs which will enhance the basin. The Committee shall meet at least once quarterly, or more as needed, and minutes of their meetings shall be maintained and furnished to the Boards of the members.

9. Subcommittees. The committee may establish such advisory committees as it deems appropriate to advise committee activities.

10. Non-Restrictive of Independent Activities. This agreement does not preclude any agency from pursuing programs and projects related to groundwater management either independently or in cooperation with other agencies that may or may not be a party to the Soquel-Aptos Area Groundwater Management Joint Powers Agreement.

11. Severability. Should any portion, term, condition, or provision of this Agreement be decided by a court of competent jurisdiction to be illegal or in conflict with any law, or otherwise rendered unenforceable or ineffectual, the validity of the remaining portions, terms, conditions, or provisions shall not be affected thereby.

11. Amendment. This Agreement may be amended by resolution of the Boards and Councils of all members of the JPA.

Dated: _____ 2015

CENTRAL WATER DISTRICT

Authorized Officer

SOQUEL CREEK WATER DISTRICT

Authorized Officer

CITY OF SANTA CRUZ

Authorized Officer

SANTA CRUZ COUNTY

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Authorized Officer

**PAJARO VALLEY WATER
MANAGEMENT AGENCY**

Authorized Officer

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March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 5.3

Soquel-Aptos Area Groundwater
Management Annual Budget FY 2015/16

Background: The Joint Powers Agreement (JPA) authorizes the committee (also referred to as the BIG) to hire consultants to assist in the management and implementation of the groundwater management plan and other management and implementation expenses agreed upon by the BIG.

Below is a description of the estimated expenses for regional groundwater management and implementation activities in Fiscal Year 2015/16 (July 1, 2015-June 30, 2016).

Discussion: With the upcoming budget cycle for FY 2015/16 underway, the partner agencies under the Joint Powers Agreement (JPA) should evaluate the anticipated expense for the coming year to adequately appropriate the necessary funds to cover the proposed work for the coming year. Soquel Creek Water District will continue to serve and coordinate the financial obligations associated groundwater management under the JPA and will seek reimbursement from partner agencies per the cost split as outlined in “Funding” under Amendment 2 or the proposed Amendment 3 of the JPA, if approved at the March 25 meeting.

Fiscal Impact: Several expenditures, as noted below, would be funded from existing appropriations and carried over to FY 2015/16. New costs to be allocated for FY 2015/16 are approximately \$662,850 (costs shown in **bold**). The percentage cost to each partner agency shall be shared and follow the formula as outlined in the JPA, Amendment #3 which is pending adoption: 70% Soquel Creek Water District, 10% Central Water District, 10% City of Santa Cruz, and 10% County of Santa Cruz. (Cost split for groundwater model will also include Central Water District’s credit as agreed upon at the 9/23/2014 Basin Implementation Group Meeting). The partner agencies will seek grant and other financial assistance, as appropriate.

Technical Advisor- Hydrology: HydroMetrics WRI has been retained under the JPA to provide groundwater management and hydrology assistance. The outlined activities and budgets for work done in FY 15/16 include:

- Prepare Annual Review and Report for Water Year 2015
 - **\$35,000** (for work in FY 15/16)
- Prepare Quarterly Reports
 - **\$8,000** (for work in FY 15/16)

- Sustainable Groundwater Management Act - Basin Boundary Changes
 - **\$30,000** (for work in FY 15/16)
- Sustainable Groundwater Management Act – Data/Technical information to support GSA Formation
 - **\$10,000** (for work in FY 15/16)
- Shallow Well Evaluation – Compile Shallow Groundwater Levels and Compare to Creek Elevation
 - **\$20,000** (for work in FY 15/16)
- Groundwater Model: Currently underway.
 - \$196,115 already approved in FY 14/15 for work estimated to be done through June 30, 2015. (Any unspent funds to be rolled over to FY 15/16).
 - **\$397,850** for work in FY 2015/16. This includes additional work supported by USGS that derived from the scoping meetings. (See Agenda Item 5.4)
- Cross Sectional Model Modifications: to begin in 2015
 - \$49,820 already approved in FY 14/15. (Any unspent funds to be rolled over to FY 15/16)

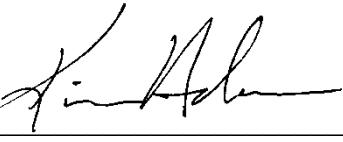
Legal Advisor: The new legislation requires local agencies develop a Groundwater Sustainability Agency by the state deadline of June 30, 2017 or prior. Brownstein Hyatt Farber Schreck has been retained since October 2014 to provide assistance in development of a Groundwater Sustainability Agency/Joint Powers Authority. The scope of work and estimated budget was for \$15,000 (any unspent funds to be rolled over to FY 15/16).

Facilitation Services: To aid in meeting the state's deadline and to ensure meaningful, efficient, and collaborative engagement, facilitation services will be needed in FY 2015/16. Under the JPA, the partner agencies will be seeking funding and service assistance through the Department of Water Resources to help initiate this process as a pilot/learning tool. There is also the potential for future funding through Prop 1 money for additional services that we should ready ourselves to be well positioned for. It is anticipated that assessment and facilitation services will cost between **\$135,000 and \$150,000** that would need to be split between FY 14/15 and FY 15/16 and/or front funded in FY 15/16 with anticipation that DWR funding could reduce the expense. (See Agenda Item 5.5)

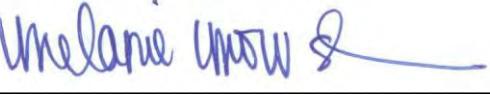
General Administration: These costs are related to meetings, such as staff/labor time (preparing meeting materials such as memos, recording of minutes, presentations, accounts payable and invoicing, etc.), A/V or room fees, dedicated website, and other incidental costs related to the work performed under the JPA. It is anticipated to cost approximately **\$ 12,000** in FY 15/16.

POSSIBLE ACTION

1. Review and recommend approval of the FY 2015/16 budget estimate for groundwater management activities in the Soquel-Aptos Groundwater Management Area Basin.
2. No action.

By 

Kim Adamson
General Manager
Soquel Creek Water District

By 

Melanie Mow Schumacher
Special Projects/CD Manager
Soquel Creek Water District

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March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 5.4

Soquel-Aptos Groundwater Model Work Plan

Attachment: Technical Memorandum from HydroMetrics WRI dated January 23, 2015

HydroMetrics WRI is developing a groundwater model for the Mid-Santa Cruz County groundwater basin. The firm has completed its first task “Scoping Efforts” and, as part of this effort, a work plan (including revised cost estimate) has been prepared (attached). Based on the scoping efforts, the following changes/additions have been incorporated to the work plan:

- Using the U.S. Geological Survey (USGS) model code GSFLOW that is a fully integrated watershed-groundwater model. GSFLOW will be used because simulating surface water-groundwater interaction is a top priority use of the model.
- Using a PRMS watershed model based on a rectangular grid, rather than the sub-watershed discretization used by the existing PRMS model. Thus, a grid based PRMS model needs to be created and any previous work will still be incorporated as data set inputs.
- Developing climate change scenarios. The USGS will create datasets for climate data to import into the GSFLOW model representing possible climate change futures.
- Evaluating groundwater management alternatives with the model and running recommended alternative with climate change scenarios.

The revised overall cost estimate for the Soquel-Aptos Groundwater Model scope of work is \$591,000. The cost estimate for fiscal year 2015-2016, including USGS costs, is \$397,850.

POSSIBLE ACTION

1. By MOTION, provide direction to staff on the Soquel-Aptos Area Groundwater Model Work Plan.
2. By MOTION, approve revised scope of work and budget Soquel-Aptos Area Groundwater Model Work Plan.

By _____

Kim Adamson
General Manager
Soquel Creek Water District

By _____

Melanie Mow Schumacher
Special Projects/CD Manager
Soquel Creek Water District



519 17th Street, Suite 500
Oakland, CA 94612

TECHNICAL MEMORANDUM

To: Kim Adamson, Soquel Creek Water District
Ralph Bracamonte, Central Water District

From: Cameron Tana and Derrik Williams

Date: January 23, 2015

Subject: Work Plan
Soquel-Aptos Area Groundwater Model

This memorandum provides the work plan for completing the Soquel-Aptos Area groundwater model. This work plan is based on two scoping meetings held on October 28 and December 1, 2014. This work plan describes the tasks required to develop a groundwater model with the uses and capabilities described in the attached memorandum (HydroMetrics WRI, 2015).

One primary direction from the scoping meetings is to use the U.S. Geological Survey (USGS) model code GSFLOW (Markstrom et al., 2008) that is a fully integrated watershed-groundwater model. GSFLOW will be used because simulating surface water-groundwater interaction is a top priority use of the model.

This work plan has a major change from the tasks listed in our July 10, 2014 proposal to the Basin Implementation Group (BIG). The July 10 proposal proposed using the existing Precipitation-Runoff Modeling System (PRMS) watershed model for the Soquel-Aptos Area (HydroMetrics WRI, 2011) and integrating it directly with a MODFLOW groundwater model to create a GSFLOW model. The USGS provided guidance as part of the scoping process and recommended that the PRMS watershed model be based on a rectangular grid, rather than the sub-watershed discretization used by the existing PRMS model. Therefore, we will need to create a grid based PRMS model, although we will leverage the previous work by using data sets input into the existing PRMS model.

Additional changes from the proposal will be noted in the task list.

TEAM MEMBERS

The principals of HydroMetrics WRI, Derrik Williams and Cameron Tana, will lead the work in the roles of technical lead and project manager, respectively. Senior hydrogeologist Georgina King will lead land use analysis and transfer of information from the existing PRMS model to the grid-based model. Our staff groundwater modelers are Stephen Hundt and Hanieh Haeri. If additional modelers are added to the team, we will provide resumes.

Based on a reference from the USGS, we are subcontracting with Huntington Hydrologic, Inc. (Huntington) to efficiently develop a grid based PRMS model. Justin Huntington, the principal of Huntington Hydrologic, is a research professor at the Desert Research Institute and is a PRMS and GSFLOW expert.

Mike Cloud will also join our team to assist with developing the hydrogeologic subsurface structure. Before retiring from Santa Cruz County, Mike developed a detailed knowledge of the basin's hydrogeology and we plan to leverage that knowledge.

The U.S. Geological Survey (USGS) will continue to provide support for this effort under separate contract with the Basin Implementation Group. Linda Woolfenden will provide guidance for the modeling effort on conference calls every other week, review of reports, and participation in Technical Review Committee meetings. Richard Niswonger will upgrade GSFLOW to incorporate the seawater intrusion package SWI2. Lorrie and Alan Flint will develop climate data for the calibration period and climate scenarios to incorporate in model simulations of future conditions.

The following tasks make up the work plan. Several tasks detail interim deliverables to be reviewed by the Technical Review Committee that will also be used as milestones for project progress. Task 1 is the scoping task that concludes with Basin Implementation Group acceptance of this work plan and formation of the Technical Review Committee.

TASK 2. DEVELOP MODEL OF SURFACE SYSTEM

2.1 DEFINE MODEL GRID FOR GROUNDWATER MODEL

The model grid for the surface system needs to match the model grid for the groundwater system. HydroMetrics WRI will first define a reasonable model grid for the groundwater system. The model grid will consider important aspects of the conceptual model, including:

- Identifying model boundaries. The model boundary will be similar to the existing PRMS model (Figure 1) with revisions most likely in the southeast corner and how far it extends offshore.
- Honoring watershed boundaries
- Acknowledging the groundwater management area boundary
- Acknowledging and incorporating the Central Water District (CWD) model grid (HydroMetrics WRI and Kennedy/Jenks, 2014), though highly discretized areas of the CWD grid will likely be made more coarse for this larger model
- Honoring existing and potential well locations
- Honoring geologic structures
- Maintaining reasonable simulation times

2.2 REFINE MODEL GRID FOR PRMS AND DEFINE STREAM/SUB-WATERSHED NETWORK

In addition to the preliminary grid created for the groundwater system, the model grid for the surface system will be based on the ground surface digital elevation model (DEM) and stream network. HydroMetrics WRI will compile the stream network map and the streamflow gauge locations from the previous PRMS work into a Geographic Information System (GIS) GeoDatabase. HydroMetrics WRI will also compile daily streamflow data for the gauges.

The preliminary model grid and stream GeoDatabase will be transferred to Huntington. Huntington will refine and modify the grid as necessary to promote an accurate and efficient surface water simulation. Huntington will refine the grid and define the stream/sub-watershed network based on the grid by:

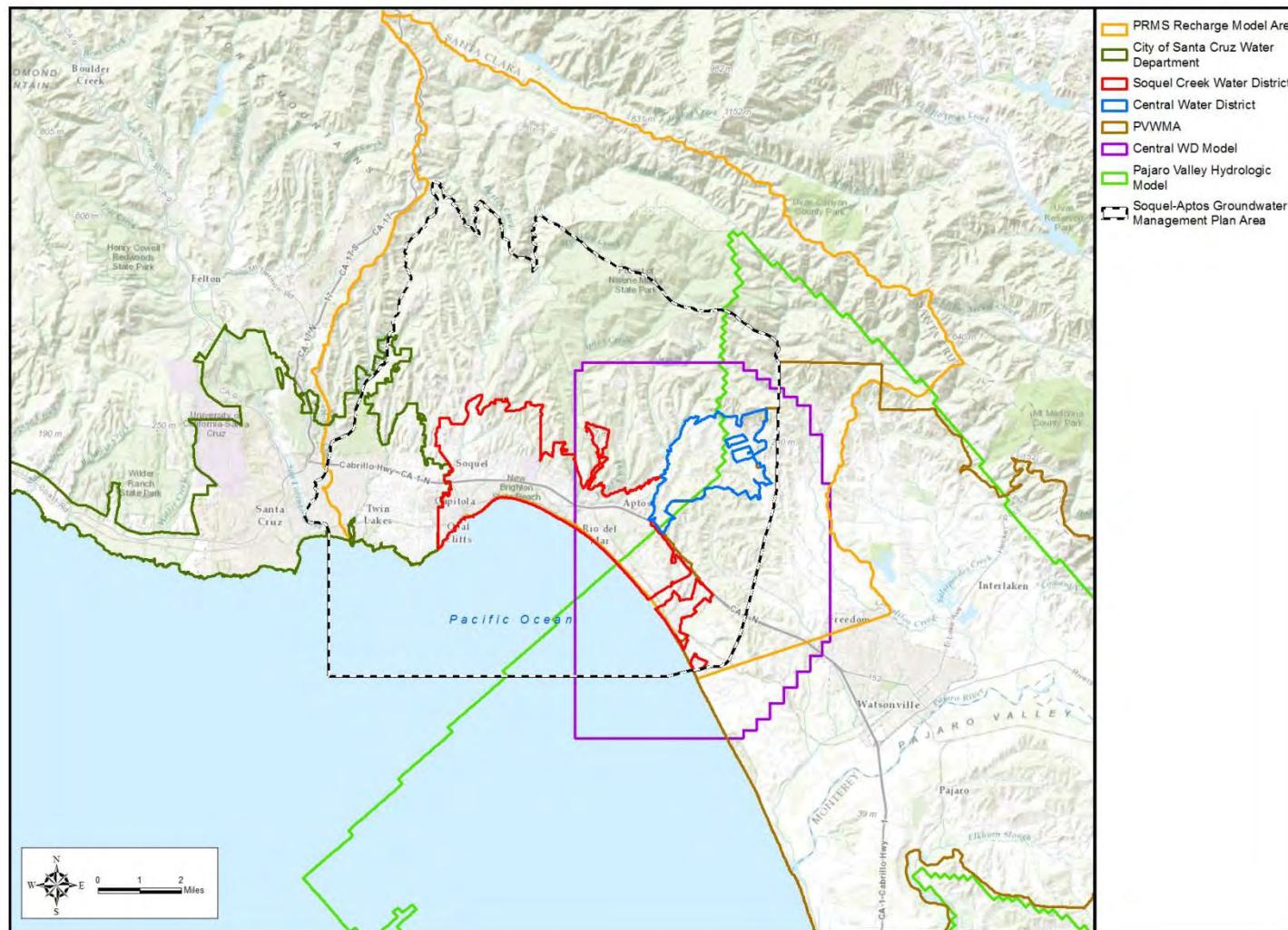


Figure 1. Existing Model Boundaries

- Resampling an existing DEM to the Grid
- Overlaying stream and stream gauge locations and adjusting DEM, stream locations, and grid as necessary
- Developing the grid-based stream network and cascade network
- Creating sub-watersheds at each gauge and mapping to grid
- Creating a map of the MODFLOW Streamflow Routing Package (SFR) stream segments with reach ordering.

The result will be the final grid and stream network used for the GSFLOW model. This grid will be used for modeling the surface system in Task 2 as well as the subsurface system in Task 3.

2.3 COMPILE LAND SURFACE DATA FROM SUB-WATERSHED BASED PRMS FOR DEVELOPMENT OF GRID BASED PRMS

For the existing sub-watershed based PRMS model, spatially distributed parameters were based on available spatial data sets, zone-based calibration to streamflows, and default values recommended by USGS documentation of PRMS (USGS, 2011). HydroMetrics WRI will compile these datasets into a GIS Geodatabase for Huntington to use in defining initial grid-based parameter values.

The four spatial data sets that will be compiled are the surface outcrop of geology (Johnson et al., 2004, Cloud, 2006, Brabb, 1997), USGS 30 meter gridded land use/land cover (USGS, 2007), SSURGO soils database (NRCS, 2009), and USGS tree canopy density (USGS, 2007). A spatial data set with the four geology-based calibration zones will be compiled with the calibrated values. The default values used will also be compiled.

Huntington will use these data sets to assign initial parameter values to the model grid cells, efficiently making use of the previous PRMS effort and calibration.

2.4 CLIMATE DATA FOR GRID-BASED PRMS

For this model, we will use available station data for rainfall and spatially distribute the data using the PRISM dataset. This differs from the existing PRMS, for which we distributed data from individual weather stations based on

distance inverse weighting. Using the PRISM dataset for historical climate simulations will be more consistent with the datasets that will be developed to simulate different climate change scenarios (Task 5.2). HydroMetrics WRI will compile individual weather station data. Huntington will use the station data and PRISM dataset to calculate precipitation parameters and map them to the grid cells.

We also plan to directly input spatially distributed temperature, solar radiation and evapotranspiration data into PRMS. In most PRMS applications, including our existing PRMS, model parameters are calibrated to regional solar radiation and evapotranspiration data averaged over longer timescales than the daily results provided by PRMS. The USGS will develop spatially distributed daily data for input into PRMS by Huntington. This methodology will be consistent with methodology used for climate change scenarios (Task 5.2).

2.5 LAND USE ANALYSIS FOR WATER USE AND RETURN FLOW

An important part of the basin's water balance is water use by non-agency pumpers and return flow from all users. The return flow occurs at the surface and can both recharge the basin or flow to streams so this source of water needs to be added to the PRMS model of the surface system. We performed a land use analysis for the CWD model using assumptions in Johnson et al. (2004). We propose to expand the land use analysis from the CWD model to the entire basin, and update the assumptions in Johnson et al. (2004) with more current and local information. This analysis will involve the following steps.

- Revise water use factors and return flow assumptions for more current and local information.
- Extend GIS analysis of land use from CWD model to entire basin. We plan to apply the current land use over the entire model period. We will either assume current non-agency water use applies to the entire period or apply a simple factor to account for changes in water use over time.
- Evaluate water use and return flow by land use zone.
- Calculate system losses based on zones served by water supply and sewer systems

HydroMetrics WRI will compile return flow estimates by land use zone in a GIS Geodatabase. Huntington will map water applied at the surface to the model

grid cells. System losses that occur below the surface will likely be added directly to groundwater using the recharge package.

2.6 DRAFT TECHNICAL MEMO AND REVIEW OF PRMS INPUTS (MILESTONE)

We will summarize the work in Tasks 2.1-2.5 in a draft technical memorandum. An interim draft technical memorandum will first be reviewed by the USGS. The technical memorandum will be revised based on USGS comments and provided to funding partners and Technical Review Committee (TRC) members two weeks prior to a scheduled meeting. HydroMetrics WRI will present the memorandum at the meeting and receive feedback from the TRC. The USGS will also attend the meeting.

2.7 CONSTRUCT GRID-BASED PRMS FOR GSFLOW

Huntington will use the grid-based GeoDatabases from GIS created in Tasks 2.2 through 2.5 to create PRMS input files: including the parameter and control files. Huntington will create the data file containing streamflow for all gauges. Huntington will then make initial PRMS runs, debug, and analyze initial results.

2.8 CALIBRATE PRMS

In order to facilitate integration with MODFLOW in GSFLOW, the grid-based PRMS model will be calibrated to measured steamflows. HydroMetrics WRI will use the Parameter Estimation (PEST) software (Watermark, 2005) to achieve a calibration that is adequate to proceed with the GSFLOW integration. This includes creation of PEST files based on PRMS files.

TASK 3. DEVELOP MODEL OF SUBSURFACE SYSTEM

3.1 SUBSURFACE STRUCTURE FOR MODEL

HydroMetrics WRI and Mike Cloud will develop the hydrogeologic structure of the GSFLOW model based on our existing understanding of the Soquel-Aptos basin hydrostratigraphy. Mapped contacts originally developed by Johnson et al. (2004), and updated by Mike Cloud will form the basis of the hydrostratigraphic layering. Modifications to the mapped contacts will include

- Merging layers used in CWD model.
- Extending layers to the western outcrop boundaries
- Adding layers for deeper Purisima and related units
- Merging units if defensible

Terrace deposits cap the dipping hydrostratigraphy in the coastal area of the Soquel-Aptos basin. As part of this task, we will develop and implement a conceptual model for modeling the terrace deposits. The implementation may be similar to that used for the Potomac aquifer modeled by Phillips (1987).

In consultation with Huntington and USGS, an alluvium layer along the stream network will be added as necessary to simulate groundwater-surface water interaction. A layer to simulate future recharge basins may also be added if artificial surface recharge is a likely groundwater management alternative.

The Zayante fault will be simulated as a horizontal flow barrier. Mike Cloud will help determine whether the Zayante fault should be implemented in only the model layers simulating the Purisima Formation, or the model layers representing both the Purisima and Aromas Formations.

The geologic structure north of the Zayante Fault is undifferentiated Purisima Formation as well as other more consolidated formations. This subsurface area needs to be modeled as part of the integrated GSFLOW model. Based on our current conceptual model, groundwater flow in this area is not significant for groundwater management of the Soquel-Aptos area. Therefore, we will simulate this area as simply as possible. We will likely extend layers across the Zayante Fault to the northern watershed boundary parallel to the ground surface and possibly deactivate lower layers.

HydroMetrics WRI and Mike Cloud will also evaluate and revise the conceptual model for the Aromas coastal area. Groundwater levels observed in the area appear inconsistent with the current conceptual model for the Aromas Red Sands formation.

HydroMetrics WRI will develop the layer surfaces and fault locations, and enter these data into the Groundwater Vistas groundwater modeling graphical user interface.

3.2 DEFINE BOUNDARY CONDITIONS

Boundary conditions must be defined along all lateral edges of the model, as well as the top and bottom of the model. These boundary conditions define how groundwater flows across the boundaries of the model. Transient boundary conditions will be developed for each month between 1984 and 2014. A steady-state initial boundary condition will also be developed, using average boundary conditions for the 1984 through 2014 time period. This is the same approach used in the CWD model.

The main steady state boundary condition are the outcrops below Monterey Bay, which will likely be simulated with general head boundaries representing sea level. The main transient boundary condition to be developed is the boundary with Pajaro Valley, which will consist of extending the groundwater level based boundary developed for the CWD model in time and space. Other boundary conditions are likely to be no-flow with source of water flow only coming from the surface system. HydroMetrics WRI will compile and create datasets for the boundary conditions and enter the boundary conditions into Groundwater Vistas.

3.3 DEVELOP PUMPING TIME SERIES

Groundwater pumping is the primary way in which groundwater leaves the Soquel- Aptos basin. The majority of pumping is municipal. Historic municipal pumping rates are available from the city of Santa Cruz, SqCWD, and CWD. Averages for steady-state initial conditions will be based on an estimate of average pumping prior to 1984. These data will be incorporated directly into the model at the location of the pumping wells.

Where possible, additional individual wells for small water systems will be simulated. These may include the Cabrillo College well, the Seaside Golf Course well, the Seaside Greens well, and wells of mutual water companies. Pumping amounts for these wells may be based on historical records recorded by Santa Cruz County, County records of number of connections, and/or land-use based water use estimates (Task 2.5). The well locations and depths may need to be estimated.

For these wells with readily identified screen intervals, the Multi-Node Well (MNW2) package will be used to allow the model to calculate distribution of pumping between layers. HydroMetrics WRI will create the package outside of Groundwater Vistas to simulate multiple screen intervals, but also store well locations and pumping data in Groundwater Vistas.

Additional private pumping will be based on the land-use based water use estimates (Task 2.5). The pumping will be distributed over the land use zones and assumed to be relatively shallow pumping. Our plan is to use MODFLOW's Recharge package to incorporate pumping as negative recharge applied to the top active layer.

3.4 DRAFT TECHNICAL MEMO AND REVIEW OF MODFLOW INPUTS (MILESTONE)

We will summarize the work in Tasks 3.1-3.3 in a draft technical memorandum. An interim draft technical memorandum will first be reviewed by the USGS. The technical memorandum will be revised based on USGS comments and provided to funding partners and Technical Review Committee (TRC) members two weeks prior to a scheduled meeting. HydroMetrics WRI will present the memorandum at the meeting and receive feedback from the TRC. The USGS will also attend the meeting.

3.5 COMPILE GROUNDWATER LEVEL CALIBRATION DATA

The primary data for calibration of the groundwater model will be groundwater levels. HydroMetrics WRI will compile groundwater level data used in the Annual Review and Report (HydroMetrics WRI, 2014) for model calibration. Any logger data will be averaged to daily or greater intervals. HydroMetrics WRI will set up files to use Parameter Estimation (PEST) software to calibrate the groundwater model.

3.6 CREATE RECHARGE PACKAGE BASED ON HRU BASED PRMS

The USGS has recommended that an initial calibration of MODFLOW be performed prior to integration into GSFLOW. In order to perform an initial calibration of MODFLOW, we will use the results from the existing sub-watershed based PRMS model to estimate recharge. The existing PRMS results

are for 1984-2009 so initial MODFLOW runs will be limited to that time frame. HydroMetrics WRI will map the results to the model grid similar to what was done for the CWD model . Estimates of return flow and system losses (Task 2.5) will also be added to recharge package. As done for the CWD model, the steady state initial conditions will be based on a 1984-2009 average. The recharge package will be added to Groundwater Vistas.

3.7 ROUGHLY CALIBRATE MODFLOW (1984-2009) USING EXISTING PRMS RAINFALL RECHARGE

To facilitate integration with PRMS in GSFLOW, the interim MODFLOW model will be calibrated so that general groundwater levels relative to streams and ground surface are simulated accurately. HydroMetrics WRI will use the Parameter Estimation (PEST) software to achieve this rough calibration.

TASK 4. DEVELOP INTEGRATED MODEL

4.1 IMPLEMENT SFR AND UZF PACKAGES

The main packages connecting PRMS and MODFLOW in GSFLOW are the streamflow routing (SFR, Pradic et al., 2004) and unsaturated zone flow (UZF, Niswonger et al., 2006) packages. Huntington will create the SFR and UZF packages based on information from Task 2.2. HydroMetrics WRI will test the packages in MODFLOW. HydroMetrics WRI and Huntington will also meet to discuss the MODFLOW development, and for Huntington to transfer to HydroMetrics WRI the codes that create model inputs including SFR and UZF.

4.2 CREATE GSFLOW

The grid-based PRMS model and MODFLOW model will be integrated into a GSFLOW model. Huntington will perform the initial linkage and testing to produce reasonable results and eliminate convergance errors. The recharge package will be revised to remove sources applied at the surface in the PRMS model.

4.3 DRAFT TECHNICAL MEMO AND REVIEW OF GSFLOW INTEGRATION (MILESTONE)

We will summarize the work to finalize development of PRMS, MODFLOW and integrate into GSFLOW (Tasks 2.7-2.8, 3.5-3.7, and 4.1-4.2) in a draft technical memorandum. An interim draft technical memorandum will first be reviewed by the USGS. The technical memorandum will be revised based on USGS comments and provided to funding partners and Technical Review Committee (TRC) members two weeks prior to a scheduled meeting. HydroMetrics WRI will present the memorandum at the meeting and receive feedback from the TRC. The USGS will also attend the meeting.

4.4 CALIBRATE GSFLOW

HydroMetrics WRI will calibrate the integrated GSFLOW model to groundwater levels and streamflows using PEST software. The model will be calibrated to a level of accuracy that justifies use of the model to evaluate groundwater model alternatives effects on basin recovery, coastal groundwater levels, and streamflows.

4.5 IMPLEMENT SWI2 CODE IN GSFLOW

The seawater interface package SWI2 is not currently implemented in GSFLOW. A USGS developer of GSFLOW will implement and test SWI2 into GSFLOW.

4.6 IMPLEMENT AROMAS AND PURISIMA SEAWATER INTERFACES USING SWI2 IN GSFLOW

A priority use of the model is to predict future movement of the seawater interface even in areas such as the Purisima Formation, where the interface has not yet been observed. We will implement the sharp-interface package (SWI2) for MODFLOW. HydroMetrics WRI will approximate the interface location in the Aromas over time and use the approximate initial condition in the model. Approximated changes over time will be used to check against model results. HydroMetrics WRI will map an assumed interface in the Purisima that will facilitate simulations evaluating minimum travel time of the interface to production wells in the Purisima. This assumed interface will be implemented in the SWI2 package.

4.7 TECHNICAL REVIEW OF GSFLOW CALIBRATION AND SWI2 IMPLEMENTATION (MILESTONE)

We will summarize the calibration of the GSFLOW model and implementation of SWI2 (Tasks 4.4-4.6) in a draft technical memorandum. An interim draft technical memorandum will first be reviewed by the USGS. The technical memorandum will be revised based on USGS comments and provided to funding partners and Technical Review Committee (TRC) members two weeks prior to a scheduled meeting. HydroMetrics WRI will present the memorandum at the meeting and receive feedback from the TRC. The USGS will also attend the meeting.

TASK 5. MODEL SIMULATIONS

5.1 DEVELOP CLIMATE CHANGE SCENARIOS

The scoping meetings identified a need to use the groundwater model to assess the effect of climate. The USGS will create datasets for climate data to import into the GSFLOW model representing possible climate change futures. The USGS will downscale four future climate scenarios (LOCA AR5) at daily time steps to the resolution of the model grid.

5.2 EVALUATE GROUNDWATER MANAGEMENT ALTERNATIVES WITH MODEL

The calibrated GSFLOW model will be used to evaluate groundwater management alternatives. Based on the current understanding of management options for the Basin Implementation Group, HydroMetrics WRI will outline up to five alternatives in a draft technical memorandum for funding partners to review before implementation. The alternatives will include variations on some combination of the following:

- Overall pumping quantities
- Pumping rates and locations, including pumping coordination
- Availability of supplemental supplies, specifically supplies that are recharged or injected
- Non-agency pumping, including alternative water use factors

One or two of the five alternatives may be developed into model simulations based on input from the funding partners. HydroMetrics WRI will implement the alternatives into GSFLOW simulations based on the 1984-2014 calibration hydrology but with initial conditions representing the end of 2014.

HydroMetrics WRI will evaluate results for the model runs of alternatives for the following:

- Comparing groundwater levels to established protective elevations for preventing seawater intrusion
- Time for basin recovery i.e. time for groundwater levels to rise to protective elevations
- Effects on stream flow
- Movement of seawater interface

Based on groundwater model results, HydroMetrics WRI will recommend groundwater management alternative for further evaluation.

5.3 RUN RECOMMENDED ALTERNATIVE WITH CLIMATE CHANGE SCENARIOS

HydroMetrics WRI will input the climate scenarios developed in Task 5.1 into GSFLOW using consistent technique to Task 2.4 and run the recommended alternative from Task 5.2 with the four climate change scenarios. Model results to be evaluated are the same as Task 5.2.

5.4 EVALUATE PREDICTIVE UNCERTAINTY FOR RECOMMENDED ALTERNATIVE

There is uncertainty in model results even with a calibrated model. HydroMetrics WRI will use the PEST software to estimate the uncertainty of the results for the recommended alternative.

5.5 DRAFT TECHNICAL MEMO AND REVIEW OF MODEL SIMULATIONS (MILESTONE)

We will summarize the setup and results of model simulations (Tasks 5.1-5.4) in a draft technical memorandum. An interim draft technical memorandum will

first be reviewed by the USGS. The technical memorandum will be revised based on USGS comments and provided to partner agencies and Technical Review Committee (TRC) members two weeks prior to a scheduled meeting. HydroMetrics WRI will present the memorandum at the meeting and receive feedback from the TRC. The USGS will also attend the meeting.

TASK 6. FINAL MODEL REPORT

HydroMetrics WRI will compile previous technical memorandums detailing model construction into a draft final report. The report serves as both a record of the models' development, and as reference documents for future model users. At a minimum, the model documentation should include the information outlined by authors such as Anderson and Woessner (1992). The report will include revisions of previous technical memorandums based on Technical Review Committee comments. The draft report will be provided to staff of partner agencies. The report will be revised based on comments of staff and submitted to the Basin Implementation Group for review and approval. HydroMetrics WRI will present the study to the BIG.

BUDGET

The revised cost estimate for this work plan is attached. The overall cost estimate of \$591,000 is higher than what was presented in our July 10, 2014 proposal for the following reasons.

1. The recommended strategy to develop a grid-based PRMS and calibrate PRMS and MODFLOW separately before integration requires more effort than presented in the proposal.
2. The proposal did not include USGS costs for guidance, implementation of SWI2 in GSFLOW, and development of data sets to facilitate climate change scenarios.
3. The plan to simulate climate change scenarios also requires greater effort from HydroMetrics WRI and Huntington to implement.

The cost estimate for fiscal year 2014-2015 of approximately \$193,500 is within the amount Soquel Creek Water District has budgeted for the fiscal year. The purchase order issued to HydroMetrics WRI was for the full fiscal year budget

and will need to be reduced \$26,000 to fund the USGS's efforts for the fiscal year. The cost estimate for fiscal year 2015-2016, including USGS costs, is \$397,850.

SCHEDULE

The following table shows the work plan schedule for tasks grouped by the draft technical memorandums and technical review committee meetings that serve as milestones for the project.

Months	Task Nos.	Tasks
Feb - May 2015	2.1-2.5	Develop PRMS Inputs
Mar - June 2015	3.1-3.3	Develop MODFLOW Inputs
June 2015	2.6	<i>Draft Memo and TRC Meeting on PRMS Inputs</i>
July 2015	3.4	<i>Draft Memo and TRC Meeting on MODFLOW Inputs</i>
July - Aug 2015	2.7-2.8	Construct and Calibrate PRMS (Tasks 2.7-2.8)
July - Sep 2015	3.5-3.7	Calibrate Interim MODFLOW (Tasks 3.5-3.7)
Sep - Oct 2015	4.1-4.2	Integrate GSFLOW (Tasks 4.1-4.2)
Nov 2015	4.3	<i>Draft Memo and TRC Meeting on GSFLOW Integration</i>
Nov 2015 – Jan 2016	4.4	Calibrate GSFLOW
July 2015 – Jan 2016	4.5-4.6	Implement SWI2 (Tasks 4.5-4.6)
Feb 2016	4.7	<i>Draft Memo and TRC Meeting on Calibration and SWI2</i>
Oct 2015 – Apr 2016	5.1-5.4	Model Simulations
May 2016	5.5	<i>Draft Memo and TRC Meeting on Model Simulations</i>
June 2016	6.1-6.2	Final Report

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Cost Estimate for Scope of Professional Services to Mid County Basin Groundwater Model

Tasks	HydroMetrics WRI Hours						Huntington Hydrologic			Cost	ODC	HydroMetrics WRI PO		U.S. Geological Survey	
	Derrick Williams	Cameron Tana	Georgina King	Staff	Staff	Admin	Mike Cloud	Justin Huntington	Staff			FY 2014-2015 TOTAL	FY 2015-2016 TOTAL	FY 2014-2015 TOTAL	FY 2015-2016 TOTAL
	Technical Lead	Project Manager	Land Use Analysis Lead	Groundwater Modeler	Hydrologist/ GIS	Office Support	Geologist	PRMS/GSFLOW Expert	Watershed Modeler						
Rates per hour	\$195	\$175	\$165	\$125	\$100	\$60	\$150	\$138	\$110	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
Task 1 Scoping Effort															
1.1 Scoping Meetings (assume 2)	16	24	0	0	0	0	0	0	0	\$ 7,320	\$ 350	\$ 7,670	\$ -	\$ 5,000	\$ -
1.2 Draft Memorandum on Potential Model Uses	2	16	4	0	2	0	0	0	0	\$ 4,050	\$ -	\$ 4,050	\$ -	\$ -	\$ -
1.3 Develop Work Plan and Revise Cost and Schedule	4	24	8	0	4	0	0	0	0	\$ 6,700	\$ 100	\$ 6,800	\$ -	\$ 2,000	\$ -
Task 1 Subtotal	22	64	12	0	6	0	0	0	0	\$ 18,070	\$ 450	\$ 18,520	\$ -	\$ 7,000	\$ -
Task 2 Develop Model of Surface System															
2.1 Define Model Grid for Groundwater Model	3	6	0	12	0	0	0	0	0	\$ 3,135	\$ 350	\$ 3,485	\$ -	\$ -	\$ -
2.2 Refine Model Grid for PRMS and Define Stream/Subwatershed Netwo	3	8	16	8	0	0	0	11	32	\$ 10,658	\$ -	\$ 10,658	\$ -	\$ -	\$ -
2.3 Compile Land Surface Data from Sub-Watershed Based PRMS	3	8	20	0	0	0	0	11	4	\$ 7,238	\$ -	\$ 7,238	\$ -	\$ -	\$ -
2.4 Climate Data for PRMS	2	4	4	0	4	0	0	10	38	\$ 7,705	\$ -	\$ 7,705	\$ -	\$ 10,000	\$ -
2.5 Land Use Analysis for Water Use and Return Flow	16	40	60	40	200	0	0	4	8	\$ 46,450	\$ -	\$ 46,450	\$ -	\$ -	\$ -
2.6 Draft Technical Memo and Review of PRMS Inputs	16	24	24	8	40	0	0	20	12	\$ 20,350	\$ 794	\$ 21,144	\$ -	\$ 9,000	\$ -
2.7 Construct Grid-Based PRMS for GSFLOW	8	16	20	8	0	0	0	44	30	\$ 18,010	\$ -	\$ 18,010	\$ -	\$ -	\$ -
2.8 Calibrate PRMS	8	20	12	60	0	0	0	26	8	\$ 18,995	\$ -	\$ 18,995	\$ -	\$ -	\$ -
Task 2 Subtotal	59	126	156	136	244	0	0	126	132	\$ 132,540	\$ 1,144	\$ 96,679	\$ 37,005	\$ 19,000	\$ -
Task 3 Develop Model of Sub-surface System															
3.1 Develop Sub-surface Hydrogeologic Structure	12	20	8	60	0	0	60	15	8	\$ 26,603	\$ -	\$ 26,603	\$ -	\$ -	\$ -
3.2 Define Boundary Conditions	12	16	0	80	0	0	0	0	0	\$ 15,140	\$ -	\$ 15,140	\$ -	\$ -	\$ -
3.3 Develop Pumping Time Series	4	8	0	24	40	0	0	2	0	\$ 9,455	\$ -	\$ 9,455	\$ -	\$ -	\$ -
3.4 Draft Technical Memo and Review of MODFLOW Inputs	16	24	0	48	20	0	10	0	0	\$ 16,820	\$ 200	\$ -	\$ 17,020	\$ -	\$ 3,000
3.5 Compile Groundwater Level Calibration Data	4	8	0	16	40	0	0	0	0	\$ 8,180	\$ -	\$ -	\$ 8,180	\$ -	\$ -
3.6 Create Recharge Package Based on HRU Based PRMS	4	16	24	8	0	0	0	0	0	\$ 8,540	\$ -	\$ -	\$ 8,540	\$ -	\$ -
3.7 Roughly Calibrate Subsurface MODFLOW	12	20	0	80	0	0	0	8	0	\$ 16,940	\$ -	\$ -	\$ 16,940	\$ -	\$ -
Task 3 Subtotal	64	112	32	316	100	0	70	25	8	\$ 101,678	\$ 200	\$ 51,198	\$ 50,680	\$ -	\$ 3,000
Task 4 Develop Integrated Model of Surface and Sub-surface Systems															
4.1 Implement SFR and UZF Package	4	8	0	16	0	0	0	42	0	\$ 9,955	\$ 594	\$ -	\$ 10,549	\$ -	\$ -
4.2 Create GSFLOW	8	16	0	20	0	0	0	24	0	\$ 10,160	\$ -	\$ -	\$ 10,160	\$ -	\$ -
4.3 Draft Technical Memo and Review of GSFLOW Integration	16	24	0	40	0	0	0	16	0	\$ 14,520	\$ 594	\$ 200	\$ 15,114	\$ -	\$ 6,000
4.4 Calibrate GSFLOW	20	60	0	200	40	0	0	40	0	\$ 48,900	\$ -	\$ -	\$ 48,900	\$ -	\$ -
4.5 Implement SWI2 Code in GSFLOW	4	8	0	0	0	0	0	0	0	\$ 2,180	\$ -	\$ -	\$ 2,180	\$ -	\$ 29,371
4.6 Incorporate Density Dependence for Seawater Intrusion	24	60	0	120	0	0	0	0	0	\$ 30,180	\$ -	\$ -	\$ 30,180	\$ -	\$ -
4.7 Draft Technical Memo and Review of GSFLOW Calibration and SWI2	16	24	0	40	20	0	0	16	0	\$ 16,520	\$ 594	\$ 200	\$ 17,114	\$ -	\$ 6,000
Task 4 Subtotal	92	200	0	436	60	0	0	138	0	\$ 132,415	\$ 1,782	\$ 400	\$ 134,197	\$ -	\$ 41,371
Task 5 Model Simulations															
5.1 Develop Climate Change Scenarios	4	8	0	16	0	0	0	0	0	\$ 4,180	\$ -	\$ -	\$ 4,180	\$ -	\$ 33,000
5.2 Evaluate Groundwater Management Alternatives and Scenarios	16	60	0	120	0	0	0	0	0	\$ 28,620	\$ -	\$ -	\$ 28,620	\$ -	\$ -
5.3 Run Selected Alternative Runs with Climate Change Scenarios	8	24	0	60	0	0	0	4	0	\$ 13,810	\$ -	\$ -	\$ 13,810	\$ -	\$ -
5.4 Evaluate Predictive Uncertainty for Preferred Alternative	8	24	0	40	0	0	0	0	0	\$ 10,760	\$ -	\$ -	\$ 10,760	\$ -	\$ -
5.5 Draft Technical Memo and Review of Model Simulations	16	24	0	40	0	0	0	0	0	\$ 12,320	\$ -	\$ -	\$ 12,320	\$ -	\$ 6,000
Task 5 Subtotal	52	140	0	276	0	0	0	4	0	\$ 69,690	\$ -	\$ -	\$ 69,690	\$ -	\$ 39,000
Task 6 Final Model Report															
6.1 Final Draft Report	12	24	12	48	20	0	4	0	0	\$ 17,120	\$ -	\$ -	\$ 17,120	\$ -	\$ 2,000
6.2 Final Report	2	4	2	8	4	16	0	0	0	\$ 3,780	\$ -	\$ -	\$ 3,780	\$ -	\$ -
Task 6 Subtotal	14	28	14	56	24	16	4	0	0	\$ 20,900	\$ -	\$ -	\$ 20,900	\$ -	\$ 2,000
TOTAL	303	670	214	1220	434	16	74	293	140	\$ 475,293	\$ 3,576	\$ 166,797	\$ 312,472	\$ 26,000	\$ 85,371
										TOTAL FISCAL YEAR BUDGET		\$ 192,797		\$ 397,843	

March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 5.5 Groundwater Sustainability Agency (GSA) Formation

Attachments:

1. Draft Framework of Formation and Function of the GSA Formation Task Force
2. Proposed Scope of Work from CSU Sacramento, Center for Collaborative Policy dated February 10, 2015- Option 1
3. Proposed Scope of Work for CSU Sacramento, Center for Collaborative Policy dated February 10, 2015 – Option 2

Background:

The Sustainable Groundwater Management Act (SGMA) that was signed into law in 2014, and effective as of January 1, 2015, lays out a stepwise process and timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities and deadlines to take the necessary steps to achieve the goal.

- **Step one: Local agencies must form local groundwater sustainability agencies (GSAs) by June 30, 2017**
- Step two: Agencies in basins deemed high- or medium-priority must adopt groundwater sustainability plans (GSPs) by 2020 or 2022, depending on whether a basin is in critical overdraft.
- Step three: Once plans are in place, local agencies have 20 years to fully implement them and achieve the sustainability goal (by 2040 or 2042).

State role: The State Water Resources Control Board may intervene if locals do not form a GSA and / or fail to adopt and implement a GSP.

Currently, under the Joint Powers Agreement (JPA), the Basin Implementation Group (BIG), has taken on the voluntary duties of groundwater management in the Soquel-Aptos groundwater basin area since 1995. Most recently, the BIG has expanded to include the City of Santa Cruz and Santa Cruz County.

Last year, when the County of Santa Cruz, Central Water District, and Soquel Creek Water District conducted their series of public Groundwater Stakeholder Meetings, there was much discussion related to how local agencies were going to address the requirements of the new SGMA. Questions, suggestions, and input specifically pertaining to the GSA formation were brought up at two meetings (December 18, 2014 and January 27, 2015) that the agencies put out an online

survey to gather input on preferences of how to engage community involvement in developing the groundwater sustainability agency. Of 382 responses:

- 8.4% preferred a formal citizens advisory committee be formed (comprised only of selected private well owners and special interest groups) to develop and propose recommendations for private well owner involvement in the GSA. These recommendations may be used by the local agencies who will be creating the proposed governance, goals, and geographical boundary of the GSA jurisdiction.
- **62.3% preferred a formal working group committee be formed (comprised of selected private well owners and special interest groups as well as representatives from the local agencies)** to collaboratively develop stakeholder involvement (for private and municipal well owners) and collaboratively create the proposed governance, goals, and geographical boundary of the GSA jurisdiction.
- 29.3% stated either will be fine.

Input was also sought pertaining to facilitation which may be used to aid in effective, efficient, and productive meetings, to serve as the liaison on behalf of the citizen committee with water agency staff members and technical experts, and to work on issues and concerns that may need mediation should disputes arise. Of the 395 responded that:

- 15.4% preferred a staff member from a local agency serve as the facilitator.
- 26.6% preferred a third-party facilitator (outside of the area) who is not affiliated with a local water agency
- **54.2% preferred a third-party facilitator (resides in the local water) who is not affiliated with a local water agency**
- 3.8% preferred none of the above.

Formation of a Groundwater Sustainability Agency (GSA)

Formation of a GSA is one of the immediate next steps that should be performed in complying with the requirements of the new law.

Based on the discussion at the last BIG meeting on January 29, 2015 and from community input (as described above), staff proposes that a GSA Formation Task Force be created to develop the framework and bylaws of the proposed GSA. The draft framework and function of this task force is attached (see **Attachment**).

Legal Assistance: Russell McGlothlin (from Brownstein Hyatt Farber) has already been retained to provide legal services to develop the GSA.

Facilitation: The Department of Water Resources (DWR) is partnering with California State University, Sacramento / Center for Collaborative Policy (CCP) to provide a range of support on SGMA to local agencies around the state. That support will include direct local assistance and various kinds of public outreach and

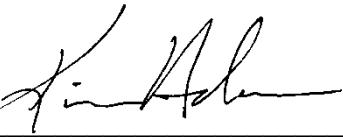
program support. CCP has developed an integrated approach to DWR's SGMA implementation program, including work on the boundary re-designation regulation and DWR's SGMA work on tribal policy, consultation, and engagement.

Attached are two options for facilitation assistance that include conducting a situational assessment followed by a facilitated consensus-seeking process to help develop the GSA (See Attachment 2 and 3).

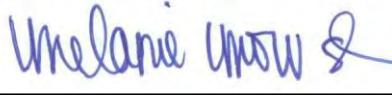
Staff recommends working with CCP for several reasons. First, DWR will be contracting with CCP to aid local agencies throughout the state. Second, DWR has shown interest in our Soquel-Aptos area piloting GSA formation using facilitation and our efforts could provide multiple benefits. Staff will be submitting a letter seeking assistance of \$50,000 that will help to offset local costs towards facilitation and GSA formation. Third, CCP meets the preferences that were identified in the on-line survey. CCP is based in Sacramento, CA with a qualified facilitator residing in the local Santa Cruz County area. Fourth, CCP is very familiar with SGMA which may aide in efficient consensus-building to form a GSA and better prepare ourselves to compete for the 1st flush of Prop 1 funds available for GSP formation, which are expected to be available sometime between November 2015 and January 2016.

POSSIBLE ACTION

1. By MOTION, provide direction to staff on the draft framework of formation and function of the GSA Formation Task Force.
2. By MOTION, approve a scope of work and budget (Option 1 or Option 2) for facilitation services by CSU Sacramento- Center for Collaborative Policy

By 

Kim Adamson
General Manager
Soquel Creek Water District

By 

Melanie Mow Schumacher
Special Projects/CD Manager
Soquel Creek Water District

Mid - County GSA Formation Task Force
Draft Framework for Formation and Function of the Task Force

Date: March 25, 2015

Background: Santa Cruz County's water supply is derived from local surface water (streams and reservoirs - 20%) and groundwater (80%). Both water sources originate from precipitation on the ocean side of the Santa Cruz Mountains. There is no imported water. Our region faces major water supply challenges: most groundwater basins have, over a prolonged period, had more water pumped out than is replaced by new water percolating into the aquifers; and the largest water supply agencies, which serve much of the population and businesses, do not have sufficient sustainable supplies to meet current and future demand, even with very effective water conservation programs already in place. Active seawater intrusion, whereby the groundwater basin is contaminated with seawater, is impacting production wells in south county (Pajaro Valley region) and has been detected in the mid-county coastal monitoring network (Pleasure Point area and Seaside/La Selva Beach).

The California Legislature enacted comprehensive legislation aimed at strengthening local control and management of groundwater basins throughout the state. Gov. Jerry Brown signed the three-bill package into law on Sept. 16, 2014. Known as the Sustainable Groundwater Management Act of 2014 (SGMA), the legislation provides a framework for sustainable management of groundwater supplies by local authorities, with a role for state intervention when necessary to protect the resource.

Sustainable Groundwater Management Act: The legislation lays out a process and a timeline for local authorities to achieve sustainable management of groundwater basins. It also provides tools, authorities and deadlines to take the necessary steps to achieve the goal. For local agencies involved in implementation, the requirements are significant and can be expected to take years to accomplish.

- Step one: Local agencies must form local groundwater sustainability agencies (GSAs) by June 30, 2017.
- Step two: Agencies in basins deemed high- or medium-priority must adopt groundwater sustainability plans (GSPs) by 2020 or 2022, depending on whether a basin is in critical overdraft.
- Step three: Once plans are in place, local agencies have 20 years to fully implement them and achieve the sustainability goal (by 2040 or 2042).

State role: The State Water Resources Control Board may intervene if locals do not form a GSA and / or fail to adopt and implement a GSP.

Approach: Santa Cruz County, Soquel Creek Water District, Central Water District, and the City of Santa Cruz have initiated a stakeholder process to meet the SGMA requirements of forming a Groundwater Sustainability Agency (GSA).

The following is a draft framework of the task force for consideration and input:

1. Name

Mid - County GSA Formation Task Force

2. Purpose and Role

Task Force members will need to know what role they play and what value they are adding to the groundwater management process.

The role and purpose of the task force will be to develop a framework and set of bylaws for the formation of a Groundwater Sustainability Agency that represents a fair and collaborative approach to recommend to the local respective agencies for approval.

3. Timeline

Total duration of approximately 6 to 12 months, with initial kick-off in June 2015 and completion no later than June 2016.

4. Task Force Membership

The task force should be comprised of a diverse representation of groundwater basin stakeholders to represent our mid-county community. Proposed membership of 11 members includes:

- 2 – Soquel Creek Water District Officials (one board member, general manager)
- 2 – Central Water District Officials (one board member, District manager)
- 2 – City of Santa Cruz officials (one council member, water director)
- 2 – County Santa Cruz County Water Commissioner (one supervisor, water resources division director)
- 2 – Private Well Representatives (to be selected by an application process)
- 1 – Pajaro Valley Water Management Agency official

Elected official committee members shall be appointed by their respective agencies; private well representatives shall be selected utilizing an open-application process.

5. Facilitation and Administration

A professional and neutral facilitator will be hired to serve as the task force's facilitator. Soquel Creek Water District will serve as task force coordinator. Additional staff support will be provided by Soquel Creek Water District.

6. Funding

Funding needs are still to be determined. Costs estimated to be incurred, at this point, include:

- \$15,000 for legal services
- \$ 135,000-\$150,000 for assessment and facilitation services
- \$10,000 for technical/hydrological information services
- \$10,000 for community outreach and administration of task force needs

There is potential that pilot and/or grant funding may be available for assistance with local agencies to form GSAs.

7. Milestones

- a. Task Force to agree on purpose, role, process, timeline, and workplan
- b. Task Force to gain an understanding of the Soquel-Aptos Groundwater Area (including its hydrogeology, the existing studies, reports, and plans, and existing governance structures), the requirements of the Sustainable Groundwater Management Act, the different approaches to develop groundwater sustainability agencies and groundwater sustainability plans, and the regional concerns of seawater intrusion and climate change.
- c. Task Force to develop a framework and set of bylaws for the formation of a Groundwater Sustainability Agency that represents a fair, collaborative, and facilitated consensus-building approach to recommend to the local respective agencies for approval.



**Establishing a Groundwater Sustainability Agency & Plan for the Soquel-Aptos Area
Groundwater Basin**
California State University, Sacramento – Center for Collaborative Policy
February 10, 2015

Proposed Scope of Work: Option 1
Situation Assessment and Consensus-Building
(April 2015 through June 2016)

Background: California's Soquel-Aptos Area groundwater basin is in trouble. It has been in overdraft for many years, and has gotten to the point of experiencing saltwater intrusion. The State's three-year drought has exacerbated the problem and in June 2014, the Soquel Creek Water District's Board declared both a Stage 3 Water Shortage Emergency and a Groundwater Emergency. The District is pursuing a three-prong approach to managing this emergency, including water conservation, groundwater management, and supplementing the local water supply. The District has been working closely on this with community leaders through the Basin Implementation Group (BIG) and with other stakeholders through the Mid-County Groundwater Stakeholder Group. It has a voluntary "AB 30-30" groundwater management plan in place.

Concurrently, the State legislature enacted a major new piece of groundwater legislation, which took effect January 1, 2015. The Sustainable Groundwater Management Act is intended to ensure that all groundwater basins in the State are being managed in a sustainable way by 2040. To achieve this goal, the Act requires managers of groundwater basins that are in trouble to establish Groundwater Sustainability Agencies (GSAs), which in turn must develop and implement Groundwater Sustainability Plans (GSPs). Consequently, Soquel Creek Water District and the other BIG members must determine how to go about forming a GSA and developing a GSP. This includes how best to build upon the considerable work and social capital already in place, rather than "re-creating the wheel," and how to do this expeditiously in order to keep up the momentum in addressing the inter-related emergencies of water shortage and groundwater overdraft without undue transaction time.

Proposed Approach

California State University, Sacramento – Center for Collaborative Policy (CCP) recommends a phased approach to answering the question of how to form a GSA and develop a GSP, as follows:

- I. Situation assessment
- II. Facilitated "consensus-seeking" process during which the actual approach to GSA formulation and GSP development is formulated by representatives of the primary stakeholders
- III. Establishment of GSA
- IV. Development of GSP
- V. Implementation of GSP, including monitoring and periodic GSP updates

This proposed Statement of Work covers a full situation assessment (approximately three months) and a year of facilitated consensus-building (ideally taking the process through Stage III above – GSA formation). Data used in the situation assessment comes from interviews with a range of stakeholders, as well as review of key documents. During the situation assessment, CCP will work closely with District personnel and BIG members to identify the most critical individuals to interview and to formulate well-framed interview questions. Interviews will be conducted primarily in person by Dr. Marci DuPraw, CCP Managing Senior Mediator-Facilitator and a resident of Santa Cruz (bio attached). Dr. DuPraw has worked on groundwater challenges as far back as the



1980s. For the past two years, she has served as the senior facilitator for the development of an AB 30-30 groundwater management plan for the Santa Rosa Plain groundwater basin.

Interviews can be expected to last approximately one hour each. CCP proposes to interview approximately 20 individuals or small groups of people, to review the information obtained, and then to decide jointly with District personnel and other BIG members whether additional interviews are needed. (If more are needed, we would need to revise the budget accordingly.)

Interviewee input will be integrated into a single document (a convening report), without attributing specific comments to individuals by name. If asked to treat particular comments as background and hold them in confidence, CCP will do so. The convening report can take different forms, depending on District / BIG preferences, from a PowerPoint presentation to a 5-page memo to a 30-page report. It will cover interview findings and associated recommendations regarding how to establish a stakeholder group that, in turn, will strive to build consensus on recommendations to the BIG and its members' decision-making bodies on how to establish the GSA and proceed to develop the GSP.

CCP proposes to present the draft recommendations that emerge from the situation assessment to the BIG in a meeting that affords members of the public the opportunity to observe and to comment on the content of the recommendations. CCP will then finalize the convening report, incorporating feedback as appropriate.

Once the recommendations contained in the convening report are approved by decision-makers, CCP would then provide the facilitation support likely to be required to implement those recommendations. This includes convening stakeholders and facilitating their efforts to develop consensus on the structure of the GSA, and ultimately the GSP. In addition, we anticipate it would be appropriate to hold two public meetings over the course of the subsequent year – i.e., one early in the year to explain to the community how GSA formation will proceed and one late in the year to share the proposed GSA structure with the public and invite their feedback.

Proposed Period of Performance

CCP anticipates that the full Phase I situation assessment will take approximately three months from the point at which a potential contract would take effect (e.g., April through June, 2015). However, CCP recognizes that time is of the essence for the Soquel-Aptos Area groundwater basin, area residents, and businesses, and will strive to complete the situation assessment as expeditiously as possible. It is difficult to predict how long it will take to build consensus on the structure of the GSA; however, for purposes of providing the requested cost estimate, we have used the time period of one year (e.g., July 2015 through June 2016).

Cost Estimate

As detailed in the attached budget, CCP estimates that the Phase I situation assessment will cost approximately \$34,429.34 for work in FY 2014/15, including two meetings with the BIG and a public stakeholder meeting to share the draft recommendations and obtain feedback. We further estimate one year of convening and facilitation support for consensus-building regarding GSA formation (including two additional public meetings) will cost approximately \$113,741.35. Total work for Phases I, II, and III are estimated not to exceed \$148,170.69. This assumes:

1. CCP would conduct 20 stakeholder interviews during the assessment, each approximately one hour long;
2. CCP's work product from the assessment would be a full report;
3. CCP would obtain interviewee feedback on the draft work product via email;
4. A total of ten facilitated meetings of the core stakeholder group over this period of time, with each of those meetings taking place in Soquel, CA, and lasting three hours in duration and requiring the



- facilitation team to be on site one hour in advance for set-up and one hour following the meeting for informal stakeholder discussion, quick debrief, and clean-up;
5. Assistance in planning and facilitating two public meetings during this time, subject to the same assumptions as under #1 above;
 6. Staffing provided by Managing Senior Mediator and Facilitator Marci DuPraw and Assistant Facilitator Stephanie Horii;
 7. Significant between-meeting support (e.g., working with District staff to plan meetings and prepare materials, and conferring with stakeholders as needed to support the success of the overall effort);
 8. No CCP responsibility for expenses associated with meeting facilities, refreshments, and AV equipment;
 9. No CCP responsibility for copying meeting and packaging stakeholder meeting materials.



**Establishing a Groundwater Sustainability Agency & Plan for the Soquel-Aptos Area
Groundwater Basin**
California State University, Sacramento – Center for Collaborative Policy
February 10, 2015

Proposed Scope of Work: Option 2
Mini-Assessment and Facilitated Consensus-Building
(April 2015 through May 2016)

Background: California's Soquel-Aptos Area groundwater basin is in trouble. It has been in overdraft for many years, and has gotten to the point of experiencing saltwater intrusion. The State's three-year drought has exacerbated the problem and in June 2014, the Soquel Creek Water District's Board declared both a Stage 3 Water Shortage Emergency and a Groundwater Emergency. The District is pursuing a three-prong approach to managing this emergency, including water conservation, groundwater management, and supplementing the local water supply. The District has been working closely on this with community leaders through the Basin Implementation Group (BIG) and with other stakeholders through the Mid-County Groundwater Stakeholder Group. It has a voluntary "AB 30-30" groundwater management plan in place.

Concurrently, the State legislature enacted a major new piece of groundwater legislation, which took effect January 1, 2015. The Sustainable Groundwater Management Act is intended to ensure that all groundwater basins in the State are being managed in a sustainable way by 2040. To achieve this goal, the Act requires managers of groundwater basins that are in trouble to establish Groundwater Sustainability Agencies (GSAs), which in turn must develop and implement Groundwater Sustainability Plans (GSPs). Consequently, Soquel Creek Water District and the other BIG members must determine how to go about forming a GSA and developing a GSP. This includes how best to build upon the considerable work and social capital already in place, rather than "re-creating the wheel," and how to do this expeditiously in order to keep up the momentum in addressing the inter-related emergencies of water shortage and groundwater overdraft without undue transaction time.

Proposed Approach

California State University, Sacramento – Center for Collaborative Policy (CCP) recommends a phased approach to answering the question of how to form a GSA and develop a GSP, as follows:

- I. Situation assessment
- II. Facilitated "consensus-seeking" process during which the actual approach to GSA formulation and GSP development is formulated by representatives of the primary stakeholders
- III. Establishment of GSA
- IV. Development of GSP
- V. Implementation of GSP, including monitoring and periodic GSP updates

This proposed Statement of Work covers a "mini-assessment" and facilitated consensus-building. This scenario assumes that the District and other BIG members have a good handle on the parties who need to be involved in consensus-building, the issues that need to be addressed, and stakeholders' interests with respect to those issues. The mini-assessment would take approximately six weeks, and consist of interviews with a targeted set of stakeholders and document review. CCP will confer with District personnel and BIG members regarding the most critical individuals to interview and proposed interview questions. Interviews will be conducted primarily by telephone by Dr. Marci DuPraw, CCP Managing Senior Mediator-Facilitator and a resident of Santa Cruz (bio



attached). Dr. DuPraw has worked on groundwater challenges as far back as the 1980s. For the past two years, she has served as the senior facilitator for the development of an AB 30-30 groundwater management plan for the Santa Rosa Plain groundwater basin.

Interviews can be expected to last approximately one hour each. CCP proposes to interview approximately 10 individuals, to review the information obtained, and then to decide jointly with District personnel and other BIG members whether additional interviews are needed. (If more are needed, we would need to revise the budget and timeline accordingly.)

Interviewee input will be integrated into a brief document (a memo or PowerPoint presentation), without attributing specific comments to individuals by name. If asked to treat particular comments as background and hold them in confidence, CCP will do so. It will cover interview findings and associated recommendations regarding how to establish a stakeholder group that, in turn, will strive to build consensus on recommendations to the BIG and its members' decision-making bodies on how to establish the GSA and proceed to develop the GSP.

In this “mini-assessment” approach, CCP proposes to obtain stakeholder feedback by emailing the draft memo or PowerPoint to the interviewees for review and comment electronically. We will coordinate and organize the feedback, and then finalize the memo or PowerPoint to address the feedback as appropriate.

Once the recommendations contained in the convening report are approved by decision-makers, CCP would then provide the facilitation support likely to be required to implement those recommendations. This includes convening stakeholders and facilitating their efforts to develop consensus on the structure of the GSA, and ultimately the GSP. In addition, we anticipate it would be appropriate to hold two public meetings over the course of the subsequent year – i.e., one early in the year to explain to the community how GSA formation will proceed and one late in the year to share the proposed GSA structure with the public and invite their feedback.

Proposed Period of Performance

CCP anticipates that the mini-assessment will take approximately six weeks from the point at which a potential contract would take effect (e.g., mid-April to the end of May, 2015).

It is difficult to predict how long it will take to build consensus on the structure of the GSA; however, for purposes of providing the requested cost estimate, we have used the time period of one year (e.g., June 2015 through May 2016). For reviewers’ convenience, we have broken down the estimated facilitation costs separately for FY 14-15 and FY 15-16.

Cost Estimate

As detailed in the attached budget, CCP estimates that the Phase I situation assessment and the start of facilitation will cost approximately \$29,776.35 for work in FY 2014/15, including two meetings with the BIG. We further estimate that 11 months of convening and facilitation support for consensus-building regarding GSA formation (including two public meetings) will cost approximately \$106,684.00. Total work for Phases I, II, and III are estimated not to exceed \$136,460.43. This includes outreach to interviewees for feedback on the draft recommendations electronically. Related assumptions include:

1. CCP would conduct 10 stakeholder interviews during the assessment, each about an hour in length;
2. CCP’s work product from the assessment would be a memo or PowerPoint presentation;
3. CCP would obtain interviewee feedback on the draft work product via email;
4. A total of ten facilitated meetings of the core stakeholder group over this period of time, with each of those meetings taking place in Soquel, CA, and lasting three hours in duration and requiring the



EPA/SRA – Del Amo and Montrose Superfund Sites Community Involvement Plan
California State University, Sacramento – Center for Collaborative Policy
December 13, 2013

- facilitation team to be on site one hour in advance for set-up and one hour following the meeting for informal stakeholder discussion, quick debrief, and clean-up;
5. Assistance in planning and facilitating two public meetings during this time, subject to the same assumptions as under #1 above;
 6. Staffing provided by Managing Senior Mediator and Facilitator Marci DuPraw and Assistant Facilitator Stephanie Horii;
 7. Significant between-meeting support (e.g., working with District staff to plan meetings and prepare materials, and conferring with stakeholders as needed to support the success of the overall effort);
 8. No CCP responsibility for expenses associated with meeting facilities, refreshments, and AV equipment;
 9. No CCP responsibility for copying meeting and packaging stakeholder meeting materials.

March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 6.1

Quarterly Monitoring Reports

Attachment: Quarterly Report for Coastal Monitoring Data through January 2015

Attached for the Board's review is the Quarterly Report for Coastal Monitoring Data through January 2015 prepared by Hydrometrics WRI.

POSSIBLE ACTION

Informational only. Provide direction as necessary.

By _____



Kim Adamson
General Manager



1814 Franklin Street
Suite 501
Oakland, CA 94612

Ms. Kim Adamson
General Manager
Soquel Creek Water District
PO Box 1550
Capitola, CA 95010-1550

March 10, 2015

Subject: Quarterly Report for Coastal Monitoring Data through January 2015

Ms. Adamson:

This is the sixth quarterly report with updates on the attached groundwater level and salt concentration plots at coastal monitoring wells where protective elevations have been defined. These wells include five wells in the Purisima area (SC-1A, SC-3A, SC-5A, SC-9C, and SC-8D) and five well clusters in the Aromas area (SC-A1A and B, SC-A8A and B, SC-A2A and B, SC-A3A and B, and SC-A4A and B). These wells are the key wells for assessing risk of seawater intrusion and the status of basin recovery in the Soquel-Aptos basin. Protective elevations estimated to protect productive aquifer units from seawater intrusion and secondary drinking water standards (MCLs) for chlorides and total dissolved solids (TDS) are shown on the plots. Data through January 2015 are included, which includes groundwater level soundings at least quarterly at the wells, quarterly sampling for chlorides and TDS in December for the Aromas area monitoring wells and quarterly sampling for chlorides and TDS in early February at SC-1A. Sampling at the other Purisima area monitoring wells occurs semi-annually with the last sampling event in October 2014.

GROUNDWATER LEVEL TRENDS

The only SqCWD coastal monitoring well in the Purisima area with groundwater levels above protective elevations continues to be SC-1A. As noted in the

previous quarterly reports, there has been at least a partial reversal of the multi-year recovery trend in groundwater levels in the Western Purisima A unit (SC-1A, 3A, and 5A). Groundwater levels in SC-1A have declined from levels in early 2013 that were above 10 feet above mean sea level (msl). There is a declining trend over the last five years in SC-3A and SC-5A, but groundwater levels rose in 2014 relative to 2013, consistent with the logger data shown in the previous quarterly report. In the Central Purisima (BC and DEF units), groundwater levels at SC-9C and SC-8D show a multi-year recovery trend. The recovery in 2014 demonstrated by the logger data shown in the previous quarterly report continued through the fall with January 2015 groundwater levels at these wells at the highest levels since the 1980s. Although the groundwater level at SC-8D was at the protective level of 10 feet in January 2015, the average annual groundwater level is still below 10 feet so recovery is not yet achieved at this well.

Recovery in 2014 likely relates to lower pumping in 2014. The drought curtailment resulted in water year total for Purisima production being 9% below the previous low annual total from 1978-2013. Purisima production from October-December 2014 was approximately 21% lower than the average for the same quarter the previous five years. Over this time scale of several months, coastal groundwater levels have a greater response to reduced pumping than reduced recharge caused by the three year drought through Water Year 2014. This is due to the much closer proximity of pumping wells compared to aquifer outcrops.

In the northwestern part of the Aromas area (Purisima F unit and Aromas Red Sands), groundwater levels rose from September to December 1-3 feet in the SC-A1 and SC-A8 wells after 1-3 years of stabilizing or slightly declining groundwater levels. Groundwater levels increased in the SC-A2 and SC-A3 wells over Water Year 2014 and had an additional rise of 1-4 feet from September to December. Groundwater levels were near or above the protective elevations for SC-A2 and SC-A3 over the last year. Groundwater levels increasing nearly 8 feet at SC-A2A since summer 2013 likely relates to the nearby Seaside and San Andreas wells being pumped the lowest combined amount in Water Year 2014 since Water Year 1985. This will likely change over the next year with increased pumping at the San Andreas well with the Chromium VI plant online. The rise in groundwater levels from September to December likely relates to pumping; with SqCWD Aromas production in September-November 2014 approximately 30% lower than the average for the same quarter the previous five years. Groundwater levels at SC-A4, which is not near SqCWD pumping, dropped in

Water Year 2014, but also showed a rise over the last quarter. The last groundwater level measurements shown on the graphs were taken December 5-12 so it is unlikely the heavy rainfall December is a primary factor in this rise.

SALT CONCENTRATION TRENDS

There are no notable changes in salt concentration trends over the last few quarters in the Purisima or northwestern area of the Aromas. In the southeastern area of the Aromas, where the long term (> 5 years) salt concentration trend has generally been increasing, the recent trends (3-5 years) at SC-A2B and SC-A4A differ from the long term trend. The recent trend in TDS at SC-A2B has been decreasing and the recent trend for chloride and TDS at SC-A4A has been a faster increase than the long term trend. Over 2014, there were also declining TDS concentrations measured at SC-A2A, SC-A3A, and SC-A4A, but chloride concentrations were stable or rose slightly at these wells so conclusions about the movement of the seawater interface cannot be made.

It is also notable that concentrations at SC-A3B have risen since equipment was installed in 2012. The concentrations are lower than concentrations prior to 2012 as the new equipment appears to have samples only the well's upper screen. The rise in concentrations from the new equipment may indicate salt water has moved higher into the upper screen. We recommended ordering a new drop tube to sample the bottom screen of the well to better monitor the freshwater-seawater interface at this location, but silt had covered up the bottom screen. Attempts at redeveloping the well did not fully remove the silt so our recommendation was to place the drop tube at the top of the bottom screens. The most recent sample is from this lower depth and shows a higher concentration than measurements from the upper screen, but does not necessarily represent an increasing trend. The most recent concentration is still lower than measurements from before 2012.

ADDITIONAL NOTES

Although our previous quarterly report included groundwater level logger data for several of the Purisima wells, we decided to wait until data get uploaded into one of the new data management systems the District is evaluating for purchase before providing updated plots of logger data for all the wells in the quarterly report. This will prevent duplication of effort. When the new data management system is operational, future quarterly reports will include the following based on the logger data:

- Plots of available groundwater elevation data recorded by groundwater level loggers at all coastal monitoring wells. The current equipment was installed at most of these wells in 2012.
- Average groundwater elevations will be calculated based on the logger data for the quarter, water year to date, and preceding four quarters. Average equivalent freshwater heads will be estimated for the three time periods at wells where chloride concentrations are above the MCL of 250 mg/L.

The upcoming draft of the Water Year 2014 Annual Report and Review will include logger data for these coastal wells through September 2014.

Page numbers for the water quality plots are consistent with the Annual Report and Review figure sections 3B, 4B, and 5B, and therefore are not in consecutive order.

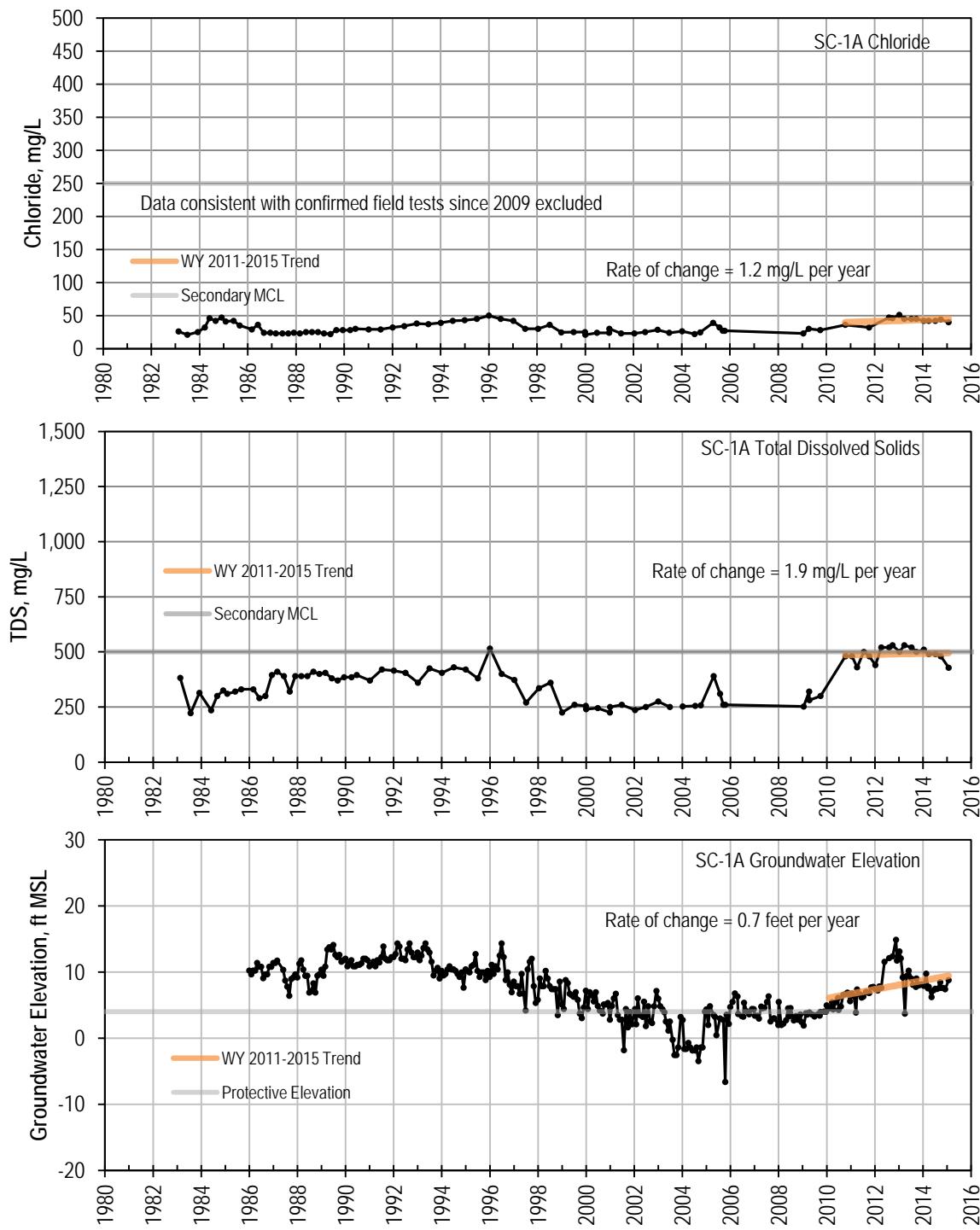
Thank you to District staff for making the data available expeditiously. Please let me know if you have any questions.

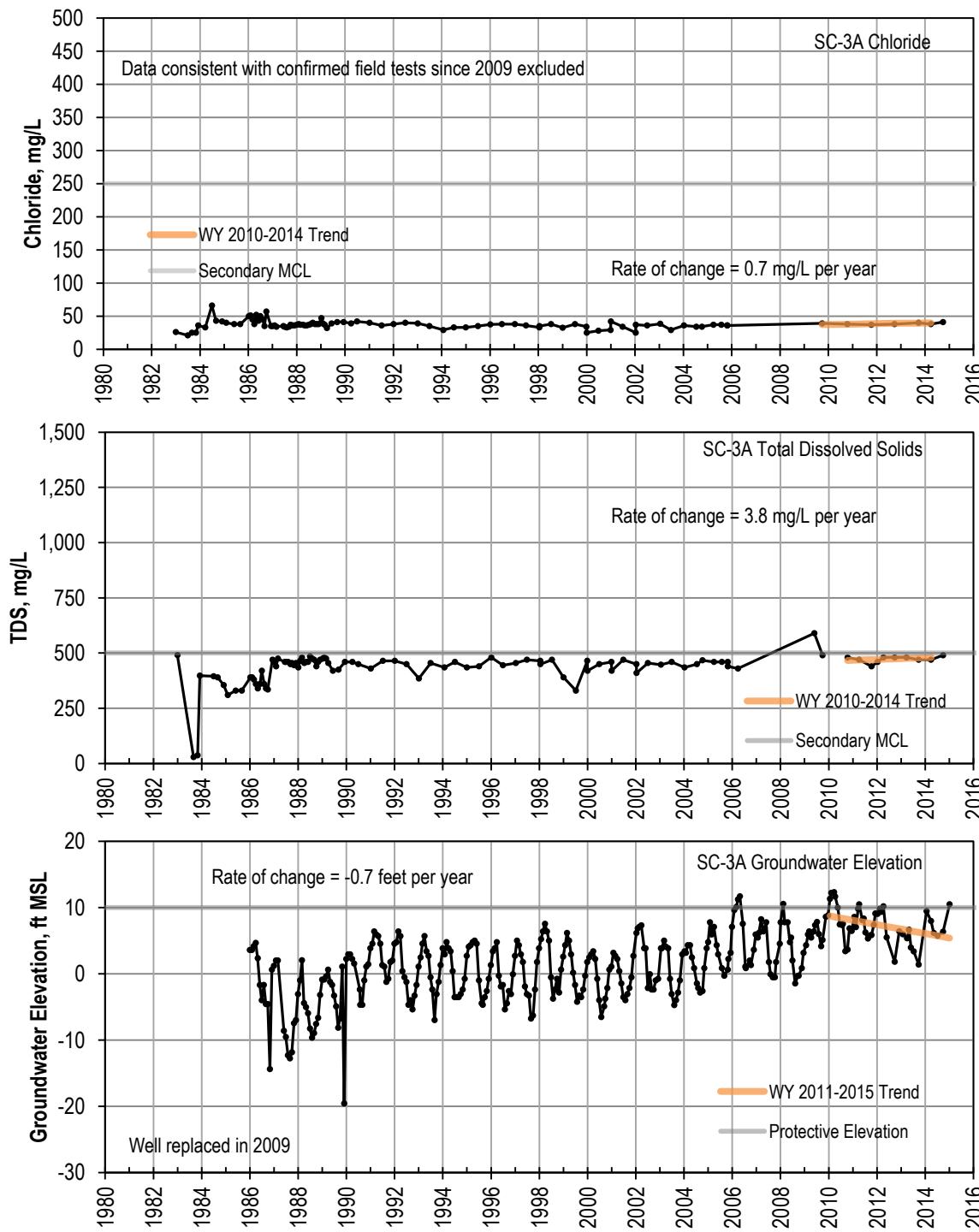
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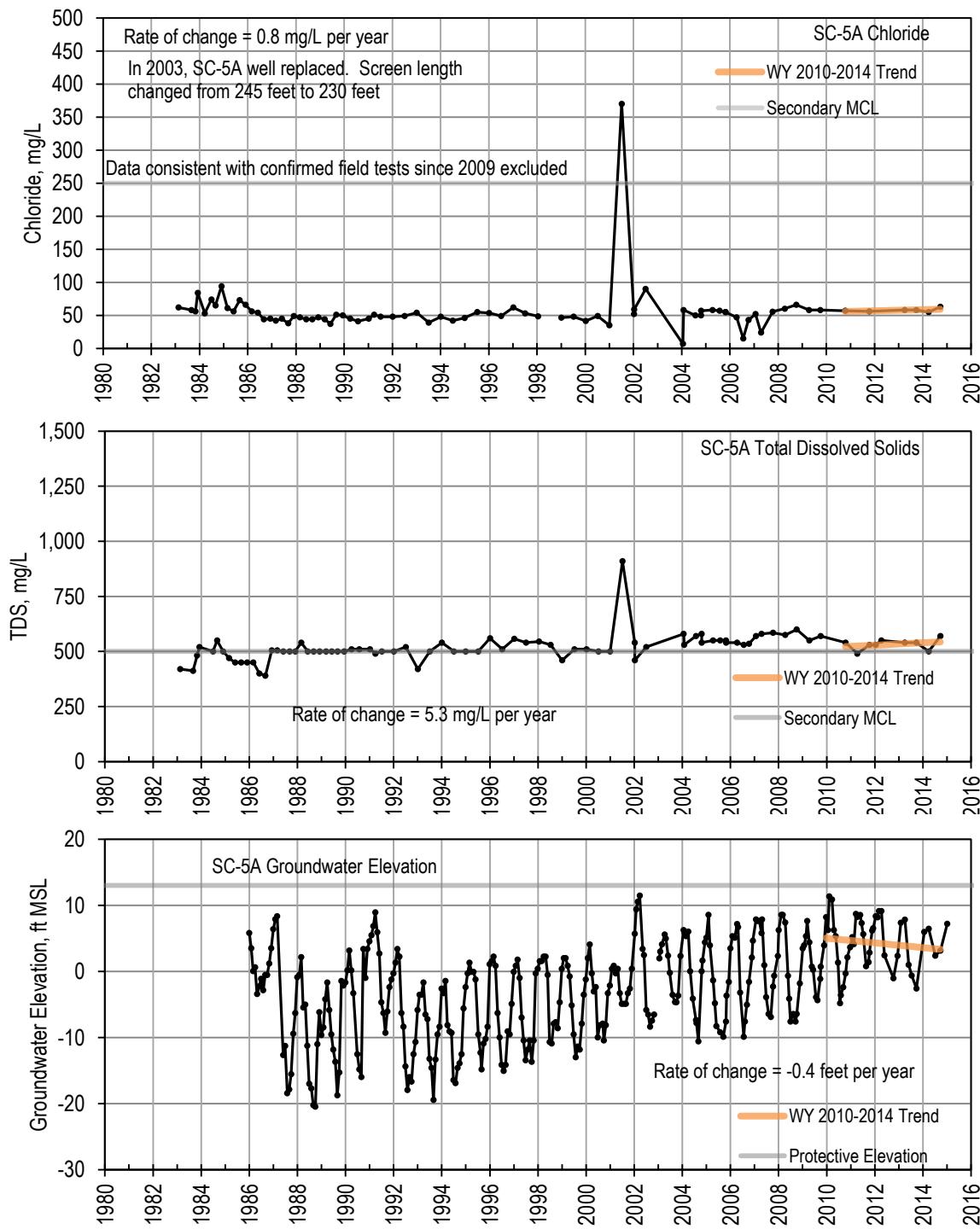


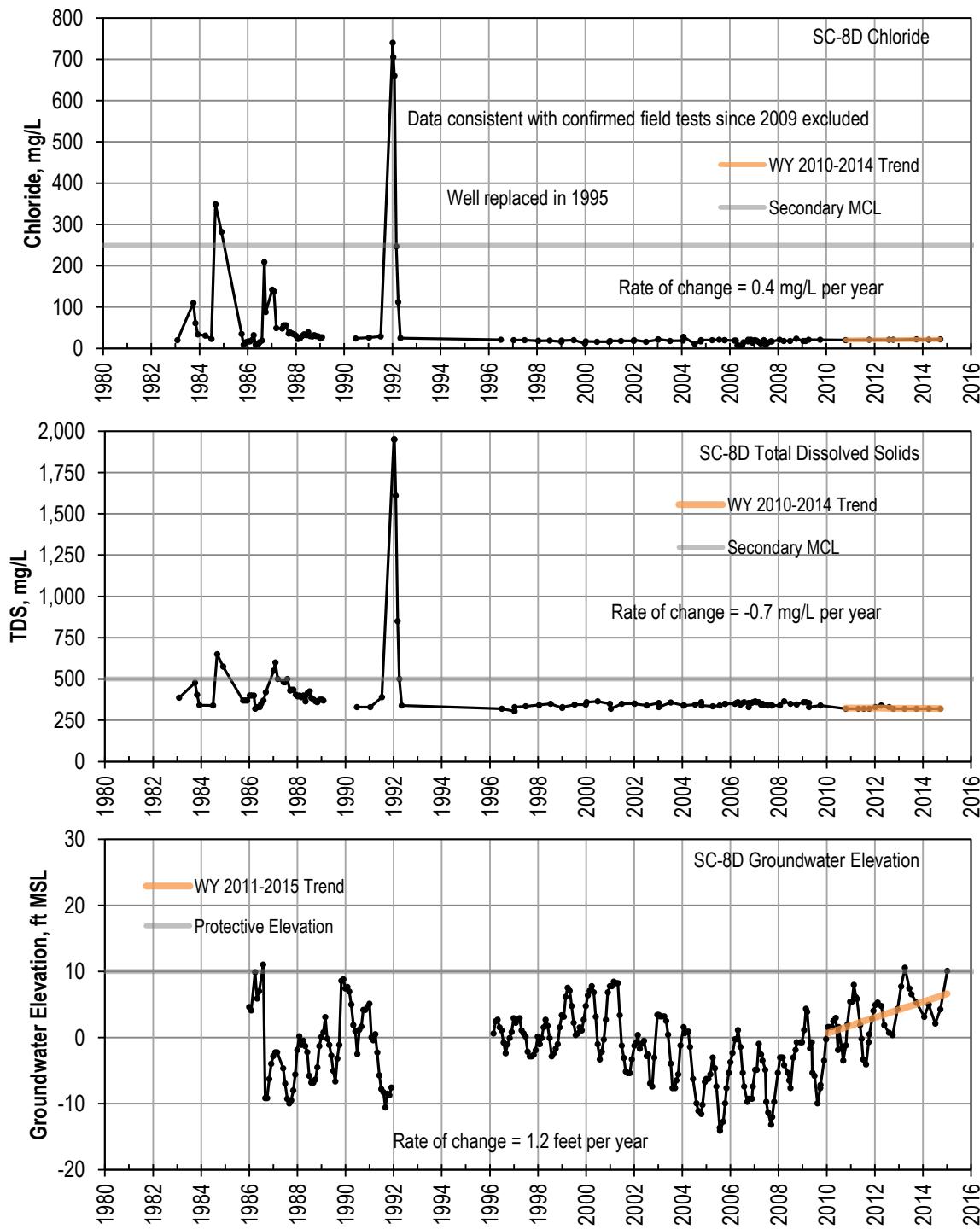
Cameron Tana, Vice President
HydroMetrics Water Resources Inc.

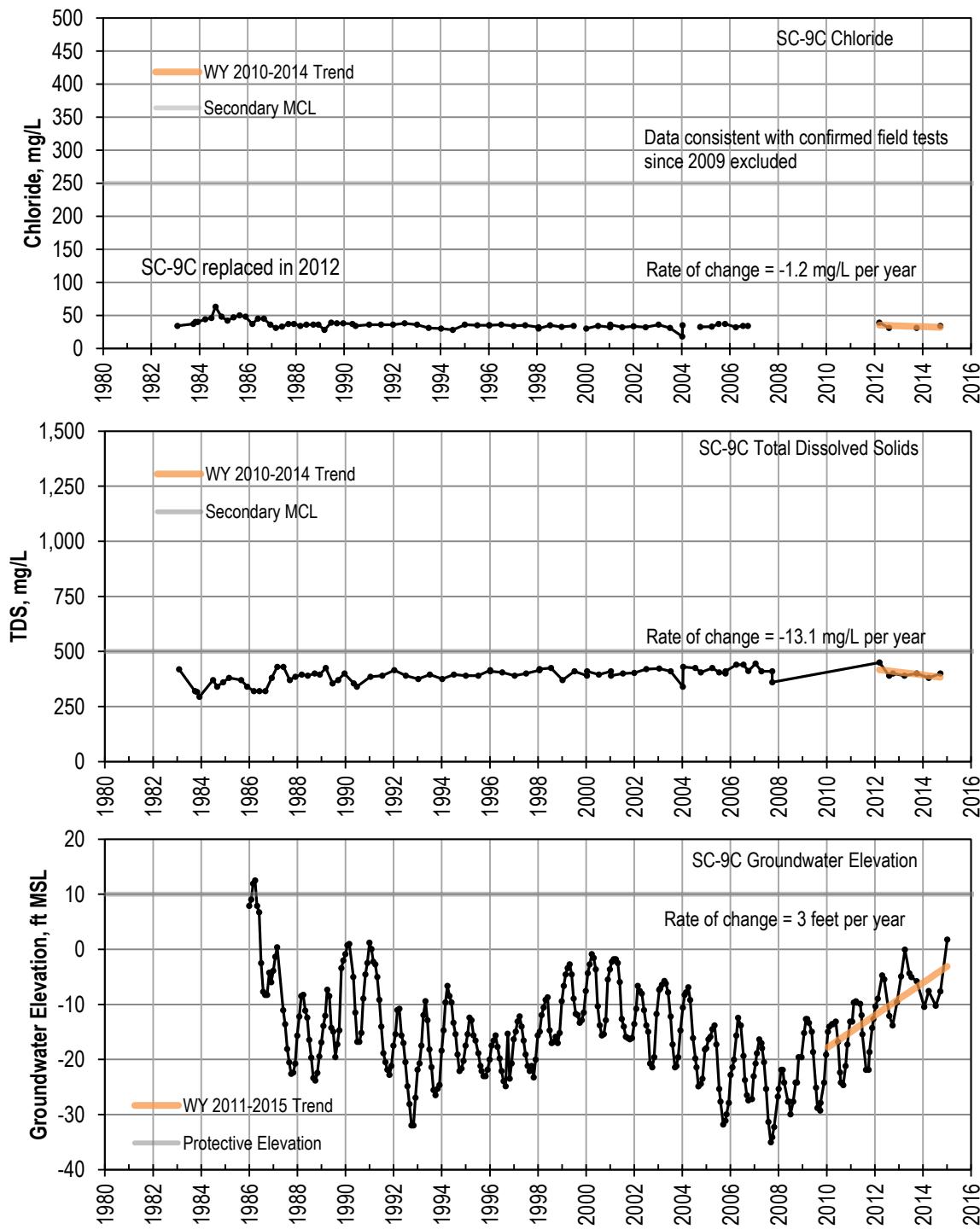
Attachment: Coastal monitoring well hydrographs and chemographs

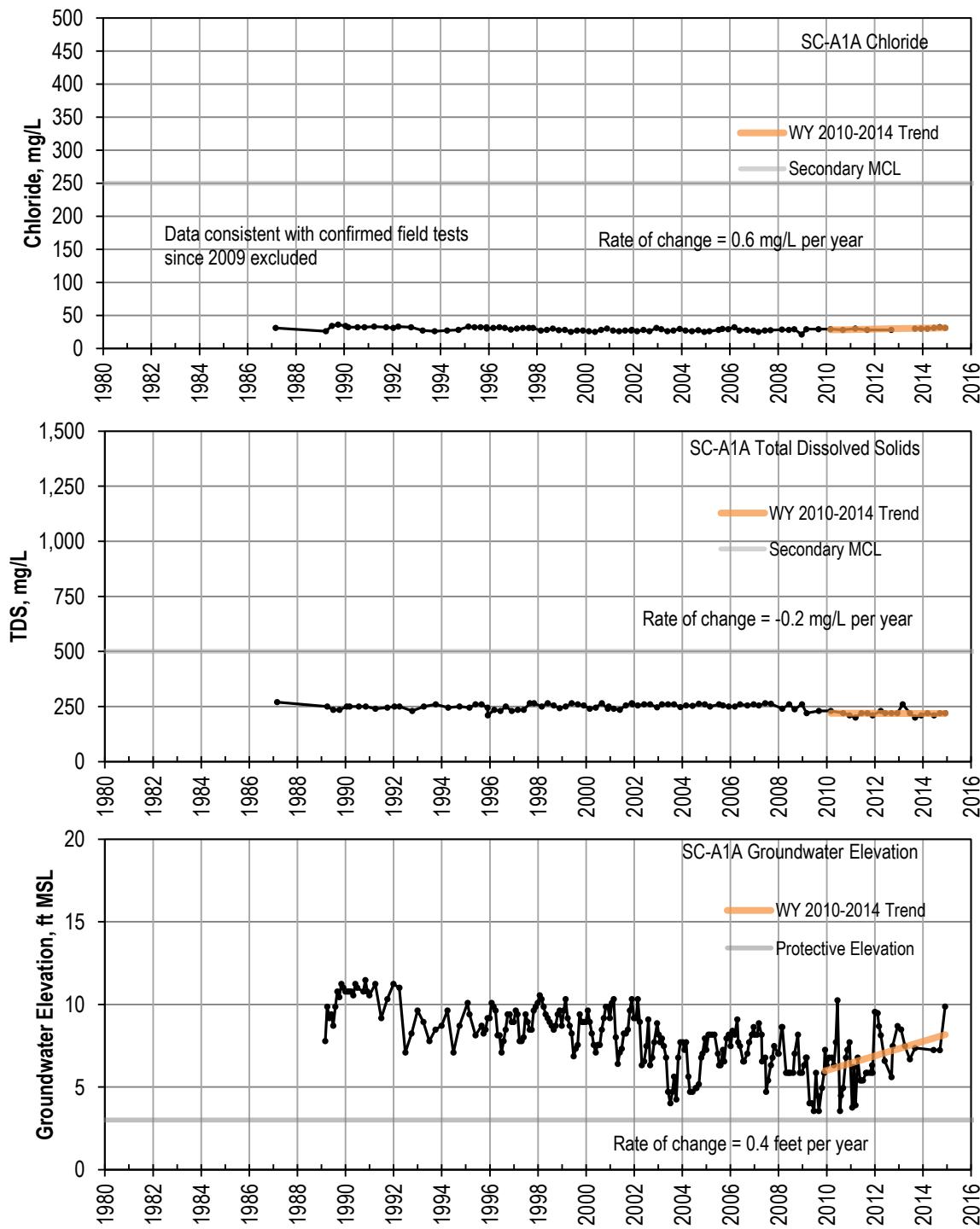


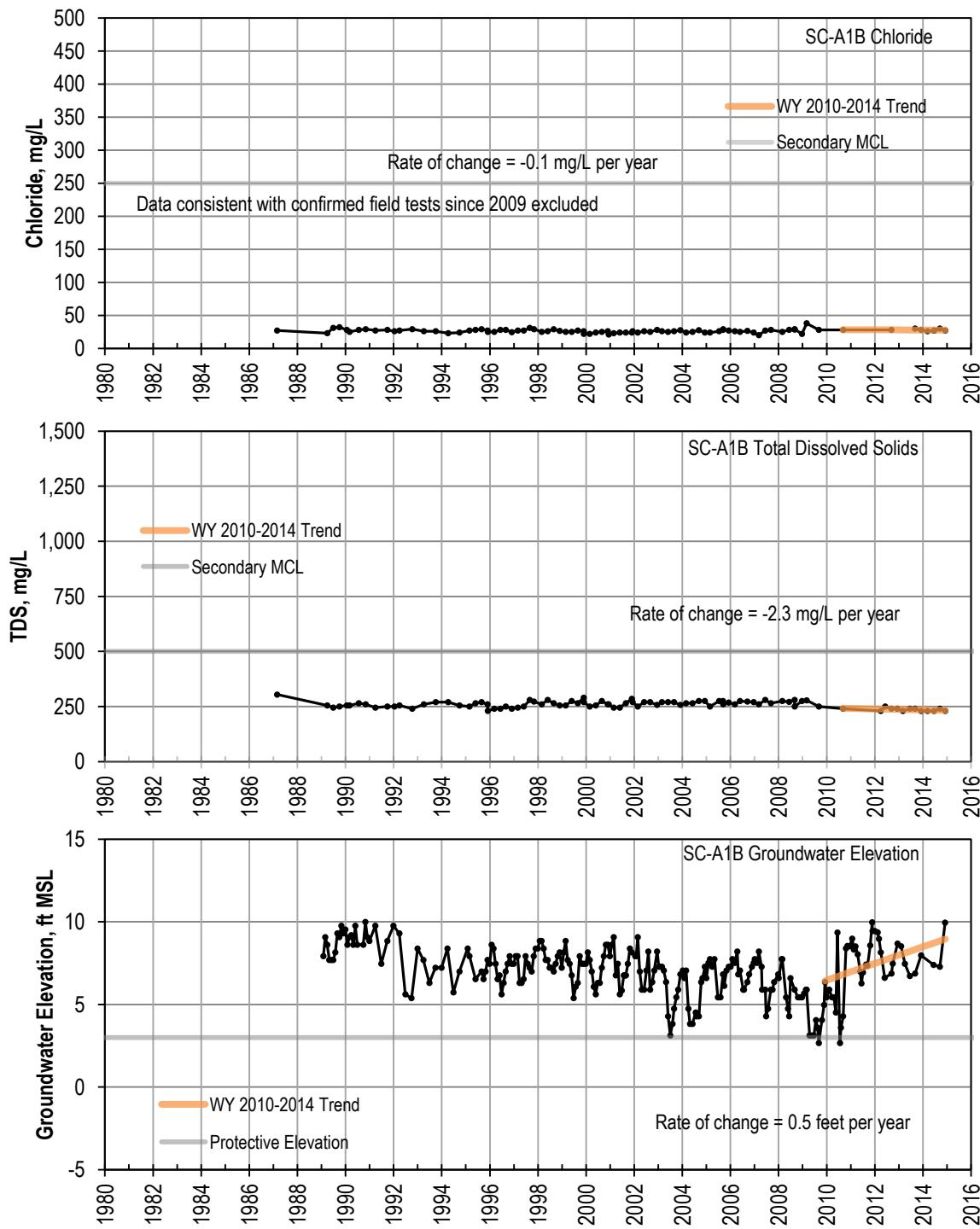


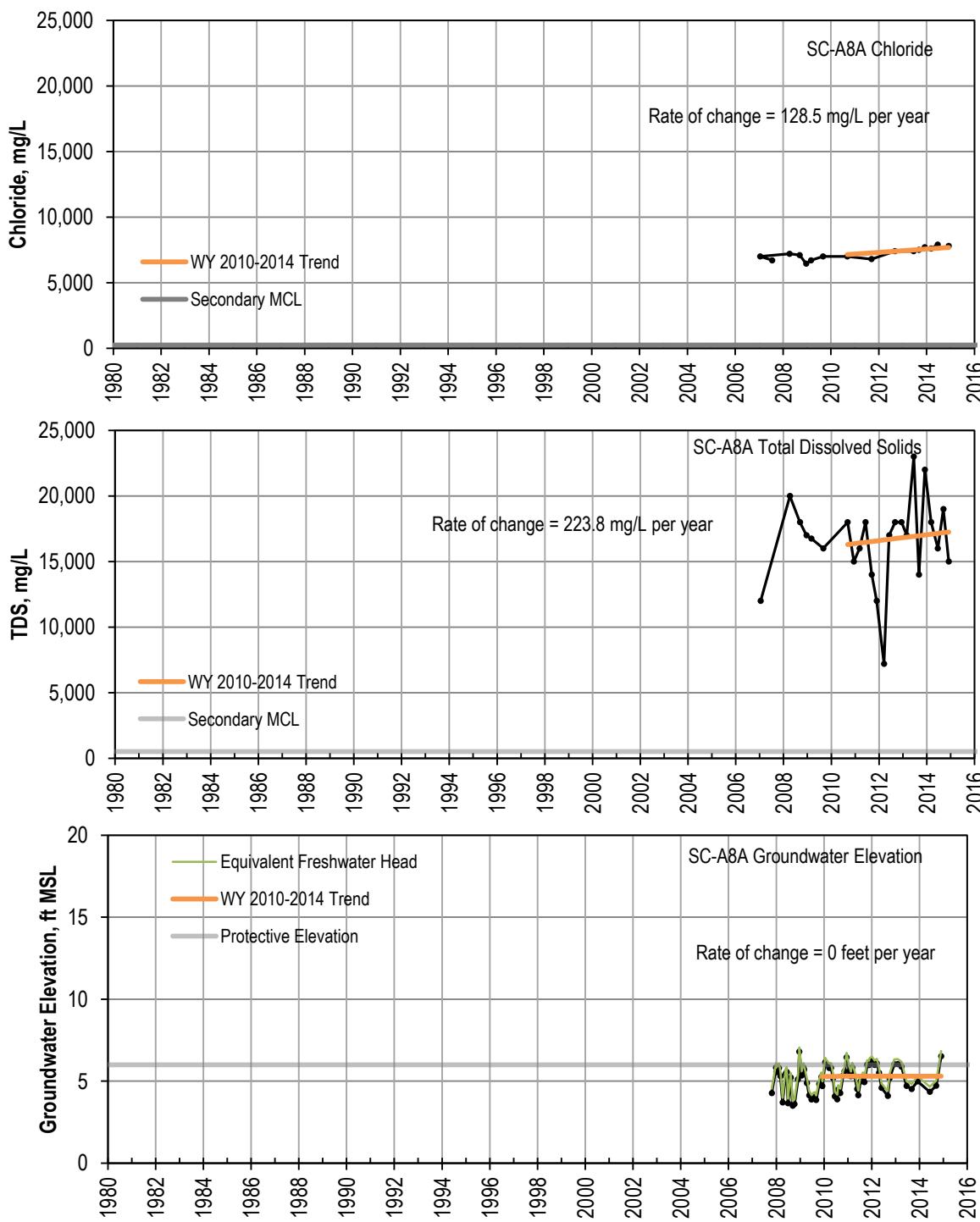


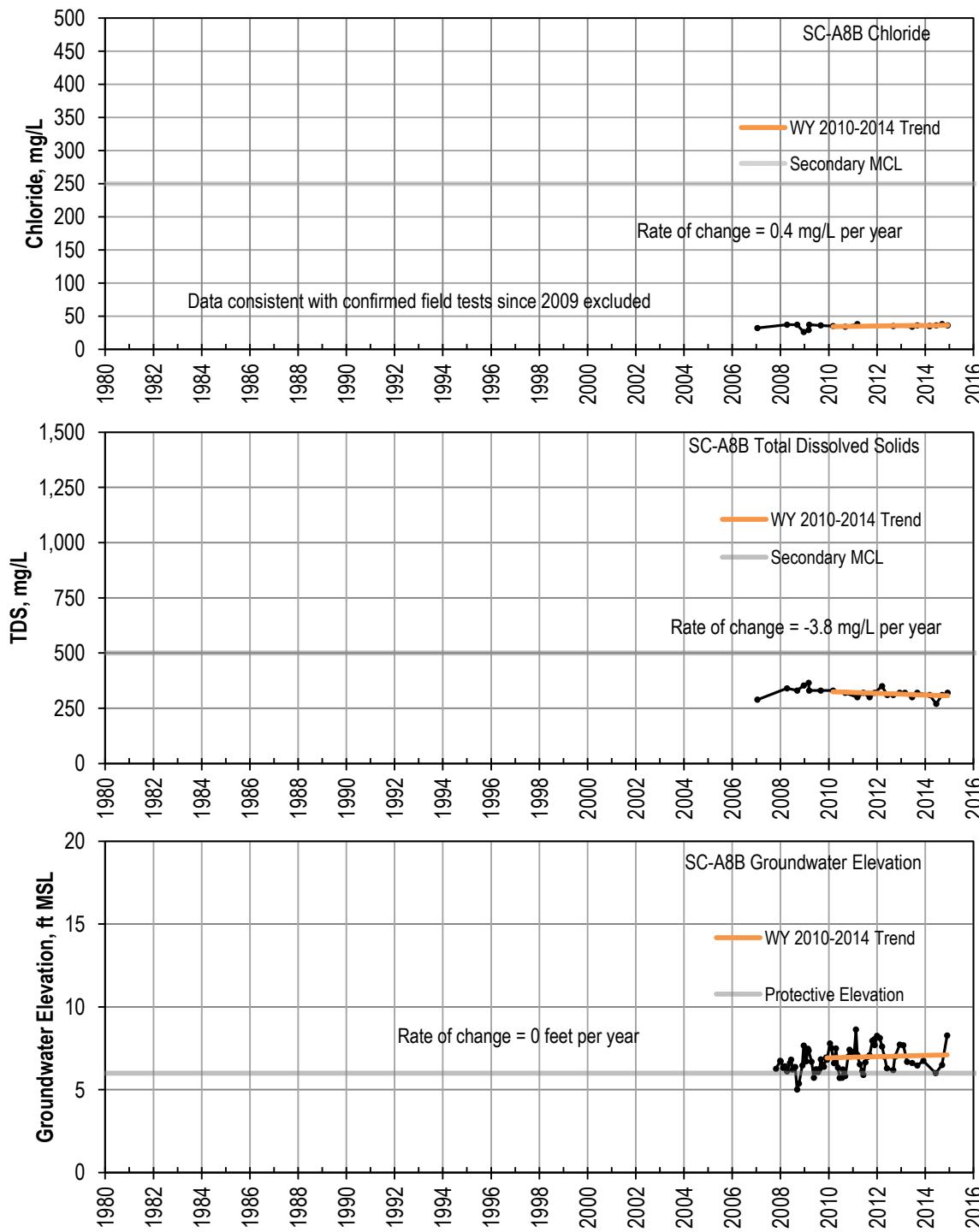


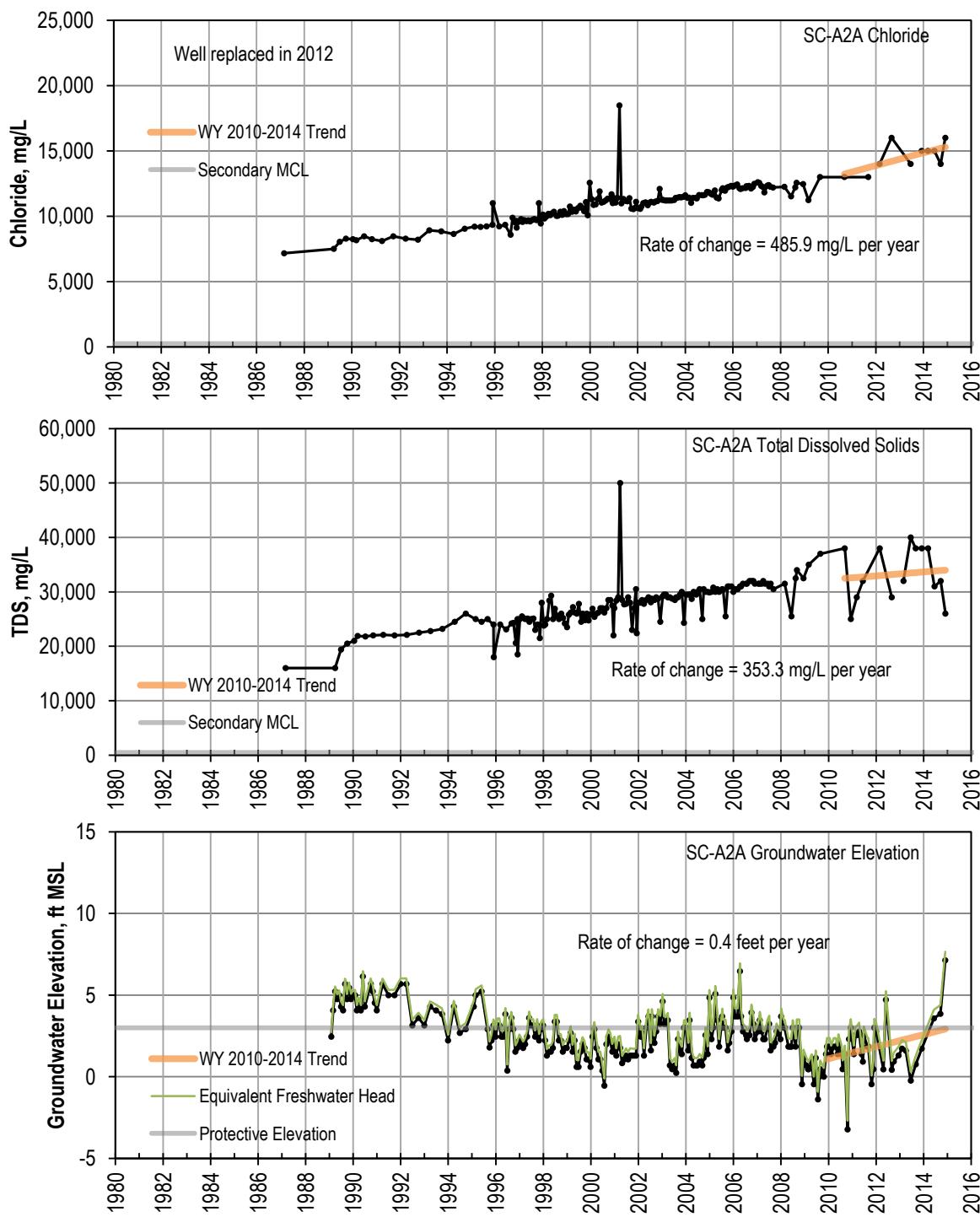


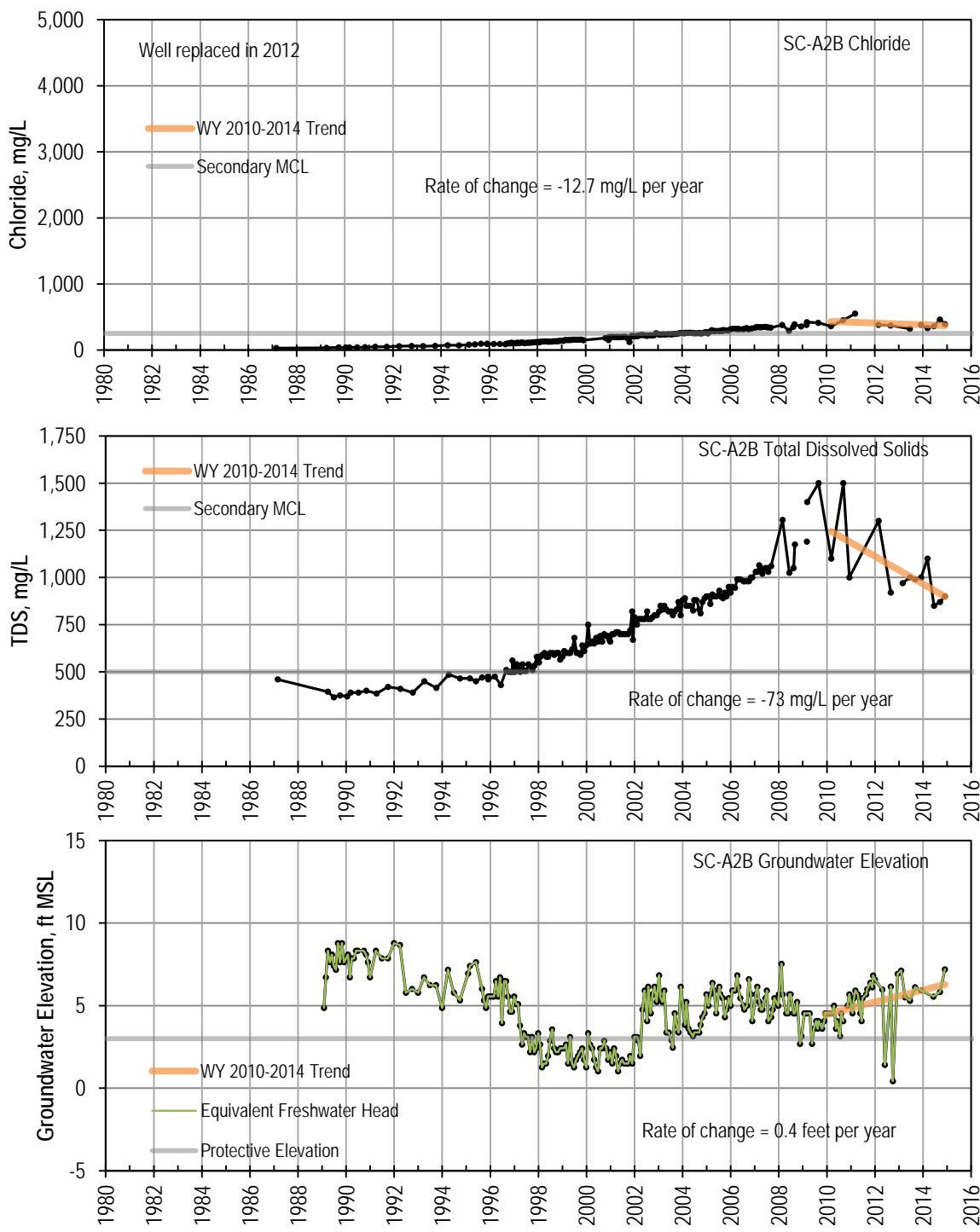


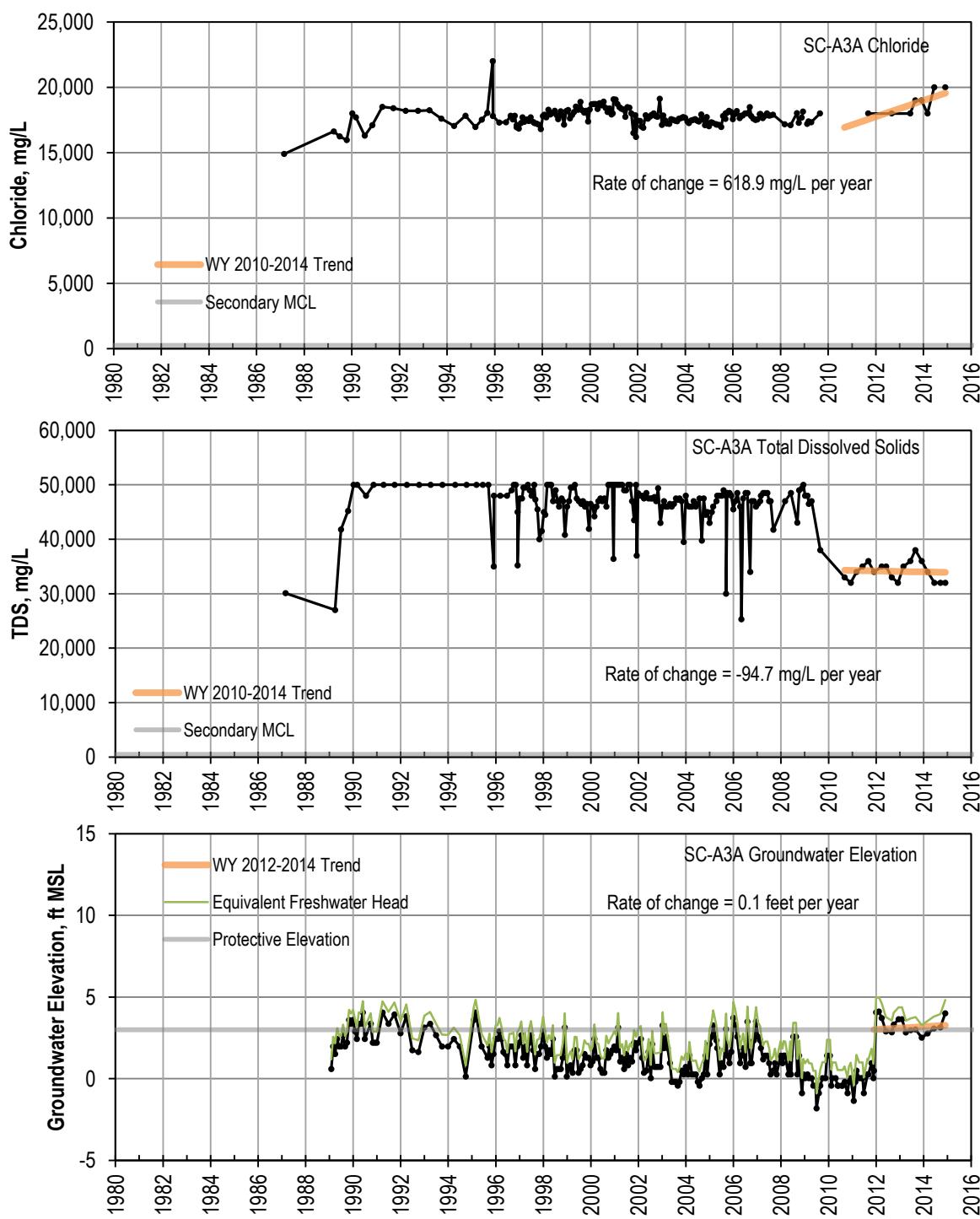


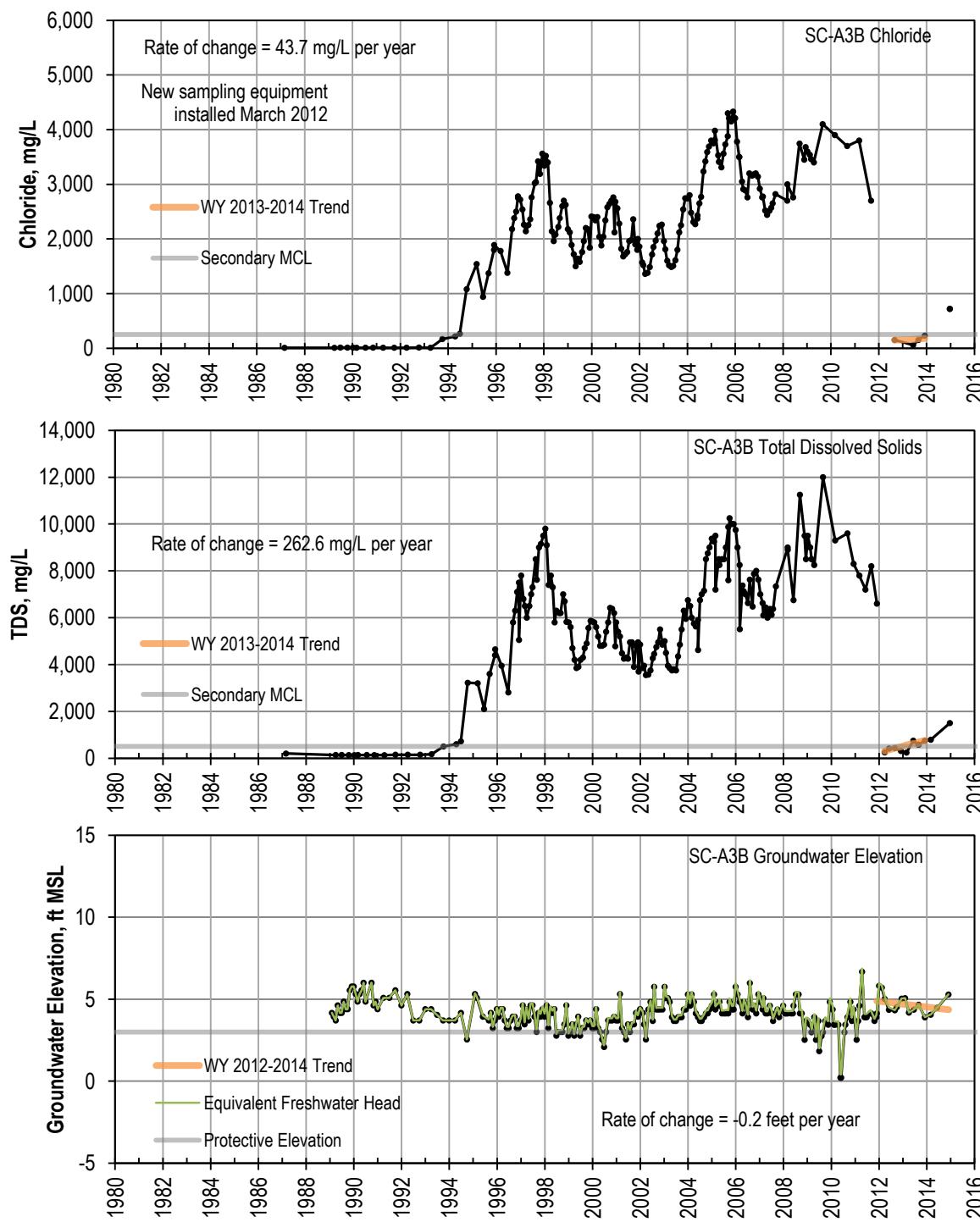


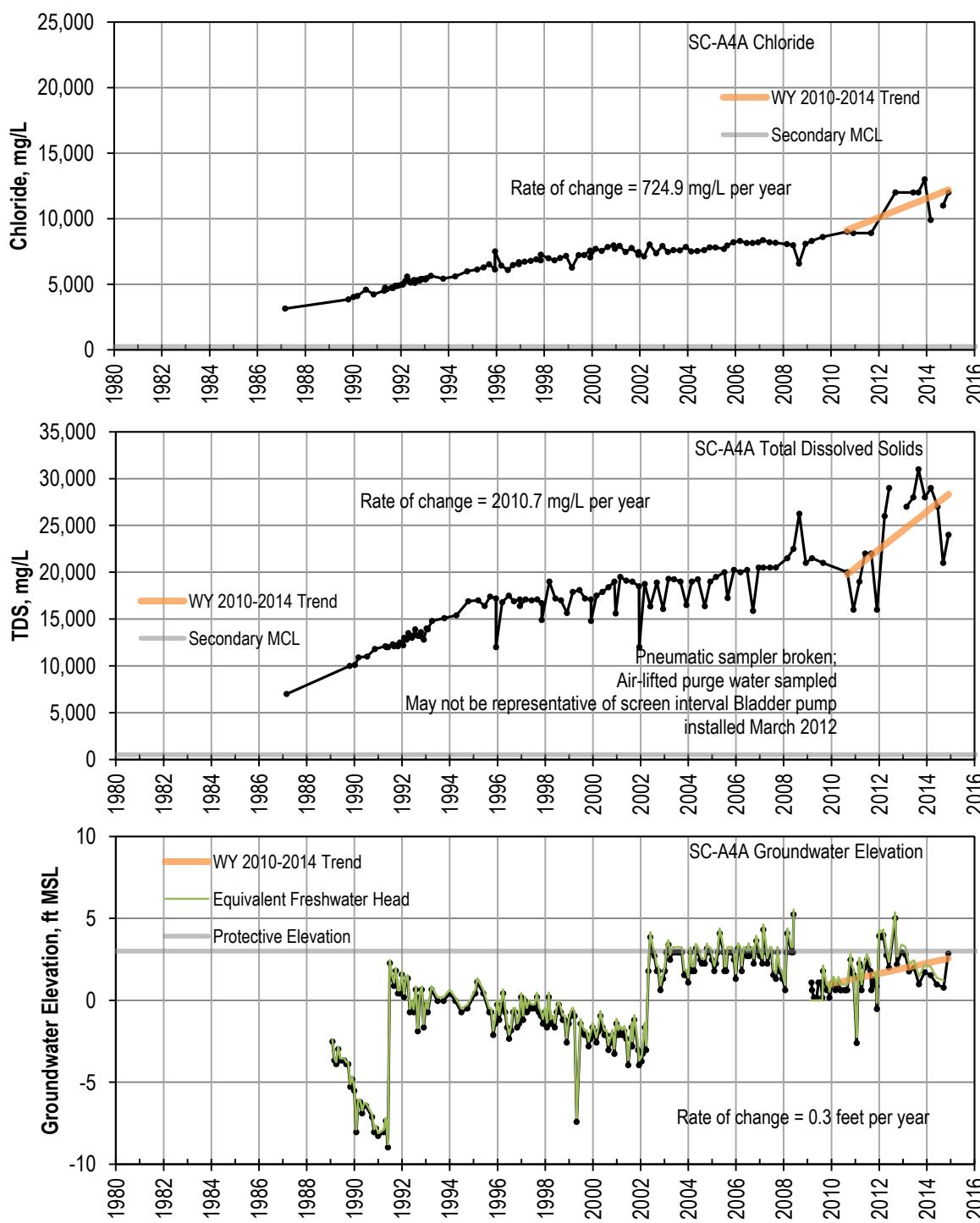


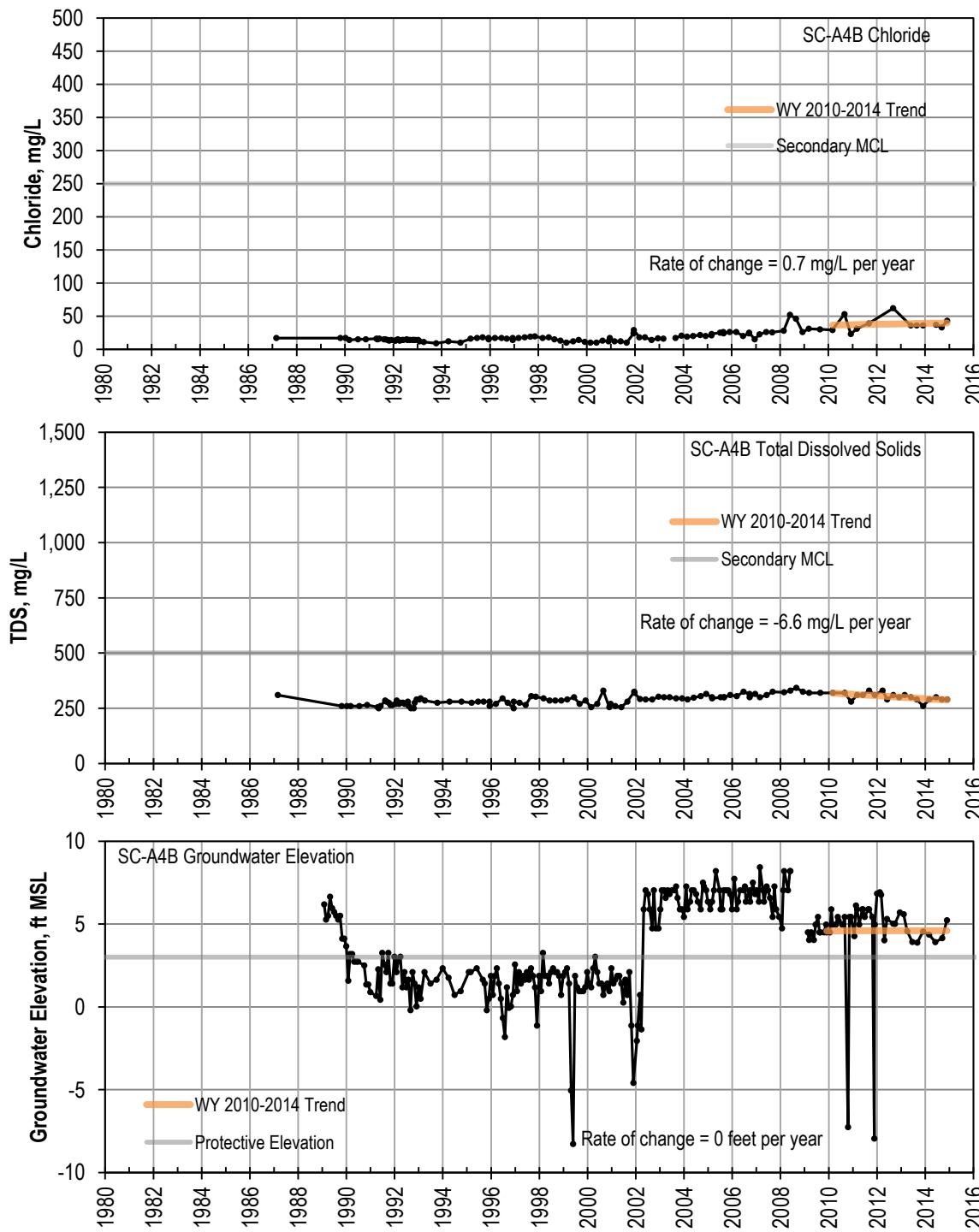












March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 6.2

Meeting With Department Of Water Resources to Discuss Local Issues Pertaining to Implementing the Sustainable Groundwater Management Act

Attachments: 1. Powerpoint Presentation
2. Handout

As part of the implementation of the Sustainable Groundwater Management (SGM) Act that was signed into law on September 16, 2014 and effective January 1, 2015, the Department of Water Resources (DWR) is conducting field assessments of selected areas in California to gain better understanding of the issues and challenges local-level officials may be facing.

The meeting attendees included:

- DWR Representatives: David Gutierrez (SGM Program Manager), Trevor Joseph (SGM Section Chief), Dane Mathis (Senior Engineering Geologist) and Steve Macaulay(Macaulay Water Resources)
- Central Water District: Ralph Bracamonte (District Manager)
- City of Santa Cruz: Heidi Luckenbach (Deputy Water Director/Engineering Manager) and Isidro Rivera (Associate Engineer)
- County of Santa Cruz: John Ricker (Water Resources Division Director)
- HydroMetrics: Cameron Tana (Vice President)
- Pajaro Valley Water Management Agency: Mary Bannister (General Manger) and Brian Lockwood (Geologist)
- Scotts Valley Water District: Piret Harmon (General Manager)
- Soquel Creek Water District: Kim Adamson (General Manager) and Melanie Mow Schumacher (Special Projects/CD Manager)

Water agency staff discussed several areas of concern with DWR representatives including basin boundaries, PVWMA being a named agency whose jurisdiction doesn't include their entire basin, and the facilitation process for GSA formation.

DWR staff was very receptive to our concerns and assured us that they will take back our information as they roll out implementation of the Act. They explained that they will have funds available to help agencies with the facilitation process, but recognized that we are much further along than most agencies. We briefly discussed opportunities to work together with DWR on a facilitation pilot prior to funds being available for other agencies.

Next Steps

District staff plans to draft a letter to DWR proposing that we develop the scope of a facilitated program to address basin boundaries and other issues related to formation of GSA's. We would create desired outcomes and timelines and prepare a final report for use by DWR documenting the processes and outcomes which can be applied in other areas of the state. We will request up to \$50,000 from DWR to assist in the facilitation service. DWR has funds for these services and they are still determining how to use them. We are planning to propose that we help them determine the best practices for using those funds through our pilot efforts.

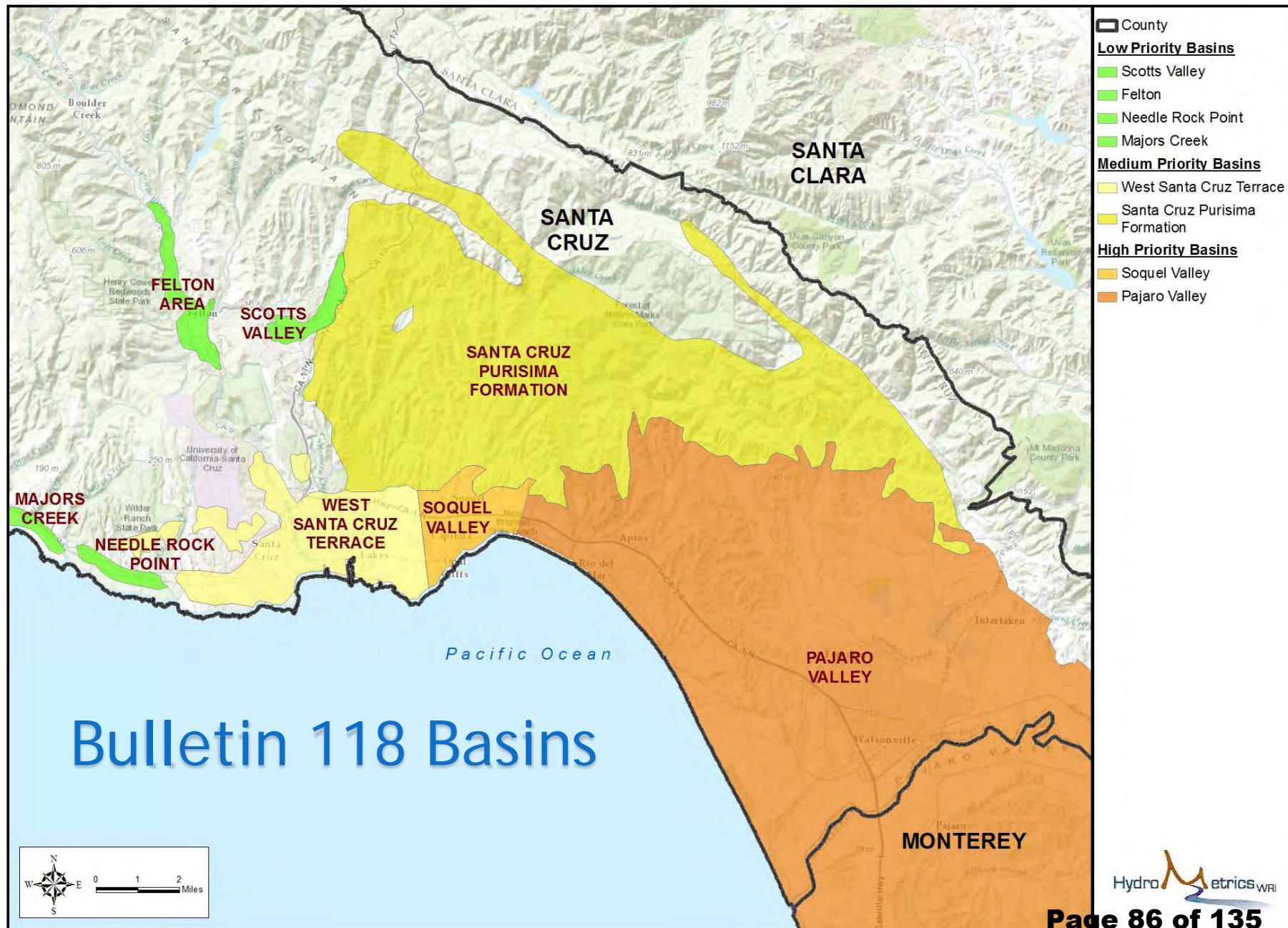
POSSIBLE ACTION

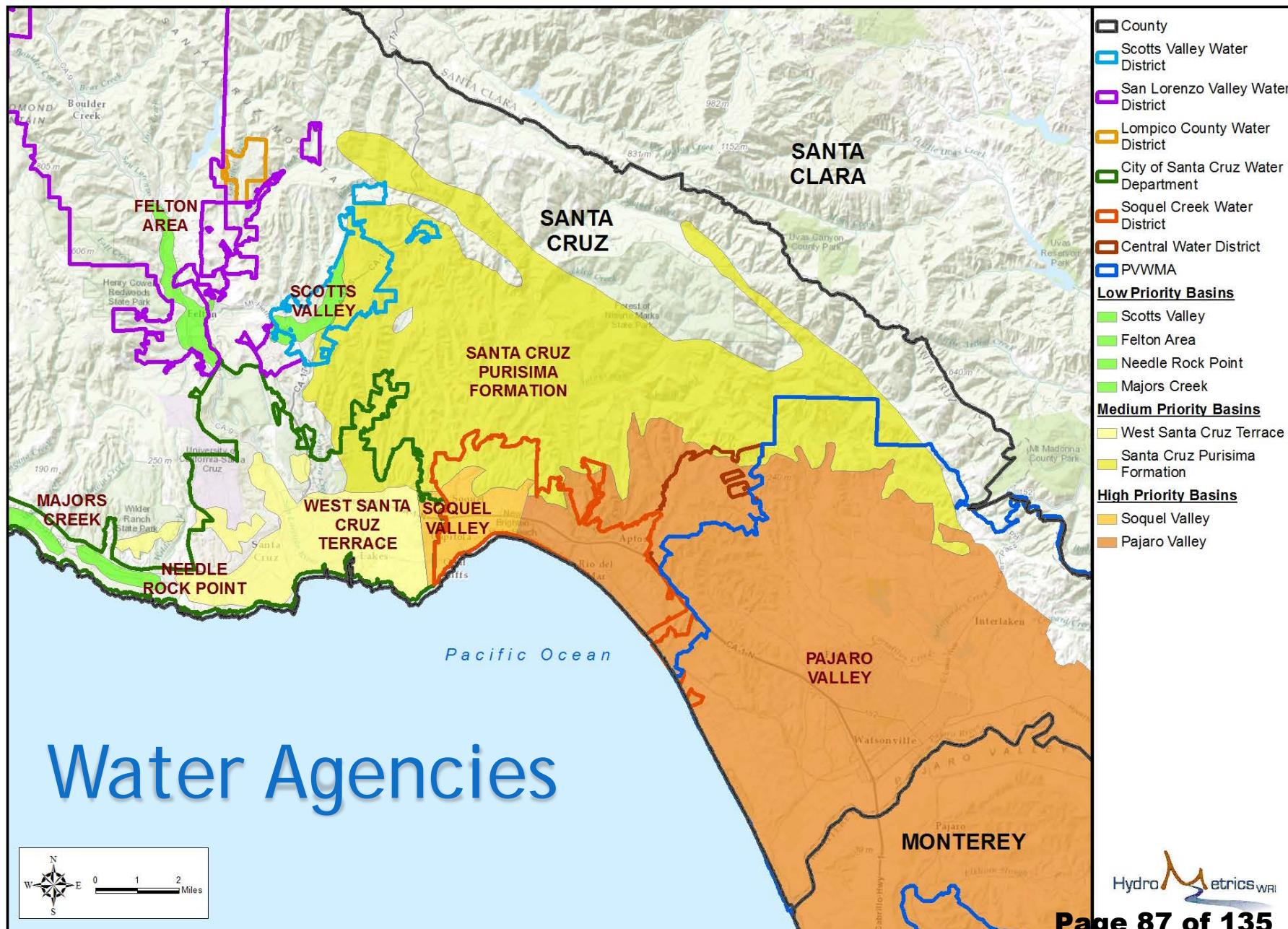
For information only. Provide direction to staff as necessary.

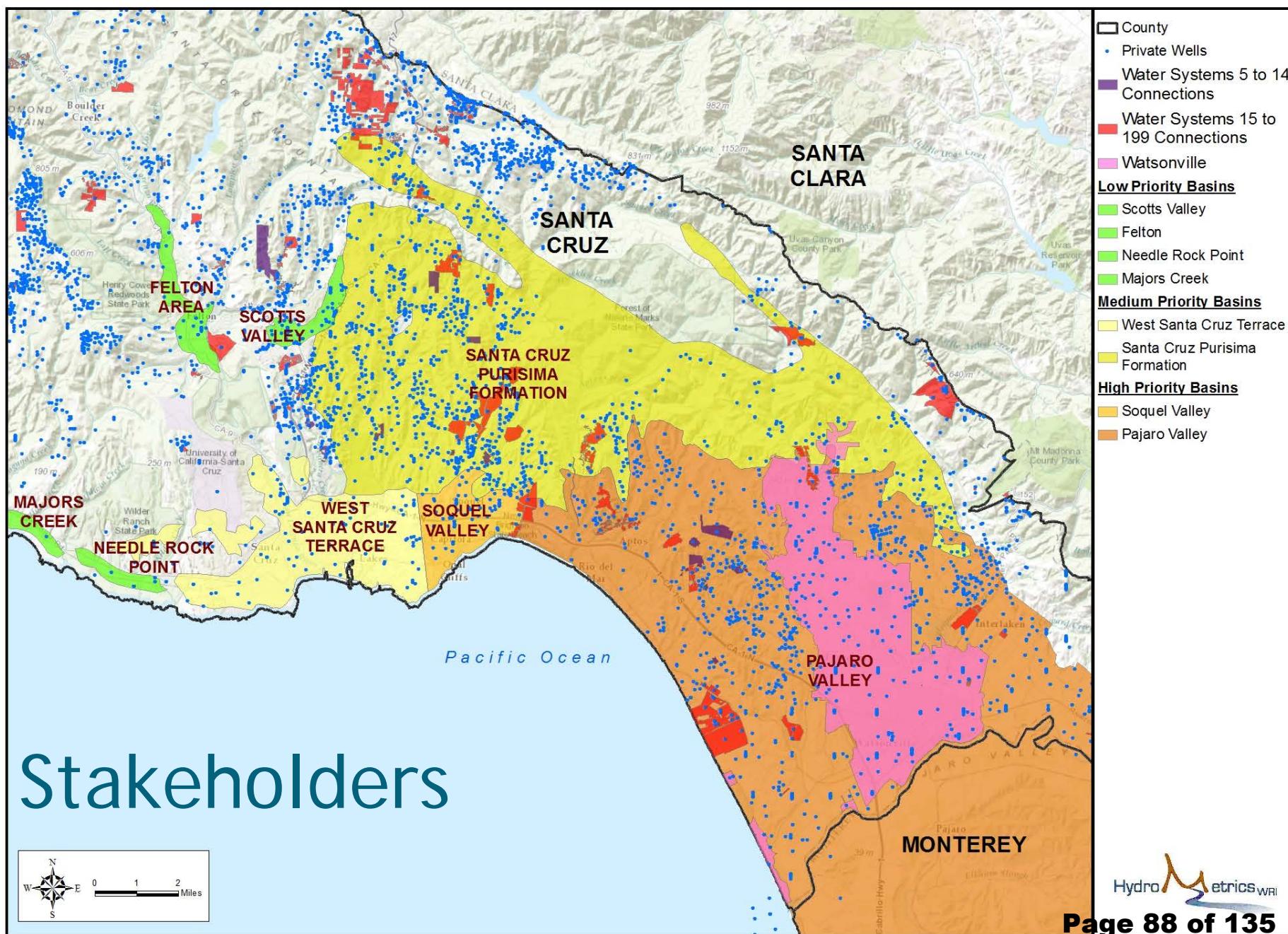
By 
Kim Adamson
Soquel Creek General Manager

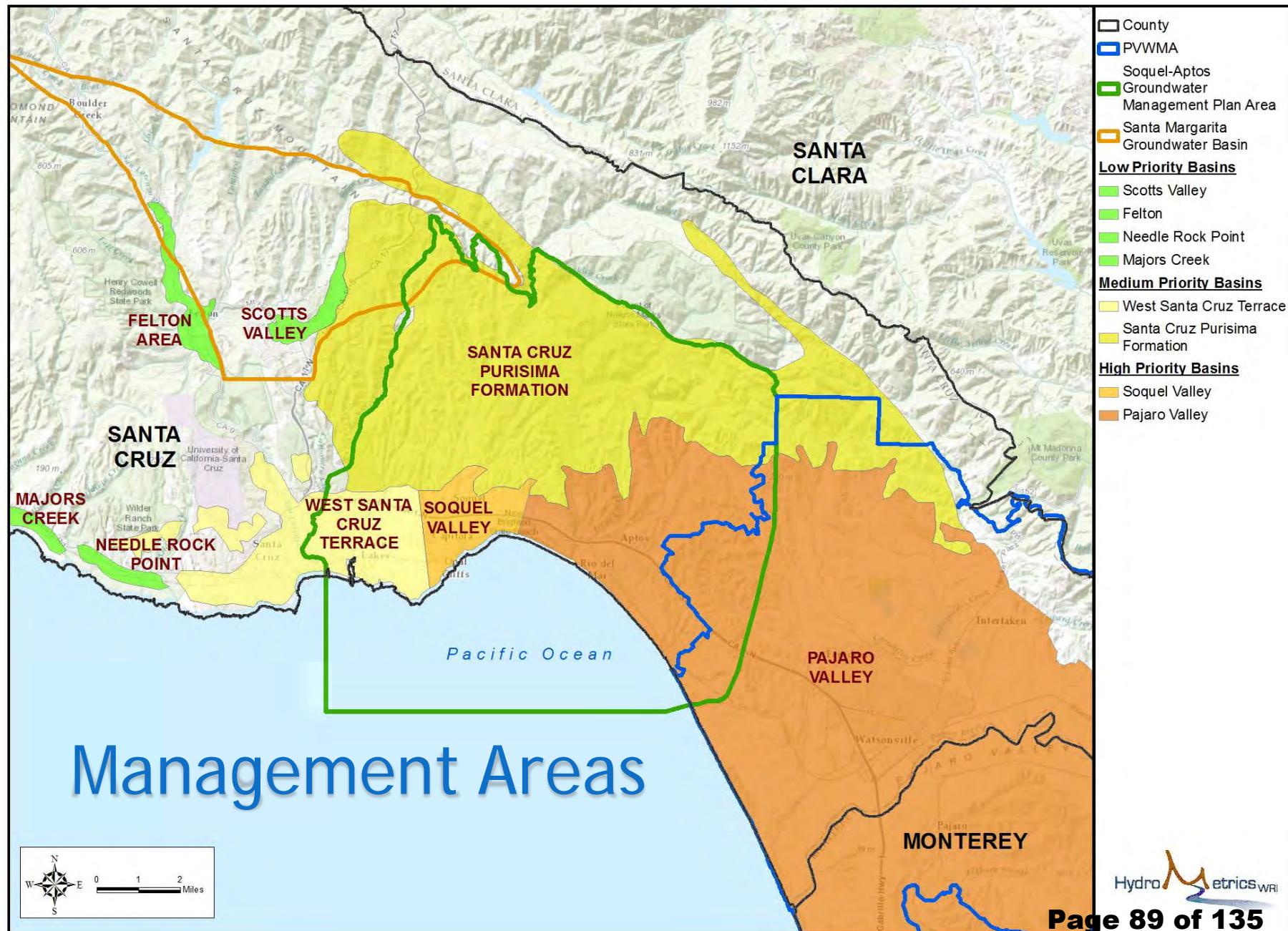
Santa Cruz County Basin Boundary Issues

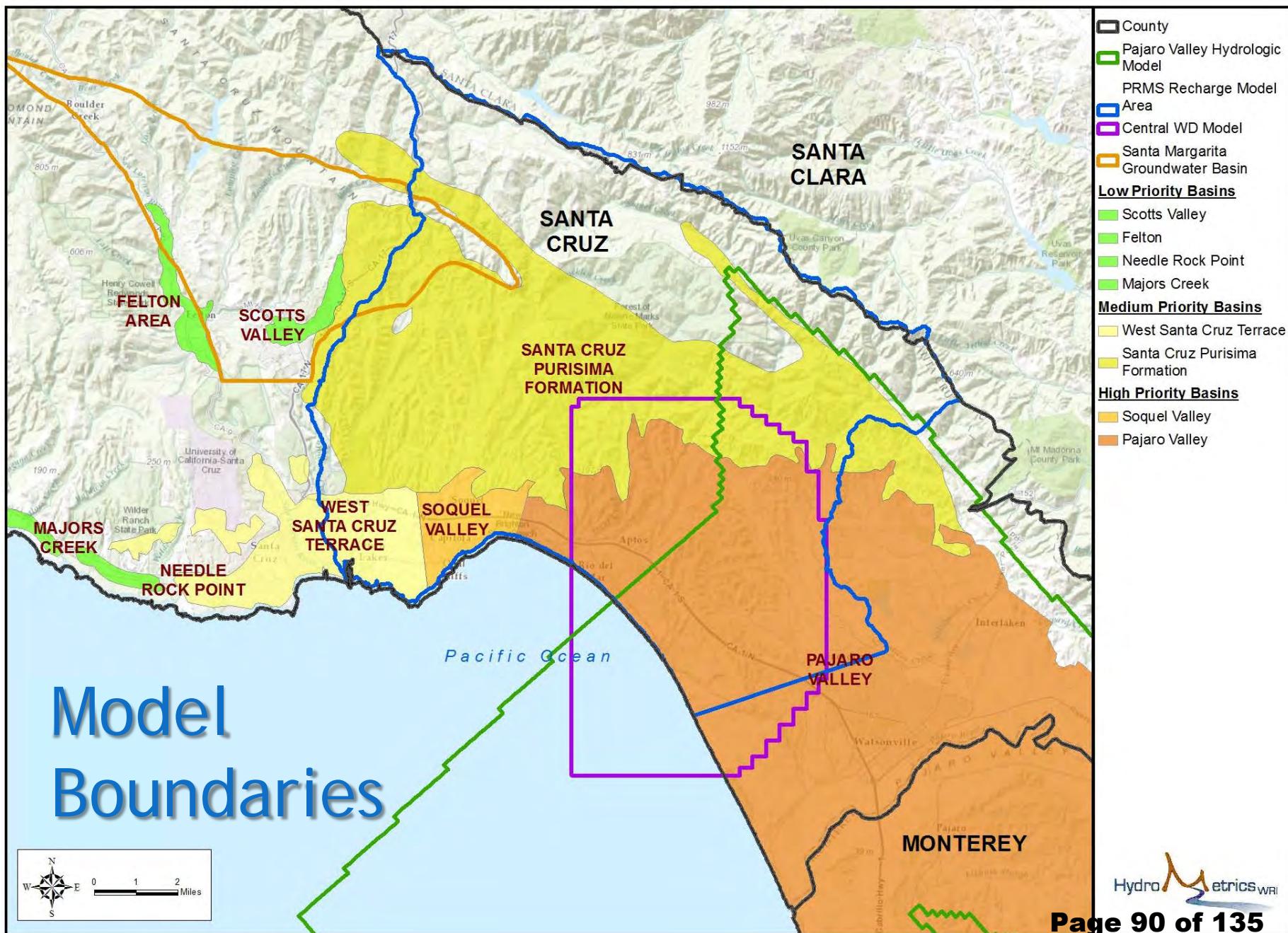
Meeting with California Department of Water Resources
Sustainable Groundwater Management Act Implementation
February 18, 2015





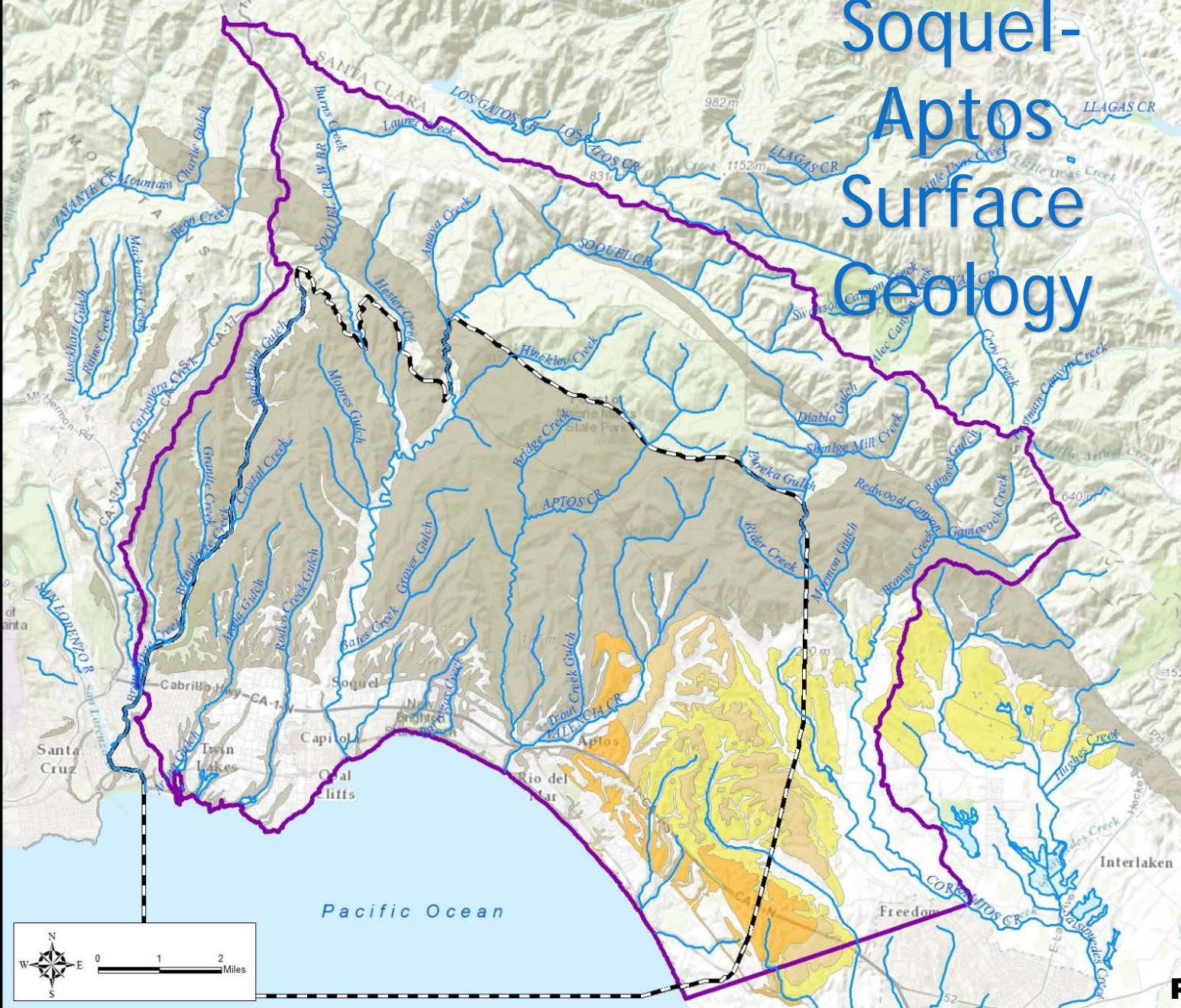




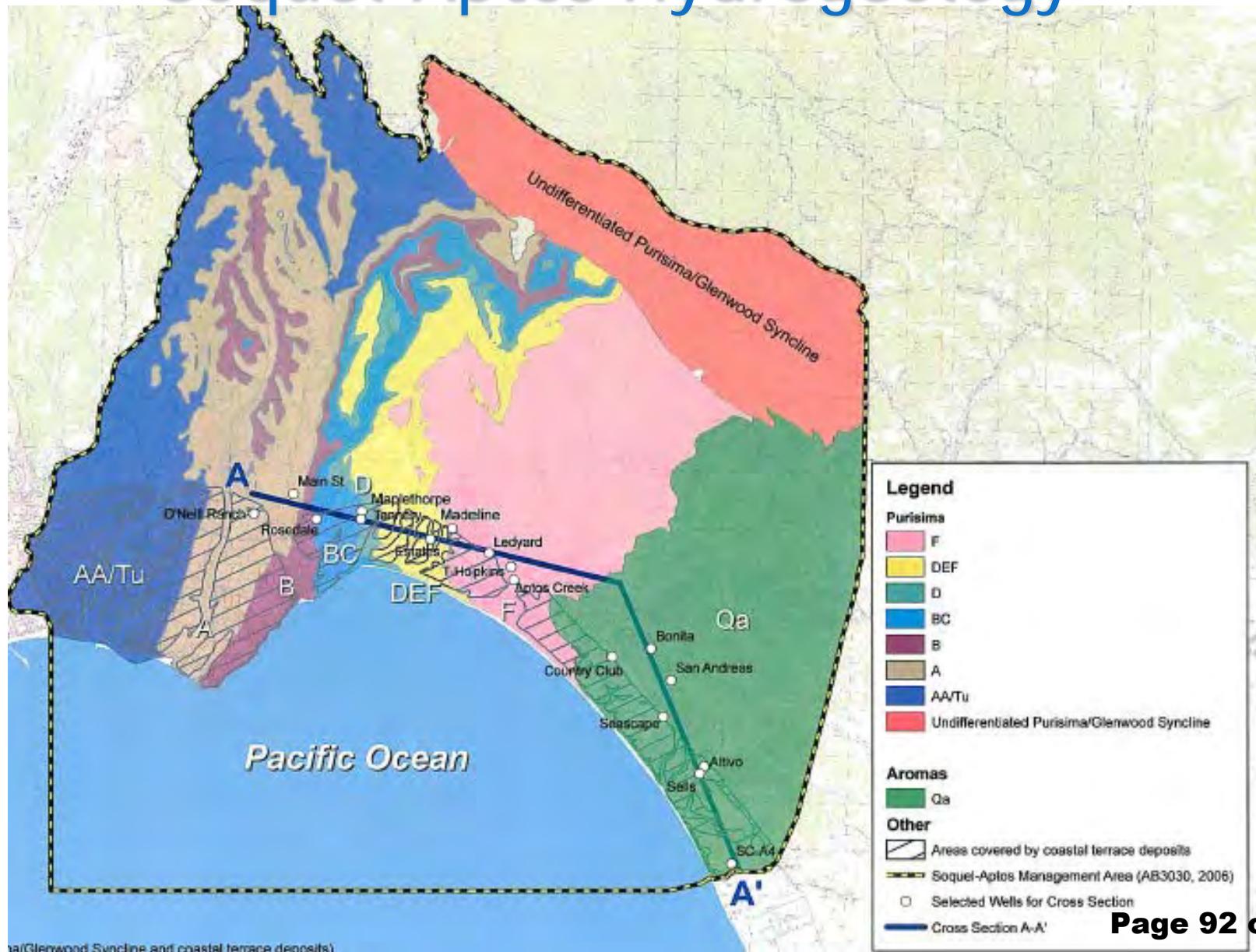


Soquel-Aptos Surface Geology

- PRMS Recharge Model Area
- Soquel-Aptos Groundwater Management Plan Area
- Creeks and Rivers
- USGS Geology
 - Qae
 - Qaf
 - Qar
 - Tp

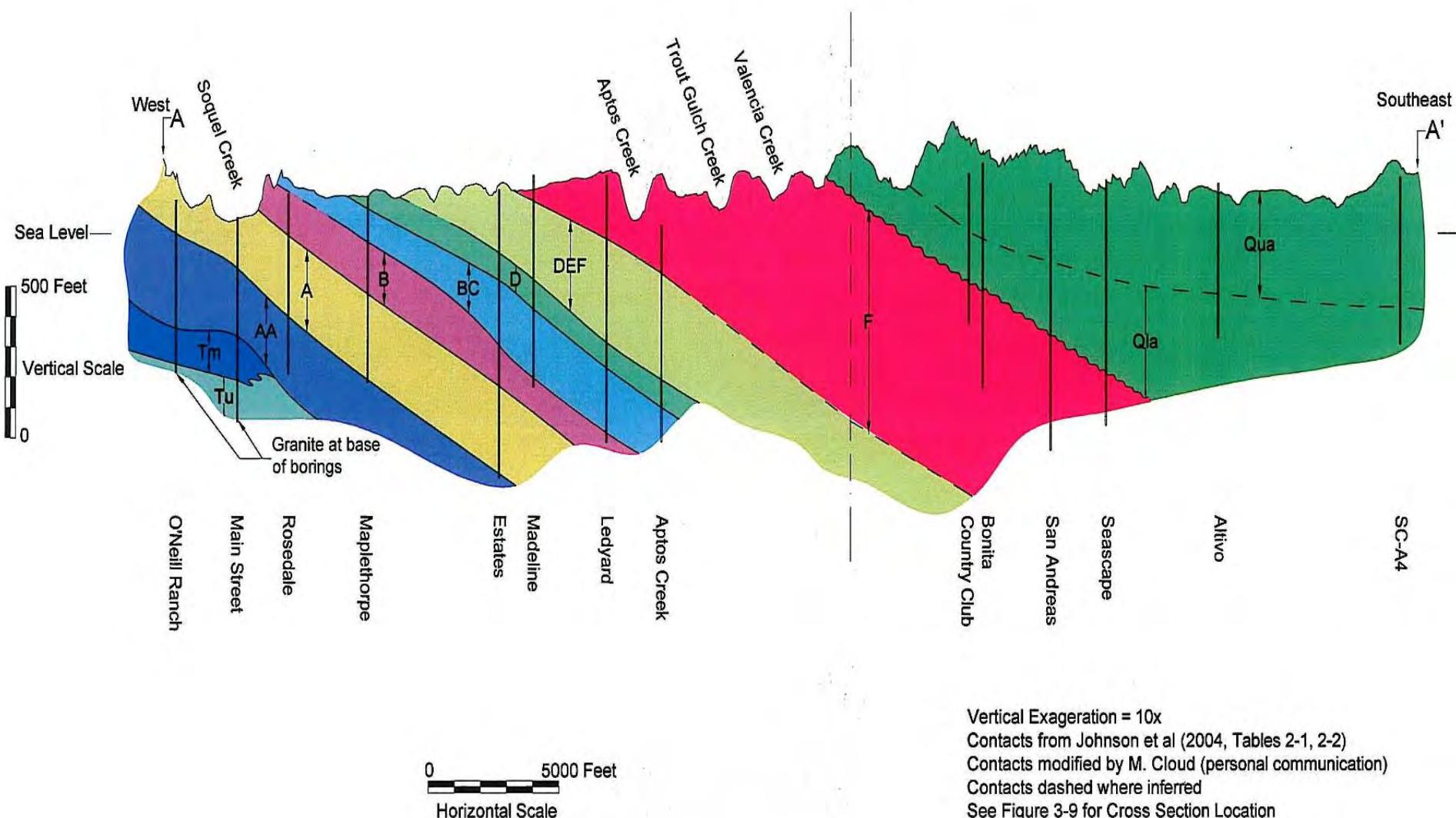


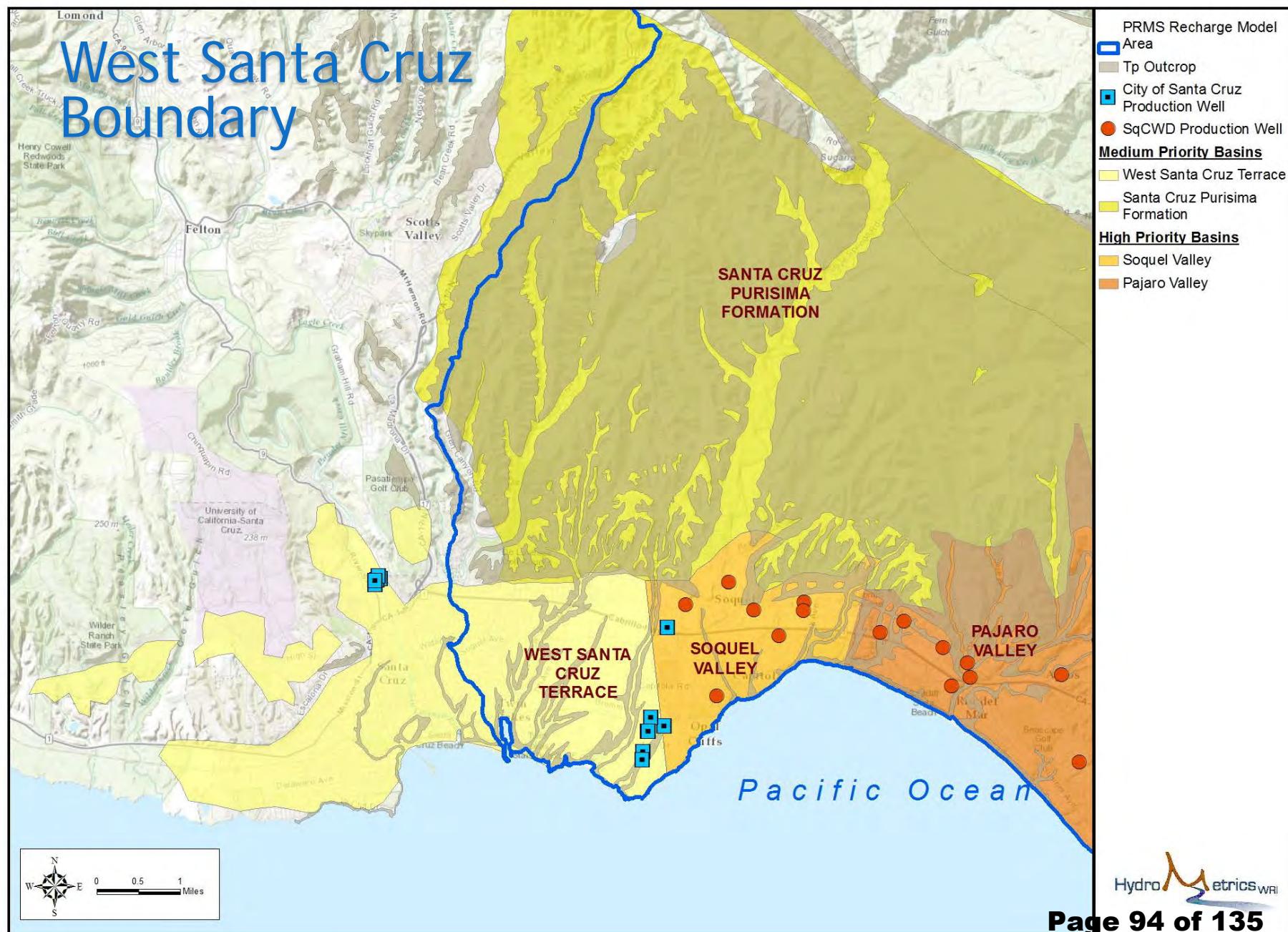
Soquel-Aptos Hydrogeology

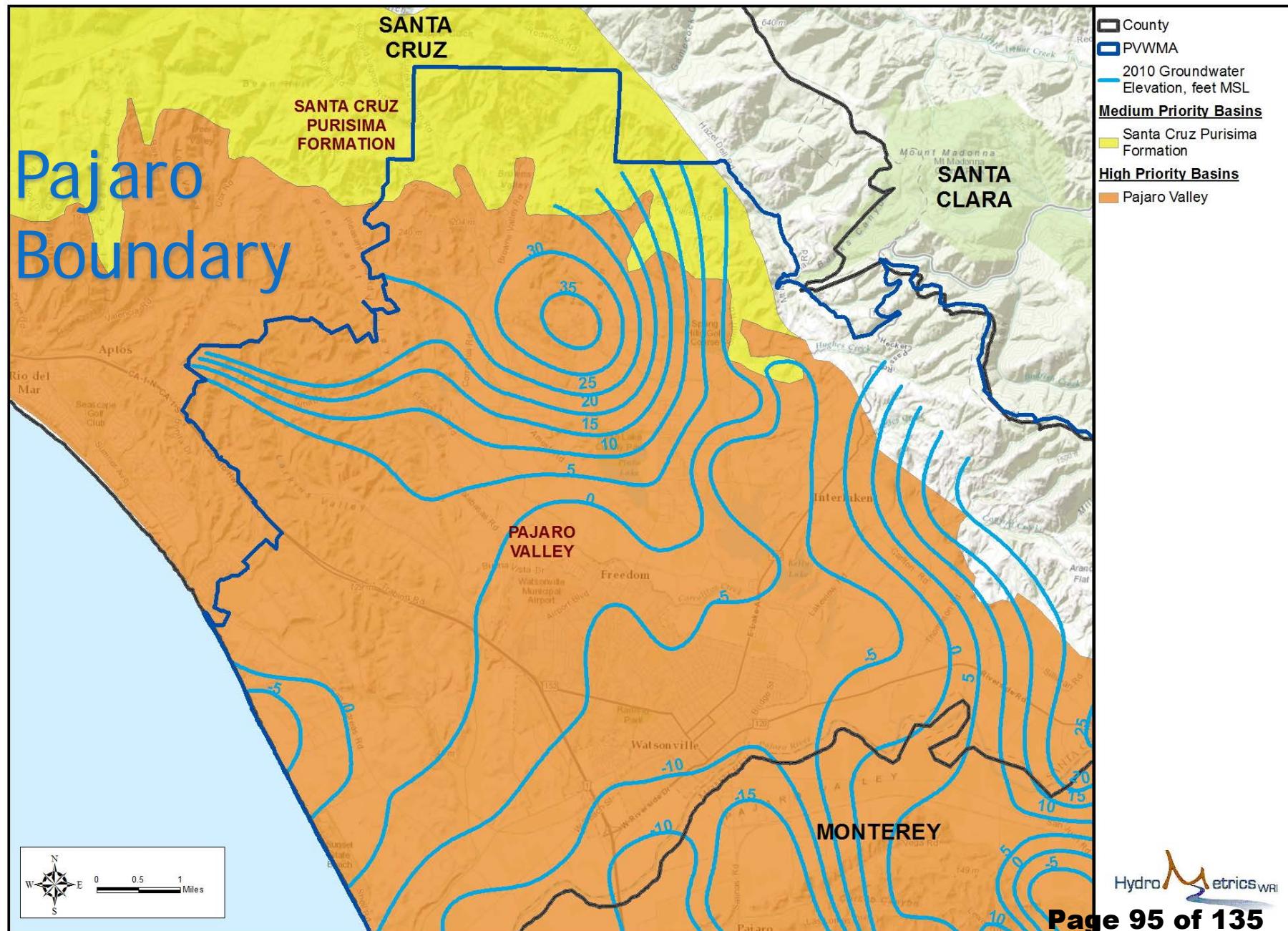


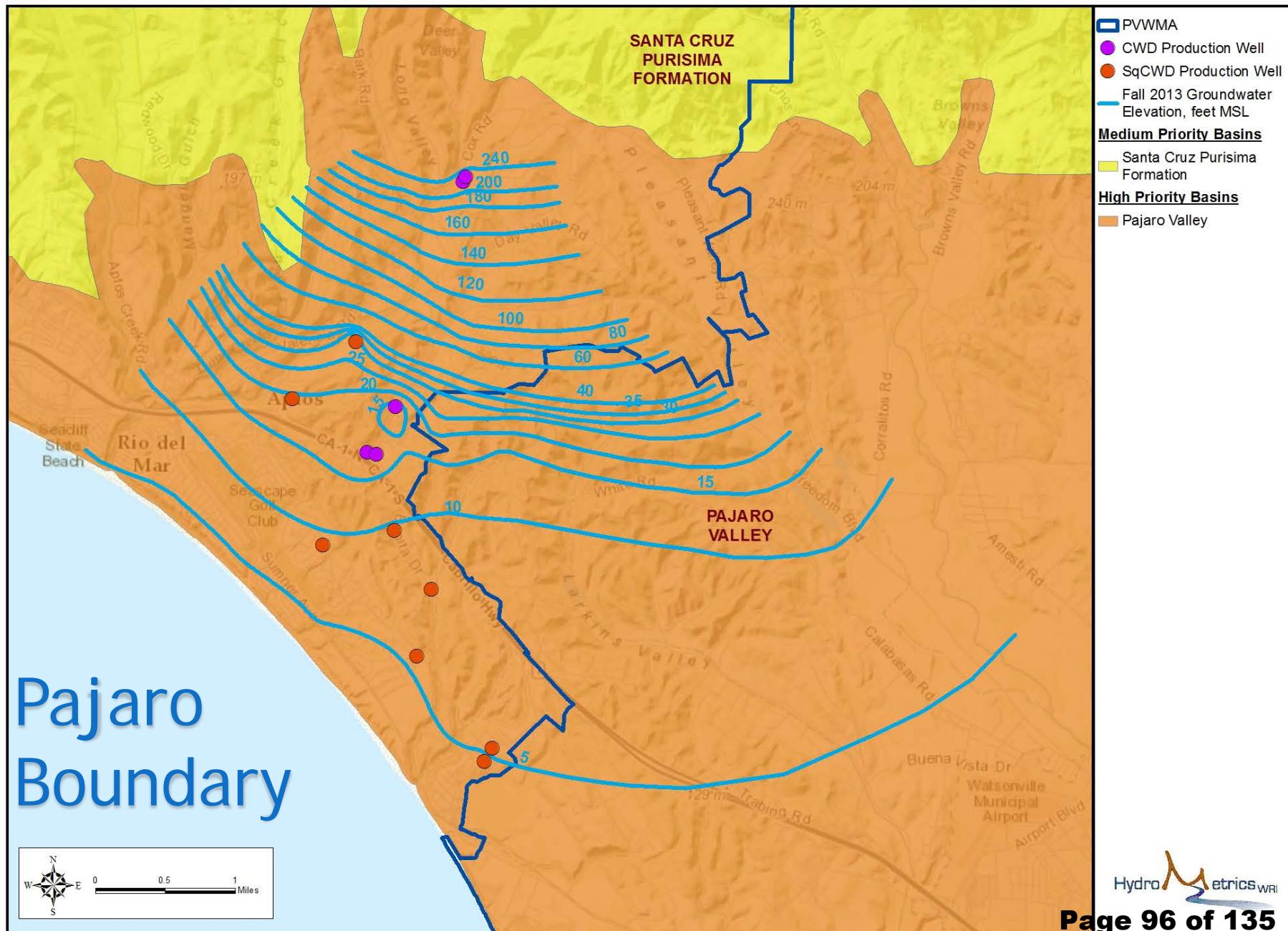
Soquel-Aptos Hydrogeologic Cross-section

Bend in Section

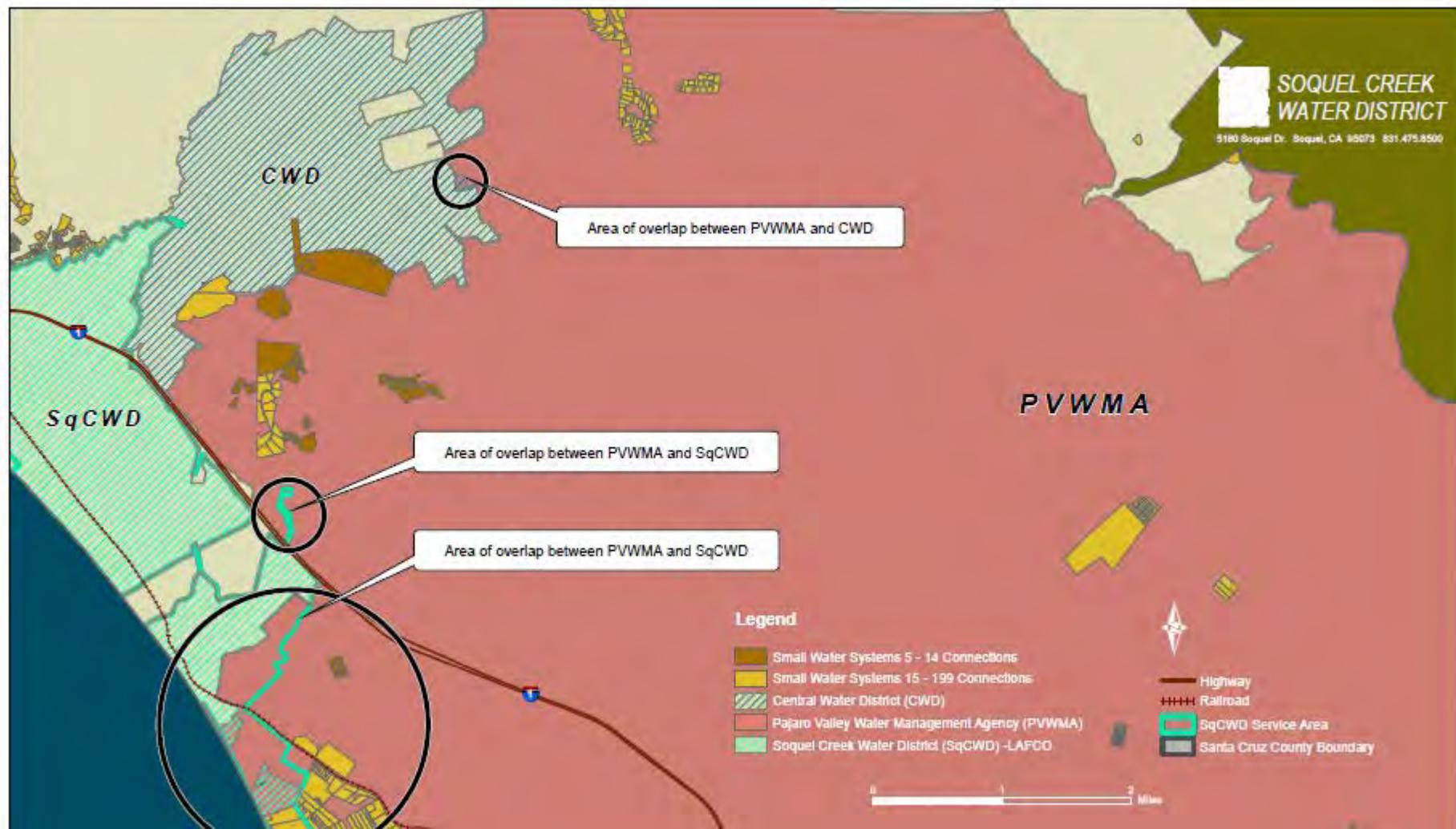


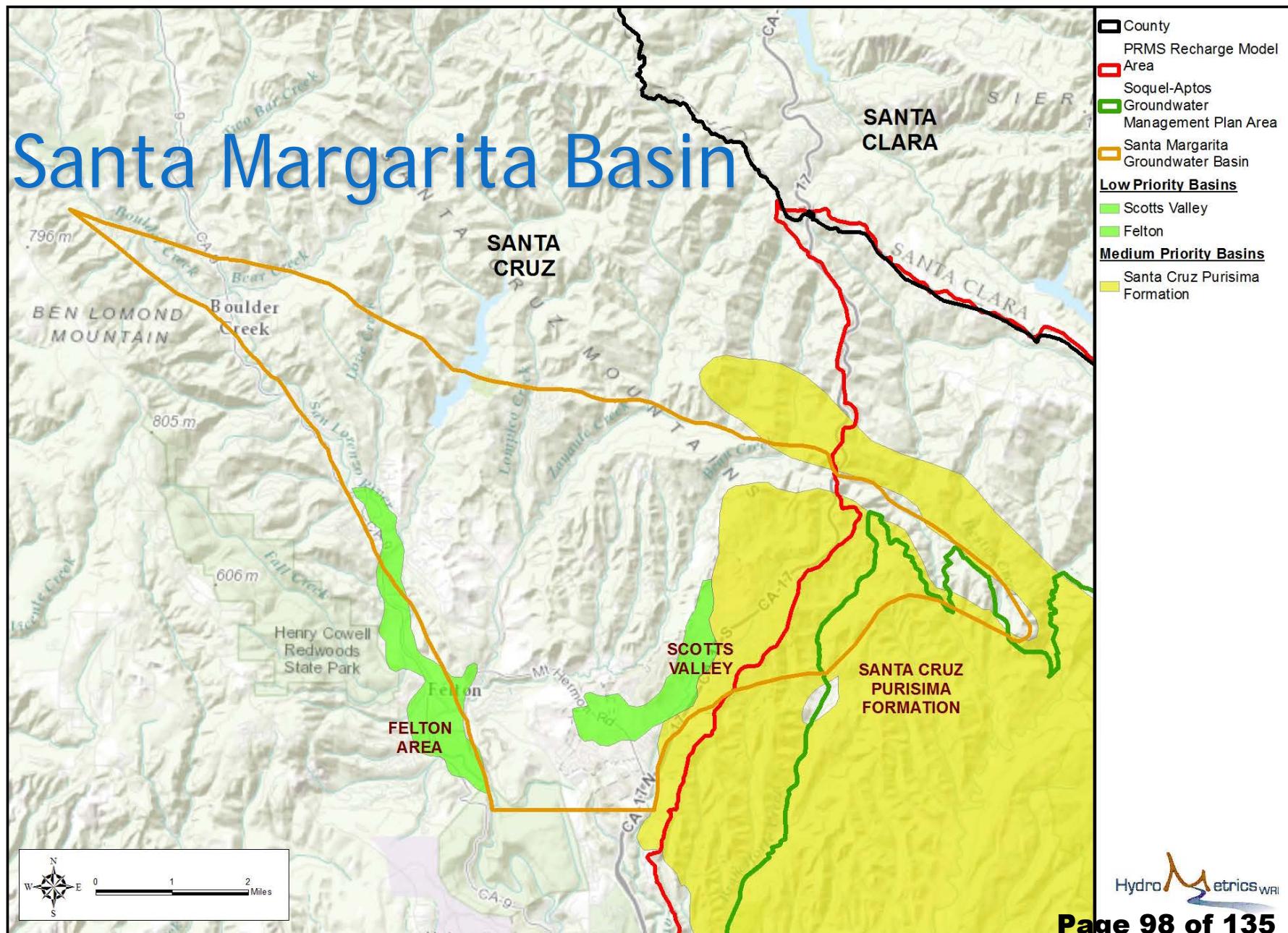






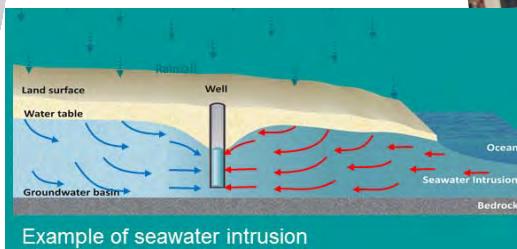
Pajaro Basin Jurisdictional Overlap





Our Water is Groundwater

Together — Let's Protect it



Practically all of Santa Cruz County's potable water supply is locally derived from groundwater (80%) and a small amount coming from surface water sources (20%). Our region receives no imported water.

There are three major groundwater basins in the county: the Santa Margarita, Soquel-Aptos, and Pajaro Valley.

All the major groundwater basins in Santa Cruz County are in some level of overdraft

(i.e. more water is being extracted from the aquifers than is naturally recharged through the soils and stream valleys).

In the Pajaro Valley, average annual groundwater production exceeds recharge, a condition that has led to long-term groundwater overdraft and seawater intrusion.

In other parts of the County, development contributes to the overdraft by both through demand but also because development covers the ground surface with impervious layers that greatly reduce groundwater recharge.

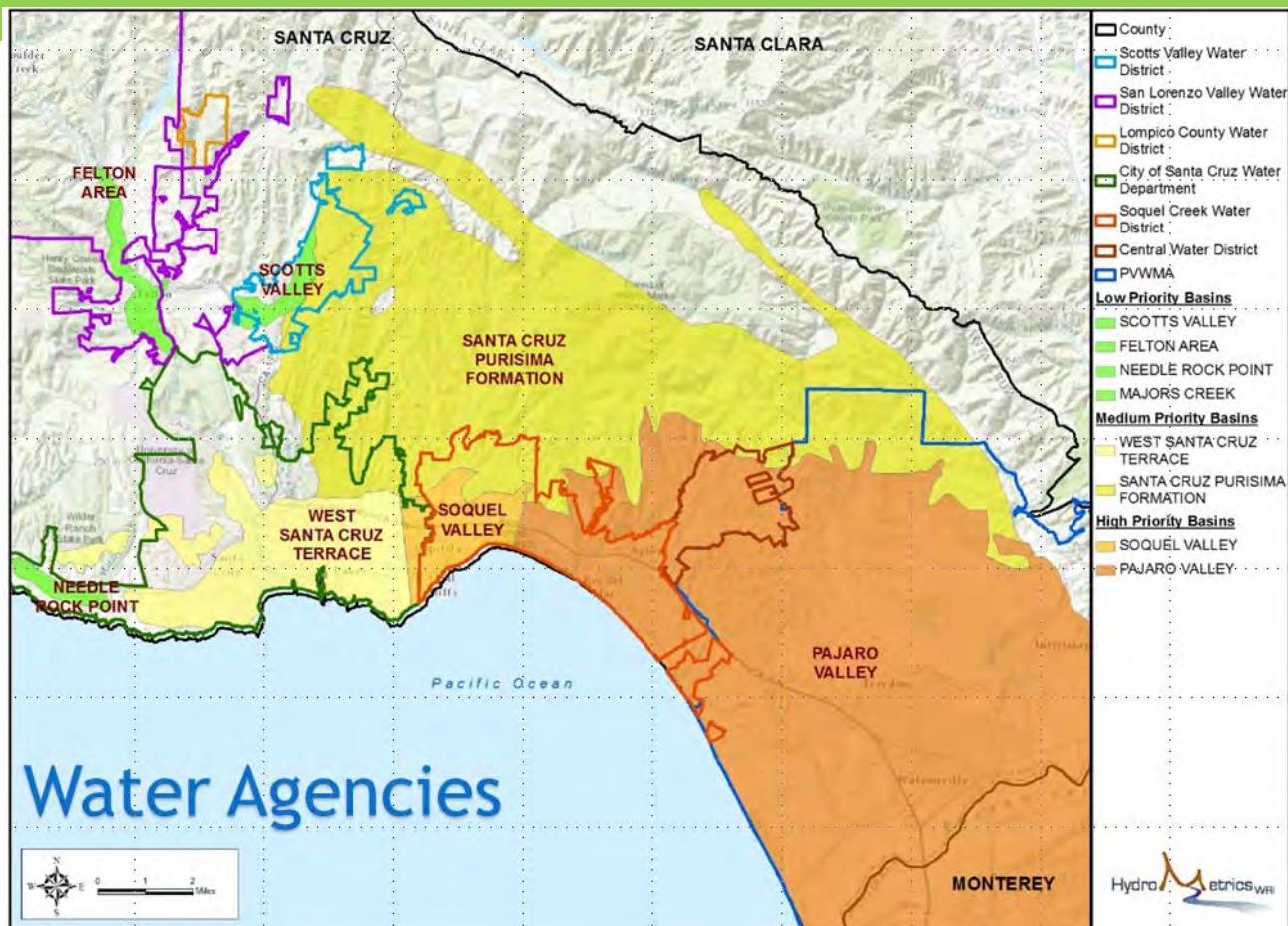
Negative consequences of overdraft include declining groundwater levels, a decrease in groundwater quality, reduced streamflow, and seawater intrusion that destroys wells and our drinking water supply.

Regional Issues

- 1 Seawater intrusion and contamination of our groundwater supply.
- 2 Inadequate water supply to meet current and future needs
- 3 100% Locally supplied water source. No imported water.

Working together, with the State and local stakeholders, sustainable groundwater management will provide long-term water supply reliability to protect our natural resources and sustain our economy.

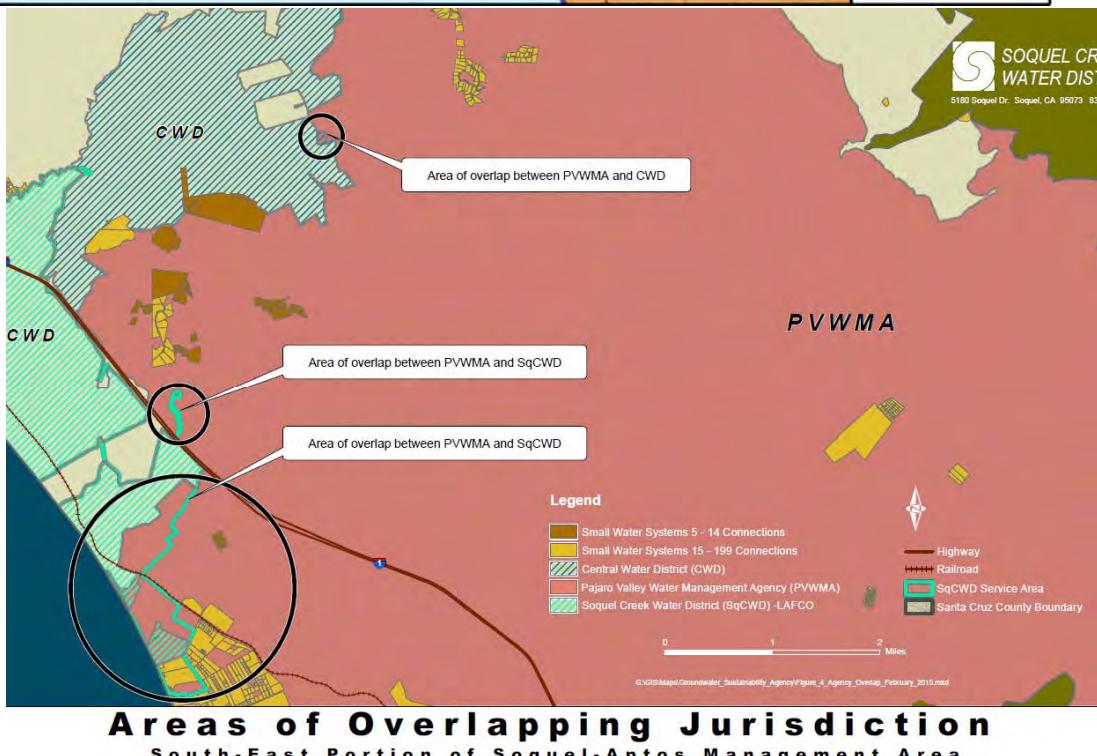
Issue: Groundwater Basin Boundaries



Water Agencies

Basin boundary issues include:

- **Bulletin 118**
- **Areas of overlap**
- **Area next to PVWMA**



Issue: Public Engagement in Forming the Groundwater Sustainability Agencies and Plans

The Mid-County Area has been actively initiating community conversations with local private pumpers on groundwater management issues. From May 2014 -January 2015, six meeting were held to discuss the general water problems facing the area, groundwater hydrology and data collection, and the sustainable groundwater management act. The results of these meetings have been very positive and there is a definite sense of trust with our



community stakeholders that a local solution needs to include continued collaboration with agencies and all pumpers in basin.

Next steps for our local water agencies include establishing a Groundwater Sustainability Agency (GSA) and adjusting basin boundary designation. Based on our survey results, our community members are interested in developing a formal working group that is facilitated.

DWR Assistance is needed to continue the momentum of public engagement as we embark on developing a GSA. Our area includes over 1,000 private well pumpers (those that are considered deminimis pumpers by the Act).

what do locals want?

In a *Survey Monkey* poll, we asked the question: "How would you prefer the community be engaged in developing a groundwater sustainability agency?"

- A formal citizens advisory group (of only private well owners) to develop recommendations
- A formal working group (of private well owners and agency reps) to develop GSA framework and bylaws.
- Either would be fine.

8.4%

62.2%

29.4%

(Based on 435 responses)

what do locals want? In a *Survey Monkey* poll, we asked the question: "Which would be your preference for meeting facilitation?"

15.5%

- A staff member

26.6%

- A third-party facilitator who is not affiliated with a local water agency (outside of area)

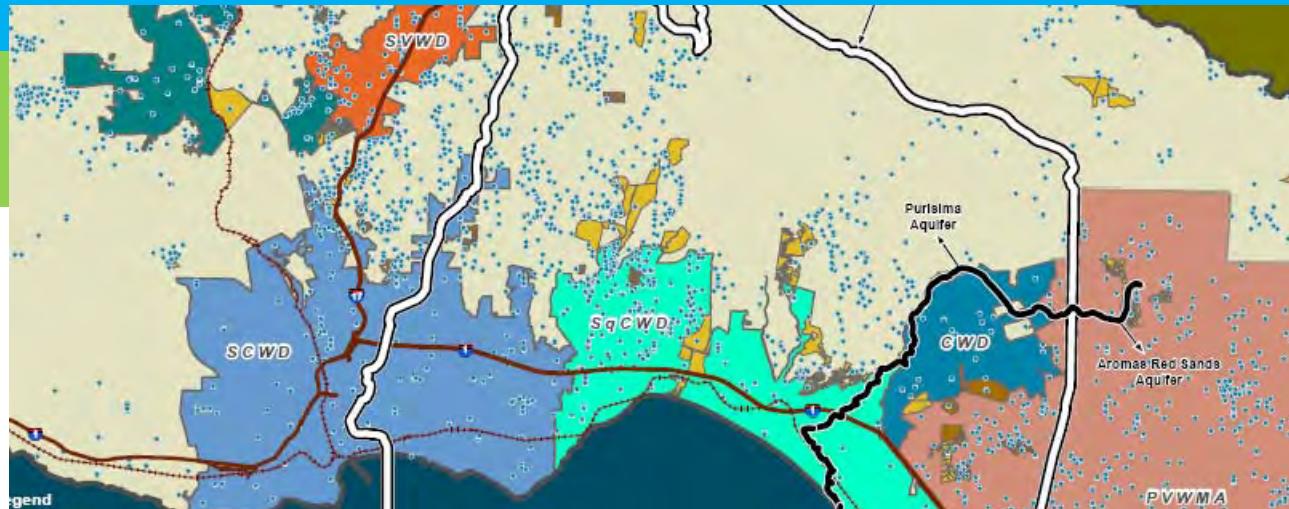
54.1%

- A third-party facilitator who is not affiliated with a local water agency (resides locally)

3.8%

- None of the above

(Based on 435 responses)



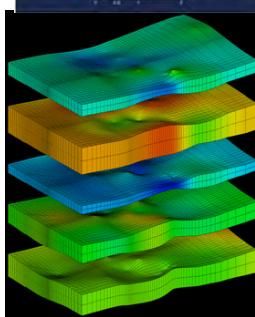
Current Groundwater Management Activities

There has been an ongoing history of groundwater management in Santa Cruz County. Data collection, monitoring and modeling, and partnerships within existing Groundwater Management Plans or the IRWM efforts are in effect.

- **Soquel-Aptos Basin:** Soquel Creek Water District and Central Water District have formed a Joint Exercise of Powers Agreement and have adopted an AB3030 Groundwater Management Plan for the Soquel-Aptos Groundwater Management Area (2007). The Agreement is currently amended to include the City of Santa Cruz and the County of Santa Cruz as they

work to develop a framework for a GSA. A groundwater model is being conducted.

- **Pajaro Valley Basin:** Pajaro Valley Water Management Agency has developed a groundwater model, adopted an Updated Basin Management Plan (2014) and is already specifically designated as a GSA under the SGMA.
- **Santa Margarita Basin:** An AB3030 Groundwater Management Plan for the Scotts Valley sub-basin was adopted and a groundwater model for the entire Santa Margarita Basin is complete. The Santa Margarita Basin Advisory committee (City of Scotts Valley, Scotts Valley Water District, San Lorenzo Valley Water District, Lompico County Water District and the County of SC) have begun discussions on meeting the requirements of a GSA.



February 18, 2015 Meeting with DWR: Representatives from County of Santa Cruz, City of Santa Cruz, Soquel Creek Water District, Central Water District, Scotts Valley Water District, and Pajaro Valley Water Management Agency

Contact: Melanie Mow Schumacher (831) 475-8501x153
melanie@soquelcreekwater.org

March 25, 2015

MEMO TO THE BASIN IMPLEMENTATION GROUP

Subject: Agenda Item No. 6.3

Department of Water Resources
Groundwater Sustainability Program Draft
Strategic Plan

Attachments: 1. Groundwater Sustainability Program Draft Strategic Plan

The Department of Water Resources has released a draft strategic plan for its Groundwater Sustainability Program describing DWR's responsibilities and outlining key actions it will take to support local agencies with implementation of the Sustainable Groundwater Management Act. The draft plan also describes current groundwater conditions, identifies success factors in addressing key challenges, and presents an initial plan for DWR communication and outreach.

Under SGMA, DWR must complete multiple activities such as the adoption of regulations for revisions to groundwater basin boundaries, evaluating and implementing groundwater sustainability plans, updating the prioritization of basins, and conducting groundwater assessments.

Public comments are currently being accepted and there is a deadline of June 1st to submit comments.

POSSIBLE ACTION

For information only. Provide direction to staff as necessary.

By _____

Kim Adamson
Soquel Creek General Manager



California Department of Water Resources

Groundwater Sustainability Program

Draft Strategic Plan



March 9, 2015

Groundwater Sustainability Program *Strategic Plan*

DWR Mission
To manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments.

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Groundwater Sustainability Goals, Objectives, and Actions	20
Communication and Outreach.....	29

Acronyms

SGMA	Sustainable Groundwater Management Act
SGWM	Sustainable Groundwater Water Management
BMPs	Best Management Practices
CASGEM	California Statewide Groundwater Elevation Monitoring
DWR	California Department of Water Resources
SWRCB	State Water Resources Control Board
CWC	California Water Code
GSA(s)	Groundwater Sustainability Agency or Agencies
GSP(s)	Groundwater Sustainability Plan or Plans



After decades of debate, California lawmakers adopted far-reaching new laws to bring the State's critically important groundwater basins into a sustainable regime of pumping and recharge. This change in water management – the most important in several generations – promises profound payoff. Groundwater on average makes up over a third of California's water supply, and it serves as a critically important savings account in dry years.

We have formally managed surface water supplies for a century. However, unrestrained groundwater use has been the rule except in areas where the courts have intervened. In some parts of California, groundwater has been pumped destructively at high levels for decades. California endured a third year of drought in 2014, and groundwater levels reached all time historic lows in most areas of the State.

While local leadership has had good success in a number of areas, on the whole, our collective management of groundwater resources is simply not working.

Governor Brown worked with the California Legislature and other stakeholders to craft the Sustainable Groundwater Management Act (SGMA). The SGMA establishes a new structure for managing California's groundwater. Developing the SGMA was not without controversy, with some interests concerned about creation of a new regulatory bureaucracy and a fear that the State would be eager to exert control over local groundwater basins. The SGMA essentially says our best chance of achieving sustainable, dependable groundwater supplies is for each basin to be managed at the local level. Local leaders will decide how best to organize and take charge through the establishment of Groundwater Sustainability Agencies. The Department of Water Resources' (DWR) primary role will be to provide guidance and technical support to local agencies. The State Water Resources Control Board will only step in on an interim basis when, but only when, local agencies fail to exercise their responsibilities set forth in the legislation. DWR recognizes that every groundwater basin is different and that solutions must be tailored by region. DWR and other State agencies are ready to provide assistance, and the water bond passed in November 2014 includes \$100 million for local and regional groundwater planning and projects.

As we consider what it will take to manage our groundwater sustainably, we need to acknowledge all water resources are interconnected. The Governor's five-year *California Water Action Plan*, released in January 2014, describes this broader view of what we need to meet the demands of the future. It spells out the challenges and the decisive actions needed now to put California on the path to more sustainable water resources: make conservation a way of life, ensure that each region does all it can to put its own water resources to efficient use, protect and restore important ecosystems, and expand water storage capacity. Sustainable groundwater management is an essential pillar of the plan.

Getting to sustainable water management will take decades, and we need to start now. This will not be easy, but many local leaders have told me they are ready to step up. We need to begin managing our groundwater so it is available for future generations while we balance the immediate needs of our economy.

Mark W. Cowin
Director
California Department of Water Resources

Navigating the Strategic Plan

Groundwater in California

Groundwater is a critical and integral component of California's overall water supply, serving residents, businesses, farms, industries, and the environment. Unlike surface water, groundwater has not been regulated on a statewide basis. Except in specific adjudicated basins, a landowner may extract an unlimited amount of groundwater if put to a reasonable and beneficial use without seeking permission to use the water. In certain parts of the state, long-term groundwater use has had serious impacts including:

- Alarming declines in groundwater levels and storage
- Degradation in water quality
- Irreversible land subsidence
- Ecosystem impacts associated with streamflow depletion and the reduced connection between groundwater and surface water systems.

The current drought has increased Californians' awareness of groundwater management issues. Approximately thirty million Californians (about 75 percent) depend on groundwater for a portion of their water supply. On average, groundwater provides about 40 percent of total annual agricultural and urban water uses. Some areas are 100 percent dependent on groundwater for their supply.

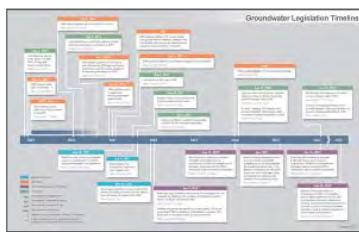
The **Groundwater Sustainability Program Strategic Plan (Strategic Plan)** describes the Department of Water Resources' roles and responsibilities under the Sustainable Groundwater Management Act (SGMA) and outlines related actions from the *California Water Action Plan* (CWAP).

This *Strategic Plan* aims to document the California Department of Water Resources' (DWR) strategy in helping to implement groundwater sustainability; share information with those who have interests in or management responsibilities for groundwater; and describe the structure through which DWR implements specific actions in coordination with stakeholders and partners.

DWR and the State Water Resources Control Board (SWRCB) are the two State agencies charged with helping to implement recent groundwater legislation. DWR's principal role is to provide guidance and support to local agencies across California to help them achieve a more sustainable future in water management. Several actions must be completed by specific dates set forth in the SGMA to accomplish this. This *Strategic Plan* does the following:

- Describes **current groundwater conditions** in the state, demonstrating the unsustainable nature of current management practices and framing the critical need for action
- Identifies **legislation and other drivers of policy**, including the SGMA, the *California Water Action Plan* and Proposition 1 (Water Bond)
- Identifies **success factors** in addressing the key challenges facing groundwater management in California
- Describes the **goals and objectives** that guide strategic concepts necessary for program implementation and the DWR actions to address the goals and objectives
- Presents an initial plan for DWR **communication and outreach** with partnering agencies, regional and local agencies, stakeholders, and the public.

Goals, Objectives, and Actions



Current GW Conditions

Legislation & Other Drivers

Success Factors

Communication & Outreach

Current Groundwater Conditions

In November 2014, DWR published *Public Update for Drought Response; Groundwater Basins with Potential Water Shortages, Gaps in Groundwater Monitoring, Monitoring of Land Subsidence, and Agricultural Land Fallowing*. As part of the *Water Plan Update 2013*, DWR released *California's Groundwater Update 2013*.

These reports outline the decline of groundwater levels in some areas and the resulting issues and impacts. **Figure 1** illustrates the changes in groundwater levels from Spring 2010 to 2014 by showing numerous wells throughout California that have experienced declines in excess of 10 feet during this four-year period. The collective view of this information identifies areas that are experiencing local and regional declines in groundwater levels. Recent increases in groundwater pumping have resulted in renewed land subsidence in some areas and initiated new areas of land subsidence in others. **Figure 2** summarizes recent, historical, and the estimated potential for future land subsidence in California.

Severe drought in 2014 resulted in a lack of adequate surface water supplies, forcing many water users to increase groundwater pumping. This has resulted in further decline in groundwater levels and storage in the Central Valley from the 2010 levels shown in **Figure 3**.

Factors in recent groundwater level declines in many basins include:

- Chronic long-term pumping of groundwater in excess of the **safe yield** of the groundwater basin. Population growth, expansion of agricultural practices, allocation of water to environmental resources and restrictions to protect threatened species all have contributed to either increased water demand or decreased availability of surface water supplies in California. In response, many water users pump groundwater to offset the reduction in surface water supply.
- Short-term increase in groundwater pumping in drought years. Drought conditions in the last three years have exacerbated the groundwater conditions in many basins as more people use groundwater to meet their needs.
- Changes in irrigated land use. During the last two decades, more agricultural lands have been converted from annual crops to permanent crops, such as vine, nuts, and fruit trees, resulting in water demand hardening. Permanent crops require irrigation during the drought, while in the past many acres of annual crops were left idle through drought years.
- Climate change, resulting in reduced snowpack, will exacerbate the water supply and demand imbalance.



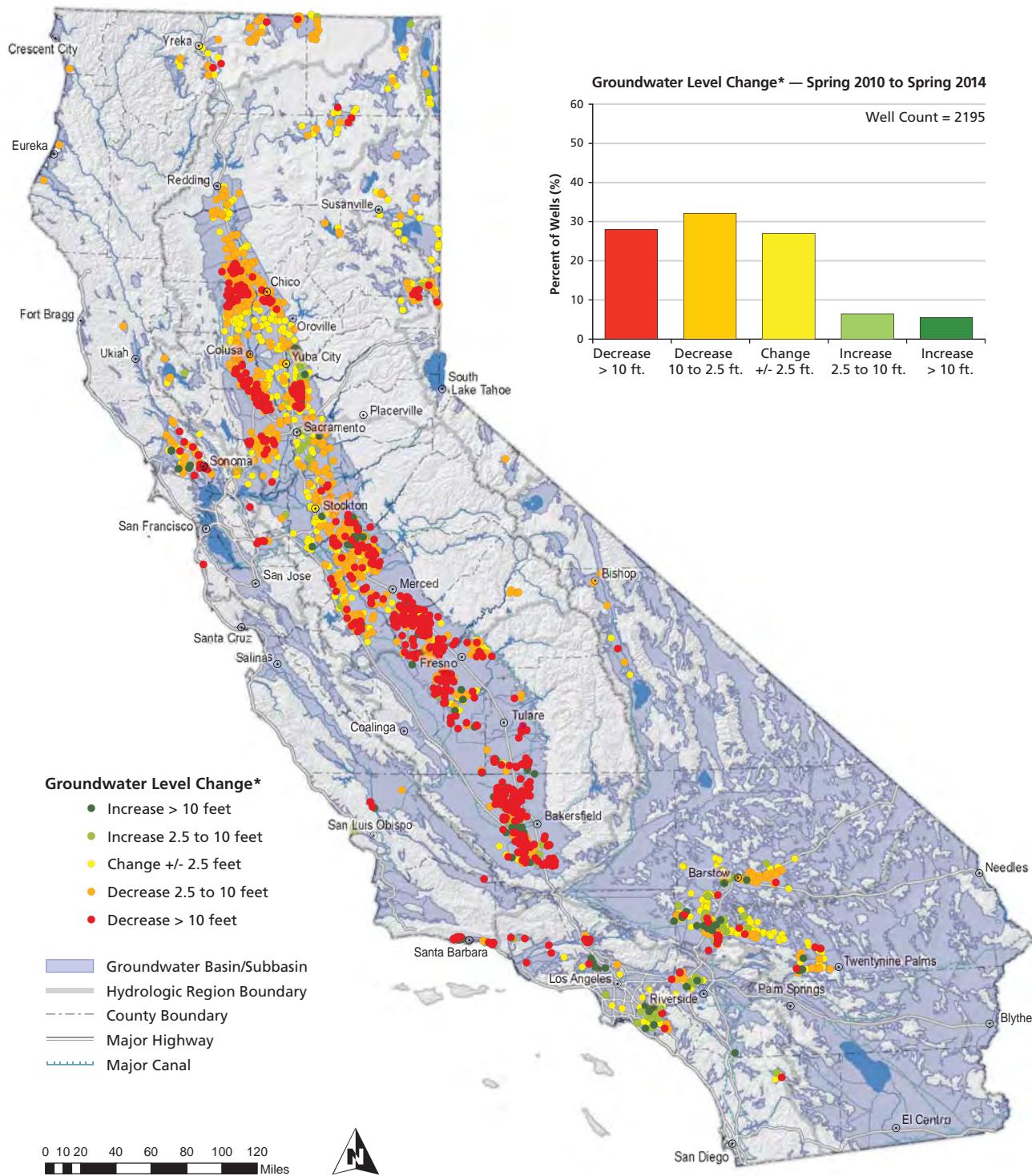
**Public Update for Drought Response:
Groundwater Basins with Potential
Water Shortages, Gaps in Groundwater
Monitoring, Monitoring of Land
Subsidence, and Agricultural Land
Fallowing**

Key Definition

Safe Yield

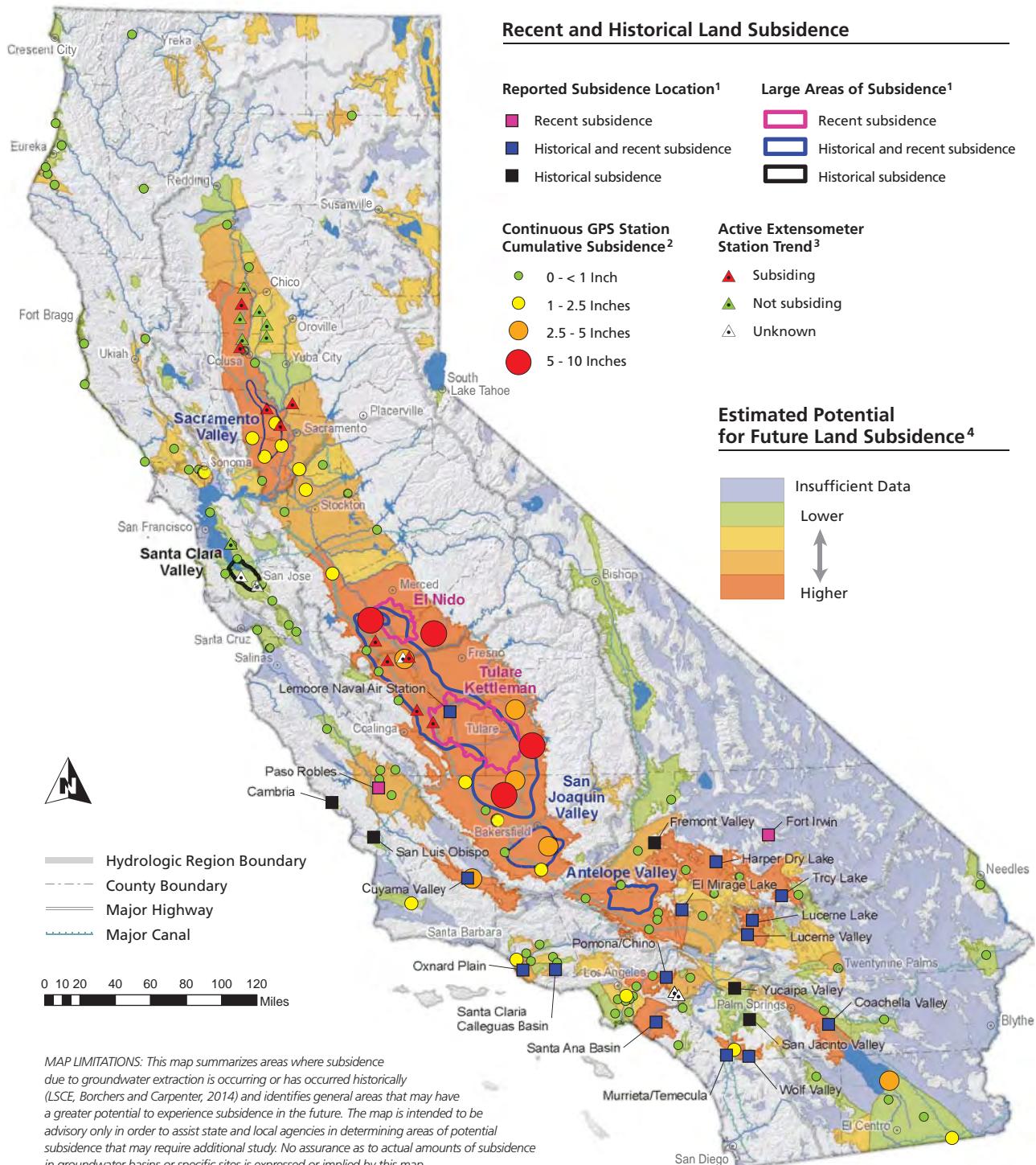
The maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect.

Groundwater Sustainability Program DRAFT Strategic Plan



*Groundwater level change determined from water level measurements in wells. Map and chart based on available data from the DWR Water Data Library as of 11/08/2014. Data subject to change without notice.

Figure 1. Change in Groundwater Levels Spring 2010 to Spring 2014

¹ Land subsidence data modified from LSCE, Borchers and Carpenter, 2014. ² Continuous GPS data from UNAVCO.org.³ Extensometer data from DWR (<http://www.water.ca.gov/waterdatalibrary>) and LSCE, Borchers and Carpenter, 2014⁴ For more information on how the estimated potential for land subsidence was calculated see:http://www.water.ca.gov/groundwater/docs/Summary_of_Recent_Historical_Potential_Subsidence_in_CA_Final_with_Appendix.pdf

Data current as of May 2014.

Figure 2. Summary of Recent, Historical, and Estimated Potential for Land Subsidence

Groundwater Sustainability Program DRAFT Strategic Plan

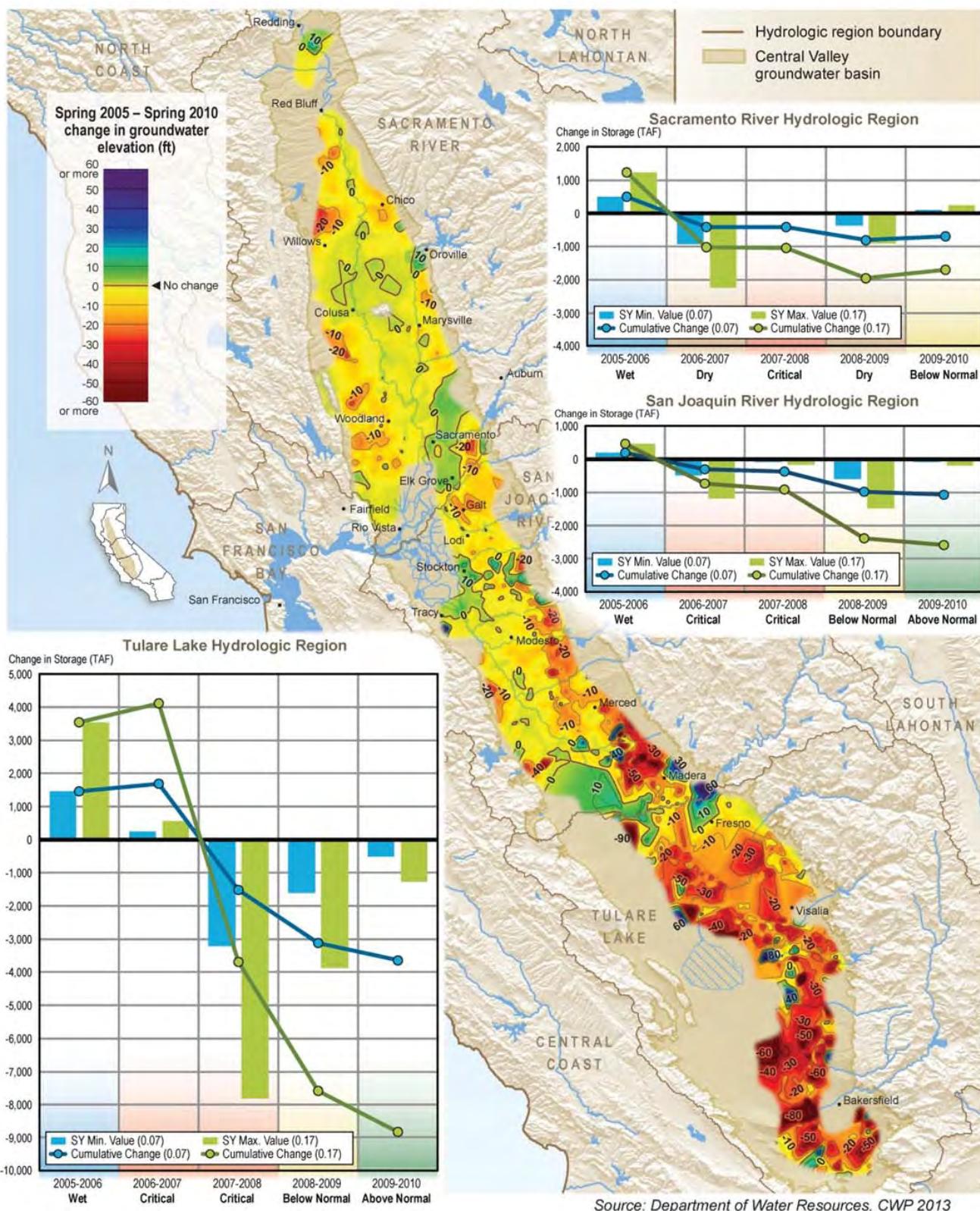


Figure 3. Change in Groundwater Storage in the Central Valley, Spring 2005–Spring 2010

Groundwater Basins

The SGMA addresses alluvial basins identified by DWR's *Bulletin 118*, with specific required actions for those basins that have been categorized as high or medium priority by the California Statewide Groundwater Elevation Monitoring (CASGEM) Program (described below). Groundwater within fractured rock is not addressed by the SGMA. In addition, low and very low priority basins are not subject to the requirements outlined in the SGMA, but local managers are encouraged to manage sustainably and can form Groundwater Sustainability Agencies and develop Groundwater Sustainability Plans.

As part of California's 2009 Comprehensive Water Package legislation (SBx7-6), DWR implemented the CASGEM Program. The SBx7-6 Groundwater Monitoring legislation added Part 2.11 to Division 6 of the California Water Code (§10920 et seq.), which established provisions and requirements for local agencies to develop and conduct groundwater level monitoring programs. The legislation required DWR to identify the extent of groundwater elevation monitoring within each of the alluvial groundwater basins defined in *Bulletin 118-2003*, and to prioritize those basins to help identify, evaluate, and determine the need for additional groundwater level monitoring. The legislation directed DWR to consider, to the extent available, all of the data components listed below as the basis for prioritizing the basins:

1. Population overlying the basin
2. Rate of current and projected growth of the population overlying the basin
3. Number of public supply wells that draw from the basin
4. Total number of wells that draw from the basin
5. Irrigated acreage overlying the basin
6. The degree to which persons overlying the basin rely on groundwater as their primary source of water
7. Any documented impacts on the groundwater within the basin, including **overdraft**, subsidence, saline intrusion, and other water quality degradation
8. Any other information determined to be relevant by DWR.

DWR evaluated California's 515 groundwater basins identified in *Bulletin 118-2003* and categorized them into four priorities:

- High Priority
- Medium Priority
- Low Priority
- Very Low Priority

The CASGEM basin prioritization identified 43 groundwater basins as High Priority, 84 basins as Medium Priority, 27 basins as Low Priority, and the remaining 361 groundwater basins or subbasins as Very Low Priority. The 127 groundwater basins designated as High or Medium Priority include 96 percent of the annual groundwater use and 88 percent of the 2010 population overlying the groundwater basin area. DWR recently determined that the basin prioritization completed in June 2014 for the CASGEM program and shown in **Figure 4** is the initial prioritization required by the SGMA.

Key Definition

Groundwater Basins

DWR's *Bulletin 118* identifies 515 groundwater basins in California. The Act recognized these basins as the initial boundaries for groundwater management and permits revision of basin boundaries at the request of a local agency.

Key Definition

Overdraft

The condition of a groundwater basin where the amount of water withdrawn exceeds the amount of water replenishing the basin over a period of time.

Groundwater Sustainability Program DRAFT Strategic Plan

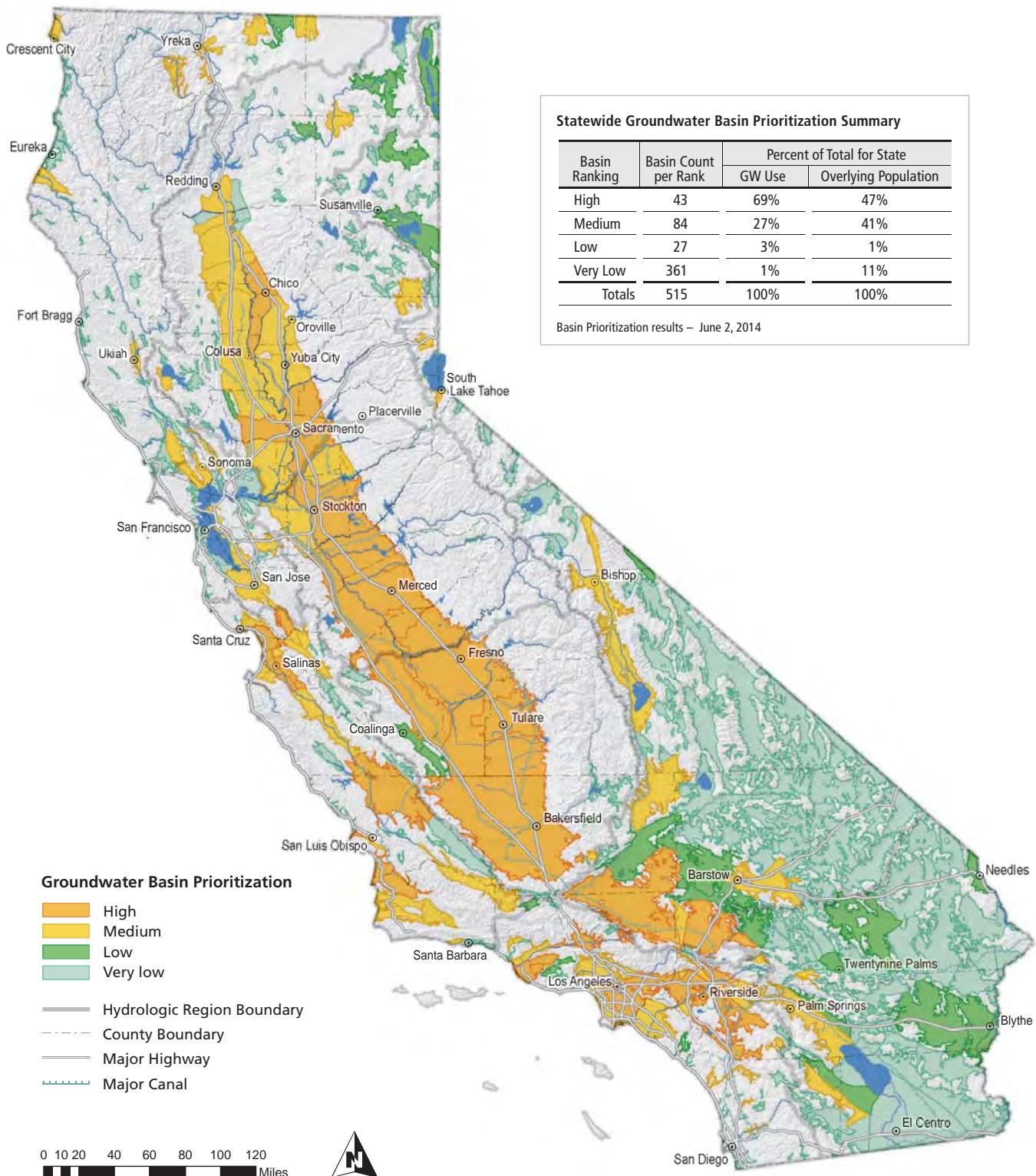


Figure 4. CASGEM Groundwater Basin Prioritization

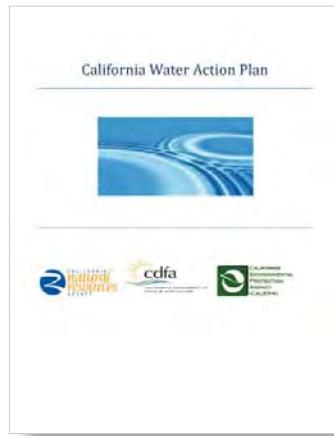
Legislation and Other Drivers of Policy

In January 2014, the Governor's Office released the ***California Water Action Plan*** (CWAP). The CWAP formulated actions that focus on sustainable water resource management for California's people, environment, industry, and agriculture, with the overarching goals to improve reliability, restore key ecosystem functions, and establish resilient resources that can be relied upon for future generations. Ten key actions identified in the CWAP:

1. Make conservation a California way of life
2. Increase regional self-reliance and integrated water management across all levels of government
3. Achieve the co-equal goals for the Delta
4. Protect and restore important ecosystems
5. Manage and prepare for dry periods
6. Expand water storage capacity and ***improve groundwater management***
7. Provide safe water for all communities
8. Increase flood protection
9. Increase operational and regulatory efficiency
10. Identify sustainable and integrated financing opportunities

The CWAP acknowledges that there is broad agreement that the State's water management system is currently unable to satisfactorily meet all ecological and human needs, is too vulnerable to wet and dry climate cycles and natural disasters, and is inadequate to handle the additional pressures of future population growth and climate change. Water sustainability solutions are complex and expensive, and require the cooperation and ongoing commitment of all Californians working together. To be sustainable, solutions must consider the need to provide for public health and safety (e.g., safe drinking water, clean rivers and beaches, flood protection), to protect the environment, and to support a stable California economy.

CWAP recognizes the importance of increased water supply reliability, improved restoration of important species and habitat, and the develop-



An excerpt from the California Water Action Plan about the need for better groundwater management:

"The bottom line is that we need to expand our State's storage capacity, whether surface or groundwater, whether big or small. Today, we need more storage to deal with the effects of drought and climate change on water supplies for both human and ecosystem needs.... Moreover, we must better manage our groundwater basins to reverse alarming declines in groundwater levels. Continued declines in groundwater levels could lead to irreversible land subsidence, poor water quality, reduced surface flows, ecosystem impacts, and the permanent loss of capacity to store water as groundwater."

CWAP Action 6: Expand water storage capacity and improve groundwater management

- Provide Essential Data to Enable Sustainable Groundwater Management
- Support Funding Partnerships for Storage Projects
- Update Bulletin 118, California's Groundwater Plan
- Improve Sustainable Groundwater Management
- Support Distributed Groundwater Storage
- Increase Statewide Groundwater Recharge
- Accelerate Clean-up of Contaminated Groundwater and Prevent Future Contamination

Key Definition
<p>Water Budget <i>"Water budget" means an accounting of the total groundwater and surface water entering and leaving a basin including the changes in the amount of water stored. {Water Code § 10721 (x)}</i></p>

ment of a more resilient and sustainably managed water resources system. The CWAP also outlines the importance of groundwater in achieving water management sustainability, a linkage between surface water and groundwater, and increasing the State's groundwater and surface water storage capacity. Achieving groundwater sustainability will be dependent on implementing sustainable and balanced **water budgets** throughout California, and addressing most of the key actions identified in the CWAP.

Building up to the Sustainable Groundwater Management Act

There have been a number of previous legislative and administrative efforts that have laid the groundwork for development of the SGMA, and several of these are likely to be useful tools as implementation of the SGMA goes forward. These efforts include:

Assembly Bill 3030 (AB 3030)

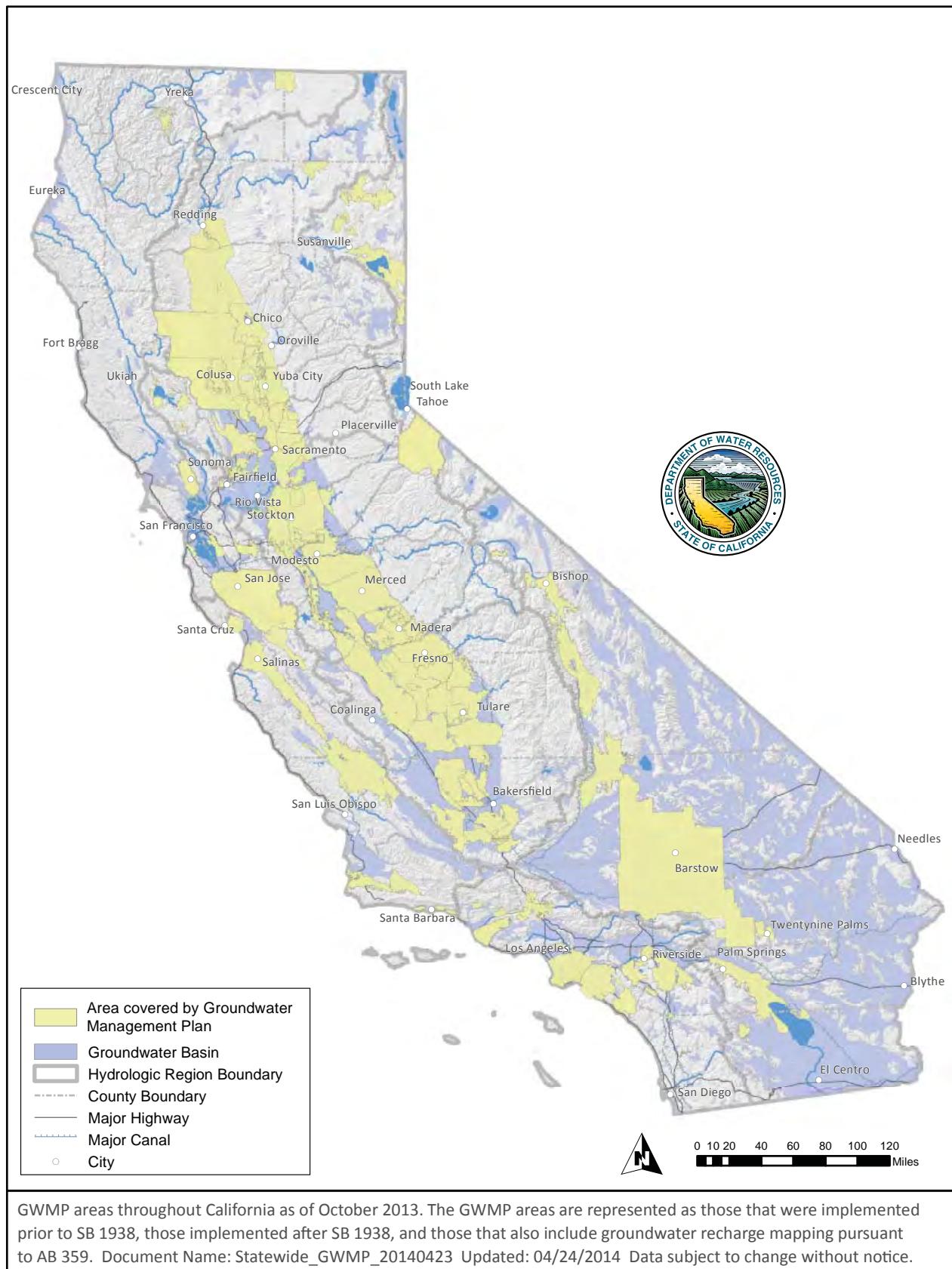
The passage of AB 3030 in 1992 encouraged local agencies to prepare and adopt plans for managing their local groundwater resources, whether or not their groundwater basin exhibited overdraft conditions. This legislation was significant in that it greatly increased the number of local agencies authorized to develop a groundwater management plan and set forth a common framework for management by local agencies throughout California. AB 3030 provides a systematic procedure to develop a groundwater management plan by local agencies overlying the groundwater basins defined by *Bulletin 118-75* and updates. Upon adoption of a plan, these agencies could possess the same authority as a water replenishment district to "fix and collect fees and assessments for groundwater management" (Water Code § 10754). However, the authority to fix and collect these fees and assessments is contingent on receiving a majority of votes in favor of the proposal in a local election (Water Code § 10754.3).

Senate Bill 1938 (SB 1938)

In 2002, the Legislature passed SB 1938, which expanded groundwater management plan requirements related to groundwater levels, groundwater quality, inelastic land subsidence, and surface water-groundwater interaction, and required local agencies to develop and adopt plans so groundwater projects can be eligible for receiving public funds. The law requires any public agency seeking State funds administered through DWR for the construction of groundwater projects or groundwater quality projects to prepare and implement a groundwater management plan with certain specified components. New requirements included establishing basin management objectives, preparing a plan to involve other local agencies in a cooperative planning effort, and adopting monitoring protocols that promote efficient and effective groundwater management. **Figure 5** shows basins in California covered by some form of groundwater management plan.

Assembly Bill 359 (AB 359)

AB 359, introduced in 2011, made changes to the California Water Code that, among other things, requires local agencies to provide a copy of their groundwater management plans to DWR and requires DWR to provide public access to those plans. The bill

**Figure 5. Location of Groundwater Management Plans in California**

requires local agencies to provide a map of recharge areas to local planning agencies and notify DWR and other interested persons when a map is submitted. Prior to the passage of AB 359, which went into effect on January 1, 2013, local groundwater management planning agencies were not required to submit their groundwater management plans to DWR.

Local Groundwater Ordinances

Another method of managing groundwater is through ordinances adopted by local governments such as cities or counties. DWR's *Bulletin 118-2003* indicated that 27 counties adopted groundwater management ordinances related to the following activities: forming advisory committees; establishing basin management objectives; and controlling the export of groundwater by requiring permits for transferring groundwater out of the basin or county. The authority of counties to regulate groundwater has been challenged. An important event in 1995 was the California Supreme Court declining to review an appeal of a lower court decision, *Baldwin v. County of Tehama* (1994), that holds that State law does not occupy the field of groundwater management and does not prevent cities and counties from adopting ordinances to manage groundwater under their police powers. However, the precise nature and extent of the police power of cities and counties to regulate groundwater is uncertain. *Bulletin 118-2003* provided a model groundwater ordinance with recommended components of a groundwater management plan to guide local agencies as they develop groundwater management ordinances.

Adjudication

In some groundwater basins, as the demand for groundwater exceeded the safe yield and caused overdraft, landowners and other parties turned to the courts to determine how much groundwater can rightfully be extracted by each user. The courts study available information on groundwater use and other factors to arrive at a distribution of the groundwater that is available each year, usually based on the California law of overlying use and appropriation. This court-directed process can be lengthy and costly. Many of these cases have been resolved with a court-approved negotiated settlement, called a stipulated judgment. The court decisions guarantee to each party a proportionate share of the groundwater that is available each year. The intense technical focus on the groundwater yield and restrictions on groundwater extraction for all parties make adjudications one of the strongest forms of groundwater management in California.

The majority of adjudicated groundwater basins are located in Southern California and in the South Coast region (See **Figure 6**). For each adjudicated groundwater basin, the court usually appoints a water-master to oversee the court judgment. The majority of groundwater basin adjudications in California impose extraction limits and/or initiate management actions in the event of declining groundwater levels or water quality degradation. The primary objective of adjudication is to provide a proportionate share of available groundwater to users within the basin so it can be extracted without having adverse effects on existing groundwater supplies. Environmental concerns were not considered when most of the judgments were written.

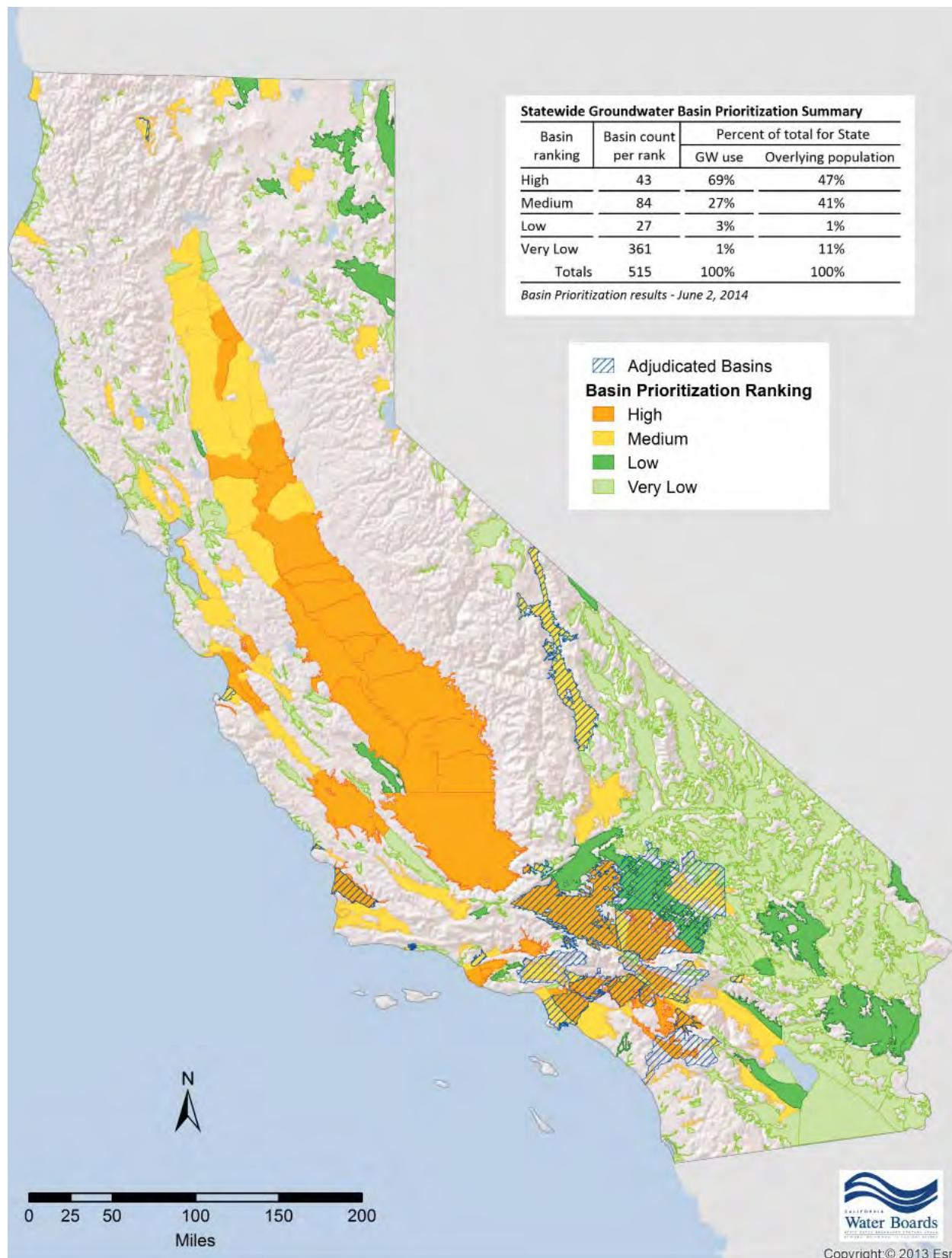


Figure 6. Adjudicated Groundwater Basins in California

Key Definition**Sustainable Groundwater Management**

The management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.

Key Definition**Undesirable Results**

Chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence and depletions of interconnected surface waters.

Key Definition**Critical Conditions of Overdraft**

A basin is subject to critical conditions of overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts (DWR Bulletin 118-80).

Key Definition**Groundwater Sustainability Agency**

"Groundwater sustainability agency" means one or more local agencies that implement the provisions of this part. For purposes of imposing fees pursuant to Chapter 8 (commencing with Section 10730) or taking action to enforce a groundwater sustainability plan, "groundwater sustainability agency" also means each local agency comprising the groundwater sustainability agency if the plan authorizes separate agency action.*

*Local agency is a local public agency that has water supply, water management, or land use responsibilities within a groundwater basin.

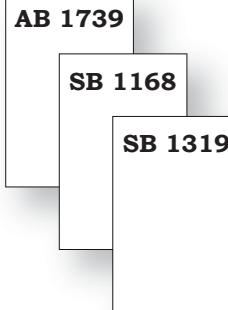
Sustainable Groundwater Management Act

On September 16, 2014, the Governor signed into law a three-bill legislative package: AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley). These laws are collectively known as the Sustainable Groundwater Management Act. This new legislation defines **sustainable groundwater management** as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results" {Water Code § 10721(u)}.

"**Undesirable results**" are defined in the legislation as any of the following effects caused by groundwater conditions occurring throughout the basin {Water Code § 10721(w) (1-6)}:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply
- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality
- Significant and unreasonable land subsidence
- Surface water depletions that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

The legislation requires High and Medium Priority basins under the CASGEM program subject to **critical conditions of overdraft** to be managed under a groundwater sustainability plan by January 31, 2020 {Water Code § 10720.7(a) (1)}, and requires all other groundwater basins designated as High or Medium Priority basins to be managed under a groundwater sustainability plan by January 31, 2022 {Water Code § 10720.7 (a) (2)}. The legislation provides for financial and enforcement tools to carry out effective local sustainable groundwater management through formation of **Groundwater Sustainability Agencies (GSAs)**. The SGMA does not require adjudicated basins to develop GSPs, but they are required to report their water use. Additional work is underway to examine methods for expediting the adjudication process.



The Governor's signing message states,

"A central feature of these bills is the recognition that groundwater management in California is best accomplished locally."

The legislation significantly increases the role and responsibilities of DWR to support sustainable groundwater management. The legislation directs DWR to:

- Complete regulations for changing basin boundaries and establish content for and review of **Groundwater Sustainability Plans (GSPs)**
- Update basin priorities
- Conduct groundwater assessments into the next decade.

Together these new responsibilities require DWR to manage its existing resources and expand its expertise to meet the challenges and opportunities ahead.

The new legislation also expands the role of DWR to support local implementation of sustainable groundwater management, and allows for State intervention (SWRCB) at discrete points throughout the process if local agencies are not willing or able to manage groundwater sustainably.

Figure 7 (page 22) summarizes the major timelines and milestones on California's path to sustainable groundwater management.

Improving California groundwater management practices will require that local and regional agencies have the incentives, tools, authority, and guidance to develop, implement, and enforce sustainable groundwater management practices to provide the benefits of water supply reliability and resiliency, public health and safety, ecosystem services, and a stable California economy.

Key Definition

Groundwater Sustainability Plan

"Groundwater Sustainability Plan" is a plan of a Groundwater Sustainability Agency, proposed or adopted.



The severe drought in 2014 resulted in a lack of adequate surface water supply, which forced many water users to increase groundwater pumping. Above, Lake Oroville and the Enterprise Bridge looking from the South Fork on September 5, 2014.

Key Intended Outcomes and Benefits of the Sustainable Groundwater Management Act

Key intended outcomes of the SGMA include:

- Advancement in understanding and knowledge of the State's groundwater basins and their issues and challenges
- Establishment of effective local governance to protect and manage groundwater basins
- Management of regional water resources for regional self-sufficiency and drought resilience
- Sustainable management of groundwater basins through the actions of local governmental agencies, utilizing State intervention only when necessary
- All groundwater alluvial basins in California are protected and operated to maintain adequate quality to support the beneficial uses for the resource.
- Surface water and groundwater are managed as "a Single Resource" to sustain their interconnectivity, provide dry season base flow to interconnected streams, and support and promote long-term aquatic ecosystem health and vitality.
- A statewide framework for local groundwater management planning, including development of sustainable groundwater management best management practices and plans
- Development of comprehensive water budgets, groundwater models, and engineering tools for effective management of groundwater basins
- Improved coordination between land use and groundwater planning
- Enforcement actions as needed by the SWRCB to achieve region-by-region sustainable groundwater management in accordance with the 2014 legislation.

To assist in attaining the above outcomes, DWR will provide local agencies with the technical and financial assistance necessary to sustainably manage their water resources.

The benefits of these outcomes include:

- A reliable, safe and sustainable water supply to protect communities, farms, and the environment, and support a stable and growing economy
- Elimination of long-term groundwater overdraft, an increase in groundwater storage, avoidance or minimization of subsidence, enhancement of water flows in stream systems, and prevention of future groundwater quality degradation.

Success Factors

The SGMA provides a framework for best management of groundwater resources. There will be many challenges to overcome in implementing the SGMA, but addressing these will foster successful sustainable groundwater management. It is critical to identify and understand those challenges as DWR works with State, federal, and local agencies, tribes, and other stakeholders to achieve groundwater sustainability goals. Success will depend upon the following factors:

- **Balanced water supply and demand:** Current available surface water and safe yield of the groundwater basins must be balanced to support the current and future land use in the basin.
- **Coordinated water management within a basin:** Moving from disjointed basin management with sometimes conflicting interests and inconsistent objectives to a more coordinated structure will enable sustainable water management within basins.
- **Regulatory oversight and enforcement:** Managing groundwater extraction, establishing a fair allocation of groundwater resources, coordinating land use changes versus resource management, and controlling future groundwater development.
- **Regulation and criteria development:** DWR has the opportunity to promote local/regional groundwater management flexibility while ensuring that the ultimate goal of statewide sustainable groundwater management is achieved by developing appropriate and sustainable criteria and regulations.
- **Basin stabilization:** Full recovery of the groundwater system may be possible in some basins. Critical issues that will need to be addressed include land subsidence and salts and nutrient concentrations. By addressing these impacts and challenges, basin managers can achieve significant improvements.
- **Improved data management:** Accurate and abundant data is necessary to assist basins in adequately developing and implementing plans to achieve the goals of the SGMA. This could include a more strategic and focused system of groundwater monitoring networks, extraction reporting, model and tool development, and a standardized process to determine water budgets for the basin.
- **Funding and resources:** Immediate, reliable, and long-term State and local funding will enable and support the achievement of the goals for sustainable groundwater management. Certain rural and disadvantaged communities will benefit from adequate funding to achieve their goals.
- **Communication and outreach:** Fostering robust communication amongst multiple entities with differing roles and responsibilities and stakeholders with differing and sometimes conflicting interests will further chances for success. Flexibility and cooperation will support consensus building amongst the various interested groups.
- **Uncertainties:** Addressing uncertainties directly will improve the likelihood for success, including those related to data, modeling and the long term effects of climate change. However, we must acknowledge we will not completely eliminate uncertainties and will therefore need to allow for adaptive management of systems as system knowledge improves.

Groundwater Sustainability Goals, Objectives, and Actions

The goals and objectives of this *Strategic Plan* are specific to DWR's role in achieving the overall goal of sustainable groundwater management, which means assisting local agencies to achieve balanced groundwater basin conditions and avoid adverse impacts such as land subsidence and long-term overdraft of the basin. Two key principles of the groundwater legislation guiding DWR include the following:

Groundwater is best managed at the local or regional level, and local agencies should have the tools they need to sustainably manage their resources. Some local and regional agencies do not currently have the necessary tools and resources to be successful. The legislation ensures that local and regional agencies will have the resources they need to sustainably manage groundwater, including the necessary authority, technical information, and financial resources.

When local or regional agencies cannot or will not manage their groundwater sustainably, the State will intervene until the local agencies develop and implement sustainable groundwater management plans. This limited State intervention would be temporary—until an adequate local program is established—to ensure the protection of the groundwater basin and its users from overdraft, subsidence, and other problems stemming from unsustainable uses of groundwater resources.

DWR's Groundwater Sustainability Goal

DWR will seek to assist local and regional GSAs to manage groundwater sustainably for long-term reliability, for economic, social, and environmental benefits, for current and future beneficial uses, and as an integral part of broader sustainable water management throughout California.

To achieve this goal, DWR has developed the following objectives. These objectives define DWR's approach to organizing and executing the work necessary for successful program implementation.

Objective 1: Develop a Framework for Sustainable Groundwater Management

Providing a structure which will enable GSA's to achieve success will require many factors be addressed. This objective will address basin boundaries and prioritization, GSP formulation and content, BMP's, and water budgeting. In order to address directives from the Sustainable Groundwater Management Act, DWR will develop regulations to inform and support regional efforts.

Objective 2: Provide Statewide Technical Assistance to Groundwater Sustainability Agencies

Providing technical assistance to GSA's will be crucial in enabling their success in managing their groundwater basins. GSA's will depend on easily accessible data and will be able to access this information via an online information system. Well standards and water conservation assistance will also be addressed.

Objective 3: Provide Statewide Planning Assistance to Support Groundwater Sustainability

DWR's *Bulletin-118* provides a systematic evaluation of groundwater basins in California, and will be updated to reflect critical information, including basin boundaries, groundwater quality data, yield data, and water budgets. This information will support and inform statewide water planning and assessment, including water budgeting, via DWR's *California Water Plan (Bulletin-160)*. DWR will also provide information to support local groundwater recharge projects.

Objective 4: Assist State and GSA Alignment and Provide Financial Assistance

Strong alignment and collaboration between and amongst local, regional, and State agencies will be critical to achieving sustainable groundwater management statewide. DWR will provide venues for communication and engagement, educational materials, and facilitation services, as well as financial assistance to help ensure success.

Objective 5: Provide Interregional Assistance

Achieving this objective will require DWR to support regional water managers with information on water reliability, storage and conveyance opportunities, water available for replenishment, and updated surface-groundwater interactions.

These objectives will be addressed by way of a suite of actions undertaken by DWR over the coming years to promote and support sustainable water management. These corresponding actions are defined in the following section.

Groundwater Sustainability Program DRAFT Strategic Plan

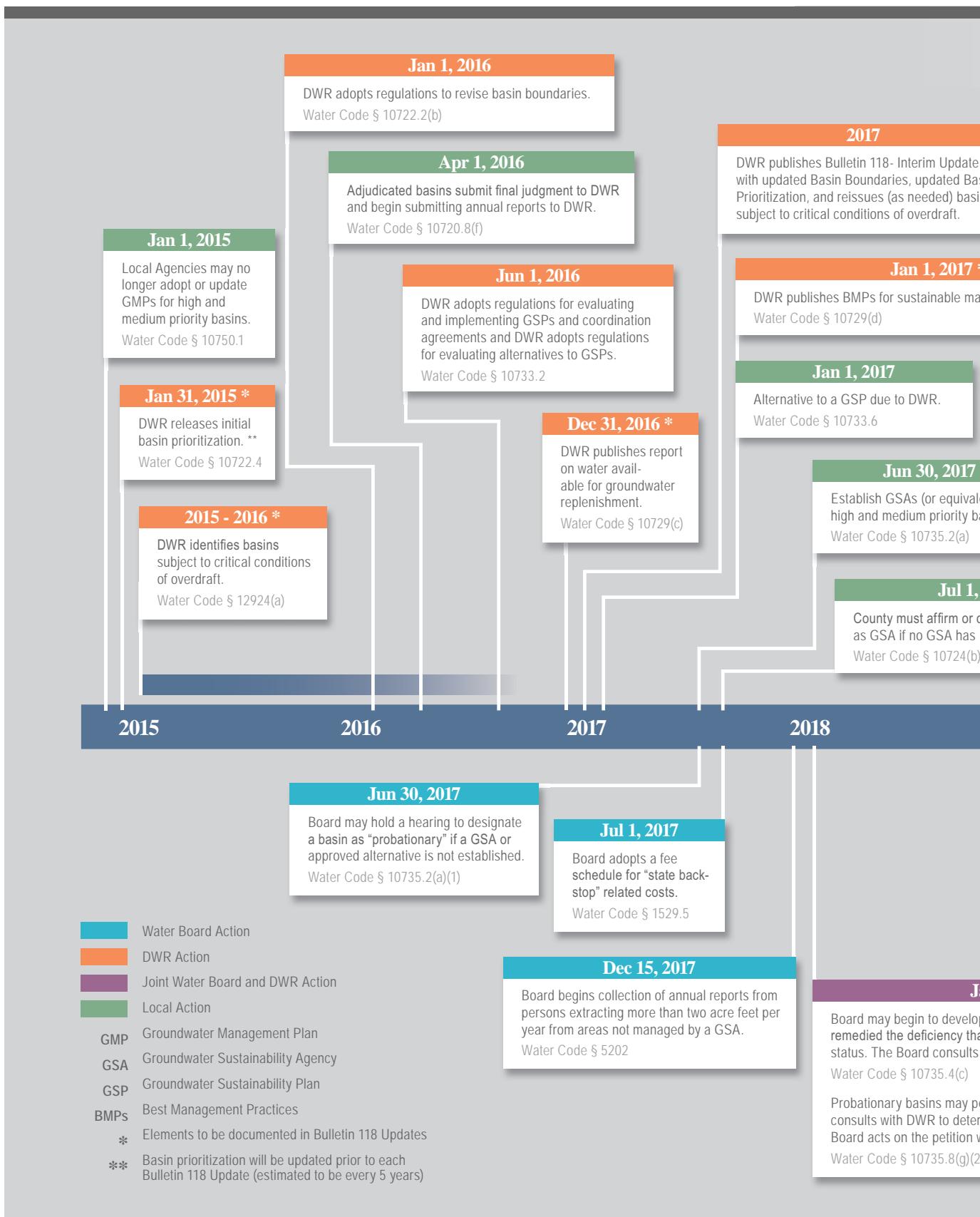


Figure 7. Major Timeline of Key SGMA Milestones

Key SGMA Milestones

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ns
management of groundwater.

ent) for all
asins.

2017

disaffirm responsibility
been established.

2019

2020

2021

2022

2025

Jan 31, 2020

Board may hold a hearing to designate a critically-overdrafted basin as "probationary" if DWR, in consultation with the Board, determines that the GSP is inadequate or will not achieve sustainability. Water Code § 10735.2(a)(3)

Jan 2021

Board may begin developing interim plans for critically overdrafted "probationary basins" one year after the probationary designation, if the Board, in consultation with the DWR, determines that a local agency has not remedied the deficiency that resulted in the probationary status. Water Code § 10735.6(b)

Jan 31, 2022

Board may hold a hearing to designate a high and medium priority basin as "probationary" if DWR, in consultation with the Board, determines that the GSP is inadequate or will not achieve sustainability. Water Code § 10735.2(a)(5)(A)

Jan 31, 2025

Board may designate a basin as "probationary" if DWR, in consultation with the Board, determines that the GSP is inadequate or not being implemented correctly, and the Board determines that the basin is in a condition where groundwater extractions result in significant depletion of interconnected surface waters. Water Code § 10735.2(a)(5)(B)

Jan 1, 2018

Develop interim plans if a local agency has not resulted in the "probationary basin" with DWR.

Petition for un-designation. The Board may determine if the petition is complete. The within 90 days of submittal.

Jan 31, 2020

DWR publishes Bulletin 118- Comprehensive Update. Water Code § 12924

Jan 31, 2020

High and medium priority basins identified subject to critical conditions of overdraft must be managed under a GSP. Water Code § 10720.7(a)(1)

On April 1 following GSP adoption and annually thereafter, GSAs provide report on progress towards sustainability to DWR. Water Code § 10728

Jan 31, 2022

All other high and medium priority basins must be managed under a GSP. Water Code § 10720.7(a)(2)

On April 1 following GSP adoption and annually thereafter, GSAs provide report on progress towards sustainability to DWR. Water Code § 10728

December 2014

DWR Objectives and Corresponding Actions

DWR's groundwater sustainability objectives and their associated actions are formulated to assist local agencies and GSAs to prepare and implement plans to achieve sustainable groundwater management in their basins. These objectives and their related actions were developed to achieve the key intended outcomes.

Objective 1: Develop a Framework for Sustainable Groundwater Management

Action 1.1 Develop Comprehensive Water Budgets for the Entire Basin

DWR will provide guidance and criteria for preparing water budgets and will review, verify, and provide comments on the water budgets prepared by the GSAs. DWR will work with local agencies to provide technical expertise to quantify comprehensive water budgets for the entire basin, including connections to upper watersheds and adjacent basins, and support making the information available to the agencies and the public through a web-based information management system.

Jan 31, 2015 *

DWR releases initial basin prioritization. **
Water Code § 10722.4

Action 1.2 Update Basin Prioritizations

DWR will periodically revise and publish basin prioritization through updates of *Bulletin 118*. Groundwater basins will be categorized as High, Medium, Low, or Very Low Priority using eight criteria including basin population, irrigated acreage, and degree of reliance on groundwater. The initial basin prioritization already has been determined as that published in June 2014 pursuant to CASGEM. Future basin priority updates will include assessment of groundwater-related impacts to habitat and streamflow.

Jan 1, 2017 *

DWR publishes BMPs for sustainable management of groundwater.
Water Code § 10729(d)

Action 1.3 Develop Best Management Practices

By **January 1, 2017**, DWR will publish best management practices (BMPs) for sustainable groundwater management. These BMPs will provide descriptions of essential elements

to be incorporated into a GSP, including stakeholder coordination, effective and appropriate monitoring systems for determining how well sustainability objectives are being met, essential data collection and management, and public transparency guidance. The BMPs will be incorporated into future *Bulletin 118* updates.

Jan 1, 2016

DWR adopts regulations to revise basin boundaries.
Water Code § 10722.2(b)

Action 1.4 Develop and Adopt Regulations for Basin Boundary Revisions

By **January 1, 2016**, DWR will adopt regulations, which will include the methodology and criteria to be used in evaluating and approving basin boundary adjustments. DWR will then evaluate and approve local agency requests for basin boundary changes where supporting documents meet the specified criteria. Boundary changes will be published in *Bulletin 118: California's Groundwater*.

Action 1.5 Develop and Adopt Regulations for Groundwater Sustainability Plan Assessment and GSP Alternatives

By **June 1, 2016**, DWR will develop and adopt regulations for evaluating the adequacy of GSPs, the implementation of GSPs, and the development of coordination agreements.

These regulations will identify necessary plan components and describe how DWR will determine whether sustainable management objectives and actions developed by GSAs meet the intent of the SGMA. The regulations also will identify required necessary information for coordination with adjacent GSAs.

By **June 1, 2016**, DWR also will adopt regulations for evaluating alternatives to GSPs. Local agencies that wish to manage the basin under an alternative to GSP will need to submit their alternative to DWR by January 1, 2017. Basins managed under adjudication are required to submit their final judgment to DWR by April 1, 2016, and begin submitting their annual reports to DWR.

Jun 1, 2016

DWR adopts regulations for evaluating and implementing GSPs and coordination agreements and DWR adopts regulations for evaluating alternatives to GSPs.

Water Code § 10733.2

Action 1.6 Identify Basins Subject to Critical Conditions of Overdraft

By **2016**, DWR will develop and apply criteria to identify basins subject to critical conditions of overdraft.

2015 - 2016 *

DWR identifies basins subject to critical conditions of overdraft.

Water Code § 12924(a)

Action 1.7 Evaluate Adequacy of Groundwater Sustainability Plans

Within two years of receiving a GSP, DWR will evaluate the GSP and provide the GSA with an assessment of the plan– including recommended corrective action to address plan deficiencies or adequacy to achieve sustainability.

Objective 2: Provide Statewide Technical Assistance to Groundwater Sustainability Agencies

Action 2.1. Develop a Groundwater Management Information System

DWR will develop a web-based groundwater management information system to collect, organize, store, and manage the exchange of information between DWR and GSAs.

Action 2.2. Collect Groundwater Quality Data

DWR will continue to collect and make groundwater quality data available.

Action 2.3. Collect Groundwater Elevation Data

DWR will continue to collect, assess, and make groundwater level data available and provide assistance to improve/expand statewide groundwater elevation monitoring for high and medium priority basins.

Action 2.4 Collect Subsidence Data

DWR will provide support to advance the collection and reporting of land subsidence data and opportunities to improve subsidence monitoring through remote sensing techniques.

Action 2.5 Establish Well Standards

DWR will update the California Well Standards and submit them to the SWRCB for adoption into the Model Well Ordinance. DWR will provide training to local enforcing agencies in administering the updated Standards.

Action 2.6 Implement the CASGEM Program

DWR will continue to support the CASGEM program and efforts that support local collection, analysis, and reporting of relevant data and information.

Action 2.7 Promote Water Conservation

DWR will provide assistance and water management strategies to groundwater-reliant entities to promote water conservation and protect groundwater resources

Objective 3: Provide Statewide Planning Assistance to Support Groundwater Sustainability**2017**

DWR publishes Bulletin 118- Interim Update with updated Basin Boundaries, updated Basin Prioritization, and reissues (as needed) basins subject to critical conditions of overdraft.

Action 3.1 Update Bulletin 118

By 2017, DWR will complete an interim *Bulletin 118* Update, then by 2020, and every 5 years thereafter DWR will update Bulletin 118, which will include updated basin boundaries and basin prioritization and identify basins that are subject to critical conditions of overdraft.

Action 3.2 Integrate Groundwater information into Bulletin 160

DWR will incorporate basin budget information from *Bulletin 118* updates into statewide planning analysis developed as part of the Department's *Bulletin 160 California Water Plan* updates, to assess changes in aquifer storage and long-term groundwater sustainability throughout California.

Action 3.3 Local Assistance for Recharge Projects

DWR will support the development, protection, and operation of a statewide network of locally and regionally operated natural and artificial groundwater recharge and managed groundwater storage sites. This will include identifying regulatory barriers and assist in removing those barriers, and providing technical tools and assistance to promote natural and managed groundwater recharge. This action will complement Action 5.1.

Objective 4: Assist State and GSA Alignment and Provide Financial Assistance**Action 4.1. Alignment for management of groundwater programs**

DWR will establish State agency steering committees, policy groups, and technical advisory groups to help strengthen and improve alignment and collaboration with the State and GSAs, and to provide guidance and support to GSAs and other stakeholders. State agency steering committees will ensure collaboration, avoid redundancy, and remain in alignment throughout the implementation process.

Action 4.2 Provide Financial Assistance

DWR will provide funding to help local agencies to develop tools and models, prepare water budgets, and provide technical assistance in helping GSAs prepare their GSPs.

"One hundred million dollars (\$100,000,000) shall be made available for competitive grants for projects that develop and implement groundwater plans and projects"

-Proposition 1

Action 4.3. Provide Education and Communication Assistance

DWR will assist in establishing effective communication pathways between GSAs and stakeholders through the implementation of a public engagement and outreach plan. DWR will provide education materials to stakeholders to assist in the development of groundwater sustainability agencies.

Action 4.4. Provide Facilitation and Engagement Assistance

DWR will provide neutral facilitation services to assist GSA development by assessing local issues, identifying common values and objectives, and establishing a framework for consensus building.

Objective 5: Provide Interregional Assistance**Action 5.1. Assist in the Implementation of Storage and Conveyance Projects**

DWR will provide assistance to local agencies to implement groundwater conjunctive use and help curb groundwater overdraft. This could include development of storage projects, conveyance, inter-regional and systemwide infrastructure improvements for basin water supply reliability and to reduce reliance on groundwater.

Action 5.2. Provide Information on Surface Water Reliability

DWR will provide systemwide water supply availability information including State Water Project and Central Valley Project water supply reliability and delivery information.

Action 5.3. Advance Studies on Surface/Groundwater Interaction

DWR will advance studies, modeling, tools and integrated water management actions that support the understanding and ability to manage water as a single resource. Independent management of surface water and groundwater resources often result in undesirable consequences to the long-term supply of one or both of these resources.

Action 5.4. Provide Information for Water availability for Replenishment

By December 31, 2016, DWR will publish a report providing a statewide estimate of water available for groundwater replenishment. This estimate will provide information to enhance supply, based on hydrology and feasible conveyance improvements. This estimate will be included in updates to *Bulletin 118*.

Dec 31, 2016 *

DWR publishes report on water available for groundwater replenishment.
Water Code § 10729(c)

Phased Implementation

It will take years to achieve the ultimate goal of local sustainable groundwater management at a statewide scale. To achieve the key outcomes, DWR, SWRCB, and other State agencies will work together to implement the many actions listed above, and assist local agencies in achieving groundwater sustainability. **Figure 8** provides an overview of the phased implementation of DWR's groundwater sustainability actions.

Groundwater Sustainability Program DRAFT Strategic Plan

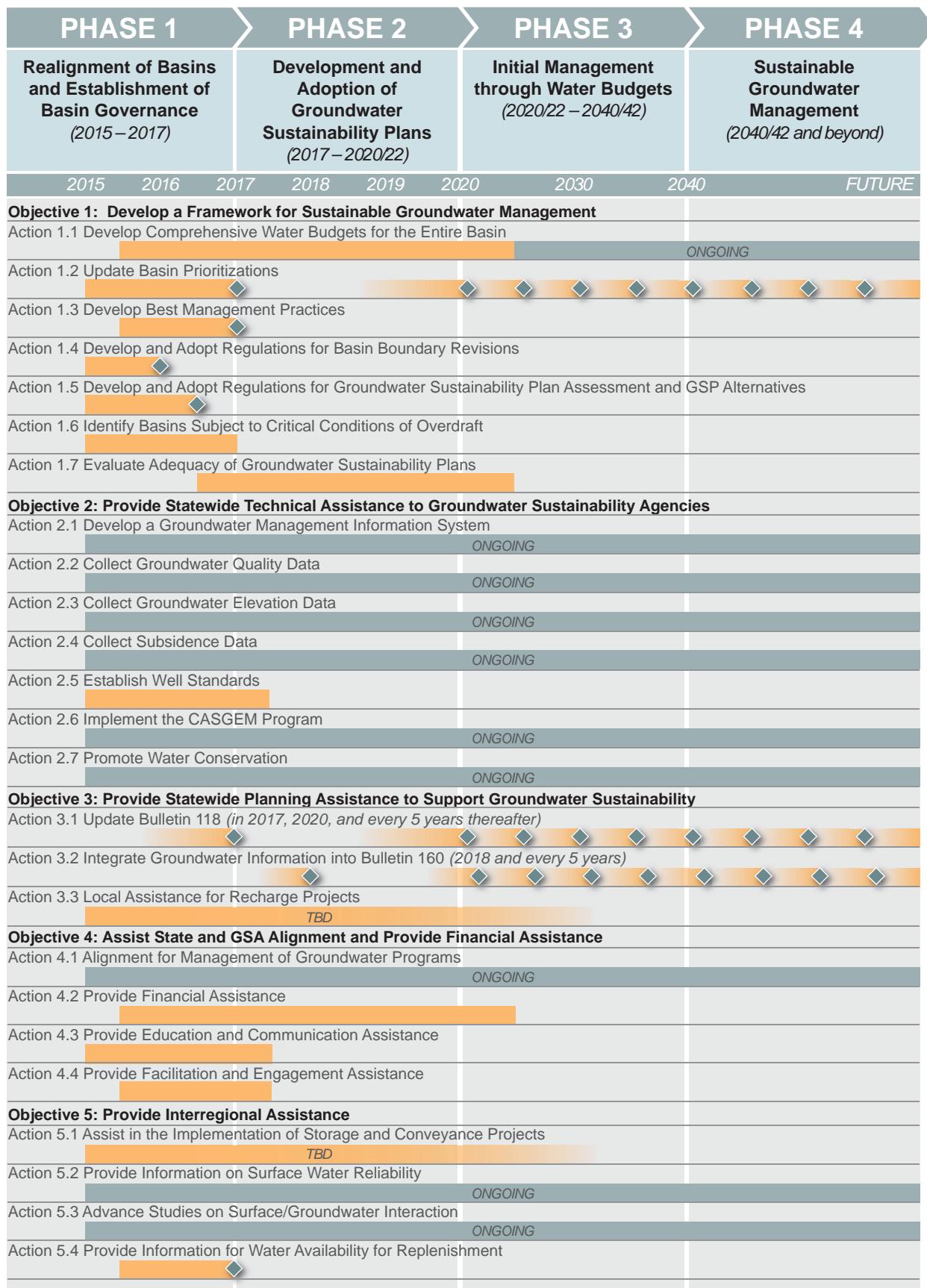


Figure 8. Phased Implementation of DWR Groundwater Sustainability Actions

Communication and Outreach

Governor Brown noted upon signing the SGMA that groundwater is best managed at the local level, and that the State's primary role is to provide guidance and support. The CWAP, SGMA, and provisions of Proposition 1 (Water Bond) direct the State to provide assistance to local agencies. Successful implementation is directly tied to effective communication and outreach, in addition to coordination at all levels of government. The SGMA requires DWR to develop regulations and tools, provide data and information, and provide support to local and regional agencies as they take on central roles in managing their groundwater basins and advancing the CWAP. California water management needs are diverse and implementation of the SGMA necessitates timely, forthright, and consistent communication among all partners and stakeholders.

In addition to communication, proactive outreach to and engagement of partners and stakeholders is essential to achieving sustainable groundwater management at the local and regional level. Local and regional agencies in turn must reach out to keep local citizens, groundwater users, and stakeholders informed. Adaptive, practical, and two-way communication is essential to establishing and maintaining the partnerships needed. This section of the *Strategic Plan* provides an overview of DWR's initial plan for communication, outreach, and coordination with partners. The key audiences for this effort include:

- **State, Federal and Tribal Governments:** Governor's Administration, Legislature and key State and federal agencies, tribes
- **Regional and local governments and agencies:** Water and groundwater management agencies and districts; land use entities such as counties and cities
- **Other stakeholders:** Non-governmental organizations including water and groundwater, environmental, environmental justice, agriculture; universities
- **The public.**

A more comprehensive communication and outreach plan is forthcoming.

Communication

Communication will provide for continuous sharing of information on all aspects of SGMA implementation, including details of DWR activities. Through proactive, regular, and timely communication, DWR seeks to accomplish the following:

- **Engagement:** Seek and maintain collaboration and cooperation with other agencies and stakeholders, and solicit and encourage public participation in SGMA implementation
- **Education:** Educate stakeholders, water users, and citizens on the requirements of the SGMA and water management sustainability objectives, and DWR's role in its implementation, relative to other State agencies
- **Accessibility:** Provide easy access to informative materials, data, reports and DWR's technical experts
- **Accountability:** Measure and report on progress and accomplishments in implementing the SGMA and provide transparency about DWR's implementation activities.

Key Definition

Communication

Ongoing sharing of information on provisions of the SGMA and its implementation.

Groundwater Sustainability Program DRAFT Strategic Plan

Key Messages

The following are some of the key messages that must be commonly understood by all stakeholders:

- Groundwater is best managed at the local or regional level, and strong local/regional governance and strategic planning are essential for success
- The State's role is to provide assistance to enable local and regional agencies to sustainably manage their water resources, and to intervene if necessary until local sustainable groundwater management plans are developed and implemented
- Strong and effective State agency alignment and coordination are required to support local/regional efforts
- Sustainable groundwater management can only be achieved in the context of regional and statewide water balance, accounting for all sources of supply as well as demands
- It will take decades to fully achieve sustainable water management and a phased approach is necessary, with accountability checks to measure progress.

Communication Tools

In collaboration with the State Water Board, DWR will create a suite of information tools and resources. These include a centralized State groundwater website managed by DWR, as well as DWR and State Water Board websites:

- <http://www.groundwater.ca.gov>
- http://www.waterboards.ca.gov/water_issues/programs/gmp/
- <http://www.water.ca.gov/groundwater>

The screenshot shows the homepage of the California Department of Water Resources (DWR) Groundwater website. The header includes the DWR logo and navigation links for CA.gov, Help, Accessibility, Home, Newsroom & Events, Issues, and About Us. The main content area features a large image of a dam and the word "Groundwater". Below the image, there are sections for "Introduction", "The Sustainable Groundwater Management (SGM) Program", "Groundwater Information Center (GIC)", and "California Statewide Groundwater Elevation Monitoring (CA SGEM) Program". Each section contains brief descriptions and links to more information. On the right side, there is a sidebar with links for "GROUNDWATER HOME", "SUSTAINABLE GROUNDWATER MANAGEMENT", "GROUNDWATER INFORMATION CENTER", "GADM", "BULLETIN 118", "Highlights", and social media links for Facebook, Twitter, and YouTube.

DWR's groundwater website includes information related to subject items in this *Strategic Plan* and links to other relevant websites.

DWR's groundwater website includes many informational features related to subject items discussed in this *Strategic Plan* and links to other related websites with technical information. The website will be updated regularly.

The DWR groundwater website will outline various project-specific actions and implementation status. DWR will continue to update and maintain its groundwater website. Technical information, data, and reports on DWR's websites will complement the centralized groundwater website and provide key information specific to SGMA implementation. DWR and SWRCB encourage local and regional agencies to develop their own communications programs to keep water users, stakeholders, and the public informed on implementation of the SGMA.

Outreach

Outreach will be critical to successful implementation of the SGMA. DWR's *Strategic Plan* outlines an outreach program that will be proactive and interactive with information, ideas, and the opportunity for a two-way exchange. DWR will tailor its outreach efforts to major program functions and milestones, including governance, revisions to groundwater basin boundaries and

required regulations, local agency assistance, and information management. Outreach efforts will recognize the importance of differences from basin to basin.

DWR is committed to maintaining open and accessible pathways of information to provide as much opportunity for engagement as possible. Shared understanding of strengths and weaknesses in groundwater management will help to build a more resilient, interconnected management framework around the State—a key goal of the Administration’s CWAP.

Key Definition

Outreach

Stakeholder/public engagement and interaction in all aspects of implementation.

Outreach Tools

DWR’s outreach program will consider a range of activities, events, and venues for public and stakeholder briefings. Specific meetings organized by DWR will include State agency committees, public stakeholder meetings, one-on-one meetings with interested stakeholders, regional workshops, and topic-specific webinars. DWR also will form groundwater sustainability member advisory panels to cover focused and specific issues. DWR-sponsored public meetings will help ensure public and stakeholder input as implementation unfolds.

Partners

DWR and the SWRCB will work closely to develop clear, consistent information regarding SGMA implementation and enforcement. DWR and SWRCB steering committees have been formed to ensure collaboration, avoid redundancy, and create alignment throughout the implementation process. In addition, DWR has a long-standing direct relationship with the California Water Commission (Commission), which, pursuant to California Water Code Section 161, must approve all DWR rules and regulations. DWR will work closely with the Commission, which meets publicly, as it develops regulations pursuant to the SGMA.

DWR also recognizes the importance of keeping relevant federal agencies and tribal governments informed of its activities and exploring potential involvement in meeting statewide groundwater sustainable goals.

Practitioners Advisory Panel

DWR will establish an advisory panel consisting of practitioners who have experience in managing groundwater or technical experts to help strengthen and improve alignment and collaboration with the State and GSAs, and to provide guidance and support to GSAs and other stakeholders. The panel will be formed to ensure the understanding of complex and detailed issues, coordination, avoidance of redundancy, alignment throughout the implementation process, and successful implementation of the SGMA.

Leveraging Associations, Foundations, and Organizations

DWR will establish effective communication pathways between stakeholder organizations through the implementation of advisory groups to ensure these organizations provide the necessary input into the process, avoid redundancy, and remain in alignment throughout the implementation process.

One-on-One Meetings

DWR will occasionally meet with specific water agency and county officials to ensure specific regional issues are discussed and well understood, and to ensure communication throughout the process.

Workshops and Webinars

DWR will participate in workshops and topic-based webinars as needed.

It is important that there is a shared vision of DWR's objectives and plans in implementing its Groundwater Sustainability Program. To that end, DWR invites comments to this plan. Please send any comments by June 1, 2015 to: sgmps@water.ca.gov

Edmund G. Brown Jr.

Governor

State of California

John Laird

Secretary

California Natural Resources Agency

Mark Cowin

Director

California Department of Water Resources



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