Water Commission Agenda
Regular Meeting
7:00 p.m. – February 6, 2017
Council Chambers
809 Center Street, Santa Cruz

Agenda

Call to order and introduction of Water Commissioner James Mekis

Roll Call

1. Election of Officers ✯ (Pages 1-16)

Presentation *Organized groups may make presentations to the Water Commission. Presentations that require more than three minutes should be scheduled in advance with Water Department staff.*

Statements of Disqualification *Section 607 of the City Charter states that "…All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made."*

The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

Oral Communications No action shall be taken on this item.

Announcements No action shall be taken on this item.

Consent Agenda (Pages 1-40)
Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are City Council Items Affecting Water, Water Commission Minutes, Information Items, Documents for Future Meetings, and Items initiated by members for Future Agendas. If one of these categories is not listed on the Consent Agenda then those items are not available for action.

2. City Council Actions Affecting Water ✯ (accept info) (Pages 17-18)
3. Approve the January 9, 2017, Water Commission Minutes ✯ (Pages 19-24)
4. 2017 Water Supply Outlook ✯ (accept info) (Pages 25-34)
5. Presentation Items on the Water Commission Agendas✯ (take action on recommendation) (Pages 35-36)
6. 2nd Quarter FY2017 Financial Report ✯ (receive info) (Pages 37-40)

Items Removed from the Consent Agenda

General Business (Pages 41-91)
Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

7. Recycled Water Workshop☆ (study Presentation and Discussion) (Pages 41-78)

Recommendation: Receive Information on Recycled Water.

8. Proposed Memorandum of Agreement with the San Lorenzo Valley Water District and the Scotts Valley Water District for Collaborative Work on Potential Supply Augmentation Projects. ☆(Pages 79-86)

Recommendation: Receive information and provide feedback on the discussion draft of a proposed Memorandum of Agreement with the San Lorenzo Valley Water District and the Scotts Valley Water District for Collaborative Work on Potential Supply Augmentation Projects.

9. Draft Agenda for the proposed March 14, 2017, Joint Meeting of the Santa Cruz City Council and the Water Commission. ☆(Pages 87-91)

Recommendation: Receive information, discuss the proposed agenda and provide feedback to staff to assist it in finalizing the proposed agenda. ☆(Pages)

Subcommittee/Advisory Body Oral Reports

Director's Oral Report No action shall be taken on this item.

Adjournment The next meeting of the Water Commission is tentatively scheduled for March 6, 2017, at 7:00 p.m. in Council Chambers.

☆Denotes written materials included in packet

APPEALS - Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action and the basis upon which the action is considered to be in error, and addressed to the City Council in the care of the City Clerk.

Other - Appeals must be received by the City Clerk within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar ($50) filing fee.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities, please attend the meeting fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call Water

WATER COMMISSION
INFORMATION REPORT

DATE: 1/12/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Rosemary Menard

SUBJECT: Election of Officers

RECOMMENDATION: The Water Commission elects a Chair and Vice-chair for 2017.

BACKGROUND: Water Commission Bylaws, Article VI – Officers and Elections provided for review.

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BYLAWS

of the

Water Commission

City of Santa Cruz, California

Under authority of applicable statues of the State of California and the City Charter of the City of Santa Cruz, California, for the purpose of establishing rules and regulations governing the organization and procedures of the Water Commission of the City of Santa Cruz, CA

Adopted June 27, 1977

Amended May 26, 1992

Amended May 5, 2003

Amended October 6, 2014

Approved by City Council on October 28, 2014

APPROVED:

David Baskin, Chair

Linda Wilshusen

Walt Wadlow, Vice-Chair

David Stearns

Andy Schiffrin

Doug Schwarm

George Mead

Approved as to form:

Attest:

Gloria Rudometkin, Commission Staff

John Barisone, City Attorney

Water Commission Bylaws

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Water Commission Bylaws

ARTICLE I – NAME AND/OR AUTHORITY

The Name of this organization shall be the Water Commission of the City of Santa Cruz, California; hereinafter referred to as the Advisory Body.

ARTICLE II – PURPOSE

The Water Commission will act in an advisory capacity to the City Council in all matters pertaining to the Santa Cruz water system and the maintenance and management thereof.

ARTICLE III – DUTIES AND RESPONSIBILITIES

The Water Commission shall have the ability, as vested by the City Council, and be required to:

- Recommend to the City Council, after public input, the adoption, amendment or repeal of ordinances relating to Chapter 16 Water, Sewers and other Public Services of the Santa Cruz Municipal Code;
- Make recommendations concerning proposed annual Water Department budget, Capital Improvement Program, Water Rate Resolutions and Water Resale Applications;
- Undertake studies and make recommendations in the area of Water Conservation and Water Supply Planning;
- Act in an advisory capacity to the City Council in all matters pertaining to the Santa Cruz water system and the maintenance and management thereof;
- Review and make recommendations to the City Council pertaining to the improvement and extension of the water system of the City, including sources, storage, quality, transmission and distribution of water to the inhabitants, and all subjects related thereto, including estimated costs of carrying out such recommendations;
- Review, monitor, and make long-range recommendations concerning securing sources of domestic water supply for the City; including re-examination of prior reports thereon to ascertain the value thereof if any at this time;
- Receive complaints pertaining to the Santa Cruz water system;
- Perform other duties as may from time to time be prescribed by the City Council.

ARTICLE IV – MEMBERSHIP

Section 1. Membership

The Water Commission shall consist of seven Water Commissioners, hereinafter referred to as members.

Membership, term of office, and procedures for removal of members and the filling of vacancies shall be as established by City Ordinance or by the City Council.

Section 2. Qualifications

The Water Commission shall be comprised of seven members. Six members of the water commission shall be qualified electors of the city, and one member shall be a qualified elector of the county who resides outside of the city limits but within the city's water service area. (Ord. 2003-32 § 1, Ord. 2000-08 § 1, 2000: Ord. 92-26 § 1, 1992; Ord. 87-10 § 1 (part), 1987).

Section 3. Application for Membership

Prospective members shall file an application in the office of the City Clerk.

Section 4. Method of Appointment

Each City Resident member shall be appointed by motion of the City Council adopted by at least four affirmative votes. The non-resident member shall be appointed by a four-member majority of the city council and nominations for that appointment may be made by any Councilmember.

Section 5. Good Standing and Reporting of Absences

Absences will be identified as "with notification" and "without notification." An absence is considered as "with notification" if the member notifies the Staff or the Chair prior to a regular or special meeting. If there has been no prior notification, the absence is considered "without notification."

Each member is allowed three absences with notification per calendar year. Should a member exceed the allowed absences from regular and special meetings, Staff shall notify the City Clerk. Excessive absences shall result in termination of membership. A leave of absence, approved by the City Council according to Council Policy is not subject to termination.

Section 6. Termination

Each member shall be subject to removal by motion of any Councilmember, adopted by at least four affirmative votes.

ARTICLE V – TERM OF OFFICE

Section 1. Term

The term of office for each member shall be one four-year term. A member may be appointed to complete an unexpired term. A member may continue to serve until his/her successor has been appointed.

Section 2. Membership Year

A membership year shall be from February 1st to January 31st of each year.

Section 3. Length of Term

A member shall not serve more than two consecutive full four-year terms. Upon completion of a member's eighth consecutive year of service, that member will be ineligible for reappointment for a period of two years. Upon completion of a member's second full four year term, that member will be ineligible for reappointment for a period of two years.

Section 4. Dual Service

No member shall be eligible to serve on two Advisory Bodies unless one is established for less than 13 months. Members of the Commission may serve for more than 13 months, if necessary, on advisory bodies whose charge is directly related to their service on the Water Commission when appointed to do so by the City Council.

ARTICLE VI – OFFICERS AND ELECTIONS

Section 1. Officers

Officers of the Advisory Body shall consist of a Chair and Vice Chair.

Section 2. Election of Officers

As soon as is practicable following the first day of February of every year, there shall be elected from among the membership of the Advisory Body a Chair and Vice Chair.

Section 3. Term of Office

The term of office for the Chair and Vice Chair is one calendar year. Officers may not serve in the same position for more than two consecutive years.

Section 4. Nominations

The Chair will open the floor to nominations. Any member may nominate a candidate from the membership for the position of Chair or Vice Chair; nominations need not be seconded.

A member may withdraw his/her name if placed in nomination, announcing that, if elected, s/he would not be able to serve; but s/he shall not withdraw in favor of another member.

Once the nominations are complete, the Chair will ask for a motion to close the nominations; a second of, and vote on, the motion is required.

The Chair then declares that it has been moved and seconded that the nominations be closed, and the members proceed to the election.

Section 5. Voting

Voting may be by voice vote or by roll call vote.

The candidate who receives a majority of the votes is then declared to be legally elected to fill the office of Chair, and will immediately chair the remainder of the meeting.

The same procedure is followed for the election of Vice Chair.

Section 6. Vacancy of an Officer

Should a vacancy occur, for any reason, in the office of Chair or Vice Chair prior to the next annual election, a special election shall be held to fill the vacant office from among the membership. That member shall serve until a new appointment has been made.

Section 7. Removal of Elected Officers

The Chair or Vice Chair may be removed by a majority vote of the full Advisory Body at a regularly scheduled meeting of the Advisory Body, when all appointed members are present, or at a special meeting convened for that purpose at which a quorum is present. Any officer removed ceases to hold the office once the vote has been tallied and announced. If the Chair is removed, the Vice Chair shall become the new Chair. An election for the Vice Chair shall then be agendized for the next meeting.

Section 8. Duties of the Chair

The Chair shall preside at all regular meetings and may call special meetings. The Chair shall decide upon all points of order and procedure during the meeting; his/her decision shall be final unless overruled by a vote of the Advisory Body, in compliance with Article IX, Section 2, "General Conduct of Meetings." The Chair may not make motions, but may second motions on the floor. The Chair acts as primary contact for staff and shall represent the Advisory Body before City Council whenever the Advisory Body or Council considers it necessary unless another member(s) is (are) appointed by the Advisory Body. The Chair and staff shall jointly set the meeting agenda.

Section 9. Duties of the Vice Chair

The Vice Chair shall assume all duties of the Chair in the absence or disability of the Chair.

Section 10. Duties of the Acting Chair

In case of absence of both the Chair and the Vice Chair from any meeting, an Acting Chair shall be elected from among the members present, to serve only during the absence of the Chair and Vice Chair.

ARTICLE VII – STAFF SUPPORT

Section 1. Staff

Staff support and assistance is provided, but advisory bodies do not have supervisory authority over City employees. While they may work closely with advisory bodies, staff members remain responsible to their immediate supervisors and ultimately to the City Manager and Council.

The Director of the Water Department shall designate appropriate staff to act as staff person(s) to assist and support the Advisory Body. Staff shall attend all regular and special Advisory Body meetings. Staff shall be responsible for coordination of such reports, studies, and recommendations as are necessary to assist the Advisory Body in the conduct of its business according to City Council policy and the Brown Act. Staff may enlist the assistance of other departments as required. Staff shall be responsible for all public notification regarding all regular and special Advisory Body meetings.

Staff shall record the minutes of the meetings in accordance with these bylaws. t Staff shall supervise volunteers and interns, shall work closely with the Chair between meetings, shall make recommendations, prepare reports and proposals to the Advisory Body, may represent the Advisory Body at other meetings, presentations, and other public functions as requested, and shall perform administrative tasks.

Staff shall be responsible for the maintenance of proper records and files pertaining to Advisory Body business. Staff shall receive and record all exhibits, petitions, documents, or other materials presented to the Advisory Body in support of, or in opposition to, any question before the Advisory Body. Staff shall sign all notices prepared in connection with Advisory Body business, shall attest to all records of actions, transmittals, and referrals as may be necessary or required by law, and shall be responsible for compliance with all Brown Act postings and noticing requirements.

Section 2. Staff Relationship to the Advisory Body

Given limited staff resources, the Chair or individual members shall not make separate requests of staff without approval of the Advisory Body. If a member has a research or report request, it shall be brought to the Advisory Body for discussion, consideration, and recommendation prior to making the request of staff. If not approved by the Advisory Body, the individual member shall be responsible for his/her own research or report.

ARTICLE VIII – MEETINGS

Section 1. Time and Location of Meetings

The Advisory Body will hold its regular meeting on the first Monday of each month, which shall begin at 7:00 p.m. in the City Council Chambers and will adjourn no later than 11:00 p.m., unless the Chair, with concurrence of the Advisory Body, extends the time of adjournment.

If the scheduled date for a regular meeting falls on a holiday, such meeting shall be rescheduled in accordance with Council policy.

Section 2. Cancellation

If a majority of the membership deems it necessary or desirable, a scheduled regular meeting may be cancelled or rescheduled upon giving notice, unless a public hearing has previously been noticed.

Section 3. Special Meetings

The Chair of the Advisory Body, staff, or a majority of the membership of the Advisory Body may call a special meeting. Notice of such meeting shall state the purpose or the business to be transacted during such special meeting. No other business may be transacted at such special meeting other than as stated in the notice. Oral Communications are not required at special meetings as long as a statement appears on the agenda identifying that there will be no Oral Communications, but that members of the public will have the opportunity to address the Advisory Body on item(s) on the agenda.

ARTICLE IX – CONDUCT OF MEETINGS

Section 1. Compliance with the Brown Act and Council Policies

All regular, special, and adjourned meetings of the Advisory Body shall be open meetings to which the public and the press shall be admitted in compliance with the Brown Act. Meetings will be held at City facilities that which are accessible to persons with disabilities. The public shall have the opportunity to speak on any item on the agenda. During oral communications, the public may speak on any water related matter not on the agenda. Comments shall be limited to three minutes for any speaker unless the chair decides otherwise.

Section 2. General Conduct of Meetings

Points of order and conduct, including those not addressed by these Bylaws, shall be settled by the Chair, unless overruled by a majority vote of the Advisory Body. Points of order and conduct shall comply with the Brown Act, these Bylaws, and the City Councilmembers' Handbook. The Chair will consult with staff as necessary. Unresolved issues shall be referred to the City Attorney and continued to a future meeting.

Section 3. How Items Are Placed on the Agenda

A request to have an item placed for consideration on a future agenda may be made by staff, any Advisory Body member or a member of the public. The Chair and staff will consider the validity (within the approved scope of work) and urgency of the request and determine when and if that item should be placed on an Advisory Body agenda. Issues can be referred to an advisory body by the City Council and may have time sensitive deadlines. The items must comply with the procedures in Article XII, Section 1, "Agenda Reports to Advisory Body."

Section 4. Quorum

A quorum of the Water Commission shall consist of four (4) members, whether or not there are vacancies on the Advisory Body.

Section 5. Absence of a Quorum

In the absence of a quorum at any meeting, such meeting shall be adjourned to the next regular meeting date by the Chair, Vice Chair, or staff.

A meeting may be declared adjourned for lack of a quorum after a 15-minute period has elapsed from the scheduled time of the start of the meeting. A meeting may also be declared adjourned in advance, if absence notifications received by staff provided for lack of a quorum. Adjournment may be declared by any member or staff.

Section 6. Agenda

The Chair and staff shall jointly set the meeting agenda and its format shall generally conform to the template provided in the Handbook for City Advisory Bodies .

Section 7. Order of Business

The Chair or a majority vote of the Advisory Body may change the order of business.

ARTICLE X – MOTIONS

Section 1. Call for Motion

Upon conclusion of preliminary discussion, any member other than the Chair may place a motion on the floor. The motion shall contain the proposed action.

Section 2. Seconding a Motion

The Chair shall receive all motions and shall call for a second to each motion. The Chair may second a motion.

Section 3. Lack of a Second

If, after a reasonable time, no second has been made, the motion shall be declared dead for lack of a second, and the Chair shall state this. This shall not be considered an action of the Advisory Body and shall not be included in the minutes.

Section 4. Discussion/Debate

After a motion has been made and seconded, the Chair shall call for a discussion of the question. All discussion shall be limited to the motion on the floor. At the close of the discussion, the Chair shall put the matter to a vote.

Section 5. Time Limits on Discussion/Debate

The Chair may, at his/her discretion, limit debate of any motion; except that each member shall have the opportunity to speak.

Section 6. Amending a Motion

A motion to amend may be made by any member to revise a motion on the floor; but it cannot be a freestanding motion on its own, nor can it substitute for a main motion. The motion to amend must be voted upon, unless the maker and the second accept it as a friendly amendment, and, if it passes, it then becomes part of the main motion.

Section 7. Withdrawing a Motion

Any motion may be withdrawn by the maker and the second and shall not be included in the meeting minutes.

Section 8. Motion to Table

A motion to table may be made to suspend consideration of an item that appears on a meeting agenda for reasons of urgency or to end an unproductive discussion. A motion to table is not in order when another member has the floor. A motion to table requires a second, is not debatable, is not amendable, requires a majority vote for passage, and, if adopted, cannot be reconsidered at the meeting at which it is adopted. Members will refrain from using a motion to table as a means of capriciously limiting debate among members, to suppress a minority of the Advisory Body, or to avoid public input on an agenda item under consideration by the Advisory Body.

Section 9. Results of Voting

Except in the case of unanimous votes, the chair shall state the results of a vote by providing the names of the Commissioners voting for and those voting against.

ARTICLE XI – VOTING

Section 1. Statements of Disqualification

Section 607 of the City Charter states that "...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made." No member may abstain from voting on any item, except on the approval of the minutes, when that member was absent.

The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that "no person shall make or participate in a governmental decision which s/he knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally."

Any member who has a disqualifying interest on a particular matter shall do the following:

1) Publicly identify the financial interest that gives rise to the conflict of interest or potential conflict of interest in detail sufficient to be understood by the public, except that disclosure of the exact street address of a residence is not required;
2) Recuse himself or herself from discussing and voting on the matter, or otherwise acting in violation of government code Section 87100;

3) Leave the room until after the discussion, vote, and any other disposition of the matter is concluded unless the matter has been placed on the portion of the agenda reserved for uncontested matters;
4) Notwithstanding paragraph 3, a public official may speak on the issue during the time that the general public speaks on the issue.

Any question regarding conflicts of interest shall be referred to the City Attorney.

Section 2. Voice Vote

All questions shall be resolved by voice vote. Each member shall vote "Aye" or "No" and the vote shall be so entered into the minutes, noting the vote of each member. A member may state the reasons for his or her vote, which reasons shall also be entered into the minutes of the meeting. All members including the Chair shall vote on all matters, except where s/he has a disqualifying interest.

Section 3. Roll Call Vote

Any member may request a roll call vote, either before or immediately after a voice vote. A roll call vote shall be taken without further discussion. The Advisory Body staff shall call the roll and each member shall state his/her vote for the record.

Section 4. Sealed Ballot Votes

No Advisory Body shall take a sealed ballot vote in open session.

Section 5. Adoption of

Adoption of a motion shall be made by a simple majority of the members present, except as otherwise provided. The Chair shall restate the vote for the record, e.g., "The motion is approved by a vote of five to two."

Section 6. Tie Votes

Tie votes will be resolved as follows:

Full Commission Attendance (7 members): A vote resulting in a tie when the full commission is in attendance shall constitute a defeat of the motion.

Statement of Disqualification: A tie vote resulting from a Statement of Disqualification of one or more members, with no members absent and no vacancies on the Advisory Body, shall constitute a defeat of the motion.

Absence: A tie vote during the absence of one or more members, or when there is a vacancy on the Advisory Body, shall cause the item to be automatically continued to the next meeting; except that, as to matters on which action must be taken on a date prior to the next meeting, a tie vote shall constitute a denial of the requested action.

Successive Tie Vote: A tie vote at the next meeting on a matter that has been continued as a result of a tie vote shall constitute a denial of the appeal or defeat of the motion.

ARTICLE XII – REPORTS

Section 1. Agenda Reports to Advisory Body

All agenda items require a written report. Written reports serve as the analysis, detail, history, and justification for each agenda item. Reports shall include recommendation(s) and background. If a report is initiated by an Advisory Body member, a draft of that report shall be provided to staff for formatting at least five (5) business days prior to the meeting. Staff shall then format reports to be consistent with content, style, and formatting of City Council agenda reports. Items initiated by a committee shall be processed in the same manner. Draft reports not submitted in a timely manner shall be placed on a future agenda.

Section 2. Committee Reports

Committee reports may be verbal or written and may be accompanied by written documentation.

Section 3. Preparation of Advisory Body-Generated City Council Agenda Reports

All resolutions and recommendations adopted by the Advisory Body and addressed to the City Council shall be delivered to the Mayor as soon as possible. If the action requests City Council action, the item shall be placed on a future City Council agenda. Agenda reports to the City Council from the Advisory Body shall be written reports consistent with content, style, and formatting of City Council agenda reports.

Additionally, the agenda report shall include a section called analysis, which includes the pros, cons, and foreseeable consequences of the recommendation(s). In the event that staff and the Advisory Body disagree, an analysis of both recommendations shall be included.

ARTICLE XIII – RECORD KEEPING

Section 1. Maintenance of Records

All records shall be maintained according to the City of Santa Cruz Records Retention Schedule.

Section 3. Minutes

Minutes shall briefly summarize comments made by members of the public and the Commission as well as actions taken by the Commission. 'For the record" statements may be made by Commissioners when she/he desires that specific language be included in the minutes. Minutes shall be reviewed, corrected as appropriate, and or amended and approved by the Advisory Body at a subsequent meeting.

Subcommittee reports presented orally in a meeting shall be summarized in the minutes.

Section 4. Audio and Video Recording of Meetings

Proceedings for all Advisory Body meetings shall be recorded on audiotapes whenever possible. The audiotapes shall be retained for one year pursuant to the City of Santa Cruz Records Retention Schedule.

As appropriate and/or when requested by the Advisory Body or City Council, a meeting of the Advisory Body may be video recorded or televised.

Members of the public have the right to make recordings of a meeting without disrupting the proceedings under any circumstances.

ARTICLE XIV – COMMITTEES

Section 1. Ad Hoc Committees

Ad hoc committees are established by an Advisory Body to gather information or deliberate on issues deemed necessary to carrying out the functions and purpose of the Advisory Body. Ad hoc committees generally serve only a limited or single purpose, are not perpetual, and are dissolved once their specific task is completed. An ad hoc committee shall be less than six months in term and shall have fewer members than a simple majority of the membership of the appointing Advisory Body. Ad hoc committees shall bring back information to the Advisory Body in either oral or written form.

Following ad hoc committee input, the Advisory Body shall then discuss, deliberate, and make recommendations on the designated issue, thereby providing the public with the opportunity to participate in the decision-making process. This shall take place in the presence of a quorum of the Advisory Body at a properly noticed public meeting.

Ad hoc committees shall not be subject to the Brown Act. City staff shall not be required to be present at ad hoc committee meetings. All ad hoc committees shall provide a final report to the Advisory Body in lieu of minutes.

Section 2. Standing Committees

Standing committees are bodies established to gather information or deliberate on issues deemed necessary to carrying out the functions and purpose of the Advisory Body. Standing committees are ongoing in nature and are created to deal with issues and make decisions on behalf of the Advisory Body. The public has a right to participate in this process. Standing committees are subject to the Brown Act and staff will provide only such support as to ensure such compliance.

Section 3. Staff Support to Committees

City staff shall normally not be required to attend or provide support for standing or ad hoc committee meetings, unless directed by the department head. All ad hoc committees shall provide a final report to the Advisory Body in lieu of minutes. All standing committees shall provide reports, no less than quarterly, to the Advisory Body.

Section 4. Appointments

The Chair of the Advisory Body may designate or solicit participation for standing and ad hoc committees, unless overruled by a majority vote of the Advisory Body.

Section 5. Committee Meetings

All standing or ad hoc committee meetings shall be held upon call of the Committee Chair.

ARTICLE XV – AMENDMENTS

A majority of the full membership of the Advisory Body may amend these bylaws, subject to the approval of the City Council.

ARTICLE XVI – ADOPTION OF BYLAWS

Immediately upon favorable vote of not less than four 4) of the full membership of the Water Commission the City of Santa Cruz and approval of the City Council, these Bylaws shall be in full force and effect. Any and all previously adopted bylaws are hereby superseded.

These Bylaws shall not be considered or construed as superseding any ordinance or directive of the City Council of the City of Santa Cruz, nor shall they preclude the preparation and adoption of further procedural manuals and policies by which the Advisory Body may direct its activities.

WATER COMMISSION
INFORMATION REPORT

DATE: 12/1/2016

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: City Council Items Affecting Water

January 10, 2017

North Coast System Rehabilitation-Phase 3 – Construction Inspection and Contract Management Services – Contract Amendment No. 1 (WT)

Motion carried to authorize the City Manager to execute Contract Amendment No. 1 with Covello Group, Inc. (Walnut Creek, CA) in the amount of $135,000 for Construction Inspection and Contract Management Services, in a form approved by the City Attorney.

January 24, 2017

Water Supply Advisory Committee Recycled Water Alternative: Contract Amendment No. 2 with Kennedy/Jenks Consultants to Evaluate Additional Regional Recycled Water Alternatives (WT)

Motion carried

Motion carried to authorize the City Manager to execute Contract Amendment No. 2 with Kennedy/Jenks Consultants (San Francisco, CA) for the evaluation of recycled water opportunities in Santa Cruz, in a form approved by the City Attorney.

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Water Department

Water Commission
7:00 p.m. – January 9, 2017
Santa Cruz Police Department Community Room
155 Center Street, Santa Cruz

Minutes of a Water Commission Meeting

Call to Order: Chair W. Wadlow called the meeting to order at 7:11 p.m. in the City Council Chambers.

Roll Call
Present: W. Wadlow (Chair), L. Wilshusen (Vice-Chair), D. Baskin, D. Engfer, D. Schwarm, A. Schiffrin, D. Stearns.
Absent:

Staff Present: R. Menard, Water Director; N. Dennis, Principal Management Analyst; M. Kaping, Management Analyst; A. Poncato, Administrative Assistant III.

Others: 5 members of the public.

Presentation: There was one presentation by Scott McGilvray.

Comments: Commissioners requested an agenda item to discuss how the Presentation agenda item is being used.

Statements of Disqualification: There were no statements of disqualification.

Oral Communications: Oral communications made by Erica Stanojevic and Christine Kirven.

Announcements: R. Menard announced that there was a break in the Newell Creek pipeline this morning. The break is located in Pipeline Road, which is located in Henry Cowell State Park. The Newell Creek pipeline was shut off and the Graham Hill Water Treatment Plant (GHWTP) is no longer receiving water from Loch Lomond. An emergency contractor has been deployed to the break site where they will excavate 50-100 feet of pavement from Pipeline Road to identify where the leak is and then plan and implement repairs. Diversion from the San Lorenzo River at Tait Street is not feasible at the moment due to high turbidity, so, until the pipe is repaired, our water supply is limited to what we can draw from our North Coast supplies and our Beltz Wells. We are working with Soquel Creek Water District to take water from them on an emergency basis beginning as soon as tomorrow. Press releases have been distributed requesting customers to cut back non-essential water use for the next week or so. We are anticipating that the repair could take as long as a week to complete, but we won't have more specifics until the excavation is complete and we can evaluate the situation.

Are we asking customers to conserve 50% of their water use?

- No, we are asking customers to conserve 1/3 of water their water use.

Does the Department have some kind of electronic or other types of monitors along the pipeline so staff can find where the leak is?

- We do not have such monitors along our pipeline to help find where a leak is. The leak was discovered when our overnight Water Treatment Operator at the GHWTP experienced difficulties moving water from Loch Lomond into the GHWTP – the volume of water being diverted from the lake wasn't matching the volume of water arriving at the plant – and alerted staff this morning. Water Department staff drove along Pipeline Road in Henry Cowell State Park shortly thereafter and found a large flow of water at what ultimately turned out to be the site of the break.

How old is the broken piece of the pipeline?

- It has been a part of water system since 1962.

Was the damage to the pipe weather related?

- Probably. There were some cracks in the pavement on top of the pipeline but there was not an obvious landslide near or over the pavement. If it was related to ground movement, it would have been underneath the road. We will not know for sure until we can excavate that area.

Do we have provisions to reach out to large water users?

- Yes, we have reached out to the University of California, Santa Cruz and made them aware of the situation. We have a list of large users we can reach out to as well.

What is the status of our distribution water storage capacity?

- Today at noon it was sixteen and a half million gallons. Normal distribution storage is 18 million gallons.

Consent Agenda

1. City Council Actions Affecting Water
2. Approve the December 5, 2017, Water Commission Minutes

Commissioner Schiffrin moved Consent Agenda Item 1. City Council Actions Affecting Water of the Consent Agenda. Commissioner Wilshusen seconded.
VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

Items Removed from the Consent Agenda

2. Approve the December 5, 2017, Water Commission Minutes

Instead of identifying General Business item 6. as Parade of Projects, it would be more helpful for members of the public if it was labeled "Presentation of Projects". It would be best to call it Presentation of Projects instead of Parade or Projects on future agendas.

Commissioner Schiffrin moved item 2. Approve the December 5, 2017 Water Commission Minutes of the Consent Agenda. Commissioner Wilshusen seconded.

VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSTAIN: D. Baskin and D. Schwarm due to absence from the December 5, 2017 Water Commission meeting
ABSENT: None.

General Business

3. Quarterly Financial Reporting

Ms. Menard introduced Ms. Dennis and Mrs. Kaping who presented an overview of the quarterly financial report.

How was $30,000,000 worth of revenue estimated?

- The projected water sales number was based on the 2.5 billion gallons of water sales during Fiscal 2017, and the revenue requirements developed and presented in the Long Range Financial Plan (LRFP).

Staff comment: The dip in revenues projected that you see in October 2016 is due to the fact that the new water rate structure did not go into effect until October 1, 2016. The fixed charge decrease was effective for the October billing cycle but the revenues generated by the volume rate increase didn't begin to accrue until the November billings for water used in October. Overall, it was difficult to estimate revenue on a monthly basis this past year.

The projected sales line for July, August, and September was originally charted assuming that the water rate increase would have gone into effect on July 1, 2016?

- No, it was based on revenues projections from the former rates.

Please explain why we are above the 25% target for the year in terms Debt Service expenses?

- Debt service payments are made twice a year. The debt service payment dates are based on when you sign the contract for the debt. The first payment due is usually just interest and the second payment is principal plus interest. The total budget is the amount that we will completely pay in debt service over the entire fiscal year.

Do the Spend Thru funds, located on the CIP Projects Overview chart, represent the current calendar year or does it represent money spent from the beginning of the project to date?

- The Spend Thru column represents money spent from the beginning of the project to date.

Is it safe to assume that the Water Supply Augmentation Strategy Implementation Life of Project Total was a guesstimate about what the projects may be?

- Yes, the CIP is planned for ten years out and this is an estimate. The project budget develops as we move through the project. As these projects develop, budget numbers will be updated.

Do we need City Council approval to move leftover funds from a completed project to an ongoing current project?

- No, only new appropriations would need City Council approval.

When money is added to a current project, would you update the Life of a Project Total column to reflect the additional funds?

- Yes and we complete a budget adjustment when we are ready to do that.

What are we projecting as the total cost of completion for Phase III North Coast System Rehab, WTP Filter Rehab, and the Tait Wells project?

- Projects nearing completion have a current status of "construction" highlighted in green on the CIP Projects Overview. The Spent Thru 9-30-16 amount reflects what we expect to spend to finish the projects; no significant change orders are expected.

Staff comment: We have a budget adjustment planned for FY17 to reconcile over budgeted projects with resources transferred from under budgeted projects. The bottom line CIP amount will not change.

Are we keeping statistics about our performance against the budget? For example, what percentage of projects at, above, or below budget estimates so that our creditors know how good we are at managing project budgets?

- We do not have a list of what projects were below budget and which projects were above budget. As we move into this more complicated and larger CIP, the ability to do a better job of estimating project costs is going to be more and more important to determine whether or not our financial plan is adequate.

<u>Final Comments and Requests for Follow Up</u>

- Future Quarterly Financial Reports should be put on Consent Agenda.
- The new Quarterly Financial Report format was much more user-friendly.

4. <u>Calendar 2017 Draft Water Commission Work Plan</u>

Discussion about the roles and responsibilities of the Water Commission followed.

Will the Commission receive plan B, or the backup plan, for recycled water or desal this year?

- That will be added back on to the Work Plan but it may be pushed off until January of 2018.

What is the timeframe on the draft Communication Plan and draft Annual Report?

- The intent is to get the Annual Reports in the mail in the next month or so. We do not have a timeframe on the draft Communication Plan.

When will the Presentation of Projects be scheduled?

- A specific month has not been chosen but you should expect to see the Presentation of Projects sometime during the last quarter of the calendar year.

Are you in contact with Santa Clara Valley Water District about their pilot recycled water program?

- We have discussed having one of their staff members assigned to the project come to speak at one of our Water Commission meetings but nothing has been determined.

Final Comments and Requests for Follow Up

- At the March Joint meeting between the Water Commission and City Council, a focus should be on the progress that has been made on implementing the WSAC recommendations, and this will be a good opportunity for the Water Commission members to share their perspectives on the status of the work.
- L. Wilshusen requested a copy of the WSAC Annual Report before it is distributed to the community.
- Add an update on the status of the water rights conformance project to Work Plan.

Commissioner Schiffrin moved to approve Draft Calendar 2017 Water Commission Work Plan with the added direction that, at our February Water Commission meeting, staff returns with draft agenda for the proposed Joint Study Session with City Council members on March 14, 2017. Commissioner Baskin seconded.

VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

Subcommittee/Advisory Body Oral Reports No items.

Director's Oral Report No action shall be taken on this item.

- We will be providing a first look at our peak water use in the near future.
- Loch Lomond began spilling at the beginning of December.

D. Stearns said goodbye to the Water Commission.

Adjournment Meeting adjourned at 9:01 p.m. The next meeting of the Water Commission is scheduled for February 6, 2017, at 7:00 p.m. in Council Chambers.

Respectfully submitted,

Amy Poncato

Digitally signed by Amy Poncato
DN: cn=Amy Poncato, o=Water Department, ou=Administration, email=aponcato@cityofsantacruz.com, c=US
Date: 2017.02.02 11:05:42 -08'00'

Staff

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WATER COMMISSION
INFORMATION REPORT

DATE: 2/1/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Toby Goddard, Administrative Services Manager

SUBJECT: Initial Water Supply Outlook for 2017

RECOMMENDATION: For information and discussion by the Water Commission.

BACKGROUND: This report provides an overview of current water conditions and presents the Water Department's first formal outlook covering the City's water supply situation for Water Year 2017. The end of January represents the mid-point of the winter wet season. The outlook will be updated as the 2017 wet season progresses and a final water supply outlook will be prepared toward the end of March. Given how much rain has fallen so far this year, though, the water supply outlook is not expected to change significantly between now and then.

DISCUSSION:

Rainfall The winter weather pattern this year has been very active, to say the least. The wet season started with a bang in mid-October when a remnant of a tropical typhoon swept through the central coast region bringing several inches of rain. It has continued into late January with multiple atmospheric river-type storm systems. Recent storms generated widespread, heavy rainfall that caused localized flooding, landslides, and road closures throughout the county. As of January 30, 2017, the Santa Cruz area had received 31.32 inches of rain, or 184 percent of normal precipitation for this time of year. In fact, rainfall to date measures about one-half inch short of the annual average rainfall amount for the City. Cumulative rainfall for the year to date is shown in Figure 1. A total of 15.66 inches of rain fell in January alone, two and a half times the average monthly total. According to the Western Regional Climate Center, January 2017 ranks as the fourth wettest January in Santa Cruz on record since 1893.

In the City's watershed around Loch Lomond Reservoir, rainfall has measured between 48 and 56 inches for the season to date, with nearly 32 inches recorded at the recreation area in January alone.

The short term forecast has more rain returning to California in early February. Long-term, the National Weather Service Climate Prediction Center is showing equal chances of normal

precipitation across California in its 3-month outlook for the period February through April 2017.

Stream Flow Figure 2 shows mean monthly amount of stream flow in the San Lorenzo River for the season to date, along with the long-term average monthly values for comparison. The extraordinarily high flow in January 2017 is the result of seven distinct, major storm systems that produced very significant peak flows some of which registered higher than 10,000 cubic feet per second at times. The highest event on January 10 resulted in minor flooding of the coast pump station and of Tait Well No. 4. As reported in the local news, these strong storms in January also damaged other critical water system infrastructure, which is discussed further below.

Reservoir Storage Loch Lomond Reservoir filled to capacity on January 4, 2017, and has been spilling over into Newell Creek since then. At one point in January, the lake level reached almost two feet over the spillway elevation. The lake water now is uniformly more turbid and brown in color than has been seen in many years from all the recent storm runoff.

Water Year Classification The Water Department uses a water year classification system to characterize the City's overall annual water supply condition. Under this classification system, the water year beginning October 1 is designated as one of four types – **Wet**, **Normal**, **Dry**, or **Critically Dry** – depending on the total annual discharge of the San Lorenzo River, measured at the stream gage in Felton, and expressed in acre-feet[1].

At this point, there is no question that the 2017 Water Year will be classified as **Wet**. Cumulative discharge currently measures 117,496 acre-feet. The threshold to be classified as wet is 119,000 acre-feet. It will only be a matter of a few more days' time, even without any more rain, before that threshold is reached. This will be the first Water Year since 2011 that is classified as **Wet**.

Cumulative discharge From October 1, 2016, through January 30, 2017, is shown in Figure 3. The long-term average discharge for this time of year is about 33,000 acre-feet. Last year at this time, the river had generated only about 18,000 acre-feet, following a succession of dry and critically dry years.

U.S. Drought Monitor What a difference a year makes, at least for surface water systems. Most of northern California, including all of Santa Cruz County, is no longer classified in any stage of drought according to the U.S. Drought Monitor. Figure 4 shows the drought monitor map as of January 25, 2017, along with last year's map at this same time for contrast. It is acknowledged,

[1] Discharge refers to the accumulated volume of runoff. One acre-foot of water is equal to 325,851 gallons. 3.07 acre-feet equals one million gallons.

Annual discharge of the San Lorenzo River is regarded as the best individual benchmark of the City's water supply condition for two reasons. First, the river is the city's single largest source of drinking water, providing about half the normal annual supply. Second, about three quarters of all the water used by city water customers is obtained from a flowing source of supply. In general, the higher the volume discharged from the San Lorenzo River means that:

- the local watersheds in the Santa Cruz mountains are more saturated;
- the stream sources will flow at higher levels later into the dry season; and
- there is more water available from all surface water sources, including the reservoir, to meet system demands over the course of the year.

however, that local groundwater supplies, including the Santa Cruz Mid-County Groundwater Basin from which the City and others pump, have been depleted over a long period of time and will not recover so quickly compared to surface water supplies.

Initial Outlook for 2017 Even with winter only halfway through, the water supply outlook for the City of Santa Cruz is more positive than it has been in a long time. In water years like this, surface water supplies tend to flow stronger and the lake tends to stay full longer into the dry season. Exactly how much stronger will depend on how weather shapes up in the second half of the wet season. Aside from the possibility of continuing state-mandated water conservation targets and ongoing water waste prohibitions, staff foresees no reason at this time for instituting restrictions on water use this summer. This is especially true in light of the low level of demand experienced in 2016. Even with no restrictions in place, total system demand in 2016 amounted to only 2.56 billion gallons, 23 percent less than in 2013 and almost exactly the same as in 2014, when rationing was in place. It is uncertain how long water sales will continue to lag. Changes to water rates that took effect last October, and are scheduled to take effect again in July, will likely reinforce ongoing conservation behavior.

The State Water Resources Control Board is scheduled to consider readopting its drought related emergency regulation on February 8, 2017. In the meantime, the City continues to meet its state mandated 8 percent reduction in total water production compared to same months in 2013 that is in effect through February 28, 2017. The Water Department will continue to monitor water supply conditions and will reevaluate the water supply outlook again in mid-March.

Storm Related Damage to Water System As mentioned above, the water system experienced significant damage during the January storms. The most critical loss was a break in the Newell Creek pipeline within Henry Cowell State Park that occurred during the overnight hours of January 8/9. This pipeline is used to bring lake water to the plant when the San Lorenzo River is too turbid to treat. While the line was temporarily out of service, operators were just able to balance demand and maintain treated water storage using the limited north coast supplies, Beltz wells, Tait wells, and about one mgd of water from the intertie with Soquel Creek Water District. Water Department crews and contractors eventually repaired the leak, rebuilt Pipeline Road, and partially restored service. Another leak on the same line has since been discovered nearby and is in the process of being repaired.

A list of other water system facilities that were damaged, along with estimated costs of repair, is included in Attachment 5. The full scope of the damage to the water system caused by these storms is still being assessed. Staff is currently working with State OES and FEMA to pursue possible reimbursement.

FISCAL IMPACT: None.

PROPOSED MOTION: Receive information.

ATTACHMENTS:
Figure 1: Cumulative Rainfall, City of Santa Cruz
Figure 2: Monthly Streamflow, San Lorenzo River at Big Trees
Figure 3: Cumulative Runoff and Water Year Classification

Figure 4: U.S. Drought Monitor Map, California
Attachment 5: Preliminary Storm Damage Assessment

Figure 1.

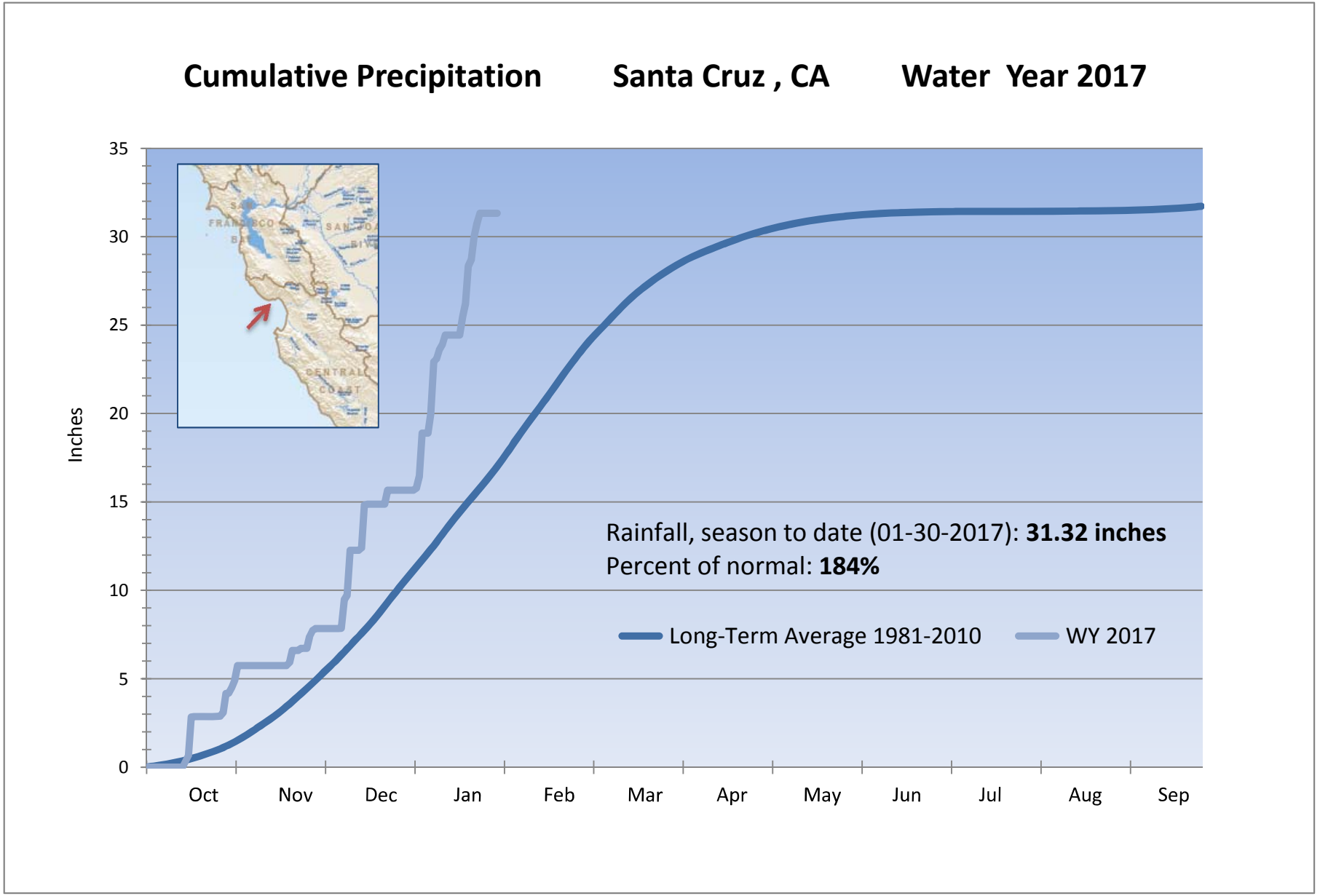

Cumulative Precipitation Santa Cruz , CA Water Year 2017
Inches
35
30
25
20
15
10
5
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Rainfall, season to date (01-30-2017): 31.32 inches
Percent of normal: 184%
Long-Term Average 1981-2010
WY 2017

Figure 2.

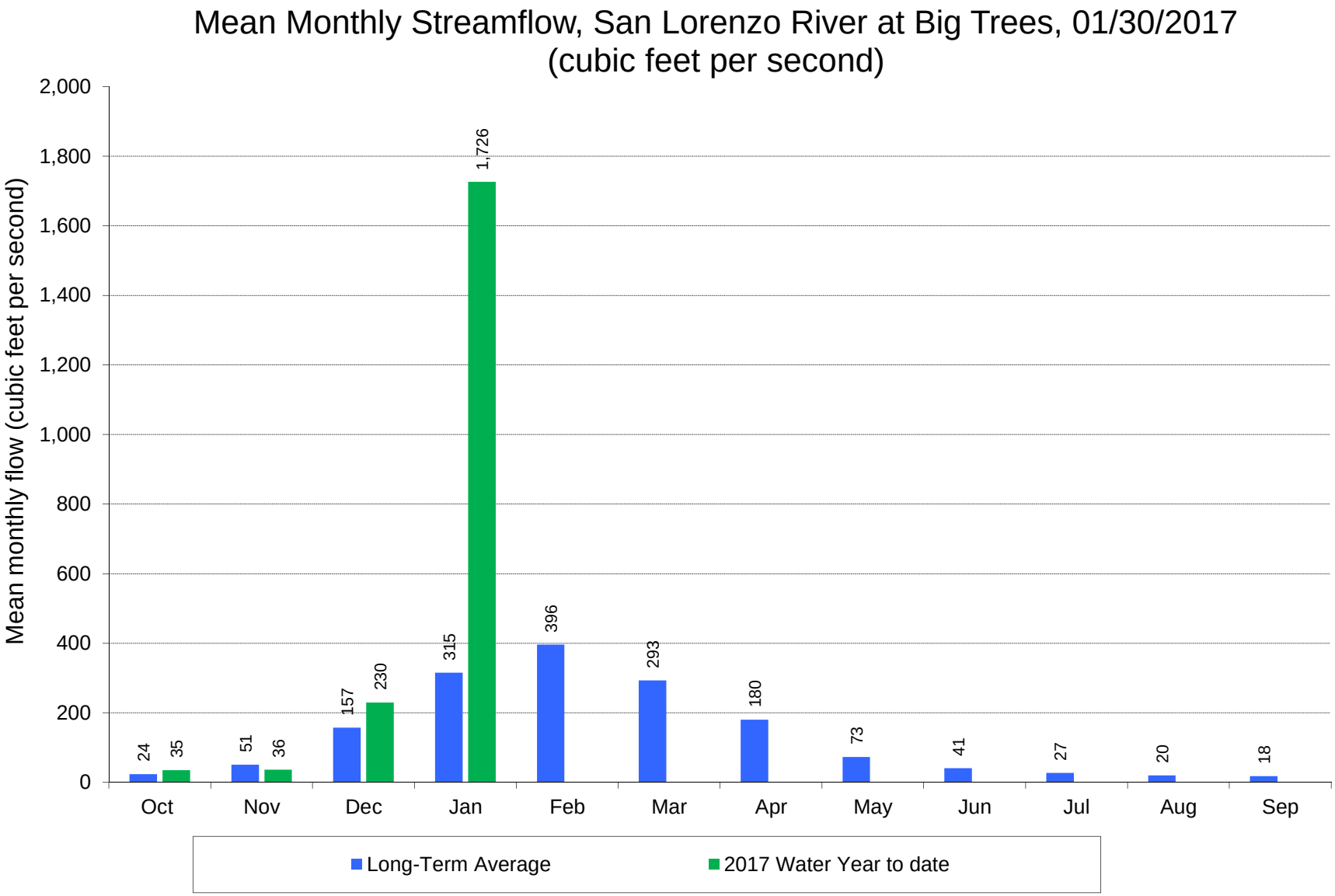

Mean Monthly Streamflow, San Lorenzo River at Big Trees, 01/30/2017
(cubic feet per second)
Mean monthly flow (cubic feet per second)
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
24
35
51
36
157
230
315
1,726
396
293
180
73
41
27
20
18
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Long-Term Average
2017 Water Year to date

Figure 3.

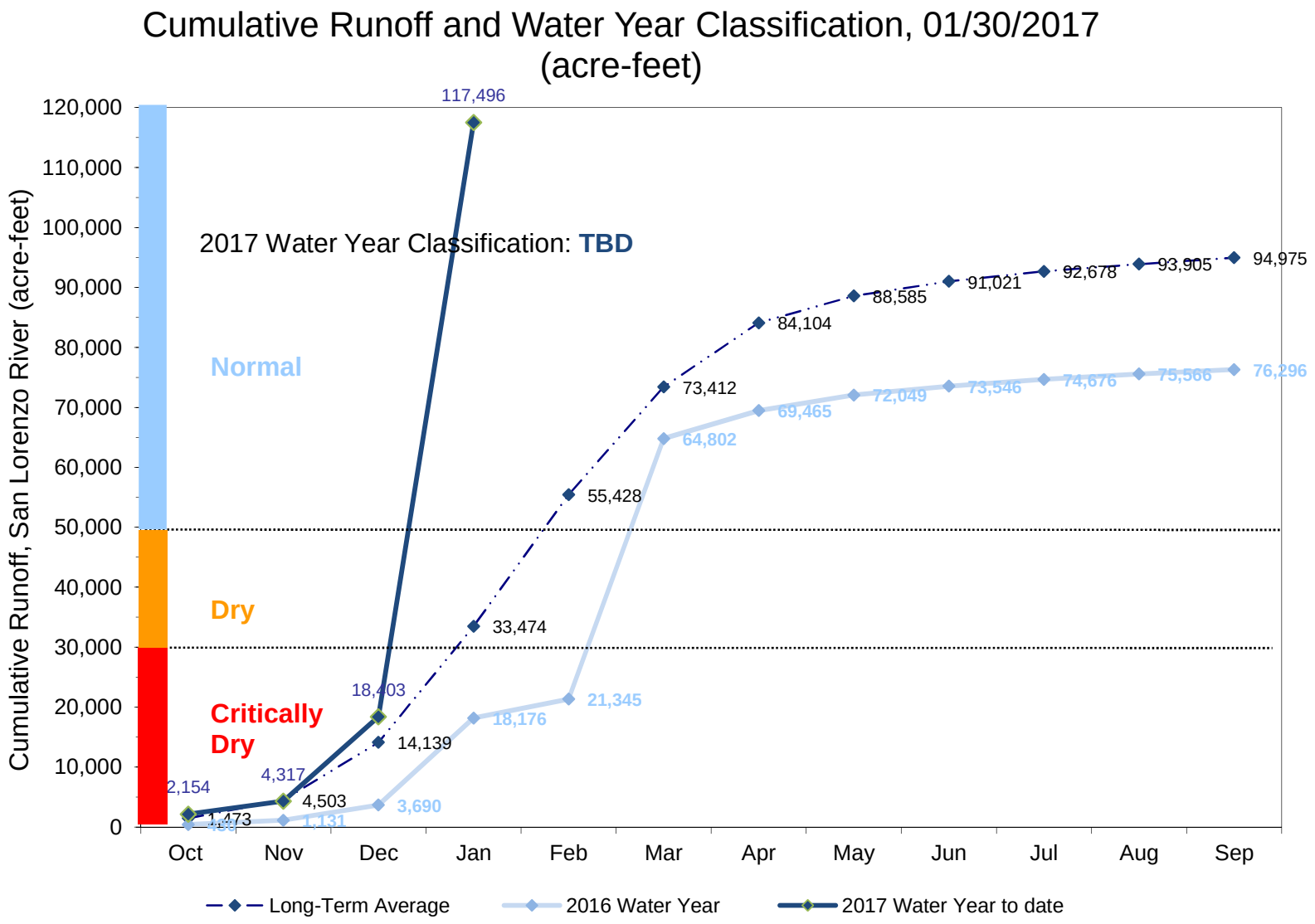
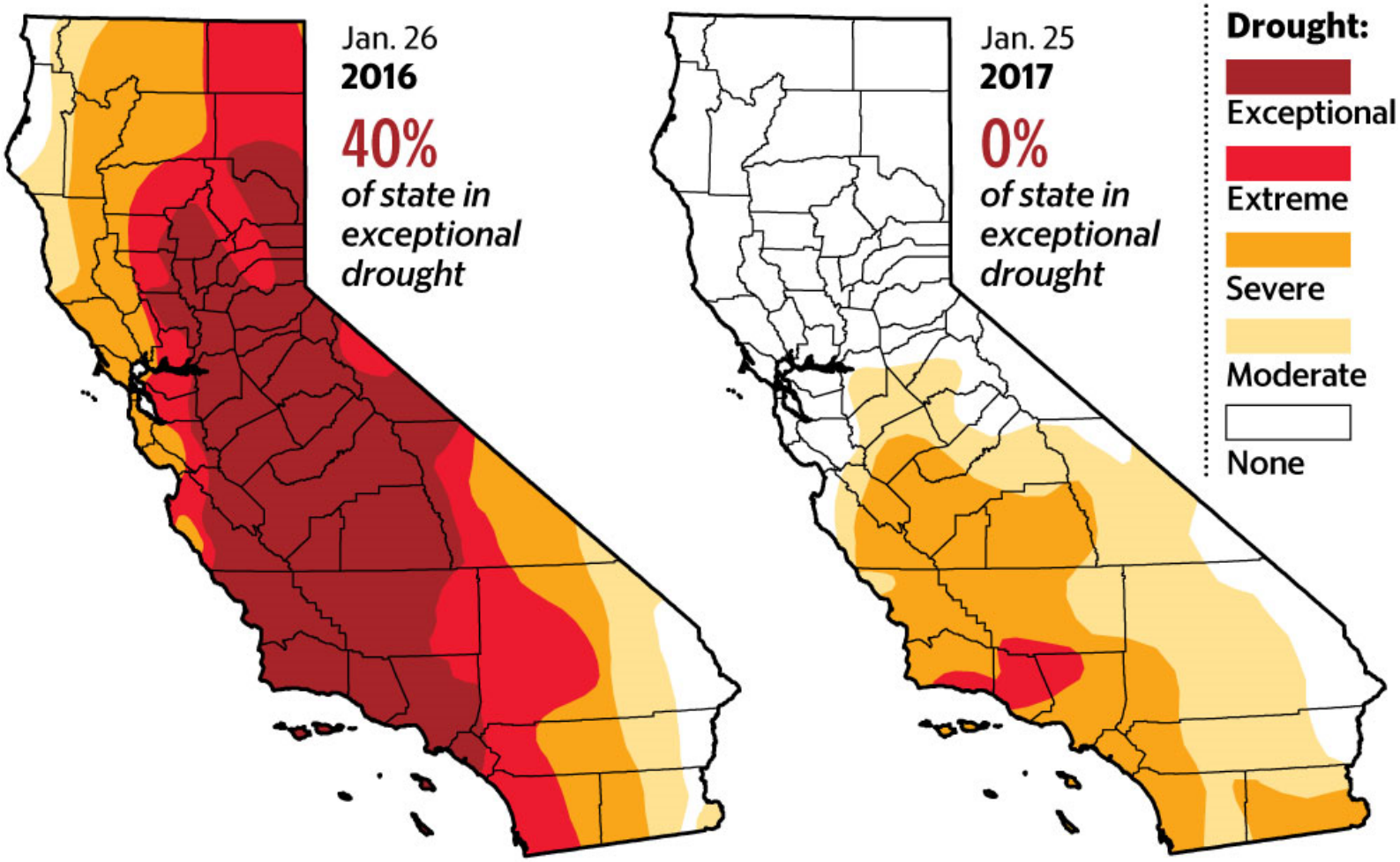

Cumulative Runoff and Water Year Classification, 01/30/2017
(acre-feet)
Cumulative Runoff, San Lorenzo River (acre-feet)
120,000
110,000
100,000
90,000
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
2017 Water Year Classification: TBD
Normal
Dry
Critically Dry
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
117,496
18,403
14,139
4,317
4,503
2,154
1,473
1,131
3,690
18,176
21,345
64,802
69,465
72,049
73,546
74,676
75,566
76,296
33,474
55,428
73,412
84,104
88,585
91,021
92,678
93,905
94,975
Long-Term Average
2016 Water Year
2017 Water Year to date

Figure 4.


Jan. 26
2016
40%
of state in exceptional drought
Jan. 25
2017
0%
of state in exceptional drought
Drought:
Exceptional
Extreme
Severe
Moderate
None

WATER DEPARTMENT
MEMORANDUM

DATE: January 25, 2017

TO: Paul Horvat, Emergency Services Manager

FROM: Toby Goddard, Administrative Services Manager

SUBJECT: Preliminary Storm Damage Assessment

Listed below is a summary of the ongoing storm damage to the City of Santa Cruz water system experienced due the severe weather beginning January 7, 2017 that prompted the City and County of Santa Cruz to proclaim a local emergency, and the Governor on January 24, 2017 to proclaim a state of emergency throughout most of California. The full scope of the damage to the water system caused by these storms is still being assessed.

Item	Amount
Newell Creek Pipeline Emergency	$1,660,000
Cleanup of Flood Damage to Coast Pump Station and Tait Wells	$25,000
Brackney Slide Area Road Drainage and Culvert Repair	$75,000
Streambank Erosion of Road Supporting Felton Diversion Pipeline	$375,000
Highway 9 Landslide/Emergency Water Main Relocation	$75,000
North Coast System (Liddell Branch) Emergency Pipeline Replacement	$160,000
Total	**$2,370,000**

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WATER COMMISSION
INFORMATION REPORT

DATE: 2/1/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Presentation Items on the Water Commission Agenda

RECOMMENDATION: Recommendation to modify the Commission's use of the Presentation agenda item to match the way the City Council uses this agenda item.

BACKGROUND: At the Water Commission's January 9, 2017, meeting there was a question from a Commissioner regarding the difference between presentations and oral communication. Staff has researched this question, with the results reflected in the discussion below.

DISCUSSION: The City's Handbook for Advisory Bodies[1] includes an agenda template (see page 12) and direction to use the standard agenda format used by the City Council for its meetings. The Handbook does not provide any specific direction on the nature of items that would be covered using the Presentation item on any Council or Commission Agenda.

To learn more about how the Council uses this agenda item, staff contacted the City Clerk to better understand the intent behind including a Presentation item on the Council's agendas. The Clerk indicated that Presentation agenda items are typically used for 'feel good' or oral FYI items, where no action by the Council will be taken.

All Council presentations are scheduled in advance and appear as part of the published agenda. Presentations are not scheduled for items that advocate for any particular position, policy, program or project. Input on the City's positions, policies, programs, or projects is accepted during Oral Communication, if the topic area does not appear on that meeting's agenda, or as part of public comment on any agendized action items, including those on the consent, general business, or public hearing parts of the agenda.

[1] See: http://www.cityofsantacruz.com/home/showdocument?id=38270

In discussing with the City Clerk the way the Water Commission agenda Presentation item has been used, at least recently, it does appear that the concerns articulated about the presentations we've recently received having been more appropriately termed Oral Communication is correct. Staff recommends that the Commission agendas no longer include the Presentation agenda item unless there is a topic whose characteristics specifically match the nature of the kinds of items the Council hears under the Presentation agenda item.

Should the Commission agree with this recommendation, one consequence of this action could be the perception that the intent or changing the way the Presentation item is handled on the Commission's agenda is to reduce the amount of time that would be available to those wanting to provide input during Oral Communication. The Chair has the discretion to provide more time for speakers during Oral Communications, and a community member who believes that he or she needs more time could be invited to reach out to the Chair in advance with a request for an extension.

FISCAL IMPACT: None

PROPOSED MOTION: Move to approve the staff's recommendation to modify the Commission's use of the Presentation agenda item to match the way the City Council uses this agenda item.

ATTACHMENTS: Electronic Link to the City's Handbook for Advisory Bodies:
http://www.cityofsantacruz.com/home/showdocument?id=38270

WATER COMMISSION
INFORMATION REPORT

DATE: 2/1/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Malissa Kaping, Management Analyst

SUBJECT: 2nd Quarter FY2017 Financial Report

RECOMMENDATION: Receive information.

BACKGROUND/DISCUSSION: The 2nd Quarter FY2017 Financial Report is attached and is being presented as an informational consent item as was discussed at the Commission's January meeting. This report is for the period through 12/31/16 and is being presented on schedule, two months after the applicable quarter ends.

This report is a summary comparison of our actual expenses and revenues versus the projected budget at the half point of the fiscal year. Although our water sales are below the 50% mark, our expenses are lower than projected and our fund balances are recovering. Therefore, staff is not recommending any action at this time but will continue to monitor water sales closely.

Operating Budget: Noteworthy Items
On the operating side, the execution of the $25M loan from the California Infrastructure and Economic Development Bank (IBank) is reflected in this report and the first principal and interest payment will occur next fiscal year on 8/1/17. Due to accounting requirements, the entire loan amount is reflected in the revenue total while the first reimbursement of $20.4M received appears in the Fund 711 balance. In accordance with the Long-Range Financial Plan, a mid-year budget adjustment is in process to transfer $2M to the Department's Water Emergency Fund (Fund 717) and $6.5 million into the 90-Day Operating Fund (Fund 716).

CIP: Noteworthy Items
On the CIP side, two inactive projects have been revived and added to the report template. The WTP Flocculator Mixer project was previously included in the Water Treatment Upgrades totals and will now be shown separately since the project is being studied as a stand-alone project. And the previously inactive Beltz Well No. 11 project was redefined and reactivated as the Beltz Rehabilitation and Development project and will appear in future reports.

Also on the CIP side, the spend amount for the San Lorenzo River Diversion & Tait Wells project actually decreased from the 1st Quarter FY2017 report. This is a normal occurrence as projects near completion and purchase orders are closed. The spend amount includes both encumbered and actual expenditures. When a purchase order is closed with unexpended funds, that amount is no longer reflected in the spend total. Over the life of projects, it is common to see changes in the total life of the project when purchase orders are closed without being fully expended.

Expectations for the 3rd Quarter FY2017 Financial Report

- A mid-year budget adjustment for both the operating and CIP budgets is in process and will appear in the 3rd Quarter FY2017 report. The bottom-line CIP budget will not change and the operating budget will increase $260K after Council approval.
- Water sales are trending lower than FY2017 projections yet higher than FY2016 actuals and staff does not expect this to change. The average daily consumption is consistent with FY2016 and production amounts did not show a significant drop in consumption during the January water shortage emergency.
- The financial impact of the January storms is not fully known at this time. The recent declaration of a state of emergency by Governor Brown will allow the City to seek reimbursement funding. Actual emergency response expenses and overtime will be reflected in the next quarterly report and staff plans a transfer of Water Emergency Reserve funds to cover the cost of Newell Creek Pipeline repair.

FISCAL IMPACT: None.

PROPOSED MOTION: Receive information.

ATTACHMENTS: 2nd Quarter FY2017 Financial Report

2nd Quarter FY2017
Preliminary, Unaudited, as of 12/31/16

Water Operations, Fund 711

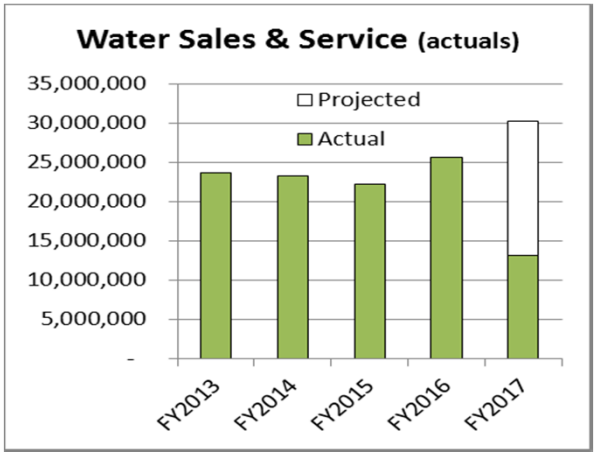
	FY2017 Ado Budget	FY2017 Adj Budget	Actual YTD Thru 12/31/16	Remaining Enc	FY2017 YTD Act + Enc	YTD % of Budget Act + Enc
Revenues						
Water Sales and Service *	30,278,463	30,278,463	13,147,812	-	13,147,812	43%
Miscellaneous	3,045,315	3,045,315	571,024	-	571,024	19%
Grants & Other Financing	20,008,000	20,008,000	25,003,224	-	25,003,224	125%
Total Revenues	**53,331,778**	**53,331,778**	**38,722,060**	**-**	**38,722,060**	**73%**
Expenses			-			
Personnel	12,741,984	12,741,984	5,681,368	-	5,681,368	45%
Services, Supplies, and Other	20,794,807	21,442,474	4,444,211	1,750,702	6,194,912	29%
Capital Outlay: Other	965,000	978,050	-	129,984	129,984	13%
Debt Service	970,550	970,550	292,054	-	292,054	30%
Total Expenses	**35,472,341**	**36,133,058**	**10,417,633**	**1,880,686**	**12,298,319**	**34%**
Balance		17,198,720	28,304,427		26,423,742	

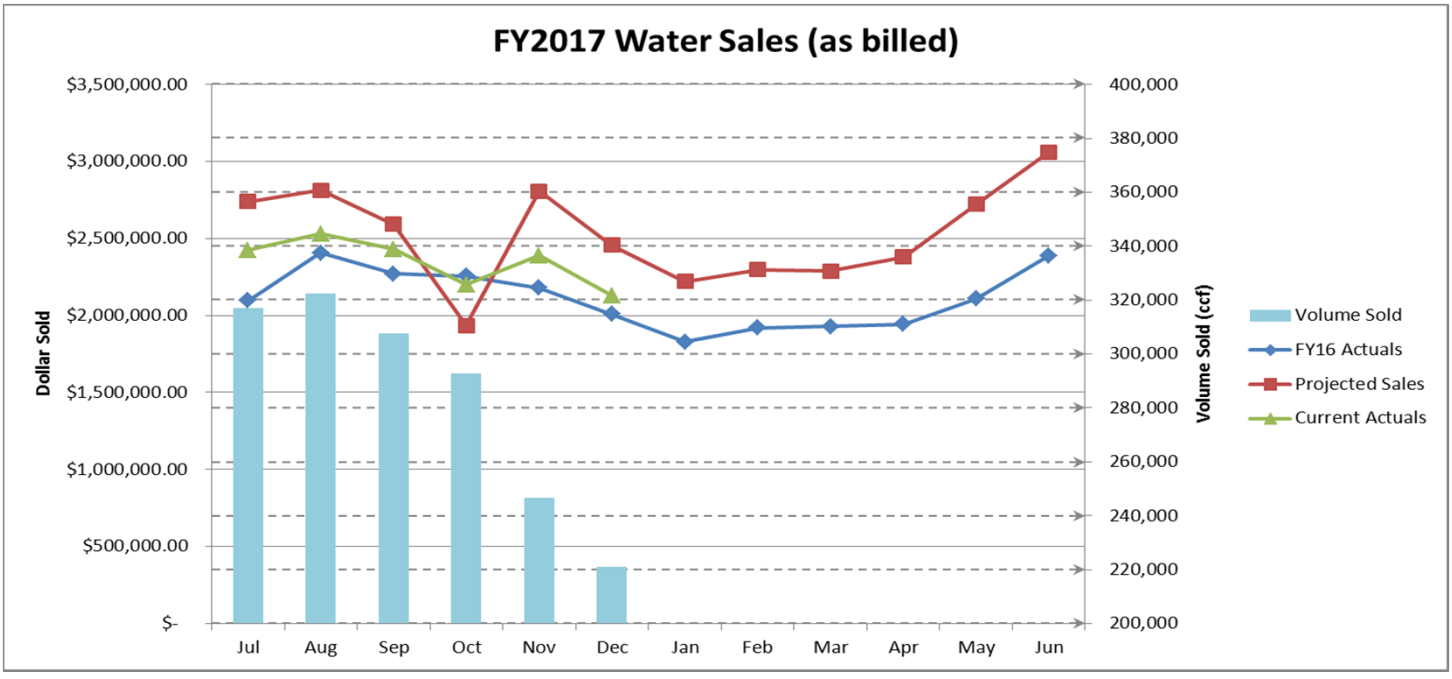
FY2017 Fund Balances

	Balance as of 12/31/16	Target Balance
711- Enterprise Operations **	23,374,603	6,600,000
713- Rate Stabilization	2,469,366	2,450,000
714- Public Art	327,134	N/A
715-System Devel. Charges	2,843,123	N/A
716- 90-Day Operating Reserve **	-	6,600,000
717- Emergency Reserve	1,036,438	3,100,000
718- MHJB Endowment	144,878	145,000

* Actual revenues received (not as billed)

** Target balance is 90-days operating cash





CIP Projects Overview, as of 12/31/16

Rehabilitation or Replacement Projects	Project #	Life of Project Total (Projected) **	Spend Thru 12/31/16*	Project Duration	Current Status
Newell Creek Dam Inlet/Outlet Pipeline	c701606	42,530,744	1,093,846	2016 - 2021	Design
Bay Street Reservoir Reconstruction	c700313 & -027	26,174,172	24,434,742	2007 - 2017	Project Wrap-up
North Coast System Rehabilitation -Phase 3	c709835	14,336,759	13,124,806	2012 - 2017	Construction
Newell Creek Pipeline Rehabilitation	c701701	18,710,000	-	2016 - 2020	Feasibility
WTP Concrete Tanks	c701501	9,963,320	248,745	2014 - 2020	Pre-Design
WTP Filter Rehabilitation and Upgrades	c701303	6,037,300	5,968,349	2013 - 2017	Construction
Felton Diversion Replac. & Pump Station	c701602	4,800,000	92,036	2016 - 2020	Pre-Design
Replace University Reservoir No. 5	c701506	2,003,000	99,698	2014 - 2018	Pre-Design
Recoat University Reservoir No. 4	c701505	1,570,000	-	2014 - 2018	Feasibility
San Lorenzo River Diversion & Tait Wells	c709872	2,055,014	1,940,131	2002 - 2017	Project Wrap-up
WTP Solids Handling	c701605	750,000	-	2016 - 2018	Pre-Design
Water Treatment Upgrades ***	c700025 +	555,548	436,121	TBD	Feasibility
WTP Flocculator Mixers	c701502	60,000	-	TBD	Feasibility
Gravity Trunk Main Valve Replacement	c701504	640,000	583,519	2014 - 2017	Construction
Pressure Regulating Stations	c701703	240,000	6,698	2017 - 2020	Pre-Design
Beltz Rehabilitation & Development	c700026	434,243	64,243	TBD	Pre-Design
		130,860,100			

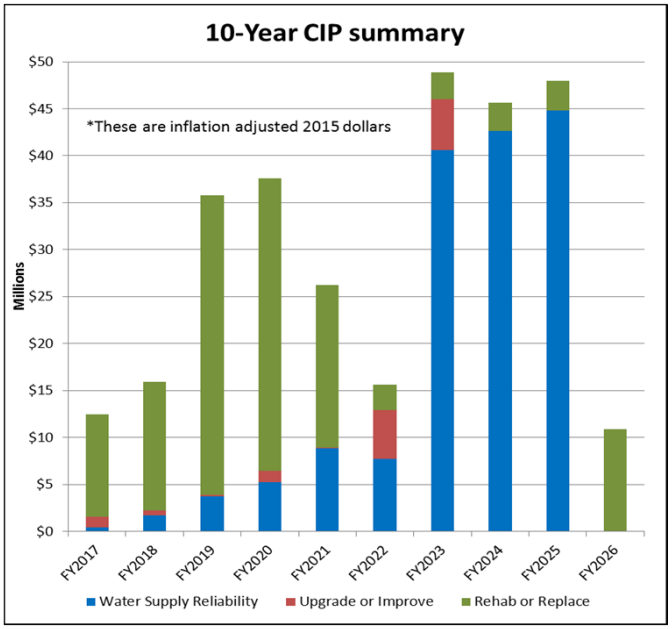
Upgrades or Improvement Projects		Life of Project Total (Projected) **	Spend Thru 12/31/16*	Project Duration	Current Status
Advanced Metering Infrastructure (AMI)	c701603	8,100,000	5,600	TBD	Feasibility
Loch Lomond Facilities Improvements	c701301	1,450,000	74,376	2013 - 2020	Construction
Water Resources Building	c701702	1,100,000	200,020	2016 - 2017	Design
Photovoltaic System Evaluation/Construc	c701607	540,000	-	2016 - 2018	Feasibility
Spoils and Stockpile Handling Facilities	c701508	350,000	5,100	2015 - 2017	Construction
Security Camera & Building Access Upgrades	c701704	95,000	-	2016 - 2019	Feasibility
		11,635,000			

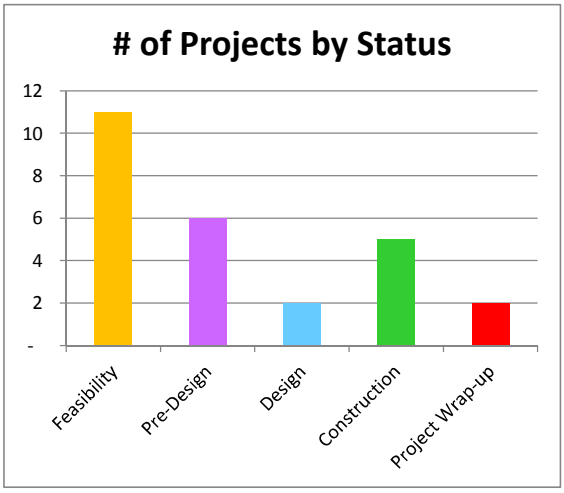
Water Supply Reliability & Studies		Life of Project Total (Projected) **	Spend Thru 12/31/16*	Project Duration	Current Status
Water Supply- WSAS Implementation	c701705	104,400,000	22,088	2020 - 2025	Feasibility
Source Water Evaluation	c701608	7,100,000	166,536	2016 - 2020	Feasibility
Aquifer Storage and Recovery	c701609 & -10	2,235,000	446,370	2016 - 2020	Feasibility
Recycled Water	c701611 & -12	500,000	474,956	2016 - TBD	Feasibility
		114,235,000			

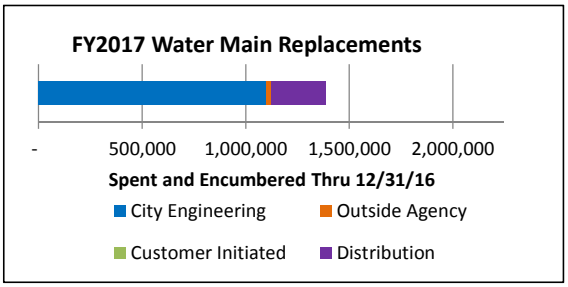
* Amount includes encumbered and spent funds from the project start through 12/31/16.

** Non-inflated 2015 dollars, subject to change as projects move through design process.

*** Includes former projects for hypochlorite generation and Pasatiempo UV System.







WATER COMMISSION
INFORMATION REPORT

DATE: 2/1/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Water Supply Augmentation Strategy, Recycled Water

RECOMMENDATION: Receive Information on Recycled Water.

BACKGROUND: The City's Water Supply Advisory Committee (WSAC) recommended several strategies in their Final Agreements and Recommendations of the Water Supply Advisory Committee (WSAC) for how best to address an agreed-upon water supply gap of 1.2 billion gallons during times of extended drought. The WSAC recommendations include continued water conservation (referred to in the WSAC Final Report as Element 0) as described in the Long Term Water Conservation Plan (August 2016), as well as the evaluation of additional water supply alternatives as described in Attachment 1 and outlined below in terms of the adopted nomenclature, "Strategy" and "Element."

Strategy 0 - Conservation
- Element 0: Water Conservation

Strategy 1 - Development of Groundwater Storage
- Element 1: In lieu Passive Recharge
- Element 2: Aquifer Storage and Recovery

Strategy 2 - Advanced Treated Recycled Water or Desalination
- Element 3: Advanced Treated Recycled Water or Desalination

(Parallel to the above studies, and ultimately inclusive in a final project, is the evaluation of the infrastructure improvements required in order for an Element to meet the project objectives. A list of these is also shown in Attachment 1.)

As required by the WSAC recommendations, quarterly updates to the Water Commission on the progress of the Water Supply Augmentation Strategy (WSAS) are provided. The Quarter 1 2017 update will be provided in a joint study session with City Council tentatively scheduled for March 14, 2017.

In addition to the quarterly updates, staff is providing other informational opportunities to the Commission to facilitate their evaluation of the work that is underway and to engage in needed discussions on the opportunities and limitations of the alternatives. For example, on November 7, 2016, the Water Commission received information on Aquifer Storage and Recovery. Information was provided by several speakers who are involved in the evaluation of the various aspects of ASR: technical, legal, practical.

DISCUSSION: The Recycled Water workshop includes discussions of the Advanced Treated Recycled Water portion of Element 3. Kennedy/Jenks Consultants was hired by the City in February 2016 to complete a Recycled Water Feasibility Planning Study (RWFPS). There have been two Contract Amendments adding several tasks to the original contract as shown below.

Original Contract
- Task 1 – Project Management & QA/QC
- Task 2 – Background Information
- Task 3 – Recycled Water Market Analysis
- Task 4 – Treatment Evaluation & Regulatory Requirements
- Task 5 – Alternatives Analysis
- Task 6 – Stakeholder Involvement
- Task 7 – Recommended Project
- Task 8 – Financial Analysis
- Task 9 – Regional RWFPS Report
- Task 10 - Meetings and Workshops

Contract Amendment Number 1
- Task 11 – Injection Well Capacity and Siting Study

Contract Amendment Number 2
- Task 12 – Santa Margarita Basin Injection Well Capacity and Siting Study
- Task 13 – Regional Groundwater Replenishment Reuse Alternative Evaluation

The goals of the RWFPS are broader than those embodied in the WSAC Final Report. While studying the potential for recycled water to provide water supply benefit to the City, the RWFPS is also evaluating a much broader range of potential beneficial uses of the treated effluent from the City's Wastewater Treatment Facility. This will be discussed in more detail at the workshop. Study partners include the City's Public Works Department as well as the State of California who is funding a portion of the project through the State Water Resources Control Board's Water Recycling Funding Program. In addition to project partners, project participants have included the County of Santa Cruz, County Sanitation District, Soquel Creek Water District, and the Scotts Valley Water District.

The following milestones affecting Element 3 are worth noting to help frame the timeframe and scope of the work being completed as per the WSAC Final Report. Refer to Attachment A.

Abbreviated Water Supply Advisory Committee Implementation Plan

End of Calendar Year	Description of task(s)
2016 (Milestone)	Identify recycled water alternatives; increase understanding of recycled water (regulatory framework, feasibility, funding opportunities, public outreach, and education)
2017 (Decision)	Complete high level feasibility studies, as-needed demonstration testing, and conceptual level designs of alternatives; define CEQA processes, and continue public outreach and education. Select preferred Element 3.
2020 (Decision)	Preliminary design, CEQA (including preparation of draft EIR), and apply for approvals and permits (except building permit).
2022 (Milestone)	Complete property acquisition, final design, complete CEQA and all permits.
2024 (Water Production)	Construction completed: plant start-up, water production begins

Information provided at the meeting will include the following. Attachment B is provided for background to the discussion of treatment technologies and removal efficacy.

- Study Background & Context;
- Scope of Work for the RWFPS;
- Current Alternatives Analysis
- Regulatory Framework, Treatment Technologies, Removal Efficacy

In addition to staff, the following speakers will present information on ASR as follows.

Dawn Taffler, P.E., LEED® AP Kennedy/Jenks Consultants Dawn has an M.S. in Civil and Environmental Engineering from the University of California at Berkeley, and a B.S. in Civil and Environmental Engineering from the University of Illinois, Champaign-Urbana. Dawn is a registered engineer in the state of California with over 15 years of experience. At Kennedy/Jenks Dawn is Practice Leader for Recycled Water and the City's Project Manager for the Recycled Water Facilities Planning Study. She has served as the project manager and provided engineering support for a wide-range of multidisciplinary water supply engineering projects throughout California. Her current role, implementing recycled water programs, includes the development of over a dozen Recycled Water Master Plans evaluating non-potable and potable reuse opportunities; many of which received state and federal grant funding. Dawn has served as the liaison between engineering, public and environmental teams, and appreciates the intercommunication needed to successfully plan and integrate all elements of a recycled water program. Dawn currently serves on the Board of Trustees for WateReuse California.

Brian Pecson, Ph.D., P.E. Trussell Technologies Inc. Dr. Pecson has an M.S. and Ph.D. in Civil and Environmental Engineering from the University of California at Berkeley, and a B.S. and B.A. from the University of Notre Dame. Brian is a registered engineer in the state of California with over 15 years of experience. He has authored 12 research papers on topics ranging from pathogen disinfection to public health protection. At Trussell Technologies, Brian uses his expertise in disinfection and pathogens to address a variety of issues in water, wastewater, and recycled water treatment. He is currently engaged in a number of projects related to potable and non-potable reuse, including the newly emerging paradigms of surface water augmentation and direct potable reuse. Work in this area includes the development of public health criteria for potable reuse, and the design, evaluation, and testing of reuse technologies that can reliably protect the public from both chemical contaminants and pathogenic microorganisms. Through these projects, Brian is working with the California Division of Drinking Water to advance and expand options for the design, implementation, and permitting of innovative potable reuse systems.

FISCAL IMPACT: None.

PROPOSED MOTION: Accept the information.

ATTACHMENTS:
Attachment A Recommended Work Plan (Table 16 and Figure 12 from WSAC Final Report)
Attachment B Carollo, (2015) "Technical Memorandum No. 2 CEC Removal Through Advanced Treatment, Draft" prepared for Soquel Creek Water District.

Table 16 – Table of Decision Nodes and Related Milestones

NODE	ABBREVIATED DESCRIPTION	ENDING YEAR
In Lieu (Element 1)		
1.1D △	Near Term: Initiation of near term water transfer/sale to SqCWD using North Coast water; agreements in place, and CEQA completed.	c. 2016
1.2M ◇	Larger Project: Understanding the feasibility of a potentially larger water transfer/exchange project with SqCWD and/or SVWD using North Coast and San Lorenzo River waters. Includes quantifying return water (using groundwater models) from SqCWD and/or SVWD to Santa Cruz as well as understanding of water rights and inter-agency collaboration.	c. 2018
1.3W/D □ △	Larger Project: Completion of agreements specifying terms of transfers to/from SqCWD and/or SVWD, water right modifications, planning/prelim design; complete assessments of cost, yield and schedule; and define CEQA. Decision point for proceeding on final design of associated infrastructure improvements.	c. 2019 c. 2020
1.4W □	Larger Project: Potential for return of water from SqCWD, and/or SVWD, to SCWD with the construction of infrastructure/treatment improvements.	c. 2022
1.5D/W △ ■	Assess in lieu performance: amount to SqCWD, SVWD, and SCWD; reduced groundwater pumping, groundwater elevations, etc.	c. 2025
Aquifer Storage and Recovery, ASR (Element 2) Includes evaluation of Purisima and Santa Margarita		
2.1M ◇	High level feasibility work: use of groundwater model; completion of site specific injection capacity and geochemical analyses; development of pilot program.	c. 2017
2.2D △	Completion of all administrative items to conduct pilot testing (e.g., CEQA/permits/agreements and well modifications), completion of pilot testing, and assessment of probable ASR system performance, cost and schedule to complete build out of ASR system.	c. 2020
2.3M/W ◇ □	Develop/construct ASR wells, ready to operate.	c. 2022
2.4D/W △ □	Assess ASR performance against projections and ability to meet project goals.	c. 2024
2.5W ■	Aquifer storage target attained (ability to sustain return flows to SCWD at desired levels).	c. 2027
Advanced Treated Recycled Water or Desalination (Element 3)		
3.1M ◇	Identify recycled water alternatives; increase understanding of recycled water (regulatory framework, feasibility, funding opportunities, public outreach and education)	c. 2016

3.2D △	Complete high level feasibility studies, as-needed demonstration testing, and conceptual level designs of alternatives;, define CEQA processes; and continue public outreach and education. Select preferred Element 3.	c. 2017
3.3D △	Preliminary design, CEQA (including preparation of draft EIR), and apply for approvals and permits (except building permit).	c. 2020
3.4M ◇	Complete property acquisition, final design, complete CEQA and all permits.	c. 2022
3.5W ■	Construction completed: plant start-up, water production begins	c. 2024

Abbreviations

ASR = Aquifer Storage and Recovery
CEQA = California Environmental Quality Act
DDW = Division of Drinking Water
DPR = Direct Potable Reuse
GHWTP = Graham Hill Water Treatment Plant
IPR = Indirect Potable Reuse
SCWD = Santa Cruz Water Department
SqCWD = Soquel Creek Water District
SVWD = Scotts Valley Water District

Notes

- This table is intended as a companion piece to the implementation Gantt chart and subway map. Gantt chart contains additional activity detail(s) for each node.
- Node types
  - D = decision node (triangle on subway chart)
  - M = milestone (diamond on the subway chart), furthering the understanding of feasibility.
  - W = water production potentially available (squares on the subway chart; open square indicates some water; solid square represents full goal being met).
- Node types have been assigned based on a set of assumptions as to how the implementation will proceed. However, if a threshold is being tripped, the node becomes a decision node regardless of its current designation.
- Ending Year refers to when all work associated with reaching node and/or achieving goal(s) will be accomplished. Dates shown are approximate based on current information and project understanding. Dates may adjust depending on: volumes of water available due to winter precipitation levels (which may limit amount of in lieu and ASR); ability to establish agreements, permits, etc.; and ability to implement workload.

As noted in earlier discussions, thresholds represent “special decision nodes” that can be reached by any Element, at any time.

(f) Guidance for Decision-Making at Decision Nodes

This section provides guidance for decision-making.

When a decision node on the adaptive pathway map is reached, or when the Plan or any Element appears it will fail to meet any threshold value at any time, the Committee’s Change Management Strategy recommends a “pause and assess” step. At this juncture, there are three basic kinds of decisions:

Figure 12 Gantt Chart
Implementation Plan and Timeline

	Node	Activity	Duration (years)	2016 Year 1 Q1 Q2 Q3 Q4	2017 Year 2 Q1 Q2 Q3 Q4	2018 Year 3 Q1 Q2 Q3 Q4	2019 Year 4 Q1 Q2 Q3 Q4	2020 Year 5 Q1 Q2 Q3 Q4	2021 Year 6 Q1 Q2 Q3 Q4	2022 Year 7 Q1 Q2 Q3 Q4	2023 Year 8 Q1 Q2 Q3 Q4	2024 Year 9 Q1 Q2 Q3 Q4	2025 Year 10 Q1/2 Q3/4	2026 Year 11 Q1/2 Q3/4	2027 Year 12 Q1/2 Q3/4
strategy 1		**Element 1 - In lieu**	Both near term with SqCWD using North Coast & lareger project with SqCWD & SVWD using SLR water												
	1.1D	Near term: Develop Agreements, Complete CEQA, Resolve any Infra. Issues	0.5	1.1											
	1.2M	Evaluate larger project(s) with other agencies; affirm return water volumes & water rights	3				1.2								
	1.3W/D	Completion of agreements, water rights, planning/prelim design, siting study & CEQA.	1						1.3						
	1.4W	Infrastructure Improvements (see below for potential projects) & return water to SCWD	4							1.4					
	1.5D/W	Assess performance	NA										1.5		
		Element 2 - ASR (City, SqCWD and/or SVWD; i.e., Purisima & SM) + shared infrastructure (in lieu & ASR)													
	Phase 1 2.1M	Complete & use groundwater model	0.5-2												
	Higher-level Feasibility	Identify/select existing wells for potential pilot testing	0.25												
		Perform site specific injection capacity & geochemical analyses	0.5												
		Develop Pilot Program & identify potential sites for new ASR well(s)	0.75			2.1									
	Phase 2 2.2D	Retrofit existing wells	0.25												
	Pilot Testing	Perform injection well hydraulic testing	0.25												
		ISR cycle testing	1-2					2.2							
		Develop ASR program	1												
	Phase 3 2.3M/W	Procure properties	1												
	Implementation	Design Project (includes City Administration)	1												
		CEQA	0.5												
		Construct	1.5							2.3					
	2.4D/W	Assess performance	2									2.4			
	2.5W	Storage target achieved	NA												2.5
		Infrastructure Improvements for Long term in lieu and/or ASR													
		Design/build pipeline in Santa Cruz to Beltz Wells	1.5												
		Tait Street Diversion Improvements	3												
		Graham Hill WTP Improvements	4												
		Design & build Soquel Creek transfer (back), Scotts Valley transfer (to) infrastructure	2												
		Pump Station (Soquel to City)	1.5												
		Intertie No. 1 Pipeline (City to Scotts Valley)	2												
		Pump Station (City to Scotts Valley) Intertie No. 1	2												
strategy 2		**Element 3 - Advanced Treated Recycled Water or Desalination**													
	3.1M	Define Recycled Water project alternatives and status of DPR regulations	1	3.1											
	3.2D	Select preferred Element 3	1		3.2										
	3.3D	Prelim design, CEQA (prepare Draft EIR), permits	3					3.3							
	3.4M	Complete Design , CEQA, permits, property acquistion	2							3.4					
	3.5W	Complete construction/start up	2										3.5		

These items will be evaluated along with Elements 1 and 2 and implemented as needed.

Table Notes & Select Assumptions

This table approximates activities, costs, durations and sequencing of each element, all of which are subject to change.
Elements are shown to start in Q1 - 2016. This may or may not occur depending upon agreements, contracts, etc.
Rehab/replacement of the Newell Creek Pipeline is part of the existing CIP and not shown here.
Some infrastructure improvements may not be required if other pursuits are successful. E.g., evaluation of Ranney collectors may substitute GHWTP Improvements.
CEQA is used generically; implies compliance with Californa Environmental Quality Act.
Pilot ASR work assumes major infrastructure not required. E.g., intertie to Scotts Valley or new well(s).
Element 2 includes 8 wells for in lieu plus 8 additional wells for ASR.

Legend

ASR = Aquifer Storage and Recovery
CEQA = California Environmental Quality Act
DDW = Division of Drinking Water
DPR = Direct Potable Reuse
EIR = Environmental Impact Report
GHWTP = Graham Hill Water Treatment Plant
IPR = Indirect Potable Reuse
ISR = Injection, Storage, Recovery
SCWD = Santa Cruz Water Department
SqCWD = Soquel Creek Water District
SVWD = Scotts Valley Water District

Decision Node
Milestone Node
Some amount of water returned to SCWD
Full required amount of water returned to SCWD

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SOQUEL CREEK WATER DISTRICT

GROUNDWATER REPLENISHMENT FEASIBILITY STUDY

TECHNICAL MEMORANDUM NO. 2
CEC REMOVAL THROUGH ADVANCED TREATMENT

DRAFT
October 2015

SOQUEL CREEK WATER DISTRICT

GROUNDWATER REPLENISHMENT FEASIBILITY STUDY

TECHNICAL MEMORANDUM
NO. 2
CEC REMOVAL THROUGH ADVANCED TREATMENT

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CEC REMOVAL THROUGH ADVANCED TREATMENT

1.0 INTRODUCTION

Soquel Creek Water District (SqCWD) is conducting a feasibility study for potable water reuse. Specifically, the SqCWD is investigating the purification of wastewater and the subsequent recharge of 1,300,000 gallons per day of the purified water into the groundwater basin. Potable water reuse has been widely and successfully implemented in California. The Orange County Water District (OCWD), as the largest example of potable water reuse, purifies wastewater to near distilled water quality and recharges 100,000,000 gallons per day into their groundwater basin. The State of California is fully supportive of this type of potable water reuse, repeatedly documenting the high quality water and the protection of public health. Final regulations for groundwater recharge have been promulgated by the state through the Division of Drinking Water (DDW), formerly known as the California Department of Public Health (CDPH) (CDPH, 2014), and these regulations are followed in the evaluation of potable reuse for the SqCWD project.

As part of the SqCWD's thorough evaluation of potable water reuse, the SqCWD's Board of Directors has requested a detailed evaluation of Compounds of Emerging Concern (CECs) in water, both for conventional potable water and in purified water. CECs is a broad term that may encompass a wide range of trace level pollutants such as potential endocrine disrupting compounds (EDCs), pharmaceutically active compounds (PhACs), and personal care products (PCPs).

This Technical Memorandum (TM) focuses upon the state of the industry's knowledge on CECs in potable water reuse projects, and supplements that information with CEC levels in conventional water supplies (e.g. surface and groundwater).

2.0 HEALTH BASED STANDARDS

CDPH (2014) requires that potable water reuse projects produce a high quality water that meets EPA potable water standards (e.g., maximum contaminant levels (MCLs)), provides robust removal of pathogens with multiple barriers of treatment, utilizes reverse osmosis (RO) for removal of total organic carbon to very low levels (<0.5 mg/L) and salts to very low levels, provides water low in conventional disinfection byproducts (DBPs) and unconventional DBPs (e.g., NDMA), and provides for an advanced oxidation process (AOP) that is capable of further reduction of trace level organic pollutants, should they pass through the RO process. Per CDPH (2014), monitoring for select unregulated CECs is also required. Appendix A includes an example list of chemicals required for monitoring for potable reuse projects regulated by the Los Angeles Regional Water Quality Control Board.

For advanced treatment trains, most chemicals are not detected; those that are detected are found at levels lower than those found in conventionally treated drinking water supplies (NRC, 2012).

Regarding CECs, their removal is usually tracked using a small list of indicator compounds, such as the one found in NWRI (2013). Most trace organic compounds are present in secondary effluent at concentrations well below the lowest human-health based threshold values. The levels of trace pollutant reduction required to meet health standards is reviewed in NWRI (2013), and various research projects document the ability of advanced treatment to meet these standards (Trussell *et al.*, 2013, Salveson *et al.*, 2010, Salveson *et al.*, 2014, Linden *et al.*, 2012).

Overall, the National Research Council (NRC 2012) demonstrated that from a risk standpoint, engineering potable water reuse projects create a better water quality and less risk (for pathogens and pollutants) compared to conventional water supplies.

2.1 Determining Health Based Standards

Municipal wastewater, and many of our nation's raw water supplies, contains chemicals from human waste (e.g., naturally excreted hormones), consumer products, industrial discharges, and water treatment additives or byproducts, which raises reasonable concerns about water safety. The risk to human health for a given chemical is typically presented as: (1) an acceptable daily dose (mg/kg/d) or (2) an acceptable concentration in drinking water (mg/L). Additionally, concentrations of chemicals (i.e. pharmaceuticals) relevant to human health come with a drug tolerance limit. Risk in each case is determined by regulators (US EPA, WHO, and state governments) from both agency and independent research studies. NWRI (2013) and Trussell *et al.* (2013) examined the current state of science for the treatment of and relevant health impacts of emerging contaminants and pathogens as part of potable water reuse projects, including an explanation of the creation of health based standards for unregulated CECs.

The regulation of chemicals with EPA mandated MCLs is an ongoing process, as new chemicals are continuously made for industrial and consumer use (and thus direct exposure). Treatment criteria is continuously developing for new chemicals while further research and regulatory steps are taken to make the decision of whether or not to include these pollutants on an enforceable list. There are a number of resources that can be used to aid in pollutant monitoring decisions:

- The US EPA Health Advisories (HAs): (http://water.epa.gov/action/advisories/drinking/upload/dwstandards2012.pdf) ,
- Division of Drinking Water (DDW) Notification Levels (NLs) (http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Notificationlevels/notificationlevels.pdf),

- and Office of Environmental Health Hazard Assessment (OEHHA) Public Health Goals (PHGs). The OEHHA is a specialized department within the cabinet-level California Environmental Protection Agency with responsibility for evaluating health risks from environmental chemical contaminants (http://oehha.ca.gov/water/phg/pdf/030714PHGTech.pdf)

Because of continuously advancing analytical techniques, we can now detect pollutants at the nanogram per liter level (ng/L), resulting in more compounds being found now than before. Such results do not infer that these ng/L (or less) compounds are of human health significance, but such detections do continuously drive the industry to look closer at water quality and remain vigilant about public health protection.

Besides the chemical and radiological constituents explicitly regulated through MCLs, a wealth of research has been conducted on the CECs in wastewater, their attenuation through conventional WWTPs, and their further breakdown during advanced oxidation treatment (Baronti *et al.*, 2000; Lovins *et al.*, 2002; Schäfer *et al.*, 2005; Sedlak *et al.*, 2006; Steinle-Darling *et al.*, 2010; Linden *et al.*, 2012; Salveson *et al.*, 2010; Snyder et al., 2012, and many others). These constituents that have been researched include pharmaceuticals, personal care products, consumer chemicals, flame retardants, and others, some of which have potential endocrine disrupting, carcinogenic, and/or other potentially harmful endpoints at sufficiently high concentrations. Due to this fact (and some help from media interest), this group of constituents has often been the primary concern for potable water reuse projects. However, the vast majority of CECs present in treated effluent, if at all, are at concentrations that are ***not of concern*** for human health (Trussell *et al.*, 2013). Further, various research projects document the ability of advanced treatment to meet stringent water quality standards (Trussell *et al.*, 2013, Salveson *et al.*, 2010, Salveson *et al.*, 2014, Linden *et al.*, 2012).

Disinfection byproducts (DBPs) are another suite of parameters that warrant consideration for potable reuse projects. Conventional DBPs, such as trihalomethanes (THMs), Haloacetic Acids (HAAs), bromate, and chlorate, are regulated by the Stage 1 and Stage 2 Disinfectant and Disinfection Byproduct Rules (USEPA, 1998 and 2006), and thus potable water reuse projects must all meet these standards with a measure of confidence. Potable water reuse projects in California go to additional measures with emerging DPBs, most notably *N*-Nitrosodimethylamine (NDMA). NDMA and other nitrosamines have been considered for regulation by the USEPA for over a decade (they are on the Unregulated Contaminant Monitoring Rule 2 list and the Candidate Contaminant List 3), and NDMA has a California Notification Level of 10 nanograms per liter (ng/L), which is considered the minimum treatment benchmark by the California utilities currently implementing potable water reuse.

Overall, the DDW regulations (CDPH, 2014) also include limits for chemical constituents, e.g., maximum contaminant levels (MCLs), notification levels (NLs), and other constituents specified by DDW, ***including monitoring for CECs***. These chemical constituents,

including disinfection byproducts (DBPs), industrial chemicals, pesticides, metals, and other classes known to be detrimental to human health above certain concentrations, are regulated in drinking water by the U.S. EPA under the Safe Drinking Water Act (SDWA) through MCLs. Any wastewater effluent that is proposed for water supply augmentation should, therefore, meet all of these standards. A number of research studies have found that secondary or tertiary effluents meet most, if not all, MCLs without further treatment (Trussell et al., 2013). The fact that MCLs are met does not mean that additional treatment is not warranted for chemical constituents, and potable water reuse projects in California do provide for purification of the water (beyond secondary and tertiary treatment) using advanced treatment trains.

2.2 CEC Health Risk for Reuse

The perception is that potable reuse projects pose a potentially higher risk to human health than that of conventional drinking water treatment is due to the original source of the water (wastewater). NRC (1982) provided that "the quality of reused water ***could be*** compared to that of conventional drinking water supplies, which are assumed to be safe." De facto reuse provides a comparison for the level of treatment and safety necessary for drinking water quality from a contaminated effluent source. NRC (2012) concluded that comparing the risk associated with potable reuse projects to that of de facto reuse scenarios is representative of currently existing water supplies.

Extensive toxicology testing performed for potable reuse projects in Tampa, FL (CH2M Hill, 1993) and Denver, CO (Lauer and Rogers, 1996) found no adverse health effects for potable water reuse. Quantitative risk assessment methods originally employed by NRC (1983) were applied to a risk analysis example published in NRC (2012). This study compared risks associated with potable water reuse using MF/RO/UV AOP with water from a conventional drinking water supply that is downstream of other communities (a common scenario). A wide array of constituents were selected for attenuation evaluation, including DBPs, hormones, pharmaceuticals, and other CECs. Based on known process attenuation data, a Margin of Safety (MOS) risk assessment was conducted for the scenario: secondary effluent treated by MF/RO/UV AOP for drinking water standards. A MOS less than 1 poses potential concern, as this is considered a low MOS. The MOS data from NRC (2012) for CECs is presented in Table 1 below.

Table 1 Margin of Safety Estimates for Constituents Treated with MF/RO/UV AOP[1] Groundwater Replenishment Feasibility Study Soquel Creek Water District

Constituent	Risk-Based Action Level	Margin of Safety (MOS[2]) MF/RO/UV AOP Train
Ibuprofen	120,000 µg/L	>280,000,000
Carbamazepine	186,900 µg/L	>190,000,000
Gemfibrozil	140,000 µg/L	>140,000,000
Sulfamethoxazole	160,000 µg/L	>160,000,000
Meprobamate	280,000 µg/L	>930,000,000
Primidone	58,100 µg/L	>58,000,000
Caffeine	70,000 µg/L	>23,000,000
17-β Estradiol	3,500 µg/L	>35,000,000
Triclosan	2,100 µg/L	>2,100,000
TCEP	2,100 µg/L	>210,000
PFOS	200 ng/L	>200
PFOA	400 ng/L	>80

Note:
(1) NRC 2012
(2) MOS <1 poses a potential concern as it presents a low margin of safety.

The NRC (2012) report concluded that "it ***is*** appropriate to compare the risk from water produced by potable reuse projects with the risk associated with the water supplies that are presently in use." In the risk scenario MF/RO/UV AOP treatment of effluent, the risk posed by this treatment scenario was less than the risk of common existing water supplies providing influent to drinking water treatment plants.

Several epidemiological and toxicological health effects studies have been conducted in the last 30 years to evaluate the public health implications of potable reuse. These studies were summarized in the 1998 NRC report on potable reuse. Health effects data from some existing and demonstration potable reuse facilities, including the first DPR project (i.e., Windhoek, Namibia), have been reported, and most recently summarized by NWRI (2015). A summary of epidemiological studies is provided by NWRI (2015), as follows:

"The limited sensitivity and nature of the toxicological and epidemiological techniques hinder the usefulness of study results for evaluating potable reuse projects in general. The epidemiological results have been negative for both studies of groundwater recharge (e.g., the Montebello Forebay in Los Angeles County) and whole animal studies of recycled water intended for potable reuse in several locations (e.g., Denver, Tampa, and Singapore). While these studies had deficiencies, the fact that the results were all negative provides some assurance that the risks are very low.

Further, a blue ribbon panel formed by the California State Water Resources Control Board (SWRCB) reviewed the results of many key studies conducted over the past 40 years on the toxicological relevance to humans of constituents of emerging concern (CECs) in recycled water (see Section 4.5.1.3 of this chapter and Anderson et al., 2010). Based on this review, the blue ribbon panel noted:

> *'In summary, the Panel views the predominantly negative findings of the combined epidemiological studies, laboratory rodent studies, bio-analytical screening studies and risk assessments as several concordant lines of evidence that appropriately treated recycled water represents a safe source of water to supplement potable drinking water supplies. The predominantly negative findings described above do not preclude the need to monitor recycled water to assure its continued safety.'"*

NWRI (2015) also includes several representative quantitative relative risk assessment studies within the Appendices of their report.

3.0 CEC ATTENUATION TECHNOLOGIES

For the potential SqCWD potable water reuse project, the treatment processes will purify conventionally treated municipal wastewater (that has gone through primary and secondary treatment processes to remove solids and provide biological treatment to reduce pollutants and pathogens) using:

- Membrane filtration (e.g., microfiltration (MF), ultrafiltration (UF) or membrane bioreactor (MBR));
- Reverse osmosis (RO); and
- an ultraviolet light (UV) advanced oxidation process (AOP).

This treatment train, shown in Figure 1, meets the requirements of the State of California (CDPH, 2014). Other treatment trains are used for potable water reuse, including alternative treatment to RO, with examples provided below. However, and this is important to note, for a groundwater recharge project such as that discussed for the SqCWD, RO is a required component of treatment in the State of California.

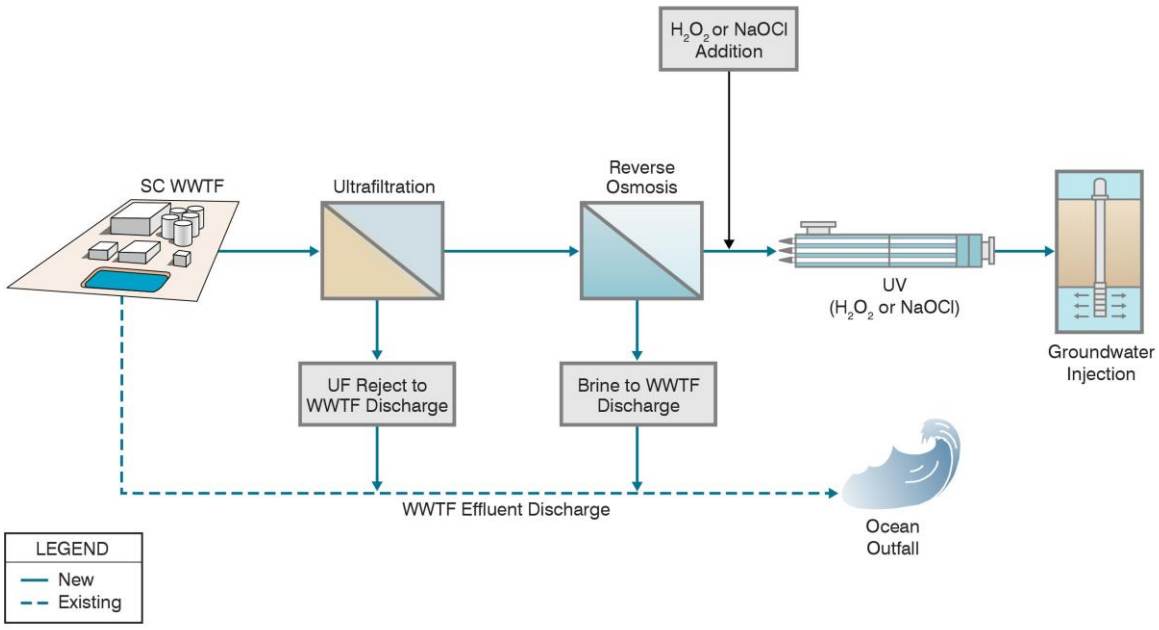


Figure 1 Example UF/RO/UV AOP Treatment for Potable Reuse Via Groundwater Recharge

Extensive research has been conducted on the attenuation of trace pollutants through conventional WWTFs and their further breakdown during advanced water treatment (Baronti et al, 2000; Lovins et al., 2002; Schäfer et al., 2005; Sedlak et al., 2006; Steinle-Darling et al., 2010; Linden et al., 2012; Salveson et al., 2010; Snyder et al., 2012; and many others). An example data set for the existence and removal of a range of trace level pollutants through two different advanced water treatment trains (O_3/BAC/UV and MF/RO/UV-AOP, from Trussell et al., 2015) is presented in Table 2. Following advanced treatment, most CECs were below the method reporting level (MRL, essentially the laboratory's minimal level for confidence in the detection of a chemical), however, in the case where there was a reportable number, the CECs were far below the projected health criteria (the listed CECs are not regulated, but health criteria were projected by Trussell *et al.* (2015)). The level of contaminants in the wastewater secondary effluent prior to advanced treatment were also all below the health criteria required for finished water sources, meaning advanced treatment provided an additional barrier, but was not necessary for meeting projected health criteria.

The removal of CECs through MF (or UF), RO, and UV AOP are detailed below.

Table 2 Example of CEC Removal by Different Advanced Treatment Trains[3]
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

	Concentrations, ng/L								
				Treatment Train 1			Treatment Train 2		
Constituent	Health Criteria	MRL[1]	Secondary effluent	O_3 effluent	BAC effluent	UV photolysis effluent	MF filtrate	RO permeate	UV- H_2O_2 effluent
Atenolol	4,000	3	292	<MRL[a]	<MRL	<MRL	NT[2]	<MRL	<MRL
Carbamezapine	10,000	1	194	<MRL	25	21	NT	<MRL	<MRL
DEET	200,000	6	45	<MRL	<MRL	<MRL	NT	<MRL	<MRL
Estrone	320	31	<MRL	<MRL	<MRL	<MRL	NT	<MRL	<MRL
Meprobamate	200,000	3	380	158	178	170	NT	<MRL	<MRL
PFOA	400	9	12	10	35	22	NT	<MRL	<MRL
PFOS	200	8	<MRL	<MRL	<MRL	<MRL	NT	<MRL	<MRL
Primidone	10,000	7	4,100	525	323	186	NT	7	75
Sucralose	150,000,000	77	24,800	17,200	19,700	21,700	NT	<MRL	<MRL
TCEP	5,000	77	<MRL	<MRL	<MRL	<MRL	NT	<MRL	<MRL
Triclosan	2,100,000	8	128	<MRL	<MRL	9	NT	<MRL	<MRL

Notes:
(1) MRL = method reporting limit.
(2) NT = not tested.
(3) Trussell et al., 2015.

3.1 Low Pressure Membrane Removal of CECs

Low-pressure membranes includes both MF and UF. The MF or UF process is employed ahead of RO to provide removal of small particulate matter that could impact RO performance and to provide a barrier to pathogens. MF or UF is not intended as a CEC removal technology. Adsorption of CECs is not expected on MF or UF membranes after an initial adsorption capacity is met, when operated in a typical steady state (NRC 2012). A list of CECs (EDCs and Pharmaceuticals and Personal Care Products (PPCPs)) found in secondary effluent, tertiary treated (sand filtered, secondary effluent), and after MF is shown in Table 3.

Table 3 EDC/PPCP Removal from Secondary Effluent by Tertiary and MF Treatment Pilot (adapted from Snyder et. al., 2006a)
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

Target Compound	Secondary Effluent (ng/L)	Tertiary Effluent (ng/L)	MF Permeate (ng/L)
DEET	154	2.5	2.4
Dilantin	79	5.8	5.2
Caffeine	32500	<10	<10
Carbamazepine	78	19	17
DEET	154	122	100
Dilantin	51	52	31
Erythromycin-H20	79	<1.0	<1.0
Estradiol	33	<1.0	<1.0
Estriol	137	<5.0	<5.0
Estrone	49	<1.0	<1.0
Fluoxetine	10	8.5	4.7
Galazolide	931	544	617
Gemfibrozil	1220	<1.0	<1.0
Hydrocodone	35	<1.0	<1.0
Ibuprofen	2270	6	2.7
Iopromide	17	42	34
Meprobamate	124	75	67
Musk Ketone	119	65	45
Naproxen	4480	<1.0	<1.0
Oxybenzone	657	5.8	4.9
Sulfamethoxazole	360	<1.0	<1.0
TCEP	244	133	127
Testosterone	47	<1.0	<1.0
Triclosan	564	1.2	1.2
Trimethoprim	213	<1.0	<1.0

3.2 Reverse Osmosis

RO has been shown to remove compounds that are not typically attenuated by MF or UF. Membranes, in particular reverse osmosis membranes, provide high removal rates for CECs . Extensive research has been completed on the type of contaminants removed by RO and expected removal rates based on compound charge and size (Ozaki and Li 2002; Kimura et al. 2003; Schafer et al. 2003; Ng and Elimelech 2004; Nghiem et al. 2004). RO membranes are highly efficient at removing CECs at higher molecular weights, with low-molecular weight organic acids and neutral compounds being removed partially, including both NDMA, 1,4-dioxane, and certain disinfection byproducts (DBPs) (Bellona et al., 2008). Having an advanced oxidation process, or an additional barrier for the treatment of NDMA and 1,4-dioxane is a highly effective treatment train to ensure contaminant removal, and is required for potable water reuse projects in California. Table 4 contains water quality measurements from a UF/RO system with secondary treated effluent as the feed water. All CECs in the secondary effluent feed were below the health-based standards, and the finished water (RO permeate) shows most compounds were below detectable levels.

Table 4 EDC/PPCP Removal by UF/RO pilot (adapted from Snyder et. al., 2006a)
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

Target Compound	Secondary Effluent (ng/L)	UF Permeate (ng/L)	RO Permeate (ng/L)
Acetominophen	<29	<10	<1.0
Caffeine	<29	14	1.8
Carbamazepine	110	147	<1.0
DEET	104	103	<1.0
Diclofenac	<20	37	<1.0
Dilantin	126	191	<1.0
Erythromycin-H20	336	357	<1.0
Estrone	35	<10	<1.0
Fluoxetine	<20	<10	<1.0
Galazolide	968	816	<10.0
Gemfibrozil	100	142	<1.0
Hydrocodone	87	89	<1.0
Iopromide	<20	58	1.1
Meprobamate	693	715	<1.0
Musk Ketone	97	106	<10.0
Naproxen	<20	17	<1.0
Oxybenzone	48	26	<1.0
Sulfamethoxazole	90	56	1.2
TCEP	189	219	1.4
Triclosan	29	<10	<1.0
Trimethoprim	186	158	<1.0

3.3 UV Advanced Oxidation

UV AOP is highly effective at destroying a wide array of CECs, due to the non-selectivity of the advanced oxidation process. Snyder et al. 2006c showed that the AOP treated constituents were removed without the formation of bromate. UV AOP is also effective for NDMA removal, due to UV photolysis in the UV reactor. The effectiveness of UV AOP is dependent upon influent water quality, most cost-effective in high UV transmittance (UVT) waters, which is the case for an RO permeate. Rosario-Ortiz et al. (2010) and Linden *et al.* (2012) showed UV-AOP is effective for CEC removal in highly treated effluents and conventional tertiary effluents, respectively. Extensive published studies have shown the destruction of pharmaceuticals and personal care products by UV AOP (ex. bezafibrate, carbamazepine, diazepam, diclofenac, 17α-ethynyl estradiol, ibuprofen, iopromide, sulfamethoxazole, roxithromycin) and additional constituents of emerging concern such as bisphenol A, 17α-ethynyl estradiol, and 17β-estradiol (Rosenfeldt and Linden 2004; Huber et al. 2003) in potable water supplies. All compounds tested for in these studies were able to be destroyed efficiently by a UV AOP process. Bench and pilot-scale studies were conducted by Snyder *et al.* 2012 to study the removal of CECs by UV AOP treatment at varying levels of treatment in potable water supplies. Data from these studies were collected and are shown as varying AOP test conditions in Figures 2 and 3. The data points labeled as AOP 1-6 correspond to varying levels of AOP treatment, with AOP 1 being the lowest level of treatment and AOP 6 being the highest. The trend of AOP contaminant reduction of all compounds tested at bench and pilot scale, respectively, are shown. Estradiol and sulfamethoxazole were more persistent through UV AOP treatment, however they are both treated to well below the projected health effect levels.

3.4 MF/RO/UV AOP Treatment Finished Water

Finished water (purified recycled water using MF/RO/UV AOP) testing for CECs is required by the State of California for potable water reuse projects (CDPH, 2014) and is critical to ensure the proper operation and startup of a potable water reuse facility. Finished water from secondary effluent MF/RO/UV AOP treatment has been tested at several facilities with varying water quality and constituent makeup (Snyder et al. 2006a; Glassmeyer et al. (submitted 2015), CWS (2015)). A summary of the finished water quality from each facility is detailed in Table 5, and compared alongside groundwater and disinfected (chlorinated) groundwater quality from the SqCWD. Note: Currently, the Altivo Well is on standby due to hexavalent chromium levels and can only be operated for short-term emergency needs and the Sells Well is inactive due to nitrates levels. SqCWD has also been in contact with he Santa Clara Valley Water District (SCVWD) who has completed an extensive analysis of their MF/RO/UV system for a future potable reuse application. Those results, not yet published and not included here, support the findings below that these advanced processes produce a high quality water that is protective of public health.

Figure 2 UV AOP Treatment of CECs in Lake Huron Water at the Bench-Scale

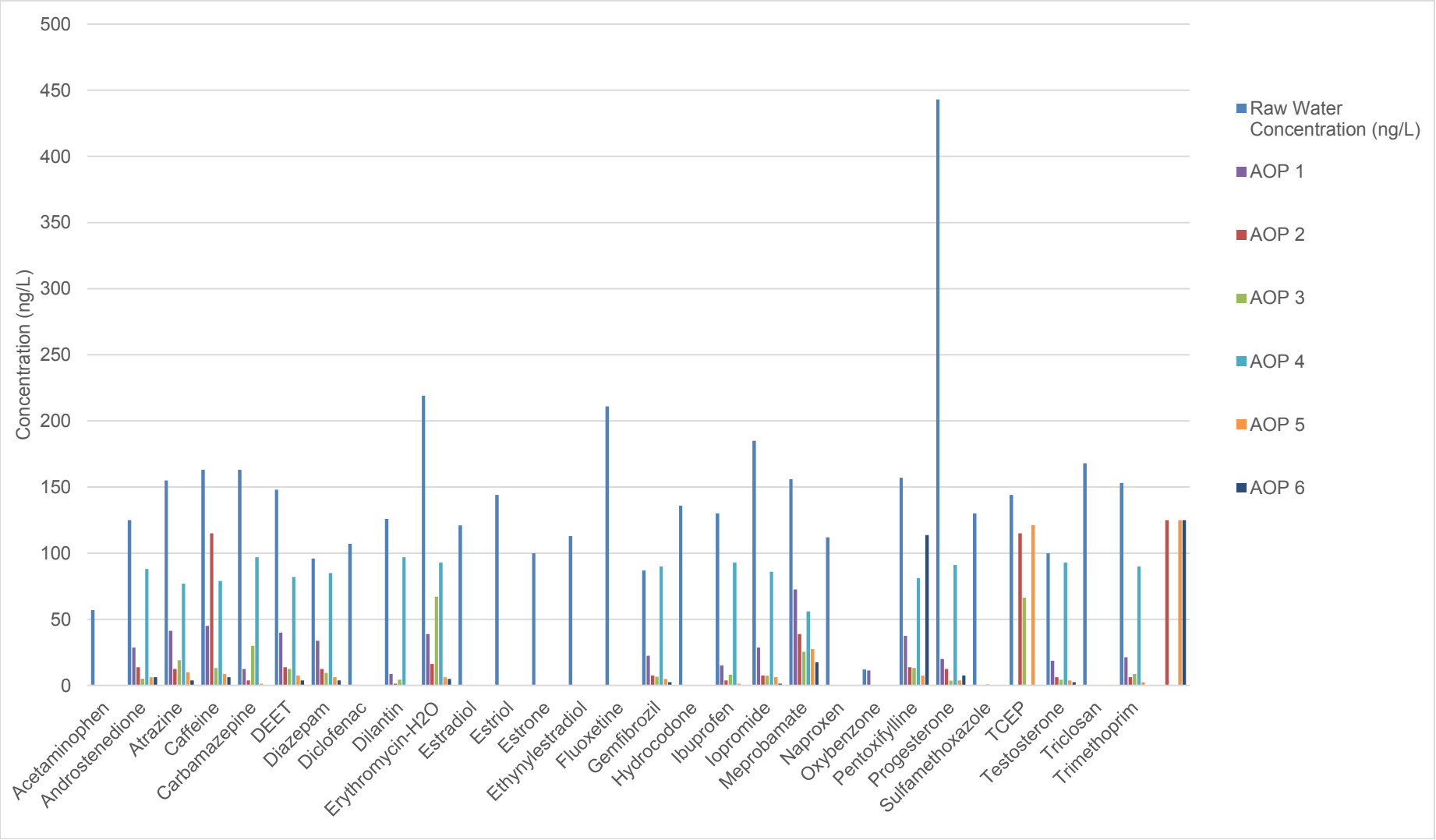
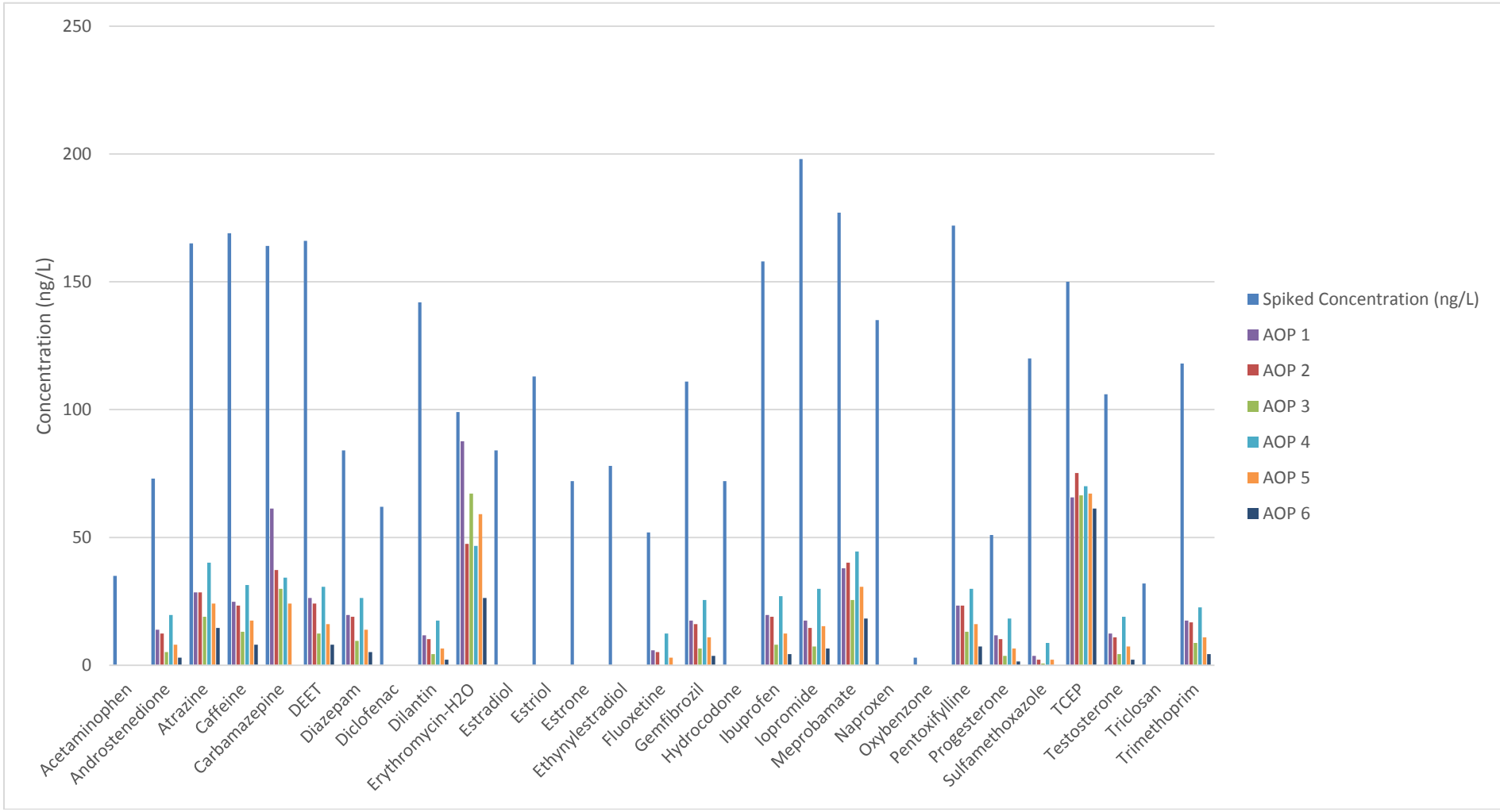


Figure 3 UV AOP Treatment of CECs in Lake Huron Water at the Pilot-Scale



Clean Water Services in Oregon ran a potable water reuse pilot demonstration study (the first and only in Oregon) using the MF/RO/UV AOP treatment train. The resulting finished water quality was demonstrated over for four separate and detailed sampling events. The results produced a water with CECs that were predominantly non-detect, below reporting limit, or significantly below any health based criteria in concentration (for all CECs tested, including regulated, non-regulated notification levels, emerging contaminants, etc.) (CWS 2015). Orange County Water District (OCWD) and West Basin Municipal Water District (WBMWD) provided finished water data from each effluent advanced treated facility (provided by Jason Dadakis from OCWD in 9/2015, with approval from Shivaji Deshmukh at WBMWD also in 9/2015). Finished water values for each facility showed CECs were mostly non-detect, and when there was a reportable result, the level was at detection limit, and/or several orders of magnitude lower than the health-based standard.

On the potable surface water supply side, Lake Huron water showed the existence and removal of all CECs by the MF/RO/UV AOP treatment train (Snyder et al. 2006a). The results from this study agree with output from all other facilities reviewed, with CECs being either non-detect or significantly below health-based criteria. All CECs tested for across each study, at each facility, were able to be effectively removed in the finished drinking water to well below health standards, with most below the detection limit. The SqCWD's groundwater data, which did detect several CECs, is comparable to that of finished water from the effluent treated processes. No levels of constituents across the literature reviewed and facilities studied were of concern based on the health criteria and literature available.

The Colorado River Municipal Water District is the first utility in the United States to implement Direct Potable Reuse (DPR), and do so at their Raw Water Production Facility (RWPF) in Big Spring, TX. The RWPF utilizes MF/RO/UV AOP for purification, similar to the processes reviewed by the SqCWD, and similar to the OCWD's 100,000,000 gallon per day potable water reuse project. The Texas Water Development Board (TWDB) commissioned an extensive public health evaluation of the potable water reuse process and compared the water quality from the purified water with the conventional water supply for Big Spring (the detailed work is not published, but results have been presented most recently by Juby et al., 2015). Testing for the removal of trace contaminants at the facility was conducted showing the removal of 10 CECs after each stage of the treatment process, shown in Figure 4 (Juby et al. 2015). Secondary influent into the facility shows CEC levels above the detection limit, and followed through MF, no significant removal is achieved for the compounds listed, as expected. After RO treatment, most of the CECs from the MF filtrate are removed, with the exception of Sucralose, Mebrobamate, and Triclocarban. These compounds, following UV AOP treatment, are all reduced to the detection limit, and if established, well below the health based standards.

Table 5 **Summary of Final Product Water and Soquel Creek Altivo and Sells Wells CEC Monitoring Results**
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

Constituent	Common Use	Health Screening Level[1,2] (ng/L)	MRL - Detection Limit (ng/L)	Finished Water Concentrations from Effluent Treated (MF/RO/UV AOP) (ng/L)				Soquel Creek Source and Treated Water Concentrations[8] (ng/L)			
				Lake Huron[7]	WBMWD[9]	OCWD[9]	Clean Water Services, OR	Sells Well	Disinfected	Altivo Well	Disinfected
Acetaminophen	Analgesic	350,000	5		ND	ND		ND	ND	ND	ND
Atenolol	Beta Blocker	70,000	1		ND	ND	<25			ND	ND
Atrazine	Herbicide	1,000					<10			ND	ND
Azithromycin	Antibiotic	3,900	10		ND	ND					
Bisphenol A	Plasticizer	35,000	1		140	ND	<50	ND	ND	ND	ND
Caffeine	stimulant/additive	350	1	<10	16	ND		ND	ND	ND	ND
Carbamazepine	Anti-convulsant	1,000	1	<1.0	ND	ND	<10	269	586	9	9
DEET	Insect Repellent	2,500	1	2.2	1.3	ND	<25			ND	ND
Diclofenac	Anti-inflammatory	1,800	1	<1.0	ND	ND					
Diethylstilbestrol	Synthetic Estrogen	NA	1		ND	ND					
Dilantin	Intermediate synthetic compound	1,000	1[5]	<1.0							
17-β Estradiol	Natural Steroid Hormone	1	1	<1.0	ND	ND					
Epitestosterone	Natural Steroid Hormone	NA	1		ND	ND					
Estriol	Natural Steroid Hormone	350	1		ND	ND				ND	ND
Estrone	Natural Steroid Hormone	350	1	<1.0	ND	ND				ND	ND
17α-Estradiol	Synthetic Hormone	350	1		ND	ND				ND	ND
17α-Ethinyl Estradiol	Contraceptive	280	1		ND	ND				ND	ND
Fluoxetine								0.53	ND	ND	ND
Gemfibrozil	Anti-cholesterol	45,000	1	1.1	ND	ND	<10			ND	ND
Hydrocodone				<1.0						ND	ND
Ibuprofen	Anti-inflammatory	40,000	1	<1.0	ND	ND	<25				
Iopromide	Contrast Media	750,000	1	<1.0	ND	ND					
Iohexol	Contrast Media	720,000	1		ND	ND					
Meprobamate	Anti-anxiety	260,000	1	<1.0	ND	ND	<10				
Musk Ketone	Fragrance additive	350,000	1				<10				
Naproxen	Anti-inflammatory	220,000	1	<1.0	ND	ND	<10				
NDMA	Disinfection Byproduct	10[6]	2								
Nonylphenol	Industrial Chemical	500000[3]	1		ND	ND		ND	2630	ND	ND
Octylphenol	Industrial Chemical	5,300,000	0		ND	ND		ND	ND	ND	ND
Phenytoin	Pharmaceutical	6,800	1				<10			ND	ND

Table 5 **Summary of Final Product Water and Soquel Creek Altivo and Sells Wells CEC Monitoring Results**
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

Constituent	Common Use	Health Screening	MRL - Detection	Finished Water Concentrations from Effluent Treated (MF/RO/UV AOP) (ng/L)				Soquel Creek Source and Treated Water Concentrations[8] (ng/L)			
				Lake Huron[7]	WBMWD[9]	OCWD[9]	Clean Water Services, OR	Sells Well	Disinfected	Altivo Well	Disinfected
Primidone	Anti-convulsant	840[4]	1		ND	ND	<10			ND	ND
Progesterone	Natural Steroid Hormone	110,000	1		ND	ND				ND	ND
Sulfamethoxazole	Antibiotic	350,000	1	<1.0	8	ND	<25	ND	ND	8	8
TCEP	Flame Retardant	2,500	1	2.6	3.7	ND	<200	ND	ND	ND	ND
Testosterone	Natural Steroid Hormone	7,000	1		ND	ND				ND	ND
Triclosan	Anti-microbial	350	2	<1.0	ND	ND	<25			ND	ND
Trimethoprim	Pharmaceutcal, antibiotic	70,000	1	<1.0			<10			ND	ND

Notes:
ND = Non Detect
Blank = Not Tested
(1) 2013 Amended Recycled Water Policy for both surface spreading and groundwater injection projects
(2) Additional health-based screening levels from 2010 SWRCB Recycled Water CEC Science Advisory Panel Final Report
(3) 2008 Australian Water Recycling Guidelines
(4) Drinking Water Equivalent Level (DWEL) developed by Intertox, Inc. (2009) for OCWD
(5) Bruce et al. (2010)
(6) No EPA criteria for NDMA. CA DDW lists a notification level of 10 ng/L.
(7) Snyder et al. 2006(a)
(8) Reference Table 6 for additional compounds with reportable results.
(9) Provided by OCWD and WBMWD 9/2015.

The same study in Big Spring, TX compared the concentration of CECs in the DPR treatment train MF/RO/UV AOP finished water to the existing source water supply, Moss Creek Lake. **The finished water from the DPR facility showed lower concentrations of all CECs tested compared to the source water supply in Moss Creek Lake (Figure 5). The DPR demonstration facility was able to achieve a water quality, with respect to the CECs tested, higher than that of the natural existing surface water supply.**

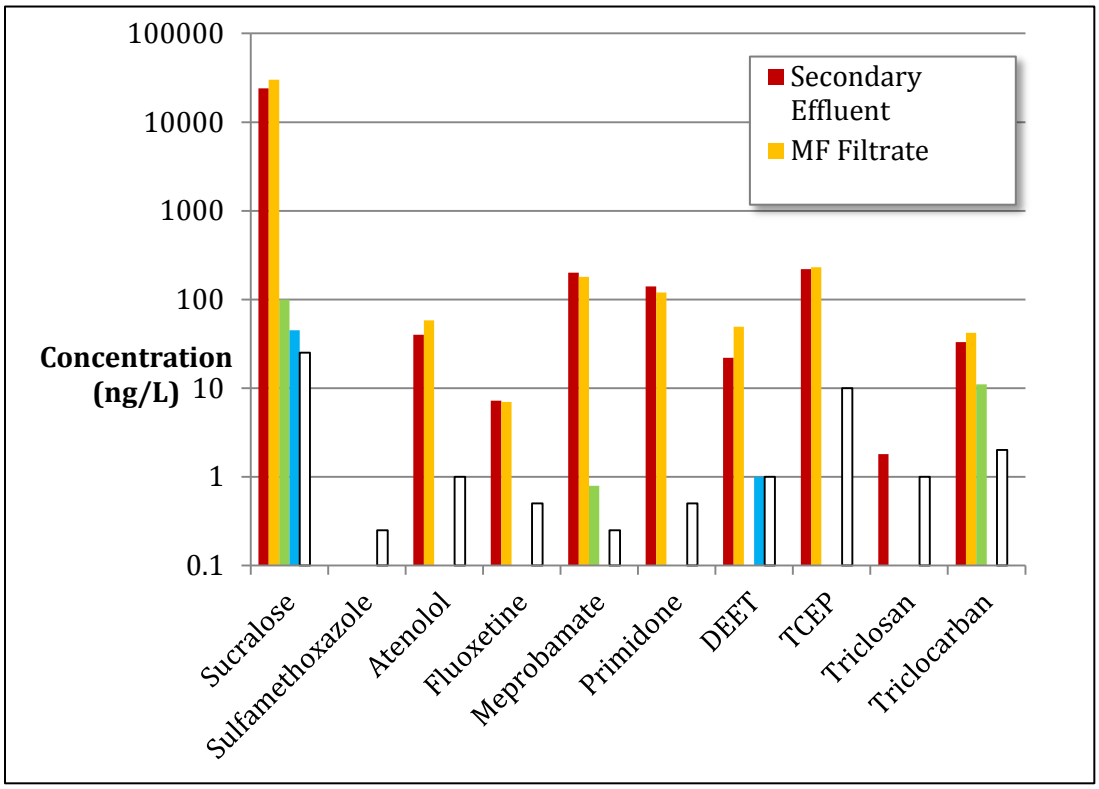


Figure 4 Removal of CECs through MF/RO/UV AOP in Big Springs, TX Potable Reuse Demonstration Facility (Juby et al. 2015).

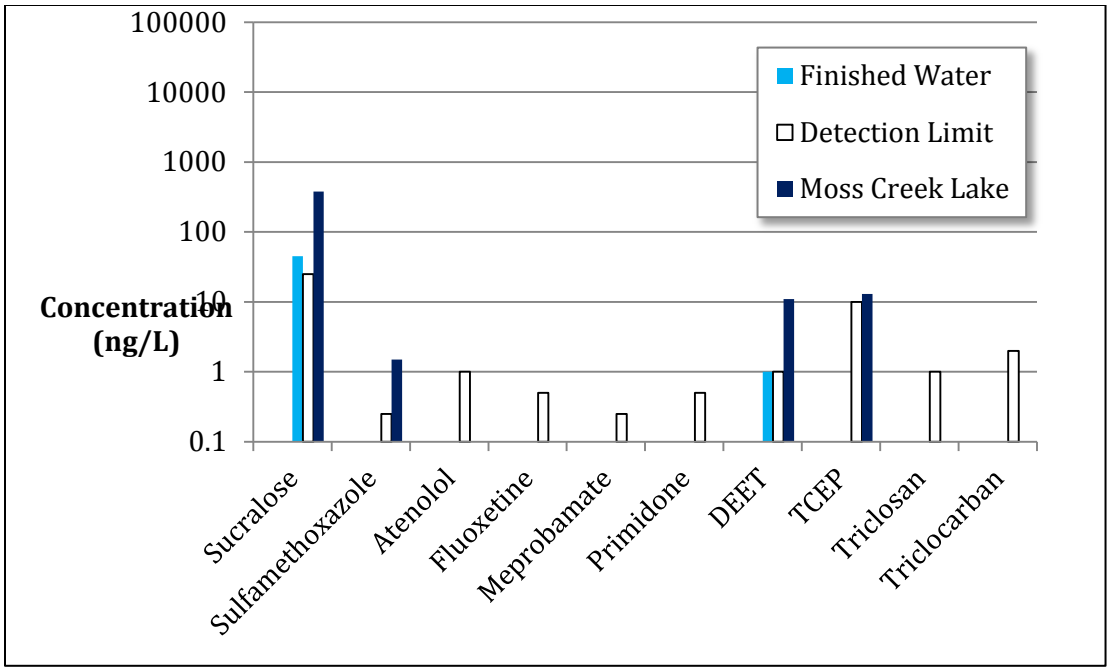


Figure 5 MF/RO/UV AOP DPR Finished Water and Existing Source Water (Moss Creek Lake) Concentrations of CECs.

Table 6, below, shows water quality monitoring data from SqCWD's ground water supplies, before and after disinfection by chlorine addition. The data presented in Table 6 were the reportable results from the monitoring data provided by SqCWD, out of a tested 247 compounds. The compounds commonly tested in other studies were compared for removal in Table 5, previously. As shown, all additional compounds tested are either near the detection limit of the method, or are well below the health based standards in the source water for both wells, and subsequently in the finished water after treatment. Not all of the compounds detected have health-based standards, risk or action levels for drinking water treatment, or additional studies with which to compare removal results.

Table 6 Altivo Well and Sells Well CEC Monitoring Positive Results and MRLs
Groundwater Replenishment Feasibility Study
Soquel Creek Water District

Constituent	Health Screening Level (ng/L)	MRL - Detection Limit ng/L	Soquel Creek Source Water Concentrations[(1)] (ng/L)			
			Sells Well	Treated	Altivo Well	Treated
Bupropion	NA	1	1.4	ND	ND	ND
Tetrachloroethylene	5,000	0.2	17.1	ND	NT	NT
Venlafaxine	NA	0.1	0.6	ND	ND	ND
Tramadol	NA	1	NT	NT	10	ND
Perfluorohexanoic acid (PFHxA)	NA	1	NT	NT	0.1	0.2
Bromoform	7,000	1	545	679	ND	ND
Caffeine	350	1	ND	ND	ND	ND
Carbamazepine	1,000	1	269	586	9.1	9.0
Fluoxetine	3,900	0	0.5	ND	ND	ND
Nonylphenol	500,000	1	ND	2,630	ND	ND
Sulfamethoxazole	350,000	1	ND	ND	8.4	8.2

Notes:
NT = not tested
ND = non detect
(1) Data received from Soquel Creek Water District, not to be distributed until Glassmeyer et. Al. (submitted 2015) goes to publication.

4.0 CONCLUSIONS

The primary source for confidence in the State of California's water supplies is the State Water Resources Control Board's Division of Drinking Water (DDW). The DDW has long protected public health through the implementation of water quality regulations, and through thorough evaluation of the safety of potable water reuse.

CECs are present in municipal wastewater, and can also often be found in conventional water supplies. The concentrations of CECs found in these waters are frequently below known health standards, and treatment by advanced purification facilities (for wastewater) and by drinking water treatment facilities (for conventional potable water) reduce CEC concentrations to further lower levels. Expert panels across the United States have repeatedly examined the health significance of CECs in water, both conventional and for potable water reuse. These experts continue to find, based on all the current data, that potable water reuse projects provide a high quality water that is protective of public health.

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APPENDIX A

EXAMPLE CHEMICAL MONITORING LISTS FOR POTABLE WATER REUSE

Table A-2 Inorganics with Primary MCLs			
Constituents	**Primary MCL (in mg/L)**	**Constituents**	**Primary MCL (in mg/L)**
Aluminum	1.0	Fluoride	2
Antimony	0.2	Lead	0.015
Arsenic	0.006	Mercury	0.002
Asbestos	7 (MFL)	Nickel	0.1
Barium	1	Nitrate (as NO_3)	45
Beryllium	0.004	Nitrite (as N)	1
Cadmium	0.005	Total Nitrogen (as N)	10
Hexavalent Chromium	0.010	Selenium	0.05
Copper	1.3	Thallium	0.02
Cyanide	0.15		

Notes:

MFL = Million fibers per liter, with fiber lengths > 10 microns.
Regulatory Action Level; if system exceeds, it must take certain actions such as additional monitoring, corrosion control studies and treatment, and for lead, a public education program; replaces MCL.
The MCL for lead was rescinded with the adoption of the regulatory action level.

Table A-2 Constituents / Parameters with Secondary MCLs			
Constituents	**MCL (in mg/L)**	**Constituents[(2)]**	**MCL (in mg/L)**
Aluminum	0.2	TDS	500
Color	15 (units)	Specific Conductance	900 *u*S/cm
Copper	1	Chloride	250
Foaming Agents (MBAS)	0.5	Sulfate	250
Iron	0.3		
Manganese	0.05		
Methyl-tert-butyl-ether (MTBE)	0.005		
Odor Threshold	3 (units)		
Silver	0.1		
Thiobencarb	0.001		
Turbidity	5 (NTU)		
Zinc	5		

Table A-3 Radioactivity			
Constituents	**MCL (in pCi/L)**	**Constituents**	**MCL (in pCi/L)**
Uranium	20	Gross Beta particle activity	50(2)
Combined radium-226 & 228	5	Strontium-90	8(2)
Gross alpha particle activity	15	Tritium	20,000(2)
Notes: MCLs are intended to ensure that exposure above 4 millirem/yr does not occur.			

Table A-4 Regulated Organics			
Constituents	**MCL (in mg/L)**	**Constituents**	**MCL (in mg/L)**
Volatile Organic Compounds			
Benzene	0.001	Monochlorobenzene	0.07
Carbon Tetrachloride	0.0005	Styrene	0.1
1,2-Dichlorobenzene	0.6	1,1,2,2-Tetrachloroethane	0.001
1,4-Dichlorobenzene	0.005	Tetrachloroethylene	0.005
1,1-Dichloroethane	0.005	Toluene	0.15
1,2-Dichloroethane	0.0005	1,2,4 Trichlorobenzene	0.005
1,1-Dichloroethylene	0.006	1,1,1-Trichloroethane	0.2
cis-1,2-Dichloroethylene	0.006	1,1,2-Trichloroethane	0.005
trans-1,2-Dichloroethylene	0.01	Trichloroethylene	0.005
Dichloromethane	0.005	Trichlorofluoromethane	0.15
1,3-Dichloropropene	0.0005	1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2
1,2-Dichloropropane	0.005	Vinyl chloride	0.0005
Ethylbenzene	0.3	Xylenes	1.75
Methyl-tert-butyl ether (MTBE)	0.013		
SVOCs			
Alachlor	0.002	Hexachlorobenzene	0.001
Atrazine	0.001	Hexachlorocyclopentadiene	0.05
Bentazon	0.018	Lindane	0.0002
Benzo(a) Pyrene	0.0002	Methoxychlor	0.03
Carbofuran	0.018	Molinate	0.02
Chlordane	0.0001	Oxamyl	0.05
Dalapon	0.2	Pentachlorophenol	0.001

Table A-4 Regulated Organics			
Constituents	**MCL (in mg/L)**	**Constituents**	**MCL (in mg/L)**
Dibromochloropropane	0.0002	Picloram	0.5
Di(2-ethylhexyl)adipate	0.4	Polychlorinated Biphenyls	0.0005
Di(2-ethylhexyl)phthalate	0.004	Pentachlorophenol	0.001
2,4-D	0.07	Picloram	0.5
Dinoseb	0.007	Polychlorinated Biphenyls	0.0005
Diquat	0.02	Simazine	0.004
Endothall	0.1	Thiobencarb	0.07/0.001 (2)
Endrin	0.002	Toxaphene	0.003
Ethylene Dibromide	0.00005	2,3,7.8-TCDD (Dioxin)	$3x10^{-8}$
Glyphosate	0.7	2,4,5-TP (Silvex)	0.05
Heptachlor	0.00001		
Heptachlor Epoxide	0.00001		
Notes: second value is listed as a Secondary MCL			

Table A-5 Disinfection By-products			
Constituents	**MCL (in mg/L)**	**Constituents**	**MCL (in mg/L)**
Total Trihalomethanes	0.080	Bromate	0.010
Total haloacetic acids	0.060	Chlorite	1.0

Table A-6 Constituents with Notification Levels			
Constituents	**NL (in μg/L)**	**Constituents**	**NL (in μg/L)**
Boron	1000	Manganese	500(2)
n-Butylbenzene	260	Methyl isobutyl ketone (MIBK)	120
sec-Butylbenzene	260	Naphthalene	17
tert-Butylbenzene	260	N-Nitrosodiethylamine (NDEA)	0.01
Carbon disulfide	160	N-Nitrosodimethylamine (NDMA) (3)	0.01
Chlorate	800	N-Nitrosodi-n-propylamine (NDPA)	0.01
2-Chlorotoluene	140	Propachlor**	90
4-Chlorotoluene	140	n-Propylbenzene	260
Diazinon	1.2	RDX	3
Dichlorodifluoromethane (Freon 12)	1000	Tertiary butyl alcohol (TBA)	12
1,4-Dioxane(3)	1(3)	1,2,3-Trichloropropane (1,2,3-TCP)	0.005
Ethylene glycol	14000	1,2,4-Trimethylbenzene	330
Formaldehyde	100	1,3,5-Trimethylbenzene	330
HMX	350	2,4,6-Trinitrotoluene (TNT)	1
Isopropylbenzene	770	Vanadium	50

Notes:

Based on http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/notificationlevels/notificationlevels.pdf.

The web link above also contains the levels of the pollutants in this table that must result in a removal of the water source from service.

Table A-7 Monitoring Trigger Levels for Groundwater Recharge, as Listed in SWRCB (2013)			
Constituents	**Relevance/ Indicator Type/ Surrogate**	**Monitoring Trigger Level (in μg/L)**	**Removal Percentages (%)**
17B-estradiol	Health	0.0009	--
Caffeine	Health & Performance	0.35	>90
NDMA	Health & Performance	0.01	25-50, >80[(1)]
Triclosan	Health	0.35	--
DEET	Performance	--	>90
Sucralose	Performance	--	>90
Electrical Conductivity	Surrogate	--	>90
TOC	Surrogate	--	>90
Notes: 25 to 50 percent removal by RO, >80% removal by RO followed by UV, depending upon the UV dose.			

Table A-8 CECs Required for Monitoring by LARWQCB		
Constituents	**Sample Type**	**Reporting Level, ng/L**
17-alpha-estradiol	Composite	0.5
Caffeine	Composite	10
DEET	Composite	10
Iodinated Contrast Media (Iopromide)	Composite	10
Triclosan	Composite	10
NDMA	Composite	10
Sucralose	Composite	100
Notes: Information provided by LARWQCB on 10/29/2014.		

WATER COMMISSION
INFORMATION REPORT

DATE: 2/3/2017

AGENDA OF: February 6, 2017

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Proposed Memorandum of Agreement with the San Lorenzo Valley Water District and the Scotts Valley Water District for Collaborative Work on Potential Supply Augmentation Projects

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RECOMMENDATION: Receive information and provide feedback on the discussion draft of a proposed Memorandum of Agreement with the San Lorenzo Valley Water District and the Scotts Valley Water District for Collaborative Work on Potential Supply Augmentation Projects.

BACKGROUND: During the Water Supply Advisory Committee process, the Committee thoroughly discussed both the potential opportunities and mutual benefits of working collaboratively with other regional water providers during the development and evaluation of water supply augmentation strategies.

For most of the last year, much of the focus of possible opportunities for regional collaboration has been on the Soquel Creek Water District (SqCWD), in part because of the work the City and SqCWD did during 2015 and 2016 to establish water transfer pilot program. During the latter half of 2016, the City joined with SqCWD, Scotts Valley Water District (SVWD) and San Lorenzo Valley Water District (SLVWD) to look at opportunities for collaboration on a more regional basis.

DISCUSSION: Using a process designed to inform and educate agency water staffs about the needs and operations of each agency, the parties were recognized that in addition to the potential opportunities for collaboration between the City and SqCWD, it appears that there are a variety of potential additional opportunities for the City to work with SVWD and/or SLVWD on projects that would conjunctively use surface and groundwater resources and also provide opportunities for collaboration on advanced treated recycled water projects, should this source be determined to be a necessary part of the City's water supply portfolio that is required to meet the City's supply augmentation goal.

To pursue the opportunities for the City to work with SVWD and SLVWD, the parties have agreed to consider jointly pursuing a work plan to evaluate the feasibility of various approaches.

A discussion draft of the Memorandum of Agreement (MOA) is included as Attachment A to this staff report. This document has been distributed to the General Managers of the SVWD and the SLVWD and preliminary feedback has been positive. Both agency managers intend to further discuss this draft with Board subcommittees in a timeframe similar to that being used by the City for discussion of this draft with the Water Commission. Once all feedback has been received, the agency managers will get together and revise the document for final review and action by their Boards, or in our case, the Water Commission and the City Council.

One notable feature of this discussion draft agreement is its lack of a specific work plan. To retain some reasonable flexibility, the draft MOA includes a set of questions that the collaborative work would be intended to answer and specifically provides that the agency managers would retain the ability to develop and evolve the work plan as needed to answer the questions articulated in the agreement.

Prior to finalizing this MOA for Board/Commission/Council action, a work plan will be created. For perspective, much of the work plan effort that is contemplated under this MOA would be done by the City on its own as it pursues the work needed to implement the recommendations of the Water Supply Advisory Committee. The timing of expanding the City's focus to consider opportunities to incorporate potential regional partners in evaluating conjunctive use of surface and groundwater in the upper San Lorenzo watershed is fortuitous. Being able to consider how options the City may be pursuing could be configured to benefit both the City and upper watershed partner now is likely to be much more cost effective than trying to reconfigure projects or approaches that meet only the City's needs later on.

FISCAL IMPACT: Potential benefit of sharing some planned costs with other regional partners.

PROPOSED MOTION: Receive information and provide feedback on the discussion draft of a proposed Memorandum of Agreement with the San Lorenzo Valley Water District and the Scotts Valley Water District for Collaborative Work on Potential Supply Augmentation Projects.

Updated February 3, 2017 to include most recent attachment.
ATTACHMENTS: ~~January 19, 2017, Discussion Draft, MOA with SVWD and SLVWD~~
February, 2017, Discussion Draft, MOA with SVWD and SLVWD

MEMORANDUM OF AGREEMENT BETWEEN THE CITY OF SANTA CRUZ, THE SAN LORENZO VALLEY WATER DISTRICT, AND THE SCOTTS VALLEY WATER DISTRICT ON EXPLORING A POTENTIAL PROJECT FOR THE CONJUNCTIVE USE OF SURFACE AND GROUNDWATER RESOURCES IN THE SANTA MARGARITA BASIN

The parties to this AGREEMENT ("AGREEMENT") are the CITY OF SANTA CRUZ ("CITY"), the SAN LORENZO VALLEY WATER DISTRICT ("SAN LORENZO VALLEY"), and the SCOTTS VALLEY WATER DISTRICT ("SCOTTS VALLEY") or collectively, "PARTIES".

RECITALS

A. CITY is a charter city which owns and operates a municipal water system in the City of Santa Cruz and in portions of County of Santa Cruz adjacent to SAN LORENZO VALLEY and SCOTTS VALLEY water systems.
B. SAN LORENZO VALLEY and SCOTTS VALLEY are County water agencies that own and operate water systems providing water service to the City of Scotts Valley, San Lorenzo Valley and unincorporated areas of Santa Cruz County to the north of the CITY.
C. CITY has significant water infrastructure in the mid and upper parts of San Lorenzo Valley, including the Newell Creek dam and Loch Lomond Reservoir, the Felton Diversion, and untreated water pipelines connecting Newell Creek dam, the Felton Diversion and the Graham Hill Water Treatment Plant.
D. CITY has a long history utilizing the San Lorenzo River as a source of supply and is very invested in preserving and enhancing the river's natural resources and pursuing opportunities to use available wet season flows to improve the reliability of the CITY's water supply.
E. SAN LORENZO VALLEY and SCOTTS VALLEY have worked together over the last few years to explore conjunctive use opportunities for existing surface and groundwater resources.
F. SAN LORENZO VALLEY AND SCOTTS VALLEY have established an emergency intertie to improve supply reliability for their agencies during drought or other emergency conditions.
G. SAN LORENZO VALLEY and SCOTTS VALLEY have collaborated for many years to manage the Santa Margarita Groundwater Basin, which is the sole source of supply for SCOTTS VALLEY and a major part of SAN LORENZO VALLEY's supply system.
H. Mainly from over pumping in 1980's and 1990's the Santa Margarita Groundwater Basin is over-drafted. Recently, through the collaborative work of SAN LORENZO VALLEY and SCOTTS VALLEY groundwater levels have stabilized.
I. SAN LORENZO VALLEY and SCOTTS VALLEY have a strong interest in and commitment to the restoration of the Santa Margarita Groundwater Basin. SCOTTS VALLEY has been exploring a variety of approaches using an excess of the tertiary treated wastewater available to them.
J. CITY has been exploring passive and active recharge opportunities in the Santa Margarita Groundwater Basin, likely using some yet to be defined combination of in lieu recharge and aquifer storage and recovery to create additional storage for wet season water from CITY's San

Lorenzo River supply which, if successful, would substantially increase the reliability of CITY's supply and decrease its vulnerability to drought, including multi-year droughts.

K. CITY is also exploring the opportunity to develop a source of advanced treated wastewater that may be determined to be a necessary part of a future water supply for the CITY.

L. SAN LORENZO VALLEY has a contractual right to 313.4[1] acre feet of water per year (AFY) from the CITY's Loch Lomond Reservoir, which it has been unable to access due to the lack of inter-connections between CITY and SAN LORENZO VALLEY systems.

M. SAN LORENZO VALLEY is interested in evaluating opportunities for creating a connection with the CITY's system to gain access to water from Loch Lomond Reservoir and improve the reliability of SAN LORENZO VALLEY supply.

N. During 2016, CITY, SAN LORENZO VALLEY and SCOTTS VALLEY participated with other regional agencies in an effort to develop ideas about the potential for regional collaboration among water utilities. During this effort, CITY, SAN LORENZO VALLEY, and SCOTTS VALLEY recognized that the three parties had common interests that could be supported by a joint project or projects that have a potential to advance the conjunctive use of surface water and groundwater in the Santa Margarita Basin and the middle and upper San Lorenzo River watershed.

O. CITY is also investigating opportunities to work with the Soquel Creek Water District in developing active and/or passive recharge in the jointly operated Santa Cruz Mid-County Groundwater Basin and is actively engaged with the Soquel Creek Water District, the Central Water District, the County of Santa Cruz, and private well owners in the Mid-County Groundwater Basin in working on implementing the Sustainable Groundwater Management Act.

NOW, THEREFORE, IT IS HEREBY AGREED:

TO JOINTLY FUND AND COLLABORATIVELY IMPLEMENT A WORK PLAN TO EXPLORE OPPORTUNITIES FOR CONJUNCTIVE USE OF SURFACE AND GROUNDWATER AT THE SANTA MARGARITA GROUNDWATER BASIN AND VICINITY.

PARTIES agree to jointly fund and collaboratively implement a work plan to explore opportunities to develop and implement one or more projects to improve the conjunctive use of surface and groundwater resources in the Santa Margarita Groundwater Basin while also improving the sustainability of groundwater resources and reliability and resiliency of the water supplies serving customers of the three water utilities.

The work plan to be implemented shall be substantially in the form of that appended to this AGREEMENT as Attachment A, with the provision that due to the exploratory nature of the work, the Director of CITY Water Department, and the District Manager of SAN LORENZO VALLEY and the General Manager of SCOTTS VALLEY may jointly agree to revise the work plan as needed to most effectively achieve the project goals identified in Section 1.

[1] 313.4 acre feet per year was determined to be equivalent to 12.5% of the safe annual yield of the Newell Creek Reservoir as a result of a 1980 court case and subsequent yield analysis establishing the safe annual yield of the reservoir as communicated by the City to the San Lorenzo Valley Water District via a June 16, 1981 letter from City Attorney Rod Atchison to District Counsel C. Shelley Emerson.

PARTIES agree that funding for this work plan will be split among them as follows:

a. CITY will cover 60% of the total cost;
b. SAN LORENZO VALLEY will cover 20% of the total cost; and
c. SCOTTS VALLEY will cover 20% of the total cost.

This AGREEMENT shall terminate at the completion of the work outlined in the Work Plan included as Attachment A, and as amended in accordance with the second paragraph of this section. Should PARTIES decide to pursue implementation of any project or program as a result of this effort, a separate agreement, including separate financial or cost sharing provisions would need to be developed and agreed to by PARTIES choosing to do so.

1. Key Questions to be Answered through the Implementation of the Work Plan

The key questions to be answered through the implementation of the Work Plan are as follows:

a. What are the opportunities for improving supply reliability and resiliency through the use of in lieu water transfers between water agencies?
b. What are the opportunities to bank available wet season flows for long term (more than one year) storage in the Santa Margarita Groundwater Basin?
c. What are the opportunities to share existing or new infrastructure and facilities for achieving increased reliability and resiliency?
d. How could the development of an aquifer storage and recovery program in the Santa Margarita Groundwater Basin affect the health of the basin? How would this compare to the outcome produced by recharging the basin with advanced treated wastewater?
e. What are the benefits to the base flow in local creeks and streams from the injection of treated drinking water or advanced treated wastewater into the basin? Can those benefits be quantified and how?
f. What are the feasible alternatives for SAN LORENZO VALLEY to access its contractual right to the 313.4 AFY? Which of these options is most cost-effective and most readily implemented?
g. What would be the elements of a proposed conjunctive use project in the basin, and how could the benefits be the most fairly distributed among PARTIES?
h. What water right implications would have to be considered?
i. How would the proposed conjunctive use project(s) support, complement or conflict with the plans of other agencies, including Soquel Creek Water District?

2. NOTIFICATIONS AND RECORD KEEPING

For the purposes of this agreement, PARTIES shall abide by the record keeping and notification provisions in the Work Plan included as Attachment A to this AGREEMENT

3. NATURE OF AGREEMENT

It is understood and acknowledged by PARTIES that this AGREEMENT is only for the purpose specified herein, that no obligations are imposed on the parties beyond the completion of the Work Plan included as Attachment A.

4. EFFECTIVE DATE:

This AGREEMENT shall become effective only upon its approval by the governing bodies of each party hereto.

5. TERMINATION ON THIRTY-DAY NOTICE

This AGREEMENT may be terminated by any party hereto upon the furnishing to the other parties a thirty (30) day notice of intent to terminate or with an email notification that is acknowledged by the receiving party provided, however, that a terminating party shall be obligated to pay its pro-rata share of any costs incurred up to the date the termination.

6. NOTIFICATIONS AND RECORD KEEPING

For the purposes of this agreement, the parties shall abide by the record keeping and notification provisions in the Work Plan attached to this AGREEMENT.

7. RELEASE AND INDEMNITY

Each of PARTIES hereto agrees to indemnify, defend and hold harmless the other PARTIES, and any agency or instrumentality thereof, and their respective elected and appointed officials, officers, employees and agents from and against all liabilities, claims, actions, causes of action, proceedings, suits, damages, judgments, liens, levies, costs and expenses of whatever nature, including reasonable attorneys' fees and disbursements arising out of any actions taken by it in the implementation of this agreement, or any environmental review conducted under the California Environmental Quality Act (CEQA) in connection with this agreement. In the event of concurrent negligence of the PARTIES, their respective officers and/or employees, then the liability for any and all claims for injuries or damages to persons and/or property, which arises out of the terms and conditions of this AGREEMENT shall be apportioned according to the California theories of comparative negligence and/or equitable indemnity, as applicable.

8. GOVERNING LAW

This AGREEMENT is executed in the State of California and that the law of the State of California shall govern this agreement.

9. 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.

CITY OF SANTA CRUZ

Dated:_____ By: _____

Mayor of City of Santa Cruz

SAN LORENZO VALLEY WATER DISTRICT

Dated:_____ By: _____

President of the Board of Directors

SCOTTS VALLEY WATER DISTRICT

Dated:_____ By: _____

President of the Board of Directors

APPROVED AS TO FORM:

_____

Attorney, CITY of SANTA CRUZ

_____

Legal Counsel, SAN LORENZO VALLEY WATER DISTRICT

_____

Legal Counsel, SCOTTS VALLEY WATER DISTRICT

CITY OF SANTA CRUZ

Dated:_____ By: _____
Mayor of City of Santa Cruz

SAN LORENZO VALLEY WATER DISTRICT

Dated:_____ By: _____
President of the Board of Directors

SCOTTS VALLEY WATER DISTRICT

Dated:_____ By: _____
President of the Board of Directors

APPROVED AS TO FORM:

_____
CITY Attorney

_____
SAN LORENZO VALLEY WATER DISTRICT Counsel

_____
SCOTTS VALLEY WATER DISTRICT Counsel

WATER COMMISSION
INFORMATION REPORT

DATE: 2/1/2017

AGENDA OF: February 6. 2017

TO: Water Commission

FROM: Rosemary Menard

SUBJECT: Draft Agenda for the proposed March 14, 2017 Joint Meeting of the Santa Cruz City Council and the Water Commission.

RECOMMENDATION: Receive information, discuss the proposed agenda and provide feedback to staff to assist it in finalizing the proposed agenda.

BACKGROUND: At its November 24, 2015 meeting, the Santa Cruz City Council adopted a series of motions related to the recommendations developed by the Water Supply Advisory Committee. One of the motions specifically directs "the Water Commission to assume oversight of the implementation of the Water Supply Advisory Committee's (WSAC) Agreements and Recommendations Final Report and provide no less than semi-annual updates to the City Council."

In the WSAC report itself, the role of the Water Commission is further described as part of the recommended Change Management Strategy covered in Section 3.24 (d)[1] and as indicated in the excerpt included below.

2. Information Sharing
    a. The Water Department will report to the Water Commission and the City Council
    i. At all decision nodes identified in the Plan;
    ii. Informally, as part of the Water Director's Oral Report at each Water Commission meeting, providing specific information about work in progress, successes and failures, and challenges and opportunities;
    iii. Quarterly in the spring, summer and fall, as an agenda item with accompanying staff report on the Water Commission agenda for discussion, public comment, and action as needed; and

[1] See pages 61 to 64 of the October 2015 Water Supply Advisory Committee's Final Report on Agreements and Recommendations at: http://www.santacruzwatersupply.com/meeting/wsac-final-reportrecommendation-appendices

iv. Formally and annually to the Water Commission and the City Council in the winter of each year during the budget cycle, including Plan performance and significant adjustments

DISCUSSION: The proposed joint meeting between the Santa Cruz City Council and the Water Commissioner will provide a refresher on the WSAC's Recommendations and Agreements for continuing Councilmembers and Commissioners and introduce new Councilmembers and Commissioners to the WSAC's work and recommendations. The agenda will be structured to provide:

1. A general overview of WSAC's Recommendations and Agreements;
2. Details about WSAC's recommended decision making process, timeline and the work plan being pursued to support decision-making;
3. A progress report on the City's work during calendar 2016 to implement the WSAC's agreed upon work plan, and an overview of the key outcomes of the calendar 2017 work plan; and
4. An opportunity for a discussion between Councilmembers and Commissioners about the on the City's pursuit of the WSAC recommendations.

Public comment will be received during this discussion, likely between agenda item 3 and 4.

Please note, the joint meeting is being framed as a study session. Council or Commission action on any specific action that might be discussed would need to be included in a future agenda for Council or Commission action.

FISCAL IMPACT: None

PROPOSED MOTION: Receive information, discuss the proposed agenda and provide feedback to staff to assist it in finalizing the proposed agenda.

ATTACHMENT: November 15, 2015 Water Supply Advisory Committee (WSAC) Agreements and Recommendations Final Report and Related Actions

CITY COUNCIL
AGENDA REPORT

DATE: November 10, 2015

AGENDA OF: November 24, 2015

DEPARTMENT: City Manager

SUBJECT: Water Supply Advisory Committee (WSAC) Agreements and Recommendations Final Report and Related Actions (CM)

This staff report was updated to split the first motion into two separate motions as follows:

RECOMMENDATION:

Motion to accept the Water Supply Advisory Committee (WSAC) Agreements and Recommendations Final Report**.**

Motion to direct staff to prepare, for the City Council's consideration, options for possible ballot measure language to affirm voter support for City of Santa Cruz's pursuit of the WSAC-recommended water supply packaged strategy.

Motion to direct staff to integrate the WSAC-recommended water supply packaged strategy into the Urban Water Management Plan update, required by the Department of Water Resources to be submitted by July 1, 2016.

Motion to direct the Water Commission to assume oversight of the implementation of the WSAC Agreements and Recommendations Final Report and provide no less than semi-annual updates to the City Council.

Motion to support staff's continuing public information and engagement on the water supply strategy.

BACKGROUND: The City Council's November 10, 2015 joint meeting with the Water Commission, in which the citizen-led Water Supply Advisory Committee's (WSAC) Agreements and Recommendations Final Report was presented and discussed, represented a culminating moment in the community discussion on water supply. At this juncture, the City Council, Water Commission, WSAC and innumerable community members have been party to an exhaustive process to accurately scope Santa Cruz's water supply problem in a number of futures, and devise the options best suited to ensure the resilience and dependency of our water system. To date, the Council has not acted substantively upon this work, instead electing to allow the 18-month process to unfold as led by its citizen committee.

DISCUSSION: With the Agreements and Recommendations Final Report in hand, the City Council has been presented with a comprehensive, packaged strategy to deliver long-term water supply security to the City of Santa Cruz. This Final Report and the strategy it contains has the support of the Water Commission, the Water Department and key stakeholders. I recommend that on the strength of the report itself and its endorsements, the City Council accept the WSAC Agreements and Recommendations Final Report and take a few related actions:

First, as the Council appreciates, significant time, staffing, financial resources and community member engagement have been invested into the water supply packaged strategy described in the Final Report. To honor that investment and create durability around the water supply approach, institutionalizing it is necessary. As more and substantial City resources will be committed to the strategy's implementation, it is crucial that this course be stayed. It would be a disservice to proceed with this work and have it unravel later due to attrition in engagement and commitment. While water supply is at the forefront of community awareness and the results from the WSAC are fresh, the City Council should consider a mechanism to solidify community commitment to the strategy.

A logical mechanism would be to present the water supply packaged strategy to the voters for approval. Such an approval could be memorialized in the City's Municipal Code and would serve as a public blueprint of the course of action, holding true to future City Councils and City staff. Accordingly, it is recommended that the Council direct City staff to develop ballot measure language options for future Council consideration, likely in early 2016 for a 2016 election. City staff would work the City Attorney in the formulation of potential ballot language.

Next, Council acceptance and endorsement of the water supply packaged strategy sets the path for the Water Department to establish and prioritize work plans. It also affects other water planning documents, notably the Urban Water Management Plan (Plan). The Plan undergoes an update every five years, with the next iteration due July 1, 2016. It is recommended that the City Council direct staff to integrate the relevant elements of the Final Report into the Plan update.

In the short and long-term, implementation of the WSAC Agreements and Recommendations Final Report will need oversight and constant, focused attention. With the official disbanding of the WSAC due to the completion of its charge, it is natural to assign the oversight responsibility to the Water Commission. This body of work already squarely fits within the purview and charge of the Water Commission but express direction that the Commission will oversee the water supply strategy will help to clarify roles and responsibilities. Integral to the Water Commission oversight are regular updates to the City Council and the proposed recommendation on oversight calls for no less than semi-annual updates from the Water Commission to the City Council.

Finally, a key component to the durability, integration and ultimate success of this new water supply strategy is continued engagement with the community. The final recommendation before the City Council is a motion supporting continued efforts to communicate and engage with the community on key strategies that advance the water supply recommendations. While the exact shape and direction is not fully known, I expect that the Water Department will lead in these efforts and as appropriate will assume some costs for outreach activities.

The four recommendations presented for the Council's consideration tonight bolster the integration of the water supply packaged strategy into the City's current and future work, while

upholding transparency and accountability—and importantly, ensuring the continuation of critically important community education and engagement.

In closing, I would be remiss to not recognize the incredible work of the citizen-led Water Supply Advisory Committee. Each of the 14 members provided inestimable contributions to the robustness of process and soundness of the final product. As City Manager, I extend my gratitude to the Committee and to the Water Department staff who worked in earnest to support and facilitate the Committee's work.

FISCAL IMPACT: The fiscal impacts related to the Final Report are not fully known at this time. However, as is described in the Final Report, implementation of the recommendations will require funding, some of which was not including in the FY2016 CIP. Staff will return to the Council in early 2016 with developed schedules and budgets for all elements of the recommendations including technical studies, agency and regulatory discussions and negotiations, and related public information efforts.

Submitted by:

Martín Bernal
City Manager

Attachment: None. The WSAC Agreements and Recommendations Final Report can be accessed on the Water Supply Advisory Committee website: www.santacruzwatersupply.com