1. **ROLL CALL**
President LaHue called the special meeting to order at 6:00 p.m. at the Capitola City Council Chambers.

**Board Members Present:**
Dr. Thomas LaHue, President
Bruce Daniels, Vice President
Dr. Don Hoernschemeyer
Dr. Bruce Jaffe
Rick Meyer

**Board Members Absent:**
None

**Staff Members Present:**
Kim Adamson, General Manager
Taj Dufour, Engineering Manager/Chief Engineer
Ron Duncan, Conservation & Customer Service Field (CCSF) Manager
Traci Hart, Human Resources Manager
Leslie Strohm, Supervising Accountant
Melanie Schumacher, Special Projects Engineer
Teresa Rein, District Counsel
Karen Reese, Executive Assistant/Board Clerk

**Others Present:**
Peter Kiel, Ellison, Schneider & Harris (Via conference call)
Ann Sansevero, URS Corporation
Todd Reynolds, Kennedy/Jenks
John Ricker, County Water Resources Director

25 Members of the public

2. **PUBLIC HEARING** – None

3. **CONSENT AGENDA** – None

4. **ORAL COMMUNICATIONS** (items not on the Agenda)
Katherine Sweet submitted a document for the record (attached as Exhibit A) with regard to private well pumping referring to the Wolcott report from 15 years ago. She objects to comments that all private well owners are major contributors (50%) to the over-draft problem. Ms. Sweet shared a report prepared by Jon Kennedy that shows small residential private well pumping is closer to 10-12%.
Jon Kennedy stated, referring to Ms. Sweet’s comments, that the numbers used were based off of private well surveys and data from John Ricker. From his calculations the pumping from the Purisima by private residential pumpers (including Central Water District) is no more than 15%.

Director Jaffe has had requests from the public for more shower timers. Staff will order more to be available.

Director Daniels noted that customers have mentioned moratorium concerns and clarified that the Board did not vote to enact a moratorium but voted to upgrade the WDO program.

5. INFORMATION ITEMS – None

6. ADMINISTRATIVE BUSINESS

Item 6.2 was heard first to allow members of the public to share their comments prior to the backup option review workshop.

6.2 CONSERVATIONplus additional discussion and public comment

Public Comments:
Doug Deaver expressed concern that this program was not presented as a complete package including economic impacts, technical details, and financial details. He feels the public needs to know the cost and that the program should be presented in its entirety to the public before a vote is taken on the Ordinance.

Terre Thomas noted she met with Mr. Duncan and Ms. Schumacher and received helpful information. She would like to see a rectification of the two hydrologist’s reports before passing an Ordinance. Additional concerns are outlined a letter included in tonight’s Board Packet.

Diane Idy commented on the way that the City of Santa Cruz calculates water budgets and she feels this is a fair way to allocate water.

Maria Marsilio would like to see a better education and advertising component to the program.

Board Discussion:
The Board discussed verification of information for determining the number of people in a household. There was agreement that customers should only need to sign an affidavit and that no additional documents should be required.

BMP’s may be difficult to meet for some small non-profits due to costs.

The definition of functional turf is very narrow and consideration should be given to gathering places that serve a public function.
A suggestion was made to work with landscape growers to provide package deals on turf replacement. Gray water and rain barrel programs packages were also suggested.

There was discussion about having more flexibility of using less water in the winter and more in the summer and having an annual allocation. The Board’s initial goal for Phase 1 was to greatly reduce outdoor irrigation water used in the summer months. This goal would not be met at current reduction levels using an annual allocation rather than a monthly budget.

6.1 Backup Options Review

Ms. Schumacher gave a presentation reviewing the steps the District has taken over the past year looking at supplemental supply options (included in the Board Packet).

Todd Reynolds led the ranking workshop (Attached as Exhibit B). From the ranking homework the Board prepared, the top three selections were 1) San Lorenzo Surface Water Transfers—Existing Infrastructure, 2) Mid-County Groundwater Replenishment, and 3) Santa Cruz Regional Groundwater Replenishment. Once the Board makes a decision to move forward with these (or other back-up options), subsequent meetings will be held to go into more detail for each option, including cost analysis, and public input. There was a question regarding the CEQA process for the different options. Ann Sansevero from URS explained that the CEQA process would start once a project is identified. CEQA also requires that reasonable alternatives to a proposed project be considered. Once the Board has identified the proposed project, the focus will be on that project and the reasonable alternatives to that project.

John Ricker discussed the water transfer without added infrastructure option. Peter Kiel noted that temporary transfers can be obtained on an expedited basis with a temporary urgency permit.

Discussion was held with regard to drilling injection wells for recharge and sufficient space between existing private wells. The three locations identified for recharge do have sufficient space from existing wells.

The Board expressed concerns about projects that require participation for other agencies, and the likelihood of litigation to stop certain projects such as desal.

More information was requested on the Lochquifer plan and staff was directed to bring this back to a subsequent meeting.

Public comment was taken and included concerns that the options presented did not get water directly to the customer but were all groundwater injection based options. Inter-basin transfers were suggested with SqCWD being the storage
ground for water from other districts. Concerns were expressed that recycled water could not be treated to a degree that would eliminate biological hazards.

Mr. Reynolds asked the audience to participate in a Dot process which was a quick exercise to illustrate preferences. The list of the top six options were displayed on the wall, each audience member was given three dots to place on their top choices. A write in choice was made by some members of the audience for Lochquifer with rain barrels/decentralized rain catchment.

After further discussion, the Board made the following motion:

**MOTION:** President LaHue; Second; Director Jaffe: To direct staff to bring back a plan for further detailed studies for 1) San Lorenzo Surface Water Transfers – Existing Infrastructure, 2) Mid-County Groundwater Replenishment, and 3) Santa Cruz Regional Groundwater Replenishment and direct staff to bring back more information regarding the Lochquifer plan. Motion passed unanimously.

**MOTION:** Director Daniels: To also evaluate Mid-County Desalination. There was no second to the motion and the motion died.

Staff was asked which of these options might qualify for water bond funding. Ms. Adamson replied that the water bond refers to water reuse which includes recycled water. In the process of moving forward with a grant application the District would be in a good position to receive funding for those types of projects.

7. **STATUS REPORTS** – None

8. **WRITTEN COMMUNICATIONS AND CORRESPONDENCE**
   8.1 Letter from Terre and Charles Thomas regarding Conservation Plus Program

   Additional written communication was distributed to the Board and is included with these minutes as Exhibit C.

9. **CLOSED SESSION** – None

10. **ADJOURNMENT**
    President LaHue adjourned the meeting at 9:10 p.m. to the next scheduled Regular Meeting on Tuesday, September 2, 2014.

    SUBMITTED BY: ______________________  APPROVED BY: ______________________

    Karen Reese, Board Clerk       Thomas R. LaHue, President
Board of Directors
Soquel Creek Water District

August 26, 2014

Over the last few years and on a regular basis, comments by both district customers and water district representatives imply or assert that private wells owners are major contributors to the over-draft problems this District now faces. Local newspapers have reported that as much as 50% of water extracted from our shared water basin is by private wells.

The January 2014 Water Resources Status Report presented to the County Board of Supervisors estimated that 38% of the pumping in the Purisima portion of “the overdrafted Soquel-Aptos basin is by non-municipal users” and that private pumpers also account for 15% of the water extraction in the urban coastal zone.

Comments at meetings and in print by members of the general public frequently point to private wells as key contributors to the current overdraft problem.

The District has indicated that it may explore options such as forming a groundwater replenishment district, metering private wells, limiting private well construction or assessing fees on groundwater pumping by non-municipal users.

These possible actions by the SqCWD cause great concern to rural residents who pay for and rely on their own wells for the water that sustains their ways of life.

Presumptions about the role of private pumpers for both the overdraft of the basin and the costs of fixing it are based on assumptions made in various County and District studies and reports. These reports continue to guide SqCWD decisions and they are incorporated into the water model being developed by HydroMetrics Water Resources.

The Wolcott report, created 15 years ago, attempted to quantify private well pumpage. Santa Cruz County Department of Environmental Health updated some information about the impact of private well usage in August, 2013. Numbers from Faler (1992), Pingree (1997), and Wolcott (1999) are being used for the estimations of the impact of private pumpers.

As residential private well owners, we believe that some of this data needs to be re-evaluated and updated before it can be relied upon in calculating a robust groundwater model.

Here are some of our concerns that we would like to see incorporated into any evaluation of the impact of private well usage in the Soquel-Aptos groundwater basin:

1. For an accurate evaluation of the shared groundwater basin, different users must be divided into several distinct groups.

   SqCWD, SCWD and CWD are all large appropriative users with publically elected Boards that direct their activities. These agencies have formed into what is referred to as the BIG – the Basin Implementation Group. Their legal water rights are solely appropriative and superseded by the absolute and over-riding water rights of private well owners to the ground water that exists under their properties. Bills are pending in both the California State Senate and Assembly that would allow some oversight.

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1 Santa Capitola Times August 2014
2 Pages 3-4: http://account01.co.santa.cruz.ca.us/BDS/Govstream2/Bds/vdata/non_legacy_2.0/agendas/2014/20140128-814/PDF/036.pdf
3 See Attachment 1
and management of groundwater resources but both bills exempt private residential wells.

Private pumpers are comprised of a minimum of five separate categories:
   - Agriculture
   - Commercial entities such as golf courses, camps, private schools and resorts
   - Public Agencies (with elected boards) such as school districts
   - Private Residential wells serving 1 to 4 homes
   - State-chartered small water systems that serve 5 to 199 homes.

2. In an October 1999 report, Wolcott specifically identified a number of areas and items that needed to have further work done. She referenced the need for additional information for things such as how to define what is the ‘rural area’ of the Purisima, how to determine the effect of shallow groundwater wells in water use calculations, and adjusting incorrectly applied Assessors Use Codes for some agricultural parcels.

Some land uses have changed since the 1999 Wolcott study that is now being used as the main guide to private well water use. For example, Antonelli Begonia Gardens, a three acre commercial nursery that was replaced by a small subdivision about 10 years ago, is still listed as using 20.46 AFY of water a year.

Our group has scrutinized the Wolcott spread sheet, updated and sorted for some aquifer and assessor use codes but this list still needs to be revised for additions and changes in use since 1999.

Has the County or the District completed the tasks that Wolcott referenced in her 1999 report?

3. Few new wells are being drilled in the Purisima. County staff projects a 2% total increase in new development in the rural areas through 2030. This number is based on the number of septic permits issued over the last 15 years. A recent article in Santa Cruz Sentinel notes that the rural areas of Santa Cruz County actually had a steep population decline over the last 20 years. Essentially, a ban on new wells on the Purisima will have a net effect of zero on overdrafting in the groundwater basin.

4. Pumping estimates do not include any estimates for either consumptive use or return flow from septic systems and irrigation. However, Wolcott's notes indicate a recharge factor, and we have included that in our analysis. These need to be incorporated into any water model to give a more accurate picture of the groundwater basin.

5. Is there a proven hydrological linkage or connection between wells drawing from different Purisima levels? Many of the private wells in the Purisima take from the upper layers of the aquifer rather than the deeper substrata that SQCWD's production wells access.

"Further work also needs to be done to encompass the effect of shallow groundwater wells in the water use calculations. The water use of the shallow wells needs to be counted as using stream baseflow rather than as water pumped from deeper substrata of the Purisima aquifer." (SC County EHS, Wolcott, 1999)

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1 Methodology of Calculating Water Use in the Purisima Aquifer, Justine Wolcott, 10/29/1999
3 See Attachment 2
6. Does the County own and operate any wells on the Purisima?

7. We ask that District representatives refrain from making statements that, in any way, blame private residential well owners for the current overdraft of our shared groundwater basin. Our preliminary analysis, based on the Wolcott numbers, demonstrates that residential wells have a small over-all impact on the Purisima.

Purisima Usage
After return flow - 4,000 AFy

- SqCWD
- Central WD
- Agricultural
- Sm Water Systems
- SCzWD Belz
- Cabrillo
- Commercial
- Private Residential

Residential wells account for 10% of groundwater extraction from the Purisima. Most of these wells access the upper strata of the aquifer and have a negligible impact on the A layer that District wells utilize in water production.

Jon Kennedy
Katherine Sweet
Soquel Well Owners Group
Attachment 1

Impact of Private Well Usage in the Soquel-Aptos Groundwater Basin
(Updated by John Ricker, August, 2013)

In order to develop a more comprehensive management approach to the Soquel-Aptos groundwater Basin, it makes sense to consider all the entities pumping from the Basin. County staff have reviewed information related to private pumping from the basin in both the coastal, urban areas and in the inland rural areas. This distinction is based on the belief by hydrologists that coastal pumping has a disproportionately greater impact on groundwater levels along the coast. The objective is to manage groundwater pumping to allow groundwater levels along the coast to recover to higher levels that would minimize the threat of seawater intrusion.

In 1999, County staff used well records, land use information, and aerial photo analysis to estimate pumping on properties with private wells pumping from the Purisima formation. This information was reviewed and updated to reflect changes in land use for larger agricultural wells, and is compared to 2011 pumping records of the water agencies. Since 1999, several of the larger agricultural operations have been phased out entirely and some have been expanded slightly. The urban areas are defined as those areas within the boundaries of the Soquel Water District. This extends inland considerably beyond the County’s urban services line in a number of locations, including up the east side of Soquel creek into the Cherryvale area.

The following table presents a summary of information for the urban area and the entire basin:

<table>
<thead>
<tr>
<th>PURISIMA AQUIFER Groundwater Extraction</th>
<th>Urban Areas</th>
<th>Rural Areas</th>
<th>Total Basin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Pumage (Acre-Feet/Year)</td>
<td>Percent of Total Urban Pumage</td>
<td># of Wells</td>
<td># of Developed Parcels</td>
</tr>
<tr>
<td>Agricultural Wells</td>
<td>88</td>
<td>2%</td>
<td>5</td>
</tr>
<tr>
<td>Seascape Golf Course</td>
<td>232</td>
<td>6%</td>
<td>2</td>
</tr>
<tr>
<td>Other Individual Private Wells: Residential &amp; Commercial</td>
<td>124</td>
<td>3%</td>
<td>184</td>
</tr>
<tr>
<td>Cabrillo College</td>
<td>95</td>
<td>3%</td>
<td>3</td>
</tr>
<tr>
<td>Other Small Water Systems:</td>
<td>30</td>
<td>1%</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL Non-Municipal Pumping</td>
<td>560</td>
<td>15%</td>
<td>198</td>
</tr>
<tr>
<td>CITY OF SANTA CRUZ</td>
<td>531</td>
<td>14%</td>
<td>3</td>
</tr>
<tr>
<td>SOQUEL CREEK WATER DISTRICT</td>
<td>2,634</td>
<td>71%</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>3,724</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The very large majority of private wells serve individual homes, with estimated water use of 0.44 acre-foot per parcel per year. The notable exceptions are Seascape golf course, Cabrillo College, 5 urban area nurseries (4-45 af/yr), a trailer park (20 af/yr), 10 rural agricultural uses (3-16 af/yr). Estimated water usage is based on an analysis of parcel size, numbers of units and typical water use factors for the type of use. Further analysis of specific parcels could provide more precise information, but it is believed that this analysis presents a good picture of the situation for general planning purposes.
ATTACHMENT 2

Kennedy Edits to the Private Wells Survey List

Our stakeholder group has performed an analysis on Wolcott's file of approximately 1700 records. We isolated the abandoned and duplicate wells and inactive parcels listed on her sheet; then updated assessor use codes and sorted by these. We attempted to clarify which parcels listed as cultivated acreage are still used agriculturally. We added a separate list of small mutual water districts. We added a column for return flow, using Wolcott's percentages for rural residential and agricultural irrigation. For two large users (Cabrillo and Seascape Golf) we have used the numbers Wolcott had assigned. We used Wolcott's numbers of 285af for Cabrillo.

Please note that Wolcott states that the predominant volume of water used by Seascape is from the Aromas aquifer. Out of 365af total for Seascape, Wolcott allocated only 52af as being taken from the Purisima.

The residential portion of total Purisima use is 10% after re-charge. This includes the small water systems and Central Water District.

Water Extraction from the Purisima Aquifer

See figures below. (Estimates for 2015 are approximate and subject to adjustment.)

<table>
<thead>
<tr>
<th></th>
<th>2012 Purisima w ReChg</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>SqCWD</td>
<td>2,660.0</td>
<td>67%</td>
</tr>
<tr>
<td>SC2WD Belz</td>
<td>400.0</td>
<td>10%</td>
</tr>
<tr>
<td>Central WD</td>
<td>160.0</td>
<td>2%</td>
</tr>
<tr>
<td>Cabrillo</td>
<td>285.0</td>
<td>7%</td>
</tr>
<tr>
<td>Agricultural</td>
<td>156.0</td>
<td>3%</td>
</tr>
<tr>
<td>Commercial</td>
<td>90.0</td>
<td>2%</td>
</tr>
<tr>
<td>Sm Water System</td>
<td>145.0</td>
<td>2%</td>
</tr>
<tr>
<td>Private Residential</td>
<td>546.0</td>
<td>8%</td>
</tr>
<tr>
<td>Total</td>
<td>4,442.0</td>
<td>3,991.4</td>
</tr>
</tbody>
</table>
Workshop for Ranking of Backup Supplemental Supply Options

August 26, 2014
Scorecard Approach

- Primary Evaluation Criteria
- Related Sub-Criteria
- Scoring
- Weighting
- Ranking
### Criteria and Sub-Criteria

<table>
<thead>
<tr>
<th>Primary Evaluation Criteria</th>
<th>Proposed Associated Evaluation Sub-Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Supply Availability and Quality</strong></td>
<td>• Amount of water available to meet District Needs</td>
</tr>
<tr>
<td></td>
<td>• Water availability throughout the year and in dry and wet years</td>
</tr>
<tr>
<td></td>
<td>• Amount of treatment or complexity of alternative to provide potable level water quality</td>
</tr>
<tr>
<td><strong>Supply Impact, Reliability and Flexibility</strong></td>
<td>• Timeliness and impact to protect GW basin and prevent seawater intrusion.</td>
</tr>
<tr>
<td></td>
<td>• Reliability of supply over the long-term (20 year period).</td>
</tr>
<tr>
<td></td>
<td>• Flexibility for expansion and/or adaption to climate change.</td>
</tr>
<tr>
<td><strong>Environmental Permitting Considerations</strong></td>
<td>• Environmental Issues and anticipated support for the alternative by environmental regulatory agencies</td>
</tr>
<tr>
<td></td>
<td>• Potential environmental benefits in addition to groundwater protection</td>
</tr>
<tr>
<td></td>
<td>• Complexity and/or effort for the permitting process</td>
</tr>
<tr>
<td><strong>Legal and Implementation Considerations</strong></td>
<td>• Ability of the District to obtain water rights or regulatory approval for the supplemental supply</td>
</tr>
<tr>
<td></td>
<td>• Complexity of property and right-of-way acquisition for associated facilities and pipelines</td>
</tr>
<tr>
<td></td>
<td>• Dependency on partners or other agencies, where there could be a risk of non-participation</td>
</tr>
<tr>
<td></td>
<td>• Potential for technical innovation and implementation.</td>
</tr>
<tr>
<td><strong>Customer/ Stakeholder Acceptability and Benefit</strong></td>
<td>• Anticipated support for the alternative by the District’s Customers</td>
</tr>
<tr>
<td></td>
<td>• Potential to provide a higher level of public safety during disaster</td>
</tr>
<tr>
<td></td>
<td>• Potential to provide benefits to other local groundwater users or the broader community</td>
</tr>
<tr>
<td><strong>Financial and Funding Considerations</strong></td>
<td>• Potential opportunities for cost-sharing or grant funding</td>
</tr>
<tr>
<td></td>
<td>• Ability of District to finance the proposed alternative</td>
</tr>
<tr>
<td><strong>Project Costs</strong></td>
<td>• Relative Capital Cost</td>
</tr>
<tr>
<td></td>
<td>• Relative Operations and Maintenance (O&amp;M) Cost</td>
</tr>
<tr>
<td></td>
<td>• Relative Unit cost of Water ($ per Acre-Foot of supply)</td>
</tr>
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</table>
# Weighting

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Recommended Weighting</th>
<th>Sensitivity Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cost Focused</td>
<td>Acceptability Focused</td>
</tr>
<tr>
<td>Water Supply Availability and Quality</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Supply Impact, Reliability and Flexibility</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Environmental Permitting Considerations</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Legal and Implementation Considerations</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>Customer/ Stakeholder Acceptability and Benefit</td>
<td>10%</td>
<td>6%</td>
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<tr>
<td>Financial and Funding Considerations</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Project Costs</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
## Results of Initial Scoring and Ranking

### Recommended Weighting

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Staff Rank</th>
<th>Board Member 1 Rank</th>
<th>Board Member 2 Rank</th>
<th>Board Member 3 Rank</th>
<th>Board Member 4 Rank</th>
<th>Board Member 5 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Lorenzo Surface Water Transfers - Existing Infrastructure</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>San Lorenzo Surface Water Transfers - Infrastructure Upgrades</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Mid-County Desalination</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Deep Water Desalination</td>
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<td>4</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mid-County Groundwater Replenishment</td>
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<td>3</td>
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<tr>
<td>Santa Cruz Regional Groundwater Replenishment</td>
<td>3</td>
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<td>1</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
## Similar Results with Different Sensitivity Weightings – Cost Focused

<table>
<thead>
<tr>
<th>Cost Focused Weighting</th>
<th>Staff</th>
<th>Board Member 1</th>
<th>Board Member 2</th>
<th>Board Member 3</th>
<th>Board Member 4</th>
<th>Board Member 5</th>
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</thead>
<tbody>
<tr>
<td>Project Name</td>
<td>Rank</td>
<td>Rank</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>San Lorenzo Surface Water Transfers - Existing Infrastructure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>San Lorenzo Surface Water Transfers - Infrastructure Upgrades</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>5</td>
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<tr>
<td>Mid-County Desalination</td>
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<td>6</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Deep Water Desalination</td>
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<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mid-County Groundwater Replenishment</td>
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<td>3</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Santa Cruz Regional Groundwater Replenishment</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Water Transfers rank drops due to supply uncertainty

Supply Reliability Focused Weighting

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Staff Rank</th>
<th>Board Member 1 Rank</th>
<th>Board Member 2 Rank</th>
<th>Board Member 3 Rank</th>
<th>Board Member 4 Rank</th>
<th>Board Member 5 Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Lorenzo Surface Water Transfers - Existing Infrastructure</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td></td>
</tr>
<tr>
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Similar Overall Results with Acceptability Focus — with some variation

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<th>Acceptability Focused Weighting</th>
<th>Staff</th>
<th>Board Member 1</th>
<th>Board Member 2</th>
<th>Board Member 3</th>
<th>Board Member 4</th>
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<td>3</td>
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<td></td>
</tr>
</tbody>
</table>
Top 3 Supplemental Supply Alternatives based on Initial Scoring and Ranking

- Water Transfers with existing infrastructure (partial supply alternative)
- Groundwater Replenishment with Mid-County RW Facility
- Groundwater Replenishment with Regional RW Facility
Discussion and Real-Time Scoring and Ranking

- TM #1 Desalination Alternatives
- TM #2 Recycled Water Alternatives
- TM #3 Water Transfer Alternatives
- TM #4 Alternatives Evaluation

Water Supply Opportunities
“Dot Process” Screening Exercise

- A quick, insightful exercise to understand a group's preference for, or acceptability of, various alternatives.

- “Dot Process” Screening Approach
  - All participants get three dots
  - May put 1, 2 or 3 dots on an alternative
  - Screening based on information presented, and individuals' judgment and understanding
Possible Next Steps for Evaluating a Backup Supplemental Supply

- Select a supplemental supply option (or options) for more detailed feasibility study and/or testing.

- Provide Staff with further direction to obtain additional information on a supplemental supply option (or options) to facilitate selection at a future date.
Potential Work Items for Top Ranked Alternatives

- Continue the process to apply for San Lorenzo River Water Rights for up to 500 AFY when excess water is available.
- Develop a Draft MOU with Santa Cruz for Water Transfers.
- Convene a Technical Advisory Committee (TAC) through the National Water Research Institute (NWRI) to provide guidance and review of GWR project development.
- Construct and test an injection well to support EIR and preliminary design.
- Coordinate with Drinking Water Program to conduct a water quality and treatment study to support EIR and preliminary design.
Additional Questions and Discussion
Desalination Alternatives

1.a

Mid-County Desalination Project

- 1,500 AFY
- All facilities w/in District Service Area
- Reduce GW pumping and protection from seawater intrusion

1.b

Deep Water Desalination Project

- 1,500 AFY (District share of a larger facility)
- Regional project with JPA of Public Agencies
- Requires JPA member agencies to “take or pay”
- Co-location may provide energy and cost savings
1.a Mid-County Desalination Project

**Conceptual Description:**
- Pumping directly into the potable water supply system
- Screened intake
- Desalination Facility north of Highway 1 and west of State Park Drive
- 2 options for brine discharge (Soquel Cove or Santa Cruz WWTP)

* Brine Conveyed to Santa Cruz WWTP Outfall requires 15 miles of additional pipeline
# 1.a Mid-County Desalination Project

## Mid-County Desalination Project

<table>
<thead>
<tr>
<th></th>
<th>Brine Outfall to Soquel Cove</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>$86.2 mil</td>
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<tr>
<td>Annual O&amp;M</td>
<td>$2.6 mil/year</td>
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</tr>
<tr>
<td>Annualized Unit Costs</td>
<td>$4,600$/AFY</td>
<td></td>
</tr>
</tbody>
</table>

## Challenges

- Higher costs
- Environmental constraints
- Regulatory obstacles

## Advantages

- Reliable local supply
- Self sufficient program
1.b Deep Water Desalination Project

**Conceptual Description:**
- Requires JPA member “take or pay” participation for 20-years
- Intake and outfall pipelines financed by the DWD Data Center
- O&M cost sharing with DWD Data Center
- Conveyance PS at Moss Landing and pipeline to District
1.b Deep Water Desalination Project

### Challenges
- Relies on regional and JPA participation
- Savings dependant on DWD Data Center
- Same environmental challenges as Mid-County

### Advantages
- Energy savings from co-location
- Cost savings from co-location and project size
- Reliable supply

### District Cost-Share

<table>
<thead>
<tr>
<th>Deep Water Desalination Project</th>
<th>District Cost-Share</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
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<td>Annual O&amp;M</td>
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<td>mil/year</td>
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<tr>
<td><strong>Annualized Unit Costs</strong></td>
<td><strong>$3,100</strong></td>
<td><strong>$/AFY</strong></td>
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</tbody>
</table>
Recycled Water Alternatives

2.a Mid-County GW Replenishment Project
- 1,500 AFY
- All facilities within District Service Area
- GW replenishment and protection from seawater intrusion

2.b Santa Cruz GW Replenishment Project
- 1,500 AFY (District share of a larger facility)
- Share facilities and costs with Santa Cruz
Recycled Water for Groundwater Replenishment

- Advanced treatment, blending and environmental barrier required
- Highly treated water would be injected into GW Basin away from the coast
- Supplemental supply water is then withdrawn from current wells

Potential Groundwater Recharge Locations:
- Groundwater Units
  - Purisima AA and TU
- 500-ft separation distance
  - travel time of 6 months to 1 year
- Proposed Sites
  - Anna Jean Cummings Park
  - Soquel High School sports Field
  - Monterey Street Well

New regulations permit 2 to 6-month separation distance from neighboring wells.
2.a Mid-County GW Recharge Project

Conceptual Description:
- Source water from local sewer
- Advanced Recycled Water Treatment Facility (ARWTF) at DA Porath Sewer PS
- Proposed injection locations to fill existing depressions in the aquifer
- Estimated underground residence time 6 months – 1 year
### 2.a Mid-County GW Recharge Project

#### Challenges

- Public perception challenges
- CDPH studies to confirm water quality
- Hydro-geologic testing to confirm recharge rates

#### Advantages

- Lower costs
- Reliable local supply
- Potential for irrigation of sites near the recycled water pipeline

#### Mid-County GWR Project District Costs

<table>
<thead>
<tr>
<th>Mid-County GWR Project</th>
<th>District Costs</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Annual O&amp;M</td>
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</tr>
<tr>
<td><strong>Annualized Unit Costs</strong></td>
<td><strong>$2,700</strong></td>
<td>$/AFY</td>
</tr>
</tbody>
</table>
2.b Santa Cruz GW Recharge Project

Conceptual Description:
- Source water from Santa Cruz WWTP secondary effluent
- Advanced Recycled Water Treatment Facility (ARWTF) in Santa Cruz
- New dedicated 5-mile RW pipeline to District
- Proposed injection locations to fill existing depressions in the aquifer
- Estimated underground residence time 6 months – 1 year

Legend:
- Existing Well
- New RW Injection Well
- Advanced Treatment Facility
- RW Pipeline
- Santa Cruz Water Department
- Soquel Creek Water District
- 500ft Radius = 6mo-1yr Underground Residence Time
2.b Santa Cruz GW Recharge Project

Challenges
- Public perception challenges
- CDPH studies to confirm water quality
- Hydro-geologic testing to confirm recharge rates
- Coordination with Santa Cruz

Advantages
- Lower costs
- Reliable local supply
- Potential for irrigation of sites near the recycled water pipeline

### Santa Cruz GWR Project District Cost-Share Unit

<table>
<thead>
<tr>
<th>Santa Cruz GWR Project</th>
<th>District Cost-Share</th>
<th>Unit</th>
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</thead>
<tbody>
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<td><strong>Annualized Unit Costs</strong></td>
<td><strong>$2,600</strong></td>
<td><strong>$/AFY</strong></td>
</tr>
</tbody>
</table>
**Water Transfer Alternatives**

3.a  
**Water Transfer with Existing Infrastructure**
- 445 AFY; ~50% of time
- Rely on existing infrastructure
- Requires District Water Rights on San Lorenzo River

3.b  
**Water Transfer with Infrastructure Upgrade**
- 1,500 AFY; ~50% of time
- Upgrades to GHWTP treatment
- Requires District Water Rights on San Lorenzo River
3.a and 3.b Water Transfer Alternatives

Conceptual Description with Existing Infrastructure:
- Treats excess low turbidity water
- Only 50% reliable - dependant on rainfall
- Minor improvements to Tait Street Diversion
- Use of existing distribution system
- Requires new water right to San Lorenzo River

Conceptual Description with Infrastructure Upgrades:
- Treats excess higher turbidity winter-time water
- Only 55% reliable - dependant on rainfall
- Improvements to treatment at GHWTP
- Improvements to Tait Street Diversion
- New distribution system connection pipelines/PS
- Requires new water right to San Lorenzo River
3.a and 3.b Water Transfer Alternatives

<table>
<thead>
<tr>
<th>Water Transfer Projects</th>
<th>3.a Existing Infrastructure</th>
<th>3.b Infrastructure Upgrades</th>
<th>Unit</th>
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<tbody>
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Challenges

- New Water Right
- Reliability of surface water
- 3a provides only small amount
- Negotiations with neighboring agencies

Advantages

- Low cost for 3.a
- No new infrastructure for 3.a
### Scoring

<table>
<thead>
<tr>
<th>Color-Coded Key</th>
<th>More Favorable, More Feasible, or Beneficial (Score = 5)</th>
<th>Moderately Favorable, Moderately Feasible, or Neutral (Score = 3)</th>
<th>Less Favorable, Less Feasible, or Flawed (Score = 1)</th>
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## Example Scoring of Project Alternatives

<table>
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<th>Amount</th>
<th>Availability</th>
<th>Treatment/Complexity</th>
<th>Water Supply Availability and Quality</th>
<th>Supply Impact, Reliability and Flexibility</th>
<th>Environmental Permitting Considerations</th>
<th>Legal and Implementation Considerations</th>
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<td>33%</td>
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Notes: For scoring: 5 = Most Favorable and 1 = Least Favorable
## Example Ranking based on Weighted Scores

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Weighting Options:
- Weighting Option #1
- Weighting Option #2
- Weighting Option #3
- Weighting Option #4
## Summary of District Water Supply Opportunities

<table>
<thead>
<tr>
<th>Alt</th>
<th>Description</th>
<th>Potential District Supplemental Supply (AFY)</th>
<th>Conceptual Capital Cost (mil $)</th>
<th>Project Annualized Unit Cost ($/AF)</th>
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<tbody>
<tr>
<td>1.a</td>
<td>Mid-County Desalination Project</td>
<td>1,500</td>
<td>$86</td>
<td>$4,600</td>
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<td>Deep Water Desalination Project</td>
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<td>Mid-County Recycled Water Project</td>
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<td>Santa Cruz Recycled Water Project</td>
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<td>3.a</td>
<td>San Lorenzo River - Water Transfer with Existing Infra</td>
<td>445</td>
<td>$6</td>
<td>$1,020</td>
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<tr>
<td>3.b</td>
<td>San Lorenzo River - Water Transfer with Infrastructure Upgrade Project</td>
<td>1,500</td>
<td>$90</td>
<td>$3,580</td>
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</tbody>
</table>
Karen Reese

From: Ron Burke <rburke477@gmail.com>
Sent: Tuesday, August 26, 2014 4:14 PM
To: Karen Reese
Subject: For Board Meeting 26-August

Karen,

Thank you for including this letter in your materials packet for the SCWD board meeting tonight.

I want to applaud the board for being active in addressing water consumption leading to overdraft of our aquifers. A few items which arose in my reading of the NOTIFICATION OF A PUBLIC HEARING ON PROPOSED PENALTY SURCHARGES THAT MAY AFFECT YOU:

1. How soon will monthly billing statements include a table displaying actual gallons of water consumed per person, well before penalties ensue as an education and awareness measure?
2. Why will residential vacation rental property owners not be subject to the same (or similar) penalties other residential consumers will be subject to?
3. How will the district account for regular resident headcount fluctuations? An example in our case: my wife and I are full-time residents though our daughter comes home from college for a month in the winter and 3 months in the summer.
4. How will landscape area be calculated and verified for allotment of irrigation water consumption? And also on a regular basis (that's a lot of work)? An example could be a homeowner who was originally assessed, then just after removes their landscape in favor of artificial turf (good), but then allocating their irrigation consumption for household interior use bypassing penalties.
5. How will well owner users, who draw from the same sources we all use, eventually be subject to restrictions and penalties?
6. Lastly, are there plans to make use of renewable water sources to augment current supply by diverting part of the flow of the Soquel Creek to a basin for direct use or re-charging its below aquifer?

Thank you in advance for your inclusion of these questions, Karen.

Ron Burke
former City of Capitola:
- Planning Commissioner
- General Plan Advisory Committee member
- Commission on the Environment member
Dear Board of Directors:

Thank you for declaring a ground water emergency in the district. In accordance with the UWMP, a higher concentration of Chromium 6 and Arsenic in a more condensed aquifer would certainly have a deleterious effect on customers' health and safety. Now it may be time to pull the trigger on future hookups. Considering that most DMMs have minor effects or decreasing results, considering that the City of Santa Cruz has historically proven an inconstant and fickle business partner, and considering the political climate in the state which encourages population growth while discouraging new sources of water collection, a hookup moratorium would appear to be the true answer to the district's shortage problem.

Various interpretations of the amount of water in the aquifers through the years only serve to illustrate the elusiveness of really knowing how much is down there. Since other economical and efficient solutions are currently out of favor, a hookup moratorium would be a better way to determine how much water to supply without creating an exorbitant increase in rates.

Respectfully Submitted,

[Signature]

APN #041 181 38
From: Jerry Paul <jpaul@ix.netcom.com>
Sent: Monday, August 25, 2014 1:03 PM
To: Karen Reese
Cc: Kim Adamson
Subject: For the SqCWD Board: Key info from the Water Supply Advisory Committee (WSAC)

To: The members of the Board of Directors of the Soquel Creek Water District
From: Jerry Paul 831-457-0910
Re: Key info from the Water Supply Advisory Committee (WSAC)

A very important body of information has just been made available by your peers, pertinent to your pivotal vote(s) to be held tomorrow on the subject of water supply alternatives. This weekend I spoke with two SqCWD Board members who appeared to be entirely unaware of the existence of this information. Specifically, the Water Supply Advisory Committee (WSAC) of the Santa Cruz City Council has published some 80 ideas regarding water source alternatives, many of them new, and every one pertaining to SqCWD, if for no other reason than that SqCWD may choose to interact with SCWD and other stakeholder agencies to which the ideas variously pertain.

WSAC sent letters to me and many others soliciting these ideas in overview format of no more than two pages each. Important respondents include:

John Ricker;
SVWD General Manager Pirette Harmon;
SCWD Operations Manager Terry McKinney (who submitted 7 ideas);
Desal Alternatives;
the present owner of (formerly Cemex) North Coast land who outlines technical details of how a reservoir might be built there cheaply; and
me, who submitted 41 ideas which generally are now almost a year more well-developed than the SqCWD Board has last heard.

A .pdf of all 80 ideas is on the WSAC web site at:

WSAC has now invited many, if not all, of these respondents to submit expanded descriptions of these and additional ideas in a format not to exceed 10 pages each and answering specific questions regarding how and to what extent each idea satisfies criteria of efficacy, reliability, efficiency, practicality, eco-friendliness, etc. The deadline is 9/11.

In addition, WSAC has invited the respondents to participate in a water supply ideas convention at the Santa Cruz Civic Auditorium on Thursday September 24 from 11:00 a.m. to 9:00 p.m., and will provide supporting logistics to the respondents to that end.

My sense is that the City Council is setting aside about $300k for the WSAC itself plus some $700k for consultant studies to be conducted at the direction of the WSAC beginning shortly. Stratus Consulting and others have been hired already. Collectively, the performance of the WSAC and the ideas it has amassed suggest revolutions in the areas of cooperation, technology and water rights acquisition, among other things. I believe that cooperating with WSAC very closely will save you
much time, energy, money and duplication of effort.

Space and time do not permit me to give the details of the voluminous reasoning behind my recommendations for your vote tomorrow regarding water supply project alternatives. Nevertheless, I urge you to pursue several projects which in my understanding meet your criteria extremely well:

1. The Proactive Water Rights Acquisition Program, which pre-emptively gives fisheries regulators stream enhancements, large base flows, large bypass flows, and other inducements in order to obtain their pre-emptive enthusiastic endorsements for your new water rights. These inducements would be secured using large diversions of winter storm water and/or other sources, and would take advantage of the new legal and regulatory climate coming about. [see WSAC site, p. 68]

2. The Lochquifer Alternative group, which would provide about: 3 times more water, 3 times more operating life, half the cost to build, half the bond interest cost, 1/13 the operating energy cost—in all, roughly 20 to 30 times more water per dollar—as compared to SCWD2 seawater desalination. In the latest version, turbidity is being addressed using a Ranney collector (a big success on the Russian River). [p. 72]

3. The Cross-County Pipeline, which would transfer raw water at about 500 foot elevation to and from Boulder Creek, Loch Lomond, Scotts Valley and upper Soquel Creek; it would enable SqCWD to, among other things, divert extra Soquel Creek winter storm water and store it in Loch Lomond, then treat it year-around in a new treatment plant, rest the SqCWD wells, and let nature recharge the Purisima Aquifer in as little as 7 years—actually, in 2 years, if I understand the new data from Todd correctly. SqCWD’s own reserve water right on Soquel Creek could be employed for the The Cross-County Pipeline. A Ranney collector could implement diversion with very minimal environmental impact, and thus hopefully quick approvals from regulators and quick water rights acquisition. The cost is similar to Lochquifer, some 20 to 30 times more water for the money, as compared to seawater desalination. [p. 75]

4. Enhancing the existing 6" 41st-Avenue intetie with 18" pipe and a bi-directional in-line low-pressure booster pump (no pump station needed). This would be able to take advantage of just about any new water sources either SCWD or SqCWD come up with, now or in the future. [p. 74]

5. Tertiary-treated Water Detention Tub Strings. [p. 78]

6. Lydell Dam, per its land owner JoeBen Bivert. [p. 80]

Thanks for your attention.

Respectfully,

Jerome Paul, M.S.E.E.
Hello Karen,

I realize I may be too late with this email for the next board meeting on Tuesday Aug. 26th, but I do wish for you to include this with the comments to the board on Tuesday Sept. 2, 2014 please.

I currently am in a single household water usage category. I strive to go as far below the allotment as possible. And for the last three years have been under the limit, with even more stringent measure imposed upon myself this past year. Oddly over the last 3 yrs in June of each yr I was over, and am having Roy (from your water district) come out to do an inspection later this month to see if there are any possible leaks or any other water saving measures I might be able to introduce.

MY CONCERNS ARE: What is going to happen when I have company? I do live in a beach community, and do have family and do plan on going on a vacation in 2015, at which time I am going to try and have guests (family) stay to mind the house and the cat. I do not know what the board is planning, but I must say that I feel it is unreasonable to never allow for such contingencies or variances in one's living situation. Obviously 2 or even 4 people who might stay at my house would use more water than I do. Even if it is only for a few days or a week. I think if I notify the water district in advance this should be taken into account and an allowance made. IT is an exception rather than a rule in my case. and I am certain that this concern is not mine alone.

This is on another matter but I would like to address it as well. I have seen certain local Soquel Creek water district customers, (Aegis) not complying at all, with green moist (very recently watered) lawns wet at noon, not complying. When I spoke to a representative at SCW, I was told that you (the district) were "working with them". Since this drought is not new news and as they are still flaunting the regulations in August, why should they be "worked with" and not fined?

Thank you for your time,

Sincerely,

Marcia Joy Martin