



QUESTIONS and ANSWERS
History of Water Planning Community Informational Meeting
July 28, 2010

The questions that follow were asked through written format at the event mentioned above. Occasionally, the exact nature and intent of the question had to be interpreted. When applicable, the agency to which the question was directed is shown in *(italics)*. For more Questions & Answers, visit www.scwd2desal.org

Q: Any consideration to enlarge Loch Lomond now? Why Not? (City)

A: Increasing the capacity of the Loch Lomond reservoir has been studied in the past, though it cannot provide much more water without completely tearing down the existing dam and reconstructing it to make it more structurally sound and high enough to make a difference in terms of water supply availability. From an operational perspective, this would be impossible as the City cannot take Loch Lomond out of service for the length of time such construction would require. Further, a plan to modify the dam in this fashion could take decades to implement, which would not provide drought protection under current demand conditions for the City or reduce groundwater pumping by the District in the near term.

Q: If you can pump water from a desalination plant in Santa Cruz, why not recycled water from the Sanitation Plant?

A: Current California Department of Public Health regulations do not allow recycled water to be discharged directly into a potable/drinking water distribution system (otherwise known as direct potable reuse). Current state regulations do allow recycled water to be used for indirect potable reuse whereby highly treated wastewater is blended with potable water and injected into the ground using percolation ponds and then extracted for later use.

For the City of Santa Cruz (City) and Soquel Creek Water District (District), there are several limitations with indirect potable reuse including, but not limited to, (a) local geology is not conducive for percolation ponds, (b) the additional source of water to blend (surface water or groundwater) is already a limited resource, and (c) injection wells require a prescribed distance away from other public/private wells which are densely scattered throughout our service areas. More information is included in a white paper on the opportunities and limitations of recycled water on our website: http://www.scwd2desal.org/documents/WhitePapers_Fact_Sheets/Recycled%20Water%20White%20Paper_Final.pdf

Q: Is there any movement to conduct a pilot project to explore using rainwater, caught onsite, for select indoor uses (such as washing dishes, laundry, or flushing toilets)?

A: There has not been any local pilot project for using rainwater for indoor uses such as washing dishes, laundry, or flushing toilets. Rainwater is being collected by some of our customers using rainwater catchment systems and used for outdoor irrigation.

Q: You seem to have considered only systemic storage facilities. Have you studied the potential impact of distributed storage (e.g. cisterns, etc. on all private properties) for supplying additional water? Wouldn't that provide a great deal of water?

A: Distributed storage, such as cisterns on all private properties, does not guarantee a specific quantity of water since it's based on the customer's willingness to use the system and rainfall amounts. Not all properties could accommodate on-site water storage. Also, the volume of water available within the cistern is limited to its size and availability/frequency to refill. During periods of droughts, residents may only be able to use one cycle of captured rainfall before their cistern runs dry.

In addition, the City of Santa Cruz needs supplemental potable water, and rainwater can only be used for non-potable/irrigation applications under current regulations.

The City and the District appreciate and support individual users' willingness to conserve and implement other water-saving devices (such as cisterns or graywater systems). However, it should be noted that urban planning is based on regionalized utilities for wastewater, storm water, and potable water. This urban planning tenet supposes that the public interest is best served in densely populated urban areas by having a centralized utility system that, among other things provides a state-permitted water system that delivers treated drinking water meeting all state and federal standards and a state permitted wastewater treatment system that disposes of treated wastewater that protects the community from outbreaks resulting from untreated wastewater.

Q: Was wastewater recycling in Santa Cruz evaluated? Why is it not listed as an option? (City)

A: Yes, recycled water has been evaluated by the City of Santa Cruz. To utilize water from the wastewater treatment plant for reuse for irrigation, the wastewater would require additional treatment and a new dedicated distribution system (AKA purple pipes) to reach areas needing irrigation. This project was considered to be prohibitively expensive compared with the small volume of water produced, and in times of drought, the City needs potable water, not irrigation water.

The City also looked at swapping reclaimed water for groundwater on the North Coast to irrigate agriculture. Unfortunately, there was not enough groundwater available to meet the 1976-1977 drought scenario objectives.

A collaborative water recycling project, such as a freshwater/recycled water exchange between the City of Scotts Valley and the City of Santa Cruz is currently being evaluated for the Pasatiempo golf course.

Q: Have you evaluated or analyzed magnetic resonance process solution for water systems?

A: No, these systems are primarily used for household water conditioning and softening.

Q: What is the potential for powering desal with solar, wind, or wave energy to mitigate the costs and greenhouse gas emissions associated with intensive use of fossil fuels?

A: Renewable energy sources, such as those listed above, will be evaluated during the environmental review process as methods to reduce greenhouse gas emissions associated with the desalination process. We will be examining most recent developments in this area to see what may be feasible for this project.

Q: What benefits does desalination have over the other alternatives studied?

A: Some of the benefits of desalination include:

- It provides a drought-proof supply of potable water. (Other alternatives are limited when there is drought or limited rainfall.)**
- It provides long-term reliability and sufficient supplies. (Other alternatives depend on rainfall or customers' continued use of a conservation fixture.)**
- It produces high quality water that can be used for potable and non-potable uses (Other alternatives such as recycled water are limited to non-potable uses only.)**
- It is not growth inducing, but rather growth responsive because it can be built in increments as growth occurs. (Other alternatives such as a reservoir can be considered growth inducing.)**
- It provides flexibility and sufficient quantity to meet fluctuating needs (Other alternatives have insufficient yield or the water is not available when needed-such as summer months.)**

Q: How can we prevent further expenditure and participation in the desalination plant project?

A: Desalination was selected as the preferred supplemental supply option for the City of Santa Cruz and Soquel Creek Water District to further evaluate based upon extensive public processes conducted by both agencies. Both agencies have already agreed to continue studying desalination and to follow California Environmental Quality Act (CEQA) guidelines to prepare an environmental impact report (EIR). The CEQA process includes opportunities for public comment and a majority of each agency's governing body will need to affirmatively vote to proceed with the project.

Q: Is the City able to transfer surface water during the winter to recharge the Soquel Creek Water District aquifers? (City)

A: The City is not presently able to transfer surface water to Soquel, but interregional exchange of water is currently being actively investigated by the water agencies as a long term measure to improve water management. It is already clear that there are a number of challenges that would need to be met in order to accomplish this. The City's water rights would need to be amended by the State to expand the allowed geographic area of use and to increase the allowed diversion rate. Such a water right amendment typically takes about 20 years. Any increase in surface water diversion could only be done between the months of December and April, and would require the approval of state and federal resource agencies. They are looking for solid documentation that the project would not adversely affect salmon and steelhead populations, but that it would go further and provide measurable benefits to the fish populations. While is expected that fish should benefit on a long term basis from recovery of groundwater levels in the Soquel groundwater basin, the timing and extent of this benefit cannot be predicted until groundwater pumping rates are substantially reduced and the basin starts to recover.

It has also been suggested that fish could benefit if the City reduced its stream diversions during summer time or drought periods, and substituted groundwater pumped from the Soquel basin. Again, it cannot be predicted if and when that could ever occur until substantial recovery of the basin is observed. Measures to accelerate groundwater recharge of the Soquel Basin are being investigated, but the fine-grained and multi-layered characteristics of the underlying Purisima formation do not lend themselves to accelerated recharge techniques.

The County and the water agencies believe that exchanges of water between Santa Cruz and Soquel provide good potential for long term benefits for county residents and the environment, and we will continue to actively pursue those opportunities. However, many of these benefits will take many years to materialize, and would probably never offset the need for a supplemental water supply during dry years to meet both water supply needs and fish needs. In summary, while best practices of water resource management include maximizing the beneficial use of existing sources, the possibility of a water exchange is not a near-term solution to the water supply shortage faced by the City and Soquel Creek Water District and is not considered an alternative to developing a new reliable and flexible supplemental supply.

**Response provided by John Ricker, Water Resource Division Director
Santa Cruz County Environmental Health Services**

Q: Why are there no incentives for graywater or rainwater from the agencies?

A: Soquel Creek Water District offers incentives/rebates for both graywater and rainwater catchment systems. Interestingly, participation in these rebates programs

for the District has been very low. The City of Santa Cruz will soon begin evaluating new rebates and other incentives to offer and will be reviewing the cost/benefits of graywater, rainwater, and other conservation measures.

Q: Which potential projects were dropped due to possible growth inducement? Are they still viable options if not for political opposition? (City)

A: Zayante Dam was previously considered by Santa Cruz. The proposed location was situated on an earthquake fault, and the single largest reason it was dropped was because it was perceived as having the potential to induce growth. It is not considered a viable option that would be reconsidered at this point. Another project that was reviewed in the past included water storage at Felton Quarry; however, residents were not in favor of this project.

Regarding the desalination facility, issues related to growth and growth inducement will be evaluated in the upcoming Environmental Impact Report (EIR). The proposed project for the City of Santa Cruz is intended for drought protection, not growth. A desalination facility is not growth inducing like a reservoir, but is growth responsive because it could be built in increments when growth occurs. If the proposed 2.5 MGD desalination facility were to be built and the City/District sought to expand it sometime in the future, another EIR would need to be conducted again to evaluate the environmental impacts associated with the proposed expansion.

Q: You say “No Decision” has been made on desalination, yet the presentation seems to rule out all other possibilities. If something (such as the EIR) were to indicate the desalination plant won’t work- what is your Plan “B”?

A: After years of evaluation, including public input, the City and District have selected desalination (in combination with conservation and curtailment) as the preferred option to further evaluate as a supplemental supply. This came after the City evaluated numerous other water supply options in its Integrated Water Plan (IWP) and the IWP Program EIR and after the District did the same in its Integrated Resources Plan (IRP). A thorough project-level environmental review under the California Environmental Quality Act (CEQA) will consider the desalination project and a reasonable range of other alternatives that would avoid or substantially lessen the significant environmental effects of the project, while still meeting the objectives of the project.

If the desalination plant is deemed infeasible, the Soquel Creek Water District may have to re-evaluate a diversion off Soquel Creek combined with mandatory water-use restrictions and the City may have to re-evaluate curtailment levels.

Q: Was groundwater basin recharge using treated wastewater ever explored by either agency, such as Orange County?

A: Both agencies have looked into it, but there are limitations. Large detention ponds (such as those in Orange County) are required to allow percolation into the groundwater system; locating such a footprint would be challenging given our local area's land size is limited and the local geology is not conducive to percolation. Another option would be to re-inject it into the ground for Aquifer Storage and Recovery, but so far California regulations require treated recycled water to be blended before injection and there is limited supply that could be used for blending. In addition, injection wells need to be a prescribed distance away from other private and public groundwater wells which is difficult due to the hundreds of wells within the Soquel-Aptos Basin.

Q: Why do City officials and spokespersons call desalination the 'preferred option'?

A: Desalination was determined to be the 'preferred option' after the conclusion of the City's IWP and the IWP EIR and the District's IRP. During these planning processes, both agencies conducted exhaustive studies (which included extensive public participation) and after analyzing water supply needs and various projects, desalination emerged as the option that best satisfied the needs objectives for further project-level evaluation. At this point, we believe other options may have greater impacts and limitations.

Here is an excerpt of Mike Rotkin's comments, Mayor of Santa Cruz, "I started off as a total opponent of desal for energy reasons. I was dragged kicking and screaming over a process of decades because we didn't have another option. I went through the whole list of potential projects (such as raising the level of the dam at Loch Lomond ... except when you talk to regulators we would end up with less water because they would require us to release more for fish). Each of the other alternatives that I thought was going to be the solution, just didn't work out. There is this opposition that we are looking at desal without looking at other alternatives - but this is not true. People have not been dragged through the process like I have. It would be a mistake to think that opposition is the majority view. It is fair to say there is a divided question. But because activists show up in opposition at meetings ... it is not fair to say that a majority of people are opposed."

Q: Will the City Council have the courage to put this project to a public vote and abide by the voters' rejection of desal if the votes were not in favor of the project? (City)

A: The City Council has not discussed or taken action to put desalination to a vote, as further evaluation, including additional environmental review, is currently underway.

Here is an excerpt of Mike Rotkin's comments, Mayor of Santa Cruz, "That is a compound question in the sense that (1) should everything go to the voters just because things that are so controversial that it divides the city council? and (2) If all the elected officials think this is the best solution, do we put it to a vote of the people? Do we want to have direct democracy on controversial issues—This is a question if the city lives or dies ... very possible citizens would put this to a vote no

matter what the city council thinks. I'm certainly willing to consider putting it to a vote but I don't see the reason it should at this point."

Q: What would a 40% reduction in water mean? What is the practical effect on residents/industry/agriculture?

A: A 40% reduction would mean, at a minimum, no outside irrigation. Landscapes would need to be xeriscape and all other outdoor uses (such as washing cars and watering at parks and other public open spaces) would be eliminated. Additional conservation would also need to be achieved indoors. In 1976 customers did not have low-flow toilets and other conservation devices which make indoor conservation during the drought easier today. An example is putting bricks in the tank of a toilet to reduce the per-flush water consumption. Today, a significant number of our customers have installed many conservation devices. Therefore, it would be very difficult to further conserve water inside the home. Our community's economy is dependent on visitors and tourists, and the hospitality industry is concerned that extreme water shortages will harm business, jobs, hotels, and golf courses.

Q: Can you expand on off-stream storage of Soquel Creek as an alternative supply option and what were the problems with feasibility? (District)

A: The District evaluated off-stream storage with a diversion off Soquel Creek in the Integrated Resources Plan (2006). This study determined that this project could/would:

- **Have potential impacts to fish and wildlife since the project would directly impact fish flows**
- **Have permitting complications and land acquisition could be complex.**
- **Be impacted by weather conditions (during times of drought less water would be available) and achieving a sufficient and reliable yield was questionable.**
- **Require injection wells to store excess water received in winter (which have operational issues).**

Q: What percentage of reduction in use did we see during the drought periods of 2006/2007 and 2007/2008? What percentage of reduction in use during 1976-1978? (City)

A: The City implemented a mandatory water restriction limiting irrigation to certain times of the day. The goal was a minimal 5% reduction and consumption during the peak season declined slightly - dropping approximately 3% compared to the year before. Water restrictions were rescinded for 2008. During the '77 drought, the City of Santa Cruz asked for 30-35% reduction and achieved slightly higher than that (38%). At that time, there were only 63,000 customers. Now, the City has 98,000 customers.

Q: The District states sustainable yield as a range? When will the District know what the actual sustainable yield is? (District)

A: Quantifying the sustainable yield of a groundwater basin is dependent on a number of factors including amount of rainfall, basin recharge, basin extraction, and

subterranean outflows from the basin to the bay. The District does know that several years of reduced District pumping to the previous sustainable yield estimate of 4,800 acre-feet-per-year (afy) has not substantially improved groundwater levels at the coast. Consultants are currently working to improve our understanding of each of these elements; however, accurate measurements may never be possible. For example, extraction could be known if all wells were metered. While public wells are metered, most private wells (and there are several hundred within the Soquel-Aptos area) are not metered and their corresponding extraction amounts can only be estimated based on land use. As a result, our hydrogeologists have recommended that we lower pumping in the Purisima aquifer by an additional 500 afy and we are hoping that an upcoming USGS groundwater model will help inform the sustainable yield of portions of the Aromas Red Sands Aquifer underlying the District.

Additionally, other issues including climate change and anticipated drinking water regulations for hexavalent chromium may also influence the sustainable yield.

Due to the factors that affect sustainable yield as described above, the District does not have enough information yet to accurately determine what we can pump safely from the basin and currently is reporting it as a range.

Q: Given that you may have much less water when the Habitat Conservation Plan (HCP) is completed and you are already short of water and are looking at desalination, why agree to provide water to an area that is now forest north of UCSC? (City)

A: The City is likely to have less water from the San Lorenzo River and the North Coast sources once the HCP is complete as the California Department of Fish and Game has requested the City reduce stream diversions to protect threatened species. The City has agreed to study what must be done to minimize these impacts.

Regarding UCSC, the water shortages the City is facing are due to drought conditions and not University growth. During a drought, whether UCSC grows or does not grow - the City still needs a supplemental water supply. The City is pursuing evaluating desalination to provide drought protection and should not be viewed as a new supply source because of UCSC's proposed expansion.

Q: Watsonville Wastewater Treatment Plant just held a public tour and announced they could easily expand and were not anywhere near capacity with wastewater treatment for irrigation. Would this be considered an option again for Soquel now? (District)

A: The District previously considered collaborating with Pajaro Valley Water Management Agency (PVWMA), the City of Watsonville and Santa Clara Valley Water District to purchase/import potable drinking water (not recycled water) through the PVWMA pipeline connecting to the State Water Project. This project is no longer viable as PVWMA is no longer pursuing connecting to the State Water Project. The

District is not considering connecting to PVWMA's Coastal Distribution System of recycled water since this source does not meet municipal water regulations.

Q: When laying new water pipes now, are you putting graywater pipes in as well, in anticipation?

A: No, graywater systems primarily capture water used during household applications (such as baths, showers, and laundry) that can be used on-site (private) property landscape irrigation. Piping for these situations can be done by individual homeowners.

Q: During 1976-1977, what % of curtailment was investigated? Was curtailment imposed upon businesses? (*City*)

A: During that drought period, the City of Santa Cruz asked for 35% reduction and achieved slightly higher than that (38%). At that time, there were only 38,000 customers. Now, the City has 98,000 customers.

Q: How did you select that 15% curtailment would be the maximum amount during a drought? (*City*)

A: The City sought input and guidance from the public during the development of the Program IWP on what percentage of curtailment could be encumbered during a drought.

Q: The overarching issue seems to be a question of increased demand levels that stem from increased growth. What attention has been given to curb growth itself recognizing that this area is near if not at its resource carrying capacity? (*City*)

A: Actually it is not the case that the issue is increased demand levels in the future. The issue in Santa Cruz has nothing to do with growth that may occur in the future. Rather, it is all about the growth that has already occurred since the City last augmented its supplies in the early 1960s. The City has outgrown its water system in droughts. The immediate goal of the Integrated Water Plan is to protect the City from the tremendous impact future droughts would have on all customer classes, but particularly commercial/business customers.

It is interesting to note that growth does not necessarily correlate with increased water demand.

Q: Laura said storing overflow winter water from Soquel Creek would be too expensive. More expensive than desal? (*District*)

A: Constructing and maintaining injection wells in the Purisima Formation aquifers would be an expensive component of an off-stream diversion project that would have numerous other associated costs. A total project cost comparison to desalination has not been conducted. More significant factors for removing the off-stream diversion/groundwater injection project from further consideration were reliability, sufficient supply and permitting.

Q: Will you have knowledgeable and experienced civil engineers not tainted by local politics, discuss and propose building a new reservoir on taxpayer owned lands (Zayante) that would be economically superior to desal and conservation and a preferred resource promoting development of private sector economic ventures, business, and new residential development?

A: Over the past several decades, numerous proposals for new reservoirs have been considered, including Zayante, Waterman Gap, Kings Creek, Felton Quarry, Olympia Quarry, and others. Each of these reservoir options had substantial issues related to growth inducement, compatibility issues with adjacent uses, seismic concerns, etc. Further, a plan to construct a new reservoir would take decades to implement, which would not provide for drought protection under current demand conditions or provide for needed reduction in groundwater pumping by the District in the near term. More information on the numerous projects previously considered is included in the City's Integrated Water Plan (2005) and the District's Integrated Resources Plan (2006).

Q: Why is recycled water being thrown away to just dilute the brine from desalination? Shouldn't there be an alternative dilutant (seawater)? Why are desal and conservation the only options? Why not work to have higher treated water in the future?

A: Treated wastewater has been discharged to the Bay from a Santa Cruz WWTF for almost 100 years. The current water quality does not meet recycled water standards. Given that even advanced-treated wastewater (that would meet recycled water standards) does not have utility in the City/District, it currently can provide a dilution benefit to the brine. By using existing wastewater that is already conveyed to the ocean, the City/District does not need additional oceanwater or freshwater (surface or groundwater) as a dilutant.

After years of evaluation, including public input, the City and District selected desalination (in combination with conservation and curtailment) as the preferred option to further evaluate as a supplemental supply. More information on the numerous projects previously considered is included in the City's Integrated Water Plan (2005) and the District's Integrated Resources Plan (2006).

Treating wastewater effluent to higher levels can create recycled water that could be used for irrigation. The City is not actively looking at this as a potential project since the water shortage is for potable/drinking water – not recycled/irrigation water. During a drought, water restrictions will apply to irrigation and the City is still faced with needing a supplemental supply.

Q: Since the start of the water studies, significant changes have taken place, one is the Coast Dairies property going to the State. Can this change aid wastewater swap ideas (Ag water for wastewater)? Presently the State virtually gives its (north coast) water

away, as compared to the cost of desal. Another development is the rail line purchase. Could that easement be used to convey wastewater swap? (City)

A: The farmers that are located north of Dimeo Lane actually do not use groundwater as their source of irrigation water, but rather rely on flowing sources or water they store on-site from winter rains. That includes all of the ranches that are part of the old Coast Dairies properties. The properties that use the groundwater that the City was coveting are the ranches closer to town on property that is mostly leased from, and owned by State Parks. Those ranches rely on water they pump from a deposition of Santa Margarita sands that underlies the State Parks property (including Wilder Ranch). Unfortunately, the disposition of the lands further up the coast once owned by Coast Dairies doesn't change anything in regard to the reclaim-for-groundwater swap that we were looking at. The two big issues that deterred the City from pursuing this option in favor of desalination was that: 1) the groundwater basin is limited in size and would not provide drought relief in the second year of drought, and; 2) the State Parks Department notified the City that the groundwater that underlies that area of the north coast was the property of the State as the overlying owner, and that it was a resource the State had no intention of giving up.