DECONSTRUCTING DESAL

Recycled water enters debate

Key document suggests testing wastewater inside desal facility

Desalination

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SANTA CRUZ — A single source exists to supply more than three times as much drinking water each day as a controversial seawater desalination facility proposed by the city of Santa Cruz and neighboring Soquel Creek Water District.

But a number of hurdles keep recycled wastewater, literally and figuratively, at bay.

The state is expected to complete an investigation on direct reuse of reclaimed water by 2016. But it's widely expected that approving public health and water quality regulations may take 10 years or more.

The "toilet-to-tap" concept — which involves layers of advanced treatment and quality testing

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ON THE NET

To read the draft environmental impact report for the proposed desalination project, visit www.scwd2desal.org.

IF YOU GO

DESAL EIR MEETING

WHAT: Public comment on the draft environmental impact report for the seawater desalination plant proposed by Soquel Creek Water District and city of Santa Cruz.
WHEN: 12-2:30 p.m. Monday
WHERE: Seacliff Inn, 7500 Old Dominion Court, Aptos
DETAILS: www.scwd2desal.org

DESAL

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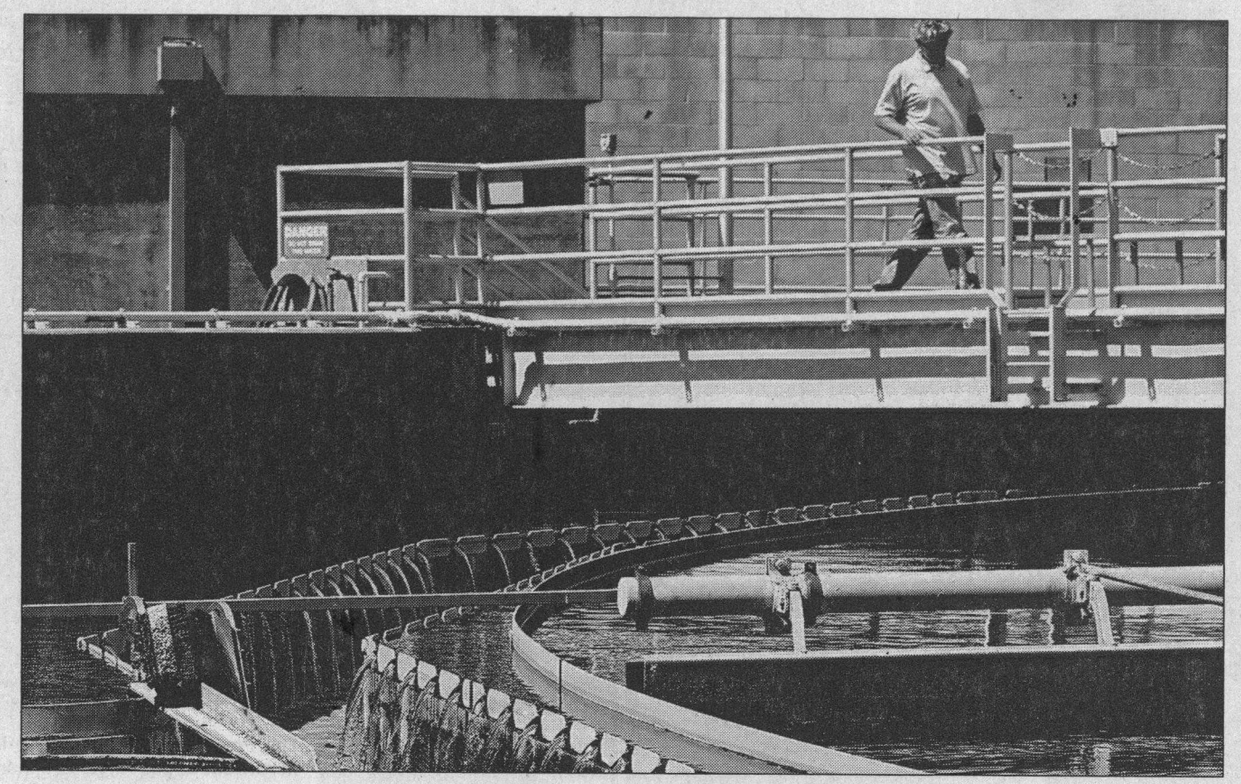
— also faces a significant yuck factor.

"The public is not there yet," said Dan Seidel, superintendent of Santa Cruz's wastewater treatment facility. "But the day is coming when that is going to happen."

Out of dozens of seawater desalination alternatives studied by the city and district, the only one given a full thumbs-up in a draft environmental analysis published last month is a plant that includes an in-house pilot project for testing the direct reuse of recycled water.

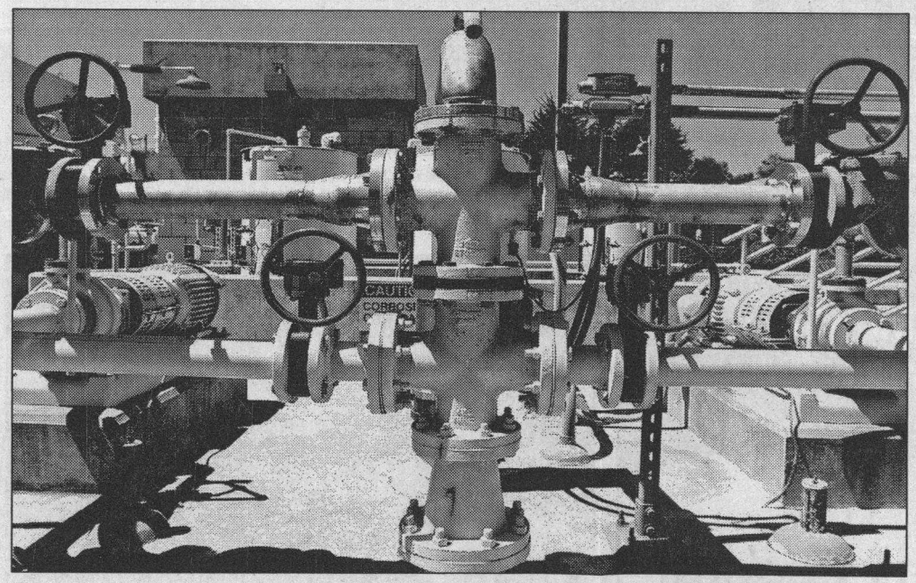
Seidel said about 9 million gallons of wastewater from 130,000 customers in Santa Cruz, Live Oak and mid-county areas is currently treated and piped out to Monterey Bay each day. Nine million gallons is also how much potable water customers used on average each day in 2012, a number up from 8.2 million gallons in 2011 and 8.5 million gallons in 2010.

If direct reuse of recycled water were legal now or in the near future, the city's water director, Bill Kocher said, "We wouldn't be proposing a desal plant."



SHMUEL THALER/SENTINEL

Santa Cruz Wastewater Treatment Facility superintendent Dan Seidel checks the plant's effluent filtration system.



SHMUEL THALER/SENTINEL

From 150,000 to 200,000 gallons of water are recycled each day at the wastewater treatment plant on California Street, but only for reuse in the facility.

WHY TRY IT?

The "desal plus" alternative dangles a tempting carrot in front of opponents and regulators. The environmental report — the first public hearing on which is Monday — says that with "relatively minor modification" to the plant and its infrastructure, the facility could be converted into a wastewater recycling center. Such a change would require far less energy than desal and leave ocean water where it is.

Melanie Schumacher, a Soquel Creek district engineer, said the direct reuse pilot was an idea that stemmed from public brainstorming meetings for the desal environmental impact study.

"It demonstrates that we listened to people," Schumacher said. "We are being responsive that this could be something if, in the future it is available, that we could evaluate."

But don't count on water of tapping the ocean and eager to realize the potential of recycled water. The project could provide critical new data about water reliability and safety.

The state Water Resources Control Board — which will be charged with permitting the desal intake system and the disposal of diluted brine through the existing wastewater outfall — has an interest in seeing water reused.

ed about it because it includes a desal plant next door."

Carol Reeb, a researcher at Stanford University's Hopkins Marine Station in Pacific Grove, strongly supports direct reuse but remains concerned about seawater desal and brine discharge when regulations on direct reuse are on the horizon.

"We could look at this as an experiment — that the people of Santa Cruz will

2.5 million gallons of water each day, though officials say the average use will be closer to 1.5 million gallons.

Recycled water also offers greater overall return than seawater desal.

Because of all the particulates in ocean water and the need to pump it offshore, it could take as much as 6 million gallons to create 2.5 million gallons of drinking water. Much less water

desal environmental report says. Because Loch Lomond holds just 2.8 billion gallons of water, its contents could surpass 50 percent of wastewater in normal rainfall years and reach 100 percent in drought years.

Recycled wastewater could be injected near the coast in the Soquel Creek district to build a barrier against seawater intrusion, but the report notes that taking that step alone would not provide enough water to rest aquifers or provide a new water source to the city during drought.

That leaves the city and district to look at direct reuse while pursuing desalination.

The pilot reuse project — which would fit in a 25-feet by 35-feet area inside the desal plant — would treat 20 gallons per minute of wastewater effluent. The process involves ultrafine filtration, desalination through reverse osmosis, and other advanced treatment and disinfection before being sent to a storage tank to monitor quality.

DESAL STILL FOCUS

With eventual state approval of direct reuse widely anticipated, it begs the question: Why not study a wastewater recycling plant rather than a desalination plant? The answers are different for the city and district.

Schumacher, the district engineer, said her customers can't wait a decade. Within the next few years, the district needs to reduce groundwater pumping by 30 percent for a 20-year period to restore its basin — either by using desal water or enacting steep rationing.

Kocher contends the city also needs an immediate fix.

The system stands to lose an estimated 1 billion gallons each year, or about a quarter of supply, to mandated cutbacks on stream diversions for fish habitat. It also needs a supplemental source to limit the amount of water customers are asked to cut back during dry periods to 15 percent.

"I don't know what happens if we don't secure a Section 10 permit," Kocher said of the process by which federal regulators safeguard endangered and threatened fish species. "If they bring enforcement action against the city, all bets are off."

Follow Sentinel reporter J.M. Brown at Twitter.com/jmbrown-reports

IN-DEPTH SERIES

This article is part of 'Deconstructing Desal,' an ongoing series of in-depth reports by the Sentinel on the proposed seawater desalination facility and its environmental impact report. To read articles from the first part of the series published in September 2012, visit www.santacruzsentinel.com/desal.

something if, in the future it is available, that we could evaluate."

But don't count on water officials necessarily to champion the "desal plus" alternative over their original plan to generate a new, reliable source of water for combatting drought, managing fish habitat restoration and resting overtaxed groundwater basins. The two agencies have pursued desalination for several years alongside conservation and customer curtailment.

Kocher called reclaim "the wave of the future" but wouldn't be keen on converting the desal facility. Once the state approves direct reuse, the environmental report also discusses the possibility for a new recycled water facility to be built instead of shutting down seawater desal.

"It's hard for me to imagine that, once you rely on (desal) and you manage to handle drought and get water back in the streams, that people would say, 'Now that you can do reclaim, just scrap all that and change it to reclaim,'" Kocher said.

Still, a recycled water pilot does offer the Santa Cruz City Council and Soquel Creek district board an option for approving desalination with an added benefit rather than ordering from an a la carte menu of conservation, storage and other alternatives that water officials say won't generate enough extra supply to address problems facing either agency.

The pilot project — the only one like it in California — is also likely to excite state and federal regulators leery the disposal of diluted brine through the existing wastewater outfall — has an interest in seeing water reused.

"It's an interesting application," Peter von Langen, an engineering geologist with the Central Coast Water Board, said of the pilot proposal. "I don't know if it would change the permitting at all. It's an intriguing possibility, though."

WILL IT FLY?

The cost of testing direct use of reclaimed water isn't a big hindrance.

Estimated at $2 million with the possibility of being granted funded, the price tag for the pilot is minimal compared to the overall cost of the $115 million desal facility, a tab ratepayers will pick up. More than $14 million has already been spent between the city and district to study desal, including $1.5 million for the environmental impact report alone.

And the energy used by the pilot project would represent 0.5 percent of the average daily energy required by the entire desal facility, according to the environmental report.

But it's doubtful a direct reuse component will do much to appease desal critics, and it's too early to know the impact of "desal plus" on voters, who could ultimately decide the fate of desal as early as June 2014.

Rick Longinotti, a founder of Santa Cruz Desal Alternatives, said the inclusion of a recycled pilot project "reflects a recognition that this is the future." However, he said, "It's hard to get excit- reuse are on the horizon.

"We could look at this as an experiment — that the people of Santa Cruz will give to the state and finance it," Reeb said of the reuse pilot. "But if I were someone living in Santa Cruz, I might be thinking to myself, 'This is a lot of money when we could be doing something cheaper 15 years from now.'"

STATE OF RECYCLING

The city's wastewater treatment facility currently recycles 150,000-200,000 gallons of water each day for washing equipment and other on-site uses but is not permitted to recycle water for use off-site. The Scotts Valley Water District and Pajaro Valley Water Management Association, however, use recycled water for some irrigation purposes.

Advancing the treatment of 9 million gallons of wastewater effluent to drinking water standards — through a complicated process that includes the same technology as desalination — would create as much as 3.5 times more drinking water than the desal plant. The desal facility would be designed to manufacture a maximum of it could take as much as 6 million gallons to create 2.5 million gallons of drinking water. Much less water is lost treating wastewater effluent, Kocher said.

The state allows indirect reuse of recycled water by requiring agencies to inject the water underground for six months or recharge it in holding ponds before it could be treated for drinking water. The Orange County Water District sends 23.5 billion gallons of wastewater to aquifers for recharge each year, and the energy use reported by that district for treating wastewater is a third of what's estimated for operating the Santa Cruz desal plant.

Santa Cruz and Soquel Creek officials argue that indirect recycling isn't feasible because the geology of local basins isn't receptive to injection wells. The proximity to a high number of private and municipal wells also presents a challenge.

Storing recycled wastewater in the city's Loch Lomond reservoir as a natural cleanser also won't work because state regulations limit a reservoir's capacity of recycled water to 50 percent, the

al of direct reuse widely anticipated, it begs the question: