

Lochquifer on the Level

**A presentation to the
Santa Cruz Water Commission**

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Situation

- WSAC defunct for almost a year
- Decline in the rates of new information and action
- Decline in transparency
- Responsibility is now on the shoulders of the Water Commission
- Supplemental water supply: official cost estimates are complete for all alternatives--except for Lochquifer, arguably the best by far
- Need an official, transparent cost estimate for Lochquifer *per se* (i.e., no dam raising, no injection wells, no GHWTP upgrade, etc.)

“Lochquifer on the Level”

Lochquifer would cost the City of Santa Cruz NOTHING, most likely, as it would be paid for entirely by Soquel Creek Water District, whose other alternatives are vastly more expensive.

Lochquifer annually banks almost three times more water, on average.

Lochquifer uses many times less energy than other alternatives do.

Lochquifer brings operating income to Santa Cruz.

Lochquifer is the fastest way to achieve supply reliability.

Lochquifer allows future quality upgrades to be done at lower cost, at a more reasonable time, and at lower operating expense.

Cost Comparison (\$M)
Wastewater Recycling vs. Lochquifer
 (Approximate, please adjust)

WD	Name of Alternative	Capital Cost	Operating Cost Excess Over Present (30 years)	Finance Cost	Total Cost Increase
Soquel Creek	IPR	60	40	25	125
Santa Cruz	IPR	150	100	70	320
Regional Sum	Dual IPR	210	140	95	445
Santa Cruz	DPR (not legal)	90	60	40	190
Soquel Creek	Lochquifer	27	5	0	32

(not Santa Cruz)

(paid to Santa Cruz)

Lochquifer cost components (Please refine)

\$10M	Ranney collector well at Felton
4M	Felton-Loch pipeline upgrade to 30 mgd instead of 13 mgd
12M	Potable water pipeline to/from Soquel Creek WD
1M	Obtain regional water rights
\$27M	Total

Separate issues:

Boosting capacity now, vs.

Boosting quality when/as needed/affordable

Save the people some \$10,000 per family

Save the region up to \$400,000,000

Election issue—don't get caught without doing Lochquifer homework

Put Lochquifer on the Level

SgCWD Demand. - 2016

MTD @ 4/30
374 M.gallons.

J 7 M April May June July Aug Sept
64 69 68 75 91.9 103 111 108

Table 1. 2016 Water Supply Forecast

SgCWD Production Forecast (million gallons)	April			May			June			July			Aug			Sep			Oct			Total		
	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance	Projected	Actual	Variance
North Coast (gross production)	0			0			0			0			0			0			0			0		
North Coast (net production)	80	62.7		46	50.4		40	60.32		38			35			32			31					
San Lorenzo River	225			232			225			150			80			87			70					
Live Oak Wells	0			25			25			25			25			25			25					
Tail Wells	8			8			8			8			8			8			8					
Total Production without Lake	275			303			290			214			150			144			128					
Projected System Demand	228	202		284	235		285	257		310	265		310	255		270			248					
Curtailed System Demand	0	<73>		0	<68>		0	<33>		0	45		180	105		128			122					
Lake Production Needed to Meet Demand	0			0			0			98			160			128			122					
Evaporation (feet)	0.2			0.3			0.3			0.4			0.4			0.3			0.2					
Evaporation (mil gal)	9			13			13			18			18			13			9					
Fish Release (mil gal)	20			20			20			20			20			20			20					
Beginning Lake Volume	2,800			2,801			2,788			2,735			2,601			2,403			2,245					
End of Month Lake Volume	2,801			2,788			2,735			2,601			2,403			2,245			2,094					
End of Month Lake Elevation (ft above msl)	576.8			576.2			575.7			573.4			569.6			568.8			563.4					
Monthly change in elevation	-0.3			-0.8			-0.5			-2.3			-3.8			-3.1			-3.1					
Cumulative change in elevation	-0.3			-1.1			-1.6			-3.9			-7.7			-10.8			-13.9					
Percent of capacity (%)	89.0			87.6	100		86.6	98.9		81.9	95.8		84.9	91.7		78.3			74.0					

North Coast Gross: No estimate
 North Coast Net: Liddell Spring and Major Creek production equal to that projected for 2015 (except April), Zero production assumed from Laguna Creek.
 San Lorenzo River forecast flow (see below) based on Normal Water Year classification, 100% exceedance
 Releases at Tail: DFG-5, 8cfs
 Live Oak Wells: 170 MG/pumping season (May to Nov)
 Level of Curtailment Imposed (May thru October) 0%
 Flows in San Lorenzo River are Normal 100% exceedance
 Flows in Coast source(s) are 100% of projected 2015 flows
 Projected unconstrained system demand based on approximately halfway between 2015 and 2013 actual.
 Assumptions for Loch Lomond Reservoir Full April 1, no additional inflow thereafter
 Newell Creek Fish Release - Normal release - 1.0 cfs

	April	May	June	July	August	September	October
Projected San Lorenzo River Flow 2015 (cfs)	58	34	33	16	13	13	12
Additional Inflow below Fenton	2.0	1.3	0.3	0.0	0.0	0.0	0.0
Flow at Tail St Diversion (cfs)	60.0	35.3	23.3	16.0	13.0	13.0	12.0
Continuous Release past Tail (cfs)	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Release Buffer (cfs)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Intermittent Release (8cfs*12 hours/2days/week)			1.0	1.00	1.00	1.00	1.00
Available Flow (cfs)	51.6	28.6	14.8	7.5	4.5	4.5	3.5
Production (mg)	225	232	225	150	80	87	70
Bypass Release as % Total Flow @ Tail	13.3%	22.7%	34.3%	50.0%	61.5%	61.5%	68.7%
Actual San Lorenzo River Flow (cfs)							
Pleasure Point Monitoring Well Projected Groundwater Elevation (feet above MSL)							
2013 Demand	285	328	325	338	332	301	301
2014 Demand	228	259	251	263	239	213	225
Estimated 2016 demand	228	202	235	286	257	270	248
Estimated daily demand mgd	7.6	6.7	8.8	7.6	8.6	8.5	8.0

PA_PublicWater Supply Conditions 2016 Water Supply Forecast.xls

Cumulative Savings

Proj vs. ACTUAL 26 25 93 138 193