

WASC Proposal ID: Smallman: Reservoirs

The Reservoirs Plan

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Introduction

Reservoirs have become prohibitive, but I believe Desal has changed this. Desal is not only an inferior and less effective means to produce water than Reservoirs; it is a cop-out of the highest degree to design the best system and ignore calculating the maximum allowable number of water services, the number or people, who can live in one area without overrunning it.

Loch Lomond is a very valuable recreational area. Yes, it did destroy a major section of the Coho Salmon and Steelhead Trout, but also created a new habitat and benefited numerous other animals. During droughts the lake level goes down, so it is really an emergency water supply. We require a sustainable source for the current population; not for growth.

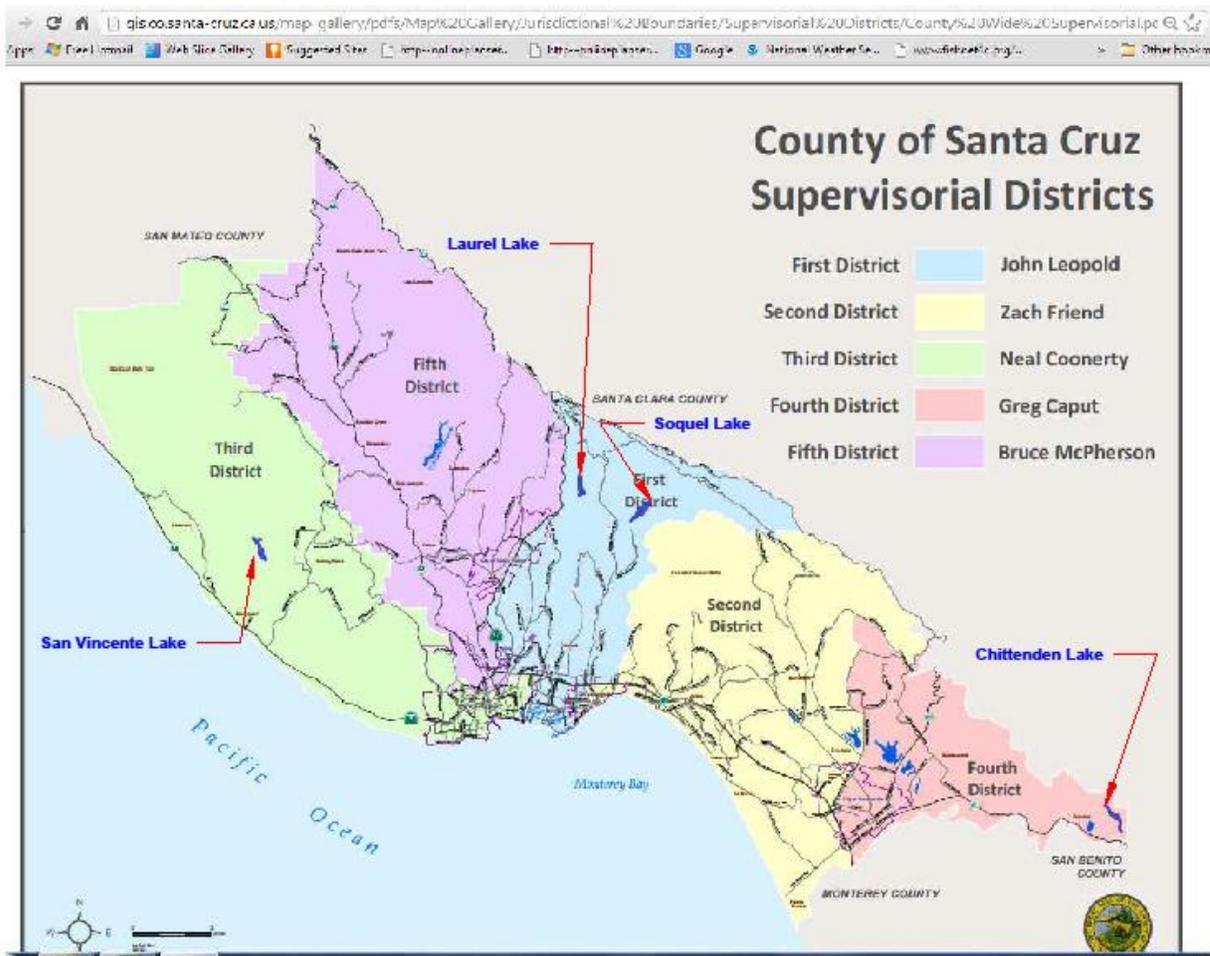
I often like to compare Santa Cruz County to Marin County. They are both similar in size and population. Marin combined numerous water agencies into one large one, the Marin Municipal Water District. Seeing that they have an advantage of being more focused on in one contained area is the reason why I decided we need the Santa Cruz County Water District. They have around 80,000 acre feet of storage in the form of reservoirs. During this recent drought, there were some heavy storms in February of 2014 in Marin which filled up most of these reservoirs. They are in far better situation than us with our rapidly draining, sole 20,000 acre reservoir, of Loch Lomond. Marin has kept all its reservoirs open to the public during droughts; When Santa Cruz has closed Loch Lomond for several years.

Marin's major fish habitat for Coho/Steelhead is the Lagunitas Creek watershed. It should have been called a river, but many of the dams were built long ago, (Alpine Dam was built in 1917). They built most of the dams on this watershed except for San Geronimo Creek. A similar situation could have occurred with the San Lorenzo River, but it goes through populated areas and next to Highway 9.

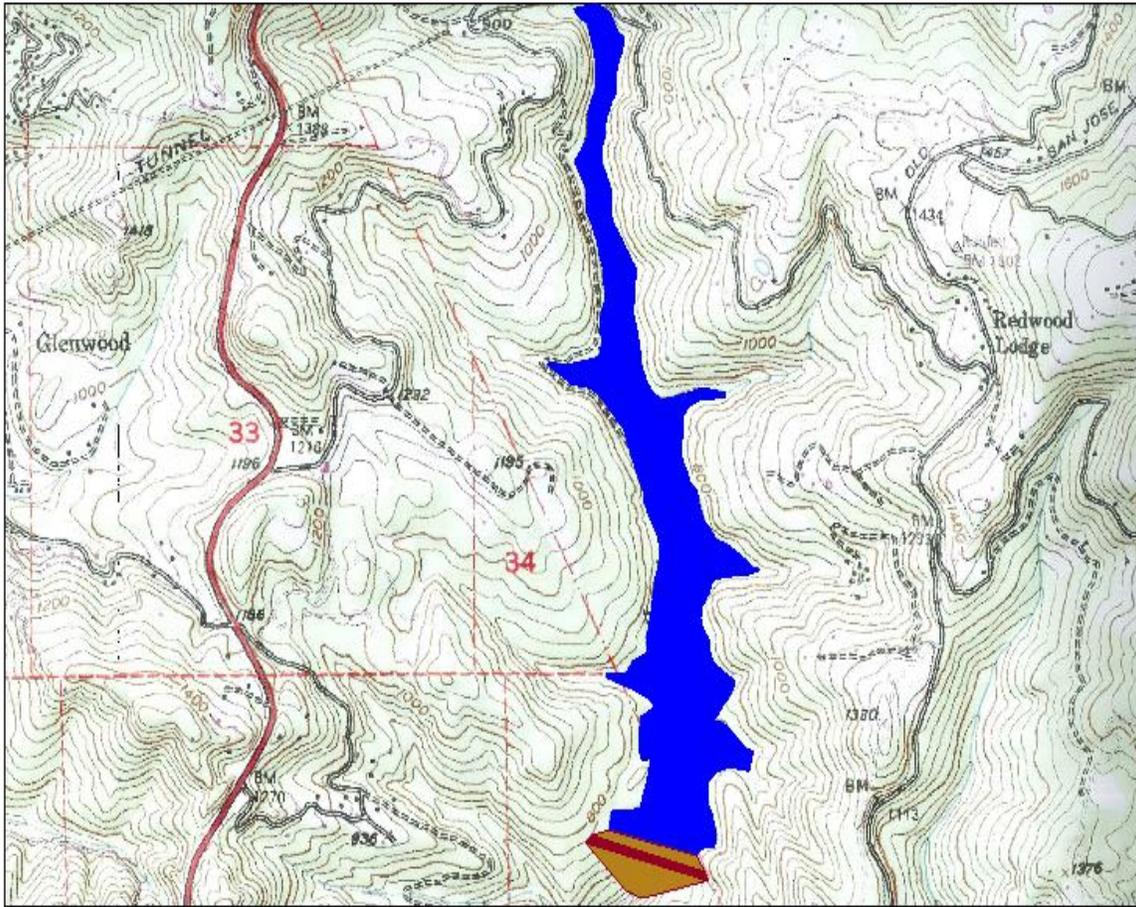
So, Marin essentially installed dams on most of its largest fish habitat waterways. Santa Cruz County only had the Newell Creek Canyon watershed dammed. It was less than around 5% of the total watershed. Like Marin, the fish habitats suffered demise due to the other factors of septic pollution causing increased nitrogen and algal blooms, silt from erosion from developed areas choking fish and filling up their shelter from predators and storm water currents, low ground water basin, removing trees that provide shelter, and cutting down trees that provide shade. The point is, however, Santa Cruz County should not be overly strict to preserve every single stream for the Coho/Salmon to recreate higher fish populations. We will always be way ahead of Marin, if most of our focus is put towards these other issues in the San Lorenzo River Watershed. Again, having more reservoirs will allow them not to drain as much, and stay open for recreation, even during droughts. All the reservoirs allow time for a significant amount of water to percolate into the groundwater basin.

Lake Locations

Instead of further impacting the San Lorenzo Valley Watershed fish habitat by building the Zayante Dam, I selected 4 other sites, further spread out, and built on waterways, that will still maintain branch streams for fish habitat. The exception would be installing a dam on Pescadero Creek, (which I call “Chittenden Lake” below). This is a branch stream for the Pajaro River. The sites are divided attempting to create one in each Supervisorial District. District One’s reservoir is up in Laurel Creek Canyon. District Two’s is on Soquel Creek, with the dam built at Olive Springs Quarry. District 3 is at the Cemex Quarry, which is now protected open space. And District 4 is the one on Pescadero Creek, and adjacent to Star Creek Ranch, a newly protected open space area.

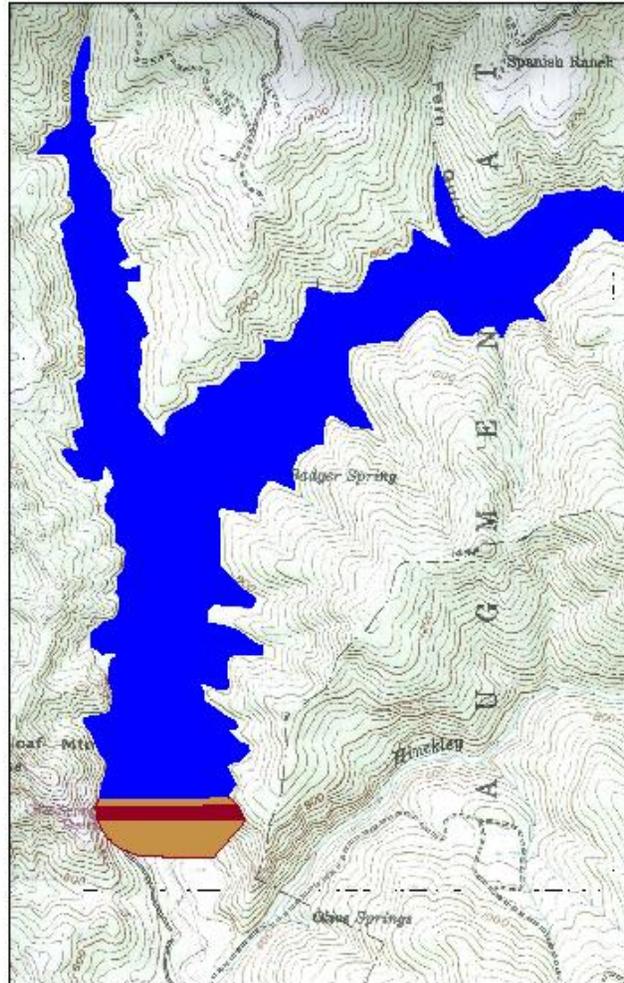


Laurel Lake



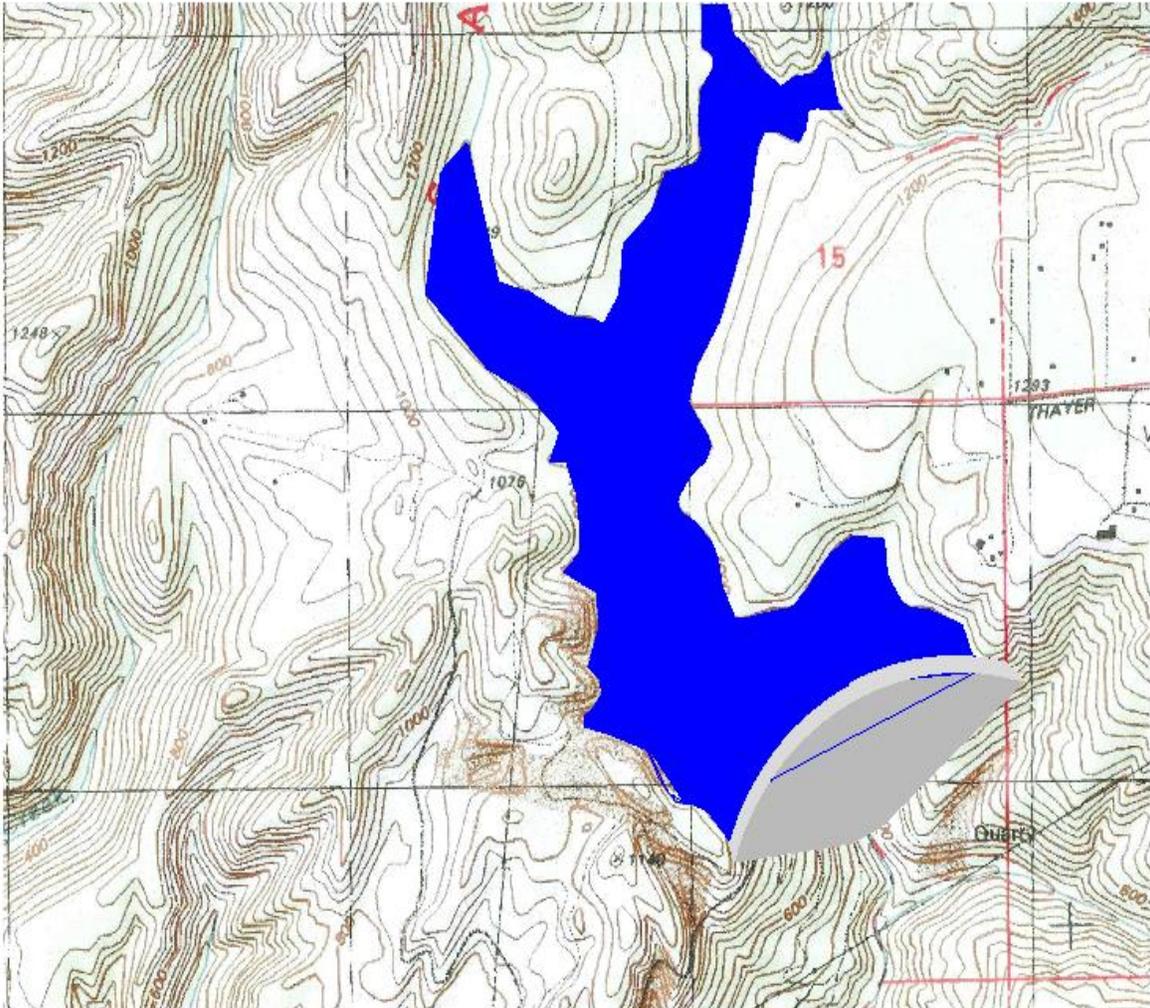
Laurel Lake is high up in the mountains bordered by Highway 17 and Summit Road. It would likely be accessible to hikers, and does have some issues private property owners. Most of the homes in the area are on the ridge tops with spectacular views. Capacity is around 4,400 Acre Feet.

Soquel Lake



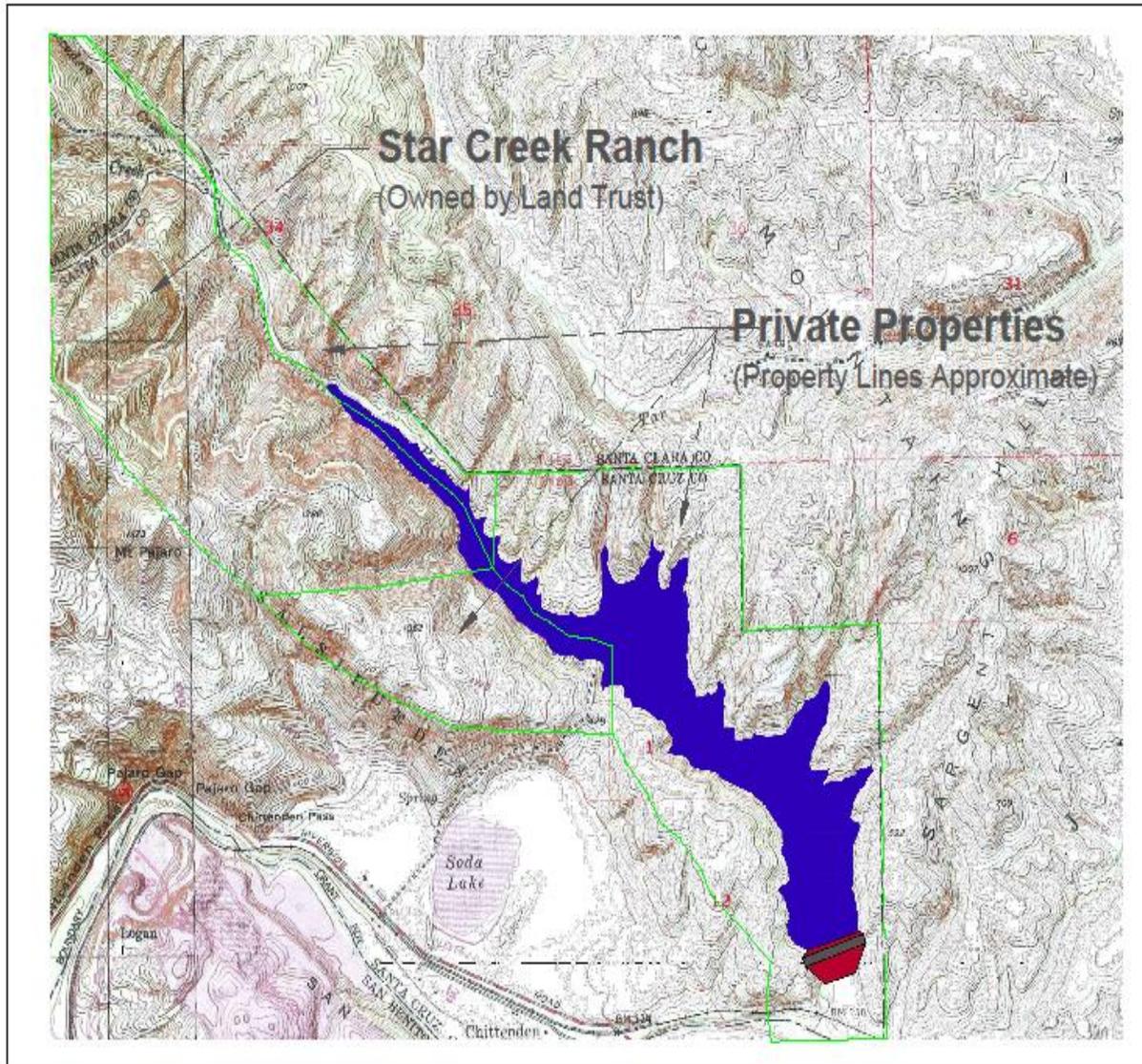
Soquel Lake Dam would be built just above Olive Springs Quarry. This will help with the construction for access of heavy equipment. The canyon is currently a demonstration forest. I believe there are no private homes in the area. This would provide a very valuable emergency water supply source for the Soquel Creek Water District which there currently is none. Capacity is around 8,700 Acre Feet.

San Vicente Lake



San Vicente Lake is built in an abandoned quarry above Davenport and on the Cemex property which was recently purchased and to become protected open space. The canyon has been gouged out, and has very steep rock walls. Capacity is around 7,500 Acre Feet.

Chittenden Lake



Chittenden Lake is on the southeast corner of the County. It is on Pescadero Creek. The property is currently a cattle ranch and adjacent to two other cattle ranches and Star Creek Ranch, a spectacular property purchased by the Land Trust. The entire area could be made into a fantastic recreational area, and, again, an extremely valuable emergency source for the Watsonville area. The Land Trust cannot afford to keep Star Creek ranch open to the public year round, but the newly created Santa Cruz County Water District could. Capacity is around 12,500 Acre Feet.

Cost and Productivity

What may be a good way to estimate the cost of these reservoirs is to take the cost to build Loch Lomond and adjust that cost for inflation. Problem is I could not get an accurate figure for Loch Lomond.

There are several factors which can lower the cost. One, Soquel Lake's dam would be right at Olive Springs Quarry which allows for easy access to heavy equipment, and they also have done soil exploration there. San Vicente Lake is also on a quarry, and there is a conveyor belt nearby. The concrete plant could be restarted, and may make constructing a reinforced concrete dam the most economical. All of the reservoirs, especially Soquel, have the potential to make money harvesting timber.

Loch Lomond's capacity is 9,200 acre feet. I did not have time to calculate the capacities accurately, so these are rough estimates. I also did not have time to measure the watershed for each. In my opinion the water in these reservoirs should only be used during droughts, and remain full during wet years.

Effectiveness, Practicability, Environmental and Community Considerations

- **Effectiveness:** Reservoirs are the most effective means to collect and store water, and requires zero energy. They are usually at a higher elevation, so the water can be delivered by a gravity pipeline. The water shed above is typically not developed, so there is no silt or septic pollution.
- **Practicability:** It probably would not be practical to build these reservoirs right away, because of cost. In my opinion, the focus should be on Recycle and Conservation, followed by these reservoirs to put the final stamp on a solid, sustainable water system.
- **Environmental Considerations:** There is no question that reservoirs take away fish habitat, but there are some positive environmental impacts that are overlooked. The first is that by trapping this water rather than allowing it to flow to sea, it provides time for a substantial amount of water to percolate into the groundwater basin. This benefits other branches of the stream, and the downstream portions that can remain part of the fish habit. The reservoirs themselves create a new habitat. Not all reservoirs have been created by man; there are several that have been created in nature by landslides.
- **Community Considerations:** All of these Reservoirs can be recreational areas open to the public. This provides invaluable areas for fishing and boating to the community. Since they also would be invaluable water storage facilities, Water District employees can not only maintain them, but provide security as well.

