

Addendum to Technical Memorandum: Estimating Benefits of the Pure Water Soquel Project

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This Addendum updates cost elements of the August 30, 2018 Technical Memorandum that presented the methods used to estimate the costs and benefits of the Pure Water Soquel Project (the Project). The Addendum also provides clarification on the non-financially quantified benefits presented in the original memorandum. Brent Haddad, MBA, Ph.D., is a Professor of Environmental Studies at University of California, Santa Cruz.

Cost Analysis

In the 2018 Memorandum, using an industry standard 5% discount rate, capital costs were estimated at \$74 million in 2018 dollars. Annual O&M costs were estimated at \$1.9 million in 2017 dollars. This amounted to a net present value of \$104.4 million in project costs combining both capital and O&M costs.

Updated cost estimates provided by the Soquel Creek Water District show increases in capital and O&M costs, with the total number of years O&M costs occur reduced. In the earlier Memorandum they were estimated to begin in 2017. In the new estimates they begin in 2023-2024.

For purposes of aligning with the timing of the benefits estimated in the earlier Memorandum, which is necessary to calculate a benefit:cost ratio, the new cost estimates are again presented in 2018 dollars.

As shown in Table 1, estimated capital costs round to \$137.3 million.

TABLE 1: CAPITAL COST NET PRESENT VALUE

Year	Capital Costs	NPV (2018, 5%)
2019-20	13,420,000	12,780,952
2020-21	31,675,000	28,730,159
2021-22	73,725,000	63,686,427
2022-23	38,900,000	32,003,126
2023-24	100,000	78,353
	TOTAL:	137,279,017

Data source: Soquel Creek Water District.

Operations and Maintenance Costs are conservatively estimated to average \$3,100,000 beginning in 2023-2024. Extending these costs to 2050-51, for 28 years, the net present value

rounds to \$28.4 million. Combined, the total cost of the project is estimated to be \$165.6 million.

Benefit Analysis

The 2018 analysis was divided into four categories of benefits: (1) benefits to residential customers, (2) benefits to commercial businesses, (3) environmental benefits, and (4) outside of district benefits. The estimated project benefits are \$903 million.

Two benefits were not quantified as dollars in the previous analysis. One was the avoidance of job losses resulting from business closures caused by the multi-decade water shortage in the absence of the project. Job losses were estimated at 725 jobs lost, or 3.8% of total service area employment. Another benefit was the avoidance of a moratorium on new home construction due to unavailable water supply, estimated at 2,100 new homes not built without the project. These two benefits were not quantified in dollar terms because of the difficulty of estimating them in a single number. With respect to job losses, new research (Burdett et al., 2020) identifies the long-term individual burden of job loss as including a loss of ongoing training and experience that contribute to income growth over time. A period of unemployment can reduce long-term income by between 13% and 25% of one's pre-displacement income. This is a personal impact of job loss; increased cost of community and other services for unemployed people is another cost avoided with the project.

With respect to housing starts foregone, the Q1 2021 median home price in Santa Cruz County was \$1.1 million, an increase of 17% over 2020. Housing unaffordability is a major problem in the county, including the service territory of the Soquel Creek Water District. All new housing complexes must include a proportion of affordable housing, which means that the canceled home construction would affect all purchasers, from rich to poor, in a stressed housing market. All of the local labor and services that go into home construction, as well as the economic contributions residents make to their region, would also be lost. Avoiding the housing loss is therefore a benefit of implementing the project.

Summary

The cost of the Pure Water Soquel project is estimated to be \$165.6 million. It is estimated to provide benefits of \$903 million. For each dollar spent on the project, 5.5 dollars of benefit will accrue to the district and broader region, a benefit:cost ratio of 5.5. This is a conservative estimate because additional benefits not financially quantified include avoiding a moratorium on development that would prevent 2,100 new housing units, and avoiding roughly 725 job losses, or 3.8 percent of employment in the service area.

References

Burdett, K., Carrillo-Tudela, C., and Coles, M. 2020. The Cost of Job Loss. *The Review of Economic Studies* 87(4): 1757-1798. <https://doi.org/10.1093/restud/rdaa014>