

Section 1: Introduction

This report presents findings for Task 3 of the Cambria Community Services District's (CCSD) Water Master Plan Update and summarizes the development of a proposed recycled water distribution system. The Task 3 water master planning work has been separated into two reports; a companion report on the potable water distribution system, and this recycled water distribution system report. A separate Task 4 report is also being developed on long-term supply alternatives. Further discussion on the phasing of the water master plan can be found in the Task 3, potable water distribution system report.

The recycled water distribution system is being planned for use at larger irrigation demand sites within the CCSD service area. When compared to desalination of seawater for potable use, recycled water requires less energy and may be a better use of resources. In addition, its use will minimize peak hourly and maximum day demands on the CCSD's potable water delivery system. A recycled water system also provides a degree of diversification to the CCSD's water supply along with a level of drought-proofing that serves to protect investments made in the community's landscaping. The report that follows provides basic criteria and costs associated with a recycled water system. These findings are also summarized within the long-term water supply assessment report (i.e., the Task 4 Water Master Plan report).

This section summarizes the objectives, scope of services, and conduct of the recycled water system distribution study.

1.1 Background

The community of Cambria has approximately 6,400 permanent residents and receives over 20,000 visitors per year that rely on local groundwater resources for their water supply. To meet this water supply need, CCSD operates several wells that withdraw water from shallow aquifers along San Simeon and Santa Rosa Creeks. To prevent seawater intrusion into the San Simeon aquifer during the summer months, the CCSD percolates treated wastewater effluent into the groundwater table between the ocean and up-gradient well field. CCSD's operation of its percolation ponds is subject to conditions of a Waste Discharge Requirements (WDR) Order (Order 01-100 adopted by the Regional Water Quality Control Board (RWQCB) on December 7, 2001).

CCSD has diversion permits issued by the State Water Resources Control Board (SWRCB) for its appropriative water rights on both the San Simeon and Santa Rosa aquifers. During the 1970s, the Santa Rosa Creek aquifer was the sole source of supply for the CCSD. The newer San Simeon well field began producing water in 1979, and has remained the CCSD's primary source of supply. The Santa Rosa aquifer supplements the San Simeon supply, but is of a lower quality due to a higher level of hardness, manganese, and iron. During periods of extended drought there can be insufficient creek flow to restore the groundwater levels in either aquifer. In recent years, the San Simeon aquifer has been used more often during the summer months than the Santa Rosa aquifer. Low well levels in the San Simeon Creek during the mid to late summer and early fall months have led to past declarations of drought emergencies, emergency water rates to encourage conservation, a moratorium on future water connections, and other water conservation incentives.

During 1999, CCSD became aware of a methyl tert-butyl ether (MtBE) contamination plume immediately up-gradient from its Santa Rosa Creek wells (Wells SR-1 and SR-3). As a result, and also based on recommendation of the RWQCB, the existing Santa Rosa wells and treatment plant were shut down. During mid-2001, construction of an emergency well (SR-4) and treatment plant was completed up-gradient from the contamination plume area, and on property behind the Coast Union High School.

The Santa Rosa and San Simeon Creeks each terminate into separate lagoons prior to entering the ocean. The lagoons provide critical fish habitat for listed species such as the endangered Tidewater Goby, and threatened South-Central Coast Steelhead. Each creek may also provide riparian habitat for listed species such as the California Red-Legged Frog and Southwestern Pond Turtle. Compliance with the Endangered Species Act is listed as a condition in each of the CCSD's appropriate water-rights diversion permits.

1.2 Objectives

The primary objective of this evaluation is to provide a comprehensive planning tool to develop and evaluate the proposed recycled water system. This report documents the development and application of a recycled water system model. Because of the long urban-wildland fire interface of the service area, the CCSD also requested an investigation on the potential use of recycled water for fire fighting purposes. Therefore, development of the recycled water system included an analysis of recycled water demands with and without fire flow demands. In addition, the Coast Unified School District is developing its new grammar school with a unique subterranean irrigation and storm water collection system as a means to offset future water system demands. This report also includes consideration of recycled water to further supply or augment the water-conserving measures currently under development.

Potential recycled water sites were split into two basic categories. The first category of sites replace the existing use of potable water, primarily used as irrigation water, with future recycled water. This first category of sites will not affect the net water balance within the watersheds. A second category of sites was developed for future irrigation sites that could conceivably increase the net amount of water leaving the watersheds. An example of such a new demand is the community park that is currently being considered by the CCSD.

Due to constraints posed mainly by the Endangered Species Act, further study of the potential downstream impacts to the San Simeon lagoon may be required in order to achieve future environmental clearances associated with the diversion of recycled water to new water demand areas. Detailed hydro-geological and biological study associated with the lagoons was not within the scope of work of this study. However, related to addressing this potential concern is a "no net increase" strategy based in part on the unique and efficient irrigation system presented to CCSD by the Coast Unified School District. A "no net increase" strategy may also incorporate the innovative irrigation technology along with seasonal storage of recycled water that would minimize the need to rely upon on-site storage and collection of stormwater, while also meeting a multi-year drought scenario. Further reduction in demand was also considered by converting irrigated turf grass areas to non-irrigated areas. An example of this would be areas within the existing elementary school that will not require irrigation after school use is converted to administrative offices.

To achieve its objectives, CCSD authorized Kennedy/Jenks Consultants to develop a hydraulic model and evaluate CCSD's water and recycled water systems under an Agreement for Engineering Services dated 25 October 2001. The evaluation of the CCSD's potable water distribution system is presented in a separate report.

1.3 Scope of Services

To accomplish this objective, the following scope of services was developed:

- Develop Design and Unit Cost Criteria
- Modeling and Analysis of the Recycled Water Systems
- Develop Recycled Water Demand Criteria and Demand Projection

1.4 Conduct of the Study

The information developed in this study is based on information provided by CCSD, discussions with CCSD staff, and computer-based hydraulic analysis. Initial phases of the study focused on the collection and review of information related to potential users and CCSD facilities so that system models could be developed. A commercially available model (H₂ONET Version 3.1) was utilized.

Subsequent phases were focused on demand data, which forms the basis for projected demand patterns. The peaking factors of potential recycled water demands were taken from comparable recycled water planning criteria. Fire flow criteria and selected levels of fire protection were provided by CCSD. Based on the model, recycled water demand projections, and fire flow criteria, CCSD's recycled water system was configured and facility locations were recommended. The estimated capital cost of the recommended improvements and implementation plan are presented.