

## Executive Summary

---

## **Executive Summary**

---

The Cambria Community Services District is phasing the completion of its water master plan through a series of reports. Kennedy/Jenks Consultants is under contract to complete Tasks 3 and 4 of the water master plan. This Task 3 report completes an engineering analysis for proposed improvements to the District's potable water distribution system. It is also a companion report to a separate Task 3 report on a proposed recycled water system. Much of the effort spent analyzing the potable water system was related to enhancing fire-fighting capabilities by increasing fire flows beyond current system capacities. As a result, this Report provides a prioritized list of improvements and estimated capital costs to the District to satisfy increased fire flows under existing and future demands. As part of this Report, the District will also receive a calibrated hydraulic model for continued analysis of future developments and other operational objectives.

Accurate existing and reasonable future demands are critical to the development of any master plan and necessary in the planning of capital improvements to the hydraulic model. Both District billing and production records from 1999 through 2003 were used in the development of existing demands, with the hydraulic model being loaded based on a land use weighted demand allocation (more dense residential areas received higher demand than lower density areas, for example). The model was updated to reflect the District's most recent yearly production data.

District staff and Board held a significant role in the development of various build-out projections and future demand projections. As a result, four build-out scenarios were analyzed along with two household densities (1.66 and 2.21 persons per household), and four levels of unit consumption. For example, based on Board direction received during a July 24, 2003 meeting, a demand for one residential connection at 18 ccf per bi-monthly billing period was included in the analyses. In addition, flow projections also considered the District's Coastal Development Permit (issued by the California Coastal Commission) requiring at least 20% of serviced capacity be applied toward public commercial or recreational uses.

Distribution piping improvements are necessary to provide minimum piping pressures while also avoiding excessive pipeline velocities. Numerous computer simulations were performed to simulate existing and future water demands along with structural fires throughout the service area. Based on input from the Cambria Fire Department, a multiple fire scenario was assumed due to the close proximity of structures, relatively high fuel loads, and historic use of combustible building materials. Although residential fire flows in modern subdivisions are often around 1500 gpm, fire flows simulations included scenarios as high as 3,500 gpm in these areas due to the multiple fire concern expressed by Cambria Fire. This high of a value was found to require replacement of practically the entire distribution system. Therefore, and following several iterations, system improvements for residential areas became based on a fire flow of 2,500 gpm with a two-hour duration. Similarly, and following a review of commercial building sizes, system improvements for commercial areas became based on a fire flow of 3,500 gpm and three-hour duration.

In addition to pipeline improvements for transporting fire flows, additional tank volume is needed to store water for use during a fire and emergency. All District storage facilities; Pine Knolls, Leimert, Stuart St., and the Fiscallini sites, were identified as deficient under the future fire flow demand conditions. With the exception of the Leimert pump station and need to replace older facilities, all pumping facilities were maintained as satisfactory given other recommended improvements. Adjustments of pressure reducing stations at Charring and Stuart Street. could be made to connect zones and maintain storage in higher zones. Additionally, the addition of a new pipeline across the West Ranch from the Lodge Hill area into the Seacliff Estates and Park Hill area, along with a a new control valve station at Windsor and Heath will increase pressures and fireflows in Park Hill.

Total estimated probable capital costs were based on the use of either PVC or ductile iron pipe materials, with PVC being less expensive. Additionally, three levels of priorities were developed to assist the District in planning future expenditures. The following table summarizes the costs for each priority level as well as some noteworthy system replacement needs.

Item	Cost (assuming PVC pipe)	Cost (assuming ductile iron pipe)	Comment
<b>Priority Level 1</b>			
Pipelines	\$783,000	\$1,070,000	
Pump Stations	\$250,000	\$250,000	Charing Fire Pump
Storage Tanks	\$1,090,000	\$1,090,000	Pine Knolls Tanks
Large diameter hose truck	\$200,000	\$200,000	In lieu of additional hydrants and pipe looping
<b>Level 1 subtotal</b>	<b>\$2,323,000</b>	<b>\$2,610,000</b>	
<b>Priority Level 2</b>			
Pipelines	\$467,000	\$636,000	
Storage Tanks	\$1,260,000	\$1,260,000	Stuart Street Tanks
<b>Level 2 subtotal</b>	<b>\$1,727,000</b>	<b>\$1,896,000</b>	
<b>Priority Level 3</b>			
Pipelines	\$1,016,000	\$750,000	
Tanks	\$750,000	\$750,000	Fiscallini tank
<b>Level 3 subtotal</b>	<b>\$1,766,000</b>	<b>\$1,500,000</b>	
<b>Significant Replacement Needs:</b>			
Zones 2/7 Pump Station	\$350,000	\$350,000	(a.k.a. Lodge Hill/Old Water Yard pump station)
New SCADA System	\$200,000	\$200,000	
Water Yard Relocation	TBD	TBD	
Permanent SR-4 facility	TBD	TBD	