SECTION 7

Cost Summary

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Cost Summary

Project Description

The proposed project, as described in the preceding chapters, is comprised of the construction components summarized in **Exhibit 7-1**. Some of the components, such as the frontage road improvements or finished water pipeline improvements, are specific to the Tree Farm site. A site location on River Drive is equally feasible and if the River Drive site is selected instead of the Tree Farm site, some of the construction components listed in this table will be modified.

The project will provide the city with a new intake on the canal, a water treatment plant capable of producing 6 million gallons per day (mgd), and a storage tank and finished water pumping system that can deliver up to 9 mgd for short periods. The selected treatment process uses pressure membrane filtration. This is a reliable and robust process that will consistently produce a high quality drinking water for the community, while minimizing the use of chemicals and labor requirements.

In addition to these construction components, the project will include property purchase, city administrative costs (for general project management; for zoning, permitting, and plan review fees, and similar items), and engineering design and construction services. The project may also include wetlands or other environmental mitigation.

EXHIBIT 7-1
Project Description Summary (assuming use of Tree Farm site for illustrative purposes)
City of Lebanon Water Improvement
Lebanon, OR

Construction Component	Description
Frontage road improvements	The Tree Farm property is located within the City of Lebanon city limits. As such, development of this property will require widening of the frontage road (River Drive), installation of a center turn lane, installation of a sidewalk, and associated utility and storm drainage improvements.
Wetlands mitigation	The development of the site may require 1 acre of wetlands mitigation.
Electrical transmission	Pacific Power, the local electrical power utility, has indicated that an extension of high voltage power lines will be needed to supply the necessary power for a plant located at the River Drive site.
Santiam Canal intake	The initial phase of the treatment plant will include a 7 million gallon per day (mgd) slant screen intake on the Santiam Canal.
Raw water pump station	The water from the intake will be pumped into the water treatment plant. Vertical turbine pumps are proposed for this service, using three pumps, two duty and one standby.

EXHIBIT 7-1
Project Description Summary (assuming use of Tree Farm site for illustrative purposes)
City of Lebanon Water Improvement
Lebanon, OR

Construction Component	Description
Water treatment plant	The conceptual design for the water treatment plant consists of an in-line coagulant feed system followed by pressure membranes. The plant will include chemical feed systems needed for the membrane system, plus a bulk hypochlorite system for chlorine disinfection, a liquid feeder for fluoride, and a dry chemical feed system for soda ash (for corrosion control). The building housing the membrane and chemical systems is anticipated to be a single story structure with a concrete floor slab on grade. The plant is sized for an initial capacity of 6 mgd with allowances for future expansion to 14 mgd.
Clearwell	The project cost is based on providing one 2 million gallon steel clearwell tank. A second 2 million gallon tank will be needed within 5-10 years to address a current distribution storage deficit. If funds were available, the city could consider the installation of two 2 million gallon steel tanks as part of the initial WTP project or bidding an alternative of a single 4 million gallon prestressed concrete tank.
Finished water transmission pipeline	The Tree Farm site requires approximately 4,800 feet of 16-inch diameter pipe for connection to the city's existing distribution mains.

Cost Estimates

Estimating Background and Limitations

The cost estimates presented in this study are order-of-magnitude estimates for November 2008. They have not been escalated to the expected mid-point of construction.

Order of magnitude cost estimates are defined by the American National Standards Institute (ANSI) and the Association for the Advancement of Cost Engineering International (AACE International) as "approximate estimates made without detailed engineering data." Estimates of this type are normally expected to be accurate within plus 50 percent or minus 30 percent. This range of accuracy implies that there is a high probability that the final project cost will fall within the range.

A 30 percent contingency has been included in the facility cost estimates as a provision for unforeseeable, additional costs within the general bounds of the project scope. No contingency was added to the site development costs, those costs associated with purchasing property, implementing frontage road improvements, wetlands mitigation, and electrical transmission service. The facility contingency is used as a means to reduce the risk of possible cost overruns. The contingency in these estimates addresses unknowns related to bids and to the project scope. Bid uncertainties include market conditions and material cost changes. The scope uncertainties consist of project changes that invariably occur during final design and implementation. An allowance of 15 percent was added for engineering services.

The cost estimates have been prepared for guidance in project evaluation and implementation from the information available at the time of the estimates. The final cost for the project will depend on such criteria as actual labor and material costs, competitive market conditions, actual site conditions, final project scope, and other variables. As a result, the final project cost will vary from this estimate. Project feasibility and funding needs must be carefully reviewed prior to making specific financial decisions to help assure proper project evaluation and adequate funding.

Project Cost Estimate

The total project cost is estimated as $25,700,000. This total includes site development costs, construction costs for the water treatment plant, and an allowance for engineering. **Exhibit 7-2** provides an itemized list of costs.

EXHIBIT 7-2
Project Cost Estimate
City of Lebanon Water Improvement
Lebanon, OR

Project Component	Cost Estimate	Basis for Estimate
Property purchase	$400,000	Estimated by city
Frontage road improvements	1,200,000	Estimated by city
Wetlands mitigation	82,000	Estimated by city
Electrical transmission	400,000	Pacific Power—preliminary estimate based on discussions with CH2M HILL
Water treatment plant, including: intake on Santiam Canal, raw water pump station, finished water pump station, and one 2 MG steel clearwell tank; includes 30 percent contingency	19,500,000	CH2M HILL's in-house water treatment plant cost estimating software and conceptual level sketches for some components
Finished water transmission pipeline	770,000	CH2M HILL hydraulic modeling to select pipe size and connection points, and city input for feasible routing; unit cost of $10 per diameter inch per foot used
Subtotal	**$22,350,000**	
Allowance for engineering and administration	3,350,000	15% of subtotal
Total Project	**$25,700,000**	