

TABLE 2

Summary of Estimated Initial Capital Costs for Intake Pipeline Improvements

Project Element	Cost
Construction Costs:	
Mobilization & demobilization	\$87,000
Installation of New SST Pipe Bands	
Materials	\$312,000
Installation	\$338,000
Installation of New Concrete Ballast Weights	\$154,000
Replace Wax Tape on Steel Flange Joints	\$49,000
CONSTRUCTION SUBTOTAL	\$940,000
Construction w/ Contingency (30%)	\$1,222,000
Construction w/ Escalation to June 2016 (7.1%)	\$1,309,000
Construction w/ Sales Tax (8.7%)	\$1,423,000
Non-Construction Costs:	
Permitting Allowance	\$50,000
Engineering and Construction Management ¹	\$327,000
TOTAL	\$1,800,000

Notes:

¹ Engineering and Construction Management costs estimated as 25 percent of construction subtotal with sales tax.

10. Recommendations

The existing wood-stave intake system is in relatively good overall condition, considering that it has been in service for approximately 75 years. In general, the wood is in good condition. Under constant immersion in a fresh water lake it is anticipated that the wood elements will provide many more years of the service. The fasteners connecting the wood bent components and the timber crib elements appear to have several years of remaining service life as well, based on observations from the June 2014 inspection as well as previous testing by Golder and Associates from 2000. However, corrosion product on the exposed portions of fasteners indicate eventual deterioration of these metals is likely and should be anticipated at some point in the future.

The original carbon steel hoop rods and connecting shoes are at or very near the end of their service life. While some portion of the original tensile strength of these hoops remains, quantifying this remaining strength is difficult, impractical, and subject to error. Correspondingly, assessing the point in time after which there is insufficient tension on the pipe via the pipe bands, is not possible. However, what is clear is that at some point, all of the strength of these rods will be gone. Replacement of the confining strength function these hoops provide is necessary and should be completed as soon as practical, while the opportunity to rehabilitate the intake pipe remains. Should the intake pipe suffer a full or partial collapse because of insufficient pipe banding, it will not be possible to rehabilitate the pipe (it will need to be replaced). Re-banding of the intake pipe should be undertaken as soon as the City has re-established emergency, backup use of its old supply currently serving the fish hatchery adjacent to the Screen House, and made the repairs to the Screen House that it is currently planning.

While the existing wood-stave intake system remains useful and in relatively good condition, preserving this usable condition for the long-term will require regular monitoring, inspection, analysis, improvements, and replacement, or supplement of key elements. The actions necessary to preserve the existing wood-stave