

TECHNICAL MEMORANDUM 9

Cost Estimates

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This technical memorandum is one of a series being prepared for the Water and Sewer Master Plan project. The purpose of this technical memorandum is to summarize the approach for estimating “order-of-magnitude” project costs to be used for planning and budgeting.

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9.1 CONSTRUCTION COSTS

The budget level cost estimates prepared for this study are based on cost curves, previous estimates and historical data from comparable work, estimating guides and handbooks, and local manufacturers' cost data. Cost assumptions for the water and sewer system follow.

9.1.1 Water Pumping Stations

Construction costs for pumping stations were based on installed capacity before allowances. Construction costs for water pumping stations were estimated based on \$0.30/gallon.

9.1.2 Water Storage Facilities

Finished water storage facilities proposed for this study were elevated water storage tanks. Construction costs for elevated water storage were estimated based on \$2/gallon.

9.1.3 Water Pipelines and Valving

The costs for installing pipe are dependent on ground conditions (land use) and geography (roads, rivers, railroad crossings, etc.). For example, installing pipe in an urban setting is typically more costly than installation in a rural area for a variety of reasons. The reasons include a greater likelihood of construction in the roadway instead of the right-of-way, a higher potential for conflict with other utilities and greater difficulty in maintaining traffic. Costs for tunneling (railroad and highway crossings) were added to the baseline costs for installing water mains.

Table 9.1.1 shows the estimated cost for installation of water pipelines. The major assumptions follow:

- Costs for pipelines include basic costs, pavement restoration and traffic control.
- Pipelines would be installed in the public rights-of-way.

Detailed alignment studies will be required prior to design and construction.

Table 9.1.1 – Construction Costs for Water Pipelines

Pipeline Diameter (inches)	Construction Cost (\$/ft)
6	130
8	145
10	150
12	160
16	180
20	190
24	200

Construction costs for pressure reducing valves in vaults were estimated based on \$50,000/valve.

9.1.4 Sewer Pipelines

The unit cost for gravity sewer pipelines will be dependent on the trench depth and the potential for utility conflicts, maintaining traffic control, and other construction difficulties. Tables 9.1.2 shows the unit costs for construction and replacement of proposed gravity sewer pipelines. The major assumptions follow:

- Costs for pipelines include basic costs, pavement restoration and traffic control.
- Pipelines would be installed in the public rights-of-way.

Pipeline Diameter (inches)	Construction Cost (\$/ft)
8	130
10	151
12	162
15	173
18	184
21	194
24	205
27	216
30	227
42	292

Table 9.1.2 – Construction Costs for Gravity Sewer Pipelines

The unit cost for construction of force mains is shown in Table 9.1.3. The basic cost assumptions used for water mains in Table 9.1.1 apply to force mains.

Table 9.1.3 – Construction Costs for Sewer Force Mains

Pipeline Diameter (inches)	Construction Cost (\$/ft)
4	120
6	130
8	150
10	155
12	160
16	180
18	190
24	200

9.1.5 Wastewater Pumping Stations

Construction costs for wastewater pumping stations were based on installed capacity before allowances. Construction costs for wastewater pumping stations were estimated based on \$0.30/gallon.

9.1.6 Construction Cost Contingency Allowance

Construction cost estimates were based on planning level unit costs and include an allowance of 35% for construction contingencies.

9.2 PROJECT COSTS

Construction and replacement cost estimates presented in this Technical Memorandum were converted to total project costs by adding an allowance of 20% for engineering, legal and administrative fees. Project

cost estimates are intended for use in budget development, wherever site-specific costs are not utilized. They represent typical experience and should be adjusted, where appropriate, to meet special needs.

