

Memorandum

To: City of Laramie Stormwater Focus Group
From: WSP Environment and Infrastructure
CC: City of Laramie Public Works and Engineering
Date: December 1, 2023
Ref: Stormwater Funding Feasibility Study
Enhancements and Performance Improvements for City's Stormwater Services - Costs

Infrastructure Improvements in Stormwater System Management

- Improvements that require pipe replacement as well as implementation of the capital projects identified in the Master Plan have an average cost of approximately \$500 per linear foot for storm sewers. If for example, the City provided a dedicated capital investment for one (1) mile of storm sewer replacement annually, the investment, at today's prices, would be \$2,640,000.
- Funding for implementation of the \$100M+ capital improvement plan varies by project. The priority projects in terms of 2020 cost estimates, require \$23,831,000. A five-year investment target of \$4,770,000 yearly could provide resources to implement the high priority projects. Several high priority projects are currently under design.
- Pipe lining is a recommended tool to preserve and extend the life of underground pipes. The cost is influenced by the size of pipe, with estimates based on experience in Wyoming ranging from 14" pipe at \$109/linear foot to 78" pipe at \$664 per linear foot (data provided by WYDOT). Bids for lining contracts can vary not only by size but location which influences cost parameters of traffic control, length of pipe run, pre-inspection need, and pipe cleaning requirements. Budgeting at \$100/per linear foot is reasonable for pipes 24" or smaller.
- New construction of drainage systems in underserved areas with unpaved roads are comparable to pipe replacement costs. Installation of drainage collection pipes typically occur when the roadway is paved, which addresses erosion of the roadbed as well as improvements in runoff controls to protect public and private property in these areas. Open channels to collect runoff may be feasible to provide an improved level of service; however, maintenance can be a greater burden.
- Reducing sediment build up in the drainage network can be addressed by increased frequency of sweeping the street network from twice per year to four

times per year coupled with a two-prong approach to flushing/vacuuming the pipe network components along with an inspection program to identify capacity and condition of the system. The cost of sediment removal within the street is approximately $\frac{1}{4}$ th the cost of sediment removal from the pipe network. Ensuring capacity of the underground system will require dedication of a two-person crew and a new vacuum truck. Pairing the sediment removal program for the pipe network with a wintertime pipe inspection program can place the City on a solid maintenance foundation for maintaining the storm system flow capacity over time.

- Expanding the use of Gutter Bins, or equivalent products, may improve system capacity of the underground pipe network where recurring debris build up occurs. Prioritization should be set based on high traffic use and experience of inlets cleaning to remove trash and sediment. The Gutter Bins in the pilot area are cleaned twice a year and costs to extract and dispose of the removed material is valuable in projecting the purchase and installation costs and long-range maintenance expense for additional units. The City desires to expand this program by installing at least two inlet filter systems per year.
- Additional personnel for engineering and maintenance services can be estimated based on the overall changes in levels of service based on capital investments and maintenance operations.