WHITE PAPER

Sewer and Water System Master Plans

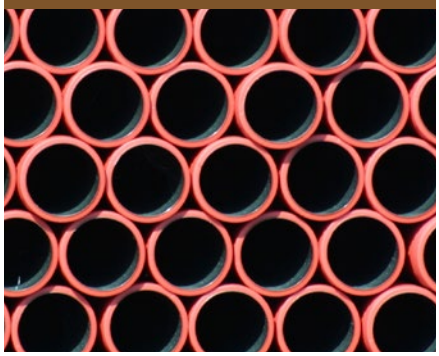
Tips for successful implementation

What is a Master Plan?

Master Plans provide a big picture evaluation of current conditions and determine the need for upgrade and/or expansion, considering:

- **Age and deterioration**
- **Public health requirements**
- **Planned growth patterns**
- **Regulatory requirements**

Master Plans set priorities and develop broad schedules for completion. Often a financing plan or rate study is included to facilitate funding the improvements.



What's the next step?

Implementation planning

Generally, Master Plans do not provide details that can greatly impact costs, schedule and specific implementation strategies. Implementation of the Master Plan objectives gives proposed projects detailed analysis that minimizes scope and potentially saves money.

Garbage in/garbage out:

How reliable is the information the Plan is based on?

- Extrapolating dry-weather flows for sewers can give erroneous values.
- Sewer system interconnections (overflows) can complicate system analysis.
- Water system losses are more likely in services than distribution piping.

Modeling accuracy: are pump stations modeled correctly?

- Small errors in pump on-off levels can have significant impacts on pipe sizing.

Site considerations: what constraints are there around the proposed projects?

- Utilities, especially high-risk gas or electric facilities, affect the routing and cost, as well as high traffic and pedestrian volumes.
- Environmentally sensitive areas need to be identified early since these will affect schedule and costs.

Cost impacts: do you get adequate "bang" for your buck?

- Can you combine streetscape, sidewalk, landscape, ADA, paving projects or funding to create greater benefit?
- Will trenchless strategies save unnecessary intrusion and impact?

Harris & Associates

Case Studies:

City of Gilroy

City-wide sewer improvements

The model showed a trunk sewer was experiencing surcharging during peak wet-weather flows and the City had budgeted $1.2 million to upside the line. On closer examination, Harris & Associates found that the sewer was over 10 feet deep and the surcharging was only inches above the crown of the pipe. Harris recommended not doing the construction, saving money for other priority projects.

City of Concord

Sewer Master Plan

The Master Plan recommendation was to upsize the diameter of 2,500 feet of pipeline from 15 to 18 inches as part of the Meadow Lane Sewer Rehabilitation. As the Harris team performed early investigations and opened manholes, we discovered that the flows were actually being routed to a different subbasin from what was shown in the Master Plan and the upsizing was not needed. This saved the City close to $500,000 in construction costs and over 30 days on the construction schedule.

Cypress Valley View

C9 storm drain

The storm drain Master Plan showed an existing 42”/39” storm drain was under capacity. Although the Master Plan recommendations indicated upsizing the existing mainline storm drain to a 54” RCP, Harris provided an alternative recommendation, which involved protecting the existing sorm drain system and diverting a portion of the drainage flows to a new 24” RCP parallel system. The City was able to realize a cost savings of approximately 50% of the original budget.