

WASTEWATER PIPELINE PREDICTIVE MODELING

The deterioration modeling task for the wastewater pipeline infrastructure will consist of three major components: 1) development of advanced mathematical model, 2) evaluation and validation of the proposed model, and 3) piloting of the proposed model at 12 geographically distributed wastewater utilities across the nation. Three Phases of the model development process is presented in Figure 1. Both Phase 1 and 2 are successfully completed by funding from WERF under SAM Challenge.

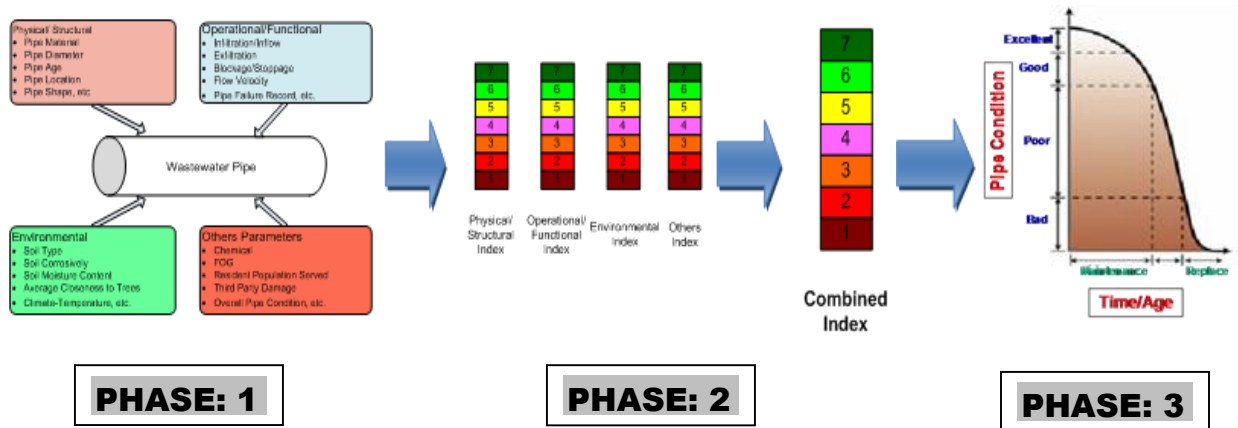
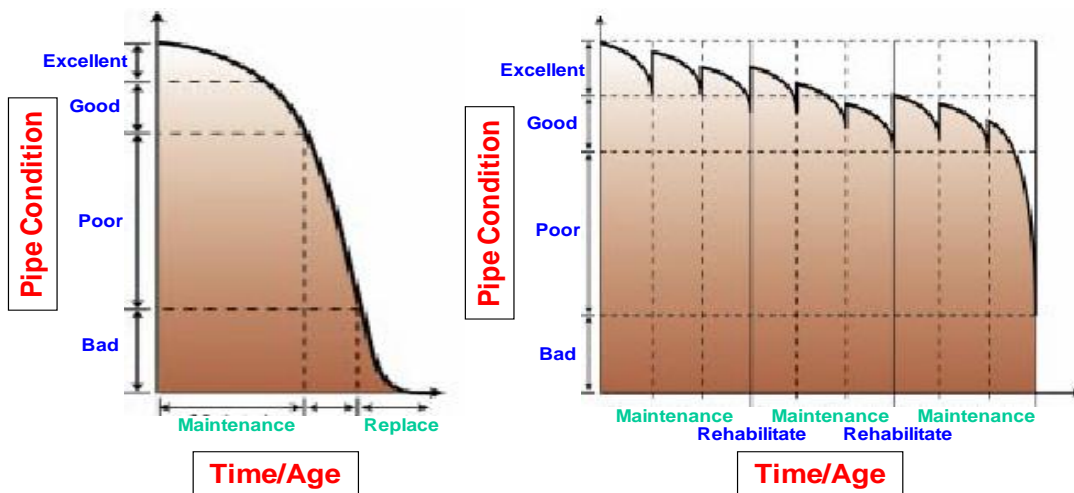


Figure 1. Development of Wastewater Pipeline Deterioration Prediction Model

Proposed Phase 3 work will provide utility managers with a practical and efficient technique for the prediction of wastewater pipeline performance and/or end of the remaining life deterioration curve. The developed methodology will be evaluated using a time dependent dataset of wastewater pipeline network from various participating utilities across the nation. Figure 2 illustrates the wastewater pipeline deterioration prediction model. The left diagram of the Figure 2 shows pipe condition deteriorated over time and the right diagram shows the updated-condition of the wastewater pipeline over time when the renewal actions such as rehabilitation has been performed.



• **Figure 2. Condition/Performance Deterioration Prediction Model.**