Chapter 7 Measuring Success

Introduction

Implementing the Rowlett Creek WPP will focus on addressing readily manageable bacteria sources in the watershed to reach water quality targets with the coordination of stakeholders over a 10-year period. This plan identified substantial financial resources, technical assistance, and educational resources required to achieve these targets. All management measures outlined in this WPP are voluntary and have the support from watershed stakeholders at the recommended levels.

Measuring WPP implementation impacts on water quality through monitoring at critical locations and sometimes accompanying installations will provide data needed to document the progress toward water quality goals. While measuring improvements in water quality is the preferred measure of success, documenting implementation accomplishments can also be used. Combining water quality data and implementation accomplishments will facilitate adaptive management by illustrating which recommended measures are successful and which need modification. Documentation of these two aspects of success can be tracked along the timeframe outlined for WPP implementation in Table 5-10.

Water Quality Target

The selected goal for water quality in Rowlett Creek is the existing primary contact recreation standard for *E. coli* of 126 cfu/100 mL. This is the defined target for future water quality to allow for the necessary bacteria load reductions. This can be achieved by implementing the management measures over the course of the 10-year period. If there are revisions or adoption of new water quality standards, such as nutrients, it is recommended these targets be revised or amended as appropriate to attain the more conservative standard.

The LDC approach was used to calculate this water quality goal into the needed bacteria load reductions. Likewise, this approach was used water quality goals on nutrients if these become standards or of interest to any stakeholders to address. Monitoring sites were established at each subwatershed junction in the creeks for this WPP. Each of the 5 sites were used in the LDC analysis to determine needed load reductions to meet the water quality targets listed above. Moreover, the mid-range flow conditions category was selected for the basis for identifying the needed amount of *E. coli* reduction.

Additional Data Collection Needs

Continuation of water quality monitoring in Rowlett Creek is necessary to track changes throughout the implementation of the WPP. This is an important process to ensure that the WPP implementation strategies are making progress to attain water quality standards. The current monitoring site distribution and data collection frequency across the watershed limits the scope of data accessible. Additional monitoring in the way of more intensive sampling in other stream segments within the watershed to identify potential pollutant sources. The current monitoring setup limits the likely observation that may be needed to evaluate small changes in water quality that result from WPP implementation. Defining localized water quality changes from specific implementation activities will require targeted water quality monitoring efforts. These can be planned once specific implementation activities and locations are known and will demand funding support. Targeted water quality monitoring could include edge of field runoff analysis where different land use or management measures have been implemented, paired

watershed studies, or multiple watershed studies. Data derived from these monitoring activities could demonstrate the applicability and efficacy of different BMPs within the watershed.

Through the adaptive management method with WPP updates future water quality monitoring needs will be evaluated and adjusted as necessary. This could include adding new sites to address new concerns or areas of interest in the watershed. The data collected at new sites will be included in the quality assurance project plans developed with future monitoring efforts.

Data Review

Watershed stakeholders are responsible for evaluating WPP implementation impacts on instream water quality. Stakeholders will use TCEQ's statewide biennial water quality assessment approach, which uses a moving seven-year geometric mean of bacteria data collected through the state's CRP as a primary means of gauging implementation success. This assessment is published in the Texas Integrated Report and is available on the TCEQ Integrated Report webpage: www.tceq.texas.gov/waterquality/assessment. It is noted there is a two-year lag between data reporting and the assessment results in the Texas Integrated Report, therefore the 2028 or 2030 Texas Integrated Report will likely be the first to include water quality data collected after the start of WPP implementation. Another method to evaluate water quality improvements is using the geometric mean of the most recent three years of water quality data reported within TCEQ's SWQMIS web tool: https://www80.tceq.texas.gov/SwqmisPublic/index.htm. This method can deliver more appropriate progress results for evaluating WPP implementation progress since the Integrated Report uses 7-year geometric means. To support data assessment as needed, trend analysis and other appropriate statistical analyses will be used.

Regardless of method used, water quality changes resulting from WPP implementation will be difficult to determine and may be diminished by activity in the watershed that negatively influences water quality. Thus, data review will not be relied on exclusively to evaluate WPP effectiveness.

The Watershed Coordinator will be responsible for tracking implementation targets and water quality in the watershed. Implementation progress and data will be summarized and reported to watershed stakeholders at least annually. Implementation progress and water quality will be evaluated to describe the success of WPP implementation. Should implementation targets or water quality improvements lag significantly, adaptive management efforts will be initiated to reassess management recommendations and targets included in the WPP.

Interim Measurable Milestones

Rowlett Creek WPP implementation will occur over a 10-year period. Milestones are useful for incrementally evaluating the implementation progress of specific management measures recommended in the WPP. Milestones outline a clear tracking process for progression throughout implementation. Interim measurable milestones for management measures and education and outreach are addressed in Chapter 5 Table 5-10. Participants and estimated costs, where available, have been included in the schedule. In some instances, funding acquisition, personnel hiring, or program initiation may delay the start of some items. This approach provides incremental targets that can be used to measure progress. If sufficient progress is not made, adjustments will follow to increase implementation and meet established goals. Adaptive management may be used to adjust the planned approach if the original strategy is no longer feasible or effective to achieve the overall goal of water quality.

Adaptive Management

Watersheds are inherently dynamic systems with numerous variables influencing landscape processes, which results in an inherent degree of uncertainty. This consideration was central to the development of the WPP. As the WPP implementation progresses, it is essential to continuously monitor water quality and adjust the implementation strategies as necessary. The inclusion of an adaptive management approach within the WPP framework provides the necessary flexibility for such adjustments.

Adaptive management is a systematic approach based on the philosophy of improving management by learning from outcomes. Adaptive management is an iterative process that involves accumulating knowledge about the causes of impairment and the responses of water quality to implementation efforts. As these efforts progress, water quality is systematically tracked to assess their impact. This data guides the refinement of future implementation activities. This cyclical process of implementation and evaluation ensures that project efforts remain focused, and their impacts are optimized. Watersheds predominantly affected by nonpoint source pollutants, like Rowlett Creek watershed, are particularly suitable for adaptive management. The progress towards achieving established water quality targets will also be used to evaluate the necessity of adaptive management. An annual review of implementation progress and water quality trends will be presented to stakeholders during meetings, as discussed above.

Given the multitude of factors influencing water quality and the typical time lag between implementation efforts and observable improvements, it is crucial to allow adequate time for implementation before triggering adaptive management. In cases where progress towards water quality targets or milestones is deemed infeasible due to factors such as funding constraints or the scope of implementation, adaptive management provides an opportunity to revisit and revise the implementation strategy. If stakeholders determine that progress towards water quality improvement or milestones is insufficient, efforts will be intensified to increase the adoption of BMPs and adjust strategies or focus areas accordingly.