Executive Summary

The City of Franklin has completed Phase I of an Integrated Water Resource Plan (IWRP) that incorporates potable water, wastewater, reclaimed water, and stormwater into a long-term plan that identifies infrastructure improvements and policy recommendations to meet the City's needs and customer requirements.

Historically, as in most communities, planning for these separate utilities in Franklin has been conducted independently. However, based on results of IWRP studies throughout the United States, the City realized that there are three fundamental advantages of integrating the plans for water resource management:

- comprehensive understanding of the impacts of decisions over all aspects of water management;
- cost savings to the City and ratepayers; and
- common means—in this case, the Harpeth River—to measure progress and, ultimately, success.

The Harpeth River and its watershed are affected by almost every water management decision in Franklin. It currently provides drinking water, receives wastewater, and conveys stormwater away from the City; and its flows and water quality are affected by the amount of water recycled for other beneficial uses within the City. As such, it was identified early in the IWRP process as the principal means of evaluating the benefits and/or impacts of water management alternatives, though it is not the only means.

Before the effectiveness of a plan can be measured, there must be goals or standards against which it can be assessed, based on common interests of the community and other interested parties. A series of workshops was held with regional stakeholders to identify project objectives, alternatives, and performance measures for success of Franklin's IWRP. Participants were associated with a diverse group of interested organizations, including:

- City of Franklin
- Regional water providers
- Harpeth River Watershed Association
- Tennessee Department of Environment and Conservation
- Williamson County
- United States Geological Survey
- Tennessee Wildlife Resources Agency

- Tennessee Department of Transportation
- Vanderbilt University

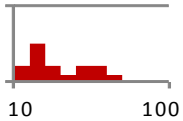
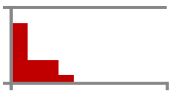
Over the course of methodical, facilitated workshops, the stakeholders developed consensus recommendations for IWRP objectives, performance measures for each objective (ways of measuring success), and projects, policies, and management tools that would be grouped into alternatives for comparison. Stakeholders were able to work toward an integrated plan that is most broadly beneficial and acceptable to Franklin and the surrounding region. Each piece of the plan will be linked to at least one of the nine objectives identified by the stakeholders. These objectives were ranked, by the stakeholders, in order of importance using weights, in which each stakeholder was asked to distribute 100 points between the 9 objectives. A summary of the results of this weighting is provided in **Table ES-1**.

The stakeholders identified ways in which performance against these objectives could be measured and formulated comprehensive sets of projects (draft alternatives) aimed at addressing the most heavily weighted (most important) objectives. A planning-level computer model was developed to examine the relationships between the utilities (for example, how recycled wastewater affects flow and pollutant loads into the stream, and potentially offsets a portion of the potable water demand).

Through a combination of computer simulation scenarios and evaluation of the draft alternatives in consultation with the steering committee for this IWRP (a group overseeing the process for Franklin and interpreting stakeholder feedback for the Board of Mayor and Aldermen), a group of four new alternatives—each on its own a comprehensive alternative for an integrated plan—was selected to advance to the next phase of the study process for more detailed evaluation of specific options. The four alternatives, shown in **Figure ES-1** and compared with the do nothing alternative, were formulated around specific individual objectives that had a high weighting, but ultimately evolved into more comprehensive plans formulated at addressing broader objectives.

The bar charts illustrate how each alternative scored with respect to each of the nine objectives, using the performance measures developed by the stakeholders. The results in Figure ES-1 have been normalized to common scales and weighted according to the values shown in Table ES-1. The graph is not intended to serve as a recommendation of one plan over another, but rather, to illustrate tradeoffs between alternatives and demonstrate that each alternative plan has merits that warrant more detailed evaluation in Phase II of the IWRP. For example, although the revised reliability alternative has the lowest composite score, it ranks highest in reliability, which was ranked the most important objective by the stakeholders. However, it is also the most expensive alternative. This example illustrates how the results can be used to understand tradeoffs in alternative costs and benefits among the four alternatives recommended for further study. The specific composition of each alternative can be found in **Table ES-2**.

Table ES-1
Franklin IWRP Objectives and Weights

Objectives		Weights			
Name	Description	Min	Max	Average	Histogram
Reliability	Meet current and future demands for water and wastewater reliably	0	70	31.1	
Efficiency	Maximize efficiency of water use and value of water resources	5	25	15.5	
Water Quality & Ecological Health	Improve water quality and ecological health of Harpeth River and watershed	0	50	13.5	
Service at a Reasonable Cost	Provide excellent level of water/wastewater utility services at reasonable cost	0	40	13.2	
Safety & Security	Provide safety and security of water resources systems	0	25	8.3	
Regional Acceptance	Achieve regional acceptance	0	15	5.7	
Sustainable Biosolids Management	Achieve sustainable biosolids management	0	15	4.7	
Improved River Access	Provide improved access and aesthetics of Harpeth River	0	15	4.5	
Carbon Footprint	Minimize carbon footprint of water resources operations	0	10	3.5	

Graphs represent the number of respondents at each level of importance (weight), and are intended to illustrate whether the group's values were generally unified or dispersed.

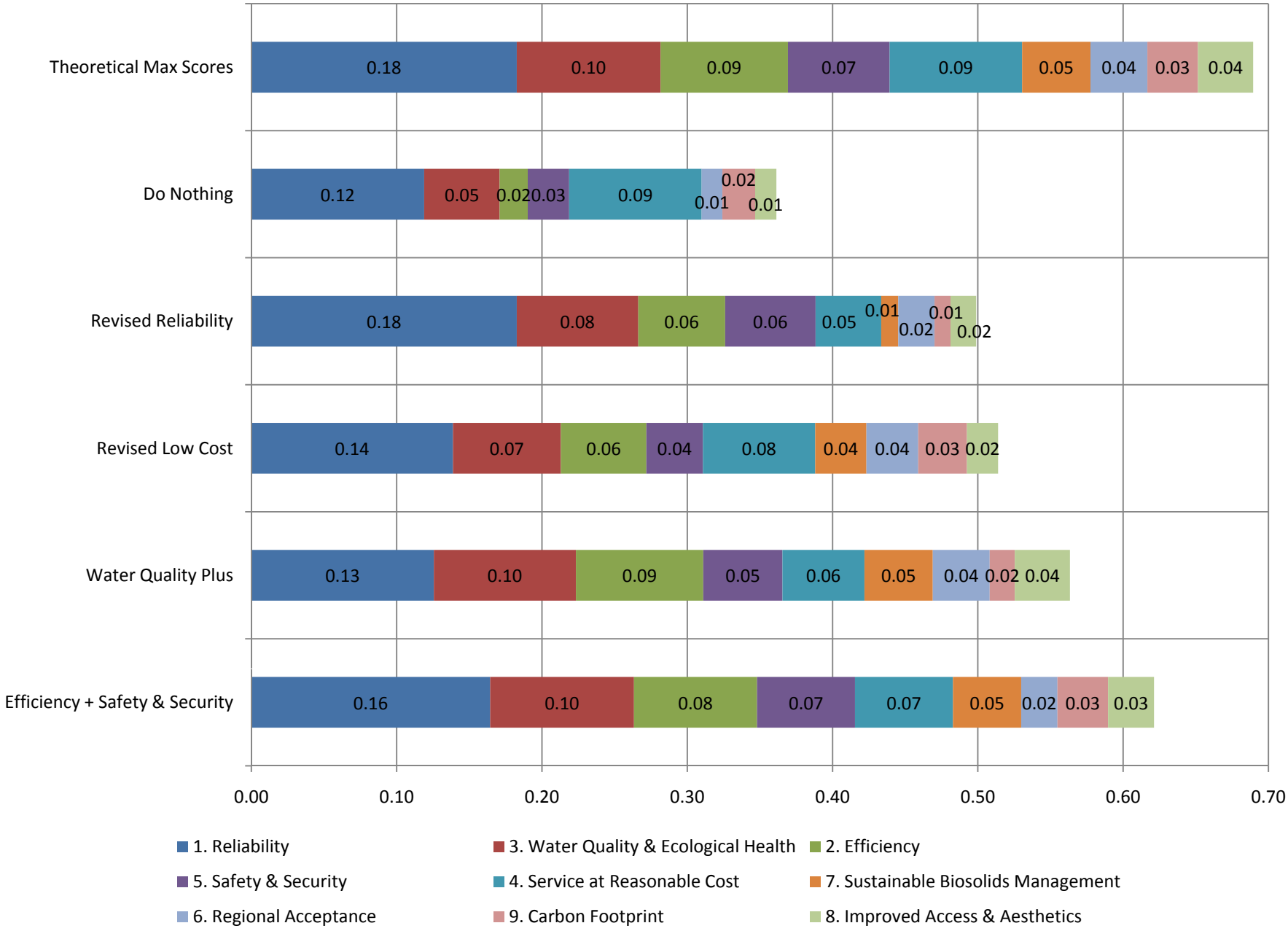


Figure ES-1
Stakeholder Recommended Alternatives for Analysis in Phase II of the IWRP

Category	Options	Efficiency + Safety & Security	Water Quality Plus	Revised Low Cost	Revised Reliability
Stormwater Options	Residential rain barrels	X	X		X
	Commercial stormwater reuse	X	X		X
	Recreational stormwater reuse	X	X		X
	Rain gardens	X	X		
	Pervious pavement	X	X		
	Constructed wetlands	X	X		
	Conveyance upgrades	X	X		
	Increased storage	X	X		
Water Treatment Plant	Upgrade existing 2.1 mgd WTP and purchase remaining water from HVUD			X	
	Expand existing WTP to 4.0 mgd, upgrade WTP intake structure and purchase remaining water from HVUD	X			
	Repair water reservoir (ongoing)	X		X	
	Shut down existing WTP and purchase all water from HVUD		X		
	Construct raw water transmission line from the Cumberland River and upgrade water treatment plant to supply all City demand				X
Distribution System	Address water loss	X	X	X	
	Install advanced metering	X	X	X	X
	Remove outdated tanks	X	X		
	System management practices	X	X	X	X
Conservation Options	Indoor and outdoor conservation (public education, etc)	X	X	X	X
	Conservation ordinances	X	X	X	X
	Low flow incentives	X	X	X	X
	Rate block structure, etc	X	X	X	X
Wastewater Treatment Plant	Upgrade and rerate existing WWTP		X	X	X
	Construct new WWTP at Goose Creek	X			X
	Collect and treat wastewater from adjacent communities or other small systems (e.g., Lynwood, Cartwright Creek)	X	X		
	Treat discharged effluent to higher standard during summer months		X		
Collection System	Address inflow and infiltration	X	X	X	
	Hook up septic users to sewer	X	X		X
	System management practices	X	X		
Ecological Restoration Options	Removal of low head dam at the water treatment plant intake	X	X	X	
	Address old dump site (from downtown to Liberty Creek) and convert to Harpeth River access area				
	Use of Robinson Lake to provide enhanced base flow in the Harpeth River during dry periods	X	X		
	Cattle exclusion	X	X		
	Widespread stream and bank restoration	X	X		
Reclaimed Water Options	Complete the 12" Long Lane line and retrofit the existing 500,000 gallon Long Lane water reservoir for reclaimed water service	X	X		
	Complete the distribution loop around the city by constructing the 12" Columbia Avenue/Southeast Parkway reclaimed line and construct a 500,000 gallon storage tank in the vicinity of Winstead Hill	X	X		X
	Convert the Franklin Green/Horton Lane sanitary force main for reclaimed water distribution	X	X	X	
	Increase City-wide reuse by increasing customer base	X	X	X	
	Install additional pumps to increase the station capacity to approximately 12 million gallons per day	X	X		X
	Establish additional reclaimed water storage facilities/ convert existing water storage tanks to reclaimed storage tanks	X	X		X
	Identify and establish dedicated reclaimed water sites	X	X	X	
	System management practices	X	X	X	
Biosolids Options	Upgrade solids handling facilities to produce Class A solids				X
	Upgrade solids handling facilities to drying/ERS (ash disposal)				X
	Upgrade solids handling facilities to produce higher TS content sludge				
	Solids disposal at BFI (108 miles/trip)				
	Solids trucked to Metro Nashville for disposal/processing			X	
	Class A biosolids to Franklin's composting facility		X		
	Land application (Switch grass production)	X			
	Upgrade biosolids facilities for biogas to energy	X	X	X	

Table ES-2
Recommended Alternatives