CHAPTER 1: INTRODUCTION

1.1 Background

The City of Fort Worth and surrounding areas are projected to experience significant growth in population over the next several decades. In order to help meet its future water supply needs, the City is pursuing opportunities that include conservation and the use of highly treated wastewater effluent to reduce demands for potable water.

The regional water supply planning process, originally mandated by the 75th Texas Legislature in Senate Bill 1, has identified a number of future water management strategies for the City of Fort Worth and Tarrant Regional Water District (TRWD), who currently provides the City with raw water. In addition to conservation and reuse, future water management strategies for TRWD in the 2006 Region C Water Plan include construction of the Marvin Nichols Reservoir in the Sulfur River Basin, importing water from Toledo Bend Reservoir and importing water from Oklahoma.

Through Senate Bill 1 and subsequent legislation, the Texas Legislature has placed a strong emphasis on the efficient use of water resources. As a result of Senate Bill 1, the Texas Water Code now requires that an applicant for a water right involving an interbasin transfer of raw water develop and implement a water conservation plan that will result in the "highest practicable levels of water conservation and efficiency achievable...[5]" Since three of the planned future water supplies for TRWD (and, hence Fort Worth) involve interbasin transfers, it will be necessary to demonstrate that this requirement has been met prior to approval and implementation of these projects.

Water reuse has been identified as a Best Management Practice for water conservation by the Water Conservation Implementation Task Force established by the 78th Texas Legislature under Senate Bill 1094[6]. Therefore, in addition to other water conservation efforts, development of a water reuse program will provide for efficient use of the City's water resources and will assist TRWD in securing necessary future water supplies to meet anticipated growth within the City of Fort Worth and surrounding areas.

Although previous studies related to water reuse have identified some potentially viable alternatives for the City, these studies have not developed a detailed, comprehensive plan that evaluates and prioritizes alternatives for the City and its service area. The purpose of this study is to provide the City with a plan that can be used to guide implementation of a direct reuse program to support future water supply requirements for the City. In addition, during development of this plan, the City has worked closely with its wholesale customers, TRWD, Trinity River Authority (TRA) and other surrounding cities to identify potential approaches to its reuse program that could include regional support and cooperation among these entities.

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[5] Texas Water Code, Subtitle B, Chapter 11, §11.085

[6] Texas Water Development Board, Report 362, Water Conservation Implementation Task Force, *Water Conservation Best Management Practices Guide*, November 2004

This study includes the evaluation of alternatives for direct non-potable reuse. No indirect reuse is considered here. However, it should be noted that TRWD has been issued a water right permit to implement a major indirect reuse project that diverts return flows from the Trinity River to a constructed wetland and ultimately into Richland Chambers and Cedar Creek Reservoirs[7]. Implementation of a direct reuse program for the City of Fort Worth is intended to complement these ongoing reuse efforts by TRWD.

1.2 Project Scope

The goals of this study were to develop a priority and implementation plan identifying appropriate uses for highly treated effluent from the City of Fort Worth Village Creek wastewater treatment plant (VCWWTP) and/or potential water recycling centers (WRCs or satellite WWTPs) at other locations within the City. The study includes the development of conceptual plans and an evaluation of costs and benefits for providing reclaimed water to several identified service areas within Fort Worth and surrounding communities.

The project scope included the following tasks, intended to provide a review of available information associated with the project, identify potential reclaimed water service areas, develop conceptual treatment and conveyance plans, evaluate costs, benefits and feasibility and identify necessary steps for implementation:

- Review previous City of Fort Worth reports or studies related to reclaimed water;
- Review population, water demand and wastewater flow projections;
- Evaluate quality of Village Creek WWTP effluent relative to potential reclaimed water quality requirements;
- Identify top water users within the City and develop a list of potential reclaimed water customers;
- Identify potential reclaimed water uses and options;
- Identify service areas, demands, and potential locations for reclaimed water projects;
- Conceptualize potential projects and develop a list of alternatives;
- Perform cost, benefit and feasibility analysis for the list of alternatives and identify the most viable projects;
- Support the City in establishing a Public Information Committee and recommended steps for development of a public information plan;
- Identify administrative or regulatory actions necessary to support a reclaimed water program;
- Develop a reclaimed water implementation plan that includes recommended projects, implementation steps and an implementation schedule.

[7] Amendment to Certificate of Adjudication, 08-5035C (Richland Chambers Reservoir) and 08-4976C (Cedar Creek Reservoir), Texas Commission on Environmental Quality, granted February 8, 2005.

The project objectives were achieved by reviewing previous studies; meeting with City staff, potential customers, TRWD and TRA; evaluating potential current and future reclaimed water needs and service areas; and assessing costs and benefits associated with each project. The potential projects were then analyzed based on engineering and economic feasibility to define the recommended reclaimed water options and develop an implementation plan.

In addition to the objectives defined above, a reuse workgroup was established in order to begin the process of developing policies and procedures and associated documentation for the City's reclaimed water program. The workgroup met on nine occasions and developed a set of draft documents that are scheduled to go to the City Council for approval in April 2007. Details of these efforts are discussed in Chapter 9.

1.3 Organization

This report is generally organized by the major tasks in the scope of work for the study. An executive summary precedes the main body of the report. Following the current introductory chapter, the remaining chapters of the report address the topics listed below:

- Review of previous reports and studies associated with water reuse, and relevant water and wastewater system characteristics;
- Population projections, water supply and demand, and treated wastewater availability;
- A review of potential reclaimed water users and their demands;
- Reclaimed water quality considerations;
- Identification of reclaimed water service areas, screening-level evaluation of potential alternatives and selection of preferred alternatives for further evaluation;
- Feasibility evaluation of the preferred alternatives, including evaluation of benefits and preliminary opinion of probable costs;
- A review of potential financing strategies and sources of funding;
- A summary of important public relations issues and a proposed public information plan;
- A summary of the proposed implementation steps and schedule for the reclaimed water system.

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