

## Madison’s East Side Water Supply Project Project Scoping Document

### I. PRURPOSE OF THIS DOCUMENT

The purpose of this project scoping document is to provide an overview of:

- The overall purpose of the project
- The project area on the east side of Madison
- Introductory background materials on the project
- The general project activities

### II. PROJECT PURPOSE

The Madison Water Utility is undertaking a study to insure the long-term supply of safe water to its east side customers. Figure 1 shows the location of the study area (Pressure Zone 6 East). ***The overall objective of this study is to develop a series of capital projects, budgets and implementation schedules that will support the continued supply of an abundant and safe drinking water supply on Madison’s east side in an economically, socially, and environmentally sustainable manner.***

To achieve this objective, we will complete a series of tasks summarized as:

- Complete a long term water demand analysis, which includes an assessment of expected water conservation measures on Madison’s long-term water needs
- Complete a water quality evaluation to summarize the existing quality of groundwater on Madison’s east side.
- A review of treatment technology and potentially pilot testing to assess how water treatment can best be accomplished to achieve Utility water quality goals, if needed
- Conduct a detailed distribution system hydraulic model evaluation to assess if the existing distribution system can supply future water needs to the east side of pressure zone 6
- Conduct a well site selection study and facility planning if a new well is needed to meet future demand

These tasks will be completed with the guidance and review of a Citizen’s Advisory Panel (CAP) established for this project and in conformance with the Madison Water Utility Public Participation Guidance document.

### III. PROJECT BACKGROUND

There are essentially two main issues in this project; 1) Water Quality and 2) Projected Water Demands. Each of these issues will be discussed in detail below.

**Water Quality** During this study we will evaluate water quality at four wells on the east side. They include Wells 7, 8, 15, and the replacement for Well 3.

- Water from Wells 7 and 8 exceed one or both of the secondary maximum contaminant levels (MCL) for iron and manganese
  - Well 7:
    - Iron levels = 0.43 mg/l  
(Secondary MCL = 0.30 mg/l)
    - Manganese levels = 29 ug/l  
(SMCL = 0.050 mg/l or 50 ug/l)
  - Well 8
    - Iron levels = 0.63 mg/l  
(SMCL = 0.30 mg/l)
    - Manganese levels = 55 ug/l  
(SMCL = 0.050 mg/l or 50 ug/l)
- Water from Well 15 has shown an increasing level of tetrachloroethylene (PCE). Although currently below the maximum contaminant level, the level of PCE may exceed the MCL within two years.
  - Well 15
    - Tetrachloroethylene = 3.8 ug/l  
(Primary MCL = 4 quarter average > 5.0 ug/l)
- While the water quality in any replacement well will not be fully known or understood until a test well is drilled, for this study we will assume that it will be similar to the utility's latest well, No. 30, and have iron levels between 0.2 and 0.3 mg/l and manganese levels between 10 and 20 ug/l. These levels will require filtration of the water per Utility policy.

**Projected Water Demands** Water demands developed for the 2006 Water Master Plan will be reviewed and updated based on current projections. This procedure will take into account the impact of the recent economic turndown and the resulting slowing of area development. Water demands are dependent upon population projections, development trends, water conservation practices and climatic conditions. Facility and system needs are based on water demand projections, fire protection requirements, system hydraulic capacity and overall facility reliability and redundancy.

- **Population Projections:** Population trends and projections will be per City of Madison Planning Department and will be in conjunction with the City's adopted Comprehensive Plan.
- **Water Conservation.** In 2008, Madison Water Utility completed and adopted a water conservation plan that established water demand goals for the system. Broadly stated, these goals were to reduce average residential use by 20-percent by the year 2020 and to maintain current total pumping levels across the City. As a part of this, the Utility initiated a toilet rebate program to encourage conservation and is investigating implementing conservation water rates to motivate customers to reduce their drinking water use.
- **Climate.** The full impact on water demands due to climate conditions is a point of discussion. The last five years have been cool and wet during summer months and this may have some impact on irrigation use and overall summer demand.

- **Hydraulic Capacity, Fire Flow Capacity, and Reliability:** The 2006 Water Master Plan reviewed system hydraulic capacity and reliability. System hydraulic capacity will be revisited as a part of this study with regard to updated water demand projections and overall facility reliability.
- **Unit Well 3 Replacement:** The need to replace Well 3 (if, when, and where) will be made in the context of the overall evaluation of future water demands.

#### **IV. PROJECT SCHEDULE AND EXECUTION**

This project will take place over the fourth quarter of 2010 and most of 2011. The project is broken into 12 distinct tasks. Figure 2 shows the individual tasks, how the tasks relate to each other, and an overall time line for the project. Appendix A to this summary document presents the detailed scope for this project.

The Madison Water Utility hired Black & Veatch, a consulting engineering firm, to help with this project. The Black & Veatch team includes professionals specifically dedicated to facilitating the public participation processes for this project.



