

## City of Fitchburg

### Supplement to the Teska Associates, Inc. proposal for the North McGaw Park Neighborhood Plan

#### Supplemental Aquatic Resource Sampling

##### OBJECTIVE

The objective of this task will be to obtain specific hydrologic, water quality and habitat data at selected locations on Swan Creek and Murphy Creek, in order to supplement the resource-based approach to environmental and water resource management criteria-setting for the North McGaw Park Neighborhood Plan.

##### SCOPE OF WORK

###### Review Available Data

We will review available data for aquatic resources near the project area that could be influenced by development, to identify data gaps in the proposed work plan. Data to be reviewed will include published and file data from:

- The City of Fitchburg
- Wisconsin DNR
- Capital Area Regional Planning Commission
- University of Wisconsin
- Dane County

###### Collect Field Data

###### Data Collection Locations

We anticipate approximately three data collection locations on Swan Creek and two data collection locations on Murphy Creek (refer to attached map). These locations will allow for data collection upstream and downstream of tributaries and should provide a reasonable evaluation of stream conditions.

###### Physical Survey of Stream Cross Sections

- GPS cross-section survey at 3-5 stream locations, conducted at the same time as the survey of hydraulic structures within the study area.

###### *Benefits:*

- Provides information on physical habitat structure & channel morphology/stability.

- Combined with stage, provides data on wetted cross section area. Recent research suggests this is a useful surrogate for discharge for determining relationships with stream ecological health indicators.
- Provides data for hydraulic calculations of discharge for flood events (e.g. using Manning's equation), which is useful in evaluating stream channel stability.

#### Stream discharge monitoring

- Streamflow measurements at 2-4 locations on Swan and Murphy's Creeks conducted on approximately 3 dates during the summer and fall of 2008, primarily during baseflow periods.

#### *Benefits:*

- Spatial baseflow distribution is an indirect indicator of groundwater discharge.
- Helps characterizes fishery suitability / risk (e.g. based on regional relationships between fish community distribution, watershed area, and stream baseflow).
- Provides calibration data for any future groundwater modeling efforts.

#### Continuous stream stage & temperature monitoring

- Continuous stage and temperature data loggers will be placed at three to five stream locations for a data collection period of approximately 6 months.
- Data review will be combined with closest available precipitation gauge

#### *Benefits:*

- Will provide data on the rapidity of stormwater runoff response
- Temperature data will provide information on suitability for different fishery types
- Temperature can be an indicator of stormwater quality impacts.

#### In-Stream water quality monitoring and Fish and Benthic Invertebrate Sampling

- Reconnaissance sampling of benthic invertebrates and fish.
- Spot measurements of dissolved oxygen, pH and specific conductance.

#### *Benefits:*

- Establishes baseline for future comparison
- Characterizes general nature of fishery
- Indicates general water quality conditions

#### **COST AND SCHEDULE**

This data collection program will be conducted as a supplemental work scope item under the contract between the City of Fitchburg and Teska Associates, Inc.

The estimated cost of this work scope addition is \$19,000 for data collection at the five locations identified in the attached Figure. Although we recommend that the proposed scope be conducted if the City wishes to pursue this option, we could reduce costs by restricting the data collection to a single location on both Murphy and Swan Creek, for an estimated cost of \$14,000.

The work will be conducted beginning at the outset of the project to provide early data availability, and will continue through the fall or early winter of 2008.

#### **DELIVERABLES**

This monitoring effort will include preparation of the following:

- A memorandum summarizing results and interpreting the hydrologic and biological conditions in Swan and Murphy's Creeks;
- Plots and maps summarizing the monitoring data; and
- Electronic data files for the City's records.