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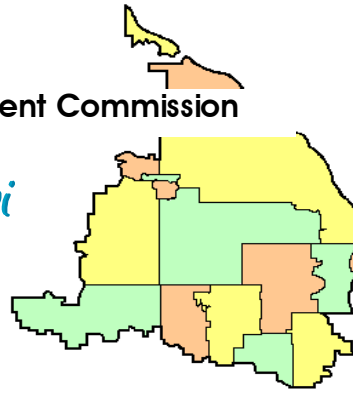
A meeting of the joint Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions is scheduled for 8:30 a.m., Thursday, October 26, 2017, at Crystal City Hall, 4141 Douglas Drive North, Crystal, MN.

A G E N D A

Meeting docs (*) are posted on the website at
<http://www.shinglecreek.org/tac-meetings.html>

1. Approve agenda.*
2. Approve Minutes of August 24, 2017 meeting.*
3. Update - Shingle Creek and West Mississippi grants for floodplain modeling and mapping – Pat Lynch and Rita Weaver, DNR.
4. Other business.
5. Next meeting _____

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MINUTES
August 24, 2017

A meeting of the Technical Advisory Committee (TAC) of the Shingle Creek and West Mississippi Watershed Management Commissions was called to order by Chairman Richard McCoy at 8:30 a.m., Thursday, August 24, 2017, at Crystal City Hall, 4141 Douglas Drive North, Crystal, MN.

Present were: Andrew Hogg, Brooklyn Center; Todd Tuominen, Champlin; Mark Ray, Crystal; Ben Scharenbroich, Plymouth; Richard McCoy and Marta Roser, Robbinsdale; Ed Matthiesen and Diane Spector, Wenck Associates, Inc.; and Judie Anderson, JASS.

Not represented: Brooklyn Park, Maple Grove, Minneapolis, New Hope and Osseo.

- I. Motion by Ray, second by Scharenbroich to approve the **agenda**. * *Motion carried unanimously.*
- II. Motion by Ray, second by Hogg to approve the **minutes of the April-27 June 22, 2017 meeting**. * *Motion carried unanimously.*
- III. **Updates.**

A. Fish Survey Results. As part of the routine, in-depth lake monitoring completed in advance of conducting TMDL Five Year Reviews, Wenck is performing fish surveys in addition to aquatic vegetation surveys and water quality sampling. This year fish surveys were completed on Lake Magda in Brooklyn Park and Meadow Lake in New Hope. Results of those surveys were presented to the members.

A summary of the results showed that Meadow Lake is dominated by fathead minnows which consume zooplankton and detritus, resuspend and relocate nutrients in the water column, are very tolerant of low Dissolved Oxygen, and can survive winter kills. All in all, Meadow Lake does not have very good water quality and demonstrates poor transparency.

There are no historic fish survey data for Lake Magda. Magda is populated by black bullhead that feed on organisms in the sediment, black crappies that consume zooplankton and invertebrates, and smallmouth buffalo that feed on detritus and organisms in the sediment. All of these fish resuspend and relocate nutrients in the water column. Magda may be improving a little, perhaps because of weather conditions. It has also been reported that someone is stocking the lake.

B. Becker Park Infiltration Project. This project is a 43,000 SF infiltration gallery beneath a ballfield at Becker Park in Crystal. The gallery will infiltrate 0.5 inches of runoff from a 147 acre, 51% impervious watershed that includes untreated mixed land uses. The proposed project will reduce TP annual load to Upper Twin Lake by 118 pounds and TSS by 38,400 pounds. It has localized flood control benefits as well. The trunk storm sewer on Bass Lake Road is undersized and frequently floods. The project will reduce the peak discharge rate into the trunk sewer from the current 110 cfs to 90 cfs for a 2-year storm event.

To date the Commission/City of Crystal have amassed almost \$1.2M in grant funds to help offset the cost of this \$2.5M project.

C. Biochar Project. The three bio-char sites (Champlin City Hall, North Lions Park, and Humboldt Avenue) are in the second year of monitoring. The 45th Avenue Pond was not constructed. In-pond and outlet monitoring is being performed. Staff is seeking permission from MPCA/EPA to perform bench monitoring, including cores, to determine removal efficiency – how filters change over time and what improves efficiency. Wenck is proposing to reallocate \$20,800 from the lab analysis budget by significantly reducing sampling for Dissolved Organic Carbon, as well as providing an additional \$28,878 of cash match from excess levy funds.

Staff discussed some of the issues regarding this project, namely difficulty in obtaining biochar in quantity; basins are difficult to monitor; monitoring ports are hard to modify; retrofit ponds require modifying outlet structures, thus increasing cost; and sediment collects on the filter bed.

D. Twin Lake Carp Project. Carp migration tracking and biomass estimating continue.

[Tuominen arrived 8:50 a.m.]

IV. Other Business.

A. When project reviews located in the Maple Grove Gravel Mining Area come before the Commission – do they have an Industrial MS4 permit? Should the Commissions' rules be revised to recognize this scenario?

B. The DNR has money to update the **Flood Maps**. What is the next step? Who should do the updating?

C. The **next meeting** is scheduled for September 28 or October 26, 2017, at 8:30 a.m. at Crystal City Hall. [The September 28 meeting was cancelled.]

D. The meeting was adjourned at 10:04 a.m.

Respectfully submitted,



Judie A. Anderson, Recording Secretary

FEMA Modeling Updates for the Twin Cities HUC8 Watershed

Scoping Document

This document is intended to help watershed organizations prepare a scope and cost estimate for updating the FEMA hydrologic and hydraulic models and creating the supporting GIS files and work maps for reaches in their HUC8. Questions or clarifications on this scoping documents should be sent to Suzanne Jiwani (suzanni.jiwani@state.mn.us, 651-259-5681) or Rita Weaver (rita.weaver@state.mn.us, 651-259-5681).

Project Background

FEMA has awarded the MnDNR a grant to update the Special Flood Hazard Areas (SFHAs) in the Twin Cities HUC8 watershed. The scope of this grant depends on individual river reaches, but in most cases it includes:

- Updated hydrology, either through modeling or use of statistical methods.
- Updated river hydraulics and/or volume analyses
- Creating the floodway and floodplain shapefiles and cross-section shapefiles
- Creating depth grids
- Development of Work Maps
- A project narrative that describes the above activities

Pass-through grants can be provided so that watershed organizations can complete some or all of these tasks. FEMA would like to leverage existing data wherever possible so watershed organizations within the Twin Cities HUC8 are being approached to see if they have any data that can support this effort. Since leveraged data will reduce overall project cost, watershed organizations that can provide data will be offered remaining funds allotted for that watershed. These funds can be used for flood risk reduction or communication activities, however activities must be pre-approved by FEMA and the MnDNR.

Scope of Services

Watershed organizations may complete any or all of the following tasks. See the attached HUC10 specific figure that shows which reaches should be studied using approximate or detailed methods.

Work Task 1: Hydrologic Analysis

Calculate peak flood discharges in approximate areas for 10%, 4%, 2%, 1%, and 0.2% annual chance events using regression equations, gage data, or hydrologic models. Calculate peak flood discharges in detailed areas for 10%, 4%, 2%, 1%, and 0.2% annual chance events using hydrologic models. Acceptable hydrologic models include HEC-HMS, XP-SWMM, and EPA-SWMM. Use of other models must get prior approval from the MnDNR.

Models and peak flow rates shall be calibrated and/or validated if reliable measured data is available. Models must go through internal QAQC and documentation of QAQC must be provided. A project narrative describing all inputs and their sources, modeling methodology, and results of the calibration/validation must be provided. Models and the hydrology narrative must be submitted to, and approved by, the Interagency Hydrology Review Committee. Comments from the IAHRC must be resolved before final submittal.

Work Task 2: Hydraulic Analysis

Hydraulic models must be created for all approximate and detailed reaches for the 10%, 4%, 2%, 1%, and 0.2% annual chance events, based on flood discharge rates computed under Work Task 1. Acceptable hydraulic models include HEC-RAS version 5.0.3, XP-SWMM, and EPA-SWMM. Use of other models must get prior approval from the MnDNR. Models must go through internal QAQC and documentation of QAQC must be provided.

For detailed study reaches, survey of the bridge/culvert crossings and stream cross-sections below the state LiDAR water surface elevation must be completed. Survey from a prior FEMA model or other study is acceptable, but spot surveys must be completed to show that the channel geometry below the water surface elevation has not changed significantly. As-builts for bridge/culvert crossings may be used in place of a current survey. A cost estimate for full survey is not required at this time, grant amendments are possible if it is determined that a full survey is needed. Cost estimate should be provided for the spot survey however.

Regulatory floodways must be determined and modeled for all detailed study areas.

MnDNR will provide: State LiDAR data in the form of 1 meter DEM and 2-foot contours if needed.

Work Task 3: Developing Floodplain, Floodway, and Cross-Section shapefiles

The 1-percent-chance and 0.2-percent-chance floodplains and the floodway will be delineated for the detailed study areas. The 1-percent-chance floodplain will be delineated for the approximate areas. Shapefiles must be provided in the format supplied by the MnDNR. A cross-section shapefile must also be provided in the format supplied by the MnDNR. This cross-section shapefile should include all cross-sections that will be shown on the DFIRM maps once they are updated.

Shapefiles must go through internal QAQC and documentation of QAQC must be provided.

MnDNR will provide: a blank shapefile for the Special Flood Hazard Areas and the cross-sections that will show the format required for submittal. Step-by-step guidance that the MnDNR uses for cleaning up the floodplain shapefile (removing holes, smoothing edges, etc.) will also be provided. This process can be used by watershed organizations or they can use their own process for shapefile cleanup as long as it meets FEMA's requirements.

Work Task 4: Developing Depth Grids

Depth grids must be developed for all return periods in detailed study areas and for the 1-percent-chance event in approximate study areas. Grids must go through internal QAQC and documentation of QAQC must be provided.

MnDNR will provide: Step-by-step guidance that the MnDNR uses for formatting and cleaning up the depth grids. This process can be used or watershed organizations can use their own process as long as it meets FEMA's requirements.

Work Task 5: Development of Work Maps

The MnDNR will hold Flood Risk Review meetings throughout the Twin Cities HUC8 between October 2019 and February 2020. Work Maps must be developed that show the new Special Flood Hazard Areas, the cross-section locations and other pertinent information. These maps must be provided in electronic and hard copy format (five copies). Expected scale is 1 inch = 500 feet.

MnDNR will provide: an example work map to use as a guide for all work maps.

Work Task 6: Developing a Project Narrative

A project narrative must be provided that includes the methodology used to develop the hydrologic and hydraulic models. The narrative must also include results of hydrologic calibration/validation and all QAQC processes and results of QAQC of the four work tasks. The project narrative should also highlight areas where further evaluation or modeling may be required under future studies.

Required Deliverables

Final deliverables must include:

1. Hydrologic models that has been approved by the Interagency Hydrologic Review Committee submitted in electronic format.
2. Hydraulic models that meet FEMA's standards for approximate or detailed studies submitted in electronic format.
3. The 1-percent-chance floodplain, 0.2-percent-chance floodplain, and floodway boundaries for detailed areas and the 1-percent-chance floodplain and 0.2-percent-chance floodplain for approximate areas submitted as shapefiles in the example format provided by the MnDNR.
4. Cross-section shapefile submitted in the format provided by the MnDNR.
5. Final depth grids submitted as rasters for all return periods in detailed areas and the 1-percent-chance depth grid in approximate areas.
6. Work Maps in electronic and hard copy formats (five copies).
7. Project Narrative submitted as a Word Document.

To help standardize the documents across the Twin Cities HUC8, a folder structure and naming conventions for electronic documents will be provided to the watershed organizations.

Timeline

Work can begin as soon as pass-through grant paperwork with the state is completed. All deliverables must be submitted to the MnDNR April of 2020. Intermediate timelines are negotiable, but a suggested timeline is as follows. An updated timeline should be provided by the watershed organization along with the proposed scope/budget if it will deviate from this suggested timeline.

- Negotiate grant work: November/December 2017
- Submittal of Hydrology to the IAHR: March 2018
 - IAHR Comments provided within 60 days
- Submittal of Hydraulic models to MnDNR staff for comment: September 2018
 - MnDNR QAQC comments provided within 60 days
- Revised models provided to MnDNR: February 2019
 - Final QAQC comments provided within 60 days
- Draft floodplain delineations and depth grids provided to MnDNR: June 2019
 - QAQC comments provided within 30 days
- Draft Narratives provided to MnDNR: August 2019
- *Twin Cities HUC8 Flood Risk Review meetings will be held October 2019 – January 2020.*
- **Provide all final files to MnDNR staff: April 2020**

Reimbursement and Reporting

The total funds for each HUC10 watershed has been established between FEMA and the DNR. This cost is based on MnDNR staff developing new hydrologic and hydraulic models (using HEC-HMS and HEC-RAS), delineating all floodplains and cross-section shapefiles, and developing the depth grids. These cost estimates will not be provided to the watershed organizations. The amount of the grant will not exceed the FEMA negotiated costs for each watershed.

Any excess funds that are not used to complete the above scope can be passed through to the watershed organization to complete other flood risk reduction activities. FEMA does have limitations on how these funds can be used, so while the watershed organization can decide on what will be most helpful for their HUC10, the activities must be pre-approved by the MnDNR staff. A deliverable must be given back to the MnDNR to be uploaded to FEMA's database.

Grant paperwork will be written such that funds will be dispersed following receipt of outlined deliverables.

The MnDNR is required to report project status to FEMA monthly. Once work has started, the percent complete and approximate funds spent should be reported by the 27th of each month. This can be an estimated number – no additional documentation is required.