COON CREEK WATERSHED DISTRICT
Request for Board Action

MEETING DATE:        June 10, 2013
AGENDA NUMBER:       14
ITEM:                Use of Atlas 14 Volume 8 Precipitation Frequency Estimates

POLICY IMPACT:       Discussion
FISCAL IMPACT:       Budgeted

REQUEST
Adopt proposed guidelines

BACKGROUND
The National Oceanic and Atmospheric Administration (NOAA) published new precipitation frequency estimates for the Midwestern States in Atlas 14 Volume 8. This information supersedes Technical Paper (TP)-40 published in 1961 and NOAA Technical Memorandum NWS Hydro 35 published in 1977 that are the sources of precipitation frequency data and Intensity-Duration-Frequency (IDF) curves used in design and sizing of stormwater and water quality infrastructure.

At the March 11, 2013 meeting the Board was presented with four recommendations concerning Atlas 14:

1. The District should continue discussing implications of increasing the design rainfall amounts with the Technical Advisory Committee who in turn are the administrators of their municipal flood plain ordinance.

2. The District should add an advisory notice section to the permit review template that would:
   a. provide the Atlas 14 100-year elevation to applicants with a project along one of the creeks or within the flood plain and
   b. give the applicant the option to either:
      i. Calculate the Atlas 14 100-year precipitation peak water elevation with their model or
      ii. Have the District calculate it if they are constructing a pond or other water holding structure that the high water may affect a building.

3. The District should field verify the Atlas 14 XP-SWMM model.

4. The District should consider, after consulting with member cities, the DNR, FEMA and district residents making the Atlas 14 XP-SWMM model the regulatory flood plain model.
On May 24, the District was notified that the MnDOT had published guidelines for the use and phasing in of Atlas 14. Those guidelines are as follows:

1. Use Atlas 14 Precipitation Frequency Estimates when using rainfall-runoff models to compute hydrology for the design of hydraulic infrastructure. The data is obtained from NOAA’s Precipitation Frequency Data Server (PFDS) at http://hdsc.nws.noaa.gov/hdsc/pfds/ based on the project location.

2. For rainfall-runoff models that use the Natural Resources Conservation Service (NRCS) rainfall distributions, if feasible, use a rainfall distribution based on the Atlas 14 data. Use the NRCS Type II rainfall distribution for NRCS peak flow methodology or for other projects where developing a rainfall distribution is not feasible.

3. Atlas 14 precipitation data should be used immediately for trunk highway projects using rainfall-runoff models provided its application does not jeopardize letting dates of projects already in the design phase. Use the Atlas 14 precipitation data for the hydraulic design of all trunk highway projects let after June 30, 2014. Where use of Atlas 14 is not feasible, evaluate the impacts of using Atlas 14 and document the justification for using the criteria from the Drainage Manual (2000). Notify the State Hydraulics Engineer about projects designed with rainfall-runoff models let after June 30, 2014 that are not designed with Atlas 14 precipitation data.

CCWD staff support the MnDOT guidelines

ISSUES/CONCERNS

TAC Involvement: The MnDOT guidelines were reviewed and discussed with the TAC at their June 5 meeting. The TAC concluded that September 30 could be a usable date provided that plans that are at greater than 30% design completion or have practical difficulties because of design complexity or site conditions would either be exempt or could gain a full or partial waiver from using the Atlas 14 standards.

Advisory Notice: The District has been adding an advisory to all permit reviews since March. Of the 16 permits reviewed under the advisory, five projects have involved evaluating low floor or low entry point elevations using Atlas 14.

- The new NOAA Atlas 14 100-year storm event for this site will be 7.1 inches. For your records, model this storm to verify that low floor elevations are still within the City of Blaine’s tolerances (2 ft above 100-year).
OPTIONS

1. **Do Nothing**: Do not adopt any formal advisory or rule change. Continue to pursue the four recommendations from March, 2013

2. **Adopt MnDOT Guidelines**: Adopt some or all of the MnDOT guidelines.

3. **Adopt Modified MnDOT Guidelines**: Modify MnDOT guidelines to ‘fit’ with CCWD circumstances

RECOMMENDATION

Adopt the following guidelines:

1. Use Atlas 14 Precipitation Frequency Estimates when using rainfall-runoff models to compute hydrology for the design of hydraulic infrastructure. The data is obtained from NOAA’s Precipitation Frequency Data Server (PFDS) at http://hdsc.nws.noaa.gov/hdsc/pfds/ based on the project location.

2. For rainfall-runoff models that use the Natural Resources Conservation Service (NRCS) rainfall distributions, if feasible, use a rainfall distribution based on the Atlas 14 data. Use the NRCS Type II rainfall distribution for NRCS peak flow methodology or for other projects where developing a rainfall distribution is not feasible.

3. Atlas 14 precipitation data should be used immediately for all land disturbing projects using rainfall-runoff models provided its application does not jeopardize letting dates of projects already in the design phase. Use the Atlas 14 precipitation data for the hydraulic design of all projects submitted to the District after September 30, 2013. Unless the project was at 30% or greater design completion or received pre-application review by Coon Creek District staff and it is agreed that utilization of Atlas 14 standards would not be prudent.