**CORRESPONDENCE / MEMORANDUM** **State of Wisconsin**

DATE: September 10, 2012 FILE REF: 3200

TO: Dick Sachs - NER

FROM: Jim Schmidt – WY/3

SUBJECT: Updated Water Quality-Based Effluent Limitations for Temperature at the City of Oshkosh Wastewater Treatment Facility (WI-0025038)

This is in response to the permittee's request for an updated evaluation of the need for water quality-based effluent limitations for temperature chs. NR 102 and 106 of the Wisconsin Administrative Code. In my memo to you dated August 4, 2011, weekly average limits were recommended for the months of April, June and July. Those limits were subject to drop pending the submittal of daily maximum temperature data pursuant to s. NR 106.56(12). Based on data submitted by the permittee, thermal limits and monitoring are no longer needed in the reissued WPDES permit for Oshkosh.

The following table summarizes the limits calculated for each month of the year based on the design effluent flow of 20 MGD (31 cfs) and the 7Q10 low flow of 920 cfs in the Fox River. One-quarter of the river flow was used to calculate the limits. The representative effluent flows (highest daily maximum and highest 7-day rolling average) for each month were based on flows reported between the issuance date of the current WPDES permit (May 1, 2007 ) and May 31, 2011, with the exception of the months of June and July when some of the data reported in 2008 and 2010 was excluded. Those exclusions were made because the flows were not considered to be representative of normal discharge conditions due to extreme precipitation events that year, as mentioned in the August 4, 2011 evaluation.

**THERMAL LIMITS FOR CITY OF OSHKOSH BASED ON 5/1/2007 – 5/31/2011 FLOW DATA**

| | Water Quality Criteria | | | Representative Highest Effluent Flow Rate (Qe) | | **Calculated Effluent Limit** | |
|---|---|---|---|---|---|---|---|
| Month | Ta (default) | Sub-Lethal WQC | Acute WQC | 7-day Rolling Average (Qesl) | Daily Maximum Flow Rate (Qea) | **Weekly Average Effluent Limitation** | **Daily Maximum Effluent Limitation** |
| | (°F) | (°F) | (°F) | (mgd) | (mgd) | (°F) | (°F) |
| JAN | 33 | 49 | 76 | 19.575 | 24.160 | NA | **120** |
| FEB | 33 | 50 | 76 | 12.708 | 17.504 | NA | **120** |
| MAR | 36 | 52 | 76 | 26.007 | 40.356 | NA | **120** |
| APR | 46 | 55 | 79 | 34.767 | 55.474 | **93** | **120** |
| MAY | 60 | 65 | 82 | 17.922 | 20.888 | **106** | **120** |
| JUN | 71 | 75 | 85 | 25.730 | 39.306 | **98** | **120** |
| JUL | 75 | 80 | 86 | 35.231 | 55.801 | **101** | **115** |
| AUG | 74 | 79 | 86 | 14.987 | 18.896 | NA | **120** |
| SEP | 65 | 72 | 84 | 11.308 | 12.659 | NA | **120** |
| OCT | 52 | 61 | 80 | 14.292 | 18.410 | NA | **120** |
| NOV | 39 | 50 | 77 | 10.292 | 11.587 | NA | **120** |
| DEC | 33 | 49 | 76 | 12.697 | 17.399 | NA | **120** |

Oshkosh began sampling and reporting maximum daily effluent temperature on July 4, 2011; daily values are available from that date through June 30, 2012. Effluent flows continued to be reported by Oshkosh over that period as well; that information was used to determine if any of the flow rates in the above table need to be revised.

As with the data from 2008 and 2010, an unusually high flow of 79.117 MGD was reported on May 3, 2012 which is not felt to be representative of normal discharge conditions. That result was excluded from the database. The following table replaces the flow rates from the previous table with the appropriate flows from the period of June 1, 2011 – June 30,2012 when those more recent flows are greater than those in represented above. The monthly thermal limits were then re-calculated using the new flow data where appropriate; those values are reflected in the following table. Based on new flow data, weekly average and daily maximum limits needed to be re-calculated for the months of May, September and November, while in December only the weekly average limit needed to be re-calculated.

**THERMAL LIMITS FOR CITY OF OSHKOSH BASED ON 5/1/2007 – 6/30/2012 FLOW DATA**

| | Water Quality Criteria | | | Representative Highest Effluent Flow Rate (Qe) | | **Calculated Effluent Limit** | |
|---|---|---|---|---|---|---|---|
| Month | Ta (default) | Sub-Lethal WQC | Acute WQC | 7-day Rolling Average (Qesl) | Daily Maximum Flow Rate (Qea) | **Weekly Average Effluent Limitation** | **Daily Maximum Effluent Limitation** |
| | (°F) | (°F) | (°F) | (mgd) | (mgd) | (°F) | (°F) |
| JAN | 33 | 49 | 76 | 19.575 | 24.160 | **NA** | **120** |
| FEB | 33 | 50 | 76 | 12.708 | 17.504 | **NA** | **120** |
| MAR | 36 | 52 | 76 | 26.007 | 40.356 | **NA** | **120** |
| APR | 46 | 55 | 79 | 34.767 | 55.474 | **93** | **120** |
| MAY | 60 | 65 | 82 | 28.788 | 38.726 | **91** | **120** |
| JUN | 71 | 75 | 85 | 25.730 | 39.306 | **98** | **120** |
| JUL | 75 | 80 | 86 | 35.231 | 55.801 | **101** | **115** |
| AUG | 74 | 79 | 86 | 14.987 | 18.896 | **NA** | **120** |
| SEP | 65 | 72 | 84 | 11.331 | 14.001 | **NA** | **120** |
| OCT | 52 | 61 | 80 | 14.292 | 18.410 | **NA** | **120** |
| NOV | 39 | 50 | 77 | 19.102 | 33.366 | **NA** | **120** |
| DEC | 33 | 49 | 76 | 13.969 | 17.399 | **NA** | **120** |

Where "NA" is listed above, the calculated weekly average limit was greater than the daily maximum limit of 120 degrees.

Since Oshkosh now has effluent temperature data for all twelve months of the year, those results can be compared directly to the calculated limits to determine if permit limits are needed (rather than limits subject to drop due to unavailable data, as was the case in the August 4, 2011 memo). The following table lists the highest reported daily temperatures over the period of July 4, 2011 – June 30, 2012 as well as the highest 7-day average temperature calculated over that period using the language in s. NR 106.54.

| Month | Representative Highest Weekly Average Temp. (°F) | Representative Highest Daily Maximum Temp. (°F) | Weekly Average Effluent Limit (°F) | Daily Maximum Effluent Limit (°F) |
|---|---|---|---|---|
| JAN | 52 | 53 | **NA (> 120)** | **120** |
| FEB | 51 | 52 | **NA (> 120)** | **120** |
| MAR | 55 | 56 | **NA (> 120)** | **120** |
| APR | 56 | 57 | **93** | **120** |
| MAY | 62 | 64 | **91** | **120** |
| JUN | 69 | 70 | **98** | **120** |
| JUL | 69 | 70 | **101** | **115** |
| AUG | 71 | 73 | **NA (> 120)** | **120** |
| SEP | 70 | 72 | **NA (> 120)** | **120** |
| OCT | 67 | 68 | **NA (> 120)** | **120** |
| NOV | 60 | 62 | **NA (> 120)** | **120** |
| DEC | 55 | 57 | **NA (> 120)** | **120** |

Since the effluent temperatures are below the limits for each month of the year, it is no longer necessary to include thermal limits in the WPDES permit for Oshkosh. In fact, since the reported temperatures are far below the limits for each month, thermal monitoring is no longer necessary either.

If you have any questions about this updated evaluation, please feel free to contact me.

Cc: Mark Stanek – NER / Oshkosh