

North Cannon River Watershed Management Organization

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 And the Cities of: Miesville - New Trier - Randolph

2013 Mid-Season Water Monitoring Update

Monitoring Activities

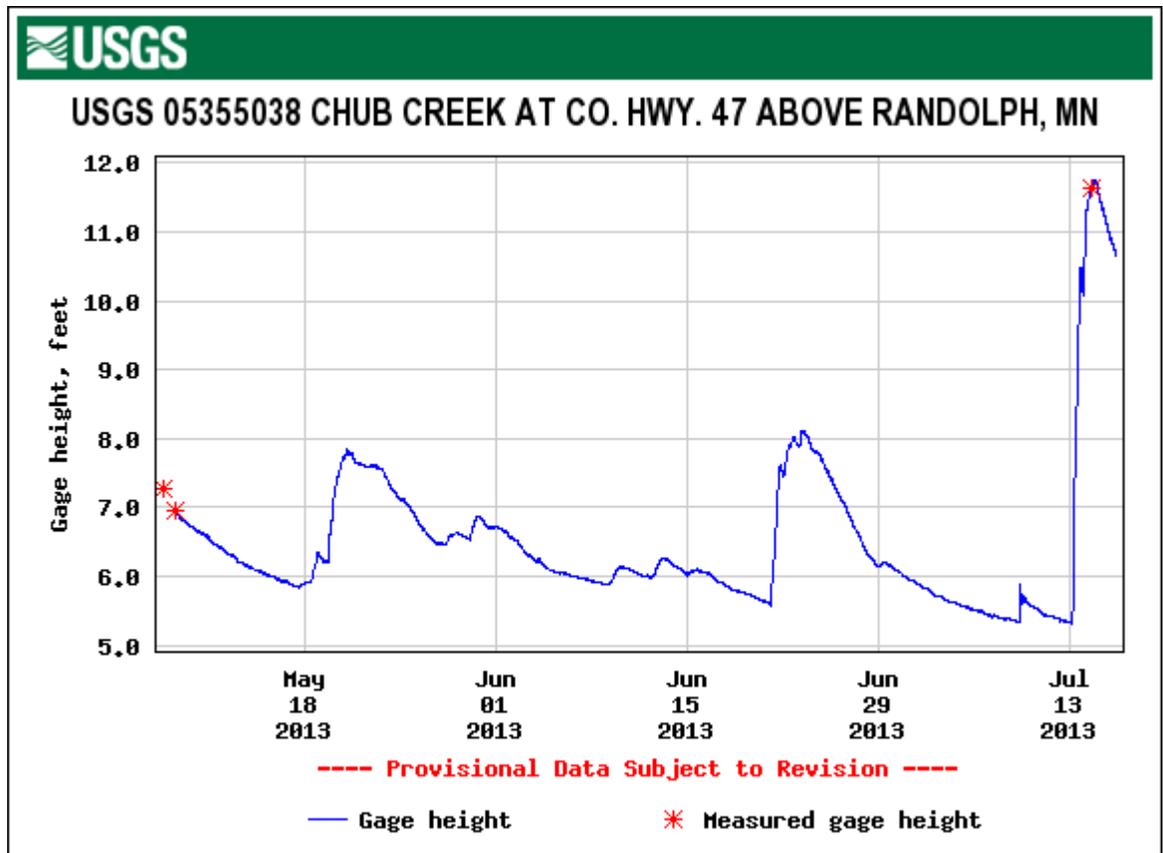
Dakota County Soil and Water Conservation District (SWCD) staff continued to monitor Chub Creek at the permanent monitoring station on Dixie Avenue on a monthly basis. Equipment was installed in April to continuously measure level, every 15 minutes, during the monitoring season (through October). Flow measurements were conducted on three occasions and four water samples have been collected, to date.

Chub Creek Flow

Stream level (stage) is monitored and used to calculate stream flow (cubic feet per second or cfs) based on a stream-specific rating curve. This rating curve is developed by manually measuring flow and stage under high, medium, and low flow conditions.

During the June 2012 flood, water moved through the stream channel very quickly with a lot of erosive power, effectively changing the stream channel. This means that the rating curve has changed and more measurements will be required to establish a new one.

In May, the United States Geological Survey (USGS) installed a permanent stream gaging station on Chub Creek to monitor stream level (waterdata.usgs.gov).



Sampling Dates and Interpretation Considerations

Sample data shown here were collected on 4/09 and 5/16. In April, Chub Creek had a lot of snowmelt water and was at medium flow conditions. In May, Chub Creek was experiencing low flow conditions. Season and flow conditions play a role in stream dynamics and should always be considered when interpreting results. Samples were also collected on 6/17 and 7/15; however, data are still being processed and are not yet available.

Nutrients

A phosphorus concentration of 0.225 mg/L (above the proposed standard) was measured in the April sample. Stream samples collected during snowmelt typically have higher concentrations of pollutants. In May's sample, the phosphorus concentration was 0.072 mg/L (below the proposed standard).



Springtime nitrate values were within the proposed standard to protect aquatic life and well within the approved drinking water standard, with the highest measured value at 4.25 mg/L. Nitrate tends to decrease as flows increase. Low values measured here may be due to the wet spring and delayed fertilizer application.



Short-term trend (2013 Mid-season)



Long-term trend (entire NCRWMO record)



Within desired range



Occasionally outside of desired range



Repeatedly outside of desired range



Desired ranges refer to approved or proposed state standards, or Minnesota Pollution Control Agency derived ecoregion means where standards have not been established.

Total Suspended Solids and Turbidity

Samples of suspended solids and turbidity were low for the spring season with total suspended solids ranging from 8 to 18 mg/L (within the proposed standard) and turbidity ranging from 5 to 11 NTU (within the approved standard). The data from these two samples in April and May coincide with low and medium flow conditions.



E. coli Bacteria

The two bacteria samples that have been analyzed to date have values of 51 and 64 organisms/100mL. This is well within the approved state standard of 126 organisms/100mL. Additionally, these values are much lower than in 2012 where all samples had exceeded the standard, even during low flow conditions. This may be explained by the late spring where unseasonably cold and wet conditions made it difficult or impossible to apply manure to farm fields.



Dissolved Oxygen, Transparency, Conductivity, pH

Dissolved oxygen (10.04 - 11.23 mg/L). These values make sense for April and May - cool water can hold more dissolved oxygen than warm water. There is also little oxygen demand from microbes during this time of year.

Transparency (53 - 98 cm). Water was mostly clear during snowmelt, then very clear during low flow conditions in May.

Conductivity (409 - 594 umho/cm).

These values are typical of warm water streams.

pH (7.93 - 8.57 S.U.). These values are typical of Minnesota streams.

