Summary of Sand Hill River Watershed
Stressor Identification Report

Why is it important?

Once dominated by tall grass prairie, rolling hills, and low lying wetlands, the landscape of the Sand Hill River Watershed has changed over the past century. Since early settlement, the landscape in the watershed has been managed to increase agricultural production. Due to the region's poorly drained soils, many of the rivers and streams were altered to create extensive ditch networks to increase drainage. The alterations included ditching, stream channelization, tiling, the creation of dams, and altering or removing many of the watershed's wetlands.

Habitat conditions vary greatly throughout the watershed with better habitat found along portions of the Upper Sand Hill River where the river retains its natural channel. In contrast, with the exception of Kittleson Creek, many of the Sand Hill River's tributary streams have generally poor habitat. Many of the rivers in the watershed are considered "flashy," with high peak flows following rain events and extremely low flows during dry periods.

To control drainage and reduce flooding, dams and other water control structures were created. While these can control flooding, they can also prevent fish passage. They may also alter stream flow, water temperature, and sediment deposits - all of which can harm fish and macroinvertebrate communities. These control structures have now been altered or removed to improve these issues.

Key issues

Monitoring/assessment efforts between 2011-2014 identified impairments to fish and aquatic insect communities in the watershed. A Stressor Identification Report identified six likely causes contributing to these impairments:

- Loss of connectivity (fish passage impaired by ditches, dams, etc.)
- Altered flow ("flashy" conditions, high flows after spring runoff and rain events, very low or no flow at other times)
- Lack of instream habitat (lack of cover, high sediment in spawning areas, etc.)
- Excessive suspended sediments (can harm gills, fish may avoid certain areas, loss of visibility, can contribute to low oxygen conditions)
- Low dissolved oxygen (worse in late summer due to low flows, higher temps)
- Pesticides (limited sampling indicated potential impacts from pesticides).

Highlights of report

Biological communities vary greatly in the watershed. Alterations made to increase drainage for agriculture and stream channelization appear to be affecting habitats that should support healthy biological communities. Also, barriers to fish migrations contributed to aquatic life impairments in the Upper Sand Hill River Subwatershed. Fish passages have recently been restored to allow access to the upper reaches of the Sand Hill River by migrating fish species.

In order to bring total suspended solids and bacteria values back into compliance with state standards, considerable measures should be taken on a watershed-wide scale to identify critical areas contributing to the impairments.

The biologically impaired reaches of the watershed have the potential to support healthier fish and aquatic insect communities. The following recommended actions will help reduce the stressors that have been identified that are limiting these communities. Whenever possible, actions should be implemented progressing from upstream to downstream.

- Modify grade control structures to restore fish passages along the Sand Hill River (Much of this work has already been completed)
- Prevent or mitigate activities that will further alter the hydrology of the watershed
- Consider opportunities and options to reduce peak flows and increase base flows in streams throughout the watershed
- Re-establish natural functioning stream channels wherever possible using natural channel design principles (re-establishing meanders, etc.)
- Increase the quantity and quality of instream habitat throughout the watershed
- Establish and/or protect vegetated buffers along all waterways, including ditches, using native vegetation whenever possible
- Perform additional monitoring to rule out pesticides as a possible stressor
- Implement farming practices that reduce soil erosion and sedimentation.

About this report

Watershed Approach

Phase 1: Monitor and assess health of waters

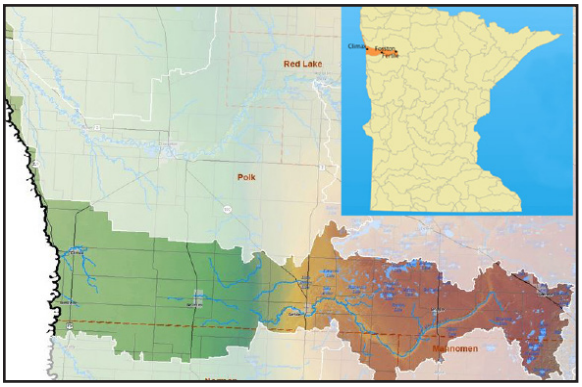
Phase 2: Identify conditions stressing biological life

Phase 3: Determine maximum pollutant loads

Phase 4: Determine Watershed Restoration and Protection Strategies

Start process over every 10 years

Minnesota has adopted a watershed approach to address the state's 80 major watersheds. This approach incorporates water quality assessment, watershed analysis, civic engagement, planning, implementation, and measuring results into a 10-year cycle that addresses both restoration and protection, something we call the Watershed Restoration and Protection Strategy or WRAPS. The 10-year cycle for the Sand Hill Watershed began in 2011 with intensive monitoring and assessment.



Waters not meeting state standards are still listed as impaired and Total Maximum Daily Load studies are performed as they have been in the past. But in addition, WRAPS includes a more cost-effective and comprehensive assessment of the watershed's overall health. The second step in the WRAPS process, stressor identification, finds and evaluates factors, natural and human, which are likely responsible for the impaired condition of fish and macroinvertebrate (aquatic insect) communities. This is phase two of a four phase process outlined at left.

Full report

To view the full report visit the Sand Hill River Watershed page on our website. Search online for "MPCA Sand Hill Watershed."

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