

MISSISSIPPI MAKEOVER

A Plan for Restoration, Just Around the Bend

Citizen Advisory Group - Notes

Background information on some questions raised at CAG meeting

At the CAG meeting on December 9, 2008, participants asked a variety of questions regarding the historical and current conditions in Spring Lake, the Lower Vermillion River and the Mississippi River. Most of these questions will be answered by technical experts at the next CAG meeting. In the meantime, here is some information on a few of your questions.

Cannon River Conditions

Question: When discussing the possibility of a canoe trail on the Lower Vermillion River, CAG members questioned why the Cannon River near Welch is used for tubing and canoeing. What are the differences in water quality and aesthetics between the Cannon River and the Lower Vermillion River that draw people to tube and canoe the Cannon?

Answer: There is a significant difference in the transparency of the Lower Vermillion River and the Cannon River near Welch. During the months May – September, Cannon River transparency averages 49 cm (using 2006 – 2008 available data), while the Lower Vermillion River averages 27.5 cm during that same time period. (Vermillion data is average of 3 different monitoring sites and only includes data from 2006 and 2008.)

Also, tubing may not be possible in the Vermillion River due to slow flowing water. The water flows much quicker in the Cannon. Additionally, anecdotal evidence suggests that river bed substrates differ greatly between the rivers: sand and cobble make up much of the Cannon River bed, while mud and muck are on the bottom of the Vermillion. The existence of a commercial outfit with shuttle service is likely another reason for higher canoe/tube traffic on the Cannon River.

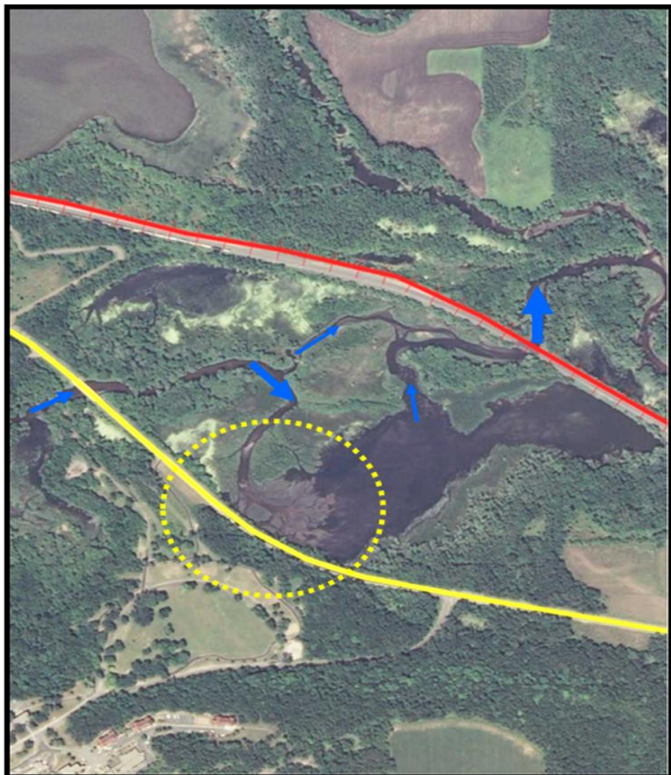


Bullfrog Pond (on Lower Vermillion River)





Question: Why is Bullfrog Pond filling in?

For an aerial photo history of this area and further details, please see the power point slides and notes on Bullfrog Pond History found under Citizen Advisory Group on our website at www.dakotaswcd.org/wshd_missmak.html.

Answer: The Lower Vermillion River, just downstream of Ravenna Trail, is flowing through Bullfrog Pond because the channels to the north have filled with sediment raising their elevation and hence diverting water and sediment through the pond. This is very typical of delta areas where there is still some room for channels to move around. Being constrained by the highway and the railroad, the River must work within the area of the Pond. Additionally, it appears that water levels are higher and there is a greater amount of open water (as opposed to vegetated wetland) than before the lock and dam was constructed.



Lower Vermillion River and Bullfrog Pond, 2008

-  Ravenna Trail
-  Area of Bullfrog Pond
-  Railroad tracks
-  Vermillion River flow

Right now, this delta attracts large numbers of waterfowl and shorebirds and illustrates some of the dynamics of a river system. Due to the highway, railroad, dikes, lock and dam, and other infrastructure constraints, it is unlikely that Mississippi or Vermillion Rivers flows will ever scour a new pond in this area. In the future, Bull Frog Pond will continue to fill with sediment.

What we are observing is a combination of pre-settlement riverine conditions modified by the construction of the railroad, highway, dikes, lock and dam system, etc. along with landuse changes in the upstream watershed.

The Making of Spring Lake

Question: What are the historical conditions of Spring Lake?

For an aerial photo history of this area and further details, please see the power point slides and notes on Spring Lake History found under Citizen Advisory Group on our website at www.dakotaswcd.org/wshd_missmak.html.

Answer: The area that is now Spring Lake has changed significantly over the last 150 years. The Spring Lake area was once a riverine marshland and floodplain forest lying just south of the Mississippi River's main channel. There is much archeological history in this area, including evidence of human inhabitants dating back to the Archaic Stage (ca. 6000 – 1000 B.C.). [For more information on the cultural history of this area, see the Spring Lake Park Reserve Master Plan, 2003 on Dakota County's website: www.co.dakota.mn.us/LeisureRecreation/Reports/default.htm]

In the 1850's Spring Lake Mill was built, raising the water level in the eastern half of the lake and allowing habitats for wild rice and even more fish and other animals. But even more change was on the way; in 1927 the Army Corps of Engineers began construction of Lock and Dam No. 2 in Hastings. The land that would be submerged under pooled waters was cleared and the Spring Lake Mill was demolished. The dam's construction caused large areas of the Spring Lake area floodplain to be submerged, displacing existing landuses and highly altering the landscape.



When Lock and Dam No. 2 first closed, historian Leslie Guelcher noted: “First, on the islands and shore land, the barren scarred acres of tree stumps were evident; then as the huge gates of the dam were shut for the first time, the slow steady rise of the river began. It took several days for the river to attain its new level, and in the process it swallowed up Boulanger Island and Freeborn Island except for the few ridges of land and trees that remained. Spring Lake is now a generous bend in the river....”

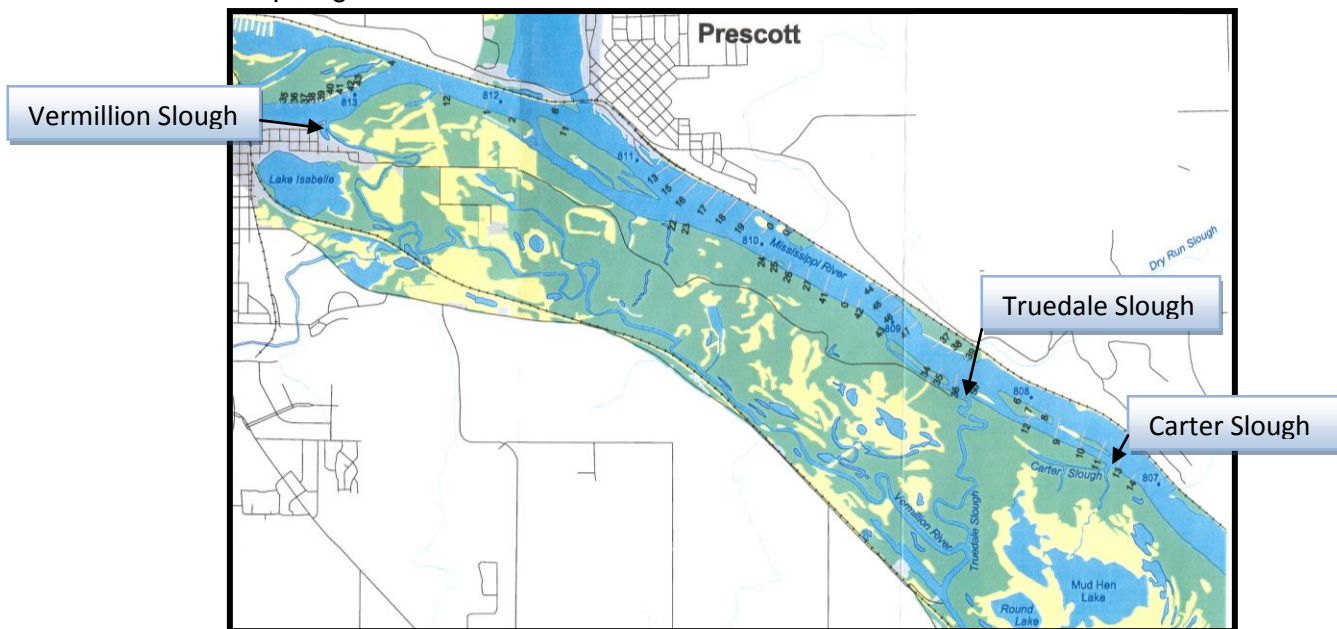
Today what we know as Spring Lake is surrounded mostly by Dakota County's Spring Lake Park Reserve – 1,200 acres of ecological, cultural, and scenic assets that make it one of the most unique parks within the regional park system.

Lower Vermillion River Sloughs and Dikes

Question: What is the history of the Vermillion River sloughs? How and when are the Vermillion and Mississippi Rivers connected hydrologically?

For photos and diagrams of the dikes, please see the power point slides and notes on Vermillion River Sloughs found under Citizen Advisory Group on our website at www.dakotaswcd.org/wshd_missmak.html.

Answer: There are three major sloughs or channels between the Lower Vermillion River (LVR) and the Mississippi River that hydrologically connect these waterbodies. The dikes or control structures at the Vermillion, Trudale and Carter sloughs were all probably originally built in the late 1930s before Pool 3 was filled for the first time. They were designed to keep the elevated water levels in Pool 3 from spilling into the LVR.



The Vermillion Slough, southeast of Hastings, is the first major connection between the Mississippi River and the Lower Vermillion River. The meandering channel is about 1.8 miles long. It is controlled by a rock-fill dike near its entrance on the Mississippi River, which is maintained by the U.S. Army Corps of Engineers. Water flows through the slough in either direction depending on the rivers' stages.

The Truedale Slough is the second major connecting channel between the Rivers. A rock-fill closure dike and 48-inch culvert control the inflow from Pool 3 to Truedale Slough. The U.S. Army Corps of Engineers rebuilt the Truedale Slough dike in 1986 as part of the ongoing project to maintain the integrity of Pool 3.

The Carter Slough connects to Mud Hen Lake and then Round Lake before entering the Vermillion. Flow through the slough is controlled by the dike at the entrance to the Mississippi River. The Carter Slough dike was constructed by the U.S. Army Corps of Engineers in 1936 to prevent the Pool 3 from draining Mud Hen Lake. The dike at the entrance was replaced in 2002 by the Army Corps.

Flows from the Mississippi into the LVR are largely controlled by the stage in Pool 3. When this stage overtops the dikes, Mississippi River water enters the Vermillion, except when high flows in the Upper Vermillion produce an even higher stage in the Lower Vermillion River. According to the Lower Vermillion River Draft TMDL document, the Vermillion Slough contributed 14.6% of the total flow in the LVR, while the Truedale Slough and Carter Slough contributed 31.0% and 21.0%, respectively.