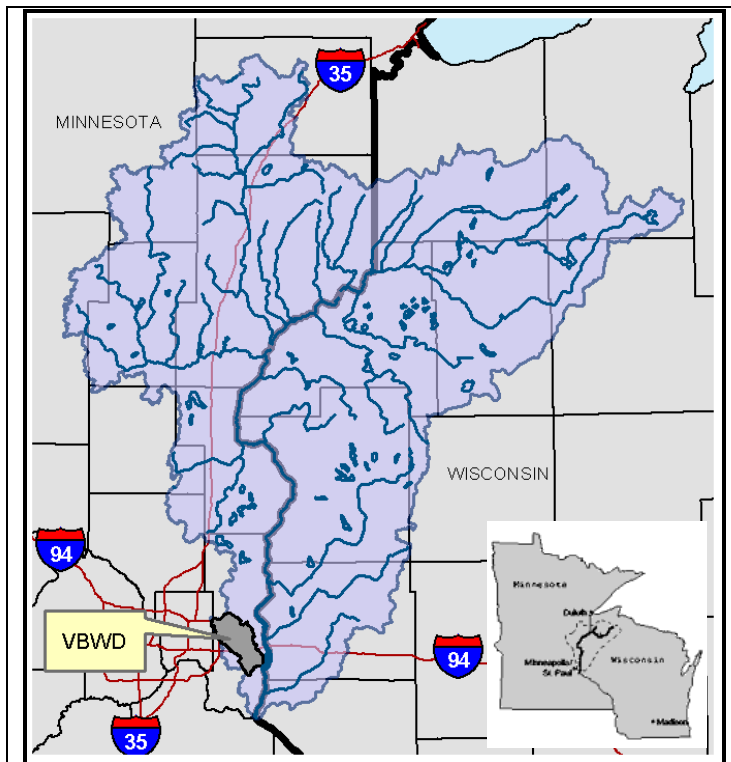


5.36	St. Croix River Watershed Management Plan .....	5.36-1
5.36.1	General Information .....	5.36-1
5.36.2	Water Quality Management Plan .....	5.36-1
5.36.2.1	Water Quality Issues and History .....	5.36-2
5.36.2.2	Water Chemistry Data .....	5.36-2
5.36.2.3	Biological Data .....	5.36-3
5.36.3	Water Quantity Management Plan .....	5.36-4
5.36.4	Groundwater Issues .....	5.36-4
5.36.5	References.....	5.36-4

## 5.36 St. Croix River Watershed Management Plan

### 5.36.1 General Information



St. Croix River Local Watershed Information	
Watershed Area (square miles)	7,760
VBWD Tributary Area (square miles)	43 (non-landlocked area)
Downstream Watershed	Mississippi River
100-Year Flood Level at Valley Creek	692
VBWD Water Quality Priority Category	High

The Valley Branch Watershed District (VBWD) lies within the St. Croix River watershed. The St. Croix River watershed is 7,760 square miles in size. It includes parts of nine Minnesota counties and nine Wisconsin counties. Approximately 46% of the St. Croix River watershed is within Minnesota, and the land of the VBWD makes up 0.9% of the St. Croix River watershed.

There are three discrete points where the VBWD discharges into the St. Croix River. One discharge point is the outlet of the Minnesota Department of Transportation's (MnDOT) Interstate 94 stormsewer system in Lakeland, which carries flows from the VBWD's Project 1007 system. A second discharge point is the outlet of Valley Creek in Afton. The third discharge point is the outlet of Kelle's Creek in Afton. Runoff from the Swede Hill Creek watershed is also directly tributary to the St. Croix River (see

Section 5.38)

The 2006 National Land Cover Dataset (NLCD) identified two-thirds of the basin area as forest and wetland cover, and approximately one quarter as agricultural cover (crop and pasture). Urban lands comprise less than 5 percent of the basin.

The St. Croix National Scenic Riverway, which includes the Namekagon River (Wisconsin) and the Upper St. Croix River, was established as a unit of the National Park System in 1968. The Lower St. Croix National Scenic Riverway was added in 1972. The VBWD discharges to the Lower St. Croix National Scenic Riverway. Lake St. Croix, formed at the downstream end of the basin, is a focal point for recreation and development.

### 5.36.2 Water Quality Management Plan

The VBWD has classified the St. Croix River as a High Priority waterbody according to the VBWD's waterbody classification system (see Section 4.1 – Water Quality) due to the St. Croix River's

classification as an Outstanding Resource Value Water (ORVW) by the Minnesota Department of Natural Resources (MDNR) and its inclusion on the Minnesota Pollution Control Agency's (MPCA) 303(d) impaired waters list. Because so many other agencies have jurisdiction over the St. Croix, the VBWD has no specific water quality management plan for the St. Croix River. The past and future management activities of the VBWD, as discussed in other sections of this plan, have benefited and will continue to benefit the St. Croix River.

### **5.36.2.1 Water Quality Issues and History**

In 1994, the St. Croix Basin Water Resources Planning Team, comprised of representatives from state, federal, and local units of government and other organizations, developed water resource goals for the river. The team later determined nutrient and sediment loading to be the top issue affecting the water quality in the St. Croix River. The St. Croix Basin Water Resources Planning Team has recommended a 20-percent reduction in total phosphorus loading within the St. Croix River Basin. According to this team, a 20-percent reduction in total phosphorus loading to the river will approximate the ecological conditions of Lake St. Croix prior to 1950, before changes in diatom communities and productivity occurred.

For more information, see the following websites:

[www.pca.state.mn.us/water/basins/stcroix/index.html](http://www.pca.state.mn.us/water/basins/stcroix/index.html)

[www.dnr.wi.gov/org/gmu/stcroix/index.htm](http://www.dnr.wi.gov/org/gmu/stcroix/index.htm)

The reach of the St. Croix River immediately adjacent to the VBWD is included in the Minnesota Pollution Control Agency's (MPCA) 303(d) Impaired Waters List due to mercury and polychlorinated biphenyls (PCB) in fish tissue. Significant impaired waters in the St. Croix River watershed located farther downstream of the VBWD include Lake St. Croix (impaired for nutrients and biological indicators) and Lake Pepin (impaired for nutrients and biological indicators).

The MPCA and Wisconsin Department of Natural Resources (WDNR) developed an interstate Total Maximum Daily Load (TMDL) plan to address the eutrophication impairment in Lake St. Croix (MPCA and WDNR 2012), including ongoing components of civic engagement, implementation, and load monitoring.

### **5.36.2.2 Water Chemistry Data**

Several federal, state, and local entities have collected water quality data for the St. Croix River. The St. Croix River Association (SCRA) sponsors activities and initiatives including monitoring and research within the St. Croix River and its watershed. Overall health of the St. Croix River was evaluated in the *Lake St. Croix Nutrient Loading and Ecological Health Assessment* report commissioned by the SCRA and published in 2013 by the St. Croix River Watershed Station, US Geological Survey, and Metropolitan Council.

Much of the available water quality data is summarized in the 2013 Health Assessment. Additional data is available from the MPCA's Environmental Data Access website:

<http://www.pca.state.mn.us/index.php/data/surface-water.html>

In 2011 and 2012, the VBWD funded flow and water quality monitoring of its discharge points (i.e., the Rest Area Pond outflow, Valley Creek, and Kelle's Creek) to estimate annual nutrient loading from the VBWD to the St. Croix River. The Metropolitan Council Environmental Services (MCES) calculated the total phosphorus load from Valley Creek in 2011 was approximately 700 kg. MCES calculated the 2011 total phosphorus loads from Rest Area Pond and Kelle's Creek to be 49 kg and 34 kg, respectively. The Kelle's Creek flow data was incomplete. Using estimated flows based on nearby gages, the VBWD estimated the 2011 total phosphorus load from Kelle's Creek as 64 kg. The VBWD estimated the total phosphorus load from Kelle's Creek to be 48 kg in 2012. There was no discharge from Rest Area Pond in 2012.

Based on the data collected in 2011 and 2012, the cumulative phosphorus loading from the VBWD is less than the waste load allocation (WLA) assigned to the VBWD in the Lake St. Croix TMDL. The VBWD will continue to collect flow and water quality data at its discharge locations.

### **5.36.2.3 Biological Data**

The river supports over 100 fish species, beaver, muskrat, and otters. Eagles, osprey, and ducks nest along the river. Insects, 40 species of fresh water mussels, and hundreds of other species of plants and animals make the St. Croix River basin their home (National Park Service, 2015). The National Park Service provides more detailed information regarding the ecological characteristics of the St. Croix River and watershed: <http://www.nps.gov/sacn/learn/nature/index.htm>

The St. Croix River fishery is managed by the MDNR and the Wisconsin Department of Natural Resources. MDNR activities include both fish stocking and fish population surveys. The MDNR has stocked the St. Croix River with muskellunge, mostly fry and fingerlings, seven times between 2005 and 2014: 2005, 2007, 2008, 2009, 2010, 2011, and 2013.

The MDNR periodically performs fisheries surveys on the St. Croix River. The most recent fish survey was conducted in 2009 and found 26 species, including varieties of catfish, carp, redhorse, bluegill, bass, perch, pike, and buffalo.

No fish consumption guidelines have been issued for the St. Croix River. The MDNR's Lakefinder website includes the most current data on fish stocking and surveying in the St. Croix River and is available at: <http://www.dnr.state.mn.us/lakefind/showreport.html?downum=82000100>

The MDNR has performed environmental DNA testing in the St. Croix River (north of the VBWD) to test for the presence of aquatic invasive species. In June 2011, 22 of 50 samples taken from the St. Croix River tested positive for the presence of silver carp, a non-native fish. The results suggest that silver carp are already present in the river (Environmental DNA Solutions, August 2011). Silver carp compete with native species for food, which can result in fewer and smaller sport fish.

### **5.36.3 Water Quantity Management Plan**

The VBWD has no specific water quality management plan for the St. Croix River. When the St. Croix River floods, the flood waters back up into Valley Creek and Kelle's Creek. However, the VBWD is not aware of any structures within the VBWD's legal limits that are within the 100-year floodplain of the St. Croix River. Over the next several years, the VBWD has committed funding to the City of Afton to address flooding in Afton Village, which can experience flooding during periods of high flow in the St. Croix River (see Section 5.37).

### **5.36.4 Groundwater Issues**

Groundwater from within and outside of the VBWD legal boundaries contributes to the water resources within the VBWD and the St. Croix River. Regional groundwater characteristics are described in Section 3.7 of this Plan. The VBWD's role in groundwater management is described in Section 4.2 of this Plan.

### **5.36.5 References**

Barr Engineering Company. December 2005. *Valley Branch Watershed District Watershed Management Plan*.

Minnesota Pollution Control Agency and Wisconsin Department of Natural Resources. 2012. *Lake St. Croix Nutrient Total Maximum Daily Load*. Prepared in cooperation with the St. Croix Basin Water Resources Planning Team, the Science Museum of Minnesota, the St. Croix Watershed Research Station, and Barr Engineering Co.

National Park Service. 2015. *St. Croix National Scenic Riverway* website. Online available: <http://www.nps.gov/sacn/index.htm>

Environmental DNA Solutions. August 4, 2011. *eDNA Surveillance of Asian Carp on the St. Croix and Mississippi Rivers*.