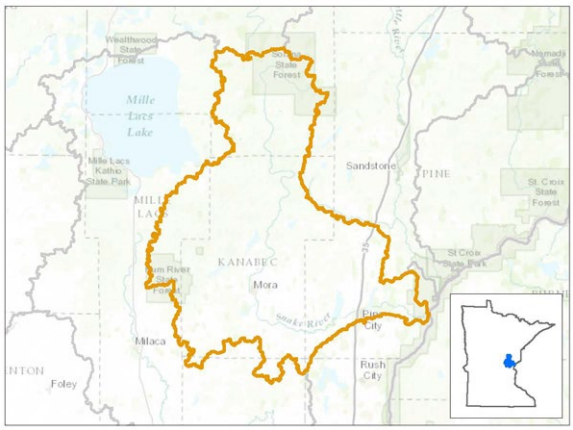
Snake River Watershed – St. Croix Basin

Clean Water Accountability Progress Report

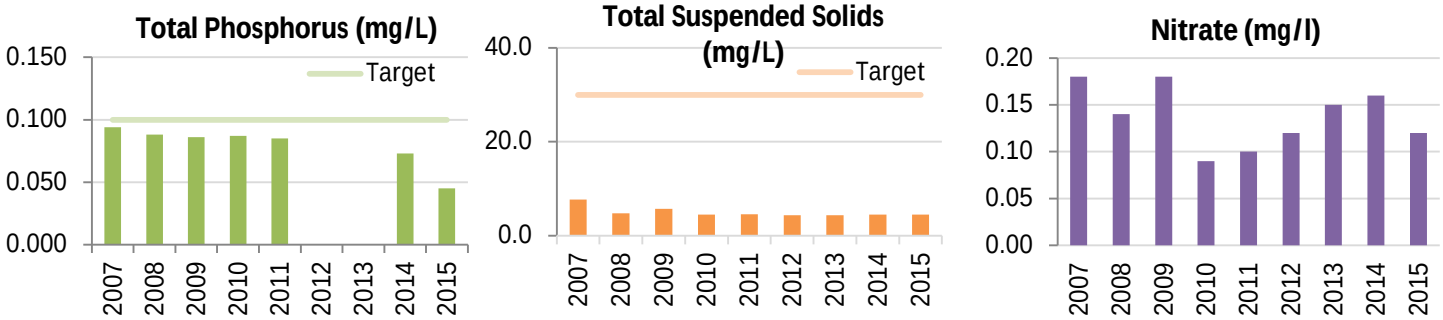


The Snake River Watershed is approximately 1,006 square miles and overlies six counties including Aitkin, Kanabec, Mille Lacs, Pine, Chisago, and Isanti. The Snake River Watershed supports a diverse range of aquatic species including fish and freshwater mussels, as well as a number of terrestrial threatened and endangered species.

Water quality is good in the northern half of the watershed where lakes and streams need protective measures to keep them healthy. These measures include managing timber harvests and other activities to prevent erosion and other impacts that can pollute the waters. Water quality becomes progressively worse in the southern half as the landscape changes from primarily forests and wetland to pasturelands with some croplands and an increased human presence. To restore the impaired waters in the watershed to state standards the Watershed Restoration and Protection Strategy (WRAPS) report recommends, among other things, improved livestock and cropland management, septic system upgrades, streambank restoration and in-lake management.

Water quality measurements

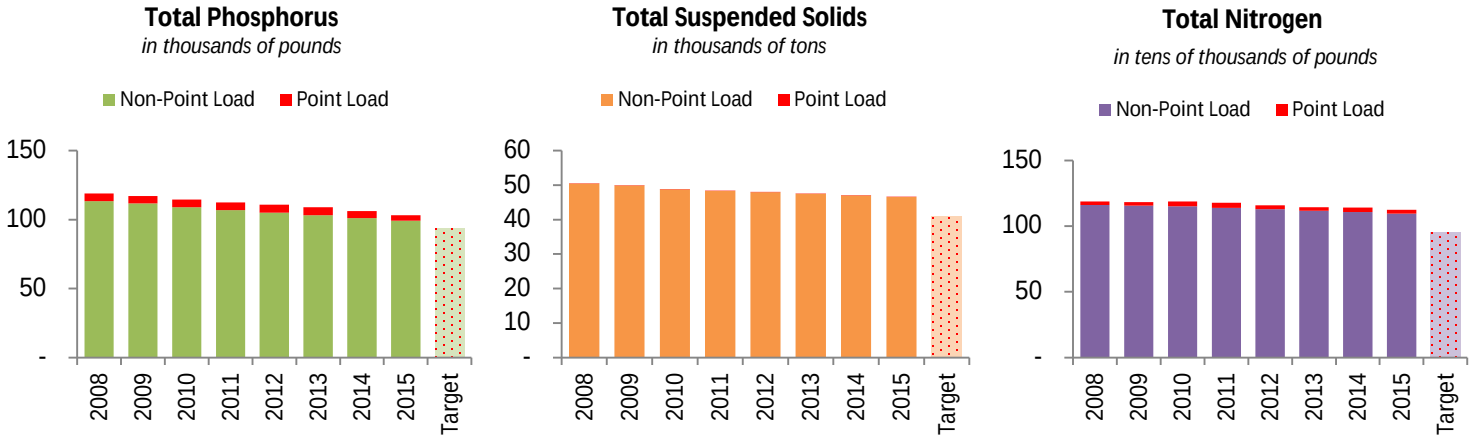
The graphs below show the annual flow weighted mean concentration (FWMC) of total phosphorus (TP), total suspended solids (TSS), and nitrate, measured at the Snake River near Pine City. FWMCs help to normalize pollutant loads across years with varying precipitation. The target identified for phosphorus and TSS is the water quality standard. There is no surface water quality standard for nitrate. Gaps in the graph indicate years where the amount of data is insufficient for comparative purposes.



Compared to other watersheds in the state, the Snake River Watershed exhibits higher than average water runoff, even when factoring in precipitation variability. For water quality, phosphorus levels near the mouth of the Snake River were somewhat lower in 2014 and 2015 as compared to earlier years, and below target levels for all years. Whether these lower levels will continue is difficult to say at this time. No trend is apparent for TSS or nitrate, although the levels are well below targets for TSS and represent some of the best water quality in the state. While below normal concentrations, the overall loads still need to be reduced to meet the downstream total maximum daily load (Lake St. Croix).

Progress toward load reduction targets, 2008-2015

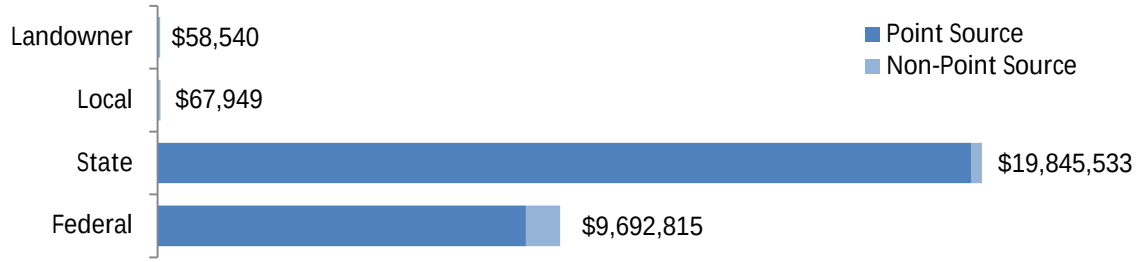
The Statewide Nutrient Reduction Strategy and the Snake River Watershed Restoration and Protection Strategy call for a minimum 20% reduction in nitrogen, a 22% reduction in TP, and a 9,500 ton reduction in sediment in order to achieve water quality goals in the Snake River Watershed. These charts display the annual load reductions for nitrogen, TP and TSS estimated as a result of best management practices (BMPs) reported to U.S. Natural Resources Conservation Service and to the Minnesota Board of Soil and Water Resources, for the period of 2008-2015. These charts do not take into account factors such as land use changes, climate change, or privately funded BMPs. The modeled load for 2008 serves as the baseline load, with the estimated reductions shown relative to that baseline.



Top non-point source BMP activities in the Snake River- St. Croix, 2008 – 2015

BMP Type	Projects	Acres	N reduced (lbs)	P reduced (lbs)	TSS reduced (tons)
Nutrient Management	273	25,490	14,643	1,182	0
Residue and Tillage Management	263	15,686	8,848	7,415	2,933
Ag Waste Management	167	-	25	67	36
Permanent Vegetative Cover	127	3,849	20	207	53
Cropland Diversity/Seasonal Cover	70	4,453	11,472	1,502	372

Water quality improvement spending in the Snake River- St. Croix, 2008 – 2015



The figures in this report are based on data from several agencies. For details, see: [www.pca.state.mn.us/water/clean-water-fund.](www.pca.state.mn.us/water/clean-water-fund)