

EPA, BWSR study could inform how wetland bank projects are managed



Dan Shaw, BWSR's senior ecologist and vegetation specialist, conducted a vegetation survey and identified plant species at a Minnesota wetland. Photo courtesy of Dennis Rodacker

A recent study conducted by the Minnesota Board of Water and Soil Resources (BWSR) could help inform how future wetland restoration sites are chosen and what methods are used to restore those sites through the agency's [Local Government Roads Wetland Replacement Program](#) (LGRWRP).

Wetland bank projects allow the state to generate and deposit wetland credits into a wetland bank account to offset wetland impacts that have occurred elsewhere throughout the state. BWSR uses the LGRWRP to assist local road authorities, such as counties, cities and townships, in using wetland bank credits for qualifying road improvement projects to meet the state's no-net-loss wetland policy.

Since the program's inception in 1996, BWSR has developed more

than 100 wetland bank projects generating more than 5,000 wetland credits for local road authorities.

Wetland bank projects typically go through a five- to seven-year establishment and active management period conducted by the bank sponsor in which performance standards are met and replacement credits are released for use. Following that period, wetland bank projects enter a long-term monitoring phase during which BWSR monitors the bank site for compliance with a state-held conservation easement.

Because vegetation and hydrology data are not collected after credits are released, limited information about wetland bank projects' long-term condition exists. With so many wetland bank projects spanning nearly 30 years, BWSR has begun

Ecoregions studied:

MIXED WOOD SHIELD: characterized by a range of forests from coniferous to hardwoods, smooth to irregular plains, some low hills, multiple wetlands, and high-quality glacial lakes

MIXED WOOD PLAINS: a mix of agriculture, forest, wetlands and glacial lakes

TEMPERATE PRAIRIES: tallgrass prairie pre-European settlement; now mostly converted to agricultural production

assessing long-term conditions of LGRWRP projects as they relate to restoration techniques and management.

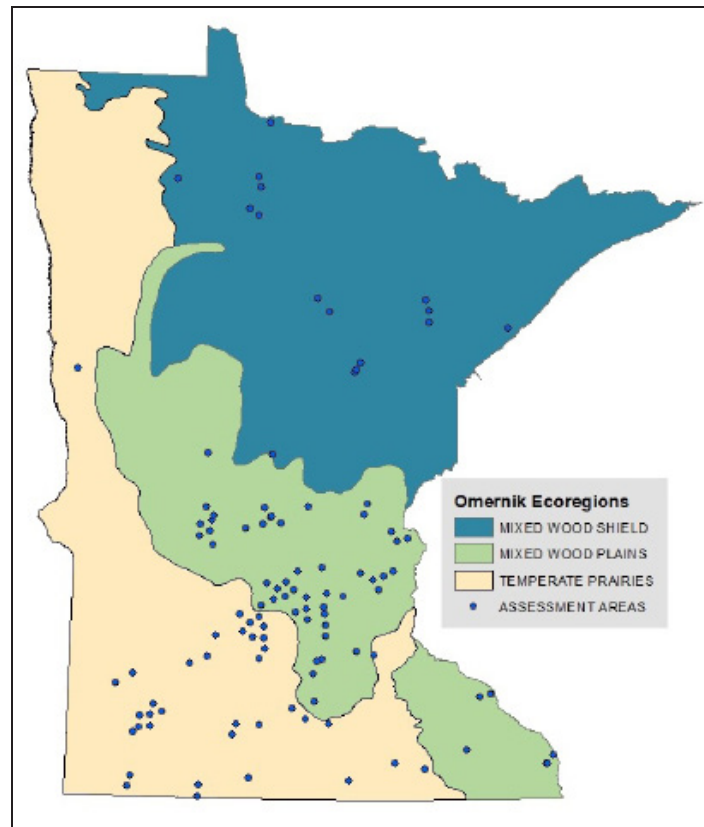
A series of multi-year studies conducted by BWSR, the Minnesota Pollution Control Agency, and the U.S. Environmental Protection Agency (EPA) focused on vegetation and hydrological conditions, including the condition of wetland bank projects related to age since restoration; hydrogeomorphic (HGM) class (wetlands that function similarly based on topography, water source and hydrodynamics); seeding; management frequency; and human disturbance.

The most recent study wrapped up in 2022. Its intent: evaluate the condition of wetland bank projects years after initial establishment and active management; compare those conditions with mostly unaltered natural wetlands in the state; consider how human disturbance affects wetland bank projects' condition; consider how different restoration approaches and HGM class affect the condition.

An EPA grant covered \$171,364 of the \$233,898 study cost; in-kind time by BWSR staff covered the balance.

The study assessed wetland conditions within 68 wetland bank projects in [Omernik ecoregions in Minnesota](#).

Assessments centered on wetlands restored six to 15 years ago, which are no longer actively managed



Dots on the map indicate where wetland surveys were conducted as part of a BWSR-led, EPA-funded study at 68 sites across Minnesota's mixed wood shield, mixed wood plain and temperate prairie ecoregions.

Map Credit: EPA

to meet performance standards and credit release requirements. The sample sites focused on those with adequate administrative records to determine restoration practices used during establishment.

The study showed little difference between wetlands restored through banking projects versus other wetlands in areas where agriculture and urbanization are most prevalent, according to BWSR Wetland Mitigation Supervisor Dennis Rodacker.

“Unsurprisingly, wetland bank (projects in those regions) were in far worse condition than wetlands in the northeastern portion of the state in the mixed wood shield ecoregion,” Rodacker said. “Three

factors are likely at play here.”

First, he said, the northeastern portion of the state has an abundance of exceptional-condition wetlands due to the vast acreage of public lands including wilderness areas, state parks and forests. Wetland bank projects rarely are located in such extensive forest areas protected from landscape-level stressors.

“Secondly, wetland bank projects have typically had restoration goals focused on plant species diversity when in fact wetland condition has subsequently been found to correlate more with the assemblage of certain species as opposed to just the number of species.

“Lastly, it can take wetland

bank projects many years to stabilize and exhibit attributes similar to very high-quality wetlands such as those found in protected forest and wilderness areas.”

The study also indicated that surrounding land use and other stressors may have a significant influence on the condition of wetland bank projects, particularly as the projects age.

“Increased scrutiny of wetland bank siting and more buffering of restored wetlands may be a means to improve wetland condition,” Rodacker said.

Controlling and managing hybrid cattails while establishing wetland bank projects may contribute to better long-term conditions, he said. The study further suggests that the use of seed mixes and the number of species they include may be of limited importance in long-term condition.

Continued condition assessments of these same wetland bank projects over time is needed to make more definitive conclusions about long-term conditions, Rodacker added. More sampling would be required to determine whether the same variables affecting bank projects' long-term condition vary by ecoregion.

Additionally, making conclusions about how to best to ensure the quality of wetland bank projects will require more assessment, Rodacker said.