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The Reinvest in Minnesota Land Retirement Program

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Introduction

The Reinvest in Minnesota (RIM) Reserve program seeks to retire marginal lands from agricultural production and to restore previously drained wetlands through conservation easements. Landowners are paid to retire the land and are required to maintain it. The RIM program is divided into public and private lands. In the public domain, funding is provided for projects that improve existing state land or acquire new outdoor recreation areas. The Department of Natural Resources manages the public portion of RIM.

The private portion of RIM will be the focus of this paper. The private land retirement program, RIM Reserve, is managed by the Minnesota Board of Water and Soil Resources (BWSR). At the local level, RIM Reserve is administered by 91 soil and water conservation districts (SWCD) state-wide. SWCDs set priorities for local sites, negotiate with landowners, accept and review applications, provide technical assistance and enforce and monitor easements.

The RIM Reserve Program has three goals: to improve and protect water quality, to reduce soil erosion, and to enhance fish and wildlife habitat. Many benefits are realized from this program, including less erosion and sedimentation, improved surface water and groundwater quality, a stronger rural economy, flood control, lower soil conservation costs and improved and protected fish and wildlife habitat.

RIM Reserve procures easements with landowners to accomplish these goals. From 1986 to 1997, RIM Reserve has obtained 2,650 easements. This translates to 81,809 acres that have been set aside, including 747 wetland basins and 19,000 acres of wetland restoration easements (RIM Reserve 1998). For fiscal year 97-98, over half of all easements will be for wetland restorations (Fredbo 1996). RIM Reserve makes wetland restorations their highest priority.

The state of Minnesota envisioned RIM as a way to improve its hunting, fishing and tourism industries. Sales tax revenues generated from the state's billion dollar outdoor recreation industry are reinvested into the state's natural resources. In its inception in 1986, the RIM bill provided $10 million for the land retirement program and $6 million for the public land programs (Korczak 1986). For 1998 and 1999, the state has given RIM $14 million of state bonding money (Wenzel 1998).

Program Details

The RIM Reserve program targets intensively used agricultural land. Easements are obtained for conservation purposes. The following types of land are eligible for the program:

- Legally drained wetlands that are feasible to restore to their pre-drainage conditions.
- Croplands located in sensitive groundwater recharge areas.

- Riparian lands identified as a priority in a comprehensive local water management plan.
- Marginal agricultural land, classified as highly erodible, that has been cropped two of the five years prior to the date of application.
- Environmentally sensitive lands such as pastured hillsides, agricultural woodlots and living snowfences, which protect habitats and water and soil resources.

Easements can be perpetual or 20-years long. Currently, RIM grants only perpetual easements because of the demand. Landowner interest has exceeded available funds in all but one year of the program's history. Landowners are paid 90% of the Assessor's Township Average Market Value for perpetual easements with a crop history. An acceptable crop history is one that has been cropped two out of the last five years. RIM will pay 100% of the costs up to: $100 per acre to establish grasses, $100 per acre to establish forbs, and $300 per acre to establish wetlands or forest.

All counties in Minnesota are eligible for RIM. However, 50% or more of all easements are to be purchased in the Minnesota River Basin. This internal policy of the BWSR, approved in 1992, mirrors the state of Minnesota's goal to clean up the Minnesota River.

Selection Process

Site selection is initiated by landowners and SWCD staff. They work together to prepare applications and design the restoration. It is important to include the landowner in the design process, by doing so they have a sense of ownership of the project. This is a voluntary program; the landowner needs to be pleased with the outcome to ensure continued success of the program. Before enrolling the land, any pollutants or hazardous substances must be cleaned up and any abandoned wells on the easement property must be sealed at the landowner's expense.

Applications are submitted in December to the SWCDs. The SWCDs approve applications based on their prioritization of sites. The BWSR has State Resource Protection Priority Assessment Guidelines to assist the SWCDs and the Board Conservationists (Fredbo 1996). A matrix is provided that uses a numerical priority rating system. Three parameters are used. Water quality protection, including wetland restoration, is the highest rated parameter. Soil erosion is a medium parameter and fish and wildlife habitat is the lowest ranked parameter. For example, a basin that is fully drained and 75% or more is cropped has a higher priority than one where the drainage system is no longer functioning and the basin is not being cropped. These assessment guidelines give the SWCDs a framework for ranking sites and keeps them in line with the state's priorities.

The Board Conservationists, of which there are six in the state, review applications subject to regional priorities before sending them to the BWSR. The BWSR does a technical review of engineering practices. The engineering analysis includes a survey and a site visit to assess elevations, neighbors, roads, drainage tiles and potential liability. An analysis indicates the feasibility of a site being returned to a wetland. Because funds are limited, if engineering costs exceed $1000 per acre, a site may be turned down (Wenzel 1998). Physical limitations such as underground utility gas or pipelines through the site, a county road or highway nearby, maintenance concerns, or even neighbors that dispute drainage issues can make a site unsuitable. For the most part though, BWSR makes every effort to enroll interested landowners.

After the analysis, easements are selected for funding by the BWSR. Then an agreement is signed by all parties. Acquiring an easement generally takes five to six months, but may take as long as two years. Abstracts and titles for the land are reviewed. Once the final title policy is reviewed and approved, the landowner is paid for the easement and work can begin on the restoration.

Restorations

The engineering analysis determines how wetlands will be restored. The BWSR uses the National Resources Conservation Service's standards and specifications, found in the Field Office Technical Guide to plan and implement all its conservation projects (Fredbo 1998). For example, in a wetland restoration, the Wetlands' Restoration Specifications would be used to size the outlet or to give the height of the berm required (Fredbo 1998). A typical restored wetland site will be designed with a principal spillway, or pipe, and a vegetated emergency spillway. The principal spillway will be designed to handle a 25-year 24-hour storm event. The emergency spillway is then designed to accommodate additional flows from a 100-year 24-hour storm event (Wenzel 1998).

The BWSR is responsible for construction and maintenance of any structures (Galatowitsch 1994). Construction of a wetland often begins with removing, replacing or blocking drainage tile. Proper grading of a site is essential to its hydrology. Engineering structures may be required such as dikes or berms. Devices installed may include weirs, anti-vortex baffles, anti seepage collars on pipes and trash racks on outlets. Weirs allow more flow to pass through them as the height of the water increases. Anti-vortex baffles help to keep vortexes from forming and interrupting the flow of water to an outlet. Anti-seepage collars are flat plates fitted perpendicular to a pipe that stop water from flowing along the outside wall of the pipe and causing erosion. Trash racks stop debris from entering outlet pipes. The engineering determines the hydrology which in turn determines what type of wetland is restored.

RIM often can not cover the full costs of a restoration. The average cost for a restoration is $370 per acre (Wenzel 1998). Additional funding is needed because this exceeds the $300 per acre limit that RIM will pay. Other funding sources are federal grants, private conservation groups and the landowners themselves. Ducks Unlimited, Pheasants Forever and the Minnesota Waterfowl Association are frequent contributors (Minnesota BWSR 1996).

Wetlands are not seeded mainly because of the high cost and high degree of maintenance and nurturing required. Plants colonize an area quickly, restored wetlands often "green-up" within one year (Wenzel 1998). However, the green may be undesirable plants. A vegetation analysis is not done, but according to Galatowitsch (1998), the "green" is primarily wind dispersed and annual species. Some species, such as cattails, are quite invasive and can dominate a wetland, reducing the biodiversity over time.

Upland areas or buffer strips are often enrolled in the same easement as the wetland restoration. The average wetland size is 11 acres with an average of about 2 acres of upland per restoration (Wenzel 1998). Upland areas are usually planted with native grasses, such as switch grass or big bluestem, along with trees (Wenzel 1998). This is in contrast to the wetland, which is not planted.

It is also important to consider what types of wetlands are restored. A mosaic of different wetland types benefits the ecology of a region and provides the most diversity for plant and animal communities. RIM Reserve attempts to restore wetlands to their pre-drainage condition when possible (Wenzel 1998). Other wetlands in the vicinity are evaluated for their size, depth and type to determine what type of wetland is most limiting in the wetland complex. In the prairie pothole region, small, shallow wetlands are most often missing since they were the easiest to drain for agriculture. Therefore, shallow emergent marshes have a high priority for restorations (Wenzel 1992). Other factors may interfere with the depth of water that can be restored, such as roads or neighbors.

Practices

Some practices are either encouraged or discouraged outright by regulations. A perpetual easement places a restricted covenant on the property and prohibits landowners from farming, grazing, spraying chemicals or building on that land. Indeed, anything that alters the wildlife habitat now or in the future is prohibited. The landowner may harvest seeds on easements but only for their own personal use, not for commercial purposes. The landowner is responsible for the annual operating and maintenance costs, controlling noxious weeds and maintaining the conservation easement. Maintenance may include controlling trees on an embankment or clearing debris from an outlet. However, the landowner retains rights to and controls access to their land. They are allowed to lease the land for hunting. The land may be sold, but the easement stays in effect. The BWSR will work with new landowners if conflicts arise.

Certain practices are discouraged by financial limitations. For wetlands, the $300 per acre that RIM provides must cover engineering structures as well as seeding. The money provided for establishing grasses and forbs for prairies and wetland edges does not always cover the cost of planting native species. The supply of native plants is not keeping pace with the high demand for them leading to higher costs (Wenzel 1998). RIM has limited funding available and does not place much importance on planting native species. In addition, money is not available for controlling invasive species. The prevailing reason for this is economics.
Maintenance is encouraged by the nature of the program. The RIM Reserve program promotes stewardship of the earth. Many landowners take pride in their land and their role as environmental stewards. The SWCDs are responsible for ensuring that landowners maintain conservation easements. Of the 2,650 easements currently being maintained, there are no outstanding violations (Fredbo 1998). Attracting wildlife and taking pride in their land can be an incentive for landowners to maintain their easements.

Discussion

While RIM Reserve is increasing the number of wetlands, further improvements could be made. One area that RIM does not address is the use of native plants. Native plants that are locally adapted will create the best habitat and are most suited to the area. Physical limitations, landowner preferences and monetary issues all contribute to make this a difficult feat. It is beyond the program's scope to expect restorations to be done to pre-settlement conditions. Ecological value exists in the retirement of marginal agricultural lands and this is where the strength of RIM Reserve lies. However, by increasing their focus on native species, the benefits of RIM would increase. Improving the ecological function and biodiversity of an area would make it more like a natural area. However, that would mean less money spent to secure easements, which is what RIM does so well. A delicate balance exists between restoring more land and the quality of each restoration.

Another issue is the colonization of restored wetlands. As mentioned previously, RIM Reserve does not seed or plant its wetlands. Galatowitsch and van der Valk (1996) researched this issue. They compared ten natural wetlands to ten recently restored wetlands. All of the restored wetlands had been restored by disrupting the drainage tile three years earlier. These wetlands were surrounded by farmland and were not planted or seeded, hence they were similar to RIM Reserve restorations. They found that, overall, natural wetlands had many more species than restored wetlands. Also, the seed banks of natural wetlands contained more species and more seeds than restored wetlands. The authors concluded that certain species with poor dispersal capabilities may have to be planted in restored wetlands if these restored wetlands are ever to have vegetation similar to their pre-drainage vegetation. This leads to the question of what quality of wetlands RIM is restoring since they do not add any plants or seed. This question can only be answered if the restorations are evaluated.

The process of monitoring and evaluating restorations is pivotal to their success. Perhaps Galatowitsch and van der Valk (1994) put it best, "If the success of a wetland restoration is judged only by whether it contains any water or not or whether or not a duck has ever been seen on it, we will become satisfied with only partially restored wetlands at best." They point out that evaluating a project's success is important for two reasons. First, to improve project design and management, data must be collected and assessed. Second, only by applying a set of criteria can it be concluded that restored wetlands are similar to and functioning like natural wetlands. By not doing an evaluation, RIM can not know if it is achieving its goals. It is only by analyzing their own data that RIM can decide whether or not to shift its focus towards doing higher quality restorations.

Evaluating the success of a program can be very difficult. The BWSR has no formal system of monitoring and evaluating their restorations. As an engineering measure of success, no structural failures have occurred to date (Wenzel 1998). Tim Fredbo (1998), Easement Program Coordinator, points to the high demand of farmers for conservation easements as a measure of the success of the program. Yet this is an economic measure of success, not an ecological one. The ecology needs to be assessed as providing habitat is a major goal of the program. When compared to the monoculture that existed previously, biodiversity is increased and some ecological function is restored. And certainly, a marsh can support more wildlife than a farm. One would also assume that wetlands are improving the water quality and reducing erosion. But without a system of monitoring, can RIM be sure their goals are being met?

As a first step, RIM could set up a system for evaluating and monitoring just a few of its many sites. Since restorations have been done since 1986, different ages of restorations could be compared. The simplest data to gather would be water height. A vegetation analysis would also be worthwhile. Since improved habitat for wildlife is a main goal, an assessment of wildlife use would be important as well. Since the SWCDs are already in place to assure compliance, it would make sense to have them monitor restorations. It is possible that volunteers or students could be found to do the site evaluations. Qualified birders could assist SWCD staff by recording wildlife sightings. This could lower the cost of generating data for the program. This data could be used to compare the number of species of plants and animals between restored sites and against reference natural wetlands. An ecologist may need to be hired to manage, analyze and present the data for management. It would also be extremely important for RIM to generate a set of criteria to measure its restorations against. In this way, RIM could demonstrate whether or not they are achieving their goals. It would also point out ways to improve their restorations by showing which restorations were the most successful.

Conclusion

Overall, RIM Reserve is a valuable program for the state of Minnesota and its natural resources. It has a system in place for prioritizing sites not only on a local level but on a regional level as well. This can make the restorations ecologically valid on a landscape scale, not just on a local scale. It would be in the program's best interests to institute a system for evaluating the success of their projects. This would allow the BWSR to improve future restoration projects and to ascertain if their goals are being met. In eleven years, 81,809 acres of agricultural land has been set aside by RIM Reserve for conservation. In this, RIM Reserve is a great success. Those acres represent an impressive accomplishment and a benefit to the ecology of the region. But the program's true value will only be assessed if a system of monitoring and evaluating restorations is put in place.

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