Table 4-6. Animal Lots: Draining to Surface Waters and to Closed Depressions

| Management Category | # of Barnyard Segments Draining to Surface Waters | # of Barnyards Internally Drained | Total # of Barnyard Segments |
|---|---|---|---|
| I | 13 | 15 | 28 |
| II | 13 | 2 | 15 |
| III | 41 | 3 | 44 |
| Total | 67 | 20 | 87 |

## Nutrient and Pest Management

Prevention of ground and surface water degradation, through better nutrient and pest management, will be more effective than treating degraded waters after damage has been done.

Farmers can benefit from nutrient pest management plans by taking nutrient credits for legumes and landspread manure and reducing applications of commercial nutrients.

Landowners will be encouraged to participate in a nutrient pest management educational program to reduce over-application of nutrients and pesticides through better management. Nutrient and pest management plans will be developed, complete with soil tests, crop scouting and farm visits. These plans will follow Soil Conservation Service Nutrient Management Standard 590 and SCS Pest Management Standard 595. A professional services contract may be established for this purpose. Each landowner can participate in this stage of the program for up to three years, and is responsible for paying 50 percent of these consulting fees.

Soil and manure testing, crop scouting, and spill control basins for pesticide handling are also eligible for cost sharing as individual practices. The nutrient and pest management practices are cost shared at 50 percent, except for spill control basins which are cost shared at 70 percent.

Livestock operations that are category I and II in table 4-5 (animal lot runoff) and table 4-7 (winterspread manure runoff), and growers of specialty crops such as vegetables, are eligible for this educational program. Specialty crop operations comprise a large portion of the agriculture in this watershed and may be contributing excess nutrients and pesticides to ground and surface waters because of over application to these high value crops. Up to 15,500 acres from all operations will be eligible to participate in this program.

Table 4-7. **Winter Spread Manure Runoff and Eligibility for NPM Educational Program Neenah Creek Watershed**

| Participation Groups | Suitability Ratio | Number of Livestock Operations (approximately) |
|---|---|---|
| I | Greater than 1 | 9 (500 ac) |
| II | Between 0 and 1 | 54 (6,000 ac) |

It is anticipated that nutrient and pest management plans will be developed for about half of the eligible acreage and only nutrient management plans will be developed for the remaining areas.

The nutrient and pest management plans will be submitted to and approved by the Adams, Columbia, or Marquette County Land Conservation Departments. Records will be kept showing progress towards reducing the use of fertilizer and pesticides. An evaluation report to the DNR and DATCP will be required at the end of the implementation of the watershed project.

## How Eligibility is Determined for Nutrient and Pest Management

A computer model (SPREADIT) was used to rank livestock operations in the Neenah Creek Watershed based on a partial inventory of acres spread with manure during the winter. The model develops a suitability ratio ranking livestock operations that are likely to produce excessive manure runoff from croplands due to lack of suitable spreading sites. If the suitability ratio is equal to or less than 1.0, then there is likely to be enough land to safely spread manure in the winter months without degrading water quality. If the suitability ratio is greater than 1.0, there is a probability that this farm does not have enough land for manure spreading, and a greater chance of water quality degradation exists.

The ranking from SPREADIT places any operation with a suitability ratio greater than 1.0 into Group I. There are approximately 9 livestock operations (500 ac) in this group. All other livestock operations are in Group II. Approximately 54 livestock operations (6,000 ac) that fall into this group.

Although the nutrient and pest management plans will be optional, it will be a priority to work with the farms in Group I first. This group is likely to have livestock operations that produce excessive manure runoff from croplands due to lack of suitable spreading sites.

In Neenah Creek Watershed, only 46 percent of the private wells sampled for nitrates are below the "preventative action limit" (2 mg/l), a health advisory level. Furthermore, groundwater is very near the surface in most of the watershed. For these reasons, nutrient and pest management is extremely important in this watershed to protect groundwater

quality. Therefore, another 9,000 acres will be eligible for cost sharing for nutrient and pest management planning.

Landowners who participate in the NPM educational program may sign a 3-year contract with the county LCD to receive funding. This is different from the conventional cost share agreement used for other practices. Receiving funding for NPM does not obligate the operator to correct all Category I resources as a cost share agreement would. The NPM plans may be done by consultants or by LCD staff.

## Manure Storage

Eligibility for cost-sharing for manure storage practices will be based on the Nutrient Management Plan, developed in compliance with SCS standard 590. A manure storage facility will be considered Category I if the 590 plan indicates need as described below. There is no Category II for manure storage. (Table 4-8).

An operation is Category I if the nutrient management plan demonstrates that manure cannot be feasibly managed during periods of snow covered, frozen and saturated conditions without the installation of storage practices. The nutrient management plan must also demonstrate that proper utilization of the manure can be achieved following adoption of the intended storage practice.

**Table 4-8. Manure Storage—Neenah Creek Watershed**

| Management Category | Eligibility Criteria |
|---|---|
| I | Exceeds 590 Standard |
| II | None |
| III | Does Not Exceed SCS Std. 590 |

The eligibility for storage facilities will be based on the least cost system that will satisfy the Std. 590 specifications. These options may include manure stacks (in accordance with Std. 312), short term storage (capacity for 30 to 100 days production in accordance with Std. 313), and long term storage (capacity for up to 210 days production in accordance with Std. 313 or 425).

Landowners receiving cost-sharing funds for storage practices or nutrient management are required to adopt a nutrient management plan (Std.590). Additionally, manure removed from cost-shared storage facilities designed to have greater than 6 month capacity, shall not be spread on frozen, snow covered, or saturated ground (as stated in NR 120).

## Streambanks

### Streambank Erosion

Streambanks contribute 4 percent of the overall sediment delivered to streams in the watershed. Category I participants will be those with identified severe erosion sites with an erosion rate of greater than 60 tons/year/landowner. County staff will evaluate site accessibility/feasibility on Category I sites.

Category II participants are also eligible for streambank erosion control practices. Eligible streambanks are those with erosion rates between 18 and 60 tons/year/landowner.

Category III streambanks are those with slight erosion rates, below 18 tons/year/landowner.

### Livestock Access

Category I (essential) streambanks include trampled sites over 200 feet per landowner and less than 75 perccent vegetative cover. One landowner on perennial streams falls into this category.

Category II (eligible) streambanks are all other sites with livestock access. Eleven landowners on perennial streams fall into this category.

Additional sites on intermittent streams which meet the criteria above may be identified.

See table 4-9 for streambank eligibility criteria and table 4-10 for additional information on streambank eligibility.

**Table 4-9. Streambank Eligibility Criteria for the Neenah Creek Watershed**

| Management Category | Criteria |
|---|---|
| **Streambank Erosion** | |
| I | over 60 tons/year/landowner |
| II | between 18 and 60 tons/year/landowner |
| III | less than 18 tons/year/landowner |
| **Streambank Habitat** | |
| I | over 200 feet/trampled and less than 75% vegetative cover |
| II | any livestock access |

Sources: Adams, Marquette and Columbia County Land Conservation Departments, WDNR and DATCP

**Table 4-10. Streambank Erosion Eligibility for the Neenah Creek Watershed**

| Subwatershed | # of Landowners and Length Eroded | | | | # of Landowners with Cattle Access & Length Trampled | |
|---|---|---|---|---|---|---|
| | Category I (severe) | Feet | Category II (moderate) | Feet | Cattle Access | Feet |
| Upper Neenah | 2 | 165 | 1 | 328 | 0 | 0 |
| Oxford Lake | 0 | 0 | 0 | 0 | 0 | 0 |
| Crooked Lake | 0 | 0 | 2 | 35 | 1 | 100 |
| Jordan Lake | 0 | 0 | 0 | 0 | 0 | 0 |
| Widow Green | 0 | 0 | 0 | 0 | 1 | 2,471 |
| Middle Neenah | 0 | 0 | 5 | 592 | 3 | 6,850 |
| Mason Lake | 2 | 6400 | 1 | 1800 | 2 | 1800 |
| South Branch | 0 | 0 | 1 | 200 | 0 | 0 |
| Lower Neenah | 1 | 580 | 1 | 210 | 0 | 0 |
| Big Slough | 0 | 0 | 0 | 0 | 0 | 0 |
| Totals | 5 | 7145 | 11 | 3,165 | 7 | 11,221 |

* Adams, County included ditched areas in their inventory (ML). Ditches represented 80-90% of streambank erosion problems. Marquette and Columbia counties did not include ditches in their inventory.

## Shoreline Erosion

Shoreline erosion on the 21 lakes in the watershed contributes 4 percent of the overall sediment delivered in the watershed. Table 4-12 refers to shoreline erosion eligibility criteria for Category I, II and III sites.

Category I sites for shoreline erosion are those with erosion rates greater than 7 tons/year/landowner.

Category II sites are those with erosion rates between 3 and 7 tons/year/landowner.

Category III sites are those with mild erosion, with rates less than 3 tons/year/landowner. See table 4-4 for eligibility criteria.

### Sediment Management Strategy

See table 4-11: Management Strategy for Sediment: All Sources

## Table 4-11. Management Strategy for Sediment: All Sources Category I

| Subwatershed | Annual Cropland Sediment (tons) | Annual Streambank Sediment (tons) | Annual Shoreline Sediment (tons) | Total Annual Subwatershed Sediment (tons) | Cat I Sediment Control Planned: Cropland (tons) | % | Sediment Control Planned: Streambanks (tons) | % | Sediment Control Planned: Shoreline (tons) | % | Total Sediment Control Planned (tons) | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper Neenah | 589 | 191 | 296 | 497 | 155 | 26 | 156 | 82 | 222 | 75 | NA | |
| Oxford Lake | 2380 | 6 | 4 | 2442 | 1249 | 52 | 0 | 0 | 3 | 75 | NA | |
| Crooked Lake | 752 | 2 | 18 | 480 | 166 | 22 | 0 | 0 | 14 | 75 | NA | |
| Jordan Lake | 356 | 0 | 22 | 394 | 287 | 80 | 0 | 0 | 16 | 75 | NA | |
| Widow Green | 2724 | 121 | 0 | 1307 | 772 | 28 | 111 | 92 | 0 | 0 | NA | |
| Middle Neenah | 8183 | 35 | 0 | 3120 | 2588 | 32 | 0 | 0 | 0 | 0 | NA | |
| Mason Lake | 6011 | 358 | 358 | 5282 | 3238 | 54 | 205 | 65 | 269 | 75 | NA | |
| South Branch | 242 | 5 | 0 | 198 | 120 | 49 | 0 | 0 | 0 | 0 | NA | |
| Lower Neenah | 13,164 | 80 | 0 | 251 | 8879 | 67 | 62 | 78 | 0 | 0 | NA | |
| Big Slough | 3846 | 0 | 0 | 3122 | 319 | 8 | 0 | 0 | 0 | 0 | NA | |
| Watershed Totals | NA | 798 | 698 | 17,133 | NA + | 42 | 534 | 70 | 524 | 75 | 7158 | 42 |

+ The estimated sediment control is assumed to be one half of the Category II fields and all of the Category I fields, based on WINHUSLE model and 50% participation.
Due to the routing techniques of the model, total sediment is not additive by subwatershed.

**Table 4-12. Shoreline Erosion Eligibility Criteria: Neenah Creek Watershed**

| Category | Erosion Level | Soil Loss (tons/year) | # Landowners | % Control |
|---|---|---|---|---|
| I | severe/ moderate | over 7 tons/year/ landowner | 53 | 75% |
| II | moderate/mild | between 3 and 7 tons/year/ landowner | 66 | 50% |
| III | mild | | less than 3 tons/year/ landowner | |
| | Totals | | | 119 |

**Phosphorus Management Strategy**

See table 4-13: Management Strategy for Phosphorus: All Sources for subwatersheds that have lakes.

## Wetland Restoration

There will be no Category I for wetland restoration. All inventoried wetlands and artificially drained cropland (8,000 acres) will be Category II, eligible for restoration, if the sites meet the criteria that follow. The targeted goal is to restore 10 percent (800 acres) of the wetlands sites inventoried.

Wetland restoration is an eligible best management practice for the purpose of controlling nonpoint sources of pollution. Secondary benefits of wetland restoration may be enhancement of fish and wildlife habitat.

Wetland restoration includes: the plugging or breaking up of existing tile drainage systems, the plugging of open channel drainage systems, other methods of restoring the pre-development water levels of an altered wetland, and the fencing of wetlands to exclude livestock.

**Table 4-13. Management Strategy for Phosphorus: All Sources, for subwatersheds that have lakes**

| Subwatershed | Annual P Loading Barnyards (lbs) | % | Annual P Loading Cropland (lbs) | % | Annual P Loading Stream-banks and Shoreline (lbs) | % | Annual P Loading Woodland | % | Annual (P) Loading Developed (lbs) | % | Annual P Loading Winter-spread Manure (lbs) | % | Total P Loading Septic Systems (lbs) | % | Total P Loading Atmo-spheric Depo-sition (lbs) | % | Total P Load-ing (lbs) | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Upper Neenah | 133 | 3 | 570 | 11 | 5 | 0 | 1925 | 37 | 1916 | 37 | 145 | 3 | 308 | 6 | 240 | 5 | 5242 | 100 |
| Jordan Lake | 0 | 0 | 216 | 21 | 0 | 0 | 392 | 38 | 223 | 21 | 0 | 0 | 106 | 10 | 106 | 10 | 1043 | 100 |
| Mason Lake | 242 | 4 | 4144 | 61 | 7 | 0 | 1085 | 16 | 139 | 2 | 582 | 9 | 200 | 3 | 428 | 6 | 6827 | 100 |
| Totals | 375 | 3 | 4930 | 38 | 12 | 0 | 3402 | 26 | 2278 | 17 | 727 | 6 | 614 | 5 | 774 | 6 | 13,112 | 100 |
| Phosphorus Control Planned | | | | | | | | | | | | | | | | | | |
| Upper Neenah | | 96 | | 21 | | 82 | | 0 | | 0 | | 40 | | 0 | | 0 | | |
| Jodan Lake | | 0 | | 47 | | 0 | | 0 | | 0 | | 40 | | 0 | | 0 | | |
| Mason Lake | | 43 | | 50 | | 65 | | 0 | | 0 | | 40 | | 0 | | 0 | | |

Wetland restoration is an eligible practice when applied to any of the following:

1. Cultivated hydric soils with tile or open channel drainage systems discharging to a stream or tributary.

   Wetland restoration will reduce the amount of nutrients and pesticides draining from the altered wetland to a water resource either by establishing permanent vegetation or altering the drainage system.

2. Pastured wetlands riparian to streams, or tributaries.

   Eliminating livestock grazing within wetlands will reduce the organic and sediment loading to the wetland and adjacent water resource, and reduce the direct damage to the wetland from the livestock. Livestock exclusion by fencing will control the pollutants and restore the wetland.

3. Prior converted wetlands downslope or upslope from fields identified as Management Category I upland sediment sources through the WINHUSLE model.

   Restoration of wetlands in these situations will do one of two things: 1) create a wetland filter which reduces the pollutants from an upslope field(s) to a water resource; or 2) reduces the volume and/or velocity of water flowing from an up-slope wetland to a down-slope critical field. Two eligibility conditions must be met to use wetland restoration in this situation:

   - All upland fields draining to the wetland must be controlled to a soil loss rate that is less than or equal to the soils "T" value.

   - Wetland restoration costs must be the **least-cost** practice to reach sediment reduction goals.

## Land Easements

Nonpoint source program funds may be used to purchase land easements in order to support specified best management practices. These practices, all of which involve the establishment of permanent vegetative cover, include:

- Shoreline Buffers

- Critical Area Stabilization

- Wetland Restoration

Although easements are not considered a best management practice, they can help achieve desired levels of nonpoint source pollution control in specific conditions. Easements are used

to support best management practices, enhance landowner cooperation and more accurately compensate landowners for loss or altered usage of property. The benefits of using easements in conjunction with a management practice are: 1) riparian easements can provide fish and wildlife habitat along with the pollutant reduction function; 2) easements are generally perpetual, so the protection is longer term than a management practice by itself; and 3) an easement may allow for limited public access (depending on the situation). However, the primary justification of an easement must be for water quality improvement.

Within the Priority Watershed, easements should be considered in the following situations:

1. To exclude livestock from grazed wetlands or along eroding streambanks within the watershed. Easements are strongly recommended whenever:

    - there is any grazing of wetlands.

    - livestock density is so great that areas of unvegetated soil are within 60 feet of streams or intermittent streams.

    - More than 2,000 feet of streambank are severely trampled and eroding.

    - channel erosion is exacerbated by livestock grazing such that unvegetated streambanks are two feet or more in height.

2. When elimination of row cropping and the establishment of permanent vegetative cover will stabilize a critical area. Easements are strongly recommended whenever:

    - Row cropping is occurring within 60 feet or less of streams or intermittent streams.

3. Easements are strongly recommended,to support eligible wetland restorations.

4. When a barnyard or animal feedlot is located within the flood plain and: a) a permanent easement is the least-cost alternative to provide adequate pollution reduction or b) a permanent easement provides a greater level of pollution reduction than on-site engineering options at a price that is cost-effective when compared to the level of pollution reduction and the price of the available engineering options. Easements are strongly recommended whenever:

    - Engineering options would require intensive management in order to continue to provide adequate pollution reduction.

    - Surrounding land use is largely agricultural and it is anticipated that it will remain so for two decades or more.

NOTE: In addition to the criteria described above, participating landowners must control all "Management Category I" sources (through a cost-share agreement) to be eligible for an easement through the watershed project.

## Wind Erosion

As explained in Chapter 3, wind erosion is a water quality problem in the Neenah Creek Watershed. Best Management Practices to reduce wind erosion are listed in "Wind Erosion Impacts on Water Quality in the Sand Plain of Central Wisconsin." The Neenah Creek Watershed Project will cost share the following SCS practices at 70%: Streambank and Shoreline Protection (580) Critical Area Planting (342). In addition, windbreaks will be cost-shared at 70% according to the standards identified in the Stewardship Incentive Program (SIP4).

Cost sharing for wind related BMPs must be related to improved water quality, as documented in the Oberhofer (1993) study or otherwise. Cost sharing may not be used to artificially drain land. All of these BMPs are applicable to any type of channel, either natural or artificial, in which water flows with a free surface (i.e., stream or ditch). Any BMPs in a "drainage district" must be done in accordance with ATCP 48.

Should additional BMPs be needed in the future, they will be considered. For example, easements may be available as a form of cost-sharing for windbreaks on irrigated cropland. The size of easement taken must be large enough to be cost-effective, based on real estate appraisal costs.

# Ordinances

## Manure Storage Ordinance

A manure storage ordinance is primarily intended to prevent ground and surface water pollution by assuring the proper design, construction, location, and management of permitted facilities. An ordinance must meet the guidelines adopted by DATCP and cite the applicable USDA Soil Conservation Service construction and management standards. A manure storage facility ordinance requires permits for the installation, modification and major repair of manure storage facilities.

Poorly located, designed, constructed, or managed storage facilities can contaminate groundwater. Elevated nitrate-nitrogen concentrations are particularly common in groundwater near leaking storage facilities.

Surface water resources are also at risk with manure storage facilities, when improperly located, designed, or constructed. Manure overflows or a blowout from storage facilities are a serious threat to aquatic life. When above-ground facilities are improperly installed, the potential for system malfunctions increases. Drainage from these facilities can degrade surface quality unless properly treated.

Manure storage facility ordinances are an essential tool in the prevention of water quality degradation. Thirty-two of 72 Wisconsin counties have already adopted ordinances for

manure storage. Columbia County has already enacted a manure storage ordinance. To assure protection of surface and groundwater from manure storage facilities throughout the watershed, the adoption of a manure storage ordinance in Adams and Marquette Counties is necessary during the span of the Neenah Creek Watershed Project. Certain costs for the development and administration of the ordinance are eligible for reimbursement under the Priority Watershed Project. Adams and Marquette Counties have initiated discussion on the development of a manure storage ordinance with the intention of adopting an ordinance in 1994. As required by State Statute, should the County fail to adopt a manure storage ordinance, the County must repay to the State all Neenah Creek Nonpoint Source Grant Agreement funding. This will be a condition of the Adams and Marquette County Nonpoint Source Grant Agreement.

## Construction Site Erosion Control Ordinance

Wisconsin State Statutes Sections 89.19, 101.65, 101.651, and 101.653 were created in 1992 to address the problem of construction site erosion on a statewide basis.

Currently inspection and enforcement measures for erosion control on construction sites for 1 and 2 family dwellings are administered by the Wisconsin Department of Industry, Labor and Human Relations.

Currently DILHR has been authorized to enforce erosion control measures on 1 and 2 family dwellings in areas that have adopted the Uniform Dwelling Code. At this time areas with populations less than 2,500 are not mandated to regulate construction site erosion for 1 and 2 family dwellings.

As a part of the Nonpoint Program counties are encouraged to adopt erosion control ordinances to provide enforcement authority in these areas.

## Road and Bridge Construction Erosion Control

Wisconsin State Statute 89.19 deals with construction site erosion control for highway and bridge construction that is funded in whole or in part by state or federal funds. State Statute 89.19 requires the Department of Transportation in consultation with the DNR to establish standards for the control of erosion related to highway and bridge construction, and establish a program of training for persons who prepare plans for, review plans for, conduct inspections of or engage in highway or bridge construction activities.

Highway and bridge construction that is not state or federally funded is not covered under the provisions of State Statute 89.19. Highway and bridge construction projects are often next to streams and water conveyance structures, and for this reason it is of utmost importance that erosion be controlled in these areas. As a part of the Neenah Creek Priority Watershed Plan, the DNR strongly recommends that areas of road and bridge construction not covered under State Statute 89.19 abide by the guidance standards for erosion control as specified by the

Department of Transportation's Facilities Development Manual and the DNR Wisconsin Construction Site Best Management Practice Handbook.

## Local Ordinances Require Developers to Prepare and Carry Out Construction Site Runoff and Erosion Control Plans

A number of local governments recognize that the cost of *preventing* damage from erosion and sedimentation is often less than the cost of *correcting* damage from erosion. Also, many believe that the cost of preventing erosion damage should be borne by those benefiting from the development rather than by taxpayers paying to remove sediment from ditches, culverts, streets, harbors, lakes, and streams.

Thus, local governments are developing or amending subdivision ordinances, zoning ordinances, and other local ordinances to include runoff and erosion control requirements for developing land areas. Regulations seem to work best if they are tied into existing local regulations. For example, developers and builders already must comply with subdivision regulations; adding erosion and runoff control requirements to these regulations merely requires the developer to assume a few additional responsibilities.

Chapter 236 of the Wisconsin Statutes gives cities, villages, towns, and counties authority to control erosion from developing subdivisions and smaller land divisions. This chapter establishes the minimum standards and procedures for land division in Wisconsin to insure that the conversion of land into building lots is carried out in an orderly manner. Subdividing is accomplished by either a subdivision plat or a certified survey map. A subdivision plat is a detailed map that shows all subdivision lots, lot numbers, roads, streets, and other land areas. A certified survey map is required for smaller land divisions.

While Chapter 236 establishes the minimum standards, the chapter enables local governments that have an established planning agency to adopt subdivision ordinances that are more restrictive than the state standards. According to the State Department of Development, about half of the cities and villages and 63 counties had adopted their own subdivision ordinances by 1977.

Several of these government units have included runoff and erosion control provisions in their ordinances. These ordinances typically require a developer to submit a detailed plan specifying how he will minimize erosion and runoff during and after development. An appropriate reviewer (for example, a city engineer or a soil and water conservation district employee) reviews the erosion control plan. If the initial or preliminary plat is approved and the erosion and runoff control plan is considered adequate, the developer may begin construction. Typically, before a final plat is filed the person who reviewed the erosion and runoff control plan visits the development site and certifies that the measures have been installed in accordance with the plan.

## Financial Assistance Available to Municipalities

## Neenah Creek Survey of Construction Site Erosion

An informal survey of recent population census, building permit and sanitary permit data was taken for each township in the watershed.

### Adams County

Adams County has had the most significant development since 1980 and appears most likely to have residential development in the future. Nearly all of the lakes in the watershed are located in Adams County, and lakes are most vulnerable to construction site erosion. Adams County also contains 45 percent of the total watershed area. For these reasons, it is imperative that construction site erosion be controlled in Adams County. Adams County has adopted the Uniform Dwelling Code (UDC) county-wide. The county is strongly encouraged to enforce the UDC and to consider adopting more stringent control of construction site erosion. Aggressive information and education activities, such as presentations to construction companies and to home buyers, are also encouraged.

### Marquette County

Marquette County contains 25 percent of the watershed area and has not adopted the UDC. Oxford township had adopted the UDC, but dropped it in 1992. Construction site erosion is not anticipated to be a major problem in the Marquette portion of the watershed. Development is fairly slow, and while in general farmland is being converted to residential land, most of the development is on upland woodlots, far from surface waters. Furthermore, most lakeshore property has already been developed. Therefore, construction site erosion does not appear to be a major water quality problem. Nevertheless, even one acre of badly eroding development could substantially degrade water quality. Therefore, the townships in the watershed are encouraged to minimize the impacts of construction site erosion through information and education activities.

### Columbia County

Columbia County represents 30 percent of the total watershed area. This portion of the county has low development rates. Most of the area is wetlands unsuitable for development. Construction site erosion is not likely to be a major water quality problem. The county is encouraged to minimize potential effects of construction site erosion through information and education activities.

### Village of Oxford and the Unincorporated Community of Briggsville

The village of Oxford and the town of Briggsville have expressed interest in a stormwater management plan. Cost-sharing for the development of the plan may be available through the Neenah Creek Watershed Project.

### Statewide Construction Erosion Control

Stricter control of construction site erosion may be available at the state level in the future. Local agencies are still strongly encouraged to control erosion.

The DNR, through the watershed project, may request the county to submit an annual review of building permits and population trends. If these data indicate water quality impacts have the potential to interfere with the goals of this plan, a construction site erosion control ordinance may be required at that time.

The DNR suggests that the Wisconsin Construction Site Erosion Best Management Handbook (DNR Publication WR-222-89) be used as a reference for any development that occurs in the Neenah Creek Priority Watershed Project.

## Stormwater Management

### Town of Jackson

Adams County was the fastest growing county in Wisconsin between 1980 and 1990 (15.9%). Jackson township, in Adams County, has several lakes which face development pressure. As new developments go in, it is critical that they be designed to protect water quality. A stormwater management plan or ordinance would be extremely beneficial to protecting these lakes. The stormwater ordinance could require contractors to have a stormwater plan before a building permit is issued. Such a plan would also: a) limit impervious areas, b) require installation of practices if necessary to protect water quality from pollutants and changes in peak flow or volume that could lead to flooding, draining problems, or changes in channel stability.

Funding for the development of a stormwater management plan and ordinance may be available with up to 100 percent cost-shared. Usually the ordinance is the legal method of implementing the plan. Funding for enforcement of the plan may be available at 100 percent cost-sharing for up to five years. The plan should focus at least on the areas that drain to the lakes, and should deal with water quality issues.

# CHAPTER FIVE
# Local Government's Implementation Program

## Introduction

This chapter identifies the means for implementing the rural and residential land use management actions for nonpoint source pollution control described in the previous chapter. See Chapter 3 for information regarding other pollution sources. The success of this priority watershed project depends on the aggressive implementation of these nonpoint source pollution control strategies.

More specifically this chapter identifies:

1. The agencies and units of government responsible for carrying out the identified tasks;

2. The best management practices (BMPs) necessary to control pollutants on the critical sites identified in Chapter 4;

3. The cost-share budget;

4. The cost containment policies;

5. The cost-share agreement reimbursement procedures, including administrative procedures for carrying out the project;

6. Staffing needs, including total hours per year and number of staff to be hired;

7. Schedules for implementing the project;

8. The involvement of other programs;

9. The project budget, including the expense for cost-sharing, and staffing for technical assistance, administration, and the information and education program.

# Project Participants: Roles and Responsibilities

## Landowners and Land Operators

Owners and operators of public and private lands are important participants in the priority watershed program. They will adopt BMPs which reduce nonpoint sources of water pollution and protect and enhance fish, wildlife and other resources. Landowners and land operators in the Neenah Creek Watershed eligible for cost-share assistance through the priority watershed program include: 1) individuals; 2) Adams, Columbia, and Marquette Counties; 3) other governmental units described in NR 120.02(19); 4) corporations; and 5) the State of Wisconsin.

Adams, Columbia, and Marquette Counties are the primary units of government responsible for implementing this plan in rural areas.

The County Land Conservation Committee (LCC) will act for the County Board and will be responsible contractually and financially to the State of Wisconsin for management of the project in areas with rural land uses. The County LCC will coordinate the activities of all other agencies involved with the rural portion of the project.

The specific responsibilities for the county are defined in the Wisconsin Administrative Rules, s. NR 120.04, and are summarized below:

1. Identify in writing a person to represent the county during implementation of the project.

2. Contact all owners or operators of lands identified as significant nonpoint sources (Cat I) within one year of signing the nonpoint source grant agreement. The county's strategy for contacting landowners is included in this chapter.

3. Develop farm conservation plans consistent with the needs of the project.

4. Enter into nonpoint source cost-share agreements with eligible landowners and enforce the terms and conditions of cost-share agreements as defined in s. NR 120.13, Wisconsin Administrative Code.

5. For lands the county owns or operates, to enter into cost-share agreements with DNR to correct identified nonpoint sources and fulfill their obligations as a cost-share recipient.

6. Design best management practices and verify proper practice installation.

7. Reimburse cost share recipients for the eligible costs of installing BMPs at the rates consistent with administrative rules and as established in this plan.

8. Prepare and submit annual work plans for activities necessary to implement the project. The Adams, Columbia, and Marquette County LCDs shall submit a workload analysis and grant application to the DATCP as required in s. Ag. 166.50.

9. Prepare and submit to the DNR and the DATCP the annual resource management report required under s. NR 120.21(7) to monitor project implementation by tracking changes in the nonpoint source inventory, and quantifying pollutant load reductions which result from installing BMPs.

10. Participate in the annual watershed project review meeting.

11. Conduct the information and education activities identified in this plan for which they are responsible.

**Department of Natural Resources**

The role of the DNR is identified in s. 144.24, Stats. and s. NR 120, Wis. Adm. Code. (NR 120) The Department has been statutorily assigned the overall administrative responsibility for the Wisconsin Nonpoint Source Pollution Abatement Program. The Department's role is summarized below.

**Project Administration**

Project administration includes working with the counties to ensure that work commitments required during the 8-year project implementation phase can be met. The DNR will participate in the annual work planning process with the county.

The Department reviews cost-share agreements signed by the county and the participating landowners for installing BMPs. The DNR provides guidance when questions arise concerning the conformance of proposed activities with the statutes, administrative rules, and the watershed plan.

**Financial Support**

Financial support for implementation of the priority watershed project is provided to each county in two ways: a local assistance grant agreement, and a nonpoint source grant agreement. These agreements are described later in this chapter.

The DNR may also enter into cost-share agreements directly with local or state units of government for the control of pollution sources on land the governments own or operate.

**Project Evaluation**

The DNR has responsibility for priority watershed project monitoring and evaluation activities. These efforts determine if changes in water quality occur as best management practices and other pollution controls are installed or implemented. The water quality evaluation and monitoring strategy for the Neenah Creek Watershed is included in Chapter 8.

The DNR documents the results of monitoring and evaluation activities in interim and final priority watershed project reports.

**Technical Assistance**

The DNR provides technical assistance to the county on the design and application of best management practices. This assistance is primarily for urban areas.

**Other Responsibilities**

These include:

1. The appropriate District Nonpoint Source Coordinator arranges for DNR staff to assist county staff with site reviews to determine the impacts of nonpoint sources on wetlands and/or groundwater quality.
2. The appropriate District Nonpoint Source Coordinator assists county staff in integrating wildlife and fish management concerns into selection and design of BMPs.

**Department of Agriculture, Trade and Consumer Protection**

The role of the DATCP is identified in s. 144.25, stats., ch. 92 stats., and NR 120. In summary, the DATCP will:

1. Manage a training program for the staff involved with project implementation.

2. Cooperate with the University of Wisconsin - Extension to act as a clearinghouse for information related to agricultural best management practices, sustainable agriculture, and nutrient and pest management.

3. Assist the counties to carry out the information and education activities or tasks described in this plan.

4. Assist county staff to identify watershed participants subject to federal or state conservation compliance programs.

5. Assist counties, if requested, to develop a manure storage ordinance.

6. Assist county staff to complete annual workload analyses and grant applications for work conducted under the priority watershed project.

7. Participate in the annual project review meetings.

8. If the need arises, assist in developing technical standards for agricultural BMPs, and provide technical assistance to county staff concerning application of these practices.

9. Assist county staff to evaluate the site specific practicality of implementing rural best management practices.

10. Provide technical and engineering assistance to counties for agricultural BMPs.

### Other Agencies

The Neenah Creek Watershed Project will receive assistance from the agencies listed below.

### Soil Conservation Service (SCS)

This agency works through the local LCC to provide technical assistance for planning and installing conservation practices. The local SCS personnel will work with the county staff to provide assistance with technical work when requested by the Land Conservation Committee and if SCS staff time is available. Personnel from the Area SCS office will provide staff training and engineering assistance for best management practices. Efforts will be made by DATCP to assist SCS to coordinate the Neenah Creek Priority Watershed Project with the conservation compliance and other conservation provisions of the 1985 and subsequent Federal Farm Bills.

### University of Wisconsin Extension (UWEX)

County and Area Extension agents will provide support in developing and conducting a public information and education program aimed at increasing voluntary participation in the project. This will include assistance to carry out the information and education activities identified in this plan.

### Agricultural Stabilization and Conservation Service (ASCS)

ASCS administers most of the federal programs aimed at the stabilization of the prices paid producers for agricultural products and administers federal funds for rural soil and water and other resource conservation activities. The Agricultural Conservation Program (ACP) which is administered by ASCS will, to the extent possible, be coordinated with the Neenah Creek Priority Watershed Project. In addition other conservation incentives such as the Conservation Reserve Program (CRP) will be used whenever possible to control critical nonpoint sources of pollution.

# Agricultural Best Management Practices (BMPs)

### BMPs Eligible For Cost-Sharing And Their Rates

Best management practices are those practices identified in NR 120 which are determined in this watershed plan to be the most effective controls of the nonpoint sources of pollution.

The practices eligible for cost-sharing and the cost share rates for each BMP are listed in tables 5-1 and 5-2 below.

Design and installation of all BMPs must meet the conditions listed in NR 120. Generally these practices use specific standard specifications included in the SCS Field Office Technical Guide. In some cases additional specifications may apply. The applicable specifications for each BMP can be found in NR 120.14. The Department may approve alternative best management practices and design criteria based on the provisions of NR 120.15 where necessary to meet the water resource objectives. Regarding alternative agricultural BMPs, this approval is developed in consultation with DATCP.

If the installation of BMPs destroys significant wildlife habitat, NR 120 requires that habitat will be recreated to replace the habitat lost. The DNR District Private Lands Wildlife Specialist or a designee will assist the LCD in determining the significance of wildlife habitat and the methods used to recreate the habitat. Every effort shall be made during the planning, design, and installation of BMPs to prevent or minimize the loss of existing wildlife habitat.

Following is a brief description of some of the most commonly used BMPs included in table 5-1 and 5-2. A more detailed description of these practices can be found in NR 120.14.

**Contour Farming**

The farming of sloped land so that all operations from seed bed preparation to harvest are done on the contour.

**Contour Stripcropping**

Growing crops in a systematic arrangement of strips or bands, on the contour, in alternate strips of close grown crops, such as grasses or legumes, and row crops. All operations from seed bed preparation to harvest are done on the contour.

**Reduced Tillage**

A system which leaves substantial amounts of crop residue on the soil surface after crops are planted. The minimum amount of ground cover after planting shall be 30%. It is utilized in two situations; one for continuous (at least 3 consecutive years) row crops, the other for short crop rotations (no more than 2 years corn and small grains and hay) or for the establishment of forages and small grains.

**Critical Area Stabilization**

The planting of suitable vegetation on critical nonpoint source sites and other treatment necessary to stabilize a specific location, including in-field buffers.

## Table 5-1. State Cost-share % Rates for Best Management Practices[1]

| BEST MANAGEMENT PRACTICE | STATE COST SHARE RATE |
|---|---|
| Field Diversions and Terraces | 70% |
| Grassed Waterways | 70% |
| Critical Area Stabilization | 70%[2] |
| Shoreline Buffers | 70%[2] |
| Wetland Restoration | 70%[2] |
| Shoreline and Streambank Stabilization | 70%[2] |
| Grade Stabilization Structures | 70% |
| Agricultural Sediment Basins | 70% |
| Barnyard Runoff Management | 70% |
| Animal Lot Relocation | 70% |
| Manure Storage Facilities | 70%[3] |
| Livestock Exclusion from Woodlots | 50% |
| Nutrient and Pesticide Management | 50%[3] |
| Abandonment of Leaking and Improperly Sited Manure Storage Systems | 50% |
| Field Windbreaks | 70% |

[1] Table 5-2 shows BMPs cost shared at a flat rate.
[2] Easements may be entered into with landowners identified in the watershed plan in conjunction with these BMPs. See Chapter 4 for an explanation of where easements may apply.
[3] Maximum cost share amount is $20,000 for manure storage.
[4] Spill control basins have a state cost share rate of 70%.

## Table 5-2. Practices Using a Flat Rate for State Cost-Share Funding

| BEST MANAGEMENT PRACTICE | FLAT RATE |
|---|---|
| Contour Farming | $ 6.00/ac[1] |
| Contour Stripcropping | $ 12.00/ac[1] |
| Reduced Tillage | $ 45.00/ac[2] |
| Reduced Tillage | $ 15.00/ac[3] |

[1] Wildlife habitat restoration components of this practice are cost-shared at 70%.
[2] $45 per acre over 3 years for reduced tillage on continuous row croplands.
[3] $15 per acre for one year only for reduced tillage on crop rotations involving hay.

### Grassed Waterways

A natural or constructed channel shaped, graded and established with suitable cover as needed to prevent erosion by runoff waters.

### Grade Stabilization Structure

A structure used to reduce the grade in a channel to protect the channel from erosion or to prevent the formation or advance of gullies.

### Livestock Exclusion from Woodlots

The exclusion of livestock from woodlots to protect the woodlots from grazing by fencing or other means.

### Shoreline and Streambank Stabilization

The stabilization and protection of stream and lake banks against erosion and the protection of fish habitat and water quality from livestock access. This practice includes streambank riprap, streambank shaping and seeding, stream crossings, livestock watering, fencing and fish habitat structures. This practice may also include plans and practices to manage or exclude livestock.

### Terraces

A system of ridges and channels with suitable spacing and constructed on the contour with a suitable grade to prevent erosion in the channel.

### Field Diversions

The purpose of this practice is primarily to divert water from areas it is in excess or is doing damage to where it can be transported safely.

### Barnyard Runoff Management

Structural measures such as filter systems and/or diversions and rain gutters to redirect surface runoff around the barnyard, and collect, convey or temporarily store runoff from the barnyard.

### Manure Storage Facility

A structure for the storage of manure for a period of time that is needed to reduce the impact of manure as a nonpoint source of pollution. Livestock operations where this practice applies are those where manure is winter spread on fields that have a high potential for runoff to lakes, streams and groundwater. The facility is needed to store and properly spread manure according to a management plan.

### Agricultural Sediment Basins

A structure designed to reduce the transport of sediment eroded from critical agricultural fields and other pollutants to surface waters and wetlands.

### Shoreline Buffers

A permanently vegetated area immediately adjacent to lakes, streams, channels and wetlands designed and constructed to manage critical nonpoint sources or to filter pollutants from nonpoint sources.

### Animal Lot Relocation

Relocation of an animal lot from a critical site such as a floodway to a suitable site to minimize the amount of pollutants from the lot to surface or groundwater.

### Wetland Restoration

The construction of berms or destruction of the function of tile lines or drainage ditches to create conditions suitable for wetland vegetation.

### Nutrient Management

The management and crediting of nutrients for the application of manure and commercial fertilizers, and crediting for nutrients from legumes. Management includes the rate, method and timing of the application of all sources of nutrients to minimize the amount of nutrients entering surface or groundwater. This practice includes manure nutrient testing, routine soil testing, and residual nitrogen soil testing.

### Pesticide Management and Spill Control Basin

The management of the handling, disposal and application of pesticides including the rate, method and timing of application to minimize the amount of pesticides entering surface and groundwater. This practice includes integrated pest management scouting and planning and spill control basins with liquid-tight floors for pesticide handling areas.

### Easements

Although not considered to be Best Management Practices, easements are useful legal tools and their applicability is defined in Chapter 4, Management Actions. Details for such arrangements will be worked out between DNR and the counties during implementation phase.

## Alternative BMPs

- ***Abandonment of Leaking and Improperly Sited Manure Storage Systems:*** Proper abandonment of leaking and improperly sited manure storage systems will aid in protection of water resources from contamination by animal waste. The practice includes proper removal and disposal of wastes, liner materials, and saturated soil, as well as shaping, filling, and seeding. Technical specifications for this BMP will be provided by the DNR.

- ***Field Windbreak:*** Reduction in wind erosion will aid in the protection of water resources from contamination by sediment, herbicides, fertilizers and other contaminants. The practice includes site preparation, plant materials, installation, weed control and fencing. Technical specifications for this BMP will be provided by the DNR.

Under some circumstances, practices may be recommended that are not included on the BMP list. Administrative Rule NR 120.15 provides for alternative practices where necessary to meet the water resource objectives identified in the watershed plan. The Department shall identify in the nonpoint source grant agreement the design criteria and standards and specifications where appropriate, cost share conditions, and cost share rates for each alternative best management practice.

### BMPs Not Cost-Shared

BMPs not cost-shared, but which shall be included on the cost share agreement if necessary to control the nonpoint sources, are listed in NR 120.17. Several examples are included below.

- That portion of a practice to be funded through other programs.

- Practices previously installed and necessary to support cost-shared practices.

- Changes in crop rotations and other activities normally and routinely used in growing crops or which have installation costs that can be passed on to potential consumers.

- Changes in location of unconfined manure stacks involving no capital cost.

- Other activities the DNR and the Counties determine are necessary to achieve the objectives of the watershed project.

### Activities and Sources of Pollution Not Eligible For Cost Share Assistance

Priority watershed cost-share funds cannot be used to control sources of pollution and land management activities specifically listed in NR 120.10(2). The following is a partial list of ineligible activities most often inquired about for cost-sharing in rural areas.

- Operation and maintenance of cost-shared BMPs,
- Actions which have drainage of land or clearing of land as the primary objective,
- Practices already installed,with the exception of repairs to the practices which were rendered ineffective due to circumstances beyond the control of the landowner,
- Activities covered under the Wisconsin Pollution Discharge Elimination System (WPDES) Program or covered in other ways by Chapter 147 of Wis. Stats. (including livestock operations with more than 1,000 animal units, or livestock operations issued a notice of discharge under ch. NR 243),
- Septic system controls or maintenance,
- Dredging activities,
- Silvicultural activities,
- Bulk storage of fertilizers and pesticides,
- Activities and structures intended primarily for flood control,
- Practices required to control sources which were adequately controlled at the time the cost-share agreement was signed, with the exception of those that occur beyond the control of the landowner,
- Other practices or activities determined by DNR not to meet the objectives of the program.

# Cost-Share Budget

### Costs of Installing BMPs

The quantity and type of management practices that are required to meet the water quality objectives of this project are listed in table 5-3. The capital cost of installing the BMPs are listed in this table assuming landowner participation rates of 100 percent and 75 percent. Also included are the units of measurement and cost per unit for the various BMPs.

The capital cost of installing the Best Management Practices is approximately $2.6 million, assuming 100 percent participation.

- State funds necessary to cost-share this level of control would be about $1.8 million.
- The local share provided by landowners and other cost-share recipients would be about $0.7 million.

At a 75 percent level of participation, the state funds needed to cover capital installation would be about $1.4 million.

**Easement Costs**

Chapter 4 identifies where nonpoint source program funds can be used to purchase easements. The estimated cost of purchasing easements on eligible lands in Adams, Columbia, and Marquette Counties is shown in table 5-3a, 5-3b and 5-3c. At 100 percent participation, the estimated purchase price of easements on eligible lands would be $600,000. At 75 percent participation, the cost would be $450,000. The easement costs would be paid for entirely by the state. However, it is very difficult to determine landowner response to easements as a management tool. Easements are a relatively new tool in the Priority Watershed Program. Therefore, it is very difficult to estimate cost.

**Stormwater Management Planning Costs**

Chapter 4 identifies where nonpoint source program funds can be used to develop stormwater management plans. Table 5-3d shows estimated costs. At 100 percent participation, the estimated state costs would be $110,000. However, it is very difficult to estimate the response of municipalities to stormwater management planning, and, therefore, very difficult to estimate costs.

# Residential Land Use Nonpoint Source Implementation Strategy

Land use in the Neenah Creek watershed is mostly rural. However, the village of Oxford, the unincorporated community of Briggsville and the township of Jackson are eligible for funding for development of stormwater management plans. Cost-sharing may be directly from the DNR or via the county LCD. Estimated cost of implementing this strategy is shown in table 5-3d.

## Table 5-3. Total Cost-Share Budget Needs for Rural Management Practices

| Best Management Practices | Number | Cost/Unit | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Change in Crop Rotation | 2,100 ac | NA (2) | 0 | 0 | 0 | 0 | 0 |
| Contour Cropping | 1,720 ac | 6 | 10,320 | 10,320 | 0 | 7,740 | 0 |
| Contour Strip Cropping | 460 ac | 12 | 5,520 | 5,520 | (3) | 4,140 | (3) |
| Reduced Tillage (4) | 7,000 ac | 45 | 315,000 | 315,000 | 0 | 236,250 | 0 |
| Reduced Tillage (5) | 12,500 ac | 15 | 187,500 | 187,500 | 0 | 140,625 | 0 |
| Critical Area Stabilization | 470 ac | 300 | 141,000 | 98,700 | 42,300 | 74,025 | 31,725 |
| Grass Waterways | 45 ac | 2,500 | 112,500 | 78,750 | 33,750 | 59,063 | 25,313 |
| Field Diversions & Terraces | 13,000 ft | 3 | 39,000 | 27,300 | 11,700 | 20,475 | 8,775 |
| Grade Stabilization | 6 ea | 3,000 | 18,000 | 12,600 | 5,400 | 9,450 | 4,050 |
| Agricultural Sediment Basin | 3 ea | 10,000 | 30,000 | 21,000 | 9,000 | 15,750 | 6,750 |
| Nutrient Management (6) | 7,500 ac | 18 | 139,500 | 69,750 | 69,750 | 52,313 | 52,313 |
| Nutrient and Pest Mgmt. (6) | 7,500 ac | 30 | 232,500 | 116,250 | 116,250 | 87,188 | 87,188 |
| Shoreline Buffers | 140 ac | 200 | 28,000 | 19,600 | 8,400 | 14,700 | 6,300 |
| Wetland Restoration | 33 ea | 3,000 | 99,000 | 69,300 | 29,700 | 51,975 | 22,275 |
| Livestock Exclusion, Woods | 1,000 rods | 15 | 15,000 | 7,500 | 7,500 | 5,625 | 5,625 |
| Spill Control Basins | 8 ea | 15,000 | 120,000 | 84,000 | 36,000 | 63,000 | 27,000 |
| Animal Waste Management | | | | | | | |
| Barnyard Runoff Control | | | | | | | |
| Complete System | 14 ea | 20,000 | 280,000 | 196,000 | 84,000 | 147,000 | 63,000 |
| Roof Gutters | 10 ea | 2,000 | 20,000 | 14,000 | 6,000 | 10,500 | 4,500 |
| Clean Water Diversion | 10 ea | 2,500 | 25,000 | 17,500 | 7,500 | 13,125 | 5,625 |
| Manure Storage Facility (7) | 8 ea | 30,000 | 240,000 | 160,000 | 80,000 | 120,000 | 60,000 |
| Abandoned/Improperly Sited | 5 ea | 30,000 | 150,000 | 75,000 | 75,000 | 56,250 | 56,250 |
| Manure Storage Systems | | | | | | | |
| Streambank Erosion Control | | | | | | | |
| Shape and Seeding | 27,500 ft | 7 | 192,500 | 134,750 | 57,750 | 101,063 | 43,313 |
| Fencing | 3,300 rods | 20 | 66,000 | 46,200 | 19,800 | 34,650 | 14,850 |
| Riprap | 3,300 ft | 20 | 66,000 | 46,200 | 19,800 | 34,650 | 14,850 |

## Table 5-3. Continued.

| Best Management Practices | Number | Cost/Unit | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Livestock/Machinery | | | | | | | |
| Crossing/Watering Ramp | 13 ea | 1,500 | 19,500 | 13,650 | 5,850 | 10,238 | 4,388 |
| Remote Watering Systems | 19 ea | 1,500 | 28,500 | 19,950 | 8,550 | 14,963 | 6,413 |
| Subtotal: | | | $2,580,340 | $1,846,340 | $734,000 | $1,384,755 | $550,500 |
| Easements | 1,200 ac | 500 | 600,000 | 600,000 | 0 | 450,000 | 0 |
| TOTALS | | | $3,180,340 | $2,446,340 | $734,000 | $1,834,755 | $550,500 |

(1) Total cost to control identified critical pollution sources
(2) NA means that cost share funds are not available for this practice
(3) Local share consists of labor and any additional equipment costs, also see flat rates
(4) Reduced tillage on greater than three years continuous row crops
(5) Reduced tillage, including no-till, on rotations including hay
(6) Nutrient and Pest Management is cost shared per acre over a three year period.
(7) Maximum cost-share is $20,000

Source: DNR; DATCP; and the Land Conservation Department of Adams, Columbia, and Marquette Counties

## Table 5-3a. Cost-Share Budget Needs for Rural Management Practices in Adams County

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Change in Crop Rotation | 1,000 ac | NA (2) | 0 | 0 | 0 | 0 | 0 |
| Contour Cropping | 1,000 ac | 6 | 6,000 | 6,000 | (3) | 4,500 | (3) |
| Contour Strip Cropping | 260 ac | 12 | 3,120 | 3,120 | (3) | 2,340 | (3) |
| Reduced Tillage (4) | 1,000 ac | 45 | 45,000 | 45,000 | (3) | 33,750 | (3) |
| Reduced Tillage (5) | 1,000 ac | 15 | 15,000 | 15,000 | (3) | 11,250 | (3) |
| Critical Area Stabilization | 280 ac | 300 | 84,000 | 58,800 | 25,200 | 44,100 | 18,900 |
| Grass Waterways | 25 ac | 2,500 | 62,500 | 43,750 | 18,750 | 32,813 | 14,063 |
| Field Diversions & Terraces | 7,000 ft | 3 | 21,000 | 14,700 | 6,300 | 11,025 | 4,725 |
| Grade Stabilization | 3 ea | 3,000 | 9,000 | 6,300 | 2,700 | 4,725 | 2,025 |
| Agricultural Sediment Basin | 1 ea | 10,000 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Nutrient Management (6) | 4,500 ac | 18 | 81,000 | 40,500 | 40,500 | 30,375 | 30,375 |
| Nutrient and Pest Mgmt. (6) | 4,500 ac | 30 | 135,000 | 67,500 | 67,500 | 50,625 | 50,625 |
| Shoreline Buffers | 30 ac | 200 | 6,000 | 4,200 | 1,800 | 3,150 | 1,350 |
| Wetland Restoration | 15 ea | 3,000 | 45,000 | 31,500 | 13,500 | 23,625 | 10,125 |
| Livestock Exclusion, Woods | 500 rods | 15 | 7,500 | 3,750 | 3,750 | 2,813 | 2,813 |
| Spill Control Basins | 4 ea | 15,000 | 60,000 | 42,000 | 18,000 | 31,500 | 13,500 |
| Animal Waste Management | | | | | | | |
| Barnyard Runoff Control | | | | | | | |
| Complete System | 4 ea | 20,000 | 80,000 | 56,000 | 24,000 | 42,000 | 18,000 |
| Roof Gutters | 4 ea | 2,000 | 8,000 | 5,600 | 2,400 | 4,200 | 1,800 |
| Clean Water Diversion | 4 ea | 2,500 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Manure Storage Facility (7) | 3 ea | 30,000 | 90,000 | 60,000 | 30,000 | 45,000 | 22,500 |
| Abandoned/Improperly Sited | 2 ea | 30,000 | 60,000 | 30,000 | 30,000 | 22,500 | 22,500 |
| Manure Storage Facility | | | | | | | |

**Table 5-3a. Continued.**

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Streambank Erosion Control | | | | | | | |
| Shape and Seeding | 10,000 ft | 7 | 70,000 | 49,000 | 21,000 | 36,750 | 15,750 |
| Fencing | 600 rods | 20 | 12,000 | 8,400 | 3,600 | 6,300 | 2,700 |
| Riprap | 1,800 ft | 20 | 36,000 | 25,200 | 10,800 | 18,900 | 8,100 |
| Livestock/Machinery | | | | | | | |
| Crossing/Watering Ramp | 8 ea | 1,500 | 12,000 | 8,400 | 3,600 | 6,300 | 2,700 |
| Remote Watering Systems | 8 ea | 1,500 | 12,000 | 8,400 | 3,600 | 6,300 | 2,700 |
| Subtotal: | | | $1,070,120 | $737,120 | $333,000 | $552,840 | $249,750 |
| Easements | 400 ac | 500 | 200,000 | 200,000 | 0 | 150,000 | 0 |
| TOTALS | | | $1,270,120 | $937,120 | $333,000 | $702,840 | $249,750 |

(1) Total cost to control identified critical pollution sources
(2) NA means that cost share funds are not available for this practice
(3) Local share consists of labor and any additional equipment costs, also see flat rates
(4) Reduced tillage on greater than three years continuous row crops
(5) Reduced tillage, including no-till, on rotations including hay
(6) Nutrient and Pest Management is cost shared per acre over a three year period.
(7) Maximum cost-share is $20,000

Source: DNR; DATCP; and the Land Conservation Department of Adams County

## Table 5-3b. Cost-Share Budget Needs for Rural Management Practices in Marquette County

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Change in Crop Rotation | 500 ac | NA (2) | 0 | 0 | 0 | 0 | 0 |
| Contour Cropping | 120 ac | 6 | 720 | 720 | (3) | 540 | (3) |
| Contour Strip Cropping | 100 ac | 12 | 1,200 | 1,200 | (3) | 900 | (3) |
| Reduced Tillage (4) | 5,000 ac | 45 | 225,000 | 225,000 | (3) | 168,750 | (3) |
| Reduced Tillage (5) | 5,000 ac | 15 | 75,000 | 75,000 | (3) | 56,250 | (3) |
| Critical Area Stabilization | 50 ac | 300 | 15,000 | 10,500 | 4,500 | 7,875 | 3,375 |
| Grass Waterways | 10 ac | 2,500 | 25,000 | 17,500 | 7,500 | 13,125 | 5,625 |
| Field Diversions & Terraces | 3,000 ft | 3 | 9,000 | 6,300 | 2,700 | 4,725 | 2,025 |
| Grade Stabilization | 1 ea | 3,000 | 3,000 | 2,100 | 900 | 1,575 | 675 |
| Agricultural Sediment Basin | 1 ea | 10,000 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Nutrient Management (6) | 2,500 ac | 18 | 45,000 | 22,500 | 22,500 | 16,875 | 16,875 |
| Nutrient and Pest Mgmt. (6) | 2,500 ac | 30 | 75,000 | 37,500 | 37,500 | 28,125 | 28,125 |
| Shoreline Buffers | 50 ac | 200 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Wetland Restoration | 8 ea | 3,000 | 24,000 | 16,800 | 7,200 | 12,600 | 5,400 |
| Livestock Exclusion, Woods | 200 rods | 15 | 3,000 | 1,500 | 1,500 | 1,125 | 1,125 |
| Spill Control Basins | 2 ea | 15,000 | 30,000 | 21,000 | 9,000 | 15,750 | 6,750 |
| Animal Waste Management | | | | | | | |
| Barnyard Runoff Control | | | | | | | |
| Complete System | 3 ea | 20,000 | 60,000 | 42,000 | 18,000 | 31,500 | 13,500 |
| Roof Gutters | 1 ea | 2,000 | 2,000 | 1,400 | 600 | 1,050 | 450 |
| Clean Water Diversion | 1 ea | 2,500 | 2,500 | 1,750 | 750 | 1,313 | 563 |
| Manure Storage Facility (7) | 3 ea | 30,000 | 90,000 | 60,000 | 30,000 | 45,000 | 22,500 |
| Abandoned/Improperly Sited | 1 ea | 30,000 | 30,000 | 15,000 | 15,000 | 11,250 | 11,250 |
| Manure Storage Facility | | | | | | | |

**Table 5-3b. Continued.**

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Streambank Erosion Control | | | | | | | |
| Shape and Seeding | 12,500 ft | 7 | 87,500 | 61,250 | 26,250 | 45,938 | 19,688 |
| Fencing | 800 rods | 20 | 16,000 | 11,200 | 4,800 | 8,400 | 3,600 |
| Riprap | 1,000 ft | 20 | 20,000 | 14,000 | 6,000 | 10,500 | 4,500 |
| Livestock/Machinery | | | | | | | |
| Crossing/Watering Ramp | 3 ea | 1,500 | 4,500 | 3,150 | 1,350 | 2,363 | 1,013 |
| Remote Watering Systems | 8 ea | 1,500 | 12,000 | 8,400 | 3,600 | 6,300 | 2,700 |
| Subtotal: | | | $875,420 | $669,770 | $205,650 | $502,328 | $154,238 |
| Easements | 550 ac | 500 | 275,000 | 275,000 | 0 | 206,250 | 0 |
| TOTALS | | | $1,150,420 | $944,770 | $205,650 | $708,578 | $154,238 |

(1) Total cost to control identified critical pollution sources
(2) NA means that cost share funds are not available for this practice
(3) Local share consists of labor and any additional equipment costs, also see flat rates
(4) Reduced tillage on greater than three years continuous row crops
(5) Reduced tillage, including no-till, on rotations including hay
(6) Nutrient and Pest Management is cost shared per acre over a three year period.
(7) Maximum cost-share is $20,000

Source: DNR; DATCP; and the Land Conservation Department of Marquette County

## Table 5-3c. Cost-Share Budget Needs for Rural Management Practices in Columbia County

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Change in Crop Rotation | 600 ac | NA (2) | 0 | 0 | 0 | 0 | 0 |
| Contour Cropping | 600 ac | 6 | 3,600 | 3,600 | (3) | 2,700 | (3) |
| Contour Strip Cropping | 100 ac | 12 | 1,200 | 1,200 | (3) | 900 | (3) |
| Reduced Tillage (4) | 1,000 ac | 45 | 45,000 | 45,000 | (3) | 33,750 | (3) |
| Reduced Tillage (5) | 500 ac | 15 | 7,500 | 7,500 | (3) | 5,625 | (3) |
| Critical Area Stabilization | 140 ac | 300 | 42,000 | 29,400 | 12,600 | 22,050 | 9,450 |
| Grass Waterways | 10 ac | 2,500 | 25,000 | 17,500 | 7,500 | 13,125 | 5,625 |
| Field Diversions & Terraces | 3,000 ft | 3 | 9,000 | 6,300 | 2,700 | 4,725 | 2,025 |
| Grade Stabilization | 2 ea | 3,000 | 6,000 | 4,200 | 1,800 | 3,150 | 1,350 |
| Agricultural Sediment Basin | 1 ea | 10,000 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Nutrient Management (6) | 750 ac | 18 | 13,500 | 6,750 | 6,750 | 3,375 | 3,375 |
| Nutrient and Pest Mgmt. (6) | 750 ac | 30 | 22,500 | 11,250 | 11,250 | 8,438 | 8,438 |
| Shoreline Buffers | 60 ac | 200 | 12,000 | 8,400 | 3,600 | 6,300 | 2,700 |
| Wetland Restoration | 10 ea | 3,000 | 30,000 | 21,000 | 9,000 | 15,750 | 6,750 |
| Livestock Exclusion, Woods | 300 rods | 15 | 4,500 | 2,250 | 2,250 | 1,688 | 1,688 |
| Spill Control Basins | 2 ea | 15,000 | 30,000 | 21,000 | 9,000 | 15,750 | 6,750 |
| Animal Waste Management | | | | | | | |
| Barnyard Runoff Control | | | | | | | |
| Complete System | 7 ea | 20,000 | 140,000 | 98,000 | 42,000 | 73,500 | 31,500 |
| Roof Gutters | 5 ea | 2,000 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Clean Water Diversion | 5 ea | 2,500 | 12,500 | 8,750 | 3,750 | 6,563 | 2,813 |
| Manure Storage Facility (7) | 2 ea | 30,000 | 60,000 | 40,000 | 20,000 | 30,000 | 15,000 |
| Abandoned/Improperly Sited | 2 ea | 30,000 | 60,000 | 30,000 | 30,000 | 22,500 | 22,500 |
| Manure Storage Facility | | | | | | | |

**Table 5-3c. Continued.**

| Best Management Practices | Number | Cost/Unit in $ | Total Cost (1) | 100% Participation | | 75% Participation | |
|---|---|---|---|---|---|---|---|
| | | | | State Share | Local Share | State Share | Local Share |
| Upland NPS Control | | | | | | | |
| Streambank Erosion Control | | | | | | | |
| Shape and Seeding | 5,000 ft | 7 | 35,000 | 24,500 | 10,500 | 18,375 | 7,875 |
| Fencing | 1,900 rods | 20 | 38,000 | 26,600 | 11,400 | 19,950 | 8,550 |
| Riprap | 500 ft | 20 | 10,000 | 7,000 | 3,000 | 5,250 | 2,250 |
| Livestock/Machinery | | | | | | | |
| Crossing/Watering Ramp | 2 ea | 1,500 | 3,000 | 2,100 | 900 | 1,575 | 675 |
| Remote Watering Systems | 3 ea | 1,500 | 4,500 | 3,150 | 1,350 | 2,363 | 1,013 |
| Subtotal: | | | $634,800 | $439,450 | $195,350 | $329,588 | $146,513 |
| Easements | 250 ac | 500 | 125,000 | 125,000 | 0 | 93,750 | 0 |
| TOTALS | | | $759,800 | $564,450 | $195,350 | $423,338 | $146,513 |

(1) Total cost to control identified critical pollution sources
(2) NA means that cost share funds are not available for this practice
(3) Local share consists of labor and any additional equipment costs, also see flat rates
(4) Reduced tillage on greater than three years continuous row crops
(5) Reduced tillage, including no-till, on rotations including hay
(6) Nutrient and Pest Management is cost shared per acre over a three year period.
(7) Maximum cost-share is $20,000

Source: DNR; DATCP; and the Land Conservation Department of Columbia County

**Table 5-3d. Estimated Cost of Stormwater Management Planning**

| Municipality | Acres | Cost/Ac | Total Cost |
|---|---|---|---|
| Briggsville | 120 | $100 | $12,000 |
| Oxford | 480 | $100 | $48,000 |
| Jackson | 8,000 | $6.25 | $50,000 |
| TOTAL | 8,600 | | $110,000 |

Source: DNR table 5-e. shows more specific urban/residential practices eligible for cost-sharing.

**Table 5-e. Residential and Urban Implementation Eligible for State Funding**

| ACTIVITY | SUPPORT RATE |
|---|---|
| Development of Stormwater Management Ordinances | 100% |
| Engineering Studies for Existing Urban Areas; Studies for Planned Urban Areas | 100% (1) |
| Design and Engineering for Structural Best Management Ordinances | 100% |
| Staff for Enforcing Construction Stormwater Management Ordinances | 100% (2) |
| Development of Alternative Financing and Administration Strategies | 100% |

(1) Funding not available for components dealing exclusively with drainage and flooding.

(2) Funding limited to five years. Level of staffing based on a work plan submitted by local units of government and approved by the DNR.

Source: DNR.

# Cost Containment

## Cost Containment Procedures

Chapter NR 120 requires that cost containment procedures be identified in this plan to control the costs of installing BMPs. The cost containment procedures to be used by Adams, Columbia, and Marquette Counties are described below. The bidding procedure and average cost and flat rate lists can be obtained from the county LCD.

### Bids

Competitive bids will be required in each county for all structural BMPs with estimated total costs, as determined by the project technician, exceeding $5,000. The bidding process requires a minimum of two bids from qualified contractors in itemized bid format. In cases where bids were requested from a minimum of three qualified contractors but only one bid was received, the county will determine if the bid constitutes an appropriate cost for the project. If no bids are received or if the lone bid is not deemed appropriate, counties will limit cost sharing based on average costs.

### Average Costs

Average costs will be used for all structural BMPs with an estimated cost of less than $5,000 and for all non-structural BMPs not using a flat rate, unless the cost share recipient decides, and the county agrees, to bid the installation of the BMPs. If the cost share recipient or any county decides to bid a structural BMP under $5,000 the before mentioned bid procedure will pertain.

### Flat Rates

BMPs using flat rates are shown in table 5-2. The rates shown are the state's share of the practice installation costs.

Payments for "in kind" contributions will be based on each county's guidelines. Cost share recipients who wish to install a BMP using their own labor, material and equipment must submit a quote plus one quote from a qualified contractor for the practice installation.

The Wisconsin Conservation Corps may be used to install best management practices for cost share recipients.

Cost-share payments will be based on actual installation costs. If actual installation costs exceed the amount of cost-sharing determined by cost estimates, then the amount paid the grantee may be increased with the approval of the County Land Conservation Committee. Appropriate documentation regarding the need for changes will be submitted to DNR.

# Cost-Share Agreement Reimbursement Procedures

## Nonpoint Source Grant Agreement and Administration

### General Information

The Nonpoint Source Grant Agreement is the means for transmitting funds from the DNR (through the Nonpoint Source Program) to Adams, Columbia, and Marquette Counties for use in funding the state's share of cost share agreements. Cost share agreements are the means to transmit funds from the county to the landowners.

A portion of the Nonpoint Source Grant is forwarded to each County to allow the county to set up an "up front" account. Funds from this account are used by the county to pay landowners after practices are installed through the project. As this account is drawn down, the county will request reimbursements from DNR to replenish the account. The county will submit reimbursement requests on a quarterly basis or sooner if needed. This reimbursement schedule will insure that the "up front" account balance is maintained at an adequate level. The Nonpoint Source (NPS) Grant Agreement will be amended annually to provide funding needed for cost sharing for the year. The funds obligated under cost share agreements must never exceed the total funds in the NPS Grant Agreement.

### Fiscal Management Procedures, Reporting Requirements

Counties are required by NR 120 to maintain a financial management system that accurately tracks the disbursement of all funds used for the Neenah Creek Watershed Project. The records of all watershed transactions must be retained for 3 years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26.

## Cost Share Agreement and Administration

### Purpose and Responsibilities

Consistent with s. 144.25, Stats. and NR 120, Wis. Adm. Code, cost-share funding is available to landowners for a percent of the costs of installing BMPs to meet the project objectives. Landowners have three years after formal approval of the watershed plan to enter into cost-share agreements (CSA). Practices included on cost-share agreements must be installed within the schedule agreed to on the cost-share agreement. Unless otherwise approved, the schedule of installing BMPs will be within 5 years of signing the cost-share agreement. Practices must be maintained for a minimum of ten years from the date of installing the final practice included in the cost-share agreement.

The cost-share agreement is a legal contract between the landowner and the county. The agreement includes the name and other information about the landowner and grant recipient,

conditions of the agreement, the practices involved and their location, the quantities and units of measurement involved, the estimated total cost, the cost share rate and amount, the timetable for installation, and number of years the practice must be maintained. The agreements also identify and provide information on practices not cost-shared through the nonpoint program but that are essential to controlling pollution sources (such as crop rotations). These items will be completely listed in the conservation plan and the conservation plan is tied to the CSA via addendum 2 of the CSA. Once it is signed by both parties, they are legally bound to carry out the provisions in it.

If land ownership changes, the cost-share agreement remains with the property and the new owner is legally bound to carry out the provisions. NR 120.13(9) and (10) has more information on changes of land ownership and the recording of cost-share agreements.

Local, state, or federal permits may be needed prior to installation of some BMPs. The areas most likely to need permits are zoned wetlands and the shoreline areas of lakes and streams. These permits are needed whether the activity is a part of the watershed project or not. Landowners should consult with the County Planning and Zoning Department or the Land Conservation Department offices to determine if any permits are required. The landowner is responsible for acquiring the needed permits prior to installation of practices.

The cost-share agreement binds the county to provide the technical assistance needed for the planning, design, and verification of the practices on the agreement, and to provide the cost-share portion of the practice costs.

Counties are responsible for enforcing compliance of cost-share agreements to which they are a party. Where DNR serves as a party to an agreement with a unit of government, the DNR will take responsibility for monitoring compliance. The responsible party will insure that BMPs installed through the program are maintained in accordance with the operation and maintenance plan for the practice for the appropriate length of time. Adams, Columbia, and Marquette Counties will check for compliance with practice maintenance provisions once every three years after the last practice has been installed. The county must check maintenance at its own expense after the Nonpoint Source Agreement has lapsed, unless state funding for this activity becomes available at any time during the implementation or monitoring phase of this project.

**Landowner Contact Strategy**

The following procedure will be used to make landowner contacts.

- During the first three months of the implementation period, all landowners or operators with eligible nonpoint sources will receive from the county a mailing explaining the project and how they can become involved.

- After the initial landowner mailings, county staff will make personal contacts with all landowners that have been identified as having critical nonpoint sources of pollution (Management Category I). These contacts will occur within the cost-share sign-up period.

- The county will continue to make contacts with eligible (Management Category I and II) landowners and operators until they have made a definite decision regarding participation in the program.

- The county will contact all eligible landowners (as defined in c above) not signing cost-share agreements by personal letter six months prior to the end of the cost-share sign-up period.

**Procedure for Developing a Cost Share Agreement**

Eligibility for cost-sharing is verified following a site visit, using the criteria described in Chapter 4.

The development of farm conservation plans will be the primary method used to develop cost-share agreements. These plans are specific to a particular landowner and are a comprehensive approach to the abatement of the nonpoint sources of pollution, and the conservation of soil and other resources. The farm plan takes into consideration the sustainability of the agricultural resources and the management decisions of the owner or operator.

The cost share agreement specifies the items listed in the farm conservation plan that are necessary to reduce the nonpoint sources of pollution. The conservation plan and cost share agreement will document existing management which must be maintained to protect water quality.

The following procedure will be used by the county for developing and administering agreements. Below are the steps from the initial landowner contact through the completion of BMP maintenance.

1. Landowner and county staff meet to discus the watershed project, NPS control practice needs, and coordination with conservation compliance provisions if applicable.

2. Landowner agrees to participate with the watershed project.

3. A farm conservation plan is prepared by the county.

4. The landowner agrees with the plan, a Cost Share Agreement is prepared and both documents are signed by the landowner and the county. A copy of the Cost Share Agreement (CSA) is sent to the DNR Southern District Nonpoint Source Coordinator and a copy given to the landowner. The CSA will be recorded by the county with the County Register of Deeds.

5. Practices are designed by the county, or their designee, and a copy of the design is provided to the landowner.

6. Landowner obtains the necessary bids or other information required in the cost containment policy.

7. Amendments to the CSA are made if necessary.

8. The county staff oversee practice installation.

9. The county verifies the installation.

10. The landowner submits paid bills and proof of payment (canceled checks or receipts marked paid) to the county.

11. Land Conservation Committees or their designated representative and if required, county boards, approve cost-share payments to landowners.

12. Checks are issued by the county to the respective landowners and project ledgers are updated.

13. The county records the check amount, number, and date.

14. DNR reimburses the county for expended cost-share funds.

**Identifying Wildlife and Fishery Needs**

The Adams, Columbia, and Marquette County staff will consult with DNR's Southern District wildlife management and fisheries management staff to optimize the wildlife and fish management benefits of nonpoint source control BMPs. Specifically, the county staff will contact DNR staff if in the county's opinion: Fence rows, rock piles, wetlands, or other wildlife habitat components will be adversely affected by installation of agricultural BMPs.

The DNR staff will assist county staff at the County's request by:

- Identifying streambank protection practices that benefit fish and wildlife.

- Identifying wildlife habitat components that could be incorporated into vegetative filter strips along streams or in upland areas.

- Reviewing placement of agricultural sediment basins to assure that negative impacts on stream fish and aquatic life do not occur and recommending wildlife habitat components.

- Providing technical assistance when the installation of BMPs will require the removal of obstructions or other wildlife habitat by proposing measures to minimize impact on wildlife habitat.

- Assisting to resolve questions concerning effects of agricultural nonpoint source BMPs on wetlands.

### Submittal to the Department of Natural Resources

Cost-share agreements do not need prior approval from DNR, except in the following instances:

- where cost-share funds are to be used for practices on land owned or controlled by the county.
- for agreements or amendments where the cost-share amount for all practices for a landowner exceeds $50,000 in state funds.
- for grade stabilization structures and agricultural sediment basins with embankment heights between 15 and 25 feet and impoundment capacities of 15 to 50 acre feet.
- for streambanks to be controlled using riprap or other materials with banks over 6 feet high, according to NR120.14. If applications are similar to each other in content, they will be reviewed to determine if future applications need be subject to this approval procedure.
- for animal lot relocation.
- for roofs over barnyards or manure storage facilities.

## Local Assistance Grant Agreement Administration

### General Information

The Local Assistance Grant Agreement (LAGA) is a grant from the DNR to the County for staff and support costs. Consistent with NR 120, the counties will use funds from the LAGA for staff to implement the project and conduct information and education activities. Other items such as travel, training, and certain office supplies are also supported by the LAGA. Further clarification of eligible costs supported by this grant is given in NR 120.14(4) and (6).

### Grant Agreement Application Procedures

An annual review of the Local Assistance Grant Agreement is conducted through the development of an annual workload analysis by the county. This workload analysis estimates the work needed to be accomplished each year. The workload analysis is provided to DATCP and DNR for review and clarification. Along with the workload analysis, a grant application form is sent. Funds needed to complete the agreed upon annual workload are amended to the local assistance grant agreement.

### Fiscal Management Procedures, Reporting Requirements

Adams, Columbia, and Marquette Counties are required by NR 120 to maintain a financial management system that accurately tracks the disbursement of all funds used for the Neenah Creek Watershed Project. The records of all watershed transactions must be retained for 3 years after the date of final project settlement. A more detailed description of the fiscal management procedures can be found in NR 120.25 and NR 120.26. NR 120 requires quarterly reports to DATCP from the county in accordance with s. Ag. 166.40(4) accounting for staff time, expenditures, and accomplishments regarding activities funded through the watershed project.

# Budget and Staffing Needs

This section estimates the funding and staffing required to provide technical assistance for the rural portion of this project.

### Staff Needs

Tables 5-4 lists the total estimated staff needed to implement the project. Tables 5-4a,b and c list the estimated staff needed by county. Figures are provided for both the 50 percent and 75 percent levels of participation. A total of about 56,750 staff hours are required to implement this plan at a 75 percent landowner participation rate. This includes 4,680 staff hours to carry out the information and education program.
Currently, 3 positions are being funded on the Neenah Creek watershed project staff. The county and agencies will determine the need for additional staff based on the annual Workload Analysis. The county will assess the number and type of staff required for the final five years of the project based on the actual landowner participation following the three year cost-share sign-up period.

### Staffing Costs

The estimated cost for staff at the 75 percent participation rate (see table 5-5) is approximately $1.1 million. These costs will be paid by the state through the Local Assistance Grant Agreement.

## Table 5-4. Estimated County LCD Staff Needs for Project Implementation

| Activity | Project Years When Work Will Be Done | Adams, Marquette and Columbia Counties | |
|---|---|---|---|
| | | 75% Landowner Participation (Staff Hours) | 50% Landowner Participation (Staff Hours) |
| Project & Financial Mgmt. | 1-8 | 9,512 | 9,512 |
| Information & Education Program | 1-8 | 4,680 | 4,680 |
| Pre-Contact Office Inventory Landowner Contacts, & Progress Tracking | 1-3 | 4,389 | 2,926 |
| Conservation Planning & Cost Share Agreement Development | 1-3 | 9,119 | 6,079 |
| Plan Revisions and Monitoring | 1-8 | 6,224 | 3,632 |
| Practice Design & Installation<br>Upland Sediment Control<br>Animal Waste Management<br>Streambank Erosion Control | 1-8 | 9,237<br>8,950<br>3,168 | 5,642<br>4,864<br>2,112 |
| Training | 1-8 | 1,480 | 1,480 |
| Total LCD Workload: | | 56,750 | 40,926 |
| Estimated Staff Required for Years 1-3: | | 4.7 per year | 3.3 per year |
| Hours | | 9,777 per year | 6,848 per year |
| Estimated Staff Required for Years 4-8: | | 3.3 per year | 2.5 per year |
| Hours | | 6,886 per year | 5,118 per year |

Source: DNR; DATCP and Land Conservation Department of Marquette County

## Table 5-4a. Estimated County LCD Staff Needs for Project Implementation

| Activity | Project Years When Work Will Be Done | Adams County | |
|---|---|---|---|
| | | 75% Landowner Participation (Staff Hours) | 50% Landowner Participation (Staff Hours) |
| Project & Financial Mgmt. | 1-8 | 5,851 | 5,851 |
| Information & Education Program | 1-8 | 2,831 | 2,831 |
| Pre-Contact Office Inventory<br>Landowner Contacts, & Progress Tracking | 1-3 | 3,024 | 2,016 |
| Conservation Planning & Cost Share Agreement Development | 1-3 | 7,671 | 5,114 |
| Plan Revisions and Monitoring | 1-8 | 5,772 | 3,331 |
| Practice Design & Installation<br>Upland Sediment Control<br>Animal Waste Management<br>Streambank Erosion Control | 1-8 | 5,517<br>1,937<br>1,718 | 3,161<br>671<br>1,145 |
| Training | 1-8 | 1,080 | 1,080 |
| Total LCD Workload: | | 35,400 | 25,200 |
| Estimated Staff Required for Years 1-3: | | 3.0 per year | 2.0 per year |
| Hours | | 6,200 per year | 4,200 per year |
| Estimated Staff Required for Years 4-8: | | 2.0 per year | 1.5 per year |
| Hours | | 4,200 per year | 3,150 per year |

Source: DNR; DATCP and Land Conservation Department of Adams County

## Table 5-4b. Estimated County LCD Staff Needs for Project Implementation

| Activity | Project Years When Work Will Be Done | Marquette County | |
|---|---|---|---|
| | | 75% Landowner Participation (Staff Hours) | 50% Landowner Participation (Staff Hours) |
| Project & Financial Mgmt. | 1-8 | 1,861 | 1,861 |
| Information & Education Program | 1-8 | 1,849 | 1,849 |
| Pre-Contact Office Inventory Landowner Contacts, & Progress Tracking | 1-3 | 630 | 420 |
| Conservation Planning & Cost Share Agreement Development | 1-3 | 1,035 | 690 |
| Plan Revisions and Monitoring | 1-8 | 293 | 195 |
| Practice Design & Installation<br>Upland Sediment Control<br>Animal Waste Management<br>Streambank Erosion Control | 1-8 | 2,722<br>674<br>1,297 | 1,815<br>449<br>865 |
| Training | 1-8 | 320 | 320 |
| Total LCD Workload: | | 10,680 | 8,463 |
| Estimated Staff Required for Years 1-3: | | 0.9 per year | 0.7 per year |
| hours | | 1,914 per year | 1,495 per year |
| Estimated Staff Required for Years 4-8: | | 0.6 per year | 0.5 per year |
| hours | | 1,266 per year | 1,017 per year |

Source: DNR; DATCP and Land Conservation Department of Marquette County

## Table 5-4c. Estimated County LCD Staff Needs for Project Implementation

| Activity | Project Years When Work Will Be Done | Columbia County | |
|---|---|---|---|
| | | 75% Landowner Participation (Staff Hours) | 50% Landowner Participation (Staff Hours) |
| Project & Financial Mgmt. | 1-8 | 1,800 | 1,800 |
| Information & Education Program | 1-8 | 0 | 0 |
| Pre-Contact Office Inventory<br>Landowner Contacts, & Progress Tracking | 1-3 | 735 | 490 |
| Conservation Planning & Cost Share Agreement Development | 1-3 | 413 | 275 |
| Plan Revisions and Monitoring | 1-8 | 159 | 106 |
| Practice Design & Installation<br>Upland Sediment Control<br>Animal Waste Management<br>Streambank Erosion Control | 1-8 | 998<br>6,332<br>153 | 666<br>3,744<br>102 |
| Training | 1-8 | 80 | 80 |
| Total LCD Workload: | | 10,670 | 7,263 |
| Estimated Staff Required for Years 1-3: | | .8 per year | .6 per year |
| hours | | 1,663 per year | 1,153 per year |
| Estimated Staff Required for Years 4-8: | | .7 per year | .5 per year |
| hours | | 1,420 per year | 951 per year |

Source: DNR; DATCP and Land Conservation Department of Columbia County

## Table 5-5. Total Project Costs and Disbursement Schedule at 75% Landowner Participation for Neenah Creek Watershed Project

| Item | 1 | 2 | 3 | 4-8 | TOTAL |
|---|---|---|---|---|---|
| Cost Share Funds: Practices | $276,951 | $553,902 | $553,902 | $0 | $1,384,756 |
| Cost Share Funds: Easements | 90,000 | 180,000 | 180,000 | 0 | $450,000 |
| Local Assistance Staff Support* | 171,815 | 171,815 | 171,815 | 602,175 | $1,117,620 |
| Information/Education Direct | 4,753 | 4,753 | 4,753 | 14,260 | $28,520 |
| Other Direct (travel, supplies, etc.) | 47,000 | 47,000 | 47,000 | 94,000 | $235,000 |
| TOTAL | $590,519 | $957,471 | $957,471 | $710,435 | $3,215,896 |

* Salary + Indirect = $36,400/year

Source: DNR; DATCP and Land Conservation Departments of Adams, Marquette and Columbia Counties

## Table 5-5a. Total Project Costs and Disbursement Schedule at 75% Landowner Participation for Adams County

| Item | 1 | 2 | 3 | 4-8 | TOTAL |
|---|---|---|---|---|---|
| Cost Share Funds: Practices | $110,568 | $221,136 | $221,136 | $0 | $552,840 |
| Cost Share Funds: Easements | 30,000 | 60,000 | 60,000 | 0 | $150,000 |
| Local Assistance Staff Support* | 109,200 | 109,200 | 109,200 | 364,000 | $691,600 |
| Information/Education Direct | 2,377 | 2,377 | 2,377 | 7,130 | $14,260 |
| Other Direct (travel, supplies, etc.) | 30,000 | 30,000 | 30,000 | 60,000 | $150,000 |
| TOTAL | $282,144 | $422,712 | $422,712 | $431,130 | $1,558,700 |

* Salary + Indirect = $36,400/year

Source: DNR; DATCP and Land Conservation Departments of Adams, Marquette and Columbia Counties

**Table 5-5b. Total Project Costs and Disbursement Schedule at 75% Landowner Participation for Marquette County**

| Item | 1 | 2 | 3 | 4-8 | TOTAL |
|---|---|---|---|---|---|
| Cost Share Funds: Practices | $100,466 | $200,931 | $200,931 | $0 | $502,328 |
| Cost Share Funds: Easements | 41,250 | 82,500 | 82,500 | 0 | $206,250 |
| Local Assistance Staff Support* | 33,495 | 33,495 | 33,495 | 110,775 | $211,260 |
| Information/Education Direct | 1,188 | 1,188 | 1,188 | 3,565 | $7,130 |
| Other Direct (travel, supplies, etc.) | 10,000 | 10,000 | 10,000 | 20,000 | $50,000 |
| TOTAL | $186,399 | $328,115 | $328,115 | $134,340 | $976,968 |

* Salary + Indirect = $36,400/year

Source: DNR; DATCP and Land Conservation Departments of Adams, Marquette and Columbia Counties

**Table 5-5c. Total Project Costs and Disbursement Schedule at 75% Landowner Participation for Columbia County**

| Item | 1 | 2 | 3 | 4-8 | TOTAL |
|---|---|---|---|---|---|
| Cost Share Funds: Practices | $65,918 | $131,835 | $131,835 | $0 | $329,588 |
| Cost Share Funds: Easements | 18,750 | 37,500 | 37,500 | 0 | $93,750 |
| Local Assistance Staff Support* | 29,120 | 29,120 | 29,120 | 127,400 | $214,760 |
| Information/Education Direct | 1,188 | 1,188 | 1,188 | 3,565 | $7,130 |
| Other Direct (travel, supplies, etc.) | 7,000 | 7,000 | 7,000 | 14,000 | $35,000 |
| TOTAL | $121,976 | $206,644 | $206,644 | $144,965 | $680,228 |

* Salary + Indirect = $36,400/year

Source: DNR; DATCP and Land Conservation Departments of Adams, Marquette and Columbia Counties

# Schedules

## Grant Disbursement and Project Management Schedule

Implementation may begin upon approval of this watershed plan by the Adams, Columbia, and Marquette County Boards; DATCP; and the DNR. The priority watershed project

implementation period lasts eight years. It includes an initial three year period for contacting eligible landowners and signing cost-share agreements. Practices on any cost-share agreement must be installed within five years of signing the CSA.

Under extenuating circumstances, the initial period for entering into cost-share agreements can be extended by DNR for a limited period of time if it will result in a significant increase in nonpoint source control. Limited extensions for the installation period for practices on individual cost-share agreements must also be approved by DNR and DATCP.

The disbursement of the grants (Local Assistance and Nonpoint Source) to the Counties will be based on an annual workload analysis and grant application process. The estimated grant disbursement schedule based on 75 percent participation by eligible landowners can be found in tables 5-5, 5-5a, 5-5b and 5-5c.

**Total Project Cost**

The total state funding required to meet the rural nonpoint source pollution control needs at a 75 percent level of landowner participation is presented tables 5-5, 5-5a, 5-5b and 5-5c.. This figure includes the capital cost of practices, staff support, and easement costs presented above. The estimated cost to the state is $3.4 million and the estimated cost to landowners and others is $0.6 million.

This cost estimate is based on projections developed by the agency planners and Land Conservation staff. Historically, the actual expenditures for projects are less than the estimated costs. The factors affecting expenditures for this watershed project include: the time it takes to plan the project; the length of time the project is under implementation; the amount of cost sharing that is actually expended; the number of staff working on the project; the amount of support costs; and the time local assistance is necessary.

# Involvement of Other Programs

## Coordination With State and Federal Conservation Compliance Programs

The Neenah Creek Watershed Project will be coordinated with the conservation compliance features of the Wisconsin Farmland Preservation Program (FPP) administered by DATCP, and the Federal Food Security Act (FSA) administered by the Soil Conservation Service. DATCP will assist the LCD and the SCS offices to identify landowners within the watershed that are subject to the compliance provisions of FPP and FSA. Conservation Farm Plans were completed for all landowners in FSA on December 31, 1989.

Implementation and amendment of these conservation plans will be necessary during the implementation phase of the watershed project. Watershed project staff will inform FPP and SCS staff of changes in plans resulting from management decisions and the installation of needed BMPs for nonpoint source pollution abatement. This comprehensive approach to

farm planning will facilitate consideration of the various goals and objectives for all the programs in which the landowner participates.

Some eroding uplands in management categories 1 and 2 may need control, in addition to that required for meeting sediment delivery targets, in order to meet soil erosion program goals established through other state and federal programs. Where this occurs, technical and financial assistance from the Nonpoint Source Program can be used to support practice design and installation on these critical lands. This assistance applies only where the additional control needed to meet soil erosion goals can be achieved using low cost practices.

# CHAPTER SIX
# Information and Education Program

## Preface

It is the considered opinion of each staff worker for the Neenah Creek Priority Watershed Project that it is important to emphasize information and education strategies. This is a large and diverse watershed with many different audiences. The bulk of improvements needed to abate nonpoint source pollution needs to come first from a change of attitude and a recognition of the connection of ourselves and what we do on the land with our water resources. Improvement will come from a change in management of our land along with the concomitant built systems available through the priority watershed program. Changing management procedures on agricultural as well as recreational land will require significant education and persuasion. This project will not be as costly in concrete and engineered solutions as many watershed projects. Funds should be allocated and can be well employed in teaching skills necessary to adopt practices in the agricultural areas of conservation tillage, crop scouting, integrated pest management, safe manure storage, handling and utilization, rotational grazing, wind erosion control and other sustainable agricultural practices. In the nonagricultural areas and at the farmsteads we feel education about buffer strips and uses of native vegetation, home pesticide and fertilizer use, home hazardous waste reduction and water infiltration practices is a necessary step for success in this watershed.

Therefore the tours, meetings, workshops, presentations and signage have been developed to provide an identity with the project and the solutions to the problem. We feel that these are essential to affect the types of changes in behavior necessary to make a difference long-term in this watershed. With these activities people will be better able to identify with the water and the land uses that impact water quality and will develop pride in the protection and improvement of local water quality and a connection between environmental health and economic well being.

## Objective

The objective of the Information and Education (I & E) Program is to improve water quality by maximizing landowner participation in the Neenah Creek Watershed Project; and to develop a citizenry that is knowledgeable about the problem of nonpoint source pollution and the Neenah Creek Priority Watershed Project, and is willing and able to reduce their contribution to surface and groundwater pollution.

# Goals of the Program

To achieve its objective of cleaner water, the I & E program has been structured around the following goals:

- Increased awareness, understanding and appreciation of the water resources in the Neenah Creek Watershed and its benefits to the area.

- Increased understanding of the principles of water pollution, especially nonpoint source (NPS) water pollution as experienced in the Neenah Creek Watershed and knowledge of how NPS impacts people and the natural environment.

- Increased awareness, knowledge and ability to implement Best Management Practices (BMPs) being promoted through the Neenah Creek Watershed Project, including awareness and knowledge of how these practices can lead to cleaner water and improved land management.

- Increased awareness and knowledge of habitat concerns and ecosystem sustainability within the Neenah Creek Watershed and willingness to participate in programs that improve fish and wildlife habitat.

- Increased awareness and understanding of the purpose, operation and benefits of the Neenah Creek Watershed Project.

# Audience

The primary audience of the I & E Program are Priority Watershed landowners who have been classified as eligible for project participation. Secondary audiences are priority watershed landowners that are not eligible for project participation, suppliers of services to the priority watershed, interest groups, and the general public [Citizen Advisory Committee members, nonresident lake users, residents of small towns and villages, rural nonagriculture landowners, lake and riverbank residents, campgrounds users, teachers and youth].

# Delivery Team

The Adams County Land Conservation Department (LCD) will take the lead responsibility for the delivery of the I & E Program. Marquette and Columbia County LCD offices will share responsibility for those I&E activities involving BMPs and agriculturally related I&E

activities, with the University of Wisconsin–Cooperative Extension (UWEX), the DNR and the Department of Agriculture (DATCP) providing supporting assistance.

# Activities

Brief program information is presented for each of the I & E Program activities listed below.

## Newsletters

Description: Newsletters will be a major component of the Neenah Creek I & E Program. During the sign-up period, newsletters will focus on building an awareness and knowledge of the problem of nonpoint source pollution and of promoting the purpose, operation and benefits of the project and of the Best Management Practices (BMP). Newsletters will be sent to all landowners in the watershed from an existing mailing list. In addition newsletters will be made available to other residents and nonresident lake users at other locations in the watershed. The implementation period newsletters will emphasize the operation and maintenance of BMPs, the water quality improvements realized through BMP installation and overall watershed progress. Four newsletters per year will be sent out during project sign-up. After project sign-up and until project end, two newsletters per year will be prepared. Newsletters will be the responsibility of the Adams County LCD in cooperation with UWEX.

Evaluation: Evaluation will be based on research being done through UWEX publications and the DNR NPS I&E Coordinator on the value of specific types of newsletters. In addition, the Citizen Advisory Committee will be asked to evaluate the effectiveness and usability of the newsletters annually in order to make improvements and suggestions for future issues.

Cost: $9,500 postage; $150 photographic supplies

## News Releases

Description: News releases will be sent to local newspapers and paid announcements will be included in the local shopping guide. Topics of these will include:

1. Description of the water resources and impact of nonpoint source pollution in the watershed.
2. Current status of watershed project progress.
3. Success stories of improved water quality.
4. Invitations to project tours and meetings.
5. Pollution awareness and benefits of BMP installation.

The news releases will be the responsibility of the Adams County LCD. At least releases per year will be scheduled during project sign-up and one release per year during implementation. Announcements of upcoming events will be placed in the local shopping guide as necessary.

Evaluation: No formal evaluation planned, informal evaluation will include questions on tour or workshop evaluations concerning where people heard about the event.

Cost: $600, cost for paid advertising in local shopping guide, amount per release will depend on size.

## Radio Announcements

Description: Paid radio announcements will be used during project signup. These will be designed to describe the impact of nonpoint source pollution in the watershed, promote watershed participation, educate lake users and residents about their role in preventing NPS pollution and provide status updates. Adams County LCD will take the lead responsibility for this activity.

Evaluation: No formal evaluation planned.

Cost: $50 each for 16 radio spots for a total of $800.

## Public Informational Meetings

Description: Joint public meetings will be held by the Adams, Marquette and Columbia County LCDs during each year of project sign-up. This will provide an opportunity to answer any questions, allow participating landowners to share their experiences thereby helping to convince other landowners to participate by signing cost-share agreements and encourage other residents to adopt appropriate behaviors to reduce or prevent NPS pollution in the watershed. Topics that will be covered at these meetings will be:

- The explanation of nonpoint source pollution and detailed explanations of BMPs needed to reduce pollution problems.
- Program overview; including project sign-up, practice design & installation, and payment procedure.
- Goals and objectives of the watershed plan.
- Administrative rules for the watershed project, including eligibility and cost sharing.

These meetings may be held as part of the annual tour. At the end of signup a meeting will be held in conjunction with an appreciation dinner to honor all those who signed cost share agreements. This meeting will provide an opportunity to thank participants and to provide a status update and report of project success.

Evaluation: Evaluation will be based on attendance and the number of contacts these meetings generate for county staff. If held in conjunction with annual tour a questionnaire will be administered.

Cost: Two public meetings with out tour, at $150 each for a total of $300. Two public meetings with tour (cost in tour), one public meeting in conjunction with meal $2,600

## Demonstration Tours

Description: Three sites have been selected for demonstrations; 1) manure storage and handling, 2) lake shoreland stabilization and 3) lake owner nutrient education project. Construction of the first two should be completed in the Fall of 1993, the third will begin implementation this fall and will continue throughout project implementation. Tours of these BMP demonstrations will allow landowners to observe BMPs first hand with watershed project staff present to answer questions. Meeting landowners who have installed these BMPs will encourage those attending the tour to participate with the project. Three formal well-publicized tours will be held. One tour will be held during the fall of 1993. This will focus on the impact of nonpoint source pollution in the watershed with a general look at solutions both in the agricultural areas and in the recreational (lakes) areas of the watershed. The purpose of this first tour is to build an awareness and knowledge base. Tours during each year of signup will continue this building on knowledge and will focus on specific audiences. The second tour will have an agricultural focus. The focus of the third tour will be determined by the needs of the project with suggestions by the citizen advisory committee. At least one of these tours will include a well abandonment demonstration. The tours will be conducted jointly by the Adams, Marquette and Columbia County LCDs.

Evaluation: A questionnaire will be distributed to every participant to be completed at the end of the tour. It will include short answer knowledge questions and questions on quality of activities which use a Likert-like rating of 1 - 5 with 5 being high. After the completion of each tour staff will do a self evaluation to discuss how to improve the next tour and additional suggestions for program modification.

Cost: Three tours at $1,700 each for a total of $5,100.

## Nutrient and Pest Management Field Days

Description: Nutrient and pest management field days will be held annually to address identified and potential nonpoint source surface and groundwater contamination from agricultural sources. The UWEX Nutrient and Pest Management (NPM) program will develop the demonstrations and take the lead on organizing the field days in cooperation with the Neenah Creek Priority Watershed Project. NPM staff will develop field plots demonstrating exemplary management of manure and other crop production inputs on one or two farms each year. Efforts will be made to locate these farms within the watershed.

Field days will be held annually to allow the public to view the results and learn about the practices. Some of the field days may be held jointly with the Priority Watershed annual demonstration tour. The NCPW project in order to encourage participation in this event will host a portion of the day, perhaps by supplying a light meal. Methods for encouraging participation will be analyzed annually to determine the most effective available.

Evaluation: An economic evaluation of the implemented practices will be done by NPM annually for each participating farm. Increases in awareness and adoption of the demonstrated practices on the cooperating farms and its impact on landowners within the watershed may be evaluated through the Farm Practices Inventory (FPI) survey or a survey developed by county staff and UWEX area agent. See Project Evaluation at end of I&E strategy.

Cost: Two field days per year for eight years at $100 each, total of $1,600.

## BMP Installation Videotapes

Description: Each LCD office will record through photos and videotapes before and after conditions at participating sites. These materials will be used as part of staff information packets. They will also be used to increase knowledge of the project and to develop a positive attitude toward it at Land Conservation Committee and county board meetings. These items will also be used during tours and at meetings as appropriate. Adams County has a video camera available for their staff's use, Columbia County anticipates acquiring one and Marquette County will either borrow one from other county sources or will work with Adams County to have their sites videotaped.

Evaluation: Subjective evaluation will be based on the perceived increased understanding of the project and of the problem of nonpoint source pollution by LCC and county boards.

Cost: $100 for materials

## Demonstration Fact Sheet

Description: A fact sheet will be prepared for each demonstration site. It will include the before and after photos, project explanation, an outline of costs, and the cost sharing breakdown. This will be done when the practice is completed and the necessary information is available. The fact sheet will be developed by the appropriate county LCD with assistance from UWEX.

Evaluation: No formal separate evaluation planned.

Cost: $50 for printing.

## Lake Fact Sheet

Description: A fact sheet will be developed for each major lake. This will include ecological, historical and environmental information. The major focus will be on the NPS impacts, sources and solutions, especially in relation to individual responsibility.

Evaluation: No separate evaluation planned.

Cost: $150

## Project Display

Description: A display has been designed for the inventory stage of the project. It will be updated as the project moves through signup and implementation. This display can be used in banks, schools and co-ops and will highlight area nonpoint source pollution problems and solutions. In addition one panel displays will be developed for use at local restaurants, campgrounds and resorts.

Evaluation: No separate evaluation planned.

Cost: $200 for one panel displays plus a portion of the photography budget for updated photographs.

## Presentation

Description: A presentation on nonpoint source pollution and the project will be created using local slides. The presentation will be used at meetings and talks given to the project's targeted audiences. The slide presentation will be completed by the Adams County LCD. Either county or UWEX staff will provide a construction erosion presentation to county and town boards as requested. Other presentations on specific topics will also be made as requested.

Evaluation: Presentations will be evaluated as part of tour and meeting evaluations.

Cost: Photographic costs included in general photography budget ($2,000 total for all uses over project life).

## Staff Informational Packets

Description: One-on-one contact between landowners and staff is an important component of our I&E strategy, especially with the agricultural community. Each county staff person will receive a binder of information that they can use when talking to individual landowners. The binder will contain before and after pictures of BMPs, other educational charts and drawings, such as distance manure or sediment can travel over different slopes and the impact of wind

erosion on water quality, press releases, and other useful information for landowners. This packet will be developed by Adams County LCD with assistance from UWEX and the DNR NPS Implementation Coordinator.

Evaluation: County staff will annually evaluate usefulness of packet; making changes and updates. Evaluation of the one-on-one contacts will be evidenced in the numbers of cost-share agreements signed.

Cost: 5 packets at $30 each for a total of $150.

## Stream Identification Road Crossing Signs

Description: Signs identifying the name of streams being crossed by county and state highways at up to sixteen locations within the watershed will be ordered and placed on bridges.

Evaluation: No separate evaluation planned.

Cost: 16 signs at $20 each for a total of $320.

## Residential Clean Water Workshop

Description: During each year of signup a residential home and yard care workshop will be offered. The purpose of the workshop will be to educate home owners, especially lake residents, about the problems and solutions to NPS water pollution. Home owners will learn the best methods of reducing pollution from their homes including fertilizer and pesticide use, water infiltration practices, composting, septic system education, and home hazardous waste reduction. People who complete the workshop will receive a certificate and a small plastic sign for display in their yard that identifies them as supporting clean water.

Evaluation: Each workshop will be evaluated by means of a questionnaire using both Likert-like scales of 1-5 with 5 being high and short answer evaluation questions.

Cost: Five workshops at $200 each for a total of $1,000.

## Watershed Signs

Description: Each landowner that signs a cost-share agreement will receive a sign with the Neenah Creek Logo and the inscription "Cooperator". These will be available in two sizes, we expect that agricultural landowners will want the larger (3' x 3') sign and lake property owners will desire the smaller (1' x 1') sign. In addition any person living in the watershed who demonstrates a willingness to improve water quality through personal actions can receive the smaller sign.

Evaluation: Evaluation will be based on the interest of landowners in displaying signs.

Cost: 60 cooperator signs at $15 each for a total of $900, 400 supporting clean water signs at $2.50 each for a total of $1,000.

## Citizen Advisory Committee

Description: During the inventory stage of the project an active Citizen Advisory Committee has been established. It is the interest of the group to continue to meet and to provide assistance in the area of information and education to the county staff. As suggested by the Citizens Advisory Committee we will develop materials such as stickers to attach to bait containers, 'clean water supporter' bumper stickers and restaurant placemats. The CAC will also be used to identify appropriate locations and events for the display as well as appropriate methods of distributing UWEX, DNR and DATCP materials.

Evaluation: At the end of signup and again at the end of the project, a random sample of 50% of the active Citizen Advisory Committee members will be called and asked questions concerning there involvement with the program, change in their understanding of the program and methods for improving citizen involvement in watershed activities.

Cost: 23 meetings at an average cost of $30 for a total cost of $690. Funds for CAC generated awareness activities, $900.

## Youth Education and Wisconsin WAV

Description: Local county staff will identify and work with at least one local youth group, school class or conservation group to participate in the Wisconsin WAV (Water Action Volunteers), formally known as the Adopt a Stream Program and/or with the UWEX Adopt a Lake Program. As appropriate to the group they will monitor the stream/lake, participate in stream walks and/or work on habitat improvement. County staff will also act as a resource to local schools and youth groups providing information on the project, nonpoint source pollution and groundwater education.

Evaluation: Students or groups involved in extensive activities with the watershed project will be asked to evaluate their involvement. Teachers will be asked to fill in an evaluation form after the completion of any program involving more than one class period.

Cost: $400 for Groundwater Model, $600 for chemical and physical water quality monitoring equipment for a total cost of $1,000.

## Evaluation of Information & Education Program

Since the education component of this project is complex and pervasive many items could not be evaluated on there own. We suggest using the following criteria for evaluating the effectiveness of the I&E strategies.

Number of Cost Share Agreements signed.
Improved practices around lakes and homes.
Improved farm practices without a cost share agreement.

In order to obtain information on the last two components we would like to survey residents during the first year of signup and again at the completion of the project. Our preference is that the DNR and UWEX include Neenah Creek in the contract for the Farm Practices Inventory, Lake Property Practices Inventory and Non-farm Homeowners Practices Inventory (names of inventories may not be accurate). If that is not possible we would like to develop our own inventory instrument to be administered by county staff during one of their first two visits to agricultural landowners and through mail surveys to non-farm residents. Upon completion of the project a second survey would be completed, best method for administration of the survey to be determined at that time.

Cost: For survey administered by county staff, $2,000 for both pre and post survey.

## Summary of Previously Completed I & E Tasks

Several I & E activities were completed prior to the implementation stage of the project. They are:

- Watershed Boundary signs.
- Information Packets for CAC members
- Watershed Display for use with local businesses and at county fairs
- Newsletters
- Bookmark for distribution to school groups, at county fairs, etc.
- Project brochure explaining the project; its goals, timetable, etc.
- Purchase of polo shirts, and beverage insulators and other promotional items with logo and phone number
- Neenah Creek Connections; a day of tours and presentations

See table 6-1 for estimated costs of information and education activities.

## Table 6-1. Information and Education Budget and Staff Needs

| Activity | Total Number | Total Direct Costs | Required Staff Hours | |
|---|---|---|---|---|
| | | | Years 1-3 | Years 4-8 |
| Newsletters | 19 | $ 9,500 | 540 | 600 |
| News Releases | 11 | 600 | 48 | 40 |
| Radio Announcements | 1 | 800 | 36 | 40 |
| CAC Meetings | 23 | 690 | 80 | 48 |
| Demonstration Tours | 3 | 5,100 | 160 | 90 |
| Public Meetings | 5 | 2,900 | | |
| BMP Installation Video | 1 | 100 | 50 | 0 |
| Demonstration Fact Sheets | 6 | 200 | 100 | 0 |
| Project Display | 1 | 200 | 80 | 0 |
| Presentation | 1 | 60 | 80 | 40 |
| Cooperator Signs | 60 | 900 | 130 | 15 |
| Supporter Signs | 400 | 1,000 | 30 | 0 |
| Residential Clean Water Workshop | 5 | 1,000 | 60 | 0 |
| Awareness Activities | 3 | 900 | 60 | 0 |
| Staff Informational Packets | 5 | 150 | 24 | 0 |
| NPM Field Days | 16 | 1,600 | 270 | 120 |
| Photography | | 2,000 | 50 | 20 |
| Stream Identification Road Signs | 16 | 320 | 32 | 0 |
| Groundwater Model | 1 | 400 | 60 | 60 |
| Water Quality Monitoring Equipment | 1 set | 600 | 60 | 100 |
| Survey | 2 | 2,000 | 400* | 400* |
| Totals | | 31,020 | 2,350 | 1,573 |

* In conjunction with farm visits

Note: Budget is based on availability of funds.

# CHAPTER SEVEN
# Integrated Resource Management Program

## Introduction

The purpose of this chapter is to define the principles and guidelines for assuring that the watershed project is coordinated with other resource management programs, organizations, and activities. Each of these activities is described below.

## Fisheries

Watershed best management practices (BMPs), such as streambank protection, shoreline buffer strips, and easements, should be implemented in such a way that will enhance fishery management goals. Specifically, all streambank protection BMPs should be installed in such a way that fisheries habitat is enhanced. The fishery manager should be consulted for input in the design of each streambank protection BMP, including easements.

## Wetland Restoration

Significant amounts of restorable wetland areas exist in this watershed. This is especially so for the floodplain areas along Neenah Creek and in the Big Slough subwatershed. The general guidelines for wetland restoration, easement acquisition, and shoreline buffers to protect existing wetlands should be followed. Wetlands that are important wildlife habitats will be identified by the U.S. Fish and Wildlife Service in consultation with the DNR private lands manager. Shoreline buffer easements may be acquired adjacent to these wetlands to better protect them from sedimentation and other nonpoint source pollution.

These wetlands (existing and restorable) were identified in the wetlands inventory conducted by the Adams, Marquette and Columbia County Land Conservation Departments (LCDs). In addition to the normal priority watershed funding, additional cost-sharing may be available to provide for a 100 percent payment for installation of the BMP. This additional funding may be available through the DNR district private lands manager, and/or the U.S. Fish and Wildlife Service. Eligibility for this additional funding would be determined by the DNR's private lands manager or the district nonpoint source coordinator.

# Riparian Zones

Where possible, riparian zones along creeks should be protected with fencing to protect them from livestock grazing and trampling. These can be acquired through easements so that they receive lasting protection. These areas are important wildlife habitats, particularly for wood ducks.

# Stewardship

The streambank protection program under stewardship is an important additional means of protecting water quality. Under this program, the DNR could obtain an easement on both sides of the stream (generally 66 feet wide on each side). If needed, the DNR will financially support the fencing of the stream to protect it from livestock access.

Streams eligible in the watershed:

- All of Big Spring and its tributaries.
- All of the upper portion of Neenah Creek is already a DNR Fisheries Area, eligible for acquisition through that program.

Additional streams, including Widow Green Creek, should be nominated when the nomination period is reopened.

# Endangered Resources Area Sites, Threatened and Special Concern Species

Endangered, threatened, and special concern species and nine natural areas are listed in Chapter 2 of the plan. To the best extent possible, every effort should be made to protect these species. If specific other information is needed, contact the DNR Bureau of Endangered Resources.

# Cultural Resources

Procedures for coordination with state and federal historic preservation laws are outlined in Chapter Two. Known archaeological sites within the Neenah Creek Watershed, will need

special consideration when structural best management practices are being considered. Settling basins, manure storage structures, and streambank or shoreline shaping and riprapping are likely practices that may impact archaeological sites.

# Coordination with State and Federal Conservation Compliance Programs

The Neenah Creek Watershed Project will be coordinated with the conservation compliance features of the Wisconsin Farmland Preservation Program (FPP) administered by DATCP, and the Federal Food Security Act (FSA) administered by the Soil Conservation Service.

# Coordination with the Lake Associations and Lake Districts

Of the 21 lakes in the Neenah Creek Watershed, 4 have active Lake Associations or Lake Districts. These citizen organizations are mainly concerned about the quality of water in their lakes. A consultant paid by the Lake Mason Association has been an active member of the watershed project team. Several lakeshore residents have also been active on the Neenah Creek Citizen Advisory Committee.

Neenah Creek Watershed staff will continue to update Lake Associations on the status of the watershed project, through mailings to lakeshore residents, attendance at board meetings and public meetings. Fact sheets and other educational materials aimed at landowners around the lakes will be distributed.

# CHAPTER EIGHT
# Project Evaluation

## Introduction

This chapter briefly summarizes the plan for monitoring the progress and evaluating the effectiveness of the Neenah Creek Watershed Project. The evaluation strategy includes these components:

- Administrative review.
- Pollution reduction evaluation.

Information on these components will be collected by the Adams, Marquette and Columbia County Land Conservation Departments and reported on a regular basis to the DNR and the DATCP. Additional information on the numbers and types of practices on cost-share agreements; funds encumbered on cost-share agreements, and funds expended will be provided by the DNR's Bureau of Community Assistance.

## Administrative Review

The first component, the administrative review, will focus on the progress of Adams, Marquette and Columbia Counties in implementing the project. The project will be evaluated with respect to accomplishments, financial expenditures, and staff time spent on project activities.

1. **Accomplishment Reporting**

   The Computer Assisted Management and Planning System, called CAMPS, is a computer data management system that has been developed by the U.S. Soil Conservation Service (SCS). The SCS, the DNR and the DATCP use CAMPS to meet the accomplishment reporting requirements of all three agencies. The Adams, Marquette and Columbia County Land Conservation Departments will use CAMPS to collect data for administrative accomplishments, and will provide the information to the DNR and the DATCP for program evaluation. As CAMPS is replaced by the Field Office Computer System (FOCS) in 1994/95, accomplishment reporting will also switch to FOCS.

The Adams, Marquette and Columbia County Land Conservation Departments will provide the following data to the DNR and the DATCP on a quarterly basis:

- Number of personal contacts made with landowners.
- Completed information and education activities.
- Number of farm conservation plans prepared for the project.
- Number of cost-share agreements signed.
- Number of farm conservation plan and cost-share agreement status reviews completed.
- Number of farms and acres of cropland checked for proper maintenance of BMPs.

In addition to quarterly reports, Adams, Marquette and Columbia Counties representatives will meet with the DNR and the DATCP staff annually to review progress and plan for the subsequent year.

2. **Financial Expenditures**

Adams, Marquette and Columbia Counties will provide the following financial data to the DNR and the DATCP on a quarterly basis:

- Number of landowner cost-share agreements signed.
- Amount of money encumbered in cost-share agreements.
- Number of landowner reimbursement payments made for the installation of best management practices (BMPs), and the amount of money paid.
- Staff travel expenditures.
- Information and education expenditures.
- Expenditures for equipment, materials, and supplies.
- Expenditures for professional services and staff support costs.
- Total project expenditures for the LCD staff.
- Amount of money paid for installation of BMPs, and money encumbered in cost-share agreements.

Adams, Marquette and Columbia Counties will also provide both agencies with the following financial data on an annual basis:

- Staff training expenditures.
- Interest money earned and expended.
- Total county LCD budget and expenditures on the project.

3. **Time Spent On Project Activities**

Adams, Marquette and Columbia Counties will provide time summaries to both departments for the following activities on a quarterly basis:

- Project and fiscal management.
- Clerical assistance.
- Pre-design and conservation planning activities.
- Technical assistance: practice design, installation, cost-share agreement status review and monitoring.

- Educational activities.
- Training activities.
- Leave time.

# Pollutant Load Reduction Evaluation

## Key Nonpoint Sources for Evaluating Pollutant Load Reductions

The purpose of the second evaluation component, pollutant load reduction, is to calculate reductions in the amount of key pollutants as a result of installing BMPs. Key sources were identified for estimating changes in pollutant loads that reach surface water in the Neenah Creek Watershed; upland sediment, and runoff from barnyards and fields spread with manure, and streambank/shoreline erosion.

As described in Chapter Three, this plan calls for the following pollutant reductions for all subwatersheds:

Pollutant load reductions are developed according to activities needed to achieve the water quality objectives. The following is a summary of reductions to be targeted for the entire watershed.

**Sediment Goal**: Reduce overall sediment delivered by 40 percent. To meet this goal, the following is needed:

- 40 percent reduction in sediment reaching streams from agricultural uplands in all subwatersheds.
- 75 percent reduction in streambank sediment delivered to all streams and a 100 percent overall repair of streambank habitat in all subwatersheds.
- 75 percent reduction in shoreline sediment delivered to the lakes.

**Phosphorus and Organic Pollutant Goal**: Reduce overall phosphorus load by 40 percent. To meet this goal, the following is needed:

- 75 percent reduction in organic pollutants from barnyards in all subwatersheds.
- 40 percent reduction in organic pollutants from winterspread manure on "unsuitable" acres in all subwatersheds.
- 30 percent reduction in phosphorus reaching lakes and streams from agricultural uplands in all subwatersheds.

**Groundwater Goal**:

- Proper abandonment of private wells no longer in use where other NPS control measures are implemented and cost-shared.
- Implementation of Nutrient and Pest Management practices on irrigated vegetable crops.

In addition, this plan calls for a restoration of 10 percent of degraded or prior converted wetlands.

### Streambanks and Shoreline

Adams, Marquette and Columbia County staff will calculate changes in streambank and shoreline sediment in terms of tons of sediment and length of eroding sites. A tally will be kept of landowners contacted, the amount of streambank and shoreline sediment being generated at the time of contact, and changes in erosion levels estimated after installing BMPs.

### Upland Sediment Sources

Adams, Marquette and Columbia County staff will use the WINHUSLE (Wisconsin Nonpoint Source) model to estimate sediment reductions due to changes in cropping practices. The counties will use CAMPS/FOCS to provide data for the WINHUSLE model on a quarterly basis, as described above.

It may be useful to evaluate uplands on a subwatershed basis, as the greatest water quality improvements might be seen in the smaller drainage areas and in specific water bodies. For ease of running the WINHUSLE inventory model, Adams County was responsible for UN, JL, WG and ML subwatersheds; Marquette County ran OL, CL, MN and BS subwatersheds; and Columbia County ran the model for LN and BS subwatersheds.

### Barnyard Runoff

Adams, Marquette and Columbia Counties will use the BARNY (Modified ARS) model to estimate phosphorus reductions due to the installation of barnyard control practices. The county will report the information to the DNR through CAMPS.

NOTE: In the event that CAMPS is replaced, the replacement system will be used for all project tracking.

# CHAPTER NINE
# Water Resource Evaluation Monitoring

## Introduction

The goal of the priority watershed evaluation monitoring program is to evaluate the progress of the nonpoint source control program toward improving the quality of water resources.

Monitoring objectives are to:

- Evaluate whether water quality objectives resulting from implementation of best management practices at specific sites have been attained.
- Evaluate whether pollutant load reduction goals have been met and the effectiveness of those goals in improving water quality at specific sites.
- Evaluate the BMP implementation process, and the effectiveness of BMP's in reducing the pollutants at specific sites.
- Evaluate the application of priority watershed plans to the management of water resources, and the attainment of water quality standards and beneficial uses.

## Program Organization

1. Evaluation monitoring activities in priority watersheds will be planned and conducted according to monitoring program guidance in the Bureau of Water Resources, Surface Water Monitoring Strategy.

   Evaluation monitoring can be conducted at selected sites in basins on the 5-year basin assessment schedule. Or, they can be conducted at selected sites as special projects, depending on other monitoring priorities.

2. Evaluation monitoring may be conducted on selected waterbodies in priority watersheds that meet specific site selection criteria. These sites would be part of a statewide strategy designed to meet the program evaluation monitoring goal and objectives.

3. Evaluation monitoring need not be conducted in each priority watershed.

# Site Selection Criteria

The following criteria are suggested for site selection in agricultural watersheds to be intensively evaluated as part of basin assessments, or as special projects:

## Location

- Where BMPs are planned but yet to be implemented in priority watersheds;
- Where serious water quality, habitat or both problems exist, and a direct cause/effect relationship between problems and nonpoint sources are obvious;
- Where a high probability exists that appropriate BMPs will be installed in the site's watershed. If possible, final monitoring site selection should come after cost-share agreements have been signed. Extra effort should be made to achieve full participation by all landowners;
- Where sites are not meeting attainable uses and have a high potential to improve following management of nonpoint sources;
- Where reference sites with similar characteristics, including attainable uses, are available in the same or adjacent watersheds. A reference site can be either an impacted site that will not be managed, or preferably, a site without water quality problems and meeting attainable uses. The important consideration is that reference site conditions are not expected to change except due to climatic conditions; and
- Where sites have adequate access for sampling personnel and equipment.

## Size

- Sites should be located on permanent streams large enough to support well developed fish communities. Streams should be 5 to 30 feet wide with base flows of 1 to 20 cfs; and
- Watersheds should be manageable with areas of 5 to 50 square miles.

## Water Quality

- Suspected or known water quality problems should be caused by manageable nonpoint sources and
- Point sources should not be present or not significant; and

- Potential sources of problems that cannot or are unlikely to be managed should not be present.

## Habitat

- Habitat problems should be caused by poor land use practices immediately adjacent to or near sites, and in-stream habitat should have a high potential to improve following implementation of BMPs; and

- Sites should not be selected that have been ditched within 10 to 15 years.

# Site Selection Process

Potential evaluation monitoring sites can be located while conducting basin assessments, or when conducting appraisal monitoring in newly selected priority watersheds. Selecting potential sites during the appraisal monitoring process is recommended.

Reconnaissance surveys can be conducted to locate sites that meet evaluation monitoring criteria in on-going priority watershed projects. When potential sites are located by reconnaissance, data should be obtained to determine if site selection criteria are met. County staff should be contacted to determine the potential for landowner participation.

Sites selected for evaluation should meet most of the selection criteria, including the presence of appropriate reference sites.

## Evaluation Monitoring Approaches

Priority watershed evaluation monitoring projects can be conducted as part of basin assessments on a 5-year schedule, or as special projects subject to Bureau approval of annual monitoring plans. Intensive evaluation monitoring will continue to be conducted at "master monitoring" sites by the Bureau of Research, United States Geological Service and Water Resources Management staff. Basin assessments, special projects and monitoring project work planning are discussed in the Bureau's Monitoring Strategy.

The following evaluation monitoring options are provided as guidance for developing monitoring plans. Any option, or a combination of options, may be used for evaluating priority watershed projects.

### Basin Assessment Approach

1. Select specific sites in priority watersheds that meet site selection criteria, including at least one reference site per treatment site. Intensively monitor these sites during the basin assessment year to establish pre-implementation surface water conditions. Evaluation monitoring projects should be designed to fit individual site characteristics,

but should generally include collection of water chemistry, habitat, fish community and macroinvertebrate data.

These same sites should be monitored again in 5 years (post-implementation) when the basin is scheduled to be reassessed. These data would be compared to pre-implementation data to evaluate site specific improvements resulting from implementation of BMPs. Monitoring on a 5-year schedule would continue if appropriate.

2. Repeat appraisal type monitoring at selected sites in priority watersheds on the 5-year basin assessment schedule.

   The general water resource conditions in all priority watersheds will be assessed by conducting appraisal monitoring for developing priority watershed management plans. Appraisal monitoring provides a general water resource quality and problems assessment that, when repeated during future basin assessments, can be used to evaluate surface water quality improvements, especially where they are significant.

   When conducted on the 5-year basin assessment schedule, pre-implementation appraisal monitoring data may be compared to watershed wide assessment (using appraisal monitoring techniques) data, to provide a general, but adequate priority watershed project evaluation.

   This approach would provide an evaluation of more surface waters in a priority watershed, and an evaluation of the overall results of a priority watershed project.

**Special Project Approach**

3. This approach is essentially the same as the basin assessment intensive monitoring approach (option 1), except that sites may be monitored more frequently, and would be planned as special projects. Guidance for special project planning is provided in the Bureau's Monitoring Strategy.

# Neenah Creek Watershed

Evaluation monitoring will be conducted during the eight year implementation phase and will continue for an additional two years. Thus evaluation monitoring activities will not be completed until 2003.

Southern and North Central District staff recommend a 5-year basin assessment approach. If time and staff are available and if it is approved in the district surface water monitoring plan, a special project monitoring approach will also be considered at selected sites which meet the site selection criteria.

**Basin Assessment Approach**

- Watershed Streams and Lakes

  Monitoring will follow the five year basin assessment schedule and will include the same types of monitoring outlined in the Neenah Creek Appraisal Report (Marshall, 1991). This monitoring approach should detect habitat and surface water quality improvements, especially where they are significant. Monitoring will occur only in subwatersheds where significant Best Management Practice Installation has occurred. Long term monitoring of specific lakes will continue through the Self-Help Monitoring Program.

**Special Projects Approach**

Southern and North Central District staff may propose more intensive/frequent monitoring at selected sites. Again this is optional and its implementation is based on available staff and approval in the districts surface water monitoring plan.

- A reference site, where few, if any management practices are implemented, will be selected within the Neenah Creek Watershed or Lower Rib River Watershed. (Note: This site will have similar characteristics as one of the above sites.)

These stream reaches will be evaluated using a combination of two methods. **In-stream fish habitat** will be monitored using a technique developed by Simonson and Lyons (Evaluation Monitoring of Stream Habitat During Priority Watershed Projects, Draft, Tim Simonson, John Lyons, May 1992). This method measures the physical characteristics of a stream before and after best management practices are installed and therefore should show improvements in stream habitat. **Changes or improvements in fish communities** will be monitored using the Index of Biotic Integrity (IBI), a technique developed by Karr (1981), but adapted to warm-water streams of Wisconsin by Lyons (1992). The IBI is a bio-assessment/bio-monitoring technique that allows attributes of fish communities to be used to assess biotic integrity and environmental quality of streams and rivers (Lyons 1992). IBI scores are calculated (table 9-1) and range from excellent to very poor. Again this technique assumes that improvement in fish habitat and water quality brought about by improved watershed management, will cause changes in fish communities.

It is proposed that each site will be monitored on an annual basis prior to and after installation of management practices. The reference site will be evaluated to account for natural variation.

**Table 9-1. Guidelines for interpreting overall IBI scores (modified from Karr et al. 1986)**

| Overall IBI Score | Biotic Integrity Rating | Fish Community Attributes |
|---|---|---|
| 100-65 | Excellent | Comparable to the best situations with minimal human disturbance; all regionally expected species for habitat and stream size, including the most intolerant forms, are present with a full array of age and size classes; balanced trophic structure. |
| 64-50 | Good | Species richness somewhat below expectation, especially due to the loss of the most intolerant forms; some species, especially top carnivores, are present with less than optimal abundances or size/age distributions; trophic structure shows some signs of imbalance. |
| 49-30 | Fair | Signs of additional deterioration include decreased species richness, loss of intolerant forms, reduction in simple lithophils, increased abundance of tolerant species, and/or highly skewed trophic structure (e.g., increasing frequency of omnivores and decreased frequency of more specialized feeders); older age classes of top carnivores rare or absent. |
| 29-20 | Poor | Relatively few species; dominated by omnivores, tolerant forms, and habitat generalists; few or no top carnivores or simple lithophilous spawners; growth rates and condition factors sometimes depressed; hybrids sometimes common. |
| 19-0 | Very Poor | Very few species present, mostly exotics or tolerant forms of hybrids; few large or old fish; DELT fish (fish with deformities, eroded fins, lesions, or tumors) sometimes common. |
| No score | Very Poor | Thorough sampling finds few or no fish; impossible to calculate IBI. |

Legend
IBI - Index of Biotic Integrity

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# APPENDIX A
# Watershed Planning Methods

This chapter describes the steps and procedures used to prepare this plan. These are:

- Evaluating water quality and aquatic habitat.
- Assessing pollution sources.
- Establishing water resource objectives.
- Establishing pollution reduction goals.
- Developing a nonpoint source control strategy.
- Involving the public and local units of government.

## Evaluating Water Quality and Aquatic Habitat

The Department of Natural Resources (DNR) is responsible for: designating the biological and recreational uses that surface waters can support under proper management; prescribing the water quality required to sustain these designated uses; and indicating the methods to implement, achieve and maintain those conditions.

The DNR's Southern and North Central District Water Resources Management staff conducted investigations of the existing quality and natural resource conditions for streams and lakes during 1991–1992. Their purpose was to evaluate water quality problems and establish a basis for setting water resources management objectives. Detailed assessment results are documented in water resource appraisal reports.

## Data Collection

The following is a summary of the five elements comprising the water quality and aquatic habitat investigation.

### Subwatershed Delineation and Stream Segmentation

Prior to collecting field data, the watershed was divided into 10 hydrologic subwatersheds. This was accomplished using 1985 1"=400' scale aerial photographs and 1"=2,000' (7.5 minute) U.S. Geological Survey quadrangle maps. These maps were also used to divide the perennial and intermittent stream network into segments. Stream segments were used to separate portions of waterways where either natural conditions or human-induced changes resulted in pronounced differences in stream character and/or water quality.

### Stream Habitat Evaluation

Information characterizing stream habitat—including flow rate and depth, substrate quality, channel configuration, stability, and water temperature—were collected using techniques that the DNR developed. The data were evaluated using DNR's Stream Classification Guidelines (Ball, 1982).

### Water Quality Assessment

Surface water quality was assessed through review of historical water chemistry data and an evaluation of bottom dwelling animals (macroinvertebrates) using the Hilsenhoff Biotic Index (Hilsenhoff, 1982). Extensive bacteria (fecal coliform) surveys were conducted to assess the suitability of surface waters for recreational use. Private well samples were collected and analyzed for nitrate + nitrite and triazine herbicides. Analytical data were used to assess the quality of groundwater in the watershed.

### Fisheries Resource Assessment

Fish communities were assessed qualitatively using a combination of historical data and information collected during this investigation. Resident fish populations in the streams, lakes, and impoundments were sampled using seines and electric shocking equipment.

### Navigability and Recreational Use Determinations

The extent and degree to which streams are navigable was determined based on evidence of canoeing or boating, field data including evidence of stream alteration or use, and information that landowners or other local experts provided. Recreational uses were determined through field observations, file data and information from local users.

## Data Interpretation

The data described above were used to determine the existing and potential biological and recreational uses for surface waters. The existing uses reflect present biological and recreational conditions. Potential uses reflect biological and recreational conditions that could be achieved under prescribed types and levels of management. Even though existing

and potential uses of a surface water are the same, management programs can result in significant changes in the quality of the aquatic environment. Use classifications and supporting water quality standards used in evaluating water resource conditions are discussed below.

## Biological Stream Use Classification

Biological stream use classes describe the fish species or other aquatic organisms which a stream system supports. Designation is based on the ability of a stream to provide suitable habitat and water quality conditions for fish and other aquatic life. The following biological stream use classification system was used statewide and was applied to surface waters in the Neenah Creek Watershed.

| |
|---|
| **COLD= Cold Water Communities** include surface waters capable of supporting a community of cold water fish and other aquatic life or serving as a spawning area for cold water fish species. |
| **WWSF= Warm Water Sport Fish Communities** include surface waters capable of supporting a community of warm water sport fish and/or serving as a spawning area for warm water sport fish. |
| **WWFF= Warm Water Forage Fish Communities** include surface waters capable of supporting an abundant diverse community of forage fish and other aquatic life. |
| **LFF= Limited Forage Fish Communities** |

Discussions also include the "class" of trout streams based on the publication "Wisconsin Trout Streams" [DNR Publ. 6-3600(80)] and Outstanding/Exceptional Resource Waters, Wisconsin Administrative Code NR 102.20 and NR 102.11.

| |
|---|
| **Class I** trout streams are high quality, and populations are sustained by natural reproduction. |
| **Class II** trout streams have some natural reproduction but may need stocking to maintain a desirable fishery. |
| **Class III** trout streams have no natural reproduction and require annual stocking of legal-size fish to provide sport fishing. |

## Recreational Stream Use Classification

Recreational stream use classifications are described by a level of human body contact determined to be safe and reasonable. The system applies to all surface waters including those categorized as intermediate or marginal under the above referenced biological use

classification system. Three designations are used under the recreational stream classification system. These designations are full body contact, partial body contact, and noncontact.

**Full Body Contact**

These waters are used for human recreation where immersion of the head is expected and occurs often. Recreation activities classified as full body contact include swimming, waterskiing, sailboarding and other similar activities.

**Partial Body Contact**

These waters are used for human recreation where immersion of the head is not frequent and contact is most often incidental or accidental. Recreational activities classified as partial body contact include boating, canoeing, fishing and wading.

**Noncontact**

These waters should not be used for human recreation. This category is used infrequently when extenuating circumstances such as high concentrations of in-place pollutants, an uncontrollable pollution source, or other conditions dictate that contact with the water would be an unnecessary health risk.

## Water Quality Standards and Criteria

Surface water quality standards and criteria are expressions of the conditions considered necessary to support biological and recreational uses. Water quality standards for recreational and biological uses are contained in Chapters NR 102, NR 104, and NR 105 Wisconsin Administrative Code.

In addition to these standards, other criteria were used to assess the suitability of surface waters for recreational and biological uses. Data characterizing stream size and accessibility were used to help determine the suitability and types of recreation a stream is capable of supporting. Information on current recreational use of surface waters (provided by users at public access points and discussions with local officials) was also used to assess suitability of surface waters for recreation.

Additional information used to assess the suitability of surface waters for biological uses includes recommended maximum nutrient levels, suspended solids concentrations and the extent to which streambeds are clogged with sediment.

Groundwater quality standards for substances of public health concern and public welfare concern are contained in Chapter NR 140 Wisconsin Administrative Code. The enforcement standards (ES) and preventative action limits (PAL) are defined in Chapter Two. If well sample results exceeded the nitrate + nitrite ES, owners were sent a notice warning them that infants under six months and pregnant women should not drink the well water. At

nitrate + nitrite levels greater than 40 mg/L, owners are eligible to apply for well compensation funds from the Bureau of Water Supply.

If well sample results using the triazine screen exceeded 1 $\mu$g/L, wells were resampled and analyzed specifically for atrazine and it's metabolites. This was free of charge and on a voluntary basis by the Bureau of Water Supply who assisted well owners in obtaining a clean water supply.

# Assessing Pollution Sources

The purpose of the pollution source assessment is to identify the rural and urban sources and quantities of pollutants impacting surface waters. Rural and urban pollutant sources assessed for this watershed are discussed below.

## Rural Nonpoint Sources

Excessive quantities of sediment, nutrients, oxygen demanding substances, pesticides and bacteria are pollutants carried in runoff draining agricultural areas. These pollutants degrade surface water quality thereby restricting recreational and biological uses. The principal rural nonpoint sources evaluated in preparing this plan include:

- Barnyards and livestock area runoff.
- Eroding uplands delivering sediment to surface waters.
- Eroding, slumping, or trampled streambanks and shorelines.
- Areas contributing runoff of winterspread livestock manure.
- Gullies.
- Wind erosion.

The Adams, Marquette and Columbia County Land Conservation Departments (LCDs) staff conducted inventories in 1991. The DNR in cooperation with the DATCP and the LCDs staff completed the data analyses. Inventory and evaluation procedures are summarized below.

### Barnyard and Livestock Area Runoff

The LCDs staff mapped the locations of 58 barnyards in the watershed on 1985 1"=400' scale aerial photographs. A field survey of each barnyard was conducted to collect information needed to determine its pollution potential.

The barnyard data was used in the "BARNY" Model (Baun, 1992), a modification of the animal lot runoff model, which the U.S. Department of Agriculture, Agricultural Research Service developed (Young, 1982). Information about the mass loading of total phosphorus annually was generated to evaluate the relative pollution potential of each barnyard. The livestock operations were ranked according to their potential to impact surface and/or groundwater quality.

### Upland Erosion and Sediment Delivery

The LCDs staff conducted the inventory on the entire watershed, 169 square miles, using existing data and field investigations. Cropland, pastures, grasslands, woodlands, wetlands and other open (non-urban) land uses were investigated. Existing data sources included site specific farm conservation plans, 1"=400' scale aerial photographs, and SCS Survey 1"=2,000' scale quadrangle maps. The information obtained for each parcel included size, soil type and erodibility, slope percent and length, land cover, crop rotation, present management, overland flow distance and destination, channel type and receiving water.

Upland erosion and sediment delivery was determined using the Wisconsin Nonpoint Source (WINHUSLE) Model (Baun & Snowden, 1992). The WINHUSLE model calculates the average annual quantity of eroded soil reaching surface waters from each farm field. The determination is made based on a "typical" year of precipitation. Estimated sediment delivery was used to assess the relative pollution potential of each farm field in the watershed.

### Streambank and Shoreline Erosion

The LCDs staff conducted field surveys on about 117 miles of perennial and intermittent streams and 4 miles of lakeshore. The method used is a modification of the streambank erosion analysis included in Phase II of the Land Inventory Monitoring process used by the U.S. Department of Agriculture, Soil Conservation Service. At locations where erosion was occurring, the following information was recorded:

- Length of trampled or eroding bank.
- Vertical height.
- Estimated annual rate of recession.
- Adjacent land uses.
- Potential management measures.

The amount of sediment lost annually was calculated for each erosion site. In addition, areas adjacent to streams impacted by livestock, but which were not necessarily eroding at a high rate, were also noted.

**Runoff from Areas Winterspread with Livestock Waste**

This analysis was done to estimate the pollution potential associated with winterspreading livestock waste in the watershed. The information collected for the barnyard and upland erosion surveys was used in this evaluation.

This analysis was completed using a three-step process. First, the number of acres that each livestock operation needed to landspread manure was calculated for a six-month period approximating when manure cannot be incorporated into the ground because of frozen or saturated conditions. The amount of manure that each operation generated was based on the number and type of livestock.

Second, the land available to each livestock operation for winterspreading was characterized according to its environmental sensitivity. Lands having slopes equal to or greater than six percent or located within the floodplain were considered to have a high potential to deliver landspread manure to lakes and streams during periods of spring thaw.

Third, the number of sensitive acres winterspread with manure was estimated for each livestock operation based on the number of acres needed for winterspreading and the proportion of lands available to the livestock operation determined to be environmentally sensitive. This number was used to indicate the relative pollution potential of each livestock operation due to runoff of winterspread manure.

**Wind Erosion**

This analysis was based on "Wind Erosion Impacts on Water Quality in the Sand Plain of Central Wisconsin" (Oberhofer, 1993) and the Adams County Erosion Control Plan (1987)

Other Pollution Sources

Additional sources of surface water pollution beyond those discussed in this plan are degrading water quality in the watershed. These pollution sources have the potential of overshadowing improvements in water quality that might otherwise occur as a result of the priority watershed program.

The DNR conducted an inventory and evaluation of these other pollution sources. Inventory results and recommendations for alleviating the water quality impacts of these other pollution sources are documented in Chapter Four of this plan.

In addition, the DATCP, the DNR, and the UWEX are cooperatively working through a technical committee to define fertilizer and pesticide use guidelines to minimize threats to

surface and groundwater quality. The results will be applicable statewide and will be incorporated into this watershed project when available.

Establishing Water Resource Objectives

Recreational and biological water resource objectives were established for each of the streams and lakes in the watershed. These objectives identify how the project is anticipated to change the quality of the aquatic environment for recreational and biological uses. Factors considered in establishing water resource objectives include: existing water quality and aquatic habitat; factors or pollutants that may be preventing the surface water from reaching its full potential of supporting biological and recreational uses; and the practicality of reducing pollutants.

# Establishing Pollution Reduction Goals

Nonpoint pollution reduction goals are estimates of the level of nonpoint source control needed to meet the water quality and recreational use objectives identified in this plan. Pollution reduction goals and water resource objectives are established together since they are integrally related.

The nonpoint source pollution reduction goals in this plan specifically target the control of sediment and phosphorus in rural areas. Importantly, reducing the quantity of these substances reaching surface waters and groundwater decreases the amount of other substances such as pesticides and bacteria which degrade water quality.

# Developing a Nonpoint Source Management Strategy

The final step in the planning process is the development of a strategy for achieving the nonpoint source pollution reduction goals identified in the plan. Several items are addressed in developing the management strategy including:

- Critical nonpoint pollution sources.
- Effective management practices and guidelines for use of state cost-share funds for practice installation.
- Responsibilities, estimated workloads and work schedules for local implementing agencies, and guidelines for use of state funds to support local implementation activities.

- Estimated cost of installing practices and supporting staff at the local level.
- Information and education needs.
- Project evaluation needs.

Identification of critical nonpoint sources eligible for cost share and technical assistance under the Nonpoint Source Water Pollution Abatement (NPS) Program were determined by:

- Evaluating pollutant loading for each nonpoint source in each subwatershed.
- Determining the relative importance of controlling each source (barnyards, urban runoff, cropland erosion, etc.) to achieving the water resource objectives.
- Developing criteria to determine which sources need to be controlled.
- Applying the criteria to determine eligibility for participation in the priority watershed project.

This evaluation was carried out on a subwatershed and watershed basis for the nonpoint sources. The result is a site specific ranking of nonpoint sources and a determination of financial and technical assistance to be made available through the nonpoint source program for the control of NPS pollution.

# Involving the Public and Local Units of Government

The DNR convened an advisory subcommittee and several technical work groups to assist in preparing this watershed plan. The advisory subcommittee contains representatives from lake associations, lake districts, counties, villages, and towns in the watershed, the UWEX, the DATCP, farmers, environmental groups and interested citizens. This subcommittee primarily provided policy guidance during the planning process and reviewed plan chapters.

Three types of technical work groups were convened to help with developing technical aspects of the plan—a water resource appraisal work group, a land use work group and an information and education work group. These groups reviewed land and water resource assessment information, assisted in developing water resource objectives and pollution reduction goals and assisted in developing the pollution control strategy.

# APPENDIX B
# Glossary

ACUTE TOXICITY:

Any poisonous effect produced by a single short-term exposure to a chemical that results in a rapid onset of severe symptoms.

ADVANCED WASTEWATER TREATMENT:

The highest level of wastewater treatment for municipal treatment systems. It requires removal of all but 10 parts per million of suspended solids and biological oxygen and/or 50% of the total nitrogen. Advanced wastewater treatment is also known as "tertiary treatment."

AGRICULTURAL CONSERVATION PROGRAM (ACP):

A federal cost-sharing program to help landowners install measures to conserve soil and water resources. ACP is administered by the USDA ASCS through county ACP committees.

ALGAE:

A group of microscopic, photosynthetic water plants. Algae give off oxygen during the day as a product of photosynthesis and consume oxygen during the night as a result of respiration. Therefore, algae effect the oxygen content of water. Nutrient-enriched water increases algae growth.

AMMONIA:

A form of nitrogen ($NH_3$) found in human and animal wastes. Ammonia can be toxic to aquatic life.

ANAEROBIC:

Without oxygen.

AREA OF CONCERN:

Areas of the Great Lakes identified by the International Joint Commission (IJC) as having serious water pollution problems.

AREAWIDE WATER QUALITY MANAGEMENT PLANS (208 PLANS):

A plan to document water quality conditions in a drainage basin and make recommendations to protect and improve basin water quality. Each basin in Wisconsin must have a plan prepared for it, according to section 208 of the Clean Water Act.

ANTIDEGRADATION:

A policy stating that water quality will not be lowered below background levels unless justified by economic and social development considerations. Wisconsin's antidegradation policy is currently being revised to make it more specific and meet EPA guidelines.

AVAILABILITY:

The degree to which toxic substances or other pollutants are present in sediments or elsewhere in the ecosystem and are available to affect or be taken up by organisms. Some pollutants may be "bound up" or unavailable because they are attached to clay particles or are buried by sediment. Oxygen content, pH, temperature and other conditions in the water can affect availability.

BACTERIA:

Single-cell, microscopic organisms. Some can cause disease, but others are important in organic waste stabilization.

BARNY:

The Wisconsin Barnyard Runoff Model, a computer model used to assess the water quality impacts of barnyards or feedlots. It was developed by DNR with assistance from SCS and DATCP.

BASIN PLAN:

See "Areawide Water Quality Management Plan".

BENTHIC ORGANISMS (BENTHOS):

Organisms living in or on the bottom of a lake or stream.

BEST MANAGEMENT PRACTICE (BMP):

The most effective, practical measures to control nonpoint sources of pollutants that runoff from land surfaces.

BIOACCUMULATION:

The uptake and retention of substances by an organism from its surrounding medium and food. As chemicals move through the food chain, they tend to increase in concentration in organisms at the upper end of the food chain such as predator fish, or in people or birds that eat these fish.

BIOASSAY STUDY:

A test for pollutant toxicity. Tanks of fish or other organisms are exposed to varying doses of treatment plant effluent. Lethal doses of pollutants in the effluent are then determined.

BIOCHEMICAL OXYGEN DEMAND (BOD):

A measure of the amount of oxygen consumed in the biological processes that break down organic matter in water. $BOD_5$ is the biochemical oxygen demand measured in a five day test. The greater the degree of pollution, the higher the $BOD_5$.

BIODEGRADABLE:

Waste that can be broken down by bacteria into basic elements. Most organic wastes such as food remains and paper are biodegradable.

BIOTA:

All living organisms that exist in an area.

BUFFER STRIPS:

Strips of grass or other erosion-resisting vegetation between disturbed areas and a stream or lake.

BULKHEAD LINES:

Legally established lines that indicate how far into a stream or lake an adjacent property owner has the right to fill. Many of these lines were established many years ago and allow substantial filling of the bed of the river and bay. Other environmental laws may limit filling to some degree.

CAMPS:

Computer Assisted Management and Planning System, a computer data management system that has been developed by the U.S. Soil Conservation Service (SCS). In 1994-95 CAMPS will be updated to FOCS, Field Office Computer System.

CARCINOGENIC:

A chemical capable of causing cancer.

CATEGORICAL LIMITS:

All point source discharges are required to provide a basic level of treatment. For municipal wastewater treatment plants this is secondary treatment (30 mg/1 effluent limits for SS and BOD). For industry the level depends on the type of industry and the level of production. More stringent effluent limits are required, if necessary, to meet water quality standards.

CHLORINATION:

The application of chlorine to wastewater to disinfect it and kill bacteria and other organisms.

CHLORORGANIC COMPOUNDS (CHLORORGANICS):

A class of chemicals that contain chlorine, carbon and hydrocarbon. This generally refers to pesticides and herbicides that can be toxic. Examples include PCB's and pesticides such as DDT and dieldrin.

CHRONIC TOXICITY:

The effects of long-term exposure of organisms to concentrations of a toxic chemical that are not lethal, but is injurious or debilitating in one or more ways. An example of the effect of chronic toxicity is reduced reproductive success.

CLEAN WATER ACT:
See "Public Law 92-500."

COMBINED SEWERS:
A wastewater collection system that carries both sanitary sewage and stormwater runoff. During dry weather, combined sewers carry only wastewater to the treatment plant. During heavy rainfall, the sewer becomes swollen with stormwater. Because the treatment plant cannot process the excess flow, untreated sewage is discharged to the plant's receiving waters, i.e., combined sewer outflow.

CONFINED DISPOSAL FACILITY (CDF):
A structure built to contain and dispose of dredged material.

CONGENERS:
Chemical compounds that have the same molecular composition, but have different molecular structures and formula. For example, the congeners of PCB have chlorine located at different spots on the molecule. These differences can cause differences in the properties and toxicity of the congeners.

CONSERVATION TILLAGE:
Planting row crops while only slightly disturbing the soil. In this way a protective layer of plant residue stays on the surface. Erosion rates decrease.

CONSUMPTION ADVISORY:
A health warning issued by WDNR and WDHSS that recommends people limit the fish they eat from some rivers and lakes based on the levels of toxic contaminants found in the fish.

CONTAMINANT:
Some material that has been added to water that is not normally present. This is different from a pollutant, which suggests there is too much of the material present.

CONVENTIONAL POLLUTANT:
Refers to suspended solids, fecal coliforms, biochemical oxygen demand, and pH, as opposed to toxic pollutants

COST-EFFECTIVE:
A level of treatment or management with the greatest incremental benefit for the money spent.

CRITERIA:
See water quality standard criteria.

DATCP:
U.S. Department of Agriculture, Trade and Consumer Protection

DDT:

A chlorinated hydrocarbon insecticide that was banned because of its persistence in the environment.

DIOXIN (2,3,7,8-tetrachlorodibenso-p-dioxin):

A chlorinated organic chemical which is highly toxic.

DISINFECTION:

A chemical or physical process that kills organisms that cause disease. Chlorine is often used to disinfect wastewater.

DISSOLVED OXYGEN (DO):

Oxygen dissolved in water. Low levels of dissolved oxygen cause bad smelling water and threaten fish survival. Low levels of dissolved oxygen often result from inadequate wastewater treatment. The Department of Natural Resources considers 5 ppm DO necessary for fish and aquatic life.

DREDGING:

Removal of sediment from the bottom of water bodies.

ECOSYSTEM:

The interacting system of a biological community and its nonliving surrounding.

EFFLUENT:

Solid, liquid or gas wastes (byproducts) that are disposed on land, in water or in air. As used in the RAP, effluent generally means wastewater discharges.

EFFLUENT LIMITS:

The Department of Natural Resources issues WPDES permits establishing the maximum amount of pollutant to be discharged to a receiving stream. Limits depend on the pollutant and the water quality standards that apply for the receiving waters.

EMISSION:

A direct (smokestack particles) or indirect (busy shopping center parking lot) release of any contaminant into the air.

ENVIRONMENTAL PROTECTION AGENCY (USEPA):

The federal agency responsible for enforcing federal environmental regulations. The Environmental Protection Agency delegates some of its responsibilities for water, air and solid waste pollution control to state agencies.

ENVIRONMENTAL REPAIR FUND:

A fund established by the Wisconsin Legislature to deal with abandoned landfills.

EPIDEMIOLOGY:

The study of diseases as they affect populations rather than individuals, including the distribution and incidence of a disease mortality and morbidity rate, and the relationship of climate, age, sex, race and other factors. EPA uses such data to establish national air quality standards.

EROSION:

The wearing away of the land surface by wind or water.

EUTROPHIC:

Refers to a nutrient-rich lake. Large amounts of algae and weeds characterize a eutrophic lake (see also "Oligotrophic" and "Mesotrophic").

EUTROPHICATION:

The process of nutrient enrichment of a lake loading to increased production of aquatic organisms. Eutrophication can be accelerated by human activity such as agriculture and improper waste disposal.

FACILITY PLAN:

A preliminary planning and engineering document that identifies alternative solutions to a community's wastewater treatment problems.

FECAL COLIFORM:

A group of bacteria used to indicate the presence of other bacteria that cause disease. The number of coliform is particularly important when water is used for drinking and swimming.

FISHABLE AND SWIMMABLE:

Refers to the water quality goal set for the nation's surface waters by Congress in the Clean Water Act. All waters were to meet this goal by 1984.

FLOURANTHENE:

A polyaromatic hydrocarbon (PHA) with toxic properties.

FLY ASH:

Particulates emitted from coal burning and other combustion, such as wood burning, and vented into the air from stacks, or more likely, collected by electrostatic precipitators.

FOOD CHAIN:

A sequence of organisms where each uses the next as a food source.

FURANS (2,3,7,8-tetra-chloro-dibenzpfurans):

A chlorinated organic compound which is highly toxic.

GREEN STRIPS:

See buffer strip.

GROUNDWATER:

Underground water-bearing areas generally within the boundaries of a watershed, which fill internal passageways of porous geologic formations (aquifers) with water that flows in response to gravity and pressure. Often used as the source of water for communities and industries.

HABITAT:

The place or type of site where a plant or animal naturally lives and grows.

HEAVY METALS:

Metals present in municipal and industrial wastes that pose long-tern environmental hazards if not properly disposed. Heavy metals can contaminate ground and surface waters, fish and other food stuffs. The metals of most concern are: arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium and zinc (see also separate listings of these metals for their health effects).

HERBICIDE:

A type of pesticide that is specifically designed to kill plants and can also be toxic to other organisms.

HYDROCARBONS:

Any chemical of a large family of chemicals containing carbon and hydrogen in various combinations.

INCINERATOR:

A furnace designed to burn wastes.

INFLUENT:

Influent for an industry would be the river water that the plant intakes for use in its processing. Influent to a municipal treatment plant is untreated wastewater.

IN-PLACE POLLUTION:

As used in the RAP, refers to pollution from contaminated sediments. These sediments are polluted from post discharges from municipal and industrial sources.

INTERNATIONAL JOINT COMMISSION (IJC):

An agency formed by the United States and Canada to guide management of the Great Lakes and resolve border issues.

ISOROPYLBIPHENYL:

A chemical compound used as a substitute for PCB.

LANDFILL:

A conventional sanitary landfill is "a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading solid wastes in thin layers, materials at the end of each operating day". Hazardous wastes frequently require various types of pretreatment before they

are disposed of, i.e., neutralization chemical fixation encapsulation. Neutralizing and disposing of wastes should be considered a last resort. Repurifying and reusing waste materials or recycling them for another use may be less costly.

LC-1:
The concentration that results in 1% mortality of the test animal populations exposed to the contaminant.

$LC_{50}$:
Lethal concentration for 50% of the test population exposed to a toxicant substance.

LCD:
County Land Conservation Department

$LD_{50}$:
Lethal dose for 50 percent of the test population exposed to a toxicant substance.

LEACHATE:
The contaminated liquid which seeps from a pile or cell of solid materials and which contains water, dissolved and decomposing solids. Leachate may enter the groundwater and contaminate drinking water supplies.

LOAD:
The total amount of materials or pollutants reaching a given locale.

MACROPHYTE:
A rooted aquatic plant.

MASS:
The amount of material a substance contains causing it to have weight in a gravitational field.

MASS BALANCE:
A study that examines all parts of the ecosystem to determine the amount of toxic or other pollutant present, its sources, and the processes by which the chemical moves through the ecosystem.

MESOTROPHIC:
Refers to a moderately fertile nutrient level of a lake between the oligotrophic and eutrophic levels. (See also "Eutrophic" and "Oligotrophic.")

MILLIGRAMS PER LITER (mg/1):
A measure of the concentration of substance in water. For most pollution measurement this is the equivalent of "parts per million".

MITIGATION:

The effort to lessen the damages caused, by modifying a project, providing alternatives, compensating for losses or replacing lost values.

MIXING ZONE:

The portion of a stream or lake where effluent is allowed to mix with the receiving water. The size of the area depends on the volume and flow of the discharge and receiving water. For streams the mixing zone is one-third of the lowest flow that occurs once every 10 years for a seven day period.

NONPOINT SOURCE POLLUTION (NSP):

Pollution whose sources cannot be traced to a single point such as a municipal or industrial wastewater treatment plant discharge pipe. Nonpoint sources include eroding farmland and construction sites, urban streets, and barnyards. Pollutants from these sources reach water bodies in runoff, which can best be controlled by proper land management.

NPS:

See nonpoint source pollution.

OLIGOTROPHIC:

Refers to an unproductive and nutrient-poor lake. Such lakes typically have very clear water. (See also "Eutrophic" and "Mesotrophic.")

OUTFALL:

The mouth of a sewer, drain, or pipe where effluent from a wastewater treatment plant is discharged.

PATHOGEN:

Any infective agent capable of producing disease. It may be a virus, bacterium, protozoan, etc.

PELAGIC:

Referring to open water portion of a lake.

PESTICIDE:

Any chemical agent used to control specific organisms, such as insecticides, herbicides, fungicides, etc.

PH:

A measure of acidity or alkalinity, measured on a scale of 0 to 14 with 7 being neutral and 0 being most acid, and 14 being most alkaline.

PHENOLS:

Organic compounds that are byproducts of petroleum refining, textile, dye, and resin manufacture. High concentrations can cause taste and odor problems in fish. Higher concentration can be toxic to fish and aquatic life.

PHOSPHORUS:

A nutrient that, when reaching lakes in excess amounts, can lead to overfertile conditions and algae blooms.

PLANKTON:

Tiny plants and animals that live in water.

POINT SOURCES:

Sources of pollution that have discrete discharges, usually from a pipe or outfall.

POLLUTION:

The presence of materials or energy whose nature, location, or quantity produces undesired environmental effects.

POLYCHLORINATED BIPHENYLS(PCBs):

A group of 209 compounds, PCBs have been manufactured since 1929 for such common uses as electrical insulation and heating/cooling equipment, because they resist wear and chemical breakdown. Although banned in 1979 because of their toxicity, they have been detected on air, land and water. Recent surveys found PCBs in every section of the country, even those remote from PCB manufacturers.

POLYCHLORINATED ORGANIC COMPOUNDS:

A group of toxic chemicals which contain several chlorine atoms.

PRETREATMENT:

A partial wastewater treatment required from some industries. Pretreatment removes some types of industrial pollutants before the wastewater is discharged to a municipal wastewater treatment plant.

PRIORITY POLLUTANT:

A list of toxic chemicals identified by the federal government because of their potential impact in the environment and human health. Major dischargers are required to monitor all or some of these chemicals when their WPDES permits are reissued.

PRIORITY WATERSHED:

A drainage area about 100,000 acres in size selected to receive Wisconsin Fund money to help pay the cost of controlling nonpoint source pollution. Because money is limited, only watersheds where problems are critical, control is practical, and cooperation is likely are selected for funding.

PRODUCTIVITY:

A measure of the amount of living matter which is supported by an environment over a specific period of time. Often described in terms of algae production for a lake.

PUBLIC LAW 92-500 (CLEAN WATER ACT):

The federal law that sets national policy for improving and protecting the quality of the nation's waters. The law set a timetable for the cleanup of the nation's waters and stated that they are to be fishable and swimmable. This also required all dischargers of pollutants to obtain a permit and meet the conditions of the permit. To accomplish this pollution cleanup, billions of dollars have been made available to help communities pay the cost of building sewage treatment facilities. Amendments in the Clean Water Act were made in 1977 by passage of Public Law 95-217, and in 1987.

PUBLIC PARTICIPATION:

The active involvement of interested and affected citizens in governmental decision-making.

PUBLICLY OWNED TREATMENT WORKS (POTW):

A wastewater treatment plat owned by a city, village or other unit of government.

RAP:

See Remedial Action Plan.

RECYCLING:

The process that transforms waste materials into new products.

REMEDIAL ACTION PLAN:

A plan designed to restore beneficial uses to a Great Lakes Area of Concern.

REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RF/FS):

An investigation of problems and assessment of management options conducted as part of a superfund project.

RESOURCE CONSERVATION AND RECOVERY ACT OF 1976 (RCRA):

This federal law amends the Solid Waste Disposal Act of 1965 and expands on the Resource Recovery Act of 1970 to provide a program that regulates hazardous wastes, to eliminate open dumping and to promote solid waste management programs.

RETRO-FIT:

The placement of an urban structural practice in an existing urban area, which may involve rerouting existing storm sewers and/or relocating existing buildings or other structures.

RIPARIAN:

Belonging or relating to the bank of a lake, river or stream.

RIPRAP:

Broken rock, cobbles, or boulders placed on the bank of a stream to protect it against erosion.

RULE:
Refers to Wisconsin administrative rules. See Wisconsin Administrative Code.

RUNOFF:
Water from rain, snowmelt, or irrigation that flows over the ground surface and returns to streams. Runoff can collect pollutants from air or land and carry them to receiving waters.

SCS:
U.S. Soil Conservation Service

SECONDARY IMPACTS:
The indirect effects that an action can have on the health of the ecosystem or the economy.

SECONDARY TREATMENT:
Two-stage wastewater treatment that allows the coarse particles to settle out, as in primary treatment, followed by biological breakdowns of the remaining impurities. Secondary treatment commonly removes 90% of the impurities. Sometimes "secondary treatment" refers simply to the biological part of the treatment process.

SEDIMENT:
Soil particles suspended in and carried by water as a result of erosion.

SEICHES:
Changes in water levels due to the tipping of water in an elongated lake basin whereby water is raised in one end of the basin and lowered in the other.

SEPTIC SYSTEM:
Sewage treatment and disposal for homes not connected to sewer lines. Usually the system includes a tank and drain field. Solids settle to the bottom of the tank. Liquid percolates through the drain field.

SLUDGE:
A byproduct of wastewater treatment; waste solids suspended in water.

SOLID WASTE:
Unwanted or discharged material with insufficient liquid to be free flowing.

STANDARDS:
See water quality standards.

STORM SEWERS:
A system of sewers that collect and transport rain and snow runoff. In areas that have separated sewers, such stormwater is not mixed with sanitary sewage.

SUPERFUND:

A federal program that provides for cleanup of major hazardous landfills and land disposal areas.

SUSPENDED SOLIDS (SS):

Small particles of solid pollutants suspended in water.

SYNERGISM:

The total effect is greater than the sum of the individual effects. For example, the characteristic property of a mixture of toxicants that exhibits a greater-than-additive cumulative toxic effect.

TACs:

Technical advisory committees that assisted in the development of the Remedial Action Plan.

TERTIARY TREATMENT:

See advanced wastewater treatment.

TOP-DOWN MANAGEMENT:

A management theory that uses biomanipulation, specifically the stocking of predator species of fish to improve water quality.

TOTAL MAXIMUM DAILY LOADS:

The maximum amount of a pollutant that can be discharged into a stream without causing a violation of water quality standards.

TOXIC:

An adjective that describes a substance which is poisonous, or can kill or injure a person or plants and animals upon direct contact or long-term exposure. (Also, see toxic substance.)

TOXIC SUBSTANCE:

A chemical or mixture of chemicals which, through sufficient exposure, or ingestion, inhalation of assimilation by an organism, either directly from the environment or indirectly by ingestion through the food chain, will, on the basis of available information cause death, disease, behavioral or immunologic abnormalities, cancer, genetic mutations, or development of physiological malfunctions, including malfunctions in reproduction or physical deformations, in organisms or their offspring.

TOXICANT:

See toxic substance.

TOXICITY:

The degree of danger posed by a toxic substance to animal or plant life. Also see acute toxicity, chronic toxicity and additivity.

TOXICITY REDUCTION EVALUATION:
A requirement for a discharger that the causes of toxicity in an effluent be determined and measures taken to eliminate the toxicity. The measures may be treatment, product substitution, chemical use reduction or other actions that will achieve the desired result.

TREATMENT PLANT:
See wastewater treatment plant.

TROPHIC STATUS:
The level of growth or productivity of a lake as measured by phosphorus content, algae abundance, and depth of light penetration.

TURBIDITY:
Lack of water clarity. Turbidity is usually closely related to the amount of suspended solids in water.

UDC:
Uniform Dwelling Code, a building code consisting of statewide regulations for electrical heating, ventilation, fire, structural, plumbing, construction site erosion and other related practices, generally used by communities of at least 2,500 inhabitants.UNIVERSITY OF WISCONSIN-EXTENSION (UWEX):
A special outreach, education branch of the state university system.

VARIANCE:
Government permission for a delay or exception in the application of a given law, ordinance or regulation. Also, see water quality standard variance.

VOLATILE:
Any substance that evaporates at a low temperature.

WASTELOAD ALLOCATION:
Division of the amount of waste a stream can assimilate among the various dischargers to the stream. This limits the amount (in pounds) of chemical or biological constituent discharged from a wastewater treatment plant to a water body.

WASTEWATER:
Water that has become contaminated as a byproduct of some human activity. Wastewater includes sewage, washwater and the water-borne wastes of industrial processes.

WASTE:
Unwanted materials left over from manufacturing processes, refuse from places of human habitation or animal habitation.

WASTEWATER TREATMENT PLANT:
A facility for purifying wastewater. Modern wastewater treatment plants are capable of removing 95% of organic pollutants.

WATER QUALITY AGREEMENT:

The Great Lakes Water Quality agreement was initially signed by Canada and the United States in 1972 and was subsequently revised in 1978 and 1987. It proves guidance for the management of water quality, specifically phosphorus and toxics, in the Great Lakes.

WATER QUALITY LIMITED SEGMENT:

A section of river where water quality standards will not be met if only categorical effluent standards are met.

WATER QUALITY CRITERIA:

A measure of the physical, chemical or biological characteristics of a water body necessary to protect and maintain different water uses (fish and aquatic life, swimming, etc.).

WATER QUALITY STANDARDS:

The legal basis and determination of the use of a water body and the water quality criteria, physical, chemical, or biological characteristics of a water body, that must be met to make it suitable for the specified use.

WATER QUALITY STANDARD VARIANCE:

When natural conditions of a water body preclude meeting all conditions necessary to maintain full fish and aquatic life and swimming, a variance may be granted.

WATERSHED:

The land area that drains into a lake or river.

WETLANDS:

Areas that are inundates or saturated by surface or groundwater at a frequency and duration sufficient to support a variety of vegetative or aquatic life. Wetland vegetation requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs and similar areas.

WINHULSE:

A computer model for evaluating sediment delivery to surface waters from agricultural lands. It was developed by DNR with assistance from SCS.

WISCONSIN ADMINISTRATIVE CODE:

The set of rules written and used by state agencies to implement state statutes. Administrative codes are subject to public hearing and have the force of law.

WISCONSIN FUND:

A state program that helps pay the cost of reducing water pollution. Funding for the program comes from general revenues and bonds and is based on a percentage of the state's taxable property value. The Wisconsin Fund includes these programs:

Point Source Water Pollution Abatement Grant Program - Provides grants for 60% of the cost of constructing wastewater treatment facilities. Most of this program's money goes for treatment plant construction, but three percent of this fund is available for repair or replacement of private, onsite sewer systems.

Nonpoint Source Water Pollution Abatement Grant Program - Funds to share the cost of reducing water pollution. Nonspecified sources are available in selected priority watersheds.

Solid Waste Grant Program - Communities planning for solid waste disposal sites are eligible for grant money. $500,000 will be available each year to help with planning costs.

WISCONSIN NONPOINT SOURCE WATER POLLUTION ABATEMENT GRANT PROGRAM:

A state cost-share program established by the State Legislature in 1978 to help pay the costs of controlling nonpoint source pollution. Also known as the nonpoint source element of the Wisconsin Fund or the Priority Watershed Program.

WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM (WPDES):

A permit system to monitor and control the point source dischargers of wastewater in Wisconsin. Dischargers are required to have a discharge permit and meet the conditions it specifies.

# Priority Watershed Projects in Wisconsin
## 1993

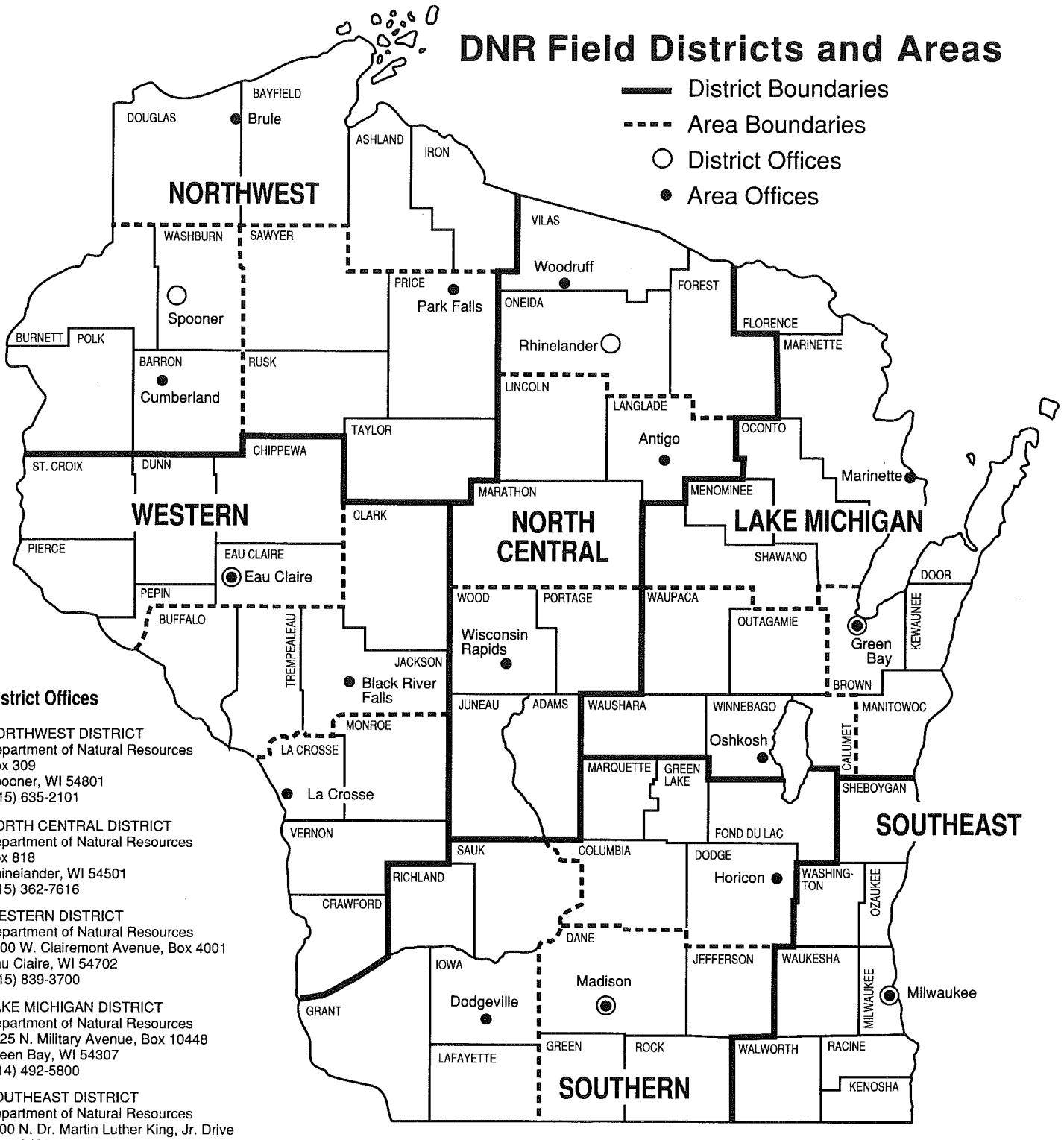
| Year Selected-Map Number | Large-scale Priority Watershed Project | County(ies) |
|---|---|---|
| 79-1 | Galena River* | Grant, Lafayette |
| 79-2 | Elk Creek* | Trempealeau |
| 79-3 | Hay River* | Barron, Dunn |
| 79-4 | Lower Manitowoc River* | Manitowoc, Brown |
| 79-5 | Root River* | Racine, Milwaukee, Waukesha |
| 80-1 | Onion River* | Sheboygan, Ozaukee |
| 80-2 | Sixmile-Pheasant Branch Creek* | Dane |
| 80-3 | Big Green Lake* | Green Lake, Fond du Lac |
| 80-4 | Upper Willow River* | Polk, St. Crox |
| 81-1 | Upper West Branch Pecatonica River* | Iowa, Lafayette |
| 81-2 | Lower Black River* | La Crosse, Trempealeau |
| 82-1 | Kewaunee River* | Kewaunee, Brown |
| 82-2 | Turtle Creek | Walworth, Rock |
| 83-1 | Oconomowoc River | Waukesha, Washington, Jefferson |
| 83-2 | Little River | Oconto, Marinette |
| 83-3 | Crossman Creek/Little Baraboo River | Sauk, Juneau, Richland |
| 83-4 | Lower Eau Claire River | Eau Claire |
| 84-1 | Beaver Creek | Trempealeau, Jackson |
| 84-2 | Upper Big Eau Pleine River | Marathon, Taylor, Clark |
| 84-3 | Sevenmile-Silver Creeks | Manitowoc, Sheboygan |
| 84-4 | Upper Door Peninsula | Door |
| 84-5 | East & West Branch Milwaukee River | Fond du Lac, Washington, Sheboygan, Dodge, Ozaukee |
| 84-6 | North Branch Milwaukee River | Sheboygan, Washington, Ozaukee, Fond du Lac |
| 84-7 | Milwaukee River South | Ozaukee, Milwaukee |
| 84-8 | Cedar Creek | Washington, Ozaukee |
| 84-9 | Menomonee River | Milwaukee, Waukesha, Ozaukee, Washington |
| 85-1 | Black Earth Creek | Dane |
| 85-2 | Sheboygan River | Sheboygan, Fond du Lac, Manitowoc, Calumet |
| 85-3 | Waumandee Creek | Buffalo |
| 86-1 | East River | Brown, Calumet |
| 86-2 | Yahara River - Lake Monona | Dane |
| 86-3 | Lower Grant River | Grant |
| 89-1 | Yellow River | Barron |
| 89-2 | Lake Winnebago East | Calumet, Fond du Lac |
| 89-3 | Upper Fox River (Ill.) | Waukesha |
| 89-4 | Narrows Creek - Baraboo River | Sauk |
| 89-5 | Middle Trempealeau River | Trempealeau, Buffalo |
| 89-6 | Middle Kickapoo River | Vernon, Monroe, Richland |
| 89-7 | Lower East Branch Pecatonica River | Green, Lafayette |
| 90-1 | Arrowhead River & Daggets Creek | Winnebago, Outagamie, Waupaca |
| 90-2 | Kinnickinnic River | Milwaukee |
| 90-3 | Beaverdam River | Dodge, Columbia, Green Lake |
| 90-4 | Lower Big Eau Pleine River | Marathon |
| 90-5 | Upper Yellow River | Wood, Marathon, Clark |
| 90-6 | Duncan Creek | Chippewa, Eau Claire |
| 91-1 | Upper Trempealeau River | Jackson, Trempealeau |
| 91-2 | Neenah Creek | Adams, Marquette, Columbia |
| 92-1 | Balsam Branch | Polk |
| 92-2 | Red River - Little Sturgeon Bay | Door, Brown, Kewaunee |
| 93-1 | South Fork Hay River | Dunn, Polk, Barron, St. Croix |
| 93-2 | Branch River | Manitowoc, Brown |
| 93-3 | Soft Maple/Hay Creek | Rusk |
| 93-4 | Tomorrow/Waupaca River | Portage, Waupaca, Waushara |

| Year Selected-Map Number | Small-scale Priority Watershed Project | County(ies) |
|---|---|---|
| SS-1 | Bass Lake* | Marinette |
| SS-90-1 | Dunlap Creek | Dane |
| SS-90-2 | Lowes Creek | Eau Claire |
| SS-90-3 | Port Edwards - Groundwater Prototype | Wood |
| SS-91-1 | Whittlesey Creek | Bayfield |
| SS-91-2 | Spring Creek | Rock |

| Year Selected-Map Number | Priority Lake Project | County(ies) |
|---|---|---|
| PL-90-1 | Minocqua Lake | Oneida |
| PL-90-2 | Lake Tomah | Monroe |
| PL-91-1 | Little Muskego, Big Muskego, Wind Lakes | Waukesha, Racine Milwaukee |
| PL-92-1 | Lake Noquebay | Marinette |
| PL-92-2 | Lake Ripley | Jefferson |
| PL-93-1 | Camp/Center Lakes | Kenosha |
| PL-93-2 | Lake Mendota | Dane, Columbia |
| PL-93-3 | Hillsboro Lake | Vernon |

** Project completed*

# Priority Watershed Projects in Wisconsin
# 1993

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REV 5/93

# Our Mission:

To protect and enhance our Natural Resources—
our air, land and water;
our wildlife, fish and forests.

To provide a clean environment
and a full range of outdoor opportunities.

To insure the right of all Wisconsin citizens
to use and enjoy these resources in
their work and leisure.

And in cooperation with all our citizens
to consider the future
and those who will follow us.

WISCONSIN
DEPT. OF NATURAL RESOURCES