Nonpoint Source Control Plan for the Dell Creek Priority Watershed Project

The Wisconsin Nonpoint Source Water Pollution Abatement Program

January 1998

This Plan Was Cooperatively Prepared By:

The Wisconsin Department of Natural Resources
Wisconsin Department of Agriculture, Trade and Consumer Protection
Sauk and Juneau County Land Conservation Departments

Publication WT-509-97

For copies of this document please contact:

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Bureau of Watershed Management
Runoff Management Section
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Watershed Plan Credits

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February 11, 1998

IN REPLY REFER TO: 3200

Melvin Rose, County Board Chair
Sauk County
515 Oak Street
Baraboo, WI 53913

SUBJECT: Dell Creek Priority Watershed Plan

Mel

Dear Mr. Rose:

I am pleased to approve the Dell Creek Priority Watershed Plan prepared through the Wisconsin Nonpoint Source Pollution Abatement Program. This plan meets the intent and conditions of s. 281.65, Wisconsin Statutes, and Chapter NR 120, Wisconsin Administrative Code. This plan went before the Land and Water Conservation Board on January 27, 1998, and was unanimously approved at that time. I am also approving this plan as an amendment to the Lower Wisconsin Areawide Water Quality Management Plan.

I would like to express the Department's appreciation to the Sauk and Juneau County Land Conservation Department staff that participated in preparing this plan. We look forward to assisting Sauk County, Juneau County and the cities and villages in the watershed in the implementation of the Dell Creek Priority Watershed Plan.

Sincerely,

George

George E. Meyer
Secretary

cc: Ben Brancel, DATCP
Bob Uphoff, LWCB
Joe Van Berkel, Sauk County LCD
Eugene Hackbarth, Sauk County LCC Chairman
Greg Lowe, Juneau County LCD
John Bollig, Juneau County LCC Chairman
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February 11, 1998

IN REPLY REFER TO: 3200

James Barrett, County Board Chair
Juneau County
220 La Crosse Street
Mauston, WI 53948

SUBJECT: Dell Creek Priority Watershed Plan

Jim

Dear Mr. Barrett:

I am pleased to approve the Dell Creek Priority Watershed Plan prepared through the Wisconsin Nonpoint Source Pollution Abatement Program. This plan meets the intent and conditions of s. 281.65, Wisconsin Statutes, and Chapter NR 120, Wisconsin Administrative Code. This plan went before the Land and Water Conservation Board on January 27, 1998, and was unanimously approved at that time. I am also approving this plan as an amendment to the Lower Wisconsin Areawide Water Quality Management Plan.

I would like to express the Department's appreciation to the Sauk and Juneau County Land Conservation Department staff that participated in preparing this plan. We look forward to assisting Sauk County, Juneau County and the cities and villages in the watershed in the implementation of the Dell Creek Priority Watershed Plan.

Sincerely,

George

George E. Meyer
Secretary

cc: Ben Brancel, DATCP
Bob Uphoff, LWCB
Joe Van Berkel, Sauk County LCD
Eugene Hackbarth, Sauk County LCC Chairman
Greg Lowe, Juneau County LCD
John Bollig, Juneau County LCC Chairman
Kay Mackesey, Village of Lake Delton
Andy Morton, SCR
Len Olson, DATCP
Jill Jonas, WT/2
Cindy Hoffland, CA/8

RESOLUTION NO. 174-97

ADOPTING THE DELL CREEK
NONPOINT SOURCE PRIORITY WATERSHED PLAN

WHEREAS, the Dell Creek Watershed was designated as a priority watershed project by the Department of Natural Resources in 1995 under the Wisconsin Nonpoint Source Water Pollution Abatement Program, and

WHEREAS, the Sauk and Juneau County Land Conservation Departments in cooperation with the Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection conducted a detailed inventory of the water resources and pollution sources within the watershed, and

WHEREAS, these inventories have been used in the development of a detailed nonpoint source control plan for the watershed, and

WHEREAS, a number of public informational meetings have been conducted throughout the watershed planning process, and a public hearing was conducted on December 12, 1997, and pertinent public comments have been incorporated into the plan, and

WHEREAS, approval of the plan by the County and the Department of Natural Resources will initiate grants to the County to administer the project and grants to landowners within the watershed area to cost share on pollution control practices.

NOW, THEREFORE, BE IT RESOLVED, by the Sauk County Board of Supervisors, met in regular session that the Dell Creek Nonpoint Source Priority Watershed Plan be approved and that the Land Conservation Committee be given the authority and responsibility to act in behalf of Sauk County to administer the project as outlined in the plan.

For consideration by the Sauk County Board of Supervisors on December 16, 1997.

Respectfully submitted,
Sauk County Land Conservation Committee

Eugene Hackbarth, Chair

Dorothy Williams

Tim Meister

John Bernien

Harlan Sprecher

FISCAL NOTE: Estimated costs over the project term 1998-2007.

Urban Components

Practice installation costs:

State share	$ 6,207,119
Local share	$ 3,959,416

Staffing costs:

State share	$ 100,000
Local share	$ 386,000

Rural components

Practice installation costs:

State share	$2,292,249
Local share	$1,077,616
County cost	$ 12,413

Staffing costs:

State share	$2,200,000
County share	$ 440,000

Copies of the Plan are available for review in the Land Conservation Department

Juneau County Board Of Supervisors

Courthouse
Mauston, Wisconsin 53948

RESOLUTION # 97-85 DATE December 16, 1997

INTRODUCED BY: Juneau County Land Conservation Committee

INTENT: Adopting the Dell Creek Nonpoint Source Priority Watershed Plan

WHEREAS, the Dell Creek Priority Watershed was designated by the Department of Natural Resources in 1995 under the Wisconsin Nonpoint source Water Pollution Abatement Program, and

WHEREAS, this project is a continuation of the Dell Creek Watershed Project and compliments the goals of improved water quality in the Dell Creek Watershed, and

WHEREAS, the Sauk & Juneau County Land Conservation Departments in cooperation with the Department of Natural Resources and the Department of Agriculture, Trade and Consumer Protection conducted a detailed inventory of the land use within the watershed in 1995 and 1996, and

WHEREAS, this inventory resulted in the development of a detailed nonpoint source control plan for the watershed, and

WHEREAS, a number of public informational meetings have been conducted throughout the watershed, and an official public hearing was conducted on December 12, 1997, and

WHEREAS, pertinent public comments have been incorporated into the plan, and

WHEREAS, the County wishing to receive cost sharing grants for landowners in the watershed must first adopt the Dell Creek Priority Watershed Plan.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Supervisors of the County of Juneau that the Dell Creek Watershed Nonpoint Source Priority Watershed Plan be adopted and the implementation of the plan begin as soon as possible.

For consideration by the Juneau County Board of Supervisors on December 16, 1997.

DATED: This 16th day of December, 1997.

Respectfully submitted,
Juneau County Land Conservation Committee

John Bollig, Chair

Dennis Kolba

Susan Krizan

Dick Minett

Copies of the Plan are available for review in the Land Conservation Department

STATE OF WISCONSIN)
)SS.
COUNTY OF JUNEAU)

I, Carl Wilke, County Clerk in and for Juneau County, Wisconsin, hereby certify that the attached Resolution #R- -97 adopted by the Juneau County Board of Supervisors at their Adjourned Annual meeting which was held December, 1997.

C. Wilke
Carl Wilke
Juneau County Clerk

SEAL

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List of Acronyms

BARNY	Barnyard Nutrient Analysis Model
BMP	Best Management Practice
BOD	Biological Oxygen Demand
CAC	Citizen Advisory Committee
COD	Chemical Oxygen Demand
CSA	Cost-share Agreement
CSEC	Construction Site Erosion
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
DILHR	Department of Industry, Labor, and Human Relations
DOT	Department of Transportation
DNR	Wisconsin Department of Natural Resources
ERW	Exceptional Resource Water
ES	Enforcement Standard
FOCS	Field Offices Computing System
FPP	Wisconsin Farmland Protection Program
FSA	Farm Services Agency (United States Department of Agriculture)
FSA	Food Services Agency
GMU	Geographic Management Unit
I&E	Information and Education
LCC	Land Conservation Committee
LCD	Land Conservation Department
LWCB	Land and Water Conservation Board
NPM	Nutrient and Pest Management
NPS	Nonpoint Source Pollution
NR	Natural Resources
NRCS	Natural Resources Conservation Service
PAL	Preventative Action Limit
SIP	Stewardship Incentive Program
SLAMM	Source Loading and Management Model
SOS	Signs of Success monitoring program
UST	Underground Storage Tank
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USLE	Universal Soil Loss Equation
UWEX	University of Wisconsin-Extension
WINHUSLE	Sediment Transfer Model based on the Universal Soil Loss Equation
WPDES	Wisconsin Pollutant Discharge Elimination System [permit system]
WUWN	Wisconsin Unique Well Number assigned to well sample sites.

General Watershed Characteristics

The Dell Creek watershed drains 133 square miles of land in Sauk and Juneau Counties in south central Wisconsin. The Dell Creek watershed is located in the Lower Wisconsin River Drainage Basin. This watershed drains into Lake Delton and the Wisconsin River. See map S-1.

Approximately 60% (80 square miles) of the Dell Creek watershed lies in Sauk County, and 40% (53 square miles) lies within Juneau County. The watershed was divided into seven smaller drainage basins, called subwatersheds, for the purpose of planning (see the watershed map for the subwatershed locations).

Dell Creek Subwatershed - Approximately 44 square miles (28,331 acres). This is the largest of the seven subwatersheds and is divided between Sauk County (80%) and Juneau County (20%). Dell Creek is the major surface water resource in the subwatershed. Water quality conditions range from "poor" to "good".

Mirror Lake Subwatershed - Approximately 24 square miles (15,442 acres). This subwatershed is located entirely in Sauk County and contains Mirror Lake and the 2,050 acre Mirror Lake State Park. Water quality conditions range from "poor" to "good".

Lake Delton Subwatershed - Approximately 9 square miles (5,807 acres). This subwatershed includes the urban areas of the village of Lake Delton and the portion of the Wisconsin Dells located west of the Wisconsin River. Lake Delton (270 acres) is the largest water body in the entire watershed and serves as the catchment basin for four (Dell Creek, Mirror Lake, Lake Blass, Lake Delton) of the seven subwatersheds. Water quality conditions are "poor".

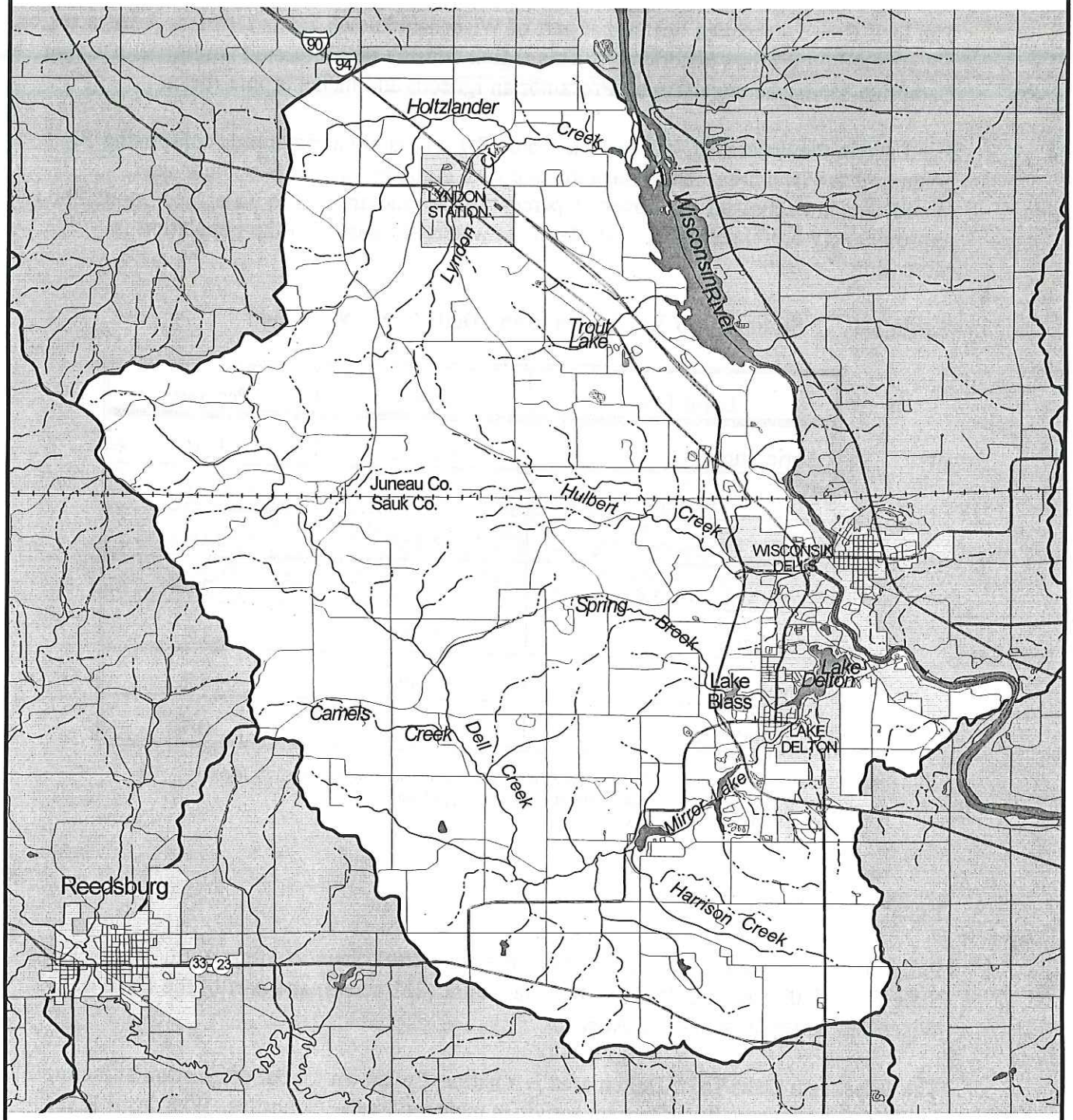
Lake Blass Subwatershed - Approximately 9 square miles (5,802 acres). This subwatershed is located entirely in Sauk County. Lake Blass (34 acre) is the largest water body in the subwatershed. Water conditions range from "very poor" to "good".

Lyndon Creek - Approximately 19 square miles (12,128 acres). This subwatershed is located entirely in Juneau County and contains the village of Lyndon Station. Surface waters within this subwatershed drain into the Wisconsin River. Lyndon Creek is the largest stream in the subwatershed. Water quality conditions range from "poor" to "very good".

Trout Lake - Approximately 10 square mile (6,556 acres). This subwatershed is located entirely in Juneau County. All tributaries within this subwatershed enter the Wisconsin River. Trout Lake (an impoundment on Gilmore Creek) is the largest water body in this subwatershed. Water quality conditions range from "poor" to "good".

Hulbert Creek – Approximately 15.5 square miles (9,934 acres). This subwatershed is divided equally between Sauk and Juneau Counties. Hulbert Creek flows through the city of Wisconsin Dells into the Wisconsin River. Water quality conditions range from "poor" to "fair".

Map S-1 Dell Creek Watershed



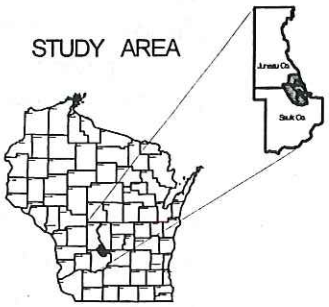
Intermittent Streams
Perennial Streams
County Boundary
Local Roads
Major Highways
Watershed Boundary
Open Water
Municipal Area

Mapscale 1:150,300

0 1 2 3 Miles

N

STUDY AREA



Wisconsin Department of Natural Resources
Water Division
Bureau of Watershed Management
October 1997

The Dell Creek watershed lies in that part of Wisconsin known as the Driftless Area, a region not covered by glaciers historically. This region consists of a dissected landscape of Upper Cambrian sandstone underlain by Precambrian igneous and metamorphic rocks.

Land use in the watershed, as shown in Table S-1, is mainly agricultural, comprising 51 percent of the land area. Dairy farming and cash cropping are the two major uses. Woodlands are abundant and cover 21 percent of the land area. The watershed population is approximately 6,300 residents. Trends in the watershed show that the population is increasing.

Table S-1. Summary of Land Uses in the Dell Creek Watershed

Land Uses	Acres	Percent
Agricultural	43,230	51%
pasture	4,544	5%
cropland	37,164	44%
farmstead	1,522	2%
Woodland	17,613	21%
Developed	14,905	18%
Wetland	8,252	10%

These are estimates based on WINHUSLE inventory data (extrapolated from a 20% inventory). The wetland estimates are of actual wetland acres, not cropped wet fields.
Source: DNR, Sauk & Juneau LCDs.

Local Information

Public land within the watershed includes the Dell Creek State Wildlife Area, Mirror Lake State Park (2,050 acres), Rocky Arbor State Park (221 acres), and part of the Dells of Wisconsin River State Natural Area.

The Wisconsin Dells/Lake Delton area is a nationally known tourist destination attracting 3 million visitors annually. Tourism activities include: hotels, campsites, Wisconsin River sightseeing trips, several water slides and go-kart establishments, and numerous golf courses and horseback riding stables. The travel and tourism industry resulted in an economic impact of $348 million on the state of Wisconsin in 1996.

The tourism industry originated in 1856 and centered around the Wisconsin River and other water resources in the Dells area. Today's expanded tourism industry continues to rely heavily on the water resources in the area. Implementation of the Dell Creek Priority Watershed Plan will serve as a tool to protect and enhance these valuable water resources.

Sources of Nonpoint Pollution

The Sauk and Juneau County LCDs collected data on agricultural lands, barnyards, and streambanks in the watershed. This data was used to estimate the pollutant potential of these nonpoint sources. The following is a summary of the inventory results.

Barnyard Runoff Inventory

- 73 barnyards were inventoried utilizing the BARNY model.
- An estimated 5,366 pounds of phosphorus are delivered to the streams in the watershed annually.

Streambank Erosion Inventory

- Approximately 65 miles of streambank were evaluated.
  Approximately ½ mile (less than 1%) had significant erosion.
- An estimated 120 tons of sediment is eroded from streambanks annually.
  This is less than 1% of the total sediment load for the watershed.
- An estimated 1,855 feet of livestock-trampled sites were identified.

Upland Sediment Inventory

- Soil erosion and sediment delivery rates were calculated using the WINHUSLE model. Approximately 42,000 acres, or around 50%, of the watershed land area were inventoried. The remainder of the watershed will be inventoried within four years.
- An estimated 13,886 tons of soil are being delivered by croplands to watershed lakes or streams on an annual basis. This is 98% of the total sediment load.

Wetlands Inventory

- The focus of the inventory was on wetlands that are present, or have been in the past. Data were gathered from NRCS maps, air photos, and the DNR wetland inventory maps. Of the estimated 8,252 acres of total wetlands, 7,410 acres are currently present, 680 acres are prior converted, and 162 acres are farmed in dry years.

Groundwater Inventory

- Of the 65 private wells in the watershed that were tested for nitrates, 83% tested over the Preventive Action Limit (PAL) of 2 mg/L and 54% of those were above the Enforcement Standard (ES) Health Advisory Level of 10 mg/L.

Urban Inventory

- Approximately 4,400 acres were inventoried utilizing the SLAMM model. Existing annual loads include: sediment (546 tons), phosphorus (1,296 lbs), and lead (2,161 lbs.). These loads are estimated to double as a result of development over the next twenty years.

- It is estimated that in the years between 1997 and 2017, construction site erosion will contribute approximately 1,800 tons per year of sediment (about 3 times the sediment load from existing development) to streams in the project area

Project Goals

The goal of the Dell Creek Priority Watershed Project is to protect, enhance and restore the surface and groundwater in the watershed area. Water quality improvement in this watershed will ultimately improve natural resources in the entire Dell Creek watershed.

Sediment Objective

To reduce overall sediment delivered to streams and lakes by 25%, the following will need to be achieved:

- Reduce sediment delivered to streams and lakes from agricultural uplands by at least 3,500 tons/year, or 25%.
- Reduce sediment delivered from existing urban areas by at least 100 tons/year, or 20%.
- Reduce sediment delivered from construction site erosion by at least 1260 tons/year, or 70%.
- A general reduction in sediment from streambanks.
- A general reduction in sediment from gullies.

Phosphorus Objective

To reduce overall phosphorus delivered to streams in the Dell Creek Priority watershed by 30%, the following will need to be achieved:

- Reduce phosphorus runoff from barnyards in the watershed by at least 2,864 pounds/year, or 53%.
- A general reduction in phosphorus from landspread manure.
- A 25% reduction in the phosphorus delivered to streams and lakes in the watershed due to soil erosion from agricultural uplands.
- A general reduction in phosphorus from urban areas.