

Wisconsin Department of Natural Resources SWIMS Project Summary

General Project Information

Project ID: LPL-049 (3006-1)
Name: PIERCE COUNTY: Nugget Lake Water Quality and Sedimentation Study
Type: Lakes Grant
Subtype: Large Scale Lake Planning
Status: COMPLETE
Start Date: 04/08/1991
End Date: 12/31/1992
Purpose: RATE OF SEDIMENTATION TO BE DETERMINED. TRIBUTARY WATERSHED WILL BE EVALUATED TO ASSESS STREAMBANK EROSION, BACTERIA CONTRIBUTIONS FROM FEEDLOTS IN THE WATERSHED, THE PERCENT OF THE WATERSHED CURRENTLY USING CONSERVATION PRACTICES. WATER CHEMISTRY SAMPLES. PARTICIPATION IN THE EXPANDED SELF-HELP MONITORING PROGRAM. DATA COLLECTION AND INFORMATION DISSEMINATION.
Objective:
Comments: Grantee is PIERCE COUNTY
Outcome:
Study Design:
QA Measures:

People

Name	Role	Status	Start Date	End Date	Organization	Comments
Pierce County,	GRANT_RECIPII	ACTIVE	04/08/1991	12/31/1992	Pierce County	

Project Statuses

Date	Reported By	Status	Comments
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Actions

Action	Detailed Description	Start	End Date	Status
Grant Awarded	Rate of sedimentation to be determined. Tributary watershed will be evaluated to assess streambank erosion, bacteria contributions from feedlots in the watershed, the percent of the watershed currently using conservation practices. Water chemistry samples. Participation in the expanded self-help monitoring program. Data collection and information dissemination.	04/08/1991		COMPLETE
Watershed Mapping or Assessment	10100424	04/08/1991		PROPOSED
Monitor Water Quality or Sediment		04/08/1991	12/31/1992	PROPOSED

Monitoring Stations

Station ID	Name	Comments
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Assessment Units

WBIC	Segment	Local Name	Official Name
2051300	2	Plum Creek	Plum Creek
2053400	1	Nugget Lake	Nugget Lake

Lab Account Codes

Account Code	Description	Start Date	End Date
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Forms

Form Code	Form Name
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Methods

Method Code	Description
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Fieldwork Events

Start Date	Status	Field ID	Station ID	Station Name
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Documents

Title	Description	Author	Published	Comments
1991 Water Quality Study of Nugget Lake (Pierce County, Wisconsin) Wisconsin Lake Management Project	Nugget Lake was created in 1972 as a flood control structure for Plum Creek. Soon thereafter, the development of a park around the lake made it a popular recreational attraction. However, subsequent sedimentation and water quality problems have changed the lake from an attraction to park visitors to a detriment, turning some visitors away. A 1991 study was completed to define the lake's problems, determine the relative sources of its problems, and provide recommendations to solve its problems. Study results indicate the water volume of the northern portion of Nugget Lake has been reduced by nearly 40 percent since 1972. Sediment deposition has occurred in this portion of the lake at an annual rate of about 1.76 acre-feet per year. The major portion of this area of the lake is now less than two feet deep. A water quality assessment of Nugget Lake indicates it is a eutrophic lake. This classification is consistent with its current water quality problems. These include frequent algal blooms, dense weed growths in shallow waters, and a lack of oxygen in the deeper bottom waters. Study results indicate the lake's algal growth is limited by its phosphorus concentration. The primary source of phosphorus during the summer months appears to be runoff from the lake's tributary watershed. However, some recycling of phosphorus from bottom sediments may be occurring in the shallow northern portion of the lake. The water quality study indicates a reduction of phosphorus in storm water runoff will be necessary to improve the lake's water quality. In addition, a reduction of sediment loading will be necessary to improve the lake's transparency after rainstorms because suspended solids in runoff cause the lake waters to become turbid. The results of a stream bank erosion survey indicate approximately one-third of the lake's sedimentation problem may be due to	Barr Engineering Company	03/31/1993	

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	<p>streambank erosion. Streambank erosion currently encompasses 17 percent of the total length of Plum Creek and 9 percent of the total length of Rock Elm Creek. Sediment loads to Nugget Lake from streambank erosion total about 24,000 cubic feet per year. Comparing current data with data collected in 1978 suggests major increases in streambank erosion have occurred. The data suggest streambank: erosion will continue to increase unless stabilization measures are implemented. The remaining two thirds of the lake's sedimentation problem appears to be due to watershed erosion. Approximately half of the 11,390 acre watershed consists of cropland. Past erosion control efforts have focused on agricultural land conservation practices. At least one form of land conservation is now found in 82 percent of existing cropland. Few structural measures have been implemented. Currently, nine grade stabilization structures control drainage in 5.5 percent of the watershed drainage area. The results of an assessment of bacteria concentrations indicate feedlots in the tributary watershed are adding animal wastes to Plum Creek and Rock Elm Creek via stormwater runoff. The bacteria are carried to Nugget Lake via the streams. High concentrations are found in the swimming beach area of the lake following rainstorms. Recommendations to solve the lake's sedimentation and water quality problems focus on changes in the tributary watershed. They include:</p> <ul style="list-style-type: none"> • Structural measures to control the rate of runoff, reduce watershed erosion, and remove sediment and nutrients from runoff • Additional land conservation measures to reduce watershed erosion • Stream bank stabilization measures to reduce the rate of flow and prevent stream bank erosion • Waste management systems to prevent the addition of animal wastes to Plum Creek, Rock Elm Creek, and Nugget Lake via stormwater runoff. <p>It is also recommended that the northern portion of Nugget Lake be dredged for navigational purposes. A plan should be prepared which details dredging methodology, costs, and funding sources.</p>			

Budget

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Combined Budgets:

Combined SLOH:

Combined Total:

Funding

Organization	Source	Type	Amount	Start Date	End Date
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