

STREAM MANAGEMENT PLAN

REGION 5	AREA 510	STREAM NAME Cannon River (mouth to Byllesby Dam)	TRIBUTARY NO. M-48	LENGTH 25 miles
SIMILAR REACH II	STREAM MILE 12.7-25.0	STREAM TYPE Warmwater gamefish	ECOLOGICAL CLASSIFICATION IIA	SPECIES MANAGED SMB

Long Range Goal:

Maintain habitat and fish species diversity by protecting the natural riparian corridor. Document the presence of additional species resulting from the removal of the Welch Dam.

For smallmouth bass:

- Maintain size structure indices at or near present values (PSD/RSD-P = 50/30).
- Maintain relative abundance as estimated by electrofishing at $\geq 10/1000$ ft*.
- Estimate smallmouth bass population size and predict catch rates anglers could expect. Determine relationships between electrofishing CPE and angler CPE, similar to the angler diary study conducted from 1991-1992.

* Number based on 25% electrofishing efficiency.

Operational Plan:

1. Continue electrofishing stations 2 and Hwy. 52 annually, as part of a long-term database. Utilize backpack electrofishing equipment during early fall to assess YOY production in stations 2 and Hwy 52.
2. Estimate smallmouth bass population size by the Petersen mark and recapture method. Fin punch smallmouth bass during routine electrofishing in stations 2 and Hwy. 52 annually from 1995-2000. Contact anglers to schedule the recapture approximately 1 week later. An adequate number of anglers will be needed to properly cover both stations.
3. Continue to protect instream habitat and the natural riparian corridor through environmental review.

Potential Plan:

1. Distribute an angler satisfaction survey to area sportsmen groups that would require mail-in responses. Pending results from this survey, and information obtained from methods described in the Operational Plan, develop customized experimental regulations if needed using the MANSIM model.

Area Supervisor's Signature

Date

*Prepared by Al Schmitt
Tim Schlagerhaft*

4/7/95

Regional Manager's Signature

Date

Steve Lynd

4/27/95

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Potential Plan (cont'd):

2. Conduct informal angler counts and interviews during weekdays and occasional weekends to roughly estimate angler pressure on the fishery, and to determine if a creel survey is justified. Analyze data on a long-term basis to determine influences that effect trends in abundance and size structure.
3. Conduct monthly angling assessments from June-October. Include data in the annual Population Assessment write-up.

Narrative:

Past Surveys and Investigations:

A pollution investigation of the Straight and Cannon Rivers was completed by the Minnesota State Board of Health from 1928-1930 (Woodward and Olson 1930). Environmental impacts associated with severe domestic, municipal and industrial pollution were reported from Owatonna to Welch. An average of nearly 500,000 gallons of raw sewage was reported entering the Cannon River each day. All forms of water use, particularly swimming, were reported health hazards.

A survey report on the Cannon River Bottoms between the mouth and Welch was completed by Johnson and Nelson (1949). Heavy erosion of crop and pastureland caused excessive siltation and extreme turbidity (<6"secchi). Additionally, unstable streamflows were also creating "very adverse" conditions for aquatic plants and animals. The control of erosion within the watershed was noted as the top priority to improving fish and wildlife habitat.

A study that examined residential, agricultural, and organic-industrial pollution in the Straight and Cannon Rivers was completed by Colman and Kopach (1972). Pollutants including nitrates, phosphates, coliform bacteria, and silt were measured in the Cannon River from Waterville to Redwing. Silt measurements (ml/l) varied according to flow, however, silting was 2-5 times greater above Lake Byllesby than below, and may have been due to differences in watershed soil composition (settling in lake also probable). Streams entering the Cannon River generally carried more silt than the river itself.

An Initial Survey was completed by Thorn (1978). Two similar reaches were established:

Similar reach I - Mouth to mile 12.7 (Welch).

Similar reach II - Mile 12.7 to mile 25.0 (Lake Byllesby Dam).

Similar reach I was essentially described as a single continuous pool flowing over extensive silt/sand flats. Streambanks were severely eroded. Similar reach II contained relatively diverse substrates including rubble, gravel and boulder. Riffles were variably spaced from 100 yards to 1/4 mile apart.

A total of twenty species were collected during electrofishing, sixteen in similar reach I, and eleven in similar reach II, despite more diverse habitat in similar reach II. Walleye, sauger, channel catfish and northern pike were collected below the Welch Dam, however, habitat conditions were reported not suited to gamefish. Smallmouth bass were the only gamefish collected between Cannon Falls and Welch. In this area, smallmouth were reported "self-sustaining", however, siltation and lack of deep pools were suggested as possible limiting factors. Better land use in the upper watershed was recommended.

Electrofishing was completed in station 2 (mile 17.4) on 10/13/78 (Thorn 1978) to detect changes in fish populations following a drawdown of Lake Byllesby in December 1977. Stream turbidity was high, and decreases in abundance of smallmouth bass and northern hogsucker were reported.

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Past Surveys and Investigations (cont'd):

Ebbers (1978), investigated a fish kill and submitted a report identifying dead carp from the Lake Byllesby dam downstream to T.H. 61. Water was high and turbid from recent rains. There was no evidence of a severe kill. Cause was not determined.

A population assessment was completed in station 2 during August 1982 (Gates 1983). An AC boom shocker and backpack electrofishing gear were used to evaluate fish species abundance. The 1977 Lake Byllesby drawdown/fish kill significantly decreased the abundance of sensitive species - particularly northern hogsucker and smallmouth bass. Reintroductions of smallmouth bass and channel catfish were recommended.

In April 1983, electrofishing was completed immediately below the Lake Byllesby Dam to further assess impacts related to the 1977 drawdown (Hirsch 1984). Sampling efficiency was extremely poor due to high, fast water. Species composition and abundance was less than station 1 (mi 12.2) and 2.

Electrofishing was completed in station 2 during July 1984 to evaluate 1979-1983 stockings of smallmouth bass and channel catfish (Hirsch 1984). Neither species were recovered, however creel survey data from that summer reported 21 channel catfish and 13 smallmouth bass caught by anglers fishing between the Lake Byllesby Dam and U.S. Hwy. 52.

Station 2 and station Hwy 52 (mile 25.3) were electrofished in August 1985 (Hirsch 1986). Smallmouth bass were reported as relatively scarce. Natural reproduction was confirmed. One channel catfish (21.2 inches) was recovered from station Hwy 52.

Station 2 was electrofished in October 1986 (Hayes 1987). Only two smallmouth bass were collected; however, electrofishing was reported difficult due to high water. Carp, white sucker and shorthead redhorse, as in past assessments, accounted for the majority of fish sampled.

A recreational use survey was completed in 1984 on the Cannon River from U.S Highway 61 to the source at Shields Lake (105 mi) (Hirsch and Peterson 1987). From April 1 to September 30, 1984, a substantial amount of recreational activity was documented, including bank angling (116,192 hrs); canoeing (39,720 hrs); and tubing (31,661 hrs). Anglers harvested an estimated 427,800 fish, including black crappie (29,988), and bluegill (4,336).

The survey suggests that the Cannon River corridor should be managed primarily for recreation, and that the economic values associated with recreational uses provide the greatest public benefit relative to other uses of instream water and/or the corridor in general.

A population assessment was completed at stations 2 and Hwy 52 during June and September 1987 (Hayes 1988). Despite a fish kill resulting from an April 1987 drawdown of Lake Byllesby, species diversity as indicated from June electrofishing samples, was similar to past assessments. Smallmouth bass, northern hogsucker, and quillback were rare to absent in June, and occasional to common in September. Fish populations in station 2 were reported less affected by the drawdown than fish in station Hwy 52. Abundance of smallmouth bass between eight and eleven inches was increasing in station 2. Continued monitoring of stations 2 and Hwy 52 was recommended in 1988.

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Past Surveys and Investigations (cont'd):

Hayes (1989) completed a population assessment at stations 2 and Hwy 52 in September 1988. Increased species diversity, compared to assessments in 1987 was reported. The re-appearance of darters was especially notable. Number of smallmouth bass collected increased, particularly in station 2 where 146 fingerlings (YOY) were collected, indicating significant natural reproduction. A recommendation was made to discontinue smallmouth bass stocking.

Another population assessment was completed in stations 2 and Hwy 52 during August 1989 (Hayes and Wiechman 1990). Number of adult smallmouth bass (age I+) was the highest for both stations since the Initial Survey in 1977. Number of smallmouth bass >12 inches, as in past assessments, remained low.

Hayes (1991) completed another population assessment in stations 2 and Hwy 52 during September 1990. Electrofishing catch rates for adult smallmouth bass decreased significantly from 1989 to 1990 (123 to 7 fish/hour) at station 2, but remained similar at station Hwy 52. High angler catch rates near station 2 suggested poor electrofishing sampling efficiency. Smallmouth bass YOY were present at both stations, indicating natural reproduction despite high water levels during May through August. Channel catfish abundance remained low for the seventh consecutive year.

Stations 2 and Hwy. 52 were electrofished again in October 1993 (Schmidt 1994). Smallmouth bass were captured at a rate of 10 and 25 fish/hour at stations 2 and Hwy 52, respectively. Smallmouth bass PSD was 69 in station 2 and 17 in station Hwy. 52. No attempt was made to sample YOY fish.

Past Management: Sediment release occurring during maintenance operations of the Lake Byllesby Dam have resulted in two severe fish kills (1977 and 1987). Annual population assessments revealed significant declines in abundance of species sensitive to water quality. Past management has subsequently focused on reestablishing gamefish populations through fingerling stocking; specifically smallmouth bass and channel catfish (see Table 1). An historical summary of smallmouth bass CPE is given in Figure 1.

Stream and Watershed Alterations: The Lake Byllesby Dam is a major alteration to the natural character of the Cannon River corridor. In addition to being a total barrier to fish migration, periodic maintenance operations adversely impact downstream fish populations. Additionally, agriculture within the watershed increases sedimentation and decreases flow stability.

Social Considerations: Data from a recreational use survey conducted in 1984 described the Cannon River as an intensely fished resource that also received significant tubing and canoeing pressure (Hirsch and Peterson 1987). From an economic standpoint, the report suggested that recreational opportunities provided the greatest public benefit relative to other uses of instream water and the corridor in general. Recently, special interest groups such as the Smallmouth Alliance have expressed concern regarding the smallmouth bass fishery between Cannon Falls and Welch. Experimental regulations intended to improve fishing quality have been proposed by the group. The Faribault based Cannon River Partnership is actively involved in water quality monitoring, land stewardship, and conservation advocacy.

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Limiting Factors: Toxic sediment release during maintenance operations of the Lake Byllesby Dam resulted in severe downstream fish kills in 1977 and 1987. Since required maintenance is ongoing (emergency repairs may arise at any time), the threat of future fish kills is significant and represents a major limiting factor to gamefish in the Cannon River.

Survey Needs and Evaluation Plans: Continue annual assessments at Stations 2 and Hwy 52 with miniboom and backpack electrofishing equipment. Conduct a Petersen mark and recapture estimate in 1995; use angling as method of recapture. Attempt to determine if angler catch rates can be predicted from electrofishing catch rates.

Land Acquisition Needs: Continue to support acquisition projects that restore or protect the natural stream corridor.

Habitat Development Needs: Better land use within the immediate watershed is needed. Preserve the remaining natural integrity of the riparian corridor through environmental review.

Stocking: None recommended at this time.

Regulations: Evaluate the need for experimental regulations. Consider an angler creel survey and subsequent modelling using MANSIM to determine if an experimental regulation would be justified.

References

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<p>Schmidt, A. 1995. Cannon River Population Assessment. Lake City files, 7 pp.</p> <p>Thorn, W.C. 1977. Cannon River reconnaissance - mouth to Welch by airboat. 3 pp.</p> <p>Thorn, W. C. 1977. Cannon River Initial Survey. Lake City files, 39 pp.</p> <p>Thorn, W. C. 1978. Untitled. Electrofishing notes for pre and post drawdown of the Byllesby Dam, 1p.</p> <p>Wiechman, J. 1991. Cannon River Population Assessment. Lake City files, 13 pp.</p>		

Table 1. Stocking history in the Cannon River, 1972-1988.

YEAR	SMB	CCF
1972	13,500 Fgl	None
1979	83 A 130 Ylg	None
1981	12,665 Fgl	None
1982	None	4,752 Ylg
1983	None	5,000 Fgl
1984	None	7,596 Fgl
1987	18,000 Fgl	None
1988	None	19,513 Fgl

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