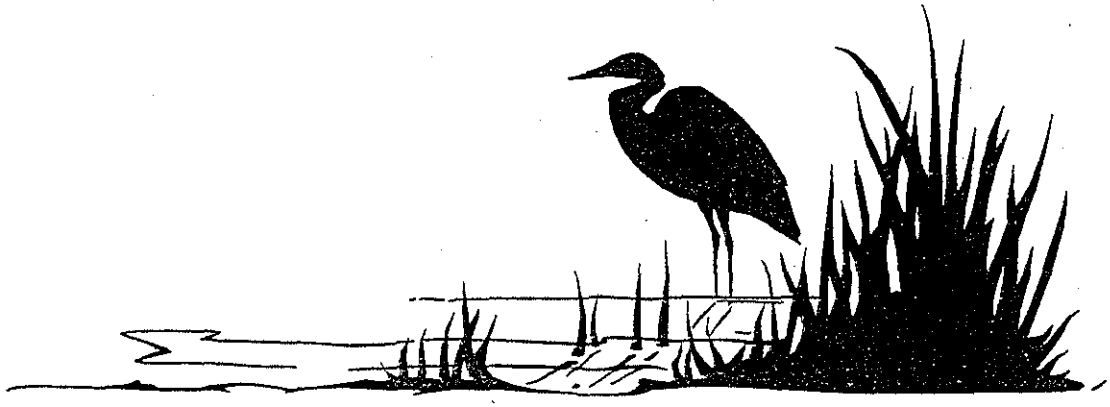
RED CEDAR LAKE SENSITIVE AREA SURVEY REPORT AND MANAGEMENT GUIDELINES



This document is to be used with its companion document "Guidelines for protecting, maintaining, and understanding lake sensitive areas"

RED CEDAR LAKE SENSITIVE AREA SURVEY REPORT AND MANAGEMENT GUIDELINES

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CONTENTS

A BRIEF SUMMARY OF RED CEDAR LAKE, BARRON COUNTY, SENSITIVE AREAS AND MANAGEMENT GUIDELINES

The following is a brief summary of the Red Cedar Lake sensitive area sites and the management guidelines. A detailed description of Red Cedar Lake's sensitive areas can be found in the attached "Integrated Sensitive Area Assessment". Also, the attached "Guidelines For Protecting, Maintaining, and Understanding Sensitive Areas" provides management guidelines for the sensitive areas. It is hoped that these two attached documents will be used as guidance when dealing with the valuable resource that is Red Cedar Lake.

I. The following sensitive areas contain aquatic plant communities which provide important fish and wildlife habitat: A, B, D, E, F, H, I, J, K, L, Q, T, and V (see map). Management guidelines for these sites are:

1. Limit aquatic vegetation removal to navigation channels no greater than 20 feet wide where necessary. These channels should be mechanically harvested, if possible, but chemical treatment will be allowed in some circumstances.

2. Attempts should be made to control the exotic plant purple loosestrife. Small infestations should be treated by removing the flowers and seedheads and placing them in a garbage bag for disposal, and treating the plant with the herbicide "Rodeo™". Large infestations require introduction of a loosestrife eating beetle.

3. Prohibit littoral zone alterations covered by Wisconsin Statutes Chapter 30, unless there is clear evidence that such alterations would benefit the lake's ecosystem.

4. Leave large woody debris, logs, trees, and stumps, in the littoral zone to provide habitat for fish and other aquatic organisms.

5. Leave an adequate shoreline buffer of un-mowed natural vegetative cover.

6. Prevent erosion, especially at construction sites.

7. Strictly enforce zoning ordinances.

8. Eliminate nutrient inputs to the lake caused by lawn fertilizers, failing septic systems, and other sources.

9. There is an additional guideline specifically for Site F. This largely undeveloped bay should be zoned conservancy and should be considered for acquisition by the lake association or district or by a conservation agency.

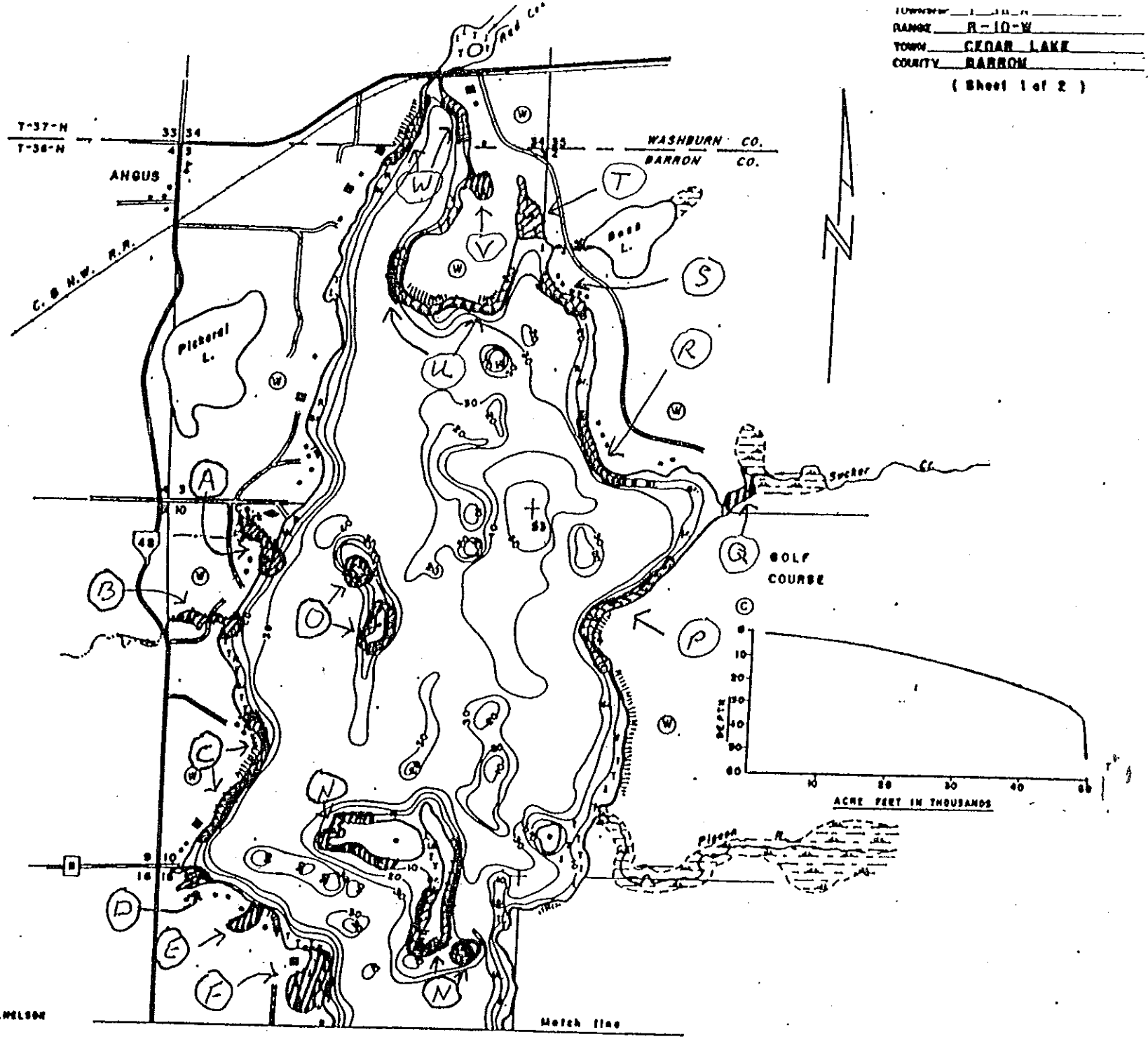
II. The following sensitive areas provide gravel and coarse rock rubble habitat which are important for walleye spawning: C, G, M, N, O, P, R, S, U, and W (see map). The management guidelines for gravel and coarse rock sensitive areas are, with the exception of guideline number 9, basically similar to the guidelines for the aquatic plant community sensitive areas. The emphasis may be somewhat different in that:

1. It is critically important that no alteration of the gravel and coarse rock substrate occur at these sites, unless such alterations would improve walleye spawning. Such alterations are regulated by Chapter 30, Wisconsin Statutes.

2. Erosion control on or near shorelines is especially important adjacent to walleye spawning areas to prevent siltation of spawning habitat.

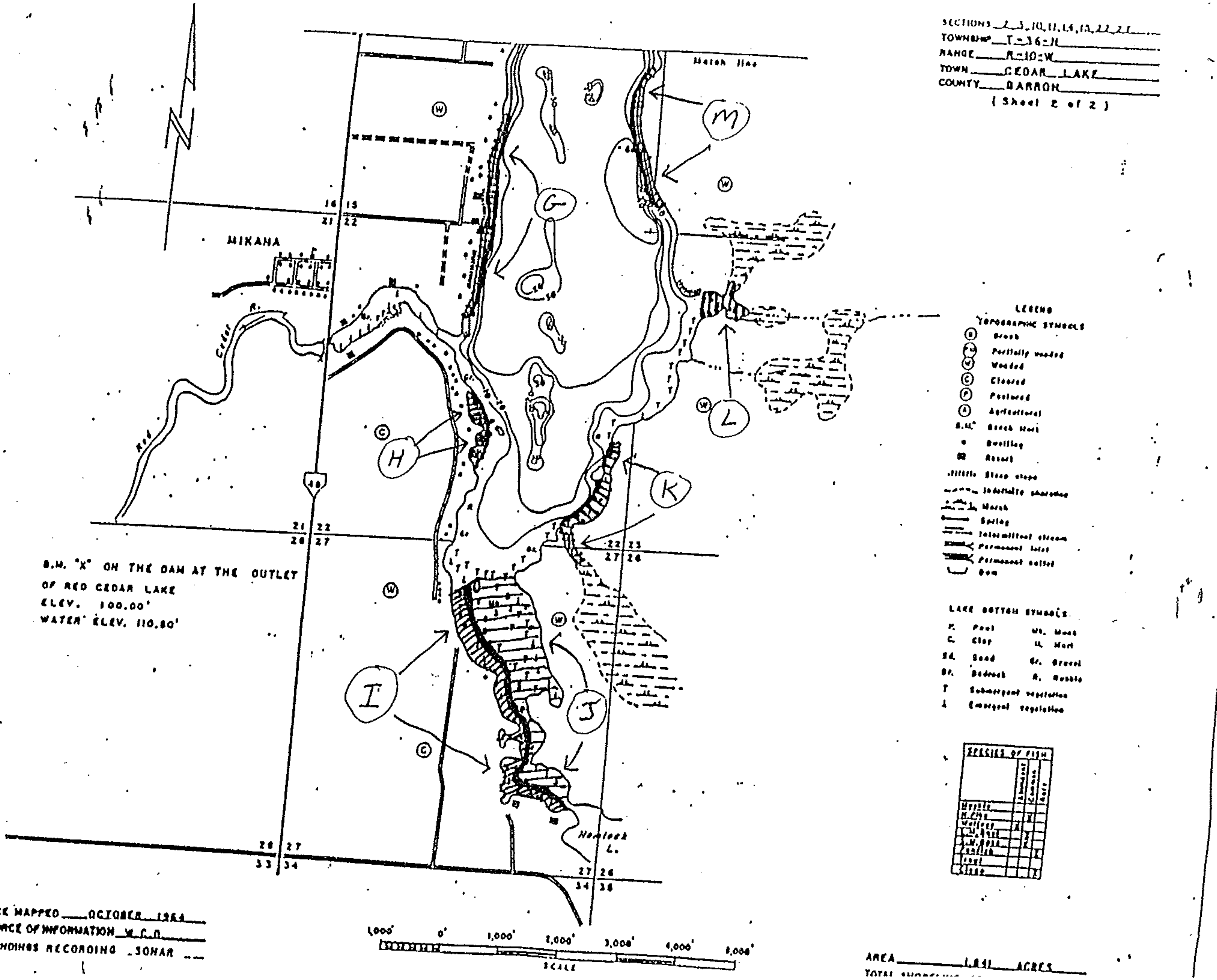
3. Chemical treatment and mechanical removal of aquatic plants need not be quite as restrictive as in aquatic plant sensitive areas. However, no removal of aquatic plants should be done unless necessary.

It should be noted that the recommendations made in these sensitive area management guidelines are in general good guidelines for managing the entire lake, but are especially important in the designated sensitive areas.



FIELD WORK BY: R.HOPKE E.NELSON
DRAWN BY: E.EATON
LAKE MAPPED OCTOBER 1964
SOURCE OF INFORMATION W.C.D.

AREA 1,861 ACRES



SECTIONS 2, 3, 10, 11, 14, 15, 22, 27
TOWNSHIP T-36-N
RANGE R-10-W
TOWN CEDAR LAKE
COUNTY BARRON
(Sheet 2 of 2)
Mikana
Cedar R.
Red
Hemlock L.
B.M. "X" ON THE DAM AT THE OUTLET
OF RED CEDAR LAKE
ELEV. 100.00'
WATER ELEV. 110.80'
LEGEND
TOPOGRAPHIC SYMBOLS
Brush
Partially wooded
Wooded
Cleared
Pastured
Agricultural
Bench Mark
Dwelling
Resort
Steep slope
Indefinite shoreline
Marsh
Spring
Intermittent stream
Permanent inlet
Permanent outlet
Dam
LAKE BOTTOM SYMBOLS
P. Peat
C. Clay
Sd. Sand
Br. Bedrock
Mk. Muck
M. Marl
Gr. Gravel
R. Rubble
T Submergent vegetation
Emergent vegetation
SPECIES OF FISH
LAKE MAPPED OCTOBER 1964
SOURCE OF INFORMATION W.C.D.
SOUNDINGS RECORDING SONAR
SCALE
AREA 1,841 ACRES

LAKE MANAGEMENT

INTEGRATED SENSITIVE AREA ASSESSMENT SUMMARY

LAKE: Red Cedar Lake COUNTY: Barron

DATE OF SURVEY: 21 August 1997 NUMBER OF SENSITIVE AREAS: 23

SITE EVALUATORS: DNR Fish Manager: Rick Cornelius
DNR Water Resources Manager: Jim Cahow
DNR Wildlife Manager: Kevin Morgan
DNR Water Regulations and Zoning Specialist: Ed Slaminski
DNR Fisheries Technician: Gary Lund

INTRODUCTION

This sensitive area lake survey is an integrated approach to resource management providing lake associations, individual property owners, zoning officials, boards of adjustment, and other interested groups or individuals with specific management recommendations that can be used to improve and protect the overall health of the Red Cedar Lake ecosystem. Some of these recommendations will provide guidance as to what should be maintained or protected to insure future health of the lake ecosystem, while also acknowledging special and exceptional resource areas. Other recommendations will focus on what should be restored or fixed to insure the different functional attributes of the ecosystem are all properly functioning together to insure full ecosystem health and biotic integrity. Readers of this document should refer to the accompanying companion document "**Guidelines for protecting, maintaining, and understanding lake sensitive areas**" which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader better understand why they are important to a healthy lake ecosystem.

This sensitive area survey was conducted on Red Cedar Lake, which lies in the northeastern corner of Barron County, about twelve miles northeast of the City of Rice Lake.. Red Cedar Lake, which is 1,841 acres in size, is the middle lake in the Red Cedar Lakes Chain, which also includes 357-acre Hemlock Lake, and 295-acre Balsam Lake. There is navigable water access between the lakes.

The outlet of Red Cedar Lake at the Village of Mikana is the headwaters of the Red Cedar River. A dam with an 11-foot head is located at the outlet. Average summer Secchi disk readings range from 7.1 to 11.9 feet.

Primary gamefish and panfish species are walleye (common), smallmouth bass (common), largemouth bass (common), northern pike (common), muskellunge (rare), bluegills (common), black crappies (common), yellow perch (common), pumpkinseed (present), rock bass (present), cisco (present), and bullheads (common).

Vegetation on much of the shoreline is composed of natural plant cover consisting of all three layers that should be present in any healthy lake shoreline buffer (trees, shrubs, herbaceous ground cover). Efforts should be made to educate residents about the importance of retaining the existing natural plant cover in shoreline areas while encouraging the restoration of those areas that have been previously converted to lot-wide mowed lawns to the water's edge.

Sensitive areas were assigned a letter designation beginning with A and continuing in a counter clockwise direction starting at the Waldo Carlson Park on the northwest side of the lake, (Figure 1). Sensitive areas fell into two basic categories, aquatic plant communities providing important fish and wildlife habitat (sensitive areas: A, B, D, E, F, H, I, J, K, L, Q, T, and V), and gravel and coarse rock rubble (sensitive areas C, G, M, N, O, P, R, S, U, and W).

Resource Value of Site A

Sensitive area A is located in a small bay on the south side of Waldo Carlson Park. This bay contains a variety of aquatic vegetation which provides spawning, feeding, and nursery habitat for fish. Habitat is also provided for a range of wildlife, including furbearers, waterfowl, reptiles, and amphibians. Vegetation present includes cattail, burreed, arrowhead, eel grass, elodea, coontail, and white and yellow water lilies. A variety of pondweeds, including largeleaf pondweed, clasping leaf pondweed, and flatstem pondweed are present in the bay and a good bed extends out into the lake, providing valuable habitat. Purple loosestrife, an unwanted exotic which crowds out native vegetation, is also present. An effort should be made to eliminate the loosestrife by removing the flowers and seedheads and putting them into a garbage bag for disposal, and treating the loosestrife with the herbicide "Rodeo™". No other vegetation removal should occur except a navigation channel at the public boat landing, if necessary. Readers of this document should refer to the more in-depth companion document "Guidelines for protecting, maintaining, and understanding lake sensitive areas" which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader to better understand why they are important to a healthy lake ecosystem. Recommendations include limiting plant removal, providing shoreline buffer areas and preventing erosion, prohibiting littoral zone alterations such as filling or dredging, leaving logs, stumps, and woody debris in the water, enforcing zoning ordinances, and eliminating nutrient inputs.

Resource Value of Site B

This is a small bay located where an intermittent inlet enters the lake. Aquatic vegetation which includes yellow water lilies, arrowhead, burreed, cattail, eel grass, and elodea, provides fish and wildlife habitat. As with Site A, a variety of pondweeds extend out into the lake providing beneficial habitat. Several landowners keep boats in this bay. If landowners on the bay also have land fronting the main lake, no dredging or navigation channels should be allowed in the bay to improve boat access for these landowners. However, for landowners whose land fronts only the bay and not the main lake, dredging and vegetation removal for 20-foot wide navigation channels may be allowed. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site C

This site encompasses about 1,800 feet of sand, gravel and coarse rock rubble shoreline which is used by walleyes for spawning. The littoral substrate should not be altered in an way, unless rip-rap is necessary to solve an erosion problem. Shoreline buffers are important on this shoreline, some of which is steep, to prevent erosion. Downed trees should be left in the water. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site D

This site is a small bay which contains cattails, burreed, yellow and white water lilies, and largeleaf pondweed. This bay provides good fish and wildlife habitat, and ducks were observed using the bay. Purple loosestrife is also present, and should be treated as in Site A (flowers and seedheads removed, plants treated with Rodeo™). Other management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site E

This bay contains cattails, burreed, yellow water lily, elodea, coontail, and several species of pondweeds. However, this bay is also heavily infested with purple loosestrife, which is replacing native vegetation. There is probably too much loosestrife to effectively control with herbicides, but biological control (introduction of insects which feed on loosestrife) may provide some benefit, and biological control will be pursued. Native vegetation should not be removed, as this will enhance the spread of loosestrife.

Resource Value of Site F

This bay provides high quality fish and wildlife habitat. A variety of aquatic vegetation including largeleaf pondweed, white and yellow water lilies, burreed, arrowhead, clasping leaf pondweed, elodea and coontail are present, providing excellent habitat for furbearers and waterfowl. Northern pike and centrarchid spawning areas are present, and this site is a fish nursery and feeding area. The shoreline is mostly undeveloped, and the wild nature of this bay could be preserved by a conservancy zoning or acquisition by the lake association or a conservation agency. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site G

This site is about 3,000 feet of sand, gravel, rock and rubble shoreline which is used by walleyes for spawning. There should be no alterations of littoral substrate, unless rip-rap is necessary to solve an erosion problem. Some of the shoreline is steep, and maintaining shoreline buffers to prevent erosion is important. In some cases, buffer areas need to be re-established. Logs and large woody debris should not be removed from the water. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site H

Site H consists of several small, shallow bays which contain cattails, water lilies, and eel grass. These shallow bays provide good fish and wildlife habitat. Aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, when necessary. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site I

Site I comprises the southwest shore of Red Cedar Lake down through the "narrows" to the entrance to Hemlock Lake. This area is shallow and contains a variety of aquatic vegetation, including yellow and

white water lilies, water marigold, largeleaf pondweed, fern pondweed, clasping leaf pondweed, coontail, eel grass, milfoil, and slender naiad. This site has high wildlife value, and also provides good fish habitat, including centrarchid spawning habitat. Logs and woody debris should be left in the water. In 1998, two shoreline property owners received permits to chemically treat a total of 132 feet of shoreline in the sensitive area. These two permits may be "grandfathered" in the future, but all other aquatic vegetation removal should be restricted to navigation channels, preferably mechanically harvested, where necessary. Other management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site J

This site covers the south end of Red Cedar Lake, including the southeast shore, through the "narrows" to the entrance to Hemlock Lake. As with Site I, the shallow south end of Red Cedar Lake provides high quality habitat for wildlife, including waterfowl, furbearers, reptiles, and amphibians. Fish habitat is especially good for largemouth bass, northern pike and panfish, which all use this area of the lake for spawning. Aquatic vegetation is similar to Site I, except that there are scattered areas of purple loosestrife located on several bog islands. The purple loosestrife should be treated as recommended at Site A. Logs and woody debris should be left in the water. Aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, where necessary. Other management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site K

This site contains a variety of aquatic vegetation which provides good fish and wildlife habitat. This site is a likely northern pike spawning area. Cattails, water lilies, largeleaf pondweed, burreed, claspingleaf pondweed, and coontail are present. In 1998, two permits were issued to chemically treat a total of 100 feet of shoreline in the sensitive area. These two permits may be "grandfathered" in the future, but all other aquatic vegetation removal should be restricted to navigation channels, preferably mechanically harvested, where necessary. Other management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value Site L

This site is a moderate-sized bay which contains cattails, water lilies, milfoil, water marigold, elodea, eel grass, coontail, and several species of pondweeds. This bay contains valuable habitat for waterfowl and furbearers. Largemouth bass, northern pike and panfish use the area for spawning and feeding. Aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, where necessary. Other management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site M

This site consists of approximately 2,000 feet of rock, rubble, gravel and sand shoreline which is used by walleyes for spawning. The littoral substrate should not be altered in any way. Fallen logs should be left in the water. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site N

This site consists of about 4,600 feet of rock, rubble, and gravel shoreline used by walleyes for spawning. This shoreline is located on parts of two islands collectively known as Stout Island, and also on a small island off the southeast end of Stout Island. The littoral substrate should not be altered in any way in the sensitive area. Fallen trees should be left in the water. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site O

This site encompasses the entire shoreline (about 1,200 feet) of two small islands located southeast of Waldo Carlson Park. This shoreline consists of rock, rubble, and gravel used by walleyes for spawning. The littoral substrate should not be altered in any way. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site P

This site consists of about 2,000 feet of rock, rubble, and gravel shoreline used by walleyes for spawning. The littoral substrate should not be altered in any way. Part of the shoreline is steep, and providing a good shoreline buffer area to prevent erosion is important. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site Q

This site is a small bay located at the inlet of Sucker Creek. This bay contains a variety of aquatic vegetation which provides good habitat for waterfowl, furbearers, and bass, northern pike, and panfish. Vegetation includes bulrush, cattail, arrowhead, water marigold, elodea, coontail, and largeleaf pondweed. A small amount of purple loosestrife is present and should be treated as recommended at Site A. Other aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, where necessary. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site R

This site consists of approximately 1,000 feet of rock, rubble, gravel, and sand shoreline used by walleyes for spawning. The littoral area should not be altered in any way, and logs in the water should not be removed. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site S

This site has about 1,000 feet of rock, rubble, gravel, and sand shoreline used by walleyes for spawning. Recommendations are the same as at Site R.

Resource Value of Site T

This site is a bay on the northeast end of the lake. This bay contains burreed, arrowhead, eel grass, yellow water lilies, water marigold, elodea, coontail, and a variety of pondweeds. The bay provides valuable fish and wildlife habitat. A small amount of purple loosestrife is present, and should be treated as in Site A. Other aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, where necessary. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site U

This site is a large point on the north end of the lake which has about 2,100 feet of rock, rubble, gravel and sand shoreline which is used by walleyes for spawning. The littoral substrate should not be altered in any way. Some of the shoreline is steep, and providing an adequate shoreline buffer to prevent erosion is important. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document

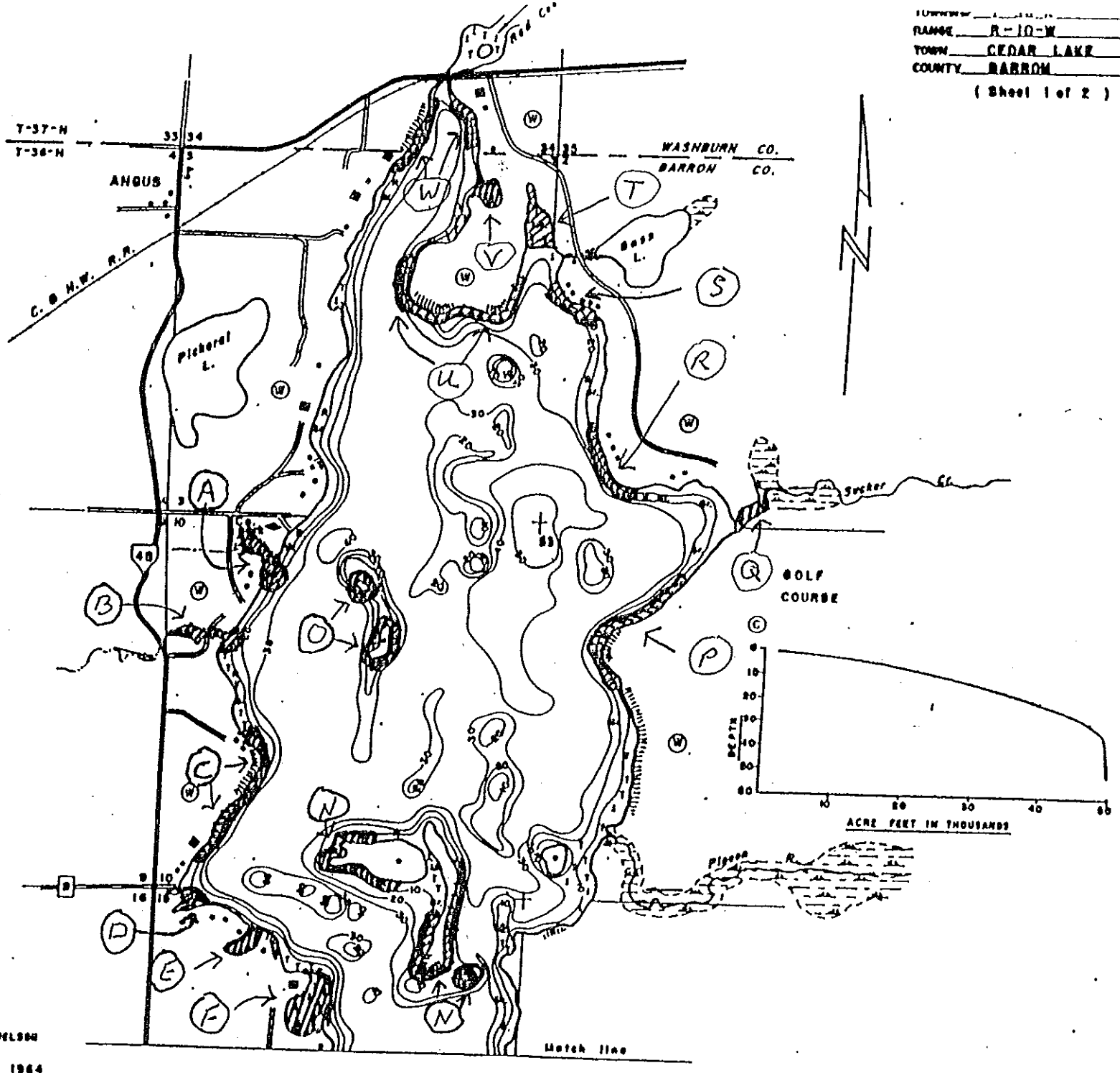
Resource Value of Site V

This is a small bay which contains valuable fish and wildlife habitat. This bay is a likely spawning area for bass, northern pike, and panfish. Ducks and an eagle were observed using the area. Aquatic vegetation present includes burreed, arrowhead, yellow water lilies, eel grass, elodea, milfoil, sender naiad, and a variety of pondweeds. A small amount of purple loosestrife is present which should be treated as recommended in Site A. Other aquatic vegetation removal should be limited to navigation channels, preferably mechanically harvested, if necessary. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

Resource Value of Site W

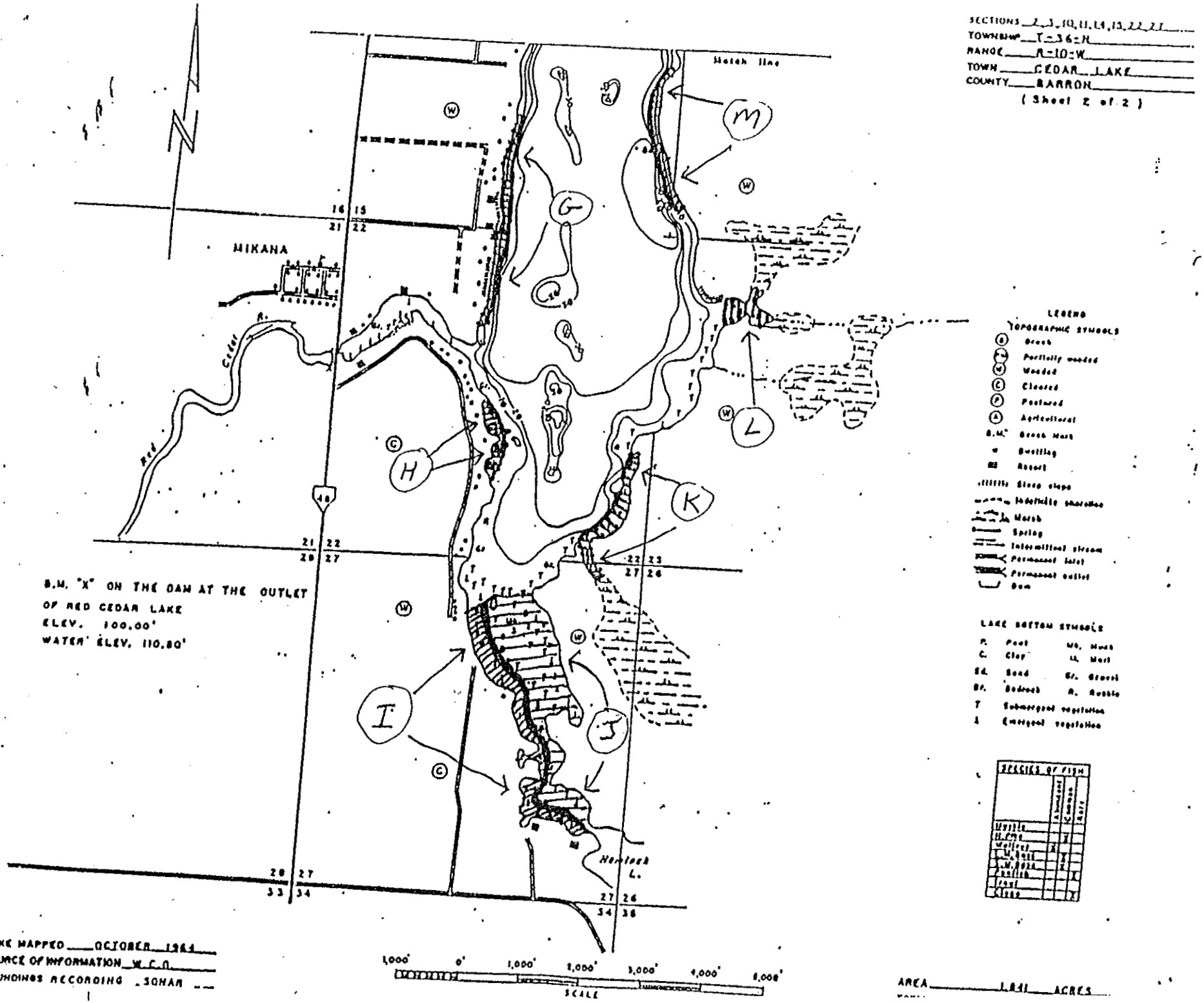
This site is located on the east and west shorelines of the far north end of the lake just south of the channel to Balsam Lake. About 1,800 feet of gravel, rock, and rubble shoreline used by walleyes for spawning make up this site. Littoral substrate should not be altered in any way, and logs and woody debris should be left in the water. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RANGE R-10-W
TOWN CEDAR LAKE
COUNTY BARRON
(Sheet 1 of 2)



FIELD WORK BY: R.HOPKE E.NELSON
DRAWN BY: R.EATON
LAKE MAPPED OCTOBER 1964
SOURCE OF INFORMATION W.C.D.

AREA 1,861 ACRES


SECTIONS 2, 3, 10, 11, 14, 15, 22, 23
TOWNSHIP T-36-N
RANGE R-10-W
TOWN CEDAR LAKE
COUNTY BARRON
(Sheet 2 of 2)
MIKANA
Red Cedar R.
B.M. "X" ON THE DAM AT THE OUTLET OF RED CEDAR LAKE
ELEV. 100.00'
WATER ELEV. 110.80'
Hemlock L.
LEGEND
TOPOGRAPHIC SYMBOLS
Brush
Partially wooded
Wooded
Cleared
Pastured
Agricultural
B.M. Bench Mark
Dwelling
Resort
Steep slope
Intermittent shoreline
Marsh
Spring
Intermittent stream
Permanent inlet
Permanent outlet
Dam
LAKE BOTTOM SYMBOLS
M. Muck
C. Clay
Sd. Sand
Br. Bedrock
Mk. Marl
Gr. Gravel
R. Rubble
T Submerged vegetation
E Emergent vegetation
SPECIES OF FISH
LAKE MAPPED OCTOBER 1964
SOURCE OF INFORMATION W.C.D.
SOUNDINGS RECORDING SONAR
1,000' 0' 1,000' 2,000' 3,000' 4,000' 5,000'
SCALE
AREA 1,841 ACRES

General Lake Wide Recommendations

The following different areas/RECOMMENDATIONS were identified as priorities by the DNR's integrated team of biologists and water regulations and zoning staff for the maintenance and protection of a healthy Red Cedar Lake ecosystem. To help better understanding the specific management recommendations that should be followed for each of the following areas the reader should refer to the accompanying companion document **"Guidelines for protecting, maintaining, and understanding lake sensitive areas".**

I. Protection and restoration of shoreline buffers. This provides protection for water quality, aquatic plant communities, and coarse rock rubble walleye spawning habitat.

II. Protection of existing aquatic plant communities

III. Aggressive erosion control measures for all bare soil areas with an emphasis on all construction and ground breaking. This provides protection for water quality, aquatic plant communities, and coarse rock rubble walleye spawning habitat.

IV. Limit the use of fertilizers on lakeshore lawns.

V. Support the aggressive application of existing zoning regulations and support the development of future ones to prevent unnecessary impacts to the ecosystem which could be avoided if future development is accomplished in a wise and careful manner considerate of the resource.

VI. Encourage the retention of large woody debris in near shore areas. Fallen trees provide critical habitat.

VII. Develop an aggressive education program by local lake association to promote the above mentioned guidelines.

VIII. Implement land acquisition or easements to protect critical areas from any possible future development.

Red Cedar Lake Aquatic Plant Species List

PLANT SPECIES	COMMON NAME
Calla palustris	Wild Calla
Ceratophyllum demersum	Coontail
Chara vulgaris	Musk Grass
Elodea canadensis	Elodea
Lemna trisulca	Forked Duckweed
Lythrum salicaria	Purple Loosestrife
Megalodonta beckii	Water Marigold
Myriophyllum sp.	Northern Water Milfoil
Najas sp.	Slender Naiad
Nuphar sp.	Yellow Water Lily
Nymphaea sp.	White Water Lily
Potamogeton sp.	Narrow Leaf Pondweed
Potamogeton amplifolius	Largeleaf Pondweed
Potamogeton gramineus	Variable Pondweed
Potamogeton illinoensis	Illinois Pondweed
Potamogeton praelongus	White-stem Pondweed
Potamogeton Richardsonii	Claspingleaf Pondweed
Potamogeton Robbinsii	Fern Pondweed
Potamogeton zosteriformis	Flat-stem Pondweed
Sagittaria sp.	Arrowhead
Scirpus americanus	Three-square Rush
Sparaganium sp.	Burreed
Typha angustifolia	Cattail
Vallisneria americana	Eel Grass