SPIDER LAKE CHAIN
SENSITIVE AREA SURVEY REPORT

AUGUST 2002, 2003

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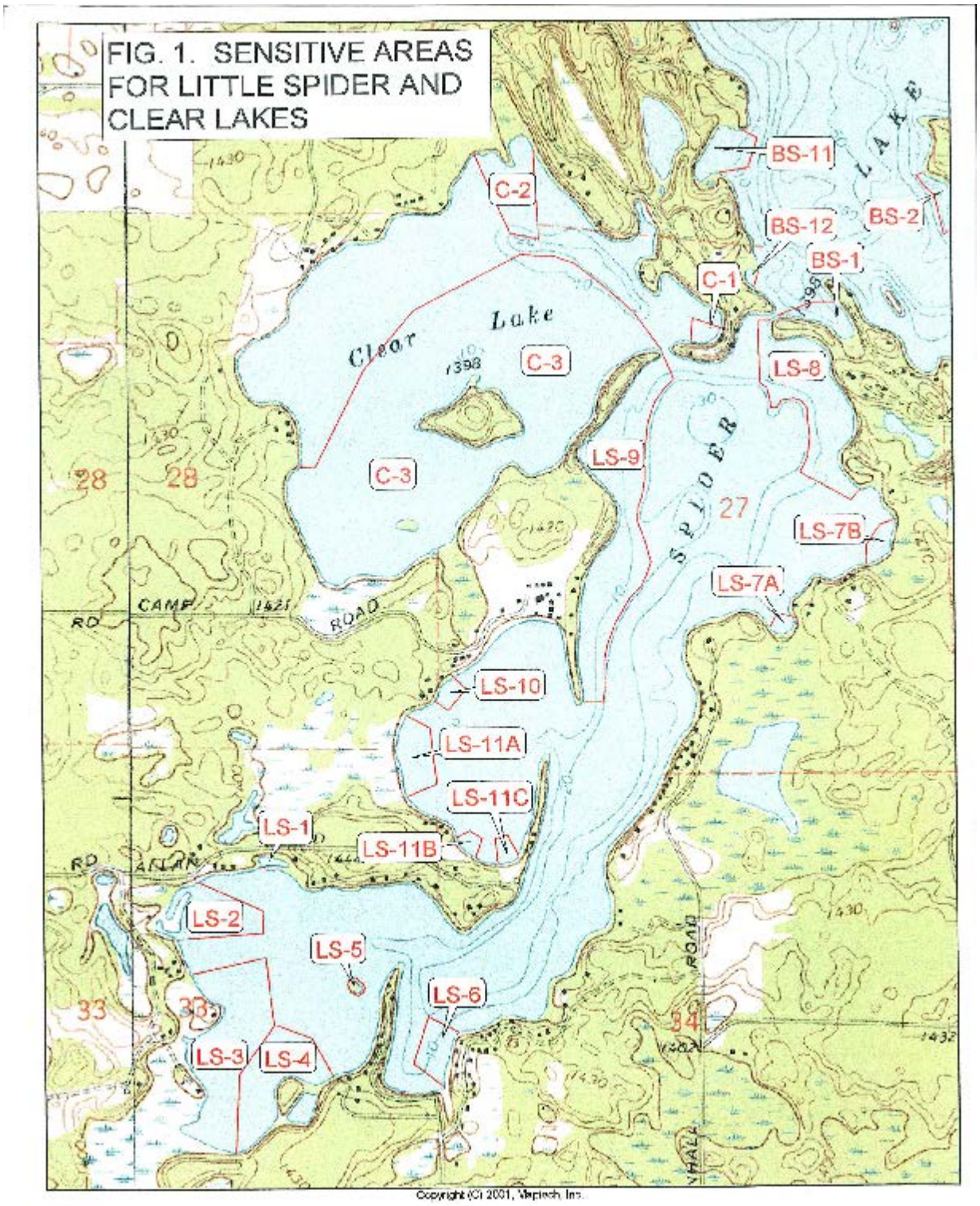
FIG. 1. SENSITIVE AREAS FOR LITTLE SPIDER AND CLEAR LAKES
BS-11
C-2
BS-12
BS-2
BS-1
C-1
LAKE
Clear Lake
C-3
LS-8
LS-9
SPIDER
C-3
28
28
27
LS-7B
LS-7A
CAMP
ROAD
RD
LS-10
LS-11A
LS-11C
LS-1
LS-11B
RD
ARLAR
LS-2
LS-5
LS-6
33
33
34
LS-3
LS-4
ROAD
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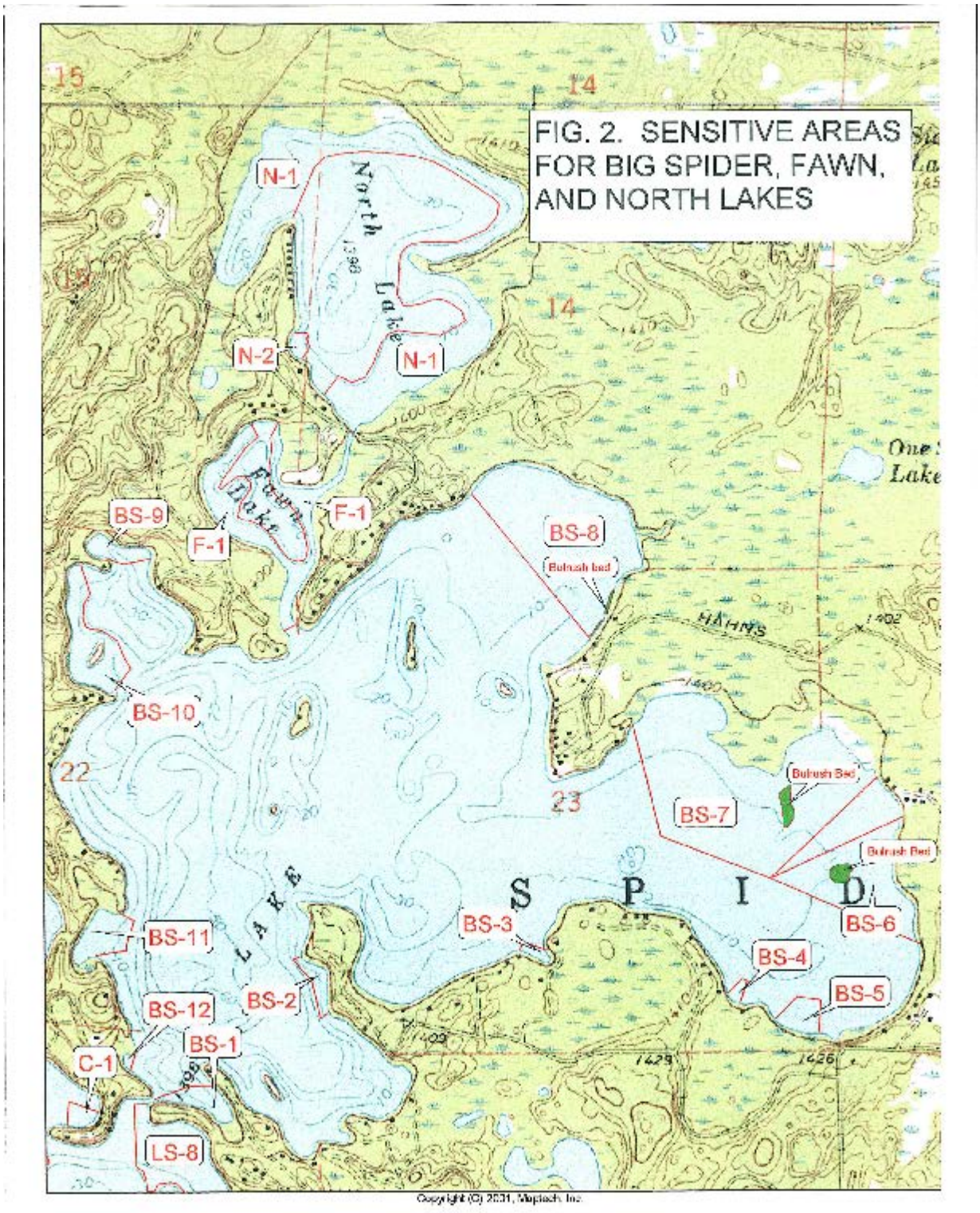
FIG. 2. SENSITIVE AREAS FOR BIG SPIDER, FAWN, AND NORTH LAKES
15
14
N-1
North Lake
N-2
N-1
14
Fawn Lake
F-1
F-1
BS-9
BS-8
Bulrush bed
BS-10
22
23
BS-7
Bulrush Bed
Bulrush Bed
S P I D
LAKE
BS-3
BS-6
BS-11
BS-4
BS-12
BS-2
BS-5
BS-1
C-1
LS-8
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SPIDER LAKE CHAIN
SENSITIVE AREA SURVEY REPORT

GENERAL LAKES DESCRIPTION

Physical features

The Spider Lake Chain includes four interconnected lakes in northern Sawyer County (T42N, R7W, Sec. 14, 15, 22, 23, 24, 26, 27, 28, 33, 34) (figures 1 and 2). Spider Lake is the largest with an area of 1,154 acres and a maximum depth of 64 feet. Spider Lake is composed of two basins (Big Spider – 745 acres, and Little Spider – 410 acres) that are connected by a short, narrow channel. The lake contains several islands.

Clear Lake is sometimes considered part of Spider Lake and is sometimes considered a separate lake. It has an area of 299 acres and a maximum depth of 30 feet. The vast majority of the lake's area has water depths less than 10 feet. It contains two islands.

Fawn Lake is the smallest lake in the chain with an area of 23 acres and a maximum depth of 35 feet. Over 70% of its shoreline is bog.

North Lake is the most northerly lake in the chain. It has an area of 129 acres and a maximum depth of 30 feet.

The Spider Lake Chain lakes are considered drainage lakes. Inflow to the chain comes from upland and wetland runoff, one small intermittent tributary, and groundwater.

The outlet is Spider Creek at the south end of the chain. A one-foot head, water control structure is present at the outlet and is operated to stabilize water levels.

There are two public boat landings. One is located on the west shore of Clear Lake and the other is located adjacent to the outlet at the south end of Spider Lake.

Overall, development along the shoreline can be termed moderate. There are some very substantial lengths of undeveloped shoreline in both upland and wetland areas.

Water quality

Basic summer water quality data for the chain is summarized below:

LAKE	Secchi depth (ft)	Total P (ug/l)	Cond. (umhos/cm)	Alkalinity (mg/l as CaCO3)	pH	True Color (Pt-Co units)
Spider (Big Spider)	9 – 17	9 - 15	96	47	7.4	10
Spider (Little Spider)	8.5 – 17	10 – 12	83	40	7.9	10
Clear	7.5 – 14	13	68	32	8.1	10
Fawn	7.5 – 11.5	18	115	55	7.7	20
North	6.5 – 9.5	27	121	58	8.0	20

The lakes are listed in order of declining water clarity and increasing total phosphorus concentrations. Generally, the lakes in the chain are mesotrophic, except for North Lake which is eutrophic. Mesotrophic lakes have low to moderate fertility and good to very good water quality. Eutrophic lakes have moderate fertility, and in the case of North Lake, still good water quality.

The Spider Chain lakes have above average conductivity, alkalinity, and pH for Sawyer County lakes. This is mostly due to significant inflow of groundwater to the lakes. Groundwater has a higher mineral content than other water sources. North Lake is the most heavily influenced by groundwater and has the highest conductivity and alkalinity. Conductivity and alkalinity decline as one moves southward through the chain. Clear Lake has the lowest conductivity and alkalinity indicating lower groundwater inflow.

Color in the Spider Chain lakes is low. Color, or staining, is caused by dissolved organic compounds mostly from wetland drainage. Color is somewhat higher in North and Fawn Lakes, since these lakes are more strongly influenced by wetland drainage.

Aquatic plants

A very good diversity of native aquatic plants is found in the chain. Fifty-one species of aquatic plants were found during the sensitive area survey. Greater numbers of species are found at the north end of the chain – the north half of Big Spider, Fawn Lake, and North Lake. Sensitive areas there had 25 to 35 species present. Sensitive areas in the remainder of the lake had 8 to 24 species present. There is a good mix of emergent, floating leaf, and submergent plants.

Aquatic plant densities in the chain are highly variable. In general, Big Spider, Little Spider and Clear Lakes have low to moderate plant densities, and Fawn and North Lake have moderate to high plant densities. The maximum depth of aquatic plant growth ranged from 11 feet in North Lake to 18 feet in Clear and Little Spider Lakes.

Highly flocculent bottom sediment is found at many sites in Little Spider and Clear Lakes. It appears this sediment limits the growth of some aquatic plants, by preventing roots from effectively anchoring the plants. Uprooted plants were frequently seen in these areas.

Curly-leaf pondweed, an exotic species was found at three sites in Big Spider Lake.

Fishery

Wild, self-sustaining largemouth bass and muskellunge are the main predator species in the chain. Wild, self-sustaining smallmouth bass are important secondary components of the predator community in open water habitats of Big and Little Spider Lakes.

A population of stocked walleyes with an adult density of 2 per acre is also present. It is suspected that the lack of walleye reproduction is an ecological limitation. There does appear to be ample, high quality spawning habitat present, so some type of biological interaction with the rest of the fish community seems to be the most likely explanation.

Historically, there have been self-sustaining periods when walleye were not stocked, which also suggests that the current lack of reproduction is not habitat limited.

Centrarchid panfish, especially bluegill and black crappie are abundant. The crappie support a quality fishery, but bluegill tend to be so small and slow growing that they do not support much of a fishery.

White sucker appear to be the dominant large non-game forage species. The small forage community is abundant and diverse and includes young-of-year yellow perch, young-of-year centrarchids, juvenille bullheads, bluntnose minnows, spottail, golden, blacknose, and common shiners, log perch, johnny darters, and mudminnows. Of note is the presence of banded killifish, a special concern species, which appears to be well established near the islands in Clear Lake. A native species of crayfish, *Orconectes virilis* is common.

At this time, the entire Spider Chain has an above average amount of wild, undeveloped habitat, even in areas with appreciable human development. Notable fish habitat features present include a broad mix of hard substrates, expansive macrophyte beds of all three habitat types (emergent, floating, and submergent), a wide littoral zone in North, Clear, Fawn, the north portion of Big Spider, and the southwestern corner of Little Spider, and a moderate abundance of big woody cover. This provides a very healthy environment where the spawning, nursery, and feeding needs of the lakes' fish can be met.

Wildlife

The substantial lengths of undeveloped upland and wetland shoreline on the chain provide excellent, diverse wildlife habitat. This mix provides habitat for a variety of upland wildlife, furbearers, such as beaver, otter, muskrat, and mink, birds, amphibians, and reptiles. Shoreline wetlands provide nesting habitat for ducks and loons. The chain also attracts a considerable number of waterfowl during migration periods.

Rare/endangered species

Bald eagle and osprey sightings on the Spider Chain are listed in the Natural Heritage Inventory of rare and endangered plants and animals. Four eagle nest locations are also listed in the Inventory. Eagles are considered a special concern species in Wisconsin and are also federally protected as a threatened species. Ospreys are a threatened species in Wisconsin. There is an active osprey nest on the large island in Clear Lake.

Common Loons are another special concern species that are present on the chain. A few loon nest sites are reported to be present. Eagles, ospreys, and loons are all commonly sighted on the chain, and currently have stable to expanding populations in the state.

The banded killifish is a special concern species of small fish that is present in Clear Lake. The population of this uncommon fish has been declining in southern Wisconsin.

Exotic species

Two species of exotic plants are known to be present on the Spider Chain. Purple loosestrife (*Lythrum salicaria*), a shoreline/wetland plant, is present at several sites on Clear Lake and on Big Spider Lake. Efforts to control it have been made, including manual removal, herbicide application, and release of *Gallerucella* beetles.

Curly-leaf pondweed (*Potamogeton crispus*), a submergent aquatic plant is present on Big Spider Lake. A single specimen of curly-leaf pondweed was observed during a July, 2000 aquatic plant survey of the chain. Several curly-leaf pondweed plants were observed at three sites during the Sensitive Area Survey in August 2003. Curly-leaf pondweed is most abundant in May and June and dies back by the beginning of July. May or June surveys would be needed to determine how abundant curly-leaf pondweed is and whether it is spreading.

SHORELAND MANAGEMENT

Activities along a lakeshore and in the immediate shoreland area can have major impacts on overall lake quality. There is growing recognition of the need to manage these areas in an environmentally conscious manner.

Shoreland management program

Wisconsin's Shoreland Management Program is a partnership between state and local government to protect clean water, habitat for fish and wildlife, and natural scenic beauty. The program establishes minimum standards for lot sizes, structural setbacks, shoreland buffers, vegetation removal, and other activities within the shoreland zone. The shoreland zone includes land within 1,000 feet of lakes, 300 feet of rivers, and floodplains. With research demonstrating that current standards may be inadequate to protect water resources and the fish and animals that depend on them, many communities have chosen to go beyond the minimum standards to ensure our natural resources are adequately protected.

Buffers

Maintaining and restoring shoreland buffers is a key tool for lake resource protection. A shoreland buffer should extend from the water onto the land at least 35 to 50 feet. Studies have shown that buffers less than 35 feet may not be effective at preventing water pollution. Deeper buffers of 50 feet or more can help provide important habitat for songbirds, turtles, frogs, and other animals, as well as help filter out pollutants from runoff. In general, no mowing should occur in the buffer area, except perhaps in a viewing/access corridor. The buffer should contain local native vegetation suited to site conditions and include herbaceous, shrub, and tree layers.

The presence of dead wood can enhance the wildlife values of a buffer. Standing dead and dying trees (snags) provide forage sites for insect eating birds and eventually nest sites for woodpeckers and songbirds. Cavities in trees provide den sites for many species

of birds and mammals. Downed and rotting logs provide homes to many types of wildlife including salamanders, small mammals, and invertebrates. Downed trees and logs in or near the water are especially valuable for resting and feeding areas.

Runoff abatement

In addition to buffers, shoreland properties can reduce the impacts of runoff flowing into the lake in other ways:

- Eliminate or reduce pesticide and fertilizer use.
- Use phosphorus free fertilizer when needed.
- Direct runoff to areas with high infiltration or retention.
- Install rain gardens.
- Minimize areas with impervious surfaces.
- Maximize areas with natural vegetative cover.

Aquatic plant values and management

Native aquatic plant communities are important for the proper functioning of a healthy lake ecosystem. Aquatic plants (macrophytes and algae) form the base of a lake's food chain. Adult and juvenile fish are dependent on aquatic plants for cover and habitat. Many fish species require aquatic plants for spawning habitat. Aquatic plants are important habitat for many aquatic invertebrates. They also serve an important function in reducing shoreline erosion from wave action and stabilizing bottom sediment.

A healthy native aquatic plant community can reduce the ability of exotic aquatic plants to become established. Eurasian water milfoil and curly-leaf pondweed are two exotic species with the potential to create nuisance conditions in northern Wisconsin lakes.

Aquatic plants also provide important functional values for wildlife. Waterfowl and furbearers require aquatic vegetation for food and cover. Loons require aquatic vegetation for their nests. Songbirds, shoreline waterbirds, frogs and other amphibians, reptiles, and a host of other wildlife utilize aquatic vegetation for some critical life cycle need.

Removal of aquatic plants should be minimized. Shoreline owners are allowed to manually remove aquatic plants from up to a 30 feet wide corridor that extends perpendicular to the shore without a permit. The 30 feet corridor must include any piers, boatlifts, swimrafts, and other recreational and water use devices. Any vegetation that is cut or dislodged must be removed from the lake. Herbicide use on aquatic plants is generally discouraged and requires a DNR permit. Any removal of aquatic plants in sensitive areas requires a DNR permit.

SENSITIVE AREA SURVEY

The Spider Lake Chain sensitive area survey was conducted in August of 2002 and August of 2003 using Wisconsin DNR guidelines for sensitive area surveys. These surveys use an integrated team approach. Several DNR resource managers collaborate to identify locations around a lake that provide unique or important habitat that benefits the lake's fishery, wildlife or general water quality. The DNR resource managers who participated in this survey were:

Dan Houston, Water Management Specialist (Park Falls)
Frank Pratt, Fisheries Biologist (Hayward)
Craig Roesler, Water Quality Biologist (Hayward)
Laine Stowell, Wildlife Biologist (Hayward)
Lowell Tesky, Wildlife Biologist (Hayward)

Sensitive areas often contain high quality aquatic, wetland, and/or terrestrial vegetation. Other values such as clean gravel/rubble substrate or an abundance of downed woody cover (fallen trees or logs) may also help define sensitive areas. These areas typically provide habitat that is needed for seasonal or life stage requirements of fish, invertebrates, and wildlife, provide water quality benefits to the lake, and/or reduce shoreline erosion.
Sensitive area survey reports can be used by DNR personnel, county zoning personnel, lake organizations, shoreline property owners, and other interested groups and individuals. The reports have a variety of uses:

- They provide baseline lake data
- They guide management decisions on permit applications. Permits potentially affected include:
    - Aquatic plant management permits,
    - Permits required by chapter 30 of the Wisconsin Statutes for filling, dredging, sand blankets, rip-rap, tree drops, fish cribs, half logs, spawning substrate addition, aeration, and other alterations,
    - Wildlife control permits and rare species collection permits,
    - County zoning permits and variance requests

- They can be used by lake organizations to help guide lake use and management activities such as:
    - Educational efforts to promote environmentally conscious shoreline management,
    - Establishment of no-wake zones,
    - Shoreline protection through acquisition or use limitation agreements.

- They can provide a source of information for potential contested case hearings.

Thirty-one sensitive areas are designated for the Spider Lake Chain. Sensitive area locations are shown in figures 1 and 2. Descriptions of these sensitive areas and their management recommendations are given below. The field data forms for these sensitive areas are contained in appendix A. Descriptions of the aquatic plant species present in the sensitive areas are contained in appendix B (appendix A and B are attached to only selected copies of this report). "The Water's Edge", a pamphlet that further describes the importance of shoreline habitat for fish and wildlife, is attached as appendix C.

LAKE-WIDE SHORELINE MANAGEMENT RECOMMENDATIONS

In addition to the site-specific sensitive area management recommendations that follow, a number of recommendations are applicable to the entire shoreline of the Spider Lake Chain:

1. Maintain or restore shoreland buffers with small view/access corridors.
2. Protect aquatic vegetation. Minimize any removal or control.
3. Use bioengineering for bank protection where needed. Rock rip-rap is unnecessary for many sites on these lakes.
4. Do not remove coarse woody cover. Allow future treefalls to remain in the lake.
5. Eliminate or reduce pesticide and fertilizer use. Use phosphorus free fertilizer when needed.
6. Control erosion sources and prevent sediment from reaching the lake.
7. Manage runoff to maximize infiltration.
8. Prevent the establishment of exotic species (signs, education, etc.).
9. Monitor the exotic species that are present – purple loosestrife and curly-leaf pondweed.
10. Control purple loosestrife at current sites with *Galerucella* beetle releases.

SENSITIVE AREA DESCRIPTIONS

SENSITIVE AREA LS-1

This site is located in a small, shallow backwater near the south end of Little Spider Lake (E end = 46° 04' 52.7" N, 91° 14' 41.5" W; W end = 46° 04' 52.8" N, 91° 14' 42.0"W). The site shoreline length is 705 feet. Water depth ranges from 0 to 2 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is mostly muck and detritus with some sand. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

A continuous band of emergent and floating leaf aquatic vegetation is present along the shoreline. Submergent aquatic vegetation is also present throughout the site at moderate densities. Fifteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Bur-reed (*Sparganium sp*.) Common Rush (*Juncus effusus*)	**Emergents** Broad-leaved cattail (*Typha latifolia)* Pickerelweed (*Pontederia cordata)*	
Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*)	**Floating leaf** White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Common bladderwort (*Utricularia vulgaris)* Fern pondweed (*Pot. robbinsii*) Illinois pondweed (*Pot. illinoensis*) Large-leaf pondweed (*Pot. amplifolius*) Water bulrush (*Scirpus subterminalis*)		

Pot. = Potamogeton

The shoreland is 80% wooded, 15% wetland, and 5% developed. The wetland is a mix of shallow and deep marsh. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, muskrat, mink, ducks, geese, songbirds, eagles, ospreys, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Otter, loons, and wading birds can use this area for cover and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Maintain the existing wood duck nest box.
5. Prevent clear-cutting along Town right-of-way.

SENSITIVE AREA LS-2

This site is located in a bay area near the south end of Little Spider Lake (N end = 46° 04' 51.2" N, 91° 14' 51.0" W; S end = 46° 04' 45.4" N, 91° 14' 54.2"W). The site shoreline length is 1,945 feet. Water depth ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is mostly muck and detritus. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A narrow band of emergent aquatic vegetation is present along less than half of the shoreline. Floating leaf aquatic vegetation is present at moderate densities in a continuous band along the entire shoreline. Submergent aquatic vegetation is also present within the floating leaf band at low densities. Submergent vegetation becomes very sparse beyond the floating leaf band until about 200 yards offshore in 4 feet of water, where moderate densities are present. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Nineteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Pickerelweed (*Pontederia cordata)*		
Floating leaf Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*	**Floating leaf** Floating-leaf pondweed (*Pot. natans)*	
Submergents Bushy pondweed (*Najas flexilis*) Common bladderwort (*Utricularia vulgaris)* Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Northern Water Milfoil (*Myriophyllum sibiricum*) Variable pondweed (*Pot. gramineus*) Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii)* White-stem pondweed (*Pot. praelongus*)	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed **(*Pot. amplifolius*)**	

Pot. = Potamogeton

The shoreland is 75% wetland, 20% wooded, and 5% developed. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. It also provides a feeding area and protective cover for walleye.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagles and ospreys can use this area for feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-3

This site is located in a bay area near the south end of Little Spider Lake (N end = 46^{o} 04' 41.9" N, 91^{o} 14' 52.1" W; S end = 46^{o} 04' 23.8" N, 91^{o} 14' 46.0"W). The site shoreline length is 2,860 feet. Water depth ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values.

The bottom substrate is mostly muck with some sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A narrow band of emergent aquatic vegetation is present along about half of the shoreline. Floating leaf aquatic vegetation is present at low to high densities in a continuous band about 75 to 135 yards wide along the shoreline. Submergent aquatic vegetation is sparse within the floating leaf band. Submergent vegetation densities are variable beyond the floating leaf band ranging from nearly absent to moderate. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. There is about a 150 feet gap in plant growth in the vicinity of a pier. Eighteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Pickerelweed (*Pontederia cordata)* Sedge *(Carex sp.)*		

Spikerush (*Eleocharis sp.)*		
Floating leaf Spatterdock *(Nuphar variegata)*	**Floating leaf** Floating-leaf pondweed (*Pot. natans)* Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*	
Submergents Bushy pondweed (*Najas flexilis*) Grass-leaved arrowhead (*Sagittaria graminea)* Illinois pondweed *(Pot. illinoensis)* Northern Water Milfoil (*Myriophyllum sibiricum*) Pipewort *(Eriocaulon septangulare)* Variable pondweed *(Pot. gramineus)* Water bulrush *(Scirpus subterminalis)* Water marigold *(Bidens beckii)* White-stem pondweed *(Pot. praelongus)*	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed **(*Pot. amplifolius*)**	

Pot. = Potamogeton

The shoreland is 50% wetland, 40% wooded, and 10% developed. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. It also provides a feeding area and protective cover for walleye.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-4

This site is located in a bay area near the south end of Little Spider Lake (W end = 46^{o} 04’ 23.8” N, 91^{o} 14’ 46.0” E; W end = 46^{o} 04’ 31.5” N, 91^{o} 14’ 31.7”W). The site shoreline length is 2,605 feet. Water depth ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is mostly muck with some sand. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

West and east of the island, a narrow band of emergent vegetation is present along less than half of the shoreline. Floating leaf aquatic vegetation is present at low to high densities in a continuous band about 70 yards wide along the shoreline. Submergent aquatic vegetation is sparse within the floating leaf band. Submergent vegetation densities are variable beyond the floating leaf band ranging from nearly absent to moderate.

Along the island shoreline, emergent and floating leaf vegetation is absent. Submergent densities are sparse near shore, and become low to moderate about 100 feet offshore. The highly flocculent bottom sediment may prevent submergent aquatic plants from anchoring themselves in some areas where their densities are low. Twenty-one species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead *(Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Sedge *(Carex sp.)*		
Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*)	**Floating leaf** White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara *(Chara sp.)* Clasping-leaf pondweed (*Pot. richardsonii*) Common bladderwort (*Utricularia vulgaris)* Grass-leaved arrowhead *(Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Northern water milfoil *(Myriophyllum sibiricum)* Pipewort *(Eriocaulon septangulare)* Variable pondweed *(Pot. gramineus)* Water bulrush (*Scirpus subterminalis*) Water celery *(Vallisneria americana)* Water marigold *(Bidens beckii)* White-stem pondweed *(Pot. praelongus)*	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 90% wooded, and 10% wetland. The wetland is a mix of shallow and deep marsh. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. It also provides a feeding area and protective cover for walleye.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagle, osprey, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-5

This site is a very small island located near the south end of Little Spider Lake (46^{o} 04' 40.5" N, 91^{o} 14' 28.3" W).

The primary reason for site selection is the use of this island for loon nesting.

The bottom substrate is gravel, rubble, and sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

The coarse substrate around the island and its exposure to waves results in a lack of aquatic plants in the immediate vicinity.

The island is a shrub carr wetland. Vegetation includes willows, alders, red-osier dogwood, sedges, ferns and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, crappie, and sucker.

Loons have used this island as a successful nesting site for many years. The very small size of the island limits other wildlife use. It can be used for nesting, cover, and feeding by songbirds, salamanders, and snakes. Mink, frogs, toads, and turtles can use it for cover and feeding. Eagles and ospreys can use it for feeding.

Management Recommendations:
1. Maintain the natural condition of the island.
2. Consider establishing a "no wake" zone surrounding this island so recreational watercraft users avoid eroding and otherwise disturbing this loon nesting site.

SENSITIVE AREA LS-6

This site is located in a bay area near the south end of Little Spider Lake. (S end = 46° 04' 30.3" N, 91° 14' 15.6" W; N end = 46° 04' 35.9" N, 91° 14' 13.4"W). The site shoreline length is 590 feet. Water depth ranges from 0 to 18 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic vegetation and fishery values.

The bottom substrate is mostly muck and detritus with some sand. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

A narrow band of emergent vegetation is present along less then half of the shoreline. Floating leaf aquatic vegetation is present in an intermittent band about 34 yards wide along the shoreline. Density of submergent aquatic vegetation within the floating leaf band is sparse. Beyond the floating leaf band, densities of submergent vegetation range from very sparse near the boat landing to high near the point. Twenty species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead *(Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Sedge *(Carex sp.)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Bushy pondweed (*Najas flexilis*) Clasping-leaf pondweed (*Pot. ric**hardsonii***) Fine-leaf pondweed *(Pot. sp.)* Flat-stem pondweed *(Pot. zosteriformis)* Grass-leaved arrowhead *(Sagittaria graminea)* Northern water milfoil *(Myriophyllum sibiricum)* Quillwort *(Isoetes sp.)* Variable pondweed *(Pot. gramineus)* Water bulrush (*Scirpus subterminalis*) Water celery *(Vallisneria americana)* White-stem pondweed *(Pot. praelongus)*	**Submergents** Fern pondweed (*Pot. robbinsii*) Illinois pondweed (*Pot. illinoensis*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 70% developed, 20% wooded, and 10% wetland. The wetland is a mix of marsh, sedge meadow, and alder thicket. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide fair wildlife habitat in undeveloped areas. Upland wildlife, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons, eagles, ospreys, and wading birds can use this area for cover and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Restore buffer areas of natural vegetation where they are lacking.
5. Prevent shoreland erosion and sedimentation deposition in this important fish spawning area.

SENSITIVE AREA LS-7A

This site is a small bay near the northeast end of Little Spider Lake (W end = 46° 05' 17.1" N, 91° 13' 27.7" W; E end = 46° 05' 17.9" N, 91° 13' 24.4"W). The site shoreline length is 320 feet. Water depth ranges from 0 to 6 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife and water quality values and natural scenic beauty.

The bottom substrate is muck and detritus. Large woody cover is present with 1-2 pieces /100 feet of shoreline.

Both emergent and floating leaf aquatic vegetation are sparse at this site. Submergent aquatic vegetation is very sparse except close to shore, where low to moderate densities are present. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Fourteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead *(Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		
Floating leaf Floating-leaf bur-reed *(Sparganium sp.)* Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*		
Submergents Chara *(Chara sp.)* Fern pondweed (*Pot. robbinsii*) Flat-stem pondweed *(Pot. zosteriformis)* Grass-leaved arrowhead *(Sagittaria graminea)* Northern water milfoil *(Myriophyllum sibiricum)* Variable pondweed *(Pot. gramineus)* Water celery *(Vallisneria americana)* Water marigold *(Bidens beckii)*		

Pot. = Potamogeton

The shoreland is 100% wetland. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The shoreland has a good mix of shrubs, and herbs, with some trees.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, and bullhead. It provides a feeding area and protective cover for walleye and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagles and ospreys can use this area for feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-7B

This site is located in a bay area near the northeast end of Little Spider Lake (S end = 46^{o} 05' 23.3" N, 91^{o} 13' 13.8" W; N end = 46^{o} 05' 27.9" N, 91^{o} 13' 9.7"W). The site shoreline length is 535 feet. Water depth ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife and water quality values and natural scenic beauty.

The bottom substrate is muck and detritus. Large woody cover is present with 1-2 pieces /100 feet of shoreline.

There is a narrow band of emergent aquatic vegetation along 80% of the shoreline. There is a continuous band of floating leaf aquatic vegetation about 34 yards wide. Densities of floating leaf plants in this band range from sparse to moderate. Submergent aquatic vegetation is very sparse except within 50 feet of the shoreline where low to moderate densities are present. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Ten species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*		
Submergents Flat-stem pondweed *(Pot. zosteriformis)* Grass-leaved arrowhead *(Sagittaria graminea)* Large-leaf pondweed *(Pot. amplifolius)* Variable pondweed *(Pot. gramineus)* Water bulrush *(Scirpus subterminalis)* Water celery *(Vallisneria americana)*		

Pot. = Potamogeton

The shoreland is 100% wetland. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The shoreland has a good mix of shrubs, and herbs, with some trees.

The natural scenic beauty at this site is rated as outstanding.
This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, and bullhead. It provides a feeding area and protective cover for walleye and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagles and ospreys can use this area for feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-8

This site is located at the northeast end of Little Spider Lake (S end = 46° 05’ 30.9” N, 91° 13’ 14.8” W; N end = 46° 05’ 48.2” N, 91° 13’ 27.4”W). The site shoreline length is 2,470 feet. Water depth ranges from 0 to 18 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is sand, gravel, and muck. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

There is no emergent or floating leaf aquatic vegetation present along the shoreline. Densities of submergent aquatic vegetation in the near shore area is variable. At most locations, densities are sparse to none, but there are scattered patches of moderate density. Moderate to high densities of submergent vegetation become consistent at distances of 30 - 90 yards offshore in water depths starting at 5 – 7 ½ feet. Thirteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Submergents Clasping-leaf pondweed (*Pot. richardsonii*) Elodea *(Elodea canadensis)* Flat-stem pondweed *(Pot. zosteriformis)* Floating-leaf burreed *(Sparganium sp.)* Grass-leaved arrowhead *(Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Pipewort *(Eriocaulon septangulare)* Variable pondweed *(Pot. gramineus)* Water celery *(Vallisneria americana)* White-stem pondweed *(Pot. praelongus)*	**Submergents** Bushy pondweed (*Najas flexilis*) Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 95% wooded and 5% developed. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, and sucker. It provides a feeding area and protective cover for perch, crappie, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagle, osprey, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons and wading birds can use this area for cover and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA LS-9

This site is located at the northwest end of Little Spider Lake (N end = 46° 05' 44.7" N, 91° 13' 43.1" W; S end = 46° 05' 9.4" N, 91° 13' 55.0"W). The site shoreline length is 4,195 feet. Water depth ranges from 0 to 18 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is sand, gravel, and muck. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

There is no emergent aquatic vegetation along the shoreline. Floating leaf aquatic vegetation is only present in the one notable bay area. The patch of floating leaf vegetation there extends up to 140 yards outward from shore in water depths up to 6 ½ feet. The density is low. Near-shore submergent aquatic vegetation is absent except in the bay area where low densities are present. Densities of submergent vegetation become moderate to high at distances of 20 – 32 yards offshore in water depths starting at 6 ½ - 8 feet. Fourteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Floating leaf Watershield (*Brasenia schreberi*) White water lily *(Nymphaea odorata)*		
Submergents Bushy pondweed (*Najas flexilis*) Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed *(Pot. sp.)* Flat-stem pondweed *(Pot. zosterifoemis)* Grass-leaved arrowhead *(Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Northern water milfoil *(Myriophyllum sibiricum)* Variable pondweed *(Pot. gramineus)* Water celery *(Vallisneria americana)* White-stem pondweed *(Pot. praelongus)*	**Submergents** Clasping-leaf pondweed (*Pot. richardsonii*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 100% wooded. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, smallmouth bass, bluegill, and sucker. It provides a feeding area and protective cover for musky, pumpkinseed, perch, crappie, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagle, osprey, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons and wading birds can use this area for cover and feeding. An active eagle nest raised young in this area in 2004.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Maintain a supercanopy of white and red pine for future eagle nesting sites.

SENSITIVE AREA LS-10

This site is located in a bay area on the west side of Little Spider Lake (N end = 46° 05' 12.0" N, 91° 14' 13.6" W; S end = 46° 05' 9.6" N, 91° 14' 16.5"W). The site shoreline length is 310 feet. Water depth ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is mostly muck with some sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A narrow band of emergent aquatic vegetation is present along half of the shoreline. There is a continuous band of floating leaf aquatic vegetation about 48 yd. wide at low to moderate densities. The floating leaf band extends out to a water depth of 2 ½ feet. Submergent aquatic vegetation is present at very low densities. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in much of this area. Eight species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*		
Submergents Bushy pondweed (*Najas flexilis*) Grass-leaved arrowhead *(Sagittaria graminea)* Pipewort *(Eriocaulon septangulare)*		

Pot. = Potamogeton

The shoreland is 80% wooded and 20% developed. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for largemouth bass, bluegill, pumpkinseed, perch, crappie, and sucker. It provides a feeding area and protective cover for walleye, musky, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide fair wildlife habitat in undeveloped areas. Upland wildlife, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons, eagles, ospreys, and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Restore buffer areas of natural vegetation where they are lacking.

SENSITIVE AREA LS-11A, B, and C

These three sites are located in a bay area on the west side of Little Spider Lake (LS-11A; N end = 46° 05' 8.1" N, 91° 14' 20.5" W; S end = 46° 04' 59.9" N, 91° 14' 20.5"W) (LS-11B; W end = 46° 04' 55.8" N, 91° 14' 13.4" W; E end = 46° 04' 53.7" N, 91° 14' 10.8"W) (LS-11C; W end = 46° 04' 53.0" N, 91° 14' 7.6" W; E end = 46° 04' 53.9" N, 91° 14' 4.6"W). Shoreline lengths for the sites are: LS-11A = 855 feet, LS-11B = 280 feet, LS-11C = 245 feet. Water depth at all sites ranges from 0 to 4 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is muck. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A narrow band of emergent aquatic vegetation is present along 10 – 75% of the shoreline at these three sites. There is also a continuous band of floating leaf aquatic vegetation with a width of 80 – 100 yards along the shoreline. Densities of floating leaf vegetation are low. Submergent aquatic vegetation densities are very low. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in much of this area. Eleven species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Pickerelweed (*Pontederia cordata)*		
Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Bushy pondweed (*Najas flexilis*) Grass-leaved arrowhead *(Sagittaria graminea)* Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (*Myriophyllum sibiricum)* Variable pondweed *(Pot. gramineus)* Water bulrush (*Scirpus subterminalis*)		

Pot. = Potamogeton

The shoreland is 90% wetland, and 10% wooded. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at these sites is rated as outstanding.

These sites provide a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. They provide a feeding area and protective cover for walleye and smallmouth bass.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagles and ospreys can use this area for feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.

3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-1

This site is located in a bay at the south end of Big Spider Lake (W end = 46° 05' 48.7" N, 91° 13' 26.2" W; E end = 46° 05' 50.0" N, 91° 13' 17.7"W). The site shoreline length is 1,274 feet. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is a mix of muck, sand, gravel, and rubble. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

Emergent aquatic vegetation is sparse. There is a fairly continuous band of floating leaf aquatic vegetation about 20 feet wide along half of the shoreline. Moderate to high densities of submergent aquatic vegetation are also present. Twenty-two species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead *(Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		
Floating leaf Narrow-leaf bur-reed (Sparganium angustifolium) Spatterdock (*Nuphar variegata*) White water lily (*Nymphaea odorata*)		
Submergents Chara *(Chara sp.)* Clasping-leaf pondweed (*Pot. richardsonii*) Coontail *(Ceratophyllum demersum)* Elodea *(Elodea canadensis)* Fine-leaf pondweed *(Pot. sp.)* Flat-stem pondweed *(Pot. zosteriformis)* Needle spikerush *(Eleocharis acicularis)* Quillwort *(Isoetes sp.)* Ribbon-leaf pondweed *(Pot. epihydrus)* Variable pondweed *(Pot. gramineus)* Water celery *(Vallisnera americana)* Water marigold *(Bidens beckii)* Water stargrass *(Zosterella dubia)*	**Submergents** Bushy pondweed (*Najas flexilis*) Fern pondweed ***(Pot. robbinsi)*** Large-leaf pondweed ***(Pot. amplifolius*)** Northern water milfoil *(Myriophyllum sibiricum)*	

Pot. = Potamogeton

The shoreland is 60% wooded and 40% wetland. The wetland is a mix of alder thicket and bog. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, and sucker. It provides a feeding area and protective cover for crappie and bullheads.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. A beaver lodge is present. Loons can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-2

This site is located along a peninsula near the south end of Big Spider Lake (S end = 46^{o} 05' 57.4" N, 91^{o} 13' 1.0" W; N end = 46^{o} 06' 3.1" N, 91^{o} 13' 5.0"W). The site shoreline length is 734 feet. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is sand and rubble with the rubble occurring in deeper water. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

No emergent aquatic vegetation is present. There are only a few scattered floating leaf plants. Densities of submergent aquatic vegetation are low near shore and moderate further out. Sixteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT

Floating leaf White water lily (*Nymphaea odorata*)		
Submergents Brown-fruited rush *(Juncus peleocarpus*) Bushy pondweed (*Najas flexilis*) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Coontail *(Ceratophyllum demersum)* Creeping spearwort *(Ranunculus flammula)* Elodea *(Elodea canadensis)* Fine-leaf pondweed *(Pot. sp.)* Flat-stem pondweed *(Pot. zosteriformis*) Quillwort *(Isoetes sp.)* Stiff water crowfoot *(Ranunculus longirostris)* Variable pondweed *(Pot. gramineus*) Water celery *(Vallisneria americana)* Water stargrass *(Zosterella dubia)*	**Submergents** Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil *(Myriophyllum sibiricum)*	

Pot. = Potamogeton

The shoreland is 100% wooded. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, smallmouth bass, bluegill, pumpkinseed, and sucker. It provides a feeding area and protective cover for musky, largemouth bass, perch, crappie and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagles, ospreys, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Maintain the two wood duck nest boxes.

SENSITIVE AREA BS-3

This site is located in a small bay along the south shore of Big Spider Lake (W end = 46^{o} 06’ 3.8” N, 91^{o} 12’ 33.4” W; E end = 46^{o} 06’ 3.7” N, 91^{o} 12’ 29.6”W). The site shoreline length is 449 feet. Water depth ranges from 0 to 6 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values.

The bottom substrate is a mix of muck, sand, gravel, and rubble. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along half of the shoreline. There is also a band of floating leaf aquatic vegetation with moderate to high densities. Submergent aquatic vegetation is present throughout the site at moderate to high densities. Twenty-six species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Bur-reed (*Sparganium sp*.) Grass-leaved arrowhead *(Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Sedge *(Carex sp.)*		
Floating leaf Floating-leaf pondweed (*Pot. natans*) Watershield (*Brasenia schreberi*) Water smartweed *(Polygonum amphibium)* White water lily (*Nymphaea odorata*)	**Floating leaf** Floating-leaf bur-reed *(Sparganium fluctuans)* Spatterdock (*Nuphar variegata*)	
Submergents Brown-fruited rush (*Juncus peleocarpus*) Common bladderwort (*Utricularia vulgaris)* Coontail *(Ceratophyllum demersum)* Creeping spearwort (*Ranunculus flammula)* Dwarf water milfoil (*Myriophyllum tenellum)* Elodea *(Elodea canadensis)* Flat-stem pondweed *(Pot. zosteriformis*) Needle spikerush (*Eleocharis acicularis*) Northern water milfoil *(Myriophyllum sibiricum)* Quillwort (*Isoetes sp.)* Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) White-stem pondweed *(Pot. praelongus)*	**Submergents** Large-leaf pondweed (*Pot. amplifolius*) Variable pondweed *(Pot. gramineus)*	

Pot. = Potamogeton

The shoreland is 10% wooded, 60% wetland, and 30% developed. The wetland is a mix of alder thicket and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, and perch. It provides a feeding area and protective cover for walleye, smallmouth bass, crappie, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides fair wildlife habitat. Upland wildlife, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Beaver, otter, loons, eagles, ospreys and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-4

This site is located in a bay area near the east end of Big Spider Lake (W end = 46^{o} 05' 59.4" N, 91^{o} 12' 3.4" W; E end = 46^{o} 05' 58.5" N, 91^{o} 12' 1.7"W). The site shoreline length is 172 feet. Water depth ranges from 0 to 6 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values.

The bottom substrate is muck. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along over half of the shoreline. There is also a band of floating leaf aquatic vegetation at a high density. Submergent aquatic vegetation is also present throughout the site at low to high densities. Fourteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf bur-reed *(Sparganium fluctuans)* Floating-leaf pondweed (*Pot. natans*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)	**Floating leaf** Spatterdock (*Nuphar variegata*)	
Submergents Bushy pondweed (*Najas flexilis*) Fern pondweed (*Pot. robbinsii*) Flat-stem pondweed (*Pot. zosteriformis*) Northern water milfoil (*Myriophyllum sibiricum)* Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Elodea (*Elodea canadensis*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 100% wooded, but becomes wetland further inland. The undeveloped shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as poor.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for bluegill, pumpkinseed, perch, and sucker. It provides a feeding area and protective cover for walleye, musky, smallmouth bass, largemouth bass, crappie, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagle, osprey, loons, and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-5

This site is located in a bay area near the east end of Big Spider Lake (W end = 46^{o} 05’ 56.8” N, 91^{o} 11’ 56.5” W; E end = 46^{o} 05’ 55,3” N, 91^{o} 11’ 50.3”W). The site shoreline length is 486 feet. Water depth ranges from 0 to 6 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife and water quality values and natural scenic beauty.

The bottom substrate muck. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 20% of the shoreline. There is a continuous band of floating leaf aquatic vegetation about 40 yards wide with a moderate density of plants. Submergent aquatic vegetation is also present throughout the site at moderate densities. Twenty-eight species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Bur-reed (*Sparganium sp*.) Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Spikerush (*Eleocharis sp.)*		
Floating leaf Floating-leaf bur-reed (*Sparganium fluctuans)* Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*)	**Floating leaf** Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)	
Submergents Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot. ri**chardsonii***) Common bladderwort (*Utricularia vulgaris)* Coontail (*Ceratophyllum demersum*) Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Saggitaria graminea)* Illinois/variable pondweed hybrid (*Pot. illinoensis x gramineus*) Northern water milfoil (*Myriophyllum sibiricum)* Ribbon-leaf pondweed (*Pot. epihydrus*) Variable pondweed (*Pot. gramineus*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*)	**Submergents** Bushy pondweed (*Najas flexilis*) Elodea (*Elodea canadensis)* Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 100% wetland. The wetland is a mix of alder thicket and bog. The shoreland has a good mix of shrubs, and herbs, with trees present at a low density.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for largemouth bass, bluegill, pumpkinseed, and perch. It provides a feeding area and protective cover for walleye, musky, smallmouth bass, crappie, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. An old beaver lodge is present. Eagles and ospreys can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-6

This site is located at the east end of Big Spider Lake (S end = 46° 06' 4.4" N, 91° 11' 35.9" W; N end = 46° 06' 17.0" N, 91° 11' 38.2"W). The site shoreline length is 1,375 feet. Water depth ranges from 0 to 12 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is a mix of muck, sand, gravel, and rubble. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 20% of the shoreline. There is also a 0.8 acre bed of hardstem bulrush off shore (see figure 2). There is a band of floating leaf aquatic vegetation of variable width along 30% of the shoreline. Submergent aquatic vegetation is also present throughout the site at moderate to high densities. Twenty-eight species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Creeping spikerush (*Eleocharis palustris)* Grass-leaved arrowhead (*Sagittaria graminea)* Hardstem bulrush (*Scirpus acutus*) Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf bur-reed (*Sparganium fluctuans)* Narrow-leaf bur-reed (*Sparganium angustifolium)* Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Coontail (*Ceratophyllum demersum*) Creeping spearwort (*Ranunculus flammula)* Dwarf water milfoil (*Myriophyllum tenellum)* Flat-stem pondweed (*Pot. zosteriformis*) Illinois pondweed (*Pot. illinoensis*) Northern water milfoil (*Myriophyllum sibiricum)* Quillwort (*Isoetes sp*.) Variable pondweed (Pot. gramineus) Water celery (*Vallisneria americana*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*) Whorled water milfoil (*Myriophyllum verticillatum)*	**Submergents** Elodea (*Elodea canadensis*)	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*)

Pot. = Potamogeton

The shoreland is 90% wooded, and 10% wetland. Some of the wooded shoreland is on a narrow ridge, with wetland further inland. The shoreland wetland is a mix of alder thicket and bog. The shoreland has a good mix of trees, and herbs, with shrubs present at lower densities.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, and sucker. It provides a feeding area and protective cover for walleye, smallmouth bass, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons can use this area for cover and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.

3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-7

This site includes a broad point and two bays near the east end of Big Spider Lake (E end = 46° 06' 21.2" N, 91° 11' 41.7" W; W end = 46° 06' 26.6" N, 91° 12' 16.8"W). The site shoreline length is 4,004 feet. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is a mix of muck, sand, gravel, and rubble. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 40% of the shoreline. There is also a 0.9 acre bed of hardstem bulrush off shore (see figure 2). There is no floating leaf aquatic vegetation off the face of the point, but there is a band of varying width along 60 – 100% of the bay shorelines. Submergent aquatic vegetation is present throughout the site at moderate to high densities. Thirty-four species of aquatic plants were found, including curly-leaf pondweed, which is an exotic. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Bur-reed (*Sparganium sp*.) Creeping spikerush (*Eleocharis palustris)* Hardstem bulrush (*Scirpus acutus*) Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf bur-reed (*Sparganium fluctuans)* Floating-leaf pondweed (*Pot. natans*) Water smartweed (*Polygonum amphibium)*	**Floating leaf** Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Coontail (*Ceratophyllum demersum*) Creeping bladderwort (*Utricularia gibba)* Creeping spearwort (*Ranunculus flammula)* Curly-leaf pondweed (*Pot. crispus*) Dwarf water milfoil (*Myriophyllum tenellum)* Fine-leaf pondweed (*Pot. sp*.) Flat-leaf bladderwort (*Utricularia intermedia)* Flat-stem pondweed (*Pot. zosteriformis*) llinois pondweed (*Pot. illinoensis*) Nitella (*Nitella sp*.) Northern water milfoil (*Myriophyllum sibiricum)* Variable pondweed (*Pot. gramineus*) Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Elodea (*Elodea canadensis)* Fern pondweed (*Pot. robbinsii*)	**Submergents** Large-leaf pondweed (*Pot. amplifolius*)

Pot. = Potamogeton

The shoreland is 10% wooded and 90% wetland. The wetland is a mix of sedge meadow, alder thicket, and bog. The shoreland has a good mix of shrubs and herbs, with trees present at lower densities.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, and sucker. It provides a feeding area and protective cover for crappie and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Monitor curly-leaf pondweed to verify it does not have invasive tendencies.

SENSITIVE AREA BS-8

This site is a large bay at the northeast end of Big Spider Lake (S end = 46° 06' 35.4" N, 91° 12' 23.0" W; N end = 46° 06' 50.2" N, 91° 12' 39.9"W). The site shoreline length is 3,374 feet. Water depth ranges from 0 to 11 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values, and natural scenic beauty.

The bottom substrate is a mix of muck and sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 60% of the shoreline. There is a large stand of hardstem bulrush about 18 yd. wide along the southeast shoreline (see map) and a small stand along the northwest shoreline. A band of floating leaf aquatic vegetation is present along 90% of the shoreline. This band is narrow (≤ 25 yd. wide) along most of the shoreline, but extends outward, up to 120 yd. near the mouth of the intermittent tributary. Submergent aquatic vegetation is also present throughout the site at moderate to high densities. Thirty-three species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Bur-reed (*Sparganium sp*.) Grass-leaved arrowhead (*Sagittaria graminea)* Hardstem bulrush (*Scirpus acutus*) Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Narrow-leaved bur-reed (*Sparganium angustifolium)* Spatterdock (Nuphar variegata) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Brown-fruited rush (*Juncus peleocarpus*) Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Common bladderwort (*Utricularia vulgaris)* Coontail (*Ceratophyllum demersum*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Needle spikerush (*Eleocharis acicularis*) Nitella (*Nitella sp*.) Northern water milfoil (*Myriophyllum sibiricum)* Ribbon-leaf pondweed (*Pot. epihydrus*) Variable pondweed (*Pot.gramineus*) Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*) Whorled water milfoil (*Myriophyllum verticillatum)*	**Submergents** Elodea (*Elodea canadensis*)	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*)

Pot. = Potamogeton

The shoreland is 10% wooded, 85% wetland, and 5% developed. The wetland is a mix of alder thicket and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. It provides a feeding area and protective cover for walleye.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-9

This site is located in a bay at the northwest end of Big Spider Lake (E end = 46° 06' 43.7" N, 91° 13' 26.6" W; W end = 46° 06' 43.7" N, 91° 13' 32.5"W). The site shoreline length is 1,114 feet. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is a mix of muck, sand, gravel, and cobble. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 5% of the shoreline. There is a band of floating leaf aquatic vegetation along 15% of the shoreline, mostly at the northwest end of the site. Submergent aquatic vegetation is present at low to moderate densities. Thirty species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Three-way sedge (*Dulichium arundinaceum)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Narrow-leaf bur-reed (*Sparganium angustifolium)* Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*)	**Floating leaf** White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Common bladderwort (*Utricularia vulgaris)* Coontail (*Ceratophyllum demersum*) Elodea (*Elodea canadensis*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Needle spikerush (*Eleocharis acicularis*) Nitella (*Nitella*) Northern water milfoil (*Myriophyllum sibiricum)* Quillwort (*Isoetes sp*.) Ribbon-leaf pondweed (*Pot. epihydrus*) Sago pondweed (*Pot. pectinatus*) Variable pondweed (*Pot. gramineus*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 80% wooded, 15% wetland, and 5% developed. The wetland is a mix of shallow and deep marsh. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, perch, and crappie. It provides a feeding area and protective cover for walleye, largemouth bass, bluegill, pumpkinseed, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. An old beaver lodge is present.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)

2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-10

This site is an oblong bay area with an island near the northwest end of Big Spider Lake (N end = 46° 06' 42.9" N, 91° 13' 36.4" W; S end = 46° 06' 30.3" N, 91° 13' 31.6"W). The site shoreline length is 1,754 feet. The 0.9 acre island has an additional 797 feet of shoreline. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is a mix of muck, sand, gravel, and rubble. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 30% of the shoreline. There is a band of floating leaf aquatic vegetation along 90% of the shoreline. The width of this band is variable and up to 30 yards. Submergent aquatic vegetation is also present throughout the site at moderate to high densities. Thirty-five species of aquatic plants were found, including curly-leaf pondweed, which is an exotic. They are:

PRESENT	COMMON	ABUNDANT
Emergents Bur-reed (*Sparganium sp.*) Creeping spikerush (Eleocharis palustris) Grass-leaved arrowhead (Sagittaria graminea) Pickerelweed (*Pontederia cordata)* Sedge (Carex sp.) Three-way sedge (Dulichium arundinaceum) Water horsetail (Equisetum fluviatile)		

Floating leaf Floating-leaf bur-reed (Sparganium fluctuans) Floating-leaf pondweed (*Pot. natans*) Narrow-leaf bur-reed (Sparganium angustifolium) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Clasping-leaf pondweed (*Pot. richardsonii*) Coontail (Ceratophyllum demersum) Creeping spearwort (Ranunculus flammula) Curly-leaf pondweed (Pot. crispus) Elodea (Elodea canadensis) Fine-leaf pondweed (Pot. sp.) Flat-stem pondweed (Pot. zosteriformis) Grass-leaved arrowhead (Sagittaria graminea) Illinois pondweed (*Pot. illinoensis*) Illinois/variable pondweed hybrid (Pot. illinoensis x gramineus) Large-leaf pondweed (*Pot. amplifolius*) Needle spikerush (Eleocharis acicularis) Nitella (Nitella sp.) Quillwort (Isoetes sp.) Ribbon-leaf pondweed (Pot. epihydrus) Variable pondweed (Pot. gramineus) Water celery (Vallisneria americana) Water marigold (Bidens beckii) Water stargrass (Zosterella dubia) White-stem pondweed (Pot. praelongus)	**Submergents** Bushy pondweed (Najas flexilis) Fern pondweed (*Pot. robbinsii*) Northern water milfoil (Myriophyllum sibiricum)	

Pot. = Potamogeton

The shoreland is 95% wooded and 5% wetland. The wetland is an alder thicket. The shoreland have a good mix of trees and herbs, with shrubs present at lower densities.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for smallmouth bass, bluegill, pumpkinseed, and sucker. It provides a feeding area and protective cover for walleye, musky, largemouth bass, perch, crappie, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Lakeshore residents report that loons have successfully nested on this island for the first time in at least 12 years. A beaver lodge is present.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
3. Protect aquatic and shoreland vegetation.
4. Protect existing large woody cover, and allow future treefalls to remain.
5. Maintain the wood duck nest box on the island.
6. Monitor curly-leaf pondweed to verify it does not have invasive tendencies.

SENSITIVE AREA BS-11

This site is a bay located along the southwest shore of Big Spider Lake (N end = 46° 06' 7.6" N, 91° 13' 31.0" W; S end = 46° 06' 3.3" N, 91° 13' 34.6"W). The site shoreline length is 1,125 feet. Water depth ranges from 0 to 16 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values.

The bottom substrate is a mix of muck and sand. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

Emergent aquatic vegetation is present along less than 5% of the shoreline. There are discontinous patches of floating leaf vegetation along 50% of the shoreline, along with some offshore patches. Submergent aquatic vegetation is also present throughout the site at moderate densities. Twenty-two species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		

Floating leaf Narrow-leaf bur-reed (*Sparganium angustifolium)* Watershield (*Brasenia schreberi*)	**Floating leaf** Spatterdock (*Nuphar variegata*) White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot.* ri*chardsonii*) Coontail (*Ceratophyllum demersum*) Elodea (*Elodea canadensis*) Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Nitella (*Nitella sp*.) Variable pondweed (*Pot. gramineus*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (*Myriophyllum sibiricum)*	

Pot. = Potamogeton

The shoreland is 90% wooded and 10% wetland. The wetland is an alder thicket. The shoreland has a good mix of trees and herbs. Shrubs are present at lower densities.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for largemouth bass, bluegill, pumpkinseed, perch and crappie. It provides a feeding area and protective cover for walleye, musky, smallmouth bass, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons, eagles, ospreys, and wading birds can use this area for cover and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA BS-12

This site is located in a small bay at the south end of Big Spider Lake (N end = 46° 05' 53.2" N, 91° 13' 29.1" W; S end = 46° 05' 51.7" N, 91° 13' 29.8"W). The site shoreline length is 317 feet. Water depth ranges from 0 to 6 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values.

The bottom substrate is mostly muck with some sand, gravel, and rubble. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 30% of the shoreline. There is a band of floating leaf aquatic vegetation about 15 feet wide along 70% of the shoreline. Submergent aquatic vegetation is also present throughout the site at moderate densities. Twenty-one species of aquatic plants were found, including curly-leaf pondweed, which is an exotic. They are:

PRESENT	COMMON	ABUNDANT
Emergents Bur-reed (*Sparganium sp*.) Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		
Floating leaf Watershield (*Brasenia schreberi*)	**Floating leaf** Spatterdock (*Nuphar variegata*) White water lily (*Nymphaea odorata*)	
Submergents Clasping-leaf pondweed (*Pot. richardsonii*) Coontail (*Ceratophyllum demersum*) Curly-leaf pondweed (*Pot. crispus*) Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Large-leaf pondweed (*Pot. amplifolius*) Ribbon-leaf pondweed (*Pot. epihydrus*) Variable pondweed (*Pot. gramineus*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*)	**Submergents** Bushy pondweed (*Najas flexilis*) Elodea (*Elodea canadensis*) Northern water milfoil (*Myriophyllum sibiricum)*	

Pot. = Potamogeton

The shoreland is 40% wooded and 60% wetland. The wetland is a mix of alder thicket and bog. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, perch, crappie, and bullhead. It provides a feeding area and protective cover for walleye, largemouth bass, bluegill, pumpkinseed, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, muskrat, mink, ducks, geese, songbirds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Otter, loons, eagles, ospreys, and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Monitor curly-leaf pondweed to verify it does not have invasive tendencies.

SENSITIVE AREA C-1

This site is located in a bay at the east end of Clear Lake (W end = 46° 05' 46.1" N, 91° 13' 39.1" W; E end = 46° 05' 47.4" N, 91° 13' 34.6"W). The site shoreline length is 355 feet. Water depth ranges from 0 to 5 feet.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, and wildlife values and natural scenic beauty.

The bottom substrate is mostly muck with some sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 5% of the shoreline. Low densities of floating leaf aquatic vegetation extend up to 142 yards from shore. Submergent aquatic vegetation is also present throughout the site at very low to moderate densities. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Fourteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf bur-reed (*Sparganium sp*.) Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata)*		
Submergents Bushy pondweed (*Najas flexilis*) Fern pondweed (*Pot. robbinsii)* Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (*Myriophyllum sibiricum)* Variable pondweed (*Pot. gramineus*) Water marigold (*Bidens beckii*)		

Pot. = Potamogeton

The shoreland is 100% wooded. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, crappie, and sucker. It provides a feeding area and protective cover for walleye, and bullhead.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provide excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, songbirds, eagle, osprey, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Loons and wading birds can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA C-2

This site is located in a bay area at the north end of Clear Lake (E end = 46^{o} 06’ 5.7” N, 91^{o} 14’ 1.5” W; W end = 46^{o} 06’ 5.0” N, 91^{o} 14’ 10.1”W). The site shoreline length is 1,010 feet. Water depth ranges from 0 to 18 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is muck, sand, gravel, and rubble. Large woody cover is common, with 3-6 pieces /100 feet of shoreline.

North of the point, a band of emergent aquatic vegetation is present along 50% of the shorline. There are very low to moderate densities of floating leaf aquatic vegetation out to 80 yards from shore. Very low to moderate densities of submergent aquatic vegetation are present within the floating leaf zone. Beyond the floating leaf zone, submergent vegetation is present at very low densities.

South of the point, a band of emergent aquatic vegetation is present along 10% of the shoreline. There are very low densities of floating leaf vegetation out to 46 yards from the shoreline. Submergent aquatic vegetation is at very low densities. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Eighteen species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead (Sagittaria graminea) Pickerelweed (*Pontederia cordata)* Sedge (Carex sp.) Spikerush (Eleocharis sp.) Three-way sedge (Dulichium arundinaceum)		
Floating leaf Floating-leaf bur-reed (Sparganium sp.) Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*) White water lily (*Nymphaea odorata*)		
Submergents Bushy pondweed (*Najas flexilis*) Fern pondweed (*Pot. robbinsii*) Grass-leaved arrowhead (Sagittaria graminea) Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (Myriophyllum sibiricum) Pipewort (Eriocaulon septangulare) Variable pondweed (Pot. gramineus) Water bulrush (*Scirpus subterminalis*) Water celery (Vallisneria americana)		

Pot. = Potamogeton

The shoreland is 75% wetland and 25% wooded. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, perch, and crappie. It provides a feeding area and protective cover for walleye, largemouth bass, bluegill, pumpkinseed, bullhead and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, muskrat, mink, ducks, loons, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Eagles and ospreys can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Monitor purple loosestrife at this and other locations in Clear Lake. Release additional *Galerucella* beetles to achieve control.
5. Maintain wood duck nest box.

SENSITIVE AREA C-3

This large site is located in the southern half of Clear Lake (E end = 46° 05' 45.3" N, 91° 13' 43.4" W; W end = 46° 05' 33.6" N, 91° 14' 35.6"W). The site shoreline length is 1.14 miles. There is an additional 2,995 feet of shoreline around the large, 10.7 acre island, and 850 feet of shoreline around the small, 1.0 acre island. Water depth ranges from 0 to 18 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values and natural scenic beauty.

The bottom substrate is mostly muck with some sand, gravel, and rubble. Large woody cover is abundant, with more than 6 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 90% of the shoreline where wetlands occur, and along less than 5% of the shoreline where uplands occur. There are very low densities of floating leaf vegetation throughout the area in water depths up to 5 feet. Submergent aquatic vegetation is present at very low densities in water depths up to 5 ½ feet. Many shallow areas are completely devoid of submergents. Submergent vegetation densities become moderate to high in water depths greater than 5 ½ feet. The highly flocculent bottom sediment may prevent aquatic plants from anchoring themselves in areas where plant densities are low. Twenty-four species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Sedge (*Carex sp*.) Spikerush (*Eleocharis sp*.) Three-way sedge (*Dulichium arundinaceum)*		
Floating leaf Floating-leaf bur-reed (*Sparganium sp*.) Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*)	**Floating leaf** White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Dwarf water milfoil (*Myriophyllum tenellum)* Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Illinois pondweed (*Pot. illinoensis*) Northern water milfoil (*Myriophyllum sibiricum)* Pipewort (*Eriocaulon septangulare*) Variable pondweed (*Pot. gramineus*) Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*)	**Submergents** Large-leaf pondweed (*Pot. amplifolius*)	

Pot. = Potamogeton

The shoreland is 70% wooded and 30% wetland. The wetland is a mix of marsh, sedge meadow, alder thicket, and bog. The shoreland has a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as outstanding.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, smallmouth bass, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, sucker, and banded killifish.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, loons, geese, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. An osprey nesting platform is present on the large island at this site. This nest has a history of producing young and is a good example of DNR's osprey management program.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Maintain the osprey nesting platform on the large island.

SENSITIVE AREA F-1

This site includes the entire shoreline of Fawn Lake except for a small, developed segment on the north end (W end = 46^{o} 06' 57.3" N, 91^{o} 13' 11.8" W; E end = 46^{o} 06' 57.5" N, 91^{o} 13' 7.9"W). The site shoreline length is 1.27 miles. Water depth ranges from 0 to 13 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values, and natural scenic beauty.

The bottom substrate is mix of muck, detritus, and sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

Five shoreline locations were assessed to provide a description of the aquatic plant community. The presence of a narrow band of emergent aquatic vegetation varied at these locations from 5 to 90% of the shoreline. A band of floating leaf aquatic vegetation occurred at all sites with widths of 18 to 38 yards in water depths up to 6 feet. High densities of submergent aquatic vegetation were found at all locations. Twenty-six species of aquatic plants were found. They are:

PRESENT	COMMON	ABUNDANT
Emergents Bur-reed (*Sparganium sp.*) Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)*		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Spatterdock (*Nuphar variegata*) Watershield (*Brasenia schreberi*)	**Floating leaf** White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Clasping-leaf pondweed (*Pot. richardsonii*) Common bladderwort (*Utricularia vulgaris)* Coontail (*Ceratophyllum demersum*) Creeping bladderwort (*Utricularia gibba*) Elodea (*Elodea canadensis*) Fern pondweed (*Pot. robbinsii*) Fine-leaf pondweed (*Pot. sp*.) Ribbon-leaf pondweed (*Pot. epihydrus*) Water bulrush (*Scirpus subterminalis*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Flat-stem pondweed (*Pot. zosteriformis*) Large-leaf pondweed (*Pot. amplifolius*) Nitella (*Nitella sp*.) Northern water milfoil (*Myriophyllum sibiricum)*	

Pot. = Potamogeton

The shoreland is 35% wooded, 60% wetland, and 5% developed. The wetland is a mix of alder thicket and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker. It provides a feeding area and protective cover for walleye.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, loons, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. A beaver lodge is present.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.
4. Maintain wood duck nest boxes.

SENSITIVE AREA N-1

This site includes a large portion of the shoreline of North Lake (S end = 46° 07' 0.5" N, 91° 13' 1.2" W; N end = 46° 07' 18.4" N, 91° 13' 5.6"W). The site shoreline length is 2.00 miles. Water depth ranges from 0 to 11 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values, and natural scenic beauty.

The bottom substrate is a mix of muck, detritus, sand, and gravel. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 25% of the shoreline. There is a band of floating leaf aquatic vegetation along 80% of the shoreline as well as some large offshore beds. Floating leaf vegetation grows in water depths up to 5 feet. Submergent aquatic vegetation is also present at moderate to high densities. Thirty-four species of aquatic plants were found, including Robbins spikerush, which is a special concern species. They are:

PRESENT	COMMON	ABUNDANT
Emergents Broad-leaved cattail (*Typha latifolia)* Creeping spikerush (Eleocharis palustris) Grass-leaved arrowhead (Sagittaria graminea) Hardstem bulrush (Scirpus acutus) Pickerelweed (*Pontederia cordata)* Sedge (Carex sp.) Spikerush (Eleocharis sp.) Three-way sedge (Dulichium arundinaceum)		

Floating leaf Floating-leaf pondweed (*Pot. natans*) Watershield (*Brasenia schreberi*)	**Floating leaf** Spatterdock (*Nuphar variegata*) White water lily (*Nymphaea odorata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (Chara sp.) Clasping-leaf pondweed (*Pot. richardsonii*) Coontail (Ceratophyllum demersum) Creeping bladderwort (*Utricularia gibba)* Elodea (Elodea canadensis) Fine-leaf pondweed (Pot. sp.) Flat-stem pondweed (Pot. zosteriformis) Grass-leaved arrowhead (Sagittaria graminea) Illinois pondweed (*Pot. illinoensis*) Illinois/variable pondweed hybrid (Pot. illinoensis x gramineus) Needle spikerush (Eleocharis acicularis) Nitella (Nitella sp.) Ribbon-leaf pondweed (Pot. epihydrus) Sago pondweed (Pot. pectinatus) Variable pondweed (Pot gramineus) Water celery (Vallisneria americana) Water marigold (Bidens beckii) Water stargrass (Zosteralla dubia) White-stem pondweed (Pot. praelongus)	**Submergents** Fern pondweed (*Pot. robbinsii*) Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (Myriophyllum sibiricum)	

Pot. = Potamogeton

The shoreland is 40% wooded, 55% wetland, and 5% developed. The wetland is a mix of alder thicket and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as good.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for walleye, musky, largemouth bass, bluegill, pumpkinseed, perch, crappie, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, otter, muskrat, mink, ducks, geese, loons, songbirds, eagles, ospreys, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding.

Management Recommendations:

1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

SENSITIVE AREA N-2

This site is a bay along the southwest shore of North Lake (S end = 46° 07' 4.0" N, 91° 13' 4.5" W; N end = 46° 07' 6.6" N, 91° 13' 5.6"W). The site shoreline length is 285 feet. Water depth ranges from 0 to 11 feet, the maximum depth of aquatic plant growth.

Reasons for site selection are aquatic and terrestrial vegetation, fishery, wildlife, and water quality values.

The bottom substrate is a mix of muck and sand. Large woody cover is present, with 1-2 pieces /100 feet of shoreline.

A band of emergent aquatic vegetation is present along 50% of the shoreline. There is a continuous band of floating leaf vegetation along the entire shoreline. This band is up to 40 yards wide in water depths up to 4 ½ feet. Submergent aquatic vegetation is also present throughout the site at moderate densities. Twenty-five species of aquatic plants were found, including Robbins spikerush, which is a special concern species. They are:

PRESENT	COMMON	ABUNDANT
Emergents Bur-reed (*Sparganium sp*.) Creeping spikerush (*Eleocharis palustris)* Grass-leaved arrowhead (*Sagittaria graminea)* Pickerelweed (*Pontederia cordata)* Sedge (*Carex sp*.) Spikerush (*Eleocharis sp*.)		
Floating leaf White water lily (*Nymphaea odorata*)	**Floating leaf** Spatterdock (*Nuphar variegata*)	
Submergents Bushy pondweed (*Najas flexilis*) Chara (*Chara sp*.) Coontail (*Ceratophyllum demersum*) Elodea (*Elodea canadensis*) Fine-leaf pondweed (*Pot. sp*.) Flat-stem pondweed (*Pot. zosteriformis*) Grass-leaved arrowhead (*Sagittaria graminea)* Needle spikerush (*Eleocharis acicularis*) Quillwort (*Isoetes sp*.) Ribbon-leaf pondweed (*Pot. epihydrus*) Variable pondweed (*Pot. gramineus*) Water celery (*Vallisneria americana*) Water marigold (*Bidens beckii*) Water stargrass (*Zosterella dubia*) White-stem pondweed (*Pot. praelongus*)	**Submergents** Large-leaf pondweed (*Pot. amplifolius*) Northern water milfoil (*Myriophyllum sibiricum)*	**Submergents** Fern pondweed (*Pot. robbinsii*)

Pot. = Potamogeton

The shoreland is 5% wooded, 90% wetland, and 5% developed. The wetland is a mix of alder thicket and bog. The undeveloped areas of shoreland have a good mix of trees, shrubs, and herbs.

The natural scenic beauty at this site is rated as average.

This site provides a spawning area, a nursery area, a feeding area, and protective cover for musky, largemouth bass, bluegill, pumpkinseed, perch, and crappie. It provides a feeding area and protective cover for walleye, bullhead, and sucker.

The diversity of aquatic and shoreland vegetation, large woody cover, and snag trees at this site provides excellent wildlife habitat. Upland wildlife, beaver, muskrat, mink, ducks, geese, songbirds, wading birds, frogs, toads, salamanders, turtles, and snakes can use the area for nesting, cover, and feeding. Otter, loons, eagles, and ospreys can use this area for cover and feeding.

Management Recommendations:
1. Minimize shoreland disturbance (grading, cutting, mowing, placement of structures, etc.)
2. Protect aquatic and shoreland vegetation.
3. Protect existing large woody cover, and allow future treefalls to remain.

LIST OF AQUATIC PLANT SPECIES OBSERVED IN SPIDER LAKE CHAIN SENSITIVE AREAS*

Common Name	**Scientific Name**	**Sensitive Areas Found**
Emergents		
Broad-leaved cattail	Typha latifolia	LS1,LS2,BS3,BS5,BS6,BS7,BS8,N1
Bur-reed	Sparganium sp.	LS1,BS3,BS5,BS7,BS8,BS10,BS12,F1,N2
Common Rush	Juncus effusus	LS1
Creeping spikerush	Eleocharis palustris	BS6,BS7,BS10,N1,N2
Grass-leaved arrowhead	Sagittaria graminea	LS4,LS6,LS7A,BS1,BS3,BS5,BS6,BS8,BS9, BS10,BS11,BS12,C1,C2,C3,F1,N1,N2
Hardstem bulrush	Scirpus acutus	BS6,BS7,BS8,N1
Pickerelweed	Pontederia cordata	LS1,LS2,LS3,LS4,LS6,LS7A,LS7B,LS10, LS11,BS1,BS3,BS4,BS5,BS6,BS7,BS8,BS9, BS10,BS11,BS12,C1,C2,C3,F1,N1,N2
Sedge	Carex sp.	LS3,LS4,LS6,BS3,BS10,C2,C3,N1,N2
Spikerush	Eleocharis sp.	LS3,BS5,C2,C3,N1,N2
Three-way sedge	Dulichium arundinaceum	BS9,BS10,C2,C3,N1
Water horsetail	Equisetum fluviatile	BS10
Floating leaf		
Floating-leaf bur-reed	Sparganium fluctuans	BS3,BS4,BS5,BS6,BS7,BS10
Floating-leaf bur-reed	Sparganium sp.	LS7A,LS8,C1,C2,C3
Floating-leaf pondweed	Potamogeton natans	LS1,LS2,LS3,LS4,LS6,LS7A,LS7B,LS10, LS11,BS3,BS4,BS5,BS7,BS8,BS9,BS10,C1, C2,C3,F1,N1
Narrow-leaf bur-reed	Sparganium angustifolium	BS1,BS6,BS8,BS9,BS10,BS11
Spatterdock	Nuphar variegatum	LS1,LS2,LS3,LS4,LS6,LS7A,LS10,LS11,BS1, BS3,BS4,BS5,BS6,BS7,BS8,BS9,BS10,BS11, BS12,C1,C2,C3,F1,N1,N2
Watershield	Brasenia schreberi	LS1,LS2,LS3,LS4,LS6,LS7A,LS7B,LS9,LS10, LS11,BS3,BS4,BS5,BS6,BS7,BS8,BS9,BS10, BS11,BS12,C1,C2,C3,F1,N1
Water smartweed	Polygonum amphibium	BS3,BS7
White water lily	Nymphaea odorata	LS1,LS2,LS3,LS4,LS6,LS7A,LS7B,LS9,LS10, LS11,BS1,BS2,BS3,BS4,BS5,BS6,BS7,BS8, BS9,BS10,BS11,BS12,C1,C2,C3,F1,N1,N2
Submergents		
Brown-fruited rush	Juncus peleocarpus	BS2,BS3,BS8
Bushy pondweed	Najas flexilis	LS1,LS2,LS3,LS4,LS6,LS8,LS9,LS10,LS11, BS1,BS2,BS4,BS5,BS6,BS7,BS8,BS9,BS10, BS11,BS12,C1,C2,C3,F1,N1,N2

Common Name	Scientific Name	Sensitive Areas Found
Submergents (cont.)		
Chara	Chara sp.	LS4,LS7A,BS1,BS5,BS6,BS7,BS8,BS9,BS11, C3,F1,N1,N2
Clasping-leaf pondweed	Potamogeton richardsonii	LS1,LS4,LS6,LS8,LS9,BS1,BS2,BS5,BS6, BS7,BS8,BS9,BS10,BS11,BS12,F1,N1
Common bladderwort	Utricularia vulgaris	LS1,LS2,LS4,BS3,BS5,BS8,BS9,F1
Coontail	Ceratophyllum demersum	BS1,BS2,BS3,BS5,BS6,BS7,BS8,BS9,BS10, BS11,BS12,F1,N1,N2
Creeping bladderwort	Utricularia gibba	BS7,F1,N1
Creeping spearwort	Ranunculus flammula	BS2,BS3,BS6,BS7,BS10
Curly-leaf pondweed	Potamogeton crispus	BS7,BS10,BS12
Dwarf water milfoil	Myriophyllum tenellum	BS3,BS6,BS7,C3
Elodea	Elodea canadensis	LS8,BS1,BS2,BS3,BS4,BS5,BS6,BS7,BS8, BS9,BS10,BS11,BS12,F1,N1,N2
Fern pondweed	Potamogeton robbinsii	LS1,LS2,LS3,LS4,LS6,LS7A,LS8,LS9,BS1, BS4,BS5,BS6,BS7,BS8,BS9,BS10,BS11, BS12,C1,C2,C3,F1,N1,N2
Fine-leaf pondweed	Potamogeton sp.	LS6,LS9,BS1,BS2,BS5,BS7,BS8,BS9,BS10, BS11,BS12,C3,F1,N1,N2
Flat-leaf bladderwort	Utricularia intermedia	BS7
Flat-stem pondweed	Potamogeton zosteriformis	LS2,LS6,LS7A,LS7B,LS8,LS9,BS1,BS2,BS3, BS4,BS5,BS6,BS7,BS8,BS9,BS10,BS11, BS12,C1,C3,F1,N1,N2
Grass-leaved arrowhead	Sagittaria graminea	LS2,LS3,LS4,LS6,LS7A,LS7B,LS8,LS9,LS10, LS11,BS5,BS8,BS9,BS10,BS11,BS12,C1,C2, C3,N1,N2
Illinois pondweed	Potamogeton illinoensis	LS1,LS2,LS3,LS4,LS6,LS8,LS9,BS6,BS7, BS8,BS10,C3,N1
Illinois/variable pondweed hybrid	Potamogeton illinoensis x gramineus	BS5,BS10,N1
Large-leaf pondweed	Potamogeton amplifolius	LS1,LS2,LS3,LS4,LS6,LS7B,LS8,LS9,LS11, BS1,BS2,BS3,BS4,BS5,BS6,BS7,BS8,BS9, BS10,BS11,BS12,C1,C2,C3,F1,N1,N2
Needle spikerush	Eleocharis acicularis	BS1,BS3,BS8,BS9,BS10,N1,N2
Nitella	Nitella sp.	BS7,BS8,BS9,BS10,BS11,F1,N1
Northern water milfoil	Myriophyllum sibiricum	LS2,LS3,LS4,LS6,LS7A,LS9,LS11,BS1,BS2, BS3,BS4,BS5,BS6,BS7,BS8,BS9,BS10,BS11, BS12,C1,C2,C3,F1,N1,N2
Pipewort	Eriocaulon septangulare	LS3,LS4,LS8,LS10,C2,C3
Quillwort	Isoetes sp.	LS6,BS1,BS2,BS3,BS6,BS9,BS10,N2
Ribbon-leaf pondweed	Potamogeton epihydrus	BS1,BS5,BS8,BS9,BS10,BS12,F1,N1,N2
Sago pondweed	Potamogeton pectinatus	BS9,N1
Stiff water crowfoot	Ranunculus longirostris	BS2
Variable pondweed	Potamogeton gramineus	LS2,LS3,LS4,LS6,LS7A,LS7B,LS8,LS9,LS11, BS1,BS2,BS3,BS5,BS6,BS7,BS8,BS9,BS10, BS11,BS12,C1,C2,C3,N1,N2

Common Name	Scientific Name	Sensitive Areas Found
Submergents (cont.)		
Water bulrush	Scirpus subterminalis	LS1,LS2,LS3,LS4,LS6,LS7B,LS11,BS3,BS7, BS8,C2,C3,F1
Water celery	Vallisneria americana	LS2,LS4,LS6,LS7A,LS7B,LS8,LS9,BS1,BS2, BS3,BS5,BS6,BS7,BS8,BS9,BS10,BS11, BS12,C2,C3,F1,N1,N2
Water marigold	Bidens beckii	LS2,LS3,LS4,LS7A,BS1,BS5,BS7,BS8,BS9, BS10,BS11,BS12,C1,C3,F1,N1,N2
Water stargrass	Zosterella dubia	BS1,BS2,BS4,BS5,BS6,BS7,BS8,BS9,BS10, BS11,BS12,F1,N1,N2
White-stem pondweed	Potamogeton praelongus	LS2,LS3,LS4,LS6,LS8,LS9,BS3,BS4,BS6, BS7,BS8,BS9,BS10,BS11,F1,N1,N2
Whorled water milfoil	Myriophyllum verticillatum	BS6,BS8

*Only species rooted below the waterline are included.