

Lake Roesiger

Lake Roesiger appears to be in healthy condition, with high water clarity, low nutrients, moderate oxygen depletion, low to moderate algae, and moderate levels of aquatic plants. Maintaining the health of the lake depends on controlling nutrient runoff from fertilizers, septic systems, roads, clearing, logging, and land development.

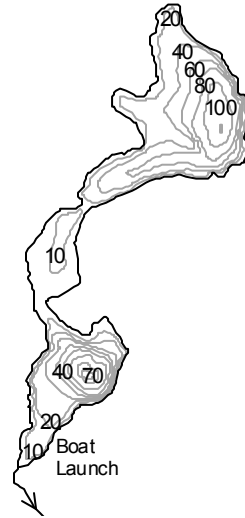


State of the Lakes Report
March 2003

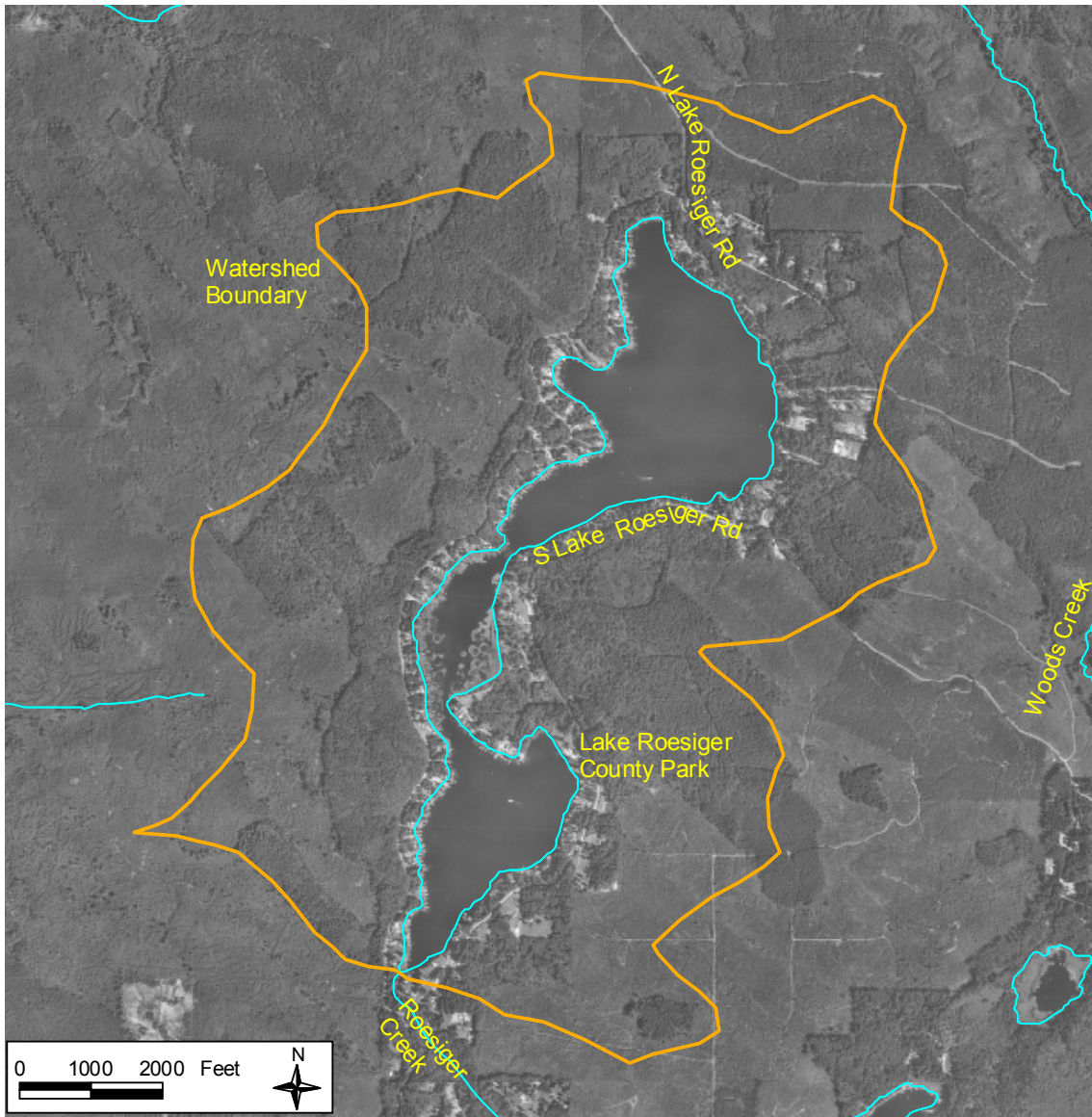
Snohomish County Public Works
Surface Water Management

LAKE AND WATERSHED DATA

Lake Area: 340 acres
 Watershed Area: 2272 acres
 Watershed to Lake Area Ratio: 6.7
 Maximum Depth: 110 feet (33.5 meters)
 Average Depth: 37 feet (11.3 meters)
 Lake Volume: 12,600 acre-feet
 Length of Shore: 5.9 miles



	<u>1972</u>	<u>MID-90'S</u>
# of nearshore homes	344	386
# of homes/1000' of shoreline	11.0	12.4
% of homes with bulkhead or fill		NA
% of homes with some native vegetation near shore		NA
% of watershed developed (residential or commercial)	9%	10% (est.)



LAKE ASSESSMENT

DESCRIPTION

■ **Location/Access**– Lake Roesiger is located 7 miles east of Lake Stevens near the Cascade Mountain foothills. Several small streams feed the lake. The lake outlet flows into Woods Creek and eventually into the Skykomish River. Recreational use of the lake, including fishing, swimming, boating, and skiing, is heavy. Lake Roesiger County Park is located on the southeast shore, and there is a state-owned public boat launch at the south end of the lake.

■ **Size/Shape**– The lake is separated into three distinct basins totaling 340 surface acres, which makes it the third largest natural lake in the county. The north basin (referred to as Roesiger N.) covers 200 acres, has a maximum depth of 33.5 meters and an average depth of 14.6 meters. The south basin (referred to as Roesiger S.) covers about 100 acres with a maximum depth of 21.3 meters and average depth of 8 meters. The middle basin covers about 40 acres and is much shallower—only 3 meters maximum and 2 meters average depth. The total lake volume is 12,600 acre-feet, 76% of which is contained in the north basin.

■ **Watershed**– The Lake Roesiger watershed, including the lake, covers 2272 acres. The watershed is 6.7 times the size of the lake, which is one of the smallest ratios in the county. This means that there should be less potential for pollution impacts from the surrounding watershed than at a lake with a large watershed. Commercial forest lands make up most of the lake watershed. Residential and commercial development is confined to the immediate surroundings of the lake. In 1972 about 9% of the total watershed was developed. By the mid-90s, development was denser, but still covered only 10% of the watershed.

■ **Shoreline**– The shoreline of Lake Roesiger is 5.9 miles long. Along the shoreline, there were 344 homes in 1972 and approximately 386 in the mid-90s. Many small seasonal cabins have been replaced by larger, year-round homes. Residential development around the lake is some of the densest in the county—an average of 12.4 homes per 1000 feet of shoreline. Many of the nearshore homes



have modified the shoreline with bulkheads or fill. However, some homes have retained native vegetation along the shore, which is important for filtering pollution.

LAKE CONDITIONS

■ **Water Clarity**– Summer water clarity in Lake Roesiger is high. In the north basin, averages ranged from 5.0 to 6.1 meters from 1991 through 2002, with the highest averages occurring in recent years. Analysis indicates that there has been a small, but statistically significant, increase in water clarity in the north basin since 1991. Averages in the south basin have been slightly lower, ranging from 4.6 to 5.7 meters from 1992-2002. KCM, Inc. conducted a detailed Phase I diagnostic study of the lake in 1988 for Snohomish County SWM. Summer water clarity measured during this study averaged 5.7 meters in the north basin and 4.9 meters in the south.

■ **Color**– Based on single samples in 1972 and on volunteer observations, the water in Lake Roesiger has very little natural color. The water is usually described as light green.

■ **Nutrients**– Summer average total phosphorus concentrations in the epilimnion averaged 5 $\mu\text{g/l}$ in the north basin and 6 $\mu\text{g/l}$ in the south basin during the 1988 KCM study. Hypolimnion samples averaged 22 $\mu\text{g/l}$ in the north basin and 35 $\mu\text{g/l}$ in the south basin during the 1988 study, which indicates some build-up of phosphorus caused by sediment releases during periods of oxygen depletion. The Department of Ecology and Lake

Roesiger volunteers collected composite total phosphorus samples for most years between 1992 and 2002. Although composite samples are not directly comparable to discrete samples, these results confirm that phosphorus levels in both basins are low in the epilimnion and somewhat higher in the hypolimnion, especially in the south basin. Ecology data from 1990-1997 revealed moderate total nitrogen concentrations in the north and south basins (averages of 230 and 240 $\mu\text{g/l}$ in the epilimnion and 410 and 420 $\mu\text{g/l}$ in the hypolimnion, respectively). The 1988 KCM study showed moderately high nitrates, with elevated ammonia in the south basin. These data suggest that nitrogen is moderately abundant and that phosphorus availability limits algal growth.

- **Alkalinity**– Data from 1988 indicate that Lake Roesiger has a very low buffering capacity and is sensitive to nutrient pollution.
- **Oxygen/Temperature**– Vertical profiles of dissolved oxygen and temperature from 1988 through 2002 show that the north and south basins are strongly stratified into warm, oxygenated upper waters and cool, oxygen-depleted bottom waters during the warm months. The middle basin does not stratify. Typically, dissolved oxygen is almost depleted in the north basin below about 22 meters and in the south basin below 13 meters. This indicates the presence of decomposing organic matter on the lake bottom, especially in the south basin. On occasion there have been spikes of dissolved oxygen at 5 to 6 meters depth which suggest the presence of algal blooms at that depth.
- **Algae**– Chlorophyll *a* summer averages from 1992-2002 ranged from 1.4 to 4.3 $\mu\text{g/l}$ in the north basin and 0.9 to 4.4 $\mu\text{g/l}$ in the south basin. Data from summer 1998 were somewhat higher, averaging 6.7 and 5.3 $\mu\text{g/l}$, respectively. These values indicate low to moderate levels of algae. Golden brown algae were the dominant algae in 1988-89, with a slight peak of blue-green algae in mid summer. Monitors have occasionally observed blue-green algal blooms during summer months in both basins.
- **Aquatic Plants**– Lake Roesiger supports moderate amounts of aquatic plants in the south basin, low densities of plants in the north basin because of steep nearshore habitat, and high

densities in the shallow middle basin. Dominant plants include slender arrowhead, tapegrass, elodea, fragrant water-lily (middle basin), and bladderwort (middle basin). Eurasian watermilfoil, an invasive non-native plant, was discovered in 1998. There were dense stands at the south end near the boat launch and in the shallow middle basin, and scattered plants around both the north and south basins. Snohomish County SWM has used divers to remove the milfoil by hand since 1998. The efforts have reduced the milfoil to a few scattered locations. However, annual work will be necessary in the future to prevent the milfoil from spreading.

SUMMARY

- **Trophic State**– Based on high water clarity, low phosphorus concentrations, hypolimnetic oxygen depletion, occasional blue-green algal blooms, and moderate aquatic plants, Lake Roesiger as a whole may be classified as oligo-mesotrophic.
- **Current Conditions/Trends**– Lake Roesiger appears to be in healthy condition. Monitoring data show a small, but statistically significant, trend toward increasing water clarity in the north basin.
- **Future Concerns/Targets**– The main concern for Lake Roesiger is the potential for increased nutrient runoff from logging, clearing, fertilizer use, road runoff, and septic systems which could result in declines in water quality, especially in the south basin. Also, future large-scale conversion of forest lands to residential is a potential threat to the lake. Maintaining current water clarity and phosphorus levels is the target for the lake.
- **Recommendations**– Monitoring of the lake should continue to help identify any future water quality problems. Milfoil removal should continue. New development and forest practices in the watershed should take precautions to control runoff and reduce nutrient pollution. Other recommended measures are also included in the lake management plan developed as part of the 1988 KCM study.

CITIZEN VOLUNTEERS

Thanks to the Department of Ecology and Lake Roesiger volunteers, especially Elsie Sorgenfrei and Robert and Joanne Miller, for lake monitoring.

DATA SUMMARY TABLE—ROESIGER N.

Source	Date	Secchi Depth (meters)	Total Phosphorus (ug/l)		Color (Pt-Co scale)	Chlorophyll a (ug/l)
			Epi	Hypo	Epilimnion	Epilimnion
Bortleson, et al, 1976	7/25/72	3.0	29	33	5	-
Sumioka and Dion, 1985	7/6/81	5.2	10	10	-	2.3
KCM, 1989	Summer 1988	4.0 - 7.0 (5.7) n = 10	3 - 8 (5) n = 10	7 - 97 (22) n = 10	-	3.6 - 15.0 (6.7) n = 10
DOE	Summer 1991	3.4 - 7.0 (5.0) n = 8	-	-	-	-
LR Volunteer or DOE	Summer 1992	4.9 - 6.2 (5.4) n = 13	5 - 9 (7) n = 12	15 - 32 (21) n = 10	-	0.5 - 3.7 (2.2) n = 12
LR Volunteer or DOE	Summer 1993	4.0 - 8.2 (5.8) n = 9	2 - 16 (6) n = 10	3 - 36 (15) n = 11	-	0.7 - 5.9 (2.3) n = 10
LR Volunteer or DOE	Summer 1994	5.2 - 6.6 (5.8) n = 12	1 - 27 (5) n = 12	3 - 29 (14) n = 12	-	1.3 - 5.7 (2.4) n = 11
LR Volunteer or DOE	Summer 1995	4.6 - 7.6 (5.8) n = 10	2 - 9 (5) n = 9	2 - 22 (11) n = 11	-	1.2 - 3.8 (2.5) n = 9
LR Volunteer or DOE	Summer 1996	3.4 - 6.6 (5.4) n = 10	1 - 8 (4) n = 9	7 - 32 (14) n = 12	-	0.5 - 15.7 (4.3) n = 9
LR Volunteer or DOE	Summer 1997	4.9 - 6.1 (5.7) n = 6	3 - 9 (5) n = 5	5 - 30 (15) n = 4	-	1.5 - 3.6 (2.8) n = 3
LR Volunteer	Summer 1998	5.5 - 6.4 (5.9) n = 2	5 - 6 (6) n = 2	6	-	1.2 - 2.4 (1.8) n = 2
LR Volunteer or DOE	Summer 1999	4.4 - 6.1 (5.6) n = 6	4 - 8 (6) n = 7	5 - 16 (8) n = 8	-	1.1 - 7.1 (2.8) n = 6
LR Volunteer or DOE	Summer 2000	4.6 - 6.7 (5.7) n = 4	4 - 15 (10) n = 2	7 - 13 (10) n = 2	-	2.7 - 4.8 (3.6) n = 3
LR Volunteer or DOE	Summer 2001	6.1 - 6.2 (6.1) n = 3	-	-	-	-
Volunteer	Summer 2002	4.7 - 7.0 (6.0) n = 4	4 - 7 (5) n = 4	4 - 6 (5) n = 4	-	0.3 - 2.0 (1.4) n = 4

NOTES

- Table includes summer (May-Oct) data only.
- Each box shows the range on top, followed by summer average in () and number of samples (n).
- Total phosphorus data from 1992 - 2000 are from composite samples taken at varied depths.
- DOE = Washington Department of Ecology
- LR Volunteer = Lake Roesiger Resident Monitors citizen volunteer monitoring program

DATA SUMMARY TABLE ROESIGER S.

Source	Date	Secchi Depth (meters)	Total Phosphorus (ug/l)		Color (Pt-Co scale)	Chlorophyll a (ug/l)
			Epi	Hypo	Epilimnion	Epilimnion
Bortleson, et al, 1976	7/25/72	3.0	5	18	5	-
KCM, 1989	Summer 1988	4.2 - 6.5 (4.9) n = 10	3 - 8 (6) n = 10	13 - 56 (35) n = 10	-	1.6 - 9.5 (5.3) n = 10
DOE	Summer 1990	-	7 - 13 (10) n = 2	-	-	-
LR Volunteer or DOE	Summer 1992	3.7 - 5.8 (4.6) n = 9	4 - 34 (12) n = 9	17 - 35 (22) n = 10	-	1.1 - 4.1 (2.5) n = 11
LR Volunteer	Summer 1993	4.9 - 7.0 (5.6) n = 9	2 - 20 (9) n = 8	2 - 27 (15) n = 8	-	1.7 - 5.7 (2.9) n = 8
LR Volunteer	Summer 1994	4.6 - 6.6 (5.7) n = 11	1 - 8 (4) n = 10	6 - 41 (24) n = 10	-	1.6 - 4.0 (2.9) n = 7
LR Volunteer or DOE	Summer 1995	4.7 - 6.6 (5.5) n = 9	2 - 8 (4) n = 8	5 - 42 (16) n = 13	-	1.1 - 5.2 (2.8) n = 8
LR Volunteer or DOE	Summer 1996	3.4 - 6.1 (5.1) n = 9	1 - 7 (4) n = 8	5 - 97 (42) n = 9	-	0.6 - 8.8 (3.0) n = 9
LR Volunteer or DOE	Summer 1997	4.9 - 6.2 (5.5) n = 5	3 - 5 (4) n = 2	5 - 55 (21) n = 6	-	2.8 - 5.6 (4.1) n = 3
LR Volunteer or DOE	Summer 1998	4.3 - 5.8 (5.1) n = 6	-	-	-	-
LR Volunteer or DOE	Summer 1999	4.6 - 6.4 (5.6) n = 5	4 - 15 (7) n = 6	9 - 26 (16) n = 4	-	0.7 - 2.7 (1.4) n = 4
LR Volunteer or DOE	Summer 2000	4.6 - 5.3 (5.1) n = 4	5 - 12 (7) n = 3	16	-	1.9 - 6.9 (4.4) n = 2
LR Volunteer or DOE	Summer 2001	4.6 - 6.1 (5.1) n = 4	-	-	-	-
LR Volunteer or DOE	Summer 2002	4.0 - 5.8 (5.0) n = 9	5 - 13 (8) n = 4	6 - 26 (12) n = 4	-	0.3 - 1.6 (0.9) n = 4

NOTES

- Table includes summer (May-Oct) data only.
- Each box shows the range on top, followed by summer average in () and number of samples (n).
- Total phosphorus data from 1990 - 2000 are from composite samples taken at varied depths.
- DOE = Washington Department of Ecology
- LR Volunteer = Lake Roesiger Resident Monitors citizen volunteer monitoring program

SUMMARY OF OTHER DATA—ROESIGER N.

■ **Total Phosphorus**— composite samples taken by the Department of Ecology in 1992-1997 and 1999 ranged from 4 -- 8 µg/l (with one high value of 27 µg/l) in the epilimnion and from 5 -- 21 µg/l in the hypolimnion. Composite samples collected by LR Volunteers averaged 7 µg/l in the epilimnion and 21 µg/l in the hypolimnion in 1992, 7 µg/l and 15 µg/l in 1993, 3 µg/l and 17 µg/l in 1994, 4 µg/l and 8 µg/l in 1995, 4 µg/l (epilimnion only) in 1996, 6 µg/l (epilimnion) in 1997, 6 µg/l (epilimnion) in 1998, 6 µg/l (epilimnion) in 1999, and 10 µg/l (epilimnion) in 2000. These values from composite total phosphorus samples are not directly comparable to the discrete samples shown above. In addition, the composite depths changed in some years. However, these composite sample data indicate that Roesiger N. has low phosphorus levels.

■ **Nitrogen**— single total nitrogen samples in 1972 were 0.73 mg/l in the epilimnion and 1.07 mg/l in the hypolimnion; 1981 samples were 1.00 mg/l and 0.83 mg/l, respectively; during KCM's 1988-89 study, nitrate was moderately high (from <0.010 to 0.322 mg/l in the epilimnion and from <0.010 to 0.313 mg/l in the hypolimnion) and ammonia was slightly elevated in the hypolimnion (from < 0.010 to 0.329 mg/l); Ecology total nitrogen composite samples from 1992-1997 averaged 0.23 mg/l in the epilimnion and 0.41 mg/l in the hypolimnion; these data suggest that nitrogen is moderately abundant and is not limiting algal growth.

■ **Alkalinity**— data from the 1988-89 study ranged from 4 -- 17 mg/l CaCO₃, which indicates that Roesiger N. has a very low buffering capacity and is sensitive to nutrient pollution.

■ **pH**— 1988-89 study data averaged 7.0 in the epilimnion and 6.1 near the lake bottom, which is near neutral and typical for Snohomish County lakes.

■ **Conductivity**— 1988-89 data averaged 35 µmhos near the surface and 50 µmhos near the lake bottom; these data indicate low levels of dissolved materials in the water.

■ **Iron**— data from the 1988-89 KCM study showed low levels in the epilimnion (avg. 46 µg/l) but high levels in the hypolimnion (avg. 1037 µg/l, high of 3964 µg/l), which suggests significant release of iron and phosphorus from the bottom sediments under low oxygen conditions.

■ **Algae**— samples collected during the 1988-1989 KCM study showed that during May through mid-October biovolumes were low and dominated by gold-browns. Blue-green algae showed a slight peak in mid summer. Gold-browns were also dominant from fall through spring.

ALGAE TYPES	Averages	
	May-Oct. 1988	Nov.-April 1988-1989
Cyanophyta (Blue-greens)	9%	1%
Chlorophyta (Greens)	17%	16%
Chrysophyta (Golden/diatoms)	53%	64%
Cryptophyta (Cryptomonads)	7%	2%
Euglenophyta (Euglenoids)	0%	0%
Pyrrhophyta (Dinoflagellates)	15%	16%
TOTAL BIOVOLUME (mm ³ /l)	0.109	0.405

■ **Fish**— according to the Washington State Department of Fish and Wildlife (WDFW), fish species found in Lake Roesiger (north, south, and middle basins) include rainbow trout, kokanee, largemouth bass, black crappie, yellow perch, bluegill, pumpkinseed sunfish, and brown bullhead catfish. WDFW usually stocks the lake each year with rainbow trout.

DATA SOURCES

In addition to data from citizen volunteers, data for Lake Roesiger N. are also available from: Bortleson, et. al., 1976; KCM, 1989; Rector, 1994; Rector, 1996; Smith and Rector, 1997; Smith, et. al., 2000; and Sumioka and Dion, 1985. Please refer to the full list of references in the [County-Wide Summary](#).

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SUMMARY OF OTHER DATA—ROESIGER S.

■ ***Total Phosphorus***— composite samples taken by the Department of Ecology in 1990, 1992, 1995-1997, and 1999 ranged from 3 -- 15 µg/l in the epilimnion and from 5 -- 28 µg/l in the hypolimnion. Composite samples collected by LR Volunteers averaged 12 µg/l in the epilimnion and 23 µg/l in the hypolimnion in 1992, 9 µg/l and 15 µg/l in 1993, 4 µg/l and 30 µg/l in 1994, 4 µg/l and 7 µg/l in 1995, 3 µg/l (epilimnion only) in 1996, 7 µg/l (epilimnion) and 19 µg/l (hypolimnion) in 1999, and 7 µg/l (epilimnion) in 2000. These values from composite total phosphorus samples are not directly comparable to the discrete samples shown above. In addition, the composite depths changed in some years. However, these composite sample data indicate that Roesiger S. has low phosphorus levels in the epilimnion and low to moderate levels in the hypolimnion.

■ ***Nitrogen***— single total nitrogen samples in 1972 were 0.66 mg/l in the epilimnion and 0.87 mg/l in the hypolimnion, with elevated ammonia (0.47 mg/l) in the bottom waters; during KCM's 1988-89 study, nitrate levels were moderately high (from < 0.010 to 0.379 mg/l in the epilimnion and from < 0.010 to 0.365 mg/l in the hypolimnion) but ammonia was elevated in the hypolimnion (up to 1.108 mg/l); Ecology total nitrogen composite samples from 1990-1997 averaged 0.24 mg/l in the epilimnion and 0.42 mg/l in the hypolimnion; these data suggest that nitrogen is moderately abundant and is not limiting algal growth.

■ ***Alkalinity***— data from the 1988-89 study ranged from 6 -- 23 mg/l CaCO₃, which indicates that Roesiger S. has a low buffering capacity and is sensitive to nutrient pollution.

■ ***pH***— 1988-89 study data ranged from 5.5 to 7.4, which is slightly more acidic than Roesiger N.

■ ***Conductivity***— 1988-89 data averaged 38 µmhos near the surface and 58 µmhos near the lake bottom, which indicates low levels of dissolved materials in the water.

■ ***Iron***— data from the 1988-89 KCM study showed low levels in the epilimnion (avg. 49 µg/l) but very high levels in the hypolimnion (avg. 2354 µg/l, high of 4365 µg/l), which suggests significant release of iron and phosphorus from the bottom sediments under low oxygen conditions.

■ ***Algae***— samples collected during the 1988-1989 KCM study showed that during May through mid-October biovolumes in the south basin were low and dominated by gold-brown algae. Greens, cryptomonads, and dinoflagellates also showed brief periods of dominance. Gold-brown algae were also dominant from fall through spring. In the shallow middle basin of the lake, biovolumes were somewhat higher than in the other parts of Lake Roesiger. This is to be expected because the middle basin is shallow and more enriched with nutrients. During this summer period, gold-brown algae dominated by biovolume. Diatoms were dominant from fall through spring.

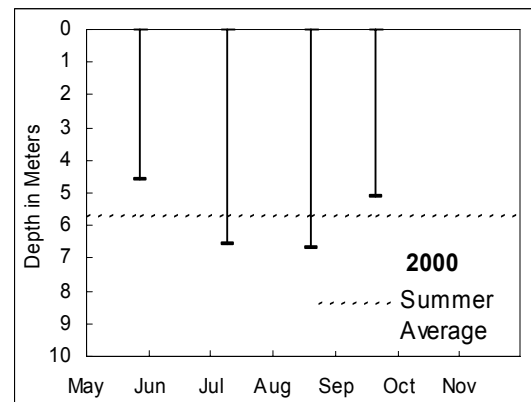
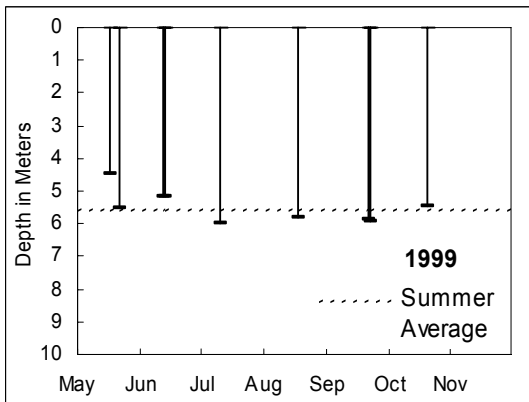
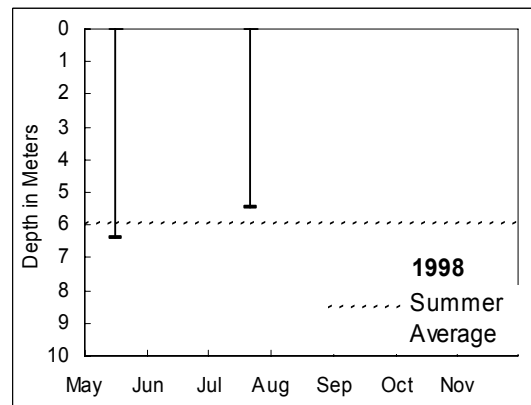
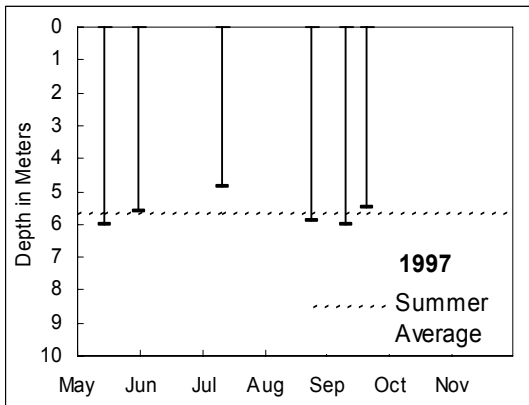
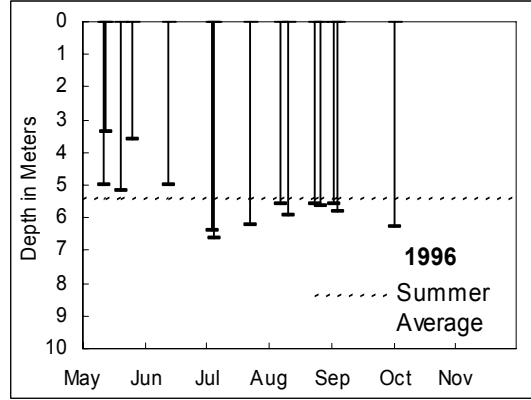
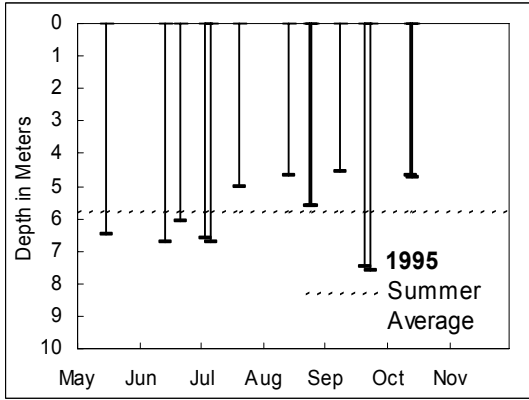
ALGAE TYPES	South Basin Averages		Middle Basin Averages	
	May-Oct. 1988	Nov.-April 1988-1989	May-Oct. 1988	Nov.-April 1988-1989
Cyanophyta (Blue-greens)	2%	0%	1%	1%
Chlorophyta (Greens)	17%	2%	6%	7%
Chrysophyta (Golden/diatoms)	59%	75%	81%	59%
Cryptophyta (Cryptomonads)	10%	9%	1%	5%
Euglenophyta (Euglenoids)	3%	0%	0%	0%
Pyrrhophyta (Dinoflagellates)	9%	14%	10%	29%
TOTAL BIOVOLUME (mm ³ /l)	0.22	0.363	0.709	0.189

DATA SOURCES

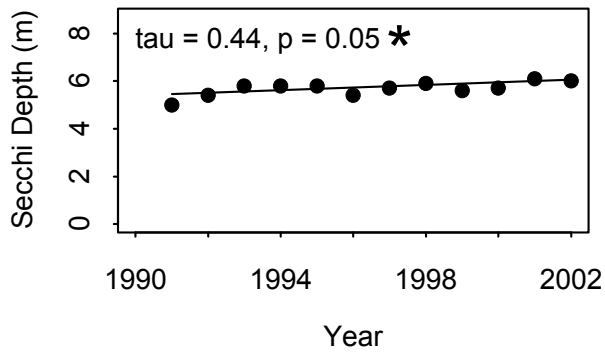
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WATER CLARITY—ROESIGER N.

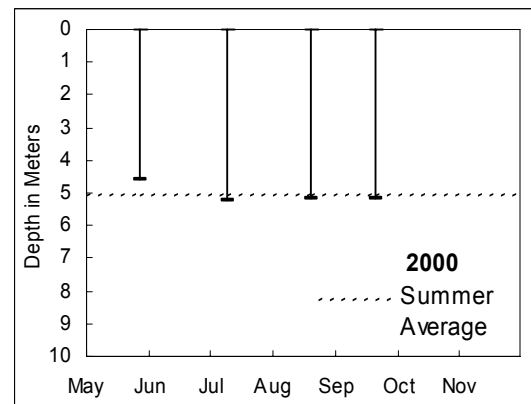
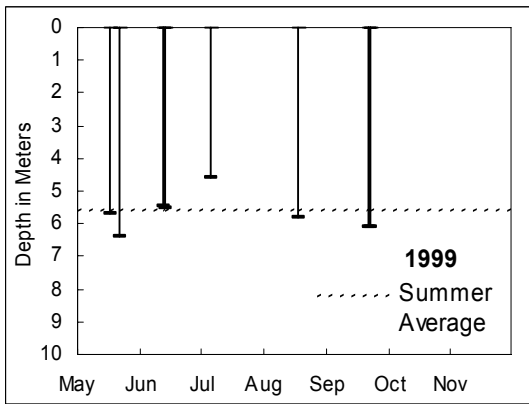
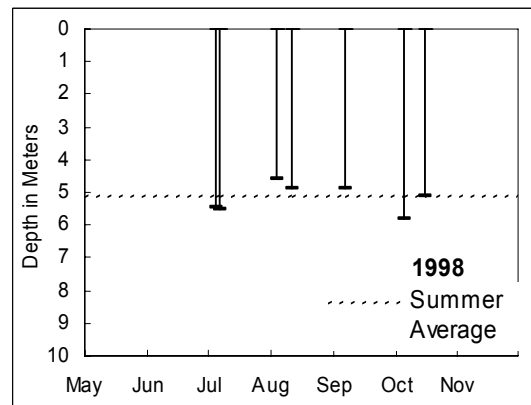
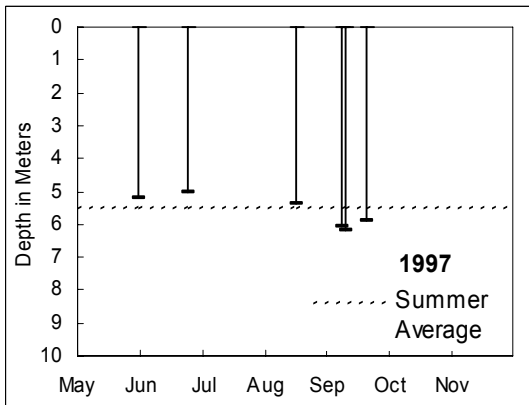
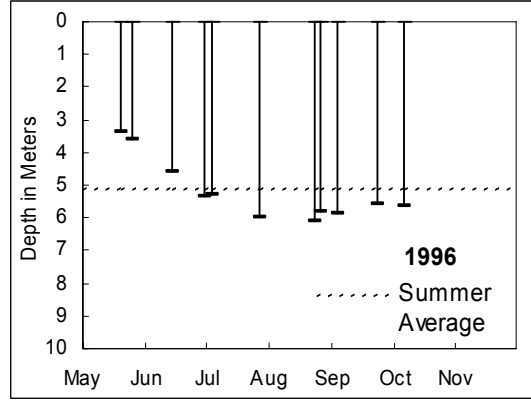
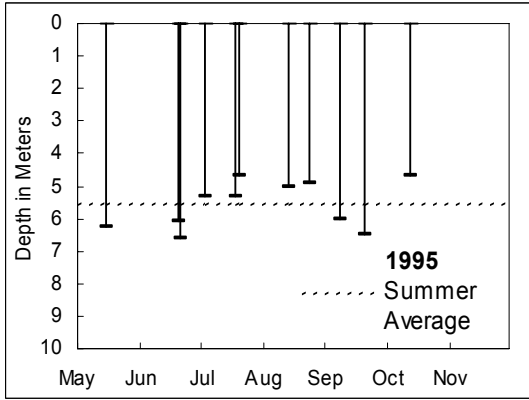


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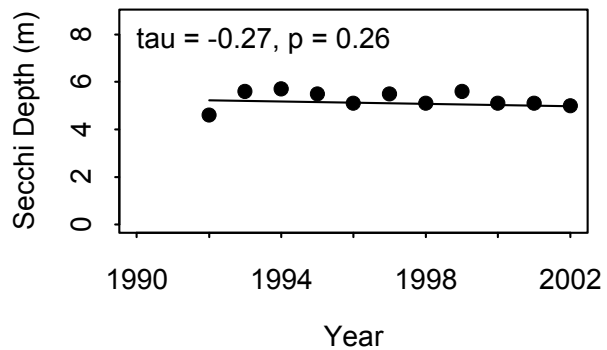


* Statistically significant trend ($p \leq 0.10$)

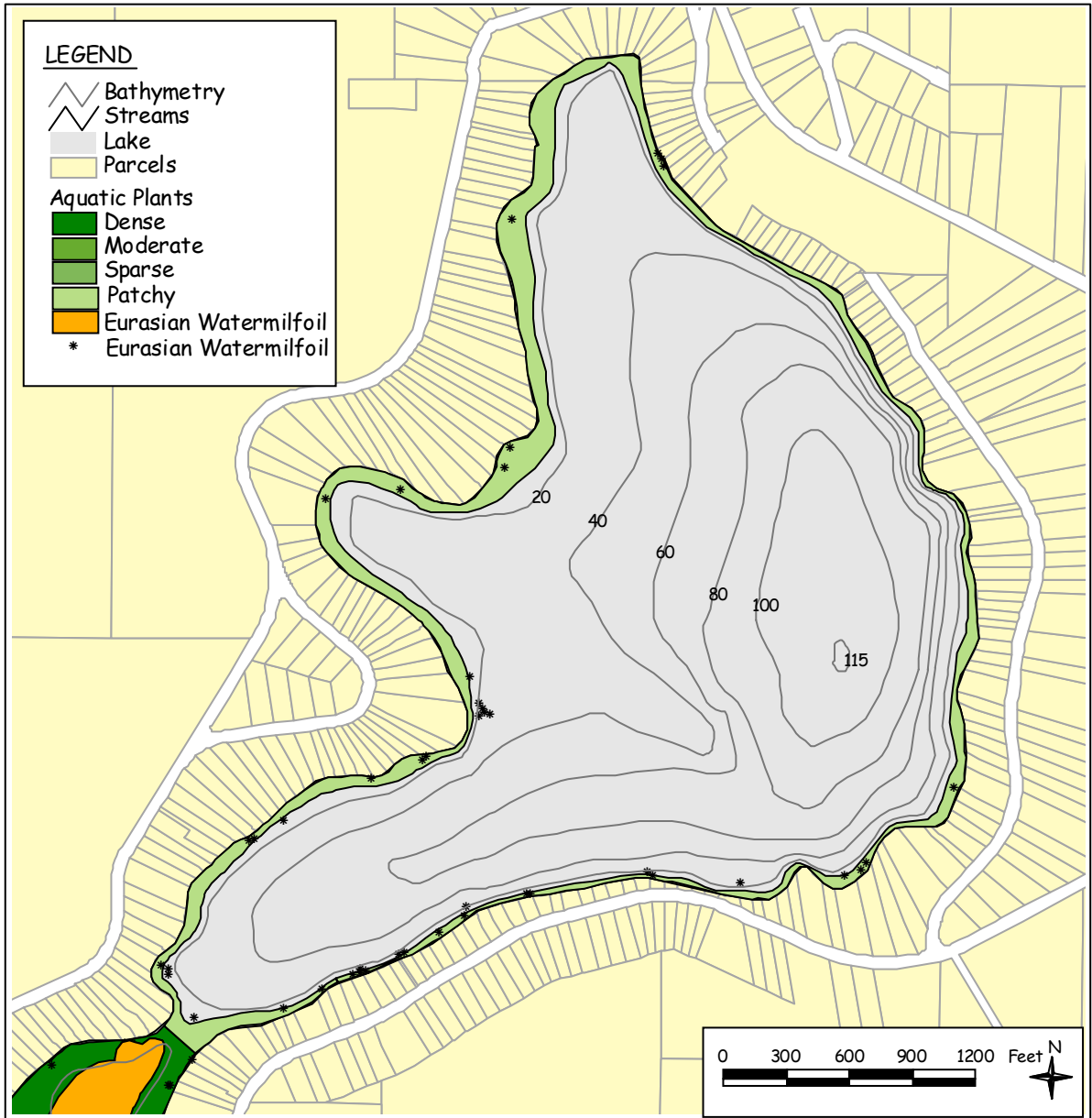
WATER CLARITY—ROESIGER S.



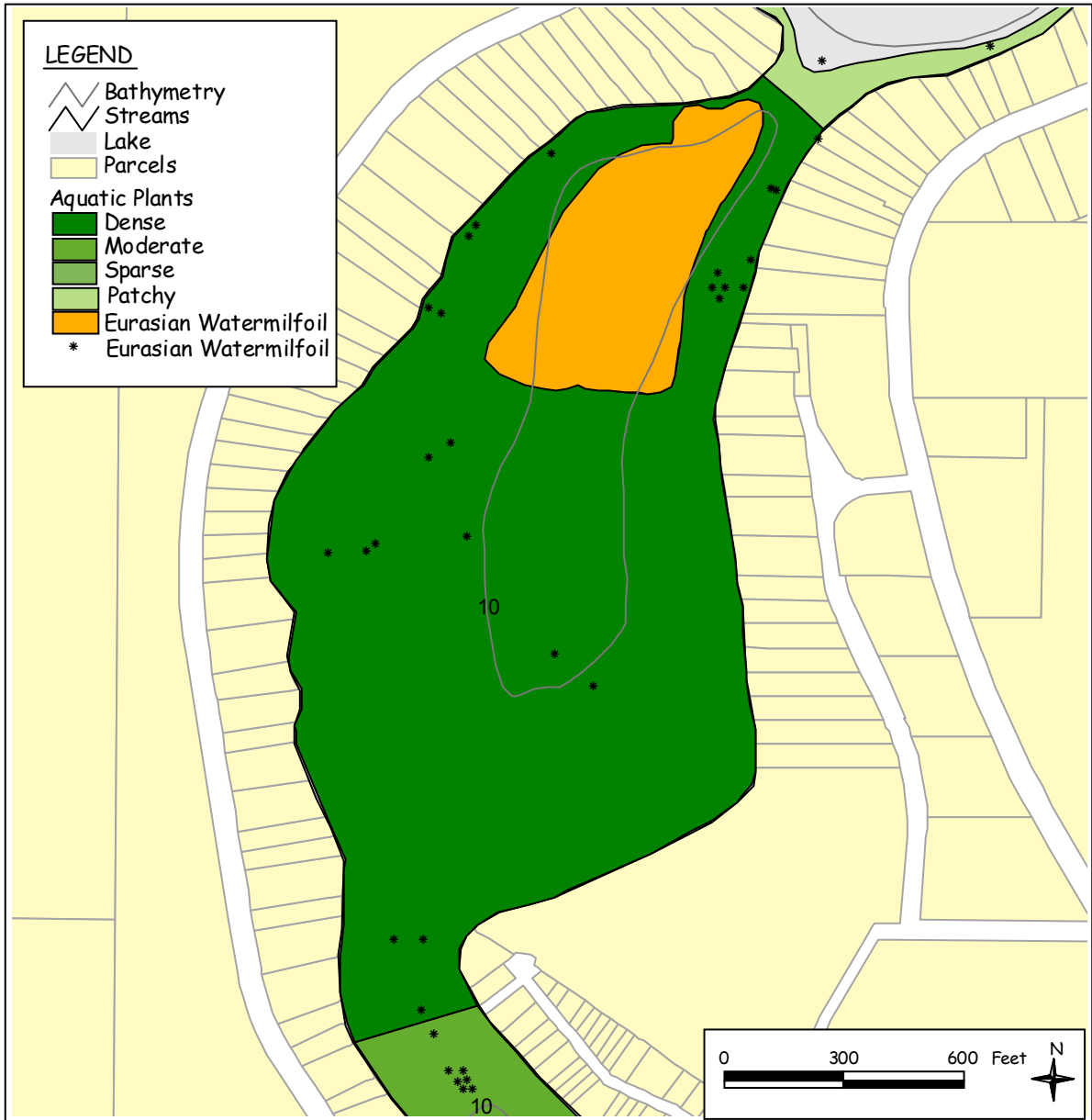
TREND ANALYSIS



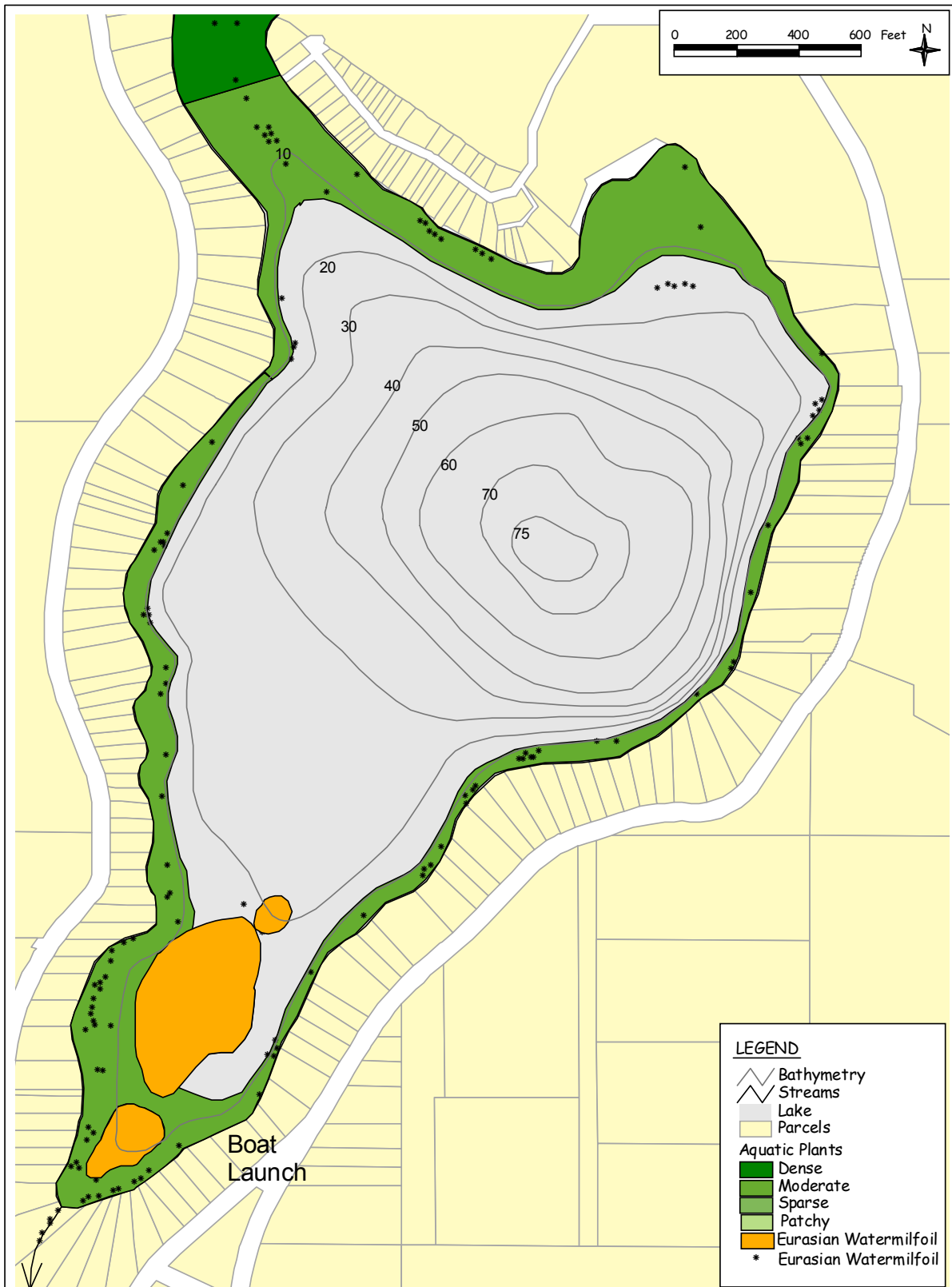
AQUATIC PLANTS—ROESIGER N.



AQUATIC PLANTS—ROESIGER M.



AQUATIC PLANTS—ROESIGER S.



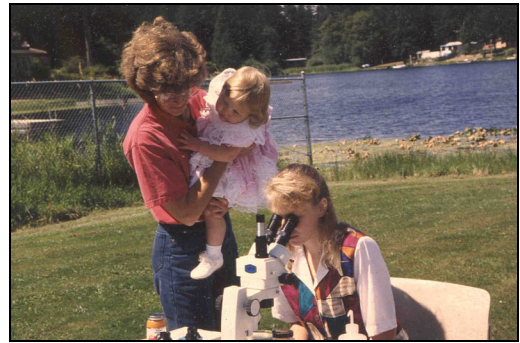
AQUATIC PLANTS

Area	Density	Dominant Plants	Other Plants
North	Sparse	<i>Sagittaria graminea</i> (Slender arrowhead) <i>Elodea canadensis</i> (Common elodea) <i>Vallisneria americana</i> (Tapegrass)	<i>Potamogeton pusillus</i> (Slender pondweed) <i>Myriophyllum spicatum</i> (Eurasian watermilfoil) <i>Nymphaea odorata</i> (Fragrant water-lily)
South	Moderate	<i>Sagittaria graminea</i> (Slender arrowhead) <i>Elodea canadensis</i> (Common elodea) <i>Vallisneria americana</i> (Tapegrass)	<i>Myriophyllum spicatum</i> (Eurasian watermilfoil) <i>Isoetes</i> sp. (Quillwort) <i>Nymphaea odorata</i> (Fragrant water-lily) <i>Nitella</i> sp. (Brittlewort) <i>Ludwigia palustris</i> (Water purslane) <i>Potamogeton epihydrus</i> (Ribbon-leaf pondweed)
Middle	Dense (Patchy)	<i>Myriophyllum spicatum</i> (Eurasian water-milfoil) <i>Nymphaea odorata</i> (Fragrant water-lily)	<i>Sagittaria graminea</i> (Slender arrowhead) <i>Elodea canadensis</i> (Common elodea) <i>Vallisneria americana</i> (Tapegrass) <i>Nuphar polysepalum</i> (Yellow water-lily) <i>Utricularia vulgaris</i> (Common bladderwort)

Note: Much of the *Myriophyllum spicatum* (Eurasian Watermilfoil) shown on maps has been eliminated by diver removal. *Lythrum salicaria* (Purple loosestrife), a non-native, invasive shoreline plant, has been found at a few locations; *Iris pseudacorus* (Yellow iris), another non-native plant, is found in scattered locations; *Typha* sp. (Cattail) and *Scirpus* sp. (Bulrush) are widely distributed, especially around the middle basin.

HOW YOU CAN HELP LAKE ROESIGER

- Educate yourself about lake ecology and the lake's health.
- Use lawn and garden fertilizers sparingly; test your soil first; choose low or no phosphorus fertilizers.
- Retain or plant native vegetation adjacent to the water to protect the shoreline and filter pollution.
- Infiltrate or filter the runoff from rooftops, patios, and driveways rather than piping it to the lake.



- Cover or mulch bare soil areas.
- Use pesticides, herbicides, and household chemicals sparingly and never near the water.
- Maintain your septic system—have it inspected every two years and pumped when needed.
- Conserve water both inside and outside.
- Clean up pet wastes and keep livestock away from the lake shore.

- Learn to identify non-native invasive aquatic plants and animals; check your boat and trailer for invaders; never empty an aquarium into the lake.
- Do not feed geese or ducks.
- Join with neighbors or the local property owners' association to work together to protect the lake.



Contact Snohomish County Surface Water Management at 425-388-3464 for information about these topics or if you have questions about Lake Roesiger.

(TTY users call 425-388-3700)

