Score Your Shore
Lake Steward Program
Watershed Health Assessment Framework for Lakes (WHAF for Lakes)

Paul J. Radomski
March 18, 2024
DNR Division of Ecological and Water Resources

CLEAN WATER LAND & LEGACY AMENDMENT

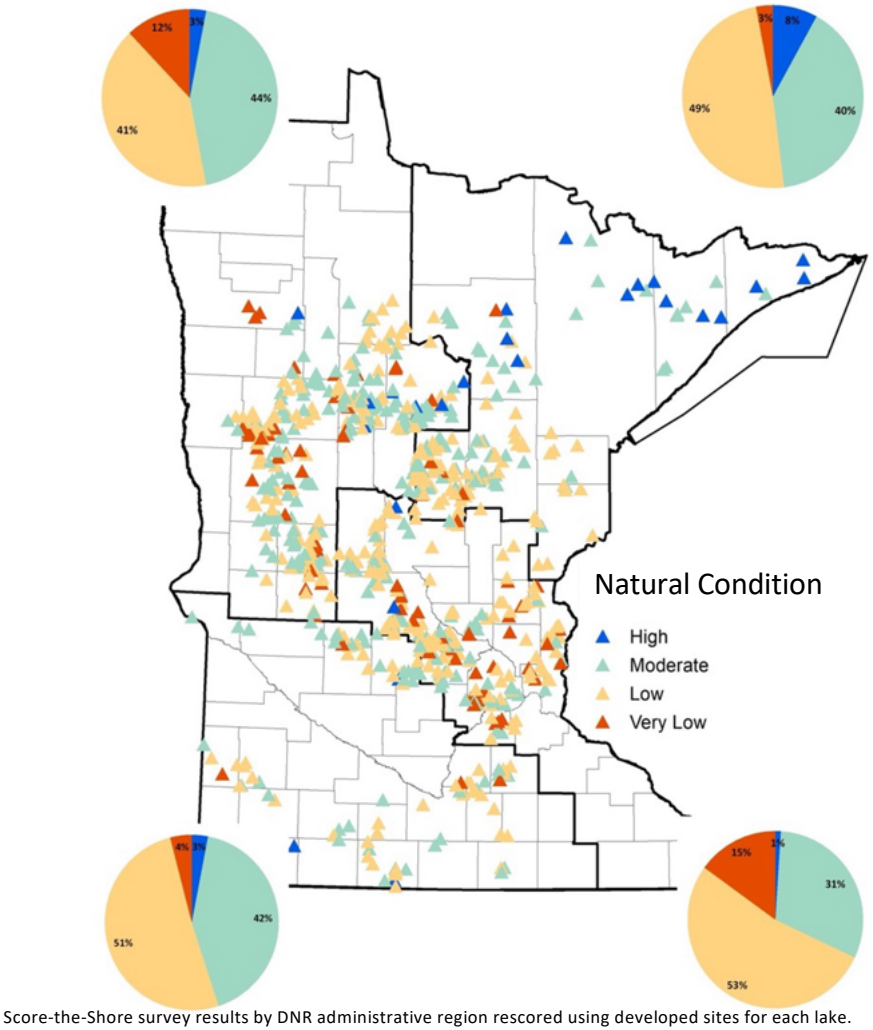
We Have a Problem

Lakeshore Buffers –

We've lost 40-50% of our natural lakeshores

1-2% loss per decade

See the **Natural Shoreline Partnership's** report: *Minnesota's Vanishing Natural Shorelines*

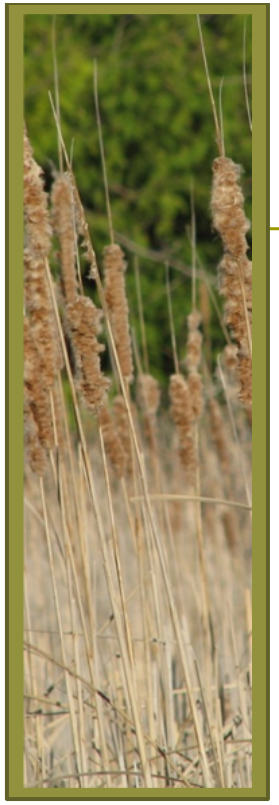


Score-the-Shore survey results by DNR administrative region rescored using developed sites for each lake.

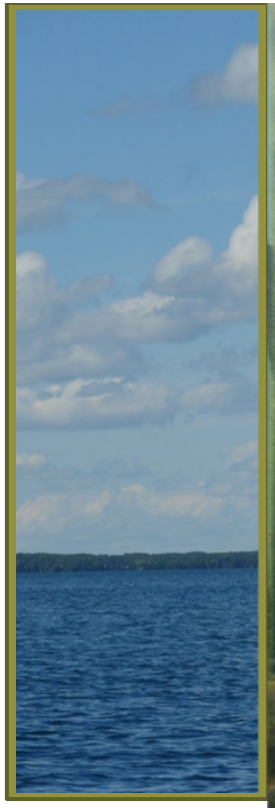

Limiting Factor:
1 lb of Phosphorus produces 500 lbs of algae
Lawn-to-Lake Pollution:
0.2 lbs Phosphorus/lot per summer
Cumulative Effect:
0.2 lbs TP/lot X 100 lots = 20 lbs
20 lbs X 500 = 10,000 lbs of algae

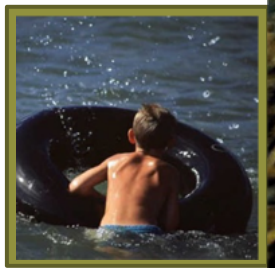
Shore

Shore




Andrea Lee Lambrecht



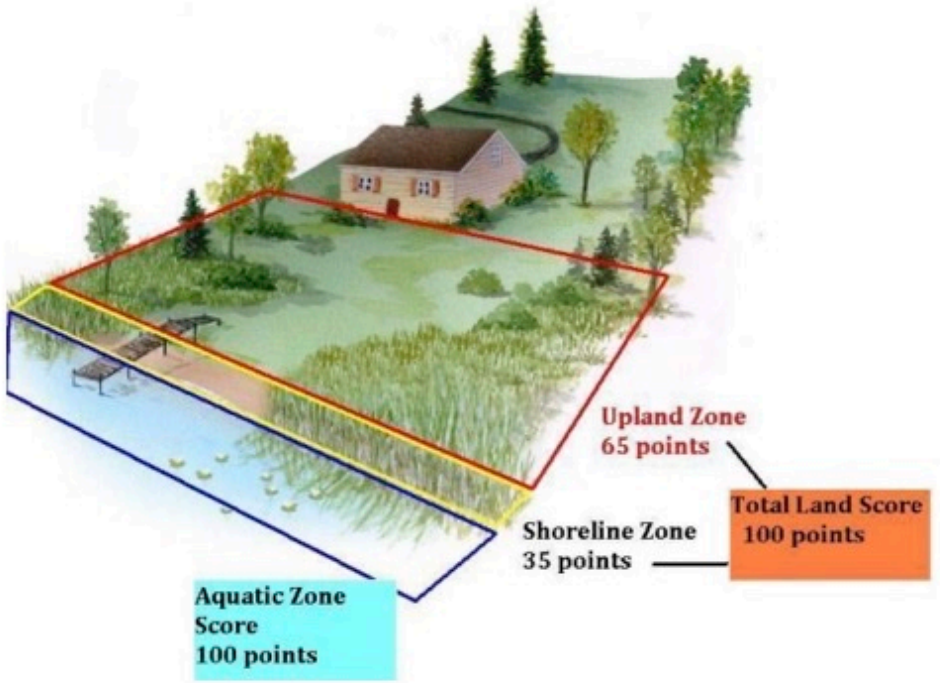



Eric Engbrettson

Resources Available

Score Your Shore

- Assess habitat conditions of developed lake lots
- Determine stewardship practices on land
- Assigns “points” for quality of entire property



Restore Your Shore

- Information on restoring your shore
- Plant selection
- Tools & Techniques

www.dnr.state.mn.us/rys/index.html

Score your Shore

A Citizen Assessment of Developed Lake Lots

Donna Perleberg, Paul Radomski, Stephanie Loso

MInnesota DNR
Ecological and Water Resources

Buffers

Lake lots can be developed with minimal impact to vegetation.

Lake view

Lot view

Vegetation reduces nutrient runoff and shoreline erosion, and provides privacy screen and wildlife habitat.

Shoreland Stewardship

Protection

Wildflower planting

Where do I start ?

No-Mow Buffer Zone

Tree Planting

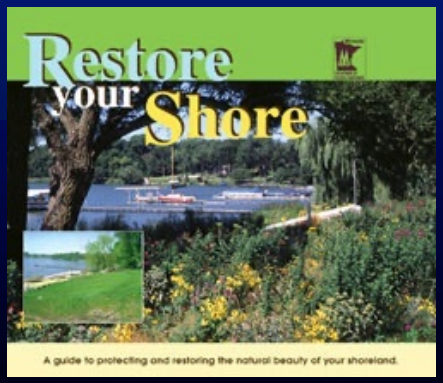
Minnesota Department of Natural Resources

Score your Shore

a simple tool to assess condition of developed shorelines

- Self-assessment
- Non-biologists
- Rapid “snapshot” survey
- Low tech
- Standard criteria

Score your Shore



Objectives

- Assess remaining habitat at developed sites
- Generate awareness of what makes a high-quality buffer
- Recognize and promote good stewardship
- Identify potential sites for restoration

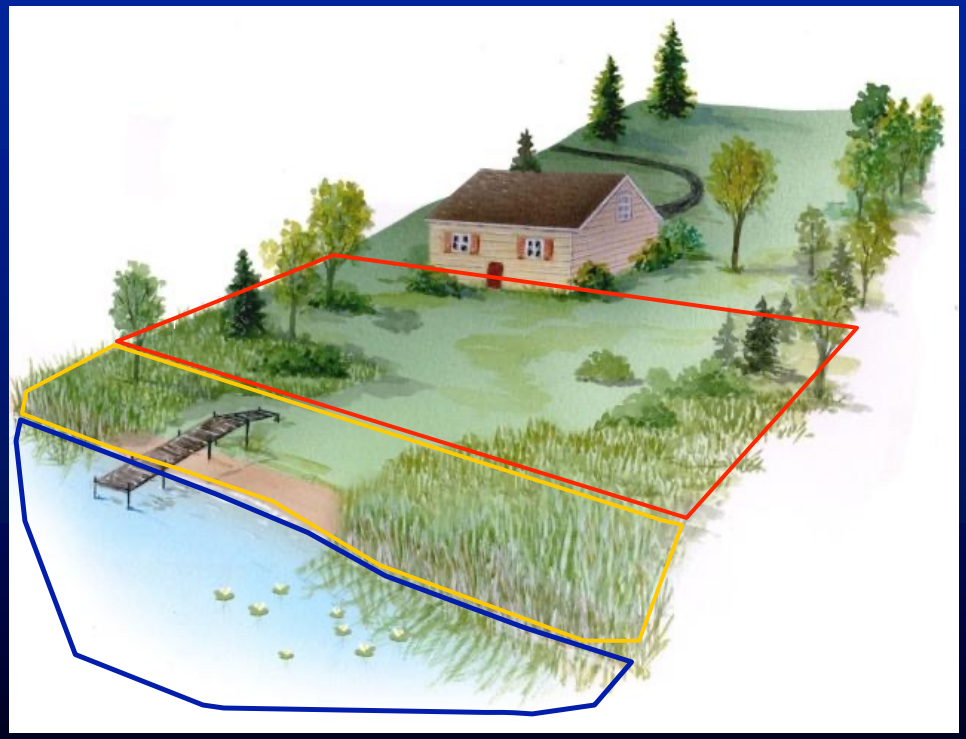
Minnesota Department of Natural Resources

Applications

- Single lot assessment by individual riparian owner

- Lakewide assessment by Volunteer Group

3 Habitat zones at site



Upland – house to bank top (about 2/3rds of lot)

Shoreline – bank top to water's edge (about 1/3rd of lot)

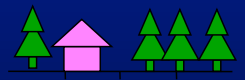
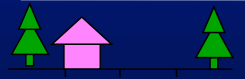
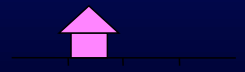
Aquatic – water's edge to deep end of weed bed (or to 15 feet depth)

Points are assigned to each zone based on how much habitat remains

Zone	Score-able features	Possible points	Total possible points
Upland	Trees	25	65
	Shrubs	20	
	Ground Cover	15	
Shoreline	Trees/Shrubs	20	35
	Ground Cover	15	
Aquatic	Emergent/Floating-leaf	40	100
	Submerged	35	
	No un-natural channels	5	
	Overhead woody habitat	10	
	Downed woody habitat	10	

Sites with more habitat score more points

Example – Upland zone: tree cover

	% of lot with trees	Points
	75-100%	25
	50-74%	18
	25-49%	13
	1-24%	9
	0%	0

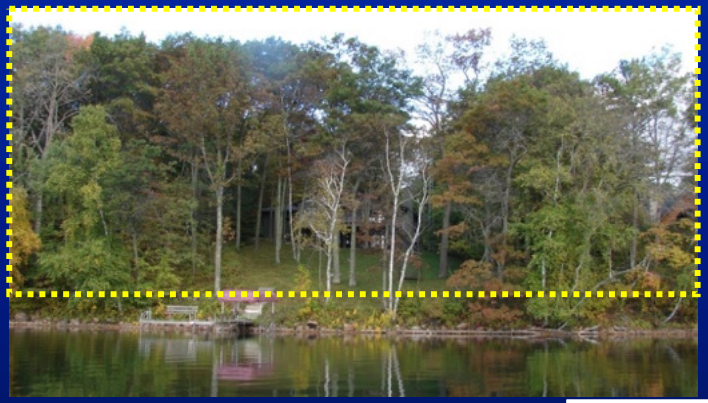
Step 1: Identify 3 habitat zones

Upland

Shoreline

Aquatic

Step 2: Score Upland Zone



% of lot with trees	points
75-100	25
50-74	18
25-49	13
1-24	9
0	0

% of lot with shrubs	points
75-100	20
50-74	15
25-49	10
1-24	5
0	0

% of lot With unmowed Ground cover	points
75-100	20
50-74	15
25-49	10
1-24	5
0	0

25
+15
+15
55 points

Step 3: Score Shoreline Zone

% of lot with trees or shrubs	points
75-100	20
50-74	15
25-49	10
1-24	5
0	0

% of lot With unmowed Ground cover	points
75-100	15
50-74	12
25-49	7
1-24	4
0	0

15
+15
30 points

Step 4: Score the Aquatic Zone (100 pts)

Focus on plant life forms, obvious human disturbance, woody habitat

1. Emergent / Floating-leaf ….40
2. Submerged……..….35
3. Continuous plant beds (no man-made openings)…....5
4. Overhead woody habitat….10
5. Downed woody habitat …..10

Individual Action Steps

Protect

Restore Shoreline;
Ask about Aquatic Zone Restoration

Restore Upland

Restore Upland + Shoreline;
Ask about Aquatic Zone Restoration

Minnesota Department of Natural Resources

Lakewide Action Steps

Identify sites for Stewardship Awards

Prioritize sites for restoration

Set Lakewide Management Goals

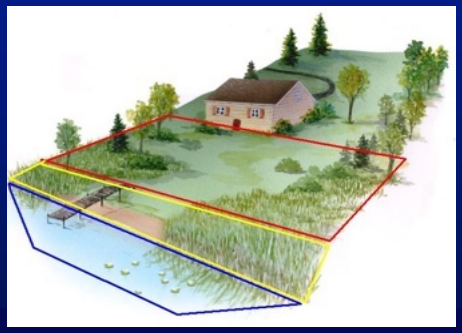
present – average lake lot score = 10

future – average lake lot score = 30

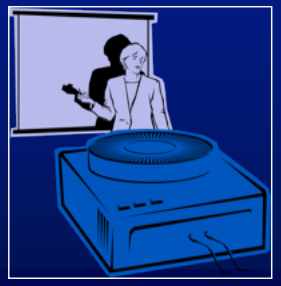
Minnesota Department of Natural Resources

Score your Shore

User Manual



Quick Guide



Slide show

Available online at: http://www.dnr.state.mn.us/scoreyourshore

Lake Steward Program

- Designed for Lake Association use to encourage shoreline restoration projects
- Educate about sustainable land management as it relates to water quality
- Awards are given for healthy, native shorelands

mailto:lily@mnlakesandrivers.org

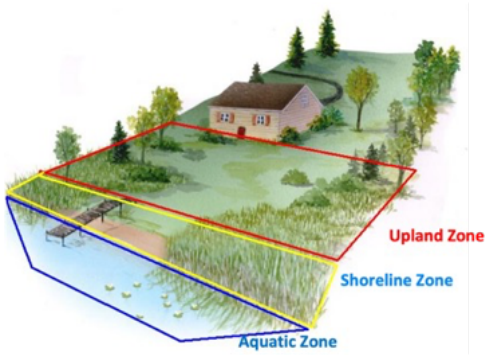
Lily Carr lily@mnlakesandrivers.org

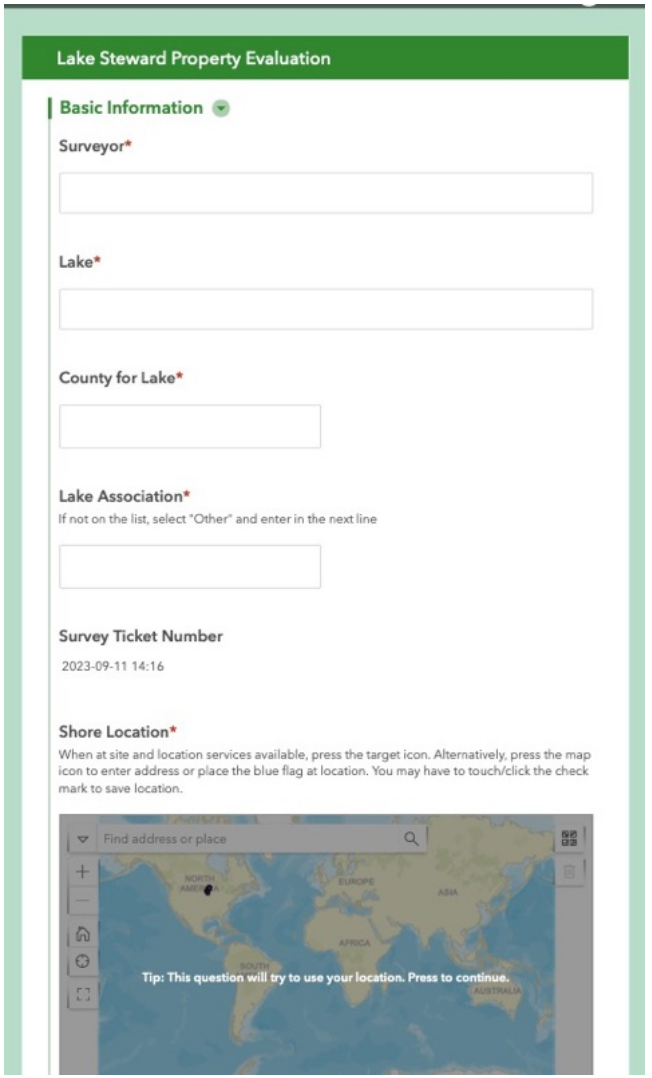
https://mnlakesandrivers.org/lake-associations/lake-association-programs/lake-steward/

Image courtesy MLR

Lake Steward Survey App

- Easy entry
- Phone/tablet
- Browser/Survey123 app
- Data stored in cloud
- Autogenerated reports





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Minnesota Lakes & Rivers

Lake Steward Survey App

- Neighbors assessing neighbors
- Restoration/Protection recommendations
- Awards given to quality lakeshores

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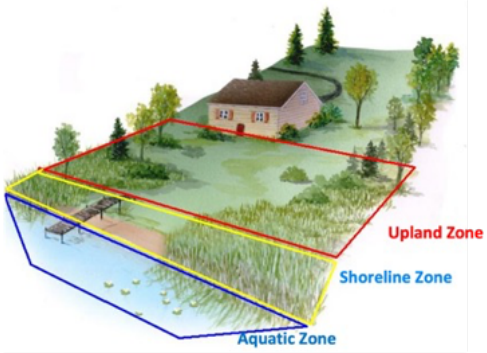
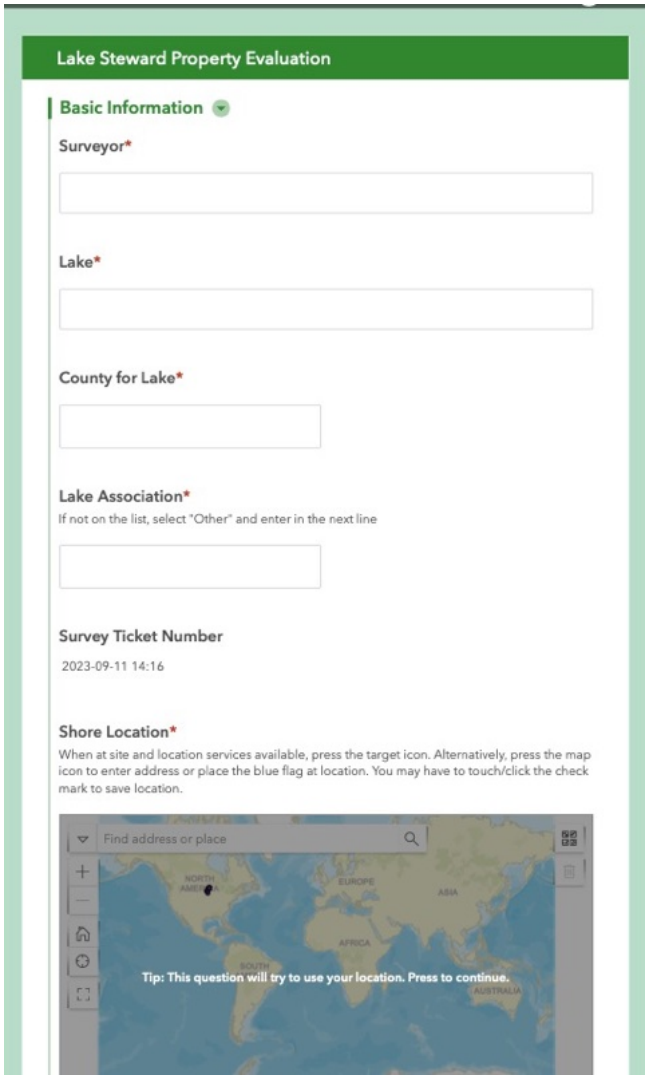
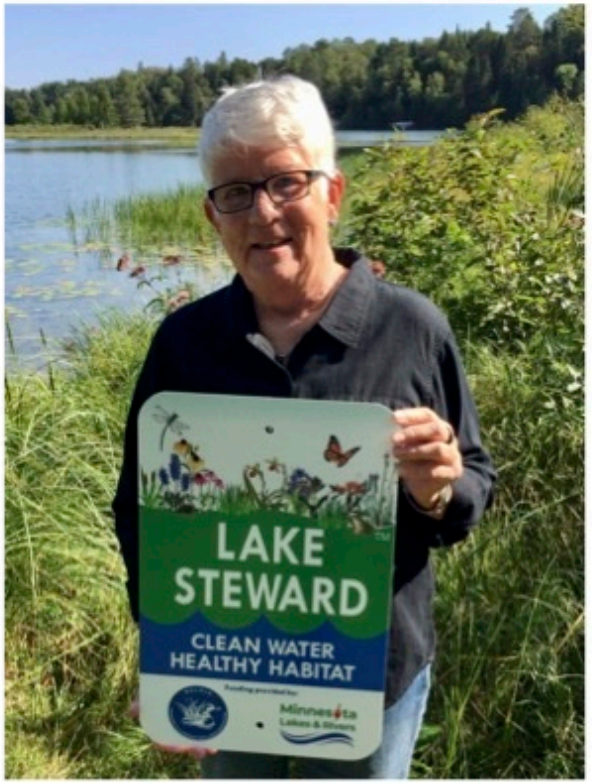




Resources Available

Minnesota Lakes & Rivers

- Initial focus on advocacy, education, project grants
- Lake Steward Program
  - Leverages existing networks
  - Taps into local values
  - Fosters behavior change via shifting social norms



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Watershed Health Assessment Framework (WHAF)

WHAF for Lakes

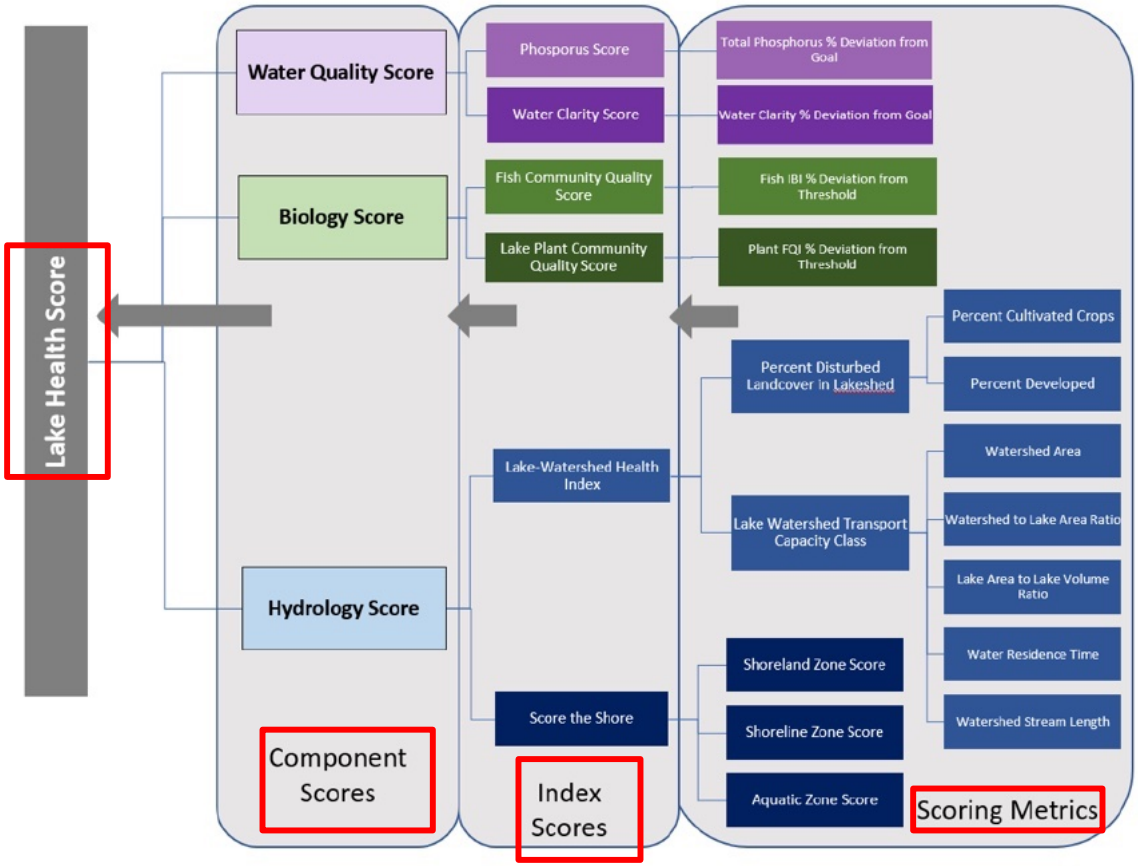
KEY CONCEPTS:

HEALTH
Define Lake Health
Score Lake Health (including Grades)

COMPLEXITY
Apply the 5 Components to Lake Health
Deliver Lake Metrics and Indices

SCALE
Connect Lake Health to Lakeshed Health
Compare Lakes

WHAF for Lakes -- Health

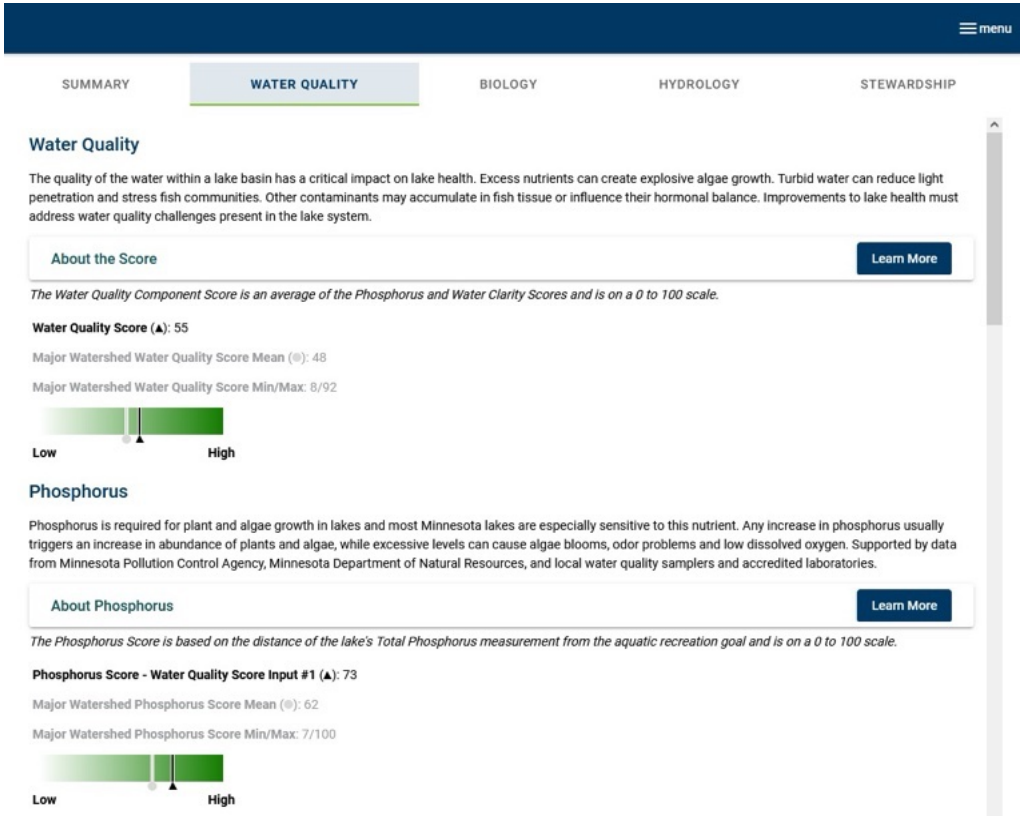


Data Partners

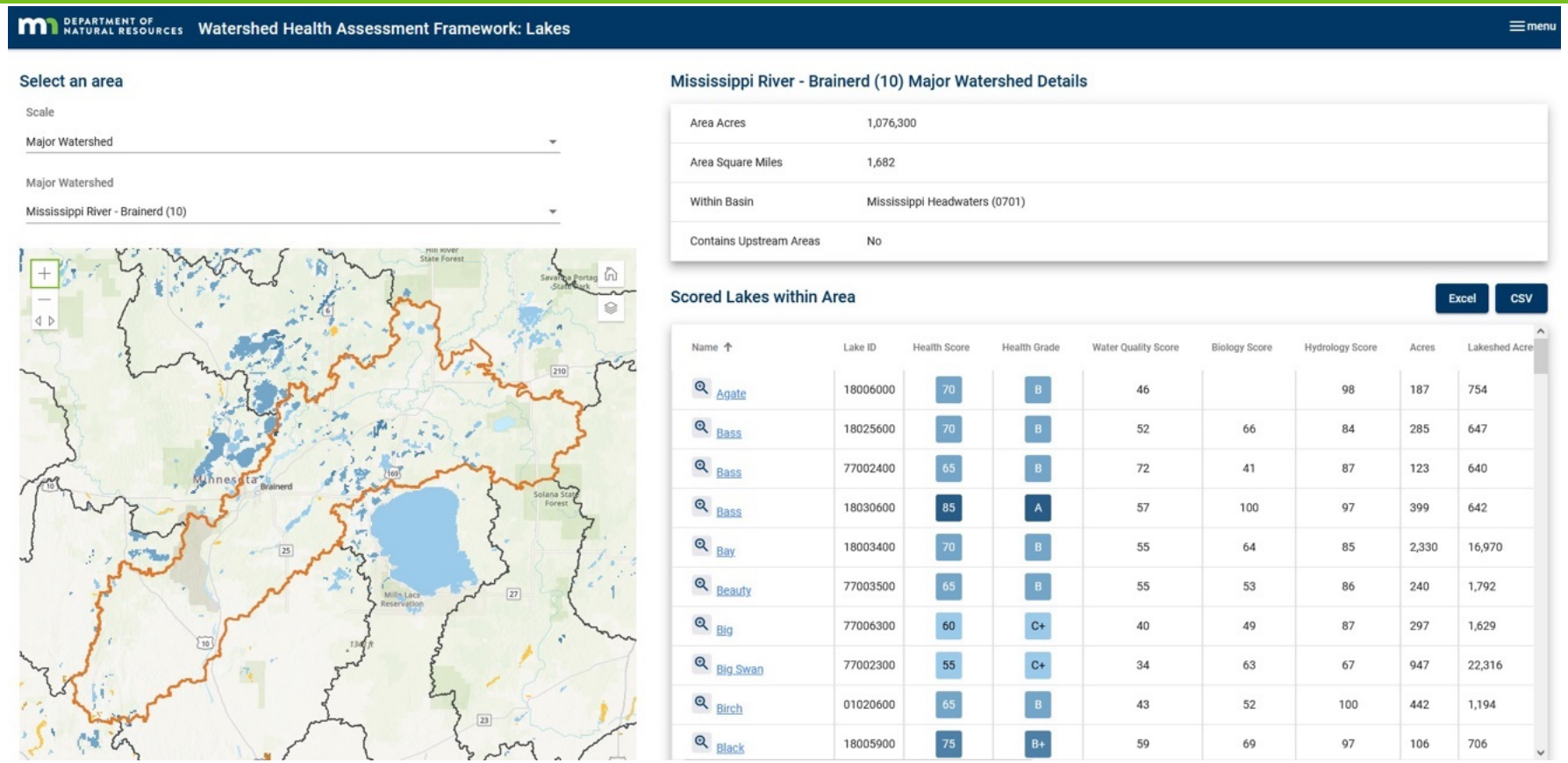
U of MN Lake Browser, Water Clarity
MPCA, and MPCA Volunteer WQ Data
DNR Lake Ecology Unit
DNR Fisheries

WHAF for Lakes

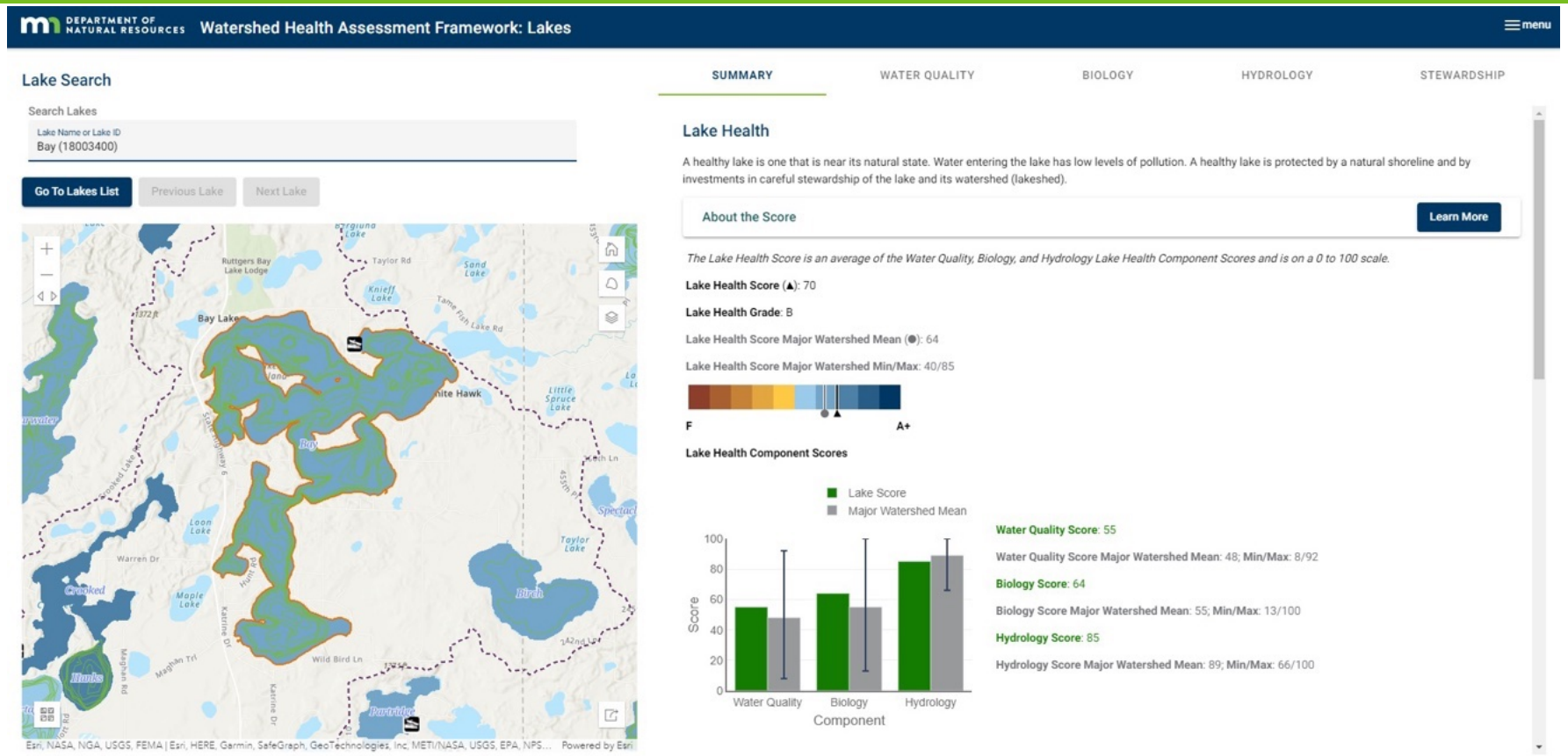
- **Component Pages**
  - Use tabs to navigate to each Component
  - ‘Water Quality’ tab shows how lake scored for different aspects of water quality
  - Learn More buttons to understand each health concern and how the data was used.
  - ‘Stewardship’ tab provide information on risks and opportunities to improve and protect lake health.



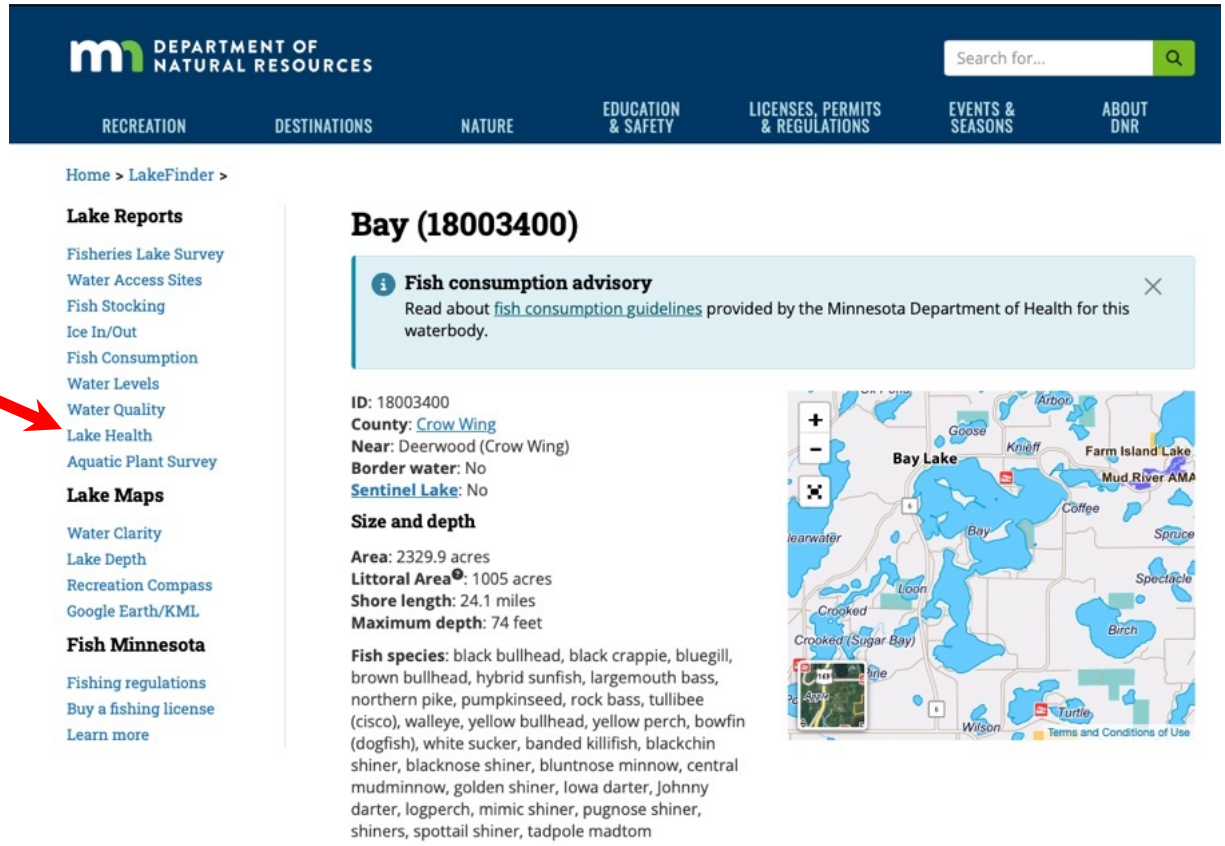
Complexity


DEPARTMENT OF NATURAL RESOURCES
Watershed Health Assessment Framework: Lakes
menu
Select an area
Scale
Major Watershed
Major Watershed
Mississippi River - Brainerd (10)
Minnesota
Brainerd
Mille Lacs Reservation
Solana State Forest
Mississippi River - Brainerd (10) Major Watershed Details
Area Acres 1,076,300
Area Square Miles 1,682
Within Basin Mississippi Headwaters (0701)
Contains Upstream Areas No
Scored Lakes within Area
Excel
CSV
Name Lake ID Health Score Health Grade Water Quality Score Biology Score Hydrology Score Acres Lakeshed Acres
Agate 18006000 70 B 46 98 187 754
Bass 18025600 70 B 52 66 84 285 647
Bass 77002400 65 B 72 41 87 123 640
Bass 18030600 85 A 57 100 97 399 642
Bay 18003400 70 B 55 64 85 2,330 16,970
Beauty 77003500 65 B 55 53 86 240 1,792
Big 77006300 60 C+ 40 49 87 297 1,629
Big Swan 77002300 55 C+ 34 63 67 947 22,316
Birch 01020600 65 B 43 52 100 442 1,194
Black 18005900 75 B+ 59 69 97 106 706

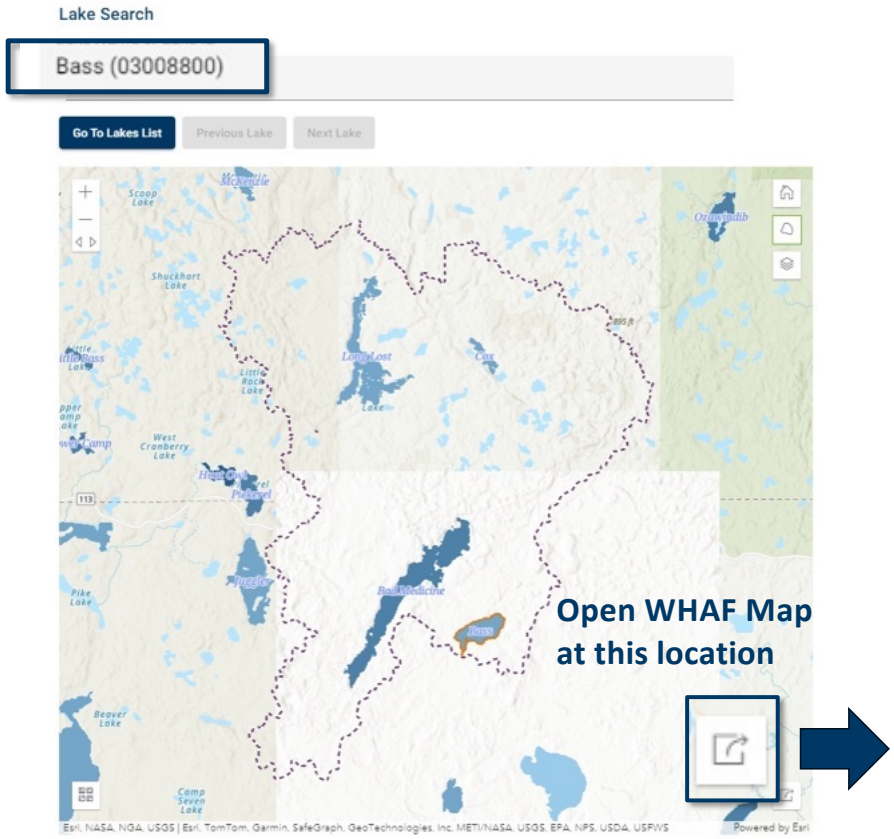
Scale

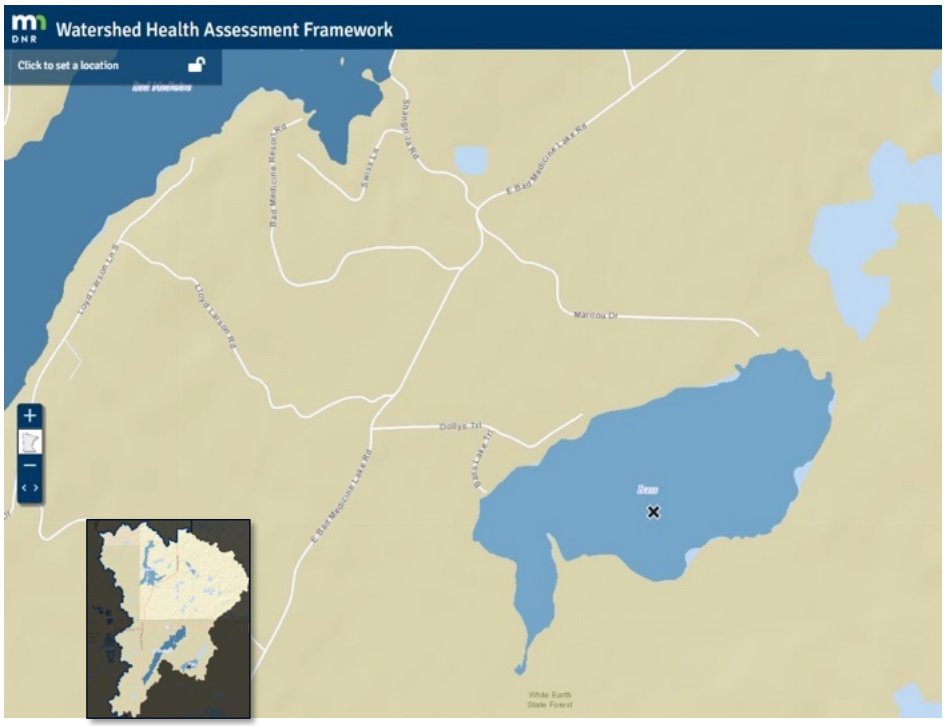

DEPARTMENT OF NATURAL RESOURCES
Watershed Health Assessment Framework: Lakes
menu
Lake Search
Search Lakes
Lake Name or Lake ID
Bay (18003400)
Go To Lakes List
Previous Lake
Next Lake
SUMMARY
WATER QUALITY
BIOLOGY
HYDROLOGY
STEWARDSHIP
Lake Health
A healthy lake is one that is near its natural state. Water entering the lake has low levels of pollution. A healthy lake is protected by a natural shoreline and by investments in careful stewardship of the lake and its watershed (lakeshed).
About the Score
Learn More
The Lake Health Score is an average of the Water Quality, Biology, and Hydrology Lake Health Component Scores and is on a 0 to 100 scale.
Lake Health Score (▲): 70
Lake Health Grade: B
Lake Health Score Major Watershed Mean (●): 64
Lake Health Score Major Watershed Min/Max: 40/85
F
A+
Lake Health Component Scores
Lake Score
Major Watershed Mean
Score
Component
Water Quality
Biology
Hydrology
Water Quality Score: 55
Water Quality Score Major Watershed Mean: 48; Min/Max: 8/92
Biology Score: 64
Biology Score Major Watershed Mean: 55; Min/Max: 13/100
Hydrology Score: 85
Hydrology Score Major Watershed Mean: 89; Min/Max: 66/100
Bay Lake
Ruttgers Bay Lake Lodge
Taylor Rd
Sand Lake
Knieff Lake
Tame Fish Lake Rd
Little Spruce Lake
Loon Lake
Warren Dr
Maple Lake
Crooked
Birch
Taylor Lake
Wild Bird Ln
Esri, NASA, NGA, USGS, FEMA | Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS...
Powered by Esri

LakeFinder Connection



WHAF for Lakes and WHAF Map Connection





Where to get information?

- Lake Protection and Prioritization Technical Document
- MN Geospatial Commons https://gisdata.mn.gov & in DNR Quick Layers
  - Lakes of Phosphorus Sensitivity Significance
  - Lakes of Biological Significance
  - Lake Benefit Cost Assessment
  - Lake Hydrology Deliverables for Watershed Planning
  - Watershed Health Assessment for Lake Scores
- Spreadsheet
- WHAF for Lakes https://arcgis.dnr.state.mn.us/ewr/whaflakes/