

Meeting Date

Tuesday, August 14, 2018

Land Services

Gary Griffin

ORIGINATING DEPARTMENT

PRESENTER

AGENDA ITEM: Establishment of Sebie Lake Improvement District

PREVIOUS ACTION:

- 7/26/2018: A public hearing was held in consideration of forming a Sebie Lake LID.

COMMENTS:

- Pre-petition meeting held by County staff on 1/4/2016
- Petition to form a Sebie Lake LID and payment received by Crow Wing County on 6/15/2018.
- Petition reviewed for accuracy and completeness by County staff and verified signatures as accurate on 6/19/2018.
- As per Crow Wing County LID policies (item #7), a 60% "super majority" of property owner support is intended for the establishment of an LID.
- Verified signatures of petition property owners totals 25. There are 38 property owners within the proposed LID. The ratio of signatures to owners is 65%, which meets the minimum required County policy super majority and state statute minimum.
- The proposed property assessment is \$250.00 for each property owner within the LID boundaries.
- Both the Minnesota DNR and Minnesota Pollution Control Agency (MPCA) were notified that the County has received a petition to form a LID within 5 days of receiving said petition on 6/19/2018.
- Written comment (Advisory Report) received from MN DNR on 7/18/2018 concerning the proposed LID.
- As per State Statute, Fort Ripley Township was notified of both the intent to form a LID and encouraged to comment. They were also notified of the public hearing date/time on 6/29/2018 (103B.521 Subd. 1(d)).
- As per State Statutes, the County must hold a public hearing within 30 days of receiving a petition (103B.521) on 7/26/2018.
- As per State Statutes, within 30 days after holding a public hearing, the County Board shall establish or deny the petitioned LID (103B.521).
- Several changes to the Sebie Lake LID Management Plan were made following the public hearing including incorporating the recommendations identified in the MN DNR's Advisory Report dated 7/18/2018.

- If approved, assessment taxes will be collected in time to start funding the LID in July, 2019.

RECOMMENDED BOARD ACTION:

To approve Resolution (attached): ORDER ESTABLISHING SEBIE LAKE IMPROVEMENT DISTRICT

Approximate length of presentation:

BOARD OF COUNTY COMMISSIONERS
Crow Wing County, Minnesota

DATE: August 14, 2018

Resolution

OFFERED BY COMMISSIONERS: and

ORDER ESTABLISHING SEBIE LAKE IMPROVEMENT DISTRICT

WHEREAS, Based upon testimony received at a public hearing held at the Crow Wing County Courthouse in Crow Wing County, Minnesota, on July 26, 2018, the comments of the Minnesota Department of Natural Resources, the recommendations of staff, and upon all files, records, and proceedings herein, the Crow Wing County Board of Commissioners makes the following:

Findings

1. Crow Wing County recognizes that its lakes and rivers are important natural resources. Various state and local government programs have encouraged lake lot owners and lake associations to manage water quality and exotic vegetation in the county lakes.
2. Curley Leaf Pondweed (CLP) is a non-native form of vegetation that has been spreading throughout Sebie Lake since its discovery there. Because of its invasive nature, this type of vegetation can choke out native vegetation and some forms of aquatic life and degrade recreation values.
3. On January 4, 2016, representatives of the Sebie Lake Association asked the county about the possibility of establishing a lake improvement district as a means of supporting past efforts by the association to manage Curly Leaf Pondweed.
4. To show support for a lake improvement district, letters of support were signed by 65% of the owners of property adjoining the lake (38 property owners total) and were submitted to the county asking that a lake improvement district be established for Sebie Lake.
5. The requested budget for the district for lake management, aquatic vegetation control and other water quality initiatives on Sebie Lake is \$9,500 per year, based on an assessment of \$250 per eligible property owner (38 property owners total) per year.
6. On June 26, 2018, the Crow Wing County Board of Commissioners recognized the receipt of a petition for a Sebie Lake Improvement District and gave notice of its intent to hold a public hearing on July 26, 2018.
7. Notice of the public hearing was published and posted as required by law.
8. On July 26, 2018, the Crow Wing County Board of Commissioners conducted a public hearing at the Crow Wing County Historic Courthouse concerning the creation of a Sebie Lake Improvement District. Oral and written comments were received by the Board.
9. A DNR Advisory Report was submitted by Julie Ekman of the DNR on July 18, 2018, which acknowledged the presence of Curly Leaf Pondweed in the lake and also approved the proposed boundaries of the LID to include those parcels riparian to Sebie Lake. The DNR recommended several actions to improve water quality not specifically addressed in the initial Sebie Lake LID management plan including (1) working collaboratively with other agencies to develop a plan to reduce and monitor phosphorus loading, (2) adopting projects identified by the MPCA's

forthcoming TMDL study to be published in 2019, and (3) working with the MN DNR's Aquatic Invasive Species specialists to develop a lake vegetation management plan. The Sebie Lake LID management plan has since been revised to incorporate these recommendations and is submitted into the record as part of the LID formation approval packet.

10. The DNR Lake Advisory Report dated 7/18/2018 was incorporated into the record.
11. The record reflected a range of views both supporting and not supporting the creation of the lake improvement district.
12. Funds from the DNR and voluntary contributions of interested individuals have not been enough to adequately control the aquatic plant nuisance.
13. The district is intended to contribute to the health and welfare of the greater public by improving water quality.
14. The district has proposed a number of specific projects with stated goals and objectives. These projects have measurable outcomes that can be monitored and assessed. Each project is manageable and attainable and can be adequately funded within the limits of the proposed five-year budget.
15. The program will be financed by special assessments imposed on riparian landowners.
16. The lake management program will be done under the direction of the Minnesota Department of Natural Resources and will not cause or contribute to long-range environmental pollution.
17. The primary program to be undertaken by the district will be long-term aquatic plant management but the district will also focus on improving water quality in Sebie Lake including those recommendations listed in the Minnesota DNR's Advisory Report dated 7/18/2018 and a forthcoming MPCA – Total Maximum Daily Load (TMDL) Plan to be published in 2019.
18. Crow Wing County Land Services will be the primary office responsible for supervising programs of the lake improvement district.
19. Delegation of the powers stated below to the district will assure that representatives of the people most directly affected by the actions of the district will determine its management.
20. The Directors shall meet the requirements of Minnesota Statute 103B.551.
21. Because of the county's residual financial responsibility under Minnesota Rule 6115.0980, the district will be required to maintain insurance and follow standard government accounting principles.

Conclusion

The establishment of a Lake Improvement District for Sebie Lake in Crow Wing County is warranted.

Wherefore, the Crow Wing County Board of Commissioners makes the following Order:

1. Sebie Lake Improvement District is hereby established.

2. The district shall include all riparian properties to Sebie Lake pursuant to county policies.
3. The lake improvement district is authorized to undertake long-term non-native aquatic plant management and water quality monitoring and improvement efforts as outlined in the LID's foundational documents and as determined necessary and appropriate by its Board of Directors and in cooperation with the Minnesota Department of Natural Resources and Crow Wing County.
4. Projects of the lake improvement district will be financed by special assessments imposed on riparian landowners pursuant to county policies.
5. The initial assessment shall be set at \$250 per eligible property owner. The Board of Directors of the Sebie Lake Improvement District may, with the consent of the membership voting at the district's annual meeting, lower or raise the annual assessment as long as the maximum assessment does not exceed the initial assessment of \$250 per eligible property owner, as per Crow Wing County's LID Policies adopted in 2017.
6. The lake improvement district will be managed initially by a five (5) person Board of Directors, subject to the bylaws of the district and Minnesota Statutes and Rules. Directors shall be property owners in the lake improvement district. The initial Directors shall be appointed to terms of one, two and three years. President and Vice President shall serve for two (2) years. All other officers shall serve for three (3) years. There shall be one (1) new Board Member elected for a three-year term at each regular annual meeting subject to the bylaws of the district.
7. Directors shall be elected at the annual meeting to be held in July or August of each year on a date set by the Board of Directors. Changes to the date of the annual meeting may be changed at the previous year's annual meeting. Nominees shall be elected by majority vote of the members present at the annual meeting of the Sebie Lake Improvement District. Property owners not present at the annual meeting may participate in the election of the District Board by absentee ballot.
8. Vacancies in the Board of Directors may be filled by a majority vote of the remaining Directors, subject to approval by a majority of votes of the property owners present at the next annual district meeting, subject to the bylaws of the district. A Director elected to fill a vacancy shall serve the unexpired term.
9. Directors may be removed by a two-thirds vote of the remaining Board Members, or by a majority of the property owners present at an annual meeting, subject to the bylaws of the district.
10. Individuals whose names appear as owners of Sebie Lake riparian property on the records of the Crow Wing County Recorder are eligible to cast votes for Board Members and on other lake improvement district matters. In addition, Common Interest Communities (CICs) and Planned Unit Developments (PUDs) have only one (1) vote, pursuant to county policies.
11. Voting for Directors will be by secret ballot. Ballots shall be mailed to each property owner within the district at least three (3) weeks prior to the annual meeting. Ballots may be sent or delivered to the Clerk of the Board prior to or on the date of the annual meeting, pursuant to county policies.
12. Directors may receive compensation for their services as determined by district members at the annual meeting and may be reimbursed for actual expenses necessarily incurred in the performance of their duties in the manner provided for county employees.

13. The following powers are hereby delegated to the Sebie Lake Improvement District:

- a. to undertake research to determine the condition and development of Sebie Lake and the water entering it and to transmit the results of the studies to the Minnesota Pollution Control Agency and other interested authorities;
- b. to conduct a program of water improvement and conservation, focused on improving the quality of water in Sebie Lake and educating riparian landowners in good stewardship. Non-native aquatic nuisance control is allowed upon consent by the Minnesota Department of Natural Resources;
- c. to make cooperative agreements with the United States or state government or other counties or cities to effectuate authorized water and related land resource programs;
- d. to take actions necessary for the administration of the lake improvement district;
- e. to levy special assessments to finance implementation of the powers identified in this Order pursuant to Minnesota Statute 103B.555, Subd. 4.

14. The Sebie Lake Improvement District shall maintain general liability insurance in the amount of tort limits established by Minnesota Statute 466 and shall name Crow Wing County as an additional insured on such insurance policy. A copy of the insurance policy shall be filed annually with the Crow Wing County Auditor-Treasurer.

15. The County Auditor-Treasurer, or their designee, shall annually review the financial records for completeness, accuracy, and to ensure that expenses paid out are consistent with the terms of this Order, Minnesota Statutes, and Minnesota Rules governing lake improvement districts.

16. The lake improvement district shall, within four months after its annual meeting or November 1st (whichever is earlier), file an annual report with Crow Wing County, the Minnesota Department of Natural Resources, and the Minnesota Pollution Control Agency.

17. The duration of the district shall initially be set for five (5) years, pursuant to county policies.

18. The County Board will consider termination of the lake improvement district upon receipt of a petition signed by the majority of property owners in the district.

19. The lake improvement district shall operate in accordance with Minnesota Statutes 103B.501 to 103B.581, Minnesota Rules 6115.0900 to 6115.0980, Crow Wing County Policies, and within the limitations of this Order.

20. This Order will become effective thirty (30) days after its publication in Crow Wing County's official publication of record.

21. If any part of this Order is rendered void, invalid, or unenforceable, such rendering shall not affect the validity and enforceability of the remainder of this Order.

This Order was approved by the Crow Wing County Board of Commissioners at its meeting on August 14, 2018.

STATE OF MINNESOTA)
COUNTY OF CROW WING) ss

I, Timothy J. Houle, County Administrator, Crow Wing County, Minnesota, hereby certify that I have compared the foregoing copy of the resolution of the county board of said county with the original record thereof on file in the Administration Office, Crow Wing County, Minnesota, as stated in the minutes of the proceedings of said board at a meeting duly held on August 14, 2018, and that the same is a true and correct copy of said original record and of the whole thereof, and that said resolution was duly passed by said board at said meeting.

Witness my hand and seal this 14th day of August 2018.

TIMOTHY J. HOULE
COUNTY ADMINISTRATOR



Land Services Department

CROW WING COUNTY
 BRainerd, MINNESOTA 56401

Lake Improvement District (LID)

PRE-PETITION MEETING CHECKLIST

PROPOSED LID CONTACT INFORMATION (PRIMARY):

NAME:

MAILING ADDRESS:

PHONE:

EMAIL:

Other Association Members Present:

Name:	Address:	Phone:	Email:
Mike Stachen	1800 Park Ridge Dr. Chaska	612-232-3600	stachen12@centurylink.com
Bob Grissom	13585 ELKWOOD DR 55318	678-480-0350	GRISBOB5UF@Juno.com
	APPLE VALLEY MN		
	55124		

In the packet:

- ☒ LID Contacts
- ☒ Petition checklist
- ☒ Annual checklist
- ☒ County policies
- ☒ LID evaluation criteria
- ☒ Timeline
- ☒ Copy of the MN statutes / rules for LIDs
- ☒ Example Petition
- ☒ Auditor's request for information form
- ☒ Example DNR advisory report
- ☒ LID factsheets

I hereby acknowledge that I have received and understand all information presented to me in the pre-petition packet.

Michael Stachen

LID representative:

1-4-16

Date

Mth

Crow Wing County Staff:

1-4-16

Date

Shaded boxes indicate CWC use only:

Date of meeting:	<u>1-4-16</u>
Staff present:	<u>Mitch Brinks Chris Pence, Jeannie Kahlberk</u>

Notes:

Goal: Curly-leaf treatment



Land Services Department

CROW WING COUNTY
 BRAINERD, MINNESOTA 56401

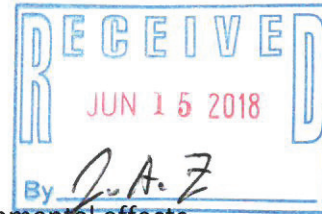
Lake Improvement District (LID)

PETITION CHECKLIST

PROPOSER INFORMATION

NAME: *Thomas J Gustafson*MAILING ADDRESS: *12479 Elm Parkway, Rogers, MN 55374*PHONE: *612-802-5321*EMAIL: *tgustafson@graco.com*

- ☒ Name of proposed LID
- ☒ Document including:
- ☒ Explanation of the lake's problems
 - ☒ Need for the district and why another unit of government with similar powers, or a voluntary lake association, cannot or will not satisfactorily accomplish the district's proposed purposes
 - ☒ Necessity of the district to promote public health or welfare
 - ☒ Objectives of proposed LID
 - ☒ Benefits to property within the proposed district
 - ☒ Intended studies
 - ☒ Management programs
 - ☒ Remedial actions
 - ☒ Construction projects (inc. technical feasibility)
 - ☒ Analysis of and monitoring plan for potential long-term environmental effects
 - ☒ Explanation of coordination among other special purpose districts
 - ☒ Identification and consideration of conflicting interests
 - ☒ Information about adequacy of public accesses, public lands, and beaches
 - ☒ Statement explaining the financing of the programs/projects & info on outside funding
 - ☒ Request for establishing the district as proposed
- ☒ Map showing boundaries of proposed LID as well as the number and location of permanent homes and seasonal dwellings and other relevant geographic information
- ☒ Number of Directors proposed for the district
- ☒ Copies of local Ordinances which regulate use of the lake or any public accesses
- ☒ Information indicating the degree of local interest and commitment to future management
- ☒ Identification of any lands and waters which may be adversely affected by the implementation of district purposes, and a preliminary assessment of those adverse effects
- ☒ Estimate of the total equalized valuation of the property within the proposed district
- ☒ Insurance information showing liability coverage to the current tort limits - *once approved*
- ☒ A procedure in place with the Auditor's office as to how the financial transactions of the district will occur
- ☒ Signatures along with name, address, phone number, and email of signers (local gov't parcels are eligible)



Please remember: Before LID activities can be paid for, they need to be on the tax rolls (often a 1 year delay)

Also, the proposer must notify the DNR et. al. within 5 days of the petition being officially certified below

Shaded boxes indicate CWC use only:

Date petition received:	<i>6/15/2018</i>	Submitted by:	<i>Tom Gustafson</i> ^{+ Mike}
Petition received by:	<i>Jacob Frie</i>	Petition reviewed by:	<i>Jacob Frie & Debby</i>
Date of pre-petition meeting:	<i>1/4/2016</i>	Notes / Other Info:	<i>Eric</i>

I hereby acknowledge that the information required above has been provided and is accurate to the best of my knowledge and the number of signatures represents a majority of landowners in the proposed LID.

Thomas J Gustafson
 Applicant
Jacob A. Frie
 Crow Wing County Staff

4/12/18
 Date
6/15/2018
 Date

Crow Wing County

Date: 6/15/2018 11:15 AM
 Office: Aud-Treas Mach ID: CH1118D15
 Cashier: AmyG
 Batch: 27612 Tran #: 1
 =====

Lake Improvement District
 Receipt #: 00839889

Name: SEBIE LAKE AREA CONSERVATION A

Cashier: ARG
 Info: LID PROPOSAL
 Parcel ID: 63

08700 LID Application \$500.00
 Org: 01510511 Object: 51570

Payment Total: \$500.

Transaction Total: \$500.
 Check Tendered: \$500.

Checks presented:

SEBIE LAKE AREA CONSERVATION ASSOCIATION		15
3009 SEBIE LAKE RD PORT APLEY, MN 56449		6-15-18
Pay to the order of Crow Wing County		\$500
Four hundred dollars and 00/100		
Wells Fargo Bank Atm/branch N.A.		
for LID Proposal		Michael Stachon

DISCLAIMER:

Please verify that all parcels intende to be paid are included on your receipt Crow Wing County will not be liable fo penalty, interest, or costs for taxes not paid in a timely manner.

Your opinion is important to us.
 Please take a moment to tell us how we did today by completing a short survey at:
www.surveymonkey.com/r/FinCustServ

Thank you for your payment.
 Have a nice day!

Attachment: Receipted application fee (\$500) (6_15_2018) (2952 : Establishment of Sebie Lake Improvement District)

Petition for Lake Improvement District

For

Sebie Lake, Crow Wing County, Minnesota

We the undersigned, representing the owners of record of more than (60%) of the total riparian owners on Sebie Lake, hereby petition the Crow Wing County Board to create a Lake Improvement District for the purpose of improving water quality of Sebie Lake through lake management, aquatic vegetation control and related services. The proposed Lake Improvement District is legally described as follows:

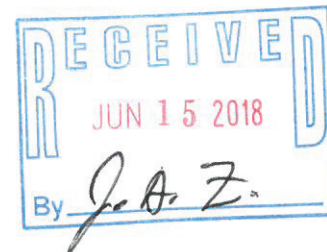
Proposed Legal Name: Sebie Lake Improvement District

We propose the district be called: Sebie Lake Improvement District. We propose a board of five (5) members elected from the residents around the lake. The boundaries of the proposed LID include only properties that are riparian to Sebie Lake. If an individual owns two adjacent, riparian properties with only one improved dwelling (one that can be resided in) they will be assessed as one property.

Each riparian owner of land abutting Sebie Lake (developed or undeveloped) will be assessed as one unit. Owners of adjacent parcels will be assessed as one unit UNLESS more than one property has been developed (has a residential dwelling on it.) Owners of two, noncontiguous parcels will be assessed as two units. The Lake Improvement District (hereby known as LID) will be equally allocated among all property owners with an annual amount of \$250.00 for each property owner with land that abuts Sebie Lake. This is the maximum amount and shall remain in effect for five years unless reduced or cancelled by the LID Board. The LID will expire after five years. See attached map.

We the petitioners understand that the improvements shall be conducted in accordance with plans for the same to be prepared, reviewed and approved by the Crow Wing County Board and the costs thereof, including expenses associated with engineering, planning, treatment and legal costs will be assumed by the LID budget. The petition is submitted pursuant to Minnesota Rule 6115, Minnesota Statute § 103B.521, and Crow Wing County Lake Improvement District Policies.

WARNING – A PERSON WHO KNOWINGLY SIGNS THIS PETITION MORE THAN ONCE, SIGNS A NAME OTHER THAN HIS OR HER OWN, SIGNS WHEN NOT QUALIFIED, OR SETS OPPOSITE HIS OR HER SIGNATURE ON A PETITION, A DATE OTHER THAN THE ACTUAL DATE THE SIGNATURE WAS AFFIXED, IS VIOLATING THE PROVISIONS OF MINNESOTA LAW.



Attachment: Sebie Lake LID petition (2952 : Establishment of Sebie Lake Improvement District)

Date: Print Name/Signature: Lake Address: Email: Phone:

- 6-2-18 1. ^{Kimberly Miller} Kimberly Miller 3915 S. Sebie Lake Rd kimmiller94@legmail.
 6/2/18 2. James Merrick 3869 S. Sebie Lake Rd jimmerrick@gmail.com 95-2-937-8
 6-2-18 3. Richard Miller / Richard Miller Parcel # 610254301 M 00009 412-386-9667 417-578-57
 6-2-18 4. DAVID R. SHENSHAK / David R. Shenshak 3531 SEBIE LAKE RD DSHENSHAK@EMAIL.COM 657-491-
 6-2-18 5. John Regan / John Regan 3803 S. Sebie Lake Rd jeregan3@gmail.com 218-8-
 6-2-18 6. Evelyn Gildart 3491 Sebie Lake Rd egildart@live.com 320-49-
 6-2-18 7. Steve Neu / Steve Neu 3717 Sebie Lake Rd SteveLneu@Q.com
 6-2-18 8. JEROLD W. HUNTINGTON 3641 SEBIE LAKE RD JEROLD.HUNTINGTON@GMAIL.COM
 6-2-18 9. Neal Loidolt / Neal Loidolt 3377 Sebie Lake Rd Neal.Loidolt@gmail.com 612-8-
 6-2-18 10. Eugene R. Gardner 3853 S. Sebie Lake Rd EG-3739@Juno.Com 612-703-
 6-2-18 11. Michael Stocken / Michael Stocken 3581 Sebie Lake Rd stocken2@centurylink.net
 6-2-18 12. Tom Gustafson / Tom Gustafson 3291 Sebie Lake Rd tgustafson@grace.com 612-802-5-
 6-2-18 13. GREG KASPER / Greg Kasper 3521 SEBIE LAKE RD, GREG.KASPER@YAHOO.COM 612-803-75
 6-2-18 14. Darleen Gohl 3613 SEBIE LAKE RD. Darleen Gohl 763-786-0-
 6-2-18 15. Jason Smrecek 3683 Sebie Lake Road Jason Smrecek 319-431-6550
 6-3-18 16. Cynthia Madsen 3245 Sebie Lake Rd CynthiaMadsen@msn.com
 6-8-18 17. Tim LEONARD 3817 S. SEBIE LAKE RD TIMLEONARD@CHOICEINSURANCE.NET 612-701-836-
 6-8-18 18. Clarence Kuhn 3337 Sebie Lake Rd CLKHkuhn@gmail.com 612-860-8357
 6-9-18 19. Todd Schendzieios 3837 SEBIE LAKE SOUTH toddschendzieios@gmail.com 320-250-2000
 6-9-18 20. GRAHAM GUSTAFSON 3783 S SEBIE LAKE ROAD 320 360 4131 TODD & M. SCHENDZIEIOS.
 6-10-18 21. TIMOTHY M. CAREY 3751 S SEBIE LAKE ROAD TCAREY17@COMCAST.NET 763 785 2759
 6-11-18 22. Deanna D. Gordon 3223 Sebie Lake Rd dgordon@iphouse.com 952-544-5684
 6-11-18 23. JERRY PILKENTON 3451 SEBIE LAKE RD jerryp6toyotaequipment.com 612-919-1983
 6-11-18 24. Donna M. Mrozek 3797 S. SEBIE LAKE RD hnmrozek@yahoo.com
 6-12-18 25. Leroy J Puse 3215 SEBIE LAKE RD. 320-616-6843
 6-12-18 26. Vincent E. Kline 3413 Sebie Lake Rd. 218-851-7099

Attachment: Sebie Lake LID petition (2952 : Establishment of Sebie Lake Improvement District)

CERTIFICATE OF CIRCULATOR

The undersigned circulator of the petition asserts that each signature on the petition was signed in his or her presence and that to his or her best knowledge and belief, each signature is the genuine signature of the person purporting to sign the petition, the person signing the petition was at the time of signing the owner of property within the proposed assessment district and qualified to sign the petition.

CIRCULATOR – DO NOT SIGN OR DATE UNTIL AFTER CIRCULATING PETITION

DATE: June 12th, 2018

SIGNATURE OF CIRCULATOR: _____

PRINTED NAME OF CIRCULATOR: _____

ADDRESS OF CIRCULATOR: _____

12479 Elm Parkway
Rogers, MN 55374

Map: Proposed Sebie Lake Improvement District



Attachment: Sebie Lake LID petition (2952 : Establishment of Sebie Lake Improvement District)

181. Kimberly Miller ^{Kimberly Miller} 3915 S. Sebie Lake Rd kimmiller94@legnet.
 12/18 2. James Merrick ^{James Merrick} 3869 S. Sebie Lake Rd jimmerrick@gmail.com 952-937-
 6-2-183. ~~Richard Miller / Richard Miller~~ Parcel # 610254301 M 00009 Sebie Lake Rd 612-386-966
 6-2-184. DAVID A. SHENSHAK ^{David A. Shenshak} 3531 SEBIE LAKE RD DSHENSHAK@MAIL.COM 612-578-50
 6-2-185. John Regan ^{John Regan} 3803 S. Sebie Lake Rd jregan3@gmail.com 657-499
 6-2-186. Evelyn Gildart ^{Evelyn Gildart} 3491 Sebie Lake Rd egildart@live.com 218-8
 6-2-187. Steve Neu ^{Steve Neu} 3717 Sebie Lake Rd SteveLNeu@Q.com 320-4
 8. JEROLD W. HULTING ^{Jerold W. Hulting} 3641 SEBIE LAKE RD JEROLD.HULTING@GMAIL.COM 612-701-15
 6-2-189. Neal Loidolt ^{Neal Loidolt} 3277 Sebie Lake Rd Neal.Loidolt@gmail.com 612-8
 6-2-1810. Eugene R. Gardner ^{Eugene R. Gardner} 3853 S. Sebie Lake Rd EG-3739@Juno.Com 612-70
 6-2-1811. Michael Stacken ^{Michael Stacken} 3581 Sebie Lake Rd Stacken2@centu
 6-2-1812. Tom Gustafson ^{Tom Gustafson} 3291 Sebie Lake Rd tgustafson@gmail.com 612-802-5
 6-2-1813. GREG KASPER ^{Greg Kasper} 3521 SEBIE LAKE RD, GREG.KASPER@YAHOO.COM 612-803-7
 6-2-1814. Darleen Gohl ^{Darleen Gohl} 3613 SEBIE LAKE RD. Darleen.Gohl 763-786-1
 6-2-1815. Insoo Smrecek ^{Insoo Smrecek} 3683 Sebie Lake Road Insoo Smrecek12 319-431-6550
 6-3-18. Cynthia Madsen ^{Cynthia Madsen} 3245 Sebie Lake Rd CynthiaMadsen@msn.com
 6-8-1817. Tim LEONARD ^{Tim Leonard} 3817 S. SEBIE LAKE RD TIM.LEONARD@CHOICEINSURANCE.NET 612-701-836
 6-8-1818. Clarence Kuhn ^{Clarence Kuhn} 3337 Sebie Lake Rd CLKHkuhn@C 612-860-8357
 6-9-1819. Todd Schendzieios ^{Todd Schendzieios} 3837 SEBIE LAKE RD Todd & ML Schendzieios 612-860-8357
 6-9-1820. GRHAM GUSTAFSON ^{Graham Gustafson} 3783 S SEBIE LAKE ROAD 320 360 4131 320-250-2000
 6-10-1821. TIMOTHY M. CAREY ^{Timothy M. Carey} 3751 S SEBIE LAKE ROAD TCAREY17@COMCAST.NET 763 785 2759
 6-11-1822. Deanna D. Gordon ^{Deanna D. Gordon} 3223 Sebie Lake Rd dgordon@iphouse.com 952-544-5684
 6-11-1823. JERRY PILKENTON ^{Jerry Pilkenton} 3451 SEBIE LAKE RD jerry66toyotaequipment.com 612-919-1983
 6-11-1824. Donna M. Mrozek ^{Donna M. Mrozek} 3797 S. SEBIE LAKE RD hmrozek@yahoo.com
 6-12-1825. LeRoy J Puse ^{LeRoy J Puse} 3215 SEBIE LAKE RD. 320-616-6843
 6-12-1826. Vincent E. Kline ^{Vincent E. Kline} 3413 Sebie Lake Rd. 218-851 7099

25 verified signatures.

**Petition by the Citizens of Sebie Lake to
Create**

Sebie Lake

Improvement District

Crow Wing County Board of Commissioners:

Citizen Petition to Create *Sebie Lake* Improvement District

To the Crow Wing County Board of Commissioners:

Attached is a petition from the property owners of Sebie Lake to form a lake improvement district. We request your approval to ensure the quality, clarity, and enjoyment of Sebie Lake is improved for the public and for those who reside on the lake by reducing curly-leaf pondweed; a non-native invasive, submerged aquatic plant and better understanding water quality issues in the lake.

Sebie Lake is a eutrophic lake with evidence of declining water quality. Total phosphorus, chlorophyll and transparency ranges are worse than comparable lakes in the ecoregion. Curly-leaf pondweed has caused problems in the lake by producing mats and subsequent algae blooms. This has interfered with the clarity and quality of the water and the recreational use of the lake.

Property owners addressed the presence of curly-leaf pondweed beginning in 2004 and each year thereafter through 2013. Treatments were funded by a fishing contest fundraiser and voluntary donations. A treatment did occur the summer of 2017 funded solely by voluntary contributions to address the recurring issue of the curly-leaf pondweed.

At this time it has become clear the recurring issue of curly-leaf pondweed cannot be funded solely by voluntary contributions and fund raisers. The need has exceeded the lake association's ability to continually raise the needed funds to sustain the effort.

We therefore respectfully request your approval to form a Sebie Lake Improvement District consistent with MN. Statute 103B.501.

Respectfully,

Mike Stacken, President Sebie Lake Association

Sebie Lake

Mission Statement

- To improve and protect the quality of the lake for residents and the public by addressing invasive plant species and declining water quality issues
- On an annual basis and more frequently if necessary, inform and represent members in regards to matters of mutual interest
- To collaborate with local government agencies to improve and protect the lake environment by applying for appropriate grants and assistance
- To educate property owners in regards to best practices to protect and improve the quality of the lake and protect and prevent shore erosion

Petition for Lake Improvement District

For

Sebie Lake, Crow Wing County, Minnesota

We the undersigned, representing the owners of record of more than (60%) of the total riparian owners on Sebie Lake, hereby petition the Crow Wing County Board to create a Lake Improvement District for the purpose of improving water quality of Sebie Lake through lake management, aquatic vegetation control and understanding declining water quality and issues addressed in the DNR advisory report, dated July 18, 2018. The proposed Lake Improvement District is legally described as follows:

Proposed Legal Name: Sebie Lake Improvement District

Each riparian owner of land abutting Sebie Lake (developed or undeveloped) will be assessed as one unit. Owners of adjacent parcels will be assessed as one unit UNLESS more than one property has been developed (has a residential dwelling on it.) Owners of two, noncontiguous parcels will be assessed as two units. The Lake Improvement District (hereby known as LID) will be equally allocated among all property owners with an annual cost of \$250.00 for each property owner with land that abuts Sebie Lake. This amount shall remain in effect for five years. At the end of year 5 the LID will automatically dissolve. A petition with 60% favorable signatures will re-enact the LID for an additional 5 years. Budgets for subsequent years shall be determined at the annual meeting during the last year of the assessment and will be subject to a public hearing.

We the petitioners understand that the improvements shall be conducted in accordance with plans for the same to be prepared, reviewed and approved by the Crow Wing County Board and the costs thereof, including expenses associated with engineering, planning, treatment and legal costs will be assumed by the LID budget. The petition is submitted pursuant to Minnesota Rule 6115 and Minnesota Statute § 103B.521.

Sebie Lake Facts and Description

Lake Characteristics:

- I.D. # 18016100
- Lake Area in acres: 176 acres
- Littoral Area in acres: 117
- Maximum depth: 27 feet
- Lake Clarity Range: (1975 – 2008) 3.8 ft – 6.8 ft.

Public Access Information:

- Ownership: DNR
- Type: Dirt and sand
- Description: Gravel road
- Short dock/fishing pier

Watershed Characteristics:

- Little Nokassippi River watershed that includes Sebie Lake: 16,239 acres
- Watershed Area: Lake Surface Area Ratio: 96:1

Demography:

- There are approximately 39 property owners on the lake
- A significant amount of shoreline along the south side of Sebie Lake is owned by Crow Wing County as part of the Crow Wing Memorial Forest
- There are not any public beaches, campgrounds or RV parks
- There are no resorts on the lake

Taxable Market Property Values:

- \$4,343,600 based on 2016 assessments payable 2017
- 55% of the land abutting Sebie Lake is government owned and the value is NOT included in the above amount

Sebie Lake Association Board Members

President	<p>Mike Stacken stacken2@centurylink.net</p> <p>Phone: 612. 232. 3650</p> <p>Address: 1800 Park Ridge Dr. Chaska, MN 55318</p>
Vice President	<p>Neil Loidolt Neal.loidolt@gmail.com</p> <p>Phone: 612-875-1537</p> <p>Address: 7556 103rd Circle N Brooklyn Park, MN 55445</p>
Treasurer	<p>Kim Miller kimmiller9667@gmail.com</p> <p>Phone: 612.220.9667</p> <p>Address: 1007 6th Ave. N.W. Buffalo, MN 55313</p>
Secretary	<p>Tom Gustafson Thomas_J_Gustafson@graco.com</p> <p>Phone: 612-802-5371</p> <p>Address: 12479 Elm Parkway, Rogers, MN 55374</p>
Alternate	<p>Gene Gardner EG3739@juno.com</p> <p>Phone: 612-703-0072</p> <p>Address: 6350 172nd Lane N.W. Ramsey, MN 55303</p>

Sebie Lake Problems

Background

Sebie Lake is a peaceful, secluded lake with only 38 property owners and a public boat launch. People enjoy fishing, skiing, sailing, cruising around on pontoon boats, paddle boarding, swimming and watching the world go by. It is a good bass lake and fishermen and women keep their favorite fishing spots secret. All of this is at risk because of the lake's problems. Sebie Lake is a shallow lake and the invasive species; curly-leaf pondweed has invaded the lake. This has caused a brown mat to form on the lake at times. Algae blooms form. Curly leaf pondweed wraps around boat propellers, reducing performance, blocking engine water inlets and causing overheating. Swimmers can't swim through it, paddle boarders can't paddle through it and water skiers become entangled in it.

A report from RMB Environmental Laboratories, Inc. compiled in 2015 (see attached) outlines the issues with the lake including:

- Total phosphorus exceeds the impaired water standards and are worse than the expected range for the Northern Lakes and Forests Ecoregion
- Sebie Lake is a eutrophic lake with declining water quality
- Transparency has declined over time

The presence of curly-leaf pondweed impacts the recreational use of the lake and if it continues to grow unfettered, property values will suffer. It is the goal of the Sebie Lake Improvement District to restore and improve the quality of the lake for the benefit of everyone; residents and the public alike.

One of the recommendations posited on page 20 is to treat curly-leaf pondweed with an aquatic herbicide to try and decrease its presence in the lake. This is the purpose of the LID formation.

An advisory recommendation from the Minnesota DNR, in its advisory report dated July 18, 2018, is that the LID be broad enough to address the declining water quality that is likely to be a recommendation from the MPCA's forthcoming TMDL study.

Monitoring and Measuring Progress:

On an annual basis the LID organization will produce records of accomplishment as well as financial reports and submit to Crow Wing County all items required by the checklist for existing LIDs.

Sebie Lake Improvement District goals and objectives include the requirement to measure progress on an annual basis. Data collected will include resident satisfaction surveys, global GPS pictures, and water quality testing.

Cooperation with Other Agencies

The Sebie Lake Association on its own cannot sustain efforts to improve the quality of Sebie Lake. The presence of so few property owners is both a blessing and a curse inasmuch as they enjoy the privacy of the lake but the cost is shared by few and is therefore higher per owner. Voluntary contributions cannot be sustained over time. The only way to ensure adequate funding to care for the lake that has been entrusted to us, is through the development of a LID. The Sebie Lake Improvement District is seeking \$250 per year from each riparian owner for an annual total of \$9,500 for a period of five years.

Members of the association have sought advice and counsel from the following agencies and its representatives:

Chris Pence, Land Service Supervisor

Tim Plude, Aquatic Invasive Species Specialist Mn DNR

Wayne Mueller and Kevin Martini, Aquatic Plan Specialists DNR

Heidi Lindgren and Kathleen Metzker, Hydrologists Mn DNR Mike

Knapp, Assistant Area Fisheries Supervisor, Mn DNT

Darren Mayers, District Technician, Crow Wing Soil and Water Conservation District

It is the intent of the members of the LID board to continue to seek advice and counsel from Crow Wing County and the DNR. It is the intent of the LID board to seek out and apply for grants and assistance that may benefit the lake, its watershed, inlets and shoreline.

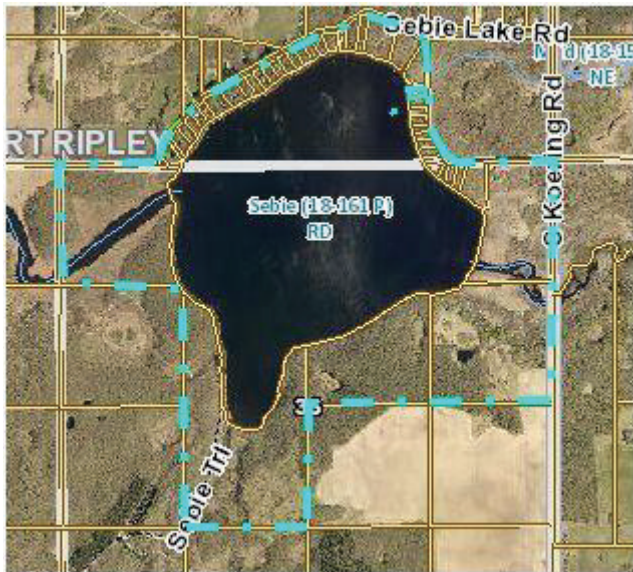
Potential Conflicts

Since members of the board have been in contact with specialists in Crow Wing County and the DNR, no conflicts have been identified. The only conflicts identified could be with those lake property owners that are concerned about an increase in taxes and those that don't realize an immediate improvement to their shoreline. Property owners will have the opportunity to express their agreement or disagreement through the democratic process. Property owners can also address their own shorelines by applying for individual treatment permits.

The LID will ultimately benefit residents, the tax base of Crow Wing county because property values will be maintained and enhanced, and the public who will be able to enjoy the lake for many years to come. This citizen driven initiative is the highest example of Minnesota citizens working together to accomplish what individuals alone cannot do.

Map of Boundaries of the LID

Boundaries of the proposed LID include only properties that are riparian to Sebie Lake. If an individual owns two adjacent, riparian properties with only one improved dwelling (one that can be resided in) they will be assessed as one property.



Problems and Solutions

Description of Water and Land Problems

The Sebie Lake Improvement Association believes that a Lake Improvement District is the best way to fairly and effectively address and sustain our existing lake problems. With this mechanism, Sebie Lake will be able to address curly leaf pondweed without relying on unpredictable voluntary donations. The association will be able to address curly-leaf pondweed and sustain that effort until it is no longer a nuisance and the LID will also allow for a better understanding of the declining water quality. A LID provides a responsible, cost effective approach that is citizen driven.

Funding Goals and Objectives

The goals and objectives of this LID are modest because it is a small lake with few property owners. Included in the budget is the required \$500.00 initial application fee, annual \$250.00 administrative fee, and the required Liability Insurance Coverage.

The LID committee is confident that the reduction on curly- leaf pondweed will produce positive results for the lake, its residents and the public who enjoy it. We would also like to be postured to address issues identified in a future “Mississippi River-Brainerd,” one watershed, one plan when it is finalized.

Management Program

Invasive Species Treatment:

- Pretreatment Survey of Curly-leaf Pondweed. Beginning in May, the contractor will begin monitoring the growth of curly-leaf pondweed and map the locations of densest growth. The contractor will delineate proposed areas for treatment (17 acres annually). Maps and data collected will be submitted to the DNR for approval prior to treatment.
- Application of approved Herbicide
- July – Summer survey, water clarity testing
- Late August – Late summer survey and delineation, water clarity testing
- Early September – administration of resident satisfaction survey

Declining Water Quality

- Review and understand the MPCA’s forthcoming TMDL study
- Consider inlet phosphorus monitoring stations
- Consider nutrient reduction strategy

LID Project and Budget Year 1

Project	Description	Budget
LID Application Fee	This is a required fee in regulation	\$500.00
Annual Administrative Fee	This is a required administrative fee in regulation	\$150.00
Curly-leaf pondweed Control	Resume treatment of this invasive species as per the recommendations of the control specialists. With approval of the LID, the association will treat up to 17 acres per year.	\$6,100
Purchase Liability Insurance	Required by Crow Wing County	\$750
Vegetation Assessment and Management Plan	Contract with specialists to prepare a report on the aquatic vegetation in Sebie Lake and submit a plan for treatment	\$2,000
Available Budget	38 X \$250.00 = \$9,500	\$9,500

LID Project and Budget (Year 2, 3, 4, 5)

LID Annual Fee	This is a required administrative fee in regulation	\$250
Purchase Liability Insurance	Required by Crow Wing County	\$770
Curly-leaf Pondweed Control	Continue to treat maximum acreage as per recommendation of the control specialist	\$6,330
Administrative Costs	Administer satisfaction survey, conduct annual meeting, distribution of minutes, postage, paper	\$150
Implementation of Vegetation Management Plan Assessment		\$2,000
Available Budget	38 X \$250.00 = \$9,500	\$9,500

A small carryover of funds from year to year will accommodate cash flow and unforeseen costs.

LID Monitoring and Measurement

Project	Benefit	Measurement	Year 1 of LID	Year 2	Year 3
Curly-leaf Pondweed Control	Reduce and prevent further spread of CLPW	Inspection by contractor, DNR, Annual Vegetation Assessment	Reduction and control as per management plan	Reduction and control as per management plan	Reduction and control as per management plan
Aquatic Vegetation Assessment	Provide data as suggested by DNR in “protocols” for the collection of pre-treatment data accepted by the MN DNR for MN DNR grant programs	Annual Contractor Report, report to residents, Crow Wing County, DNR and public upon request	Provide data for Vegetation Management Plan	Provide data for Vegetation Management Plan	Provide data for Vegetation Management Plan
Vegetation Management Plan		Annual Contractor Report, report to residents, Crow Wing County, DNR and	Provide data for management and control of invasive species	Provide data for management and control of invasive species	Provide data for management and control of invasive species
Water quality improvement plan	Improved water quality	Annual report to residents and Crow Wing County	NA	Establish monitoring stations	Actions consistent with Mississippi River – Brainerd one watershed plan

Summary:

Sebie Lake has been addressing curly-leaf pondweed since 1997. Treatment has varied greatly based on funds available. 17 acres were treated in 2017, the last previous treatment occurred in 2013. We cannot wait any longer to address this growing problem.

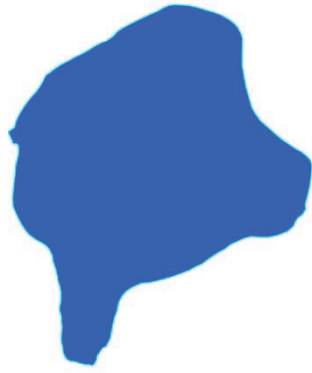
Attachments:

- Petition Checklist
- Individually signed ballots including address and phone numbers of those voting yes
- RMB Environmental Laboratories, Inc. Report 2015
- Aquatic Invasive Species Curly Leaf Pondweed Flyer MNDNR
- Sebie Lake Aquatic Vegetation Plan 2004 - 2010
- Sebie Lake Vegetation Management Plan 2011- 2015

Sebie Lake 18-0161-00 CROW WING COUNTY

Lake Water Quality

Summary



Sebie Lake is located 7.7 miles west of Fort Ripley, MN in Crow Wing County. It is a round lake covering 185 acres (Table 1).

Sebie Lake has two inlets and one outlet, which classify it as a drainage lake. Water enters Sebie Lake from a stream network to the east. The outle flows west to the Mississippi River.

Water quality data have been collected on Sebie Lake from 2007-2014 (Tables 2 & 3). These data show that the lake is eutrophic (TSI = 56) with moderately clear water conditions most of the summer.

Sebie Lake has an organized association that is involved in activities such as water quality monitoring and education.

Table 1. Sebie Lake location and key physical characteristics.

Location Data		Physical Characteristics	
MN Lake ID:	18-0161-00	Surface area (acres):	185.3
County:	Crow Wing	Littoral area (acres):	69.0
Ecoregion:	Northern Lakes and Forests	% Littoral area:	37.2
Major Drainage Basin:	Mississippi R. - Brainerd	Max depth (ft), (m):	27.0, 8.2
Latitude/Longitude:	46.169697/-94.323423	Inlets:	2
Invasive Species:	Curly-Leaf Pondweed	Outlets:	1
		Public Accesses:	1

Table 2. Availability of primary data types for Sebie Lake.

Data Availability

Transparency data



Good data set from 2007-2014.

Chemical data



Good data set from 2008-2014.

Inlet/Outlet data



No inlet or outlet data exist.

Recommendations

For recommendations refer to page 18.

Lake Map

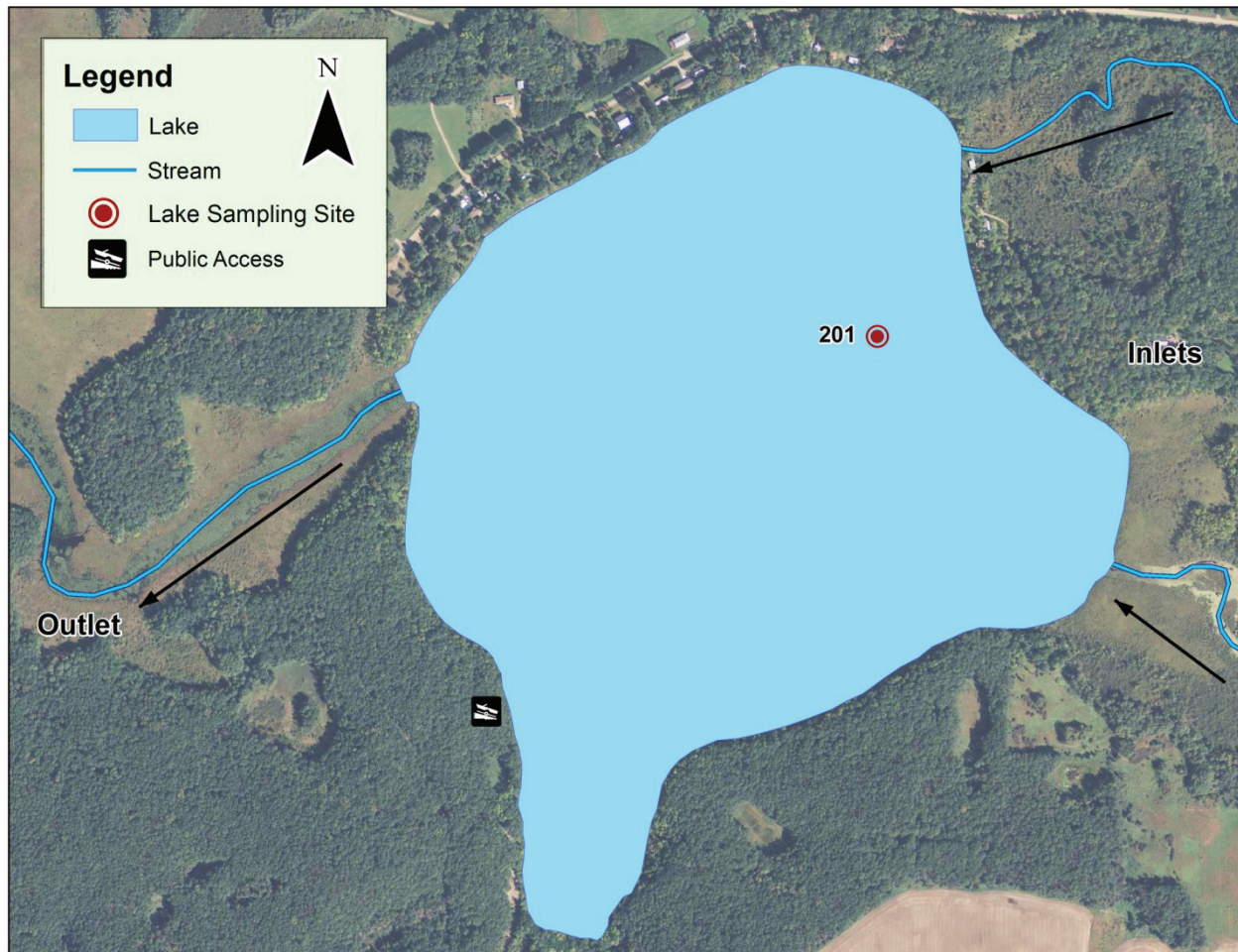


Figure 1. Map of Sebie Lake with 2010 aerial imagery and sample site locations, inlets and outlets, and public access points.

Table 3. Monitoring programs and associated monitoring sites. Monitoring programs include the Citizen Lake Monitoring Program (CLMP), Crow Wing County Surface Water Assessment Grant (SWAG), and RMB Environmental Laboratories Lakes Program (RMBEL).

Lake Site	Depth (ft)	Monitoring Programs
201	27	CLMP: 2007-2010; SWAG: 2008-2009; RMBEL: 2010-2014

Average Water Quality Statistics

The information below describes available chemical data for Sebie Lake through 2014 (Table 4). Data for total phosphorus, chlorophyll *a*, and Secchi depth are from the primary site 201.

Minnesota is divided into 7 ecoregions based on land use, vegetation, precipitation and geology. The MPCA has developed a way to determine the "average range" of water quality expected for lakes in each ecoregion. For more information on ecoregions and expected water quality ranges, see page 11. Sebie Lake is in the Northern Lakes and Forests Ecoregion.

Table 4. Water quality means compared to ecoregion ranges and impaired waters standard.

Parameter	Mean	Ecoregion Range ¹	Impaired Waters Standard ²	Interpretation
Total phosphorus (ug/L)	43.2	14 – 27	> 30	Results are worse than the expected range for the Northern Lakes and Forests Ecoregion and over the impaired water standard.
³ Chlorophyll <i>a</i> (ug/L)	16.8	4 – 10	> 9	
Chlorophyll <i>a</i> max (ug/L)	31.0	< 15		
Secchi depth (ft)	5.2	8 – 15	< 6.5	
Dissolved oxygen	See page 8			Dissolved oxygen depth profiles show that the lake mixes periodically in summer.
Total Kjeldahl Nitrogen (mg/L)	NA	<0.4 – 0.75		No data available.
Alkalinity (mg/L)	93.5	40 – 140		Indicates a low sensitivity to acid rain and a good buffering capacity.
Color (Pt-Co Units)	NA	10 – 35		No data available.
pH	NA	7.2 – 8.3		No data available.
Chloride (mg/L)	NA	0.6 – 1.2		No data available.
Total Suspended Solids (mg/L)	NA	<1 – 2		No data available.
Conductivity (umhos/cm)	NA	50 – 250		No data available.
TN:TP Ratio	NA	25:1 - 35:1		No nitrogen data available.

¹The ecoregion range is the 25th-75th percentile of summer means from ecoregion reference lakes

²For further information regarding the Impaired Waters Assessment program, refer to <http://www.pca.state.mn.us/water/tmdl/index.html>

³Chlorophyll *a* measurements have been corrected for pheophytin

Units: 1 mg/L (ppm) = 1,000 ug/L (ppb)

Water Quality Characteristics - Historical Means and Ranges

Table 5. Water quality means and ranges for primary sites.

Parameters	Primary Site 201
Total Phosphorus Mean (ug/L):	43.2
Total Phosphorus Min:	24.0
Total Phosphorus Max:	86.0
Number of Observations:	32
Chlorophyll a Mean (ug/L):	16.6
Chlorophyll-a Min:	4.0
Chlorophyll-a Max:	31.0
Number of Observations:	32
Secchi Depth Mean (ft):	5.2
Secchi Depth Min:	1.6
Secchi Depth Max:	10.0
Number of Observations:	43

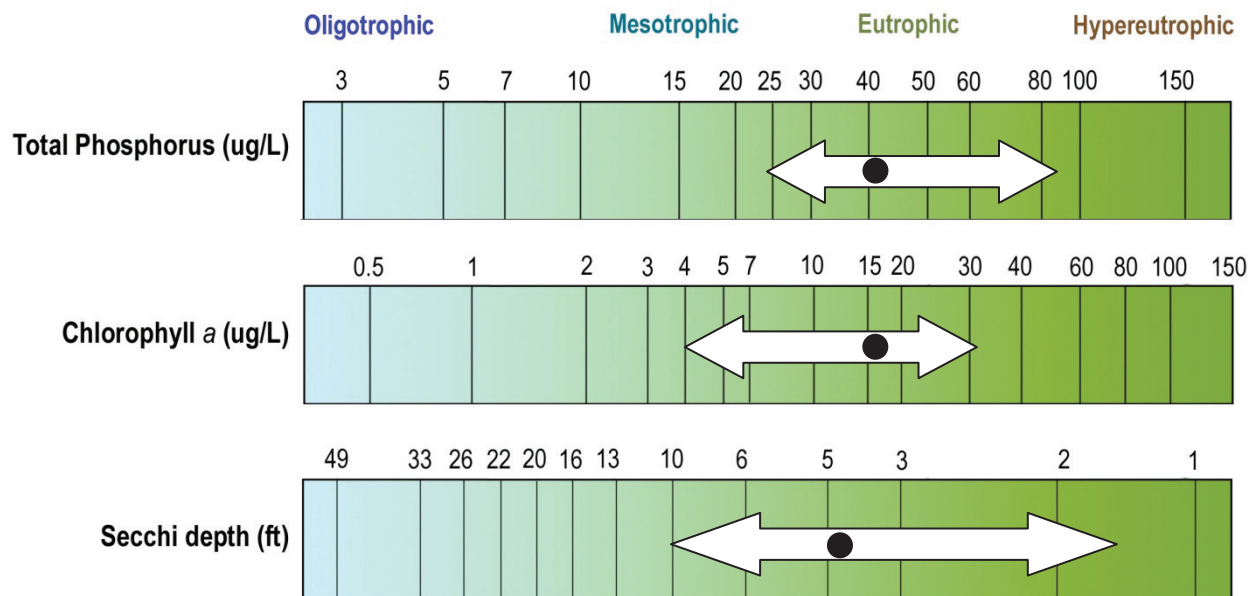


Figure 2. Sebie Lake total phosphorus, chlorophyll a and transparency historical ranges. The arrow represents the range and the black dot represents the historical mean (Primary Site 201). Figure adapted after Moore and Thornton, [Ed.]. 1988. Lake and Reservoir Restoration Guidance Manual. (Doc. No. EPA 440/5-88-002)

Transparency (Secchi Depth)

Transparency is how easily light can pass through a substance. In lakes it is how deep sunlight penetrates through the water. Plants and algae need sunlight to grow, so they are only able to grow in areas of lakes where the sun penetrates. Water transparency depends on the amount of particles in the water. An increase in particulates results in a decrease in transparency. The transparency varies year to year due to changes in weather, precipitation, lake use, flooding, temperature, lake levels, etc.

The annual mean transparency in Sebie Lake ranges from 3.2 to 6.3 feet (Figure 3). The annual means have been lower since 2010. For trend analysis, see page 10. Transparency monitoring should be continued annually at site 201 in order to track water quality changes.

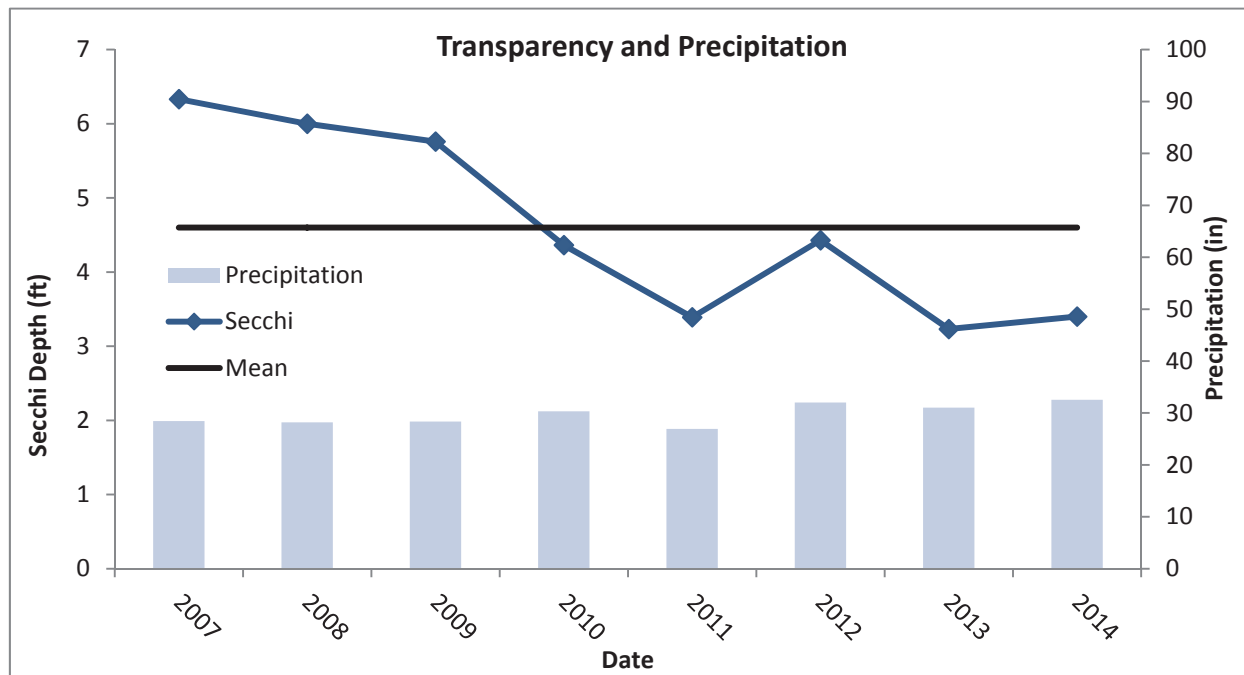


Figure 3. Annual mean transparency compared to long-term mean transparency.

Sebie Lake transparency ranges from 1.6 to 10.0 ft at the primary site (201). Figure 4 shows the seasonal transparency dynamics. The maximum Secchi reading is usually obtained in early summer. Sebie Lake transparency is high in May and June, and then declines through August. The transparency then rebounds in October after fall turnover. This transparency dynamic is typical of a Minnesota lake. The dynamics have to do with algae and zooplankton population dynamics, and lake turnover.

It is important for lake residents to understand the seasonal transparency dynamics in their lake so that they are not worried about why their transparency is lower in August than it is in June. It is typical for a lake to vary in transparency throughout the summer.

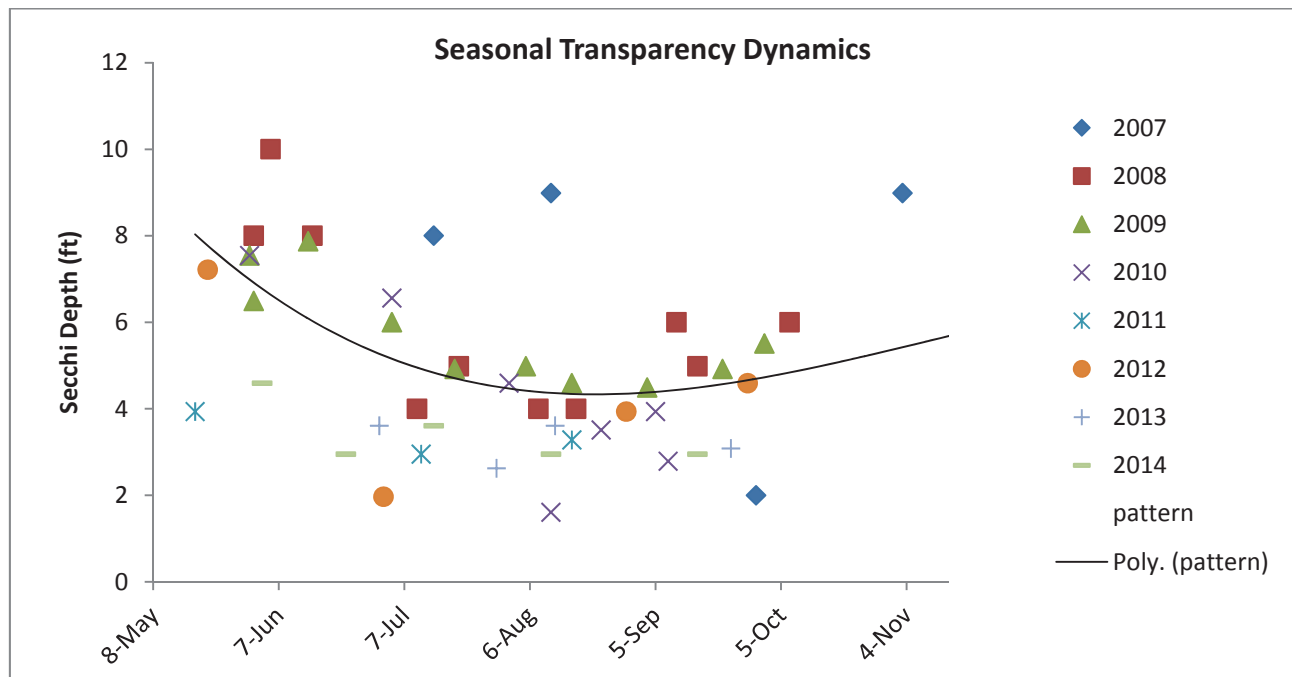


Figure 4. Seasonal transparency dynamics and year to year comparison (Primary Site 201). The black line represents the pattern in the data.

User Perceptions

When volunteers collect Secchi depth readings, they record their perceptions of the water based on the physical appearance and the recreational suitability. These perceptions can be compared to water quality parameters to see how the lake "user" would experience the lake at that time. Looking at transparency data, as the Secchi depth decreases the perception of the lake's physical appearance rating decreases. Sebie Lake was rated as being "not quite crystal clear" 48% of the time by samplers at site 201 between 2007 and 2013 (Figure 5).

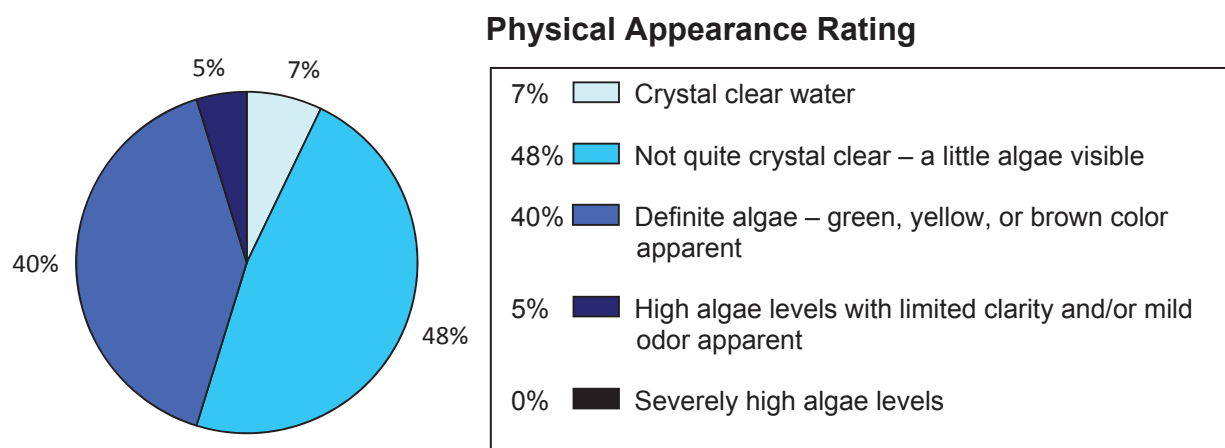


Figure 5. Sebie Lake physical appearance ratings by samplers.

As the Secchi depth decreases, the perception of recreational suitability of the lake decreases. Sebie Lake was rated as having "very minor aesthetic problems" 83% of the time from 2007 to 2013 (Figure 6).

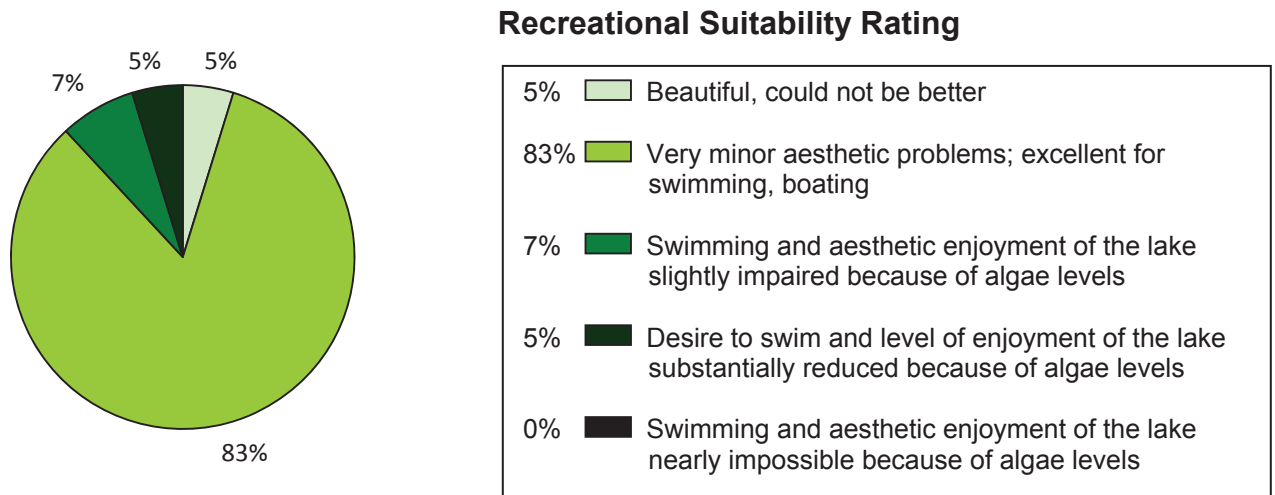


Figure 6. Recreational suitability rating, as rated by the volunteer monitor.

Total Phosphorus

Sebie Lake is phosphorus limited, which means that algae and aquatic plant growth is dependent upon available phosphorus.

Total phosphorus was evaluated in Sebie Lake in 2008-2014. The data do not indicate much seasonal variability. The majority of the data points fall into the eutrophic category (Figure 7).

There are some high phosphorus peaks in mid-summer, which could indicate internal loading.

Phosphorus should continue to be monitored to track any future changes in water quality.

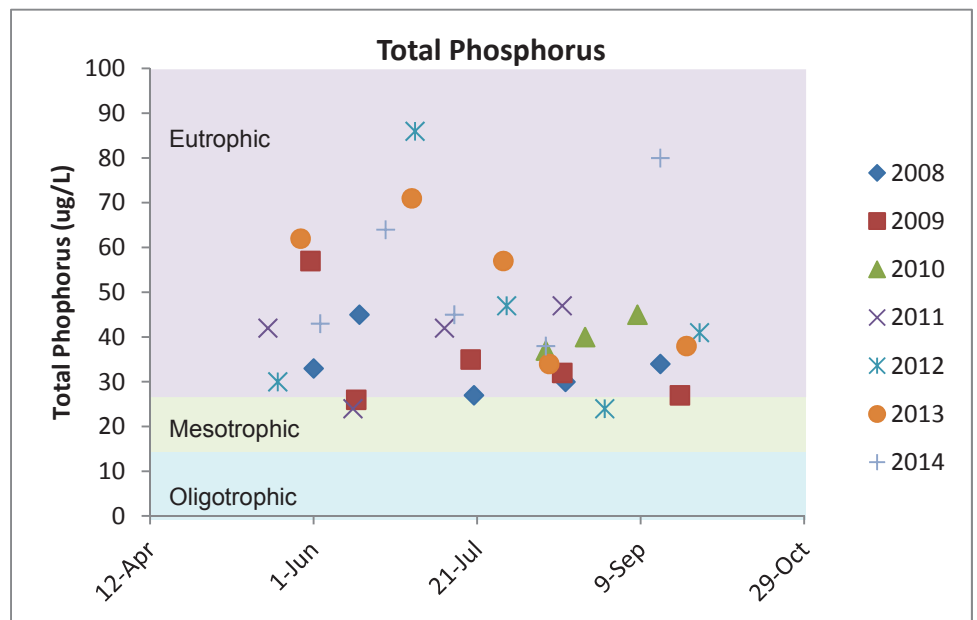


Figure 7. Historical total phosphorus concentrations (ug/L) for Sebie Lake.

Chlorophyll *a*

Chlorophyll *a* is the pigment that makes plants and algae green. Chlorophyll *a* is tested in lakes to determine the algae concentration or how "green" the water is.

Chlorophyll *a* concentrations greater than 10 ug/L are perceived as a mild algae bloom, while concentrations greater than 20 ug/L are perceived as a nuisance.

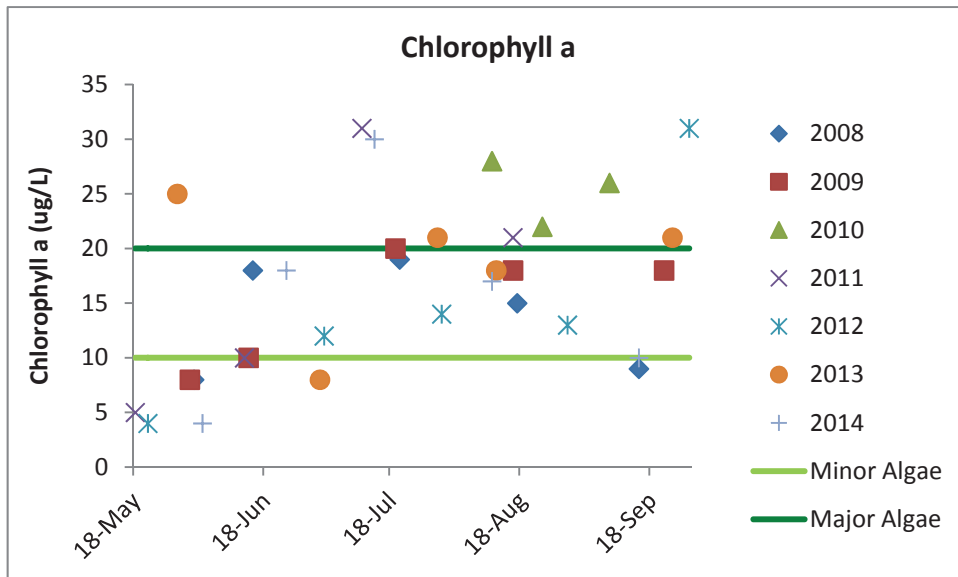
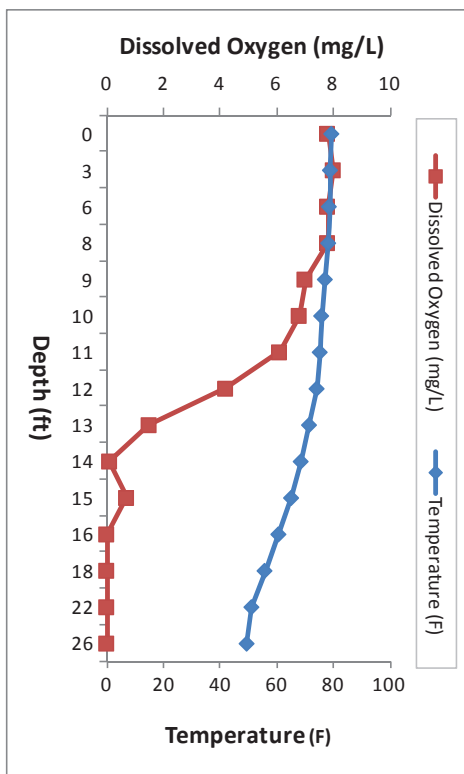


Figure 8. Chlorophyll *a* concentrations (ug/L) for Sebie Lake.

Chlorophyll *a* was evaluated in Sebie Lake in 2008-2014 (Figure 8). Chlorophyll *a* concentrations went above 20 ug/L in all years monitoring, indicating algae blooms.

Dissolved Oxygen



Dissolved Oxygen (DO) is the amount of oxygen dissolved in lake water. Oxygen is necessary for all living organisms to survive except for some bacteria. Living organisms breathe in oxygen that is dissolved in the water. Dissolved oxygen levels of <5 mg/L are typically avoided by game fisheries.

Sebie Lake is a shallow lake, with a maximum depth of 27 feet. A dissolved oxygen profiles from DNR Fisheries on July 9, 2007 shows periodic stratification developing mid-summer (Figure 9). In a shallow lake, the water column never completely stratifies. Any windy day can mix up the water column causing phosphorus from the anoxic lake bottom to re-suspend into the water. This phenomenon is known as internal loading.

Figure 9. Dissolved oxygen profile for Sebie Lake.

Trophic State Index (TSI)

TSI is a standard measure or means for calculating the trophic status or productivity of a lake. More specifically, it is the total weight of living algae (algae biomass) in a waterbody at a specific location and time. Three variables, chlorophyll *a*, Secchi depth, and total phosphorus, independently estimate algal biomass.

Phosphorus (nutrients), chlorophyll *a* (algae concentration) and Secchi depth (transparency) are related. As phosphorus increases, there is more food available for algae, resulting in increased algal concentrations. When algal concentrations increase, the water becomes less transparent and the Secchi depth decreases. If all three TSI numbers are within a few points of each other, they are strongly related. If they are different, there are other dynamics influencing the lake's productivity, and TSI mean should not be reported for the lake.

The mean TSI for Sebie Lake falls into the eutrophic range (Figure 10). There is good agreement between the TSI for phosphorus, chlorophyll *a* and transparency, indicating that these variables are strongly related (Table 6).

Eutrophic lakes (TSI 50-70) are characteristic of "green" water most of the summer. "Eu" means true and the root "troph" means nutrients therefore, eutrophic literally means true nutrients or truly nutrient rich (phosphorus). Eutrophic lakes are usually shallow, and are found where the soils are fertile. Eutrophic lakes usually have abundant aquatic plants and algae.

Sebie Lake

Table 6. Trophic State Index for Sebie.

Trophic State Index	Site 201
TSI Total Phosphorus	58
TSI Chlorophyll-a	58
TSI Secchi	53
TSI Mean	56
Trophic State:	Eutrophic

Numbers represent the mean TSI for each parameter.

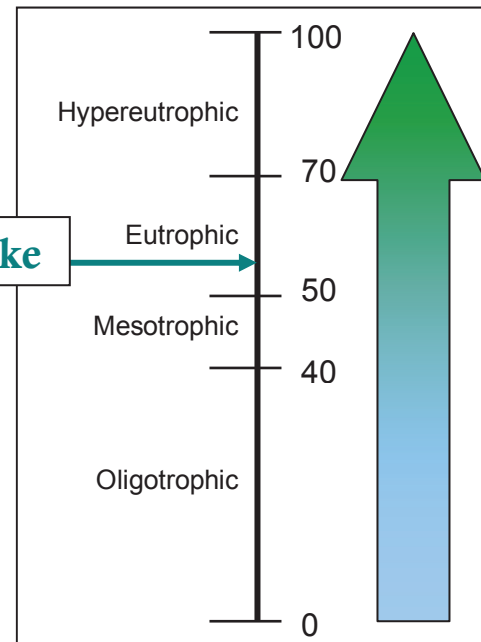


Figure 10. Trophic state index chart with corresponding trophic status.

Table 7. Trophic state index attributes and their corresponding fisheries and recreation characteristics.

TSI	Attributes	Fisheries & Recreation
<30	Oligotrophy: Clear water, oxygen throughout the year at the bottom of the lake, very deep cold water.	Trout fisheries dominate
30-40	Bottom of shallower lakes may become anoxic (no oxygen).	Trout fisheries in deep lakes only. Walleye, Cisco present.
40-50	Mesotrophy: Water moderately clear most of the summer. May be "greener" in late summer.	No oxygen at the bottom of the lake results in loss of trout. Walleye may predominate.
50-60	Eutrophy: Algae and aquatic plant problems possible. "Green" water most of the year.	Warm-water fisheries only. Bass may dominate.
60-70	Blue-green algae dominate, algal scums and aquatic plant problems.	Dense algae and aquatic plants. Low water clarity may discourage swimming and boating.
70-80	Hypereutrophy: Dense algae and aquatic plants.	Water is not suitable for recreation.
>80	Algal scums, few aquatic plants	Rough fish (carp) dominate; summer fish kills possible

Source: Carlson, R.E. 1997. A trophic state index for lakes. *Limnology and Oceanography*. 22:361-369.

Trend Analysis

For detecting trends, a minimum of 8-10 years of data with 4 or more readings per season are recommended. Minimum confidence accepted by the MPCA is 90%. This means that there is a 90% chance that the data are showing a true trend and a 10% chance that the trend is a random result of the data. Only short-term trends can be determined with just a few years of data, because there can be different wet years and dry years, water levels, weather, etc, that affect the water quality naturally.

Sebie Lake had enough data to perform a trend analysis on all three parameters (Table 8). The data was analyzed using the Mann Kendall Trend Analysis.

Table 8. Trend analysis for Sebie Lake.

Lake Site	Parameter	Date Range	Trend	Probability
201	Total Phosphorus	2008-2014	Declining	99%
201	Chlorophyll a	2008-2014	No trend	--
201	Transparency	2007-2014	Declining	95%

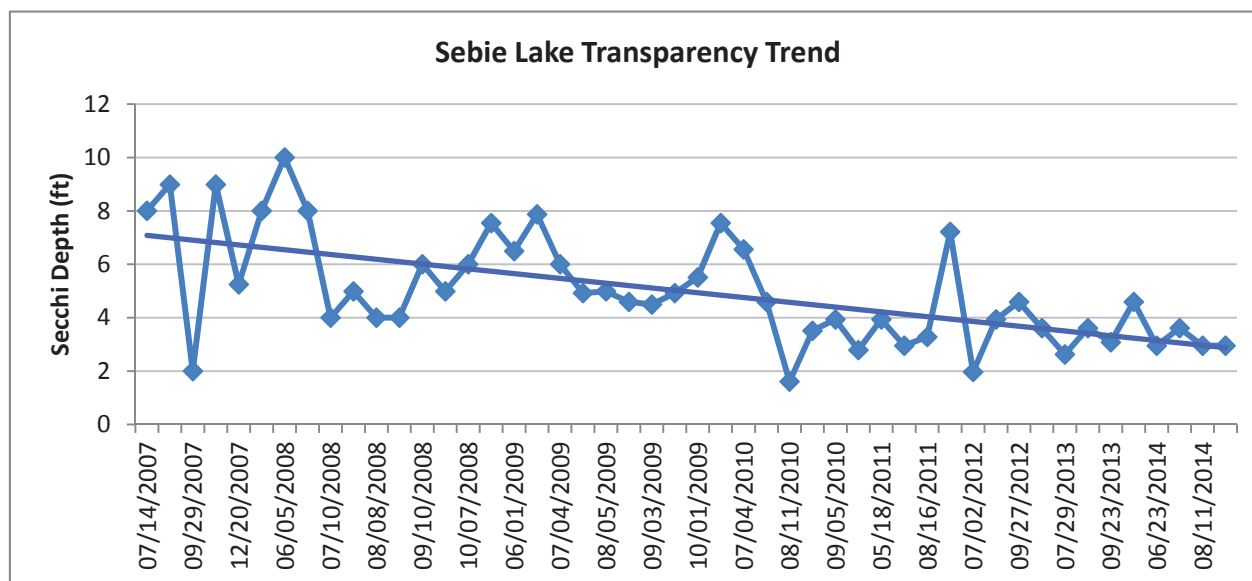


Figure 11. Transparency (feet) trend for Sebie Lake from 2007-2014.

Sebie Lake shows evidence of a declining water quality trend in transparency and phosphorus (Figure 11). Monitoring should continue so that these trends can be tracked in future years.

Ecoregion Comparisons

Minnesota is divided into 7 ecoregions based on land use, vegetation, precipitation and geology (Figure 12). The MPCA has developed a way to determine the "average range" of water quality expected for lakes in each ecoregion. From 1985-1988, the MPCA evaluated the lake water quality for reference lakes. These reference lakes are not considered pristine, but are considered to have little human impact and therefore are representative of the typical lakes within the ecoregion. The "average range" refers to the 25th - 75th percentile range for data within each ecoregion. For the purpose of this graphical representation, the means of the reference lake data sets were used.

Sebie Lake is in the Northern Lakes and Forest Ecoregion. The mean total phosphorus, chlorophyll a and transparency (Secchi depth) for Sebie Lake are above the ecoregion ranges (Figure 13).

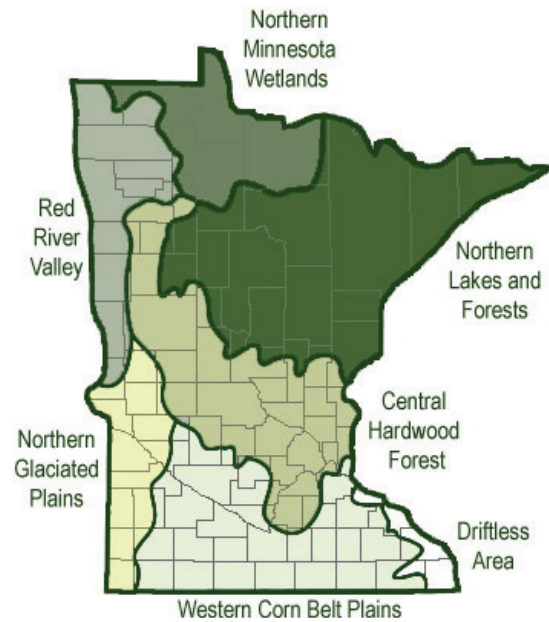
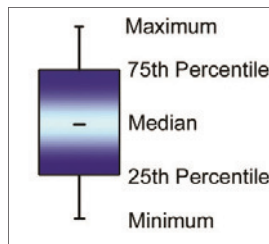


Figure 12. Minnesota Ecoregions.

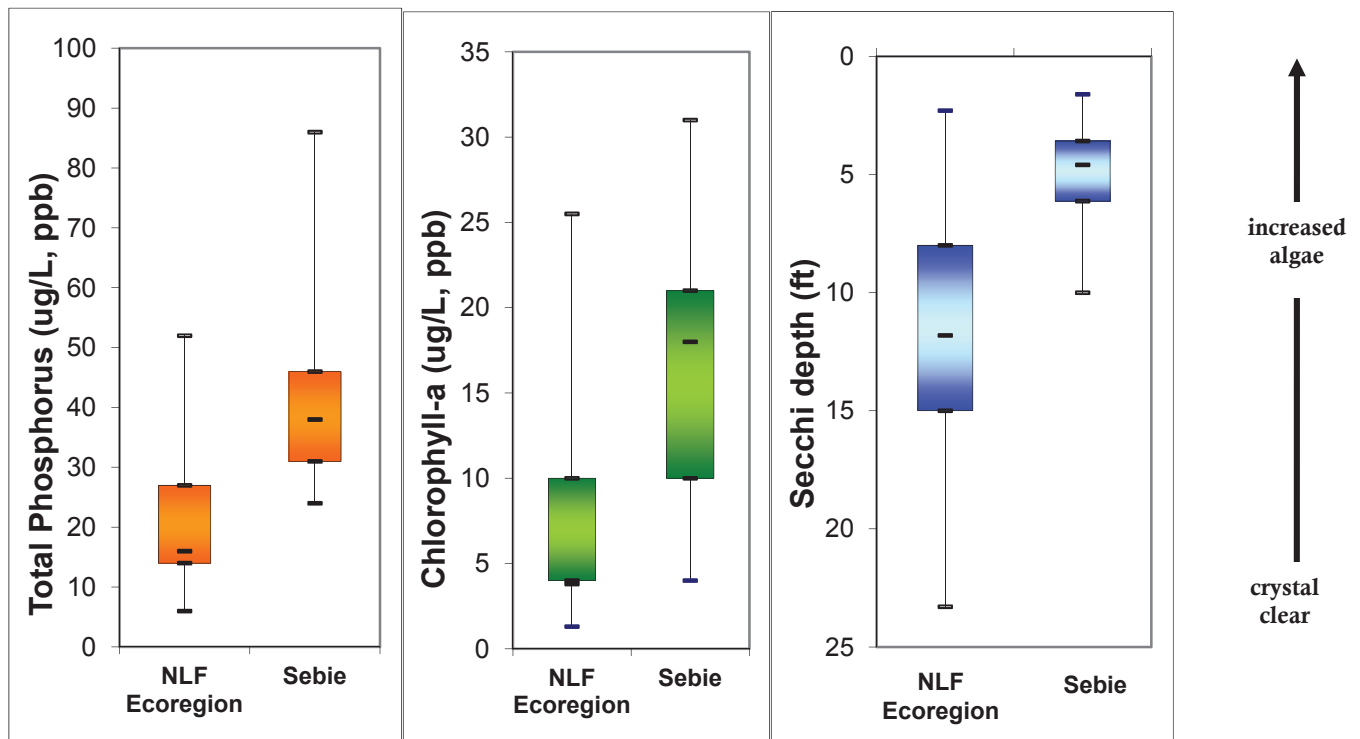


Figure 13. Sebie Lake ranges compared to Northern Lakes and Forest Ecoregion ranges. The Sebie Lake total phosphorus and chlorophyll a ranges are from 32 data points collected in May-September of 2008-2014. The Sebie Lake Secchi depth range is from 43 data points collected in May-September of 2007-2014.

Lakeshed Data and Interpretations

Lakeshed

Understanding a lakeshed requires an understanding of basic hydrology. A watershed is defined as all land and water surface area that contribute excess water to a defined point. The MN DNR has delineated three basic scales of watersheds (from large to small): 1) basins, 2) major watersheds, and 3) minor watersheds.

The Mississippi River-Brainerd Major Watershed is one of the watersheds that make up the Upper Mississippi River Basin, which drains south to the Gulf of Mexico (Figure 14). This major watershed is made up of 128 minor watersheds. Sebie Lake is located in minor watershed 10070 (Figure 15).

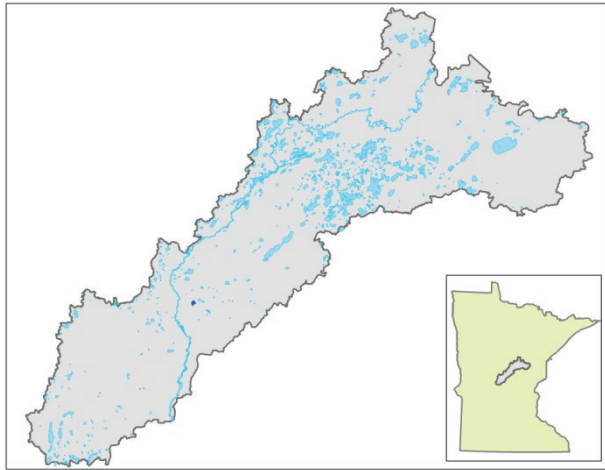


Figure 14. Major Watershed.

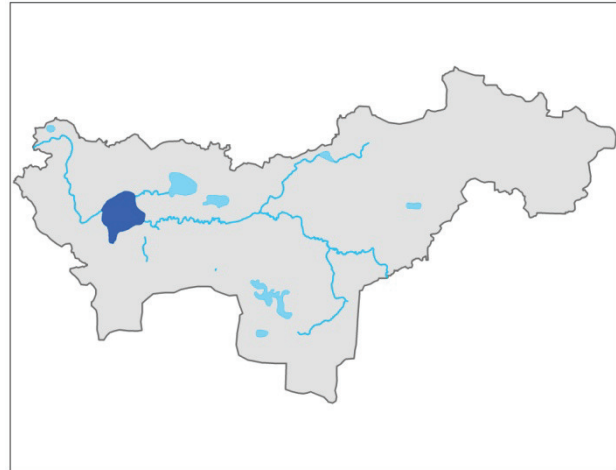


Figure 15. Minor Watershed.

The MN DNR also has evaluated catchments for each individual lake with greater than 100 acres surface area. These lakesheds (catchments) are the “building blocks” for the larger scale watersheds. Sebie Lake falls within lakeshed 1007001 (Figure 16). Though very useful for displaying the land and water that contribute directly to a lake, lakesheds are not always true watersheds because they may not show the water flowing into a lake from upstream streams or rivers. While some lakes may have only one or two upstream lakesheds draining into them, others may be connected to a large number of lakesheds, reflecting a larger drainage area via stream or river networks. For further discussion of Sebie Lake’s watershed, containing all the lakesheds upstream of the Sebie Lake lakeshed, see page 17. The data interpretation of the

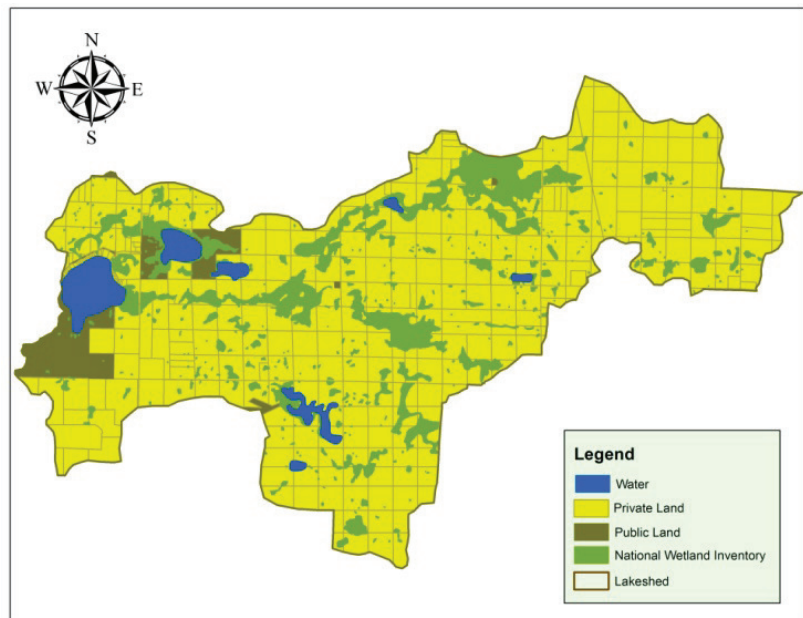


Figure 16. Sebie Lake lakeshed (1007001) with land ownership, lakes, wetlands, and rivers illustrated.

Sebie Lake lakeshed includes only the immediate lakeshed as this area is the land surface that flows directly into Sebie Lake.

The lakeshed vitals table identifies where to focus organizational and management efforts for each lake (Table 9). Criteria were developed using limnological concepts to determine the effect to lake water quality.

KEY





















-  Possibly detrimental to the lake
-  Warrants attention
-  Beneficial to the lake

Table 9. Sebie Lake lakeshed vitals table.

Lakeshed Vitals		Rating
Lake Area	183.31 acres	descriptive
Littoral Zone Area	117 acres	descriptive
Lake Max Depth	27 miles	descriptive
Lake Mean Depth	NA	NA
Water Residence Time	NA	NA
Miles of Stream	11.58	descriptive
Inlets	2	
Outlets	1	
Major Watershed	10 - Mississippi River-Brainerd	descriptive
Minor Watershed	10070	descriptive
Lakeshed	1007001	descriptive
Ecoregion	Northern Lakes and Forests	descriptive
Total Lakeshed to Lake Area Ratio (total lakeshed includes lake area)	60:1	
Standard Watershed to Lake Basin Ratio (standard watershed includes lake areas)	104:1	
Wetland Coverage (NWI)	14.4%	
Aquatic Invasive Species	None	
Public Drainage Ditches	0	
Public Lake Accesses	1	
Miles of Shoreline	2.29 miles	descriptive
Shoreline Development Index	1.2	
Public Land to Private Land Ratio	18.7:1	
Development Classification	Recreational Development	
Miles of Road	14.1 miles	descriptive
Municipalities in lakeshed	None	
Forestry Practices	Yes in county tax forfeited land. See page 19, Figure 21.	
Feedlots	3	
Sewage Management	Individual Subsurface Sewage Treatment Systems (Inspection and assessment required for all permits and property transfers within the Shoreland Protection Zone)	
Lake Management Plan	None	
Lake Vegetation Survey/Plan	DNR, 1995	

Land Cover / Land Use

The activities that occur on the land within the lakeshed can greatly impact a lake. Land use planning helps ensure the use of land resources in an organized fashion so that the needs of the present and future generations can be best addressed. The basic purpose of land use planning is to ensure that each area of land will be used in a manner that provides maximum social benefits without degradation of the land resource.

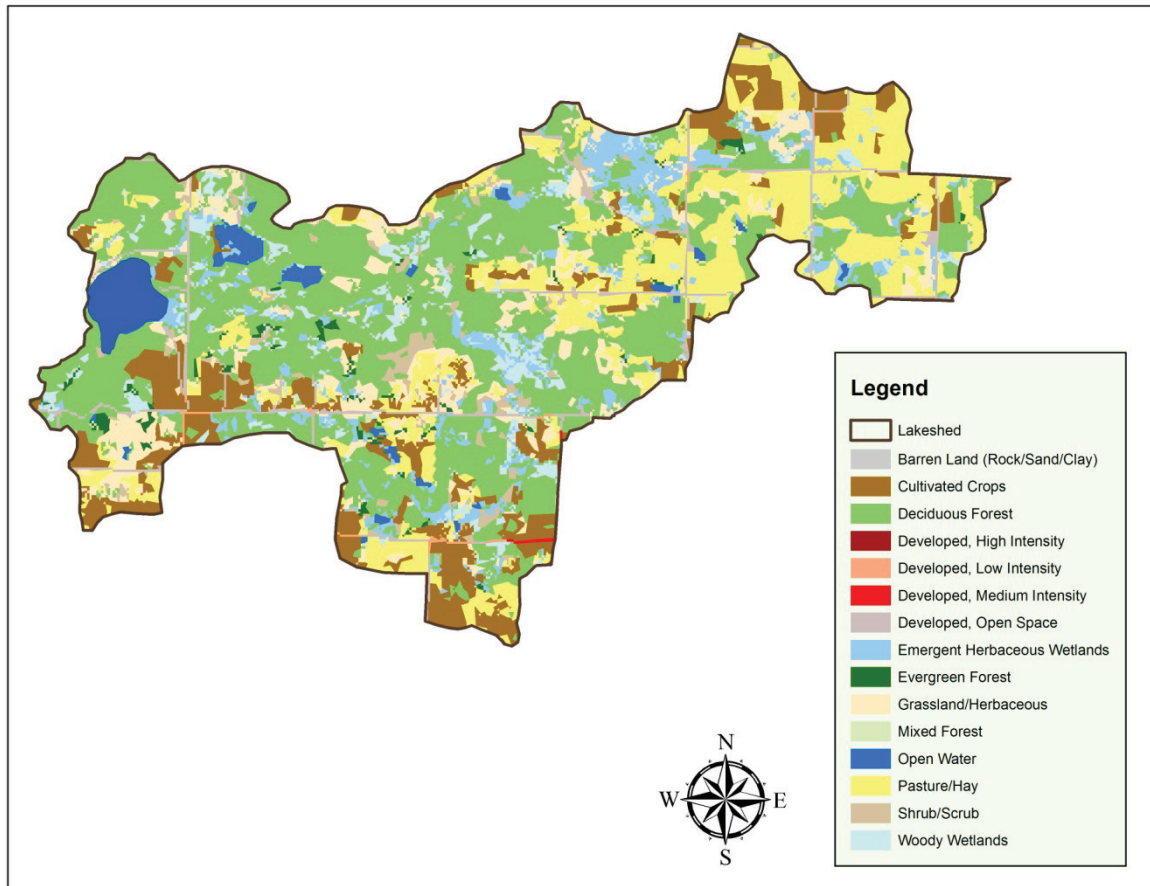


Figure 17. Sebie Lake lakeshed (1007001) land cover (NLCD 2011).

Changes in land use, and ultimately land cover, impact the hydrology of a lakeshed. Land cover is also directly related to the land's ability to absorb and store water rather than cause it to flow overland (gathering nutrients and sediment as it moves) towards the lowest point, typically the lake. Impervious intensity describes the land's inability to absorb water, the higher the % impervious intensity the more area that water cannot penetrate in to the soils. Monitoring the changes in land use can assist in future planning procedures to address the needs of future generations.

Phosphorus export, which is the main cause of lake eutrophication, depends on the type of land cover occurring in the lakeshed. Figure 17 depicts the land cover in Sebie Lake's lakeshed.

The National Land Cover Dataset (NLCD) has records from 2001 and 2011. Table 10 describes Sebie Lake's lakeshed land cover statistics and percent change from 2001 to 2011. There was an increase in cultivated cropland (+57 acres) and a decrease in forest (-22 acres) and grasslands (-37 acres). This trend in land use change is generally bad for water quality.

Table 10. Sebie Lake's lakeshed land cover statistics and % change from 2001 to 2011 (Data Source: NLCD).

Land Cover	2001 Acres	Percent	2011 Acres	Percent	% Change 2001 to 2011
Cultivated Crops	1246.59	11.71	1304.31	12.25	0.5420
Deciduous Forest	4169.23	39.16	4159.60	39.06	-0.0905
Developed, High Intensity	0.24	0.00	1.01	0.01	0.0072
Developed, Low Intensity	25.32	0.24	28.62	0.27	0.0310
Developed, Medium Intensity	8.98	0.08	9.11	0.09	0.0012
Developed, Open Space	330.59	3.10	325.63	3.06	-0.0466
Emergent Herbaceous Wetlands	698.20	6.56	693.23	6.51	-0.0467
Evergreen Forest	120.67	1.13	108.37	1.02	-0.1155
Grassland/Herbaceous	951.19	8.93	914.91	8.59	-0.3407
Mixed Forest	17.98	0.17	12.69	0.12	-0.0497
Open Water	317.04	2.98	327.24	3.07	0.0958
Pasture/Hay	2018.09	18.95	2026.23	19.03	0.0764
Shrub/Scrub	229.80	2.16	228.07	2.14	-0.0163
Woody Wetlands	514.04	4.83	508.95	4.78	-0.0478
Total Area	10647.96				

Table 11. Sebie Lake development area and % change from 1990-2000 (Data Source: UMN Landsat).

Category	1990 Acres	Percent	2000 Acres	Percent	Change (acres) 1990 to 2000
Total Impervious Area	61	0.59	121	1.16	60 acres
Urban Acreage	317	2.98	539	5.06	222 acres

Demographics

Sebie Lake is classified as a Recreational Development lake. Recreational Development lakes usually have between 60 and 225 acres of water per mile of shoreline, between 3 and 25 dwellings per mile of shoreline, and are more than 15 feet deep.

The Minnesota Department of Administration Geographic and Demographic Analysis Division extrapolated future population in 5-year increments out to 2035. Compared to Crow Wing County as a whole, Fort Ripley Township has a higher growth projection (source: <http://www.demography.state.mn.us>).

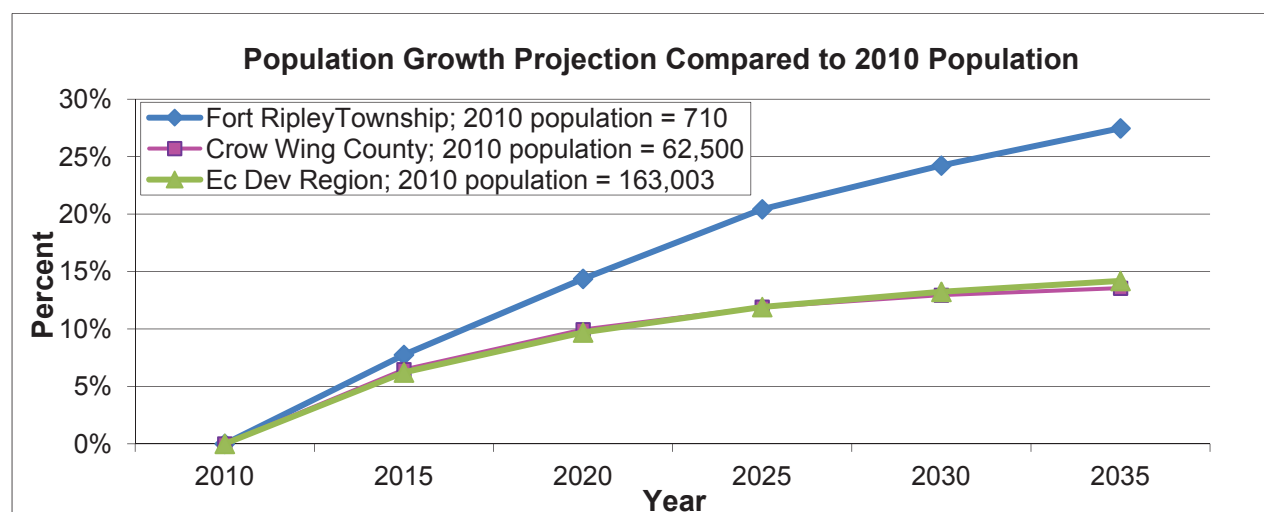
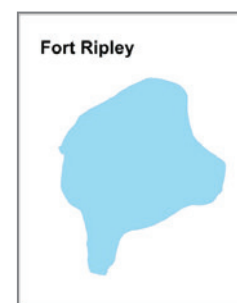


Figure 18. Population growth projection for adjacent townships and Crow Wing County.

Lakeshed Water Quality Protection Strategy

Each lakeshed has a different makeup of public and private lands. Looking in more detail at the makeup of these lands can give insight on where to focus protection efforts. The protected lands (easements, wetlands, public land) are the future water quality infrastructure for the lake. Developed land and agriculture have the highest phosphorus runoff coefficients, so this land should be minimized for water quality protection.

The majority of the land within Sebie Lake 's lakeshed is privately owned forested uplands and agriculture (Table 12). This land can be the focus of development and protection efforts in the lakeshed.

Table 12. Land ownership, land use/land cover, estimated phosphorus loading, and ideas for protection and restoration in the lakeshed (Sources: County parcel data and the 2011 National Land Cover Dataset).

	Private (91.5)					3.6	Public (4.9)		
	Developed	Agriculture	Forested Uplands	Other	Wetlands	Open Water	County	State	Federal
Land Use (%)	3.27	30.71	38.50	8.51	10.51	3.6	4.95	0	0
Runoff Coefficient Lbs of phosphorus/acre/year	0.45 – 1.5	0.26 – 0.9	0.09		0.09		0.09	0.09	0.09
Estimated Phosphorus Loading Acreage x runoff coefficient	157 –522	850 –2943	369		0.9		47.397	0	0
Description	Focused on Shoreland	Cropland	Focus of development and protection efforts	Open, pasture, grass-land, shrub-land	Protected				
Potential Phase 3 Discussion Items	Shoreline restoration	Restore wetlands; CRP	Forest stewardship planning, 3 rd party certification, SFIA, local woodland cooperatives		Protected by Wetland Conservation Act		County Tax Forfeit Lands	State Forest	National Forest

DNR Fisheries approach for lake protection and restoration

Credit: Peter Jacobson and Michael Duval, Minnesota DNR Fisheries

In an effort to prioritize protection and restoration efforts of fishery lakes, the MN DNR has developed a ranking system by separating lakes into two categories, those needing protection and those needing restoration. Modeling by the DNR Fisheries Research Unit suggests that total phosphorus concentrations increase significantly over natural concentrations in lakes that have watershed with disturbance greater than 25%. Therefore, lakes with watersheds that have less than 25% disturbance need protection and lakes with more than 25% disturbance need restoration (Table 13). Watershed disturbance was defined as having urban, agricultural and mining land uses. Watershed protection is defined as publicly owned land or conservation easement.

Table 13. Suggested approaches for watershed protection and restoration of DNR-managed fish lakes in Minnesota.

Watershed Disturbance (%)	Watershed Protected (%)	Management Type	Comments
< 25%	> 75%	Vigilance	Sufficiently protected -- Water quality supports healthy and diverse native fish communities. Keep public lands protected.
	< 75%	Protection	Excellent candidates for protection -- Water quality can be maintained in a range that supports healthy and diverse native fish communities. Disturbed lands should be limited to less than 25%.
25-60%	n/a	Full Restoration	Realistic chance for full restoration of water quality and improve quality of fish communities. Disturbed land percentage should be reduced and BMPs implemented.
> 60%	n/a	Partial Restoration	Restoration will be very expensive and probably will not achieve water quality conditions necessary to sustain healthy fish communities. Restoration opportunities must be critically evaluated to assure feasible positive outcomes.

The next step was to prioritize lakes within each of these management categories. DNR Fisheries identified high value fishery lakes, such as cisco refuge lakes. Ciscos (*Coregonus artedii*) can be an early indicator of eutrophication in a lake because they require cold hypolimnetic temperatures and high dissolved oxygen levels. These watersheds with low disturbance and high value fishery lakes are excellent candidates for priority protection measures, especially those that are related to forestry and minimizing the effects of landscape disturbance. Forest stewardship planning, harvest coordination to reduce hydrology impacts and forest conservation easements are some potential tools that can protect these high value resources for the long term.

Sebie Lake's lakeshed is classified with having 10% of the watershed protected and 34% of the watershed disturbed (Figure 19). Therefore, this lakeshed should have a restoration focus. Goals for the lake should be to restore disturbed land use. Sebie Lake has two other lakesheds flowing into it (Figure 20).

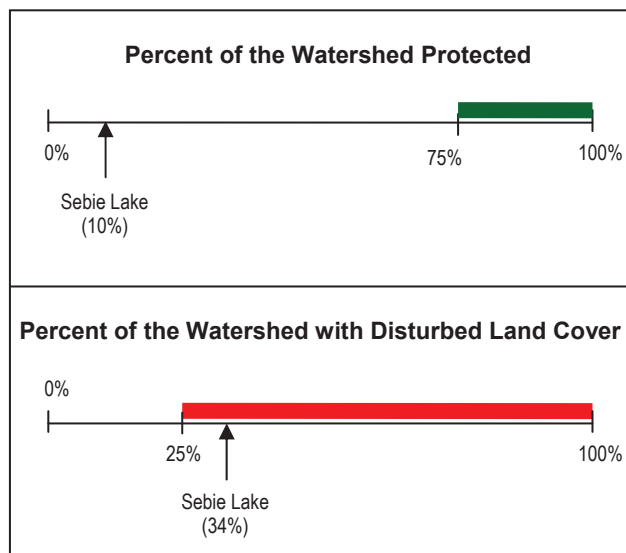


Figure 19. Sebie Lake's lakeshed percentage of watershed protected and disturbed.

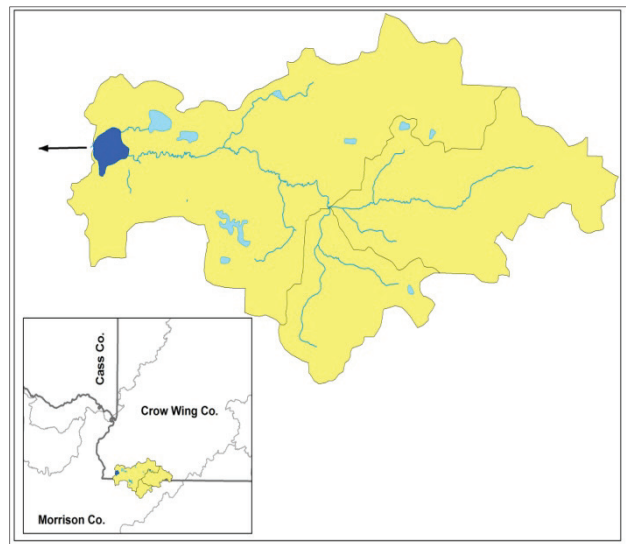


Figure 20. Lakesheds that contribute water to the Sebie Lake lakeshed. Color-coded based on management focus (Table 13).

Status of the Fishery (DNR, as of 07/09/2007)

Sebie Lake is a 169-acre lake located 1.5 miles east of Fort Ripley in Crow Wing County. Maximum depth is 27.0 feet and 69 % is less than 15 feet deep. Bottom substrate in the shoal waters (less than 4 feet) was primarily sand, with scattered areas of muck. The aquatic plant community consisted of over 19 species. Curlyleaf pondweed, an exotic plant was found around much of the shoreline. Lakeshore owners with a DNR issued permit have been applying chemicals to attempt to control the plant. The northern pike population was moderate at 4.5/gill net. Three past surveys had catch rates of 8.2/gill net (1969) to 15.0/gill net (1990). The 2007 size distribution was from 18.7 to 29.1 inches and 15 % were 24.0 inches or larger. Black crappie were present in very good numbers, with gill net catch of 5.0/gill net a all-time high for this lake and the trap net catch rates were within range of past nettings. A total of 19.0% were greater than 8.0 inches. Bluegill abundance was moderate and comparable to past surveys, with average size only 5.2 inches in the trap net. The 1969 survey had 35% of the bluegill captured at 8.0 inches or greater. The 2007 survey had none.

See the link below for specific information on gillnet surveys, stocking information, and fish consumption guidelines. <http://www.dnr.state.mn.us/lakefind/showreport.html?downum=18016100>

Key Findings / Recommendations

Monitoring Recommendations

Transparency monitoring at site 201 should be continued annually. It is important to continue transparency monitoring weekly or at least bimonthly every year to enable year-to-year comparisons and trend analyses. Total Phosphorus and chlorophyll *a* monitoring should continue, as the budget allows, to track trends in water quality.

The inlets to Sebie Lake should be monitored for phosphorus since there is a declining water quality trend for both phosphorus and transparency.

Overall Summary

Sebie Lake is a eutrophic lake (TSI = 56) with evidence of a declining trend in water quality. The total phosphorus, chlorophyll *a* and transparency ranges are worse than the ecoregion ranges. The lake is not currently on Minnesota's Impaired Waters List, but is being assessed in 2018 and could be included in the 2020 list. If the county wants to petition that the lake be expedited, the best route for that is the public comment period on the 2016 Impaired Waters List.

Thirty-four percent (34%) of the Sebie Lake lakeshed is disturbed by development and agriculture (Figure 19). The threshold of disturbance where water quality tends to decline is 25%. Sebie Lake is over this threshold and the water quality is showing a declining trend. The majority of the land use in the lakeshed is forested uplands (39%) and agriculture (31%) (Table 12).

The declining transparency and phosphorus trend could be due to a number of impacts. First of all, the shallow depth of the lake makes it susceptible to internal loading, and the phosphorus seasonal pattern indicates that this could be occurring in the lake (Figure 7). In a shallow lake, the water column never completely stratifies. Any windy day can mix up the water column causing phosphorus from the anoxic lake bottom to re-suspend into the water. This phenomenon is known as internal loading. These high phosphorus concentrations are fueling algae blooms in summer in Sebie Lake (Figure 8).

Secondly, Sebie Lake has a very large lakeshed (60:1), which is the land area that drains in to the lake (Table 9, Figure 16), and a large watershed (104:1) (Table 9). There was an increase in

cultivated cropland (+57 acres) and a decrease in forest (-22 acres) and grasslands (-37 acres) in the lakeshed from 2001-2011 (Table 10). The lakeshed area is 30% agriculture (Table 12) with 3 animal feedlots (Table 9). These land use practices can contribute nutrients to the lake.

The lakeshed also has areas of concentrated development. Concentrated development usually has a lot of impervious surface, which can enable nutrient runoff to run into the lake when it rains. The lakeshore of Sebie Lake also has very concentrated development on the north shore, but the south shore is public land (Figure 16). There was a major increase in impervious acreage(+60 acres) and urban acreage (+222 acres) in the lakeshed between 1990-2000. These land use changes can affect water quality.

Thirdly, curly-leaf pondweed is present in Sebie Lake. This is an aquatic invasive plant that can grow very thick. In addition, when it dies off in late June/early July it can release large amounts of phosphorus into the lake. This phosphorus can feed algae and cause blooms.

County data show forestry occurring in the lakeshed on county tax forfeited land (Figure 21). This cutting appears to be fairly close to the lake. On-the-ground inspection would show whether soil runoff is occurring in this area.

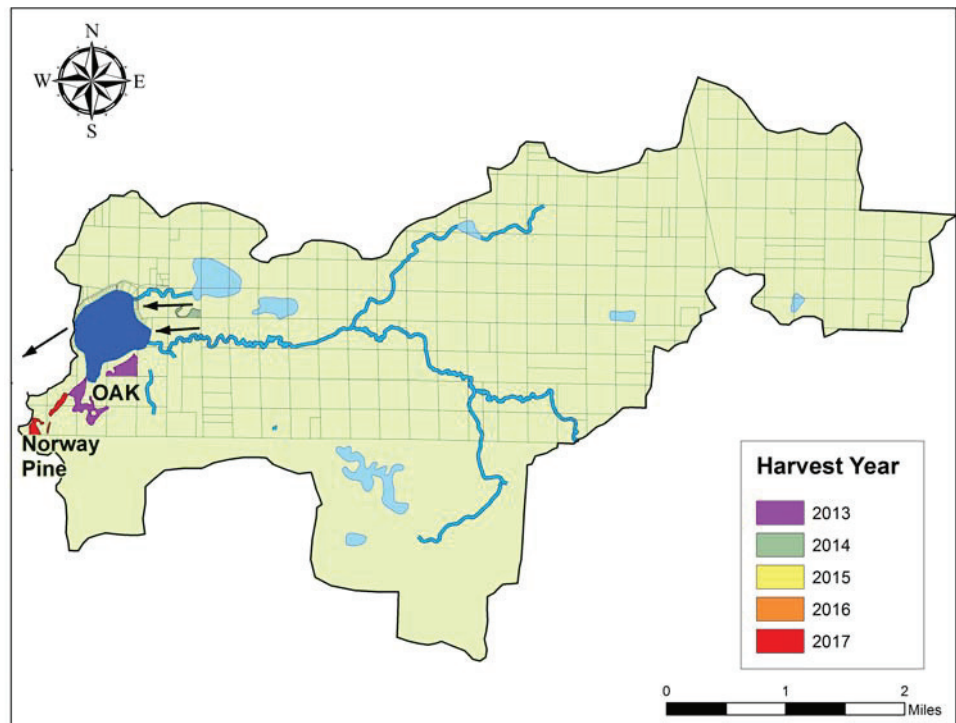


Figure 21. Forestry occurring in county tax forfeited land in the Sebie Lake Lakeshed (data source: Crow Wing County).

Priority Impacts to the Lake

Only half the lakeshore is developed, but Sebie is showing a decline in water quality. The decline is likely due to impacts in the watershed. The priority impacts to Sebie Lake are the large watershed, agricultural land use in the lakeshed, internal loading, and the expansion of residential housing development around the lakeshore.

Best Management Practices Recommendations

The management focus for Sebie Lake should be to restore the current water quality and lakeshed. Restoration efforts should be focused on managing and/or decreasing the impact caused by additional phosphorus addition to the lake from internal loading, agriculture, and impervious surface area.

The current lakeshore homeowners can lessen their negative impact on water quality by installing or maintaining the existing trees on their properties. Forested uplands contribute significantly less phosphorus (lbs/acre/year) than developed land cover (Table 12). In addition, filter strips or native vegetative buffers could be installed to decrease or slow the runoff reaching the water's edge. Septic systems should be pumped and inspected regularly.

See the Future Studies section on the next page for specific project ideas.

Project Implementation

The best management practices above can be implemented by a variety of entities. Some possibilities are listed below.

Individual property owners

- Shoreline restoration
- Rain gardens
- Aquatic plant bed protection (only remove a small area for swimming)
- Conservation easements

Lake Associations

- Lake condition monitoring
- Ground truthing – visual inspection upstream on stream inlets
- Watershed runoff mapping by a consultant
- Shoreline inventory study by a consultant
- Conservation easements

Soil and Water Conservation District (SWCD) and Natural Resources Conservation Service (NRCS)

- Shoreline restoration
- Stream buffers
- Wetland restoration
- Work with farmers to
 - Restore wetlands
 - Implement conservation farming practices
 - Land retirement programs such as Conservation Reserve Program

Future Studies

Future studies that would better pinpoint the impacts on the lake include a shoreline inventory, monitoring stream inlets, monitoring for internal loading, a watershed flow analysis, and curly-leaf pondweed treatment. The shoreline inventory would consist of driving around the lake and rating each parcel as to how much of the frontage has a vegetative buffer. Parcels with no buffer can be targeted for restoration projects with the Crow Wing Soil and Water Conservation District.

To determine the phosphorus loading from the watershed, the inlets could be monitored during baseline and peak flow events (spring thaw and heavy rains). The inlets could also be ground-truthed, which entails walking them to look for erosion and insufficient vegetative buffers.

Monitoring for internal loading involves collecting hypolimnion water samples (water samples taken 1 foot above the lake's bottom) and corresponding dissolved oxygen profiles. If internal loading is occurring, an alum treatment could be looked into to trap the phosphorus at the bottom of the lake.

A watershed flow analysis would be done using GIS software to see the areas of heaviest runoff into the lake. This analysis would also help where stormwater mitigation, rain gardens and shoreline restoration would have the most positive impact on the lake.

If Curly-leaf pondweed is found in a large area of the lake and is suspected of being a phosphorus source, it could be treated with aquatic herbicide to try and decrease its presence in the lake.

County-wide Recommendation

In order to better manage the impact of septic systems on lake water quality, it is recommended that the county implement a lake-wide septic inspection program. In a program such as this, the county would focus on one to three lakes a year, pull septic system records on those lakes, and require old systems to be inspected. This program can rotate through the county doing a few lakes each year.

Since conversion of small cabins to large lake homes could be a future issue, strengthening county shoreline ordinances such as set-backs, impervious surface limits and shoreline alteration (installation of retaining walls and removing trees) will help to protect water quality.

Organizational contacts and reference sites

Sebie Lake Area Conservation Association	No contact info.
Crow Wing County Land Services Department	322 Laurel Street, Suite 14, Brainerd, MN 56401 218-824-1128 http://crowwing.us/index.aspx?nid=211
Crow Wing Soil and Water Conservation District	322 Laurel Street, Suite 13, Brainerd, MN 56401 (218) 828-6197 http://www2.co.crow-wing.mn.us/swcd/
DNR Fisheries Office	1601 Minnesota Drive, Brainerd, MN 56401 (218) 828-2550 http://www.dnr.state.mn.us/lakefind/index.html
Regional Minnesota Pollution Control Agency Office	7678 College Road, Suite 105, Baxter, MN 56425 (218) 828-2492 http://www.pca.state.mn.us
Regional Board of Soil and Water Resources Office	1601 Minnesota Drive, Brainerd, MN 56401 (218) 828-2383 http://www.bwsr.state.mn.us

Jacob Frie

From: Jacob Frie
Sent: Friday, June 29, 2018 4:58 PM
To: 'clerkfortripleytownship@gmail.com'
Cc: Gary Griffin; 'Thomas_J_Gustafson@graco.com'
Subject: Notice of intention to form Sebie Lake - Lake Improvement District (LID)
Attachments: Sebie Lake LID petition.pdf; Sebie Lake LID management plan.pdf; Sebie LID petition checklist (signed).pdf; NOTICE OF PUBLIC HEARING - LID SEBIE LAKE.pdf; RMB Report.pdf

Good afternoon Fort Ripley Township:

Pursuant to Minnesota Statute 103B.521, Crow Wing County is sending you a copy of the petition (see attached) to form a Sebie Lake – Lake Improvement District and associated documents. Crow Wing County encourages to the Town Board to respond to the proposed creation of the district in writing through landservices@crowwing.us or via postal mail at this address:

Jacob Frie
Environmental Services Supervisor
Crow Wing County Land Services Building
322 Laurel Street – suite #15
Brainerd, MN 56401

Also, this e-mail is also notifying you that a public hearing shall be conducted concerning the potential establishment of a Sebie Lake LID on Tuesday, July 24th, 2018 at 9:20am on the 3rd floor of the Crow Wing County Historic Courthouse located at 326 Laurel Street, Brainerd, MN. See also attached.

A formal decision concerning whether or not the LID shall be formed will be made either at the August 14 or August 28, 2018, regularly scheduled County Board meeting.

For any questions about the proposed LID or the process to form a LID, please contact myself at my information below.

Thank you.

Sincerely,

Jacob Frie
Environmental Services Supervisor
 Land Services Department
 322 Laurel Street, Suite 15
 Brainerd, MN 56401

Cell: (218) 839-8889
 Office: (218) 824-1124
www.crowwing.us

Let us know how we are doing.

Customer Service Survey

Attachment: E-mail notifying Fort Ripley Township (6_29_2018) (2952 : Establishment of Sebie Lake Improvement District)

Jacob Frie

From: Jacob Frie
Sent: Tuesday, June 19, 2018 10:53 AM
To: 'Kathleen.Metzker@state.mn.us'; 'Finnerty, Bonnie (MPCA)'
Cc: Gary Griffin; 'Thomas_J_Gustafson@graco.com'
Subject: Notice of Petition to form a LID - Sebie Lake
Attachments: Sebie Lake LID petition.pdf; Sebie Lake LID management plan.pdf; Sebie LID petition checklist (signed).pdf; Sebie Lake pre-petition meeting 1-4-16.pdf

Good morning MN DNR and MPCA:

This e-mail serves notice that on 6/15/2018, a petition was handed in to Crow Wing County for the purposes of proposing the creation of a Sebie Lake – Lake Improvement District (LID). As per State Statutes, we are notifying the MN DNR and MPCA within 5 days of receiving the petition. See attachments for details.

Thank you.

Jacob Frie
Environmental Services Supervisor

Land Services Department
 322 Laurel Street, Suite 15
 Brainerd, MN 56401

Cell: (218) 839-8889
 Office: (218) 824-1124
www.crowwing.us

Let us know how we are doing.

Customer Service Survey



Our Vision: Being Minnesota's favorite place.

Our Mission: Serve well. Deliver value. Drive results.

Our Values: Be responsible. Treat people right. Build a better future.

Attachment: E-mail to MPCA and MN DNR (6_19_2018) (2952 : Establishment of Sebie Lake Improvement District)

July 18, 2018

Crow Wing County Board of Commissioners
Crow Wing County Historic Courthouse
326 Laurel St., Suite 13
Brainerd, MN 56401

Re: DNR Advisory Report on the Formation of the Sebie Lake Improvement District in Crow Wing County

Dear Commissioners:

I am writing to inform you that the Minnesota Department of Natural Resources has reviewed the petition submitted to create the Sebie Lake Improvement District (SLID) and prepared this Advisory Report in accordance with Minnesota Rules, part 6115.0970, subp. 5. We conclude that:

- we approve of the proposed boundary for the Sebie Lake LID for the purpose of aquatic plant management and in-lake water quality projects;
- we advise that the proposed management plan, which focuses on the removal of Curly-leaf Pondweed (*Potamogeton crispus*, CLP) to reduce phosphorus, will not be effective in attaining the LID's stated purpose of improving water quality; and
- we recommend that the LID proposers work with the MN DNR aquatic invasive species specialist to develop a Lake Vegetation Management Plan (LVMP) before further herbicide application to reduce CLP, and wait until the MPCA has completed the TMDL plan currently underway for Sebie Lake to evaluate the lake's needs and devise feasible programs to reduce nutrients, and then build the LID's objectives and programs around the activities specified in the TMDL plan. This would be a much more effective strategy to manage vegetation and improve water quality than that currently proposed in the Lake Sebie LID management plan.

Goals of the Proposed Lake Improvement District

The stated purpose of the Sebie Lake LID is to "improve the water quality of the lake through lake management, aquatic vegetation control, and related services." The accompanying management plan proposes to accomplish this primarily by reducing Curly-leaf Pondweed (CLP) through herbicide application.

Residents of Sebie Lake have treated the lake with herbicides for CLP since 2004. In the past, funding for treatments has been raised with proceeds from a fishing contest fundraiser as well as donations, but reliance on these funding methods is insufficient to sustain CLP management. Therefore, the lake association is proposing to found a LID to provide a reliable funding source.

Background Information on Sebie Lake

1. Sebie Lake (Lake ID Number 18016100) is classified as Recreational Development (RD). In Crow Wing County, RD lakes have structure setbacks of 100 feet above the Ordinary High Water Level (OWHL).
2. Sebie has an area of approximately 180 acres with a littoral area (15 feet deep or less per M.R. part 6280.0100, sub 9) of 117 acres, or 63 percent of the surface area. Generally, the littoral zone is the part of a lake where rooted aquatic plants can grow, though the maximum depth at which plants can grow depends on water clarity and so varies from lake to lake and even from year to year within the same lake. Its maximum depth is 27 feet.
3. The ratio of land to water in Sebie Lake's watershed is fairly large. The immediate catchment has an area of approximately 10,650 acres, and the total upstream watershed as an area of approximately 18,400 acres. These yield land:lake ratios of approximately 60:1 for the direct catchment and 105:1 for the total watershed. These large land:water ratios indicate that Sebie Lake is vulnerable to watershed disturbances.
4. Animal species of special concern identified in or near the lake include the bald eagle (*Haliaeetus leucocephalus*) and the Eastern hognose snake (*Heterodon platirhinos*). Blanding's turtle (*Emydoidea blandingii*) has been observed in the lake's catchment. Plants of special concern identified in or near the lake include butternut (*Juglans cinerea*), White Adder's Mouth (*Malaxis monophyllos* var. *brachypoda*), and Georgia bulrush (*Scirpus georgianus*)¹.
5. MN DNR Wildlife has identified Sebie Lake as a Wild Rice Lake².
6. Two aquatic invasive species have been documented in or near the lake. CLP was first reported in 1995 and has been addressed since 1997³. Purple loosestrife (*Lythrum salicaria*) was first observed in 1987.
7. Sebie Lake is in the Northern lakes and Forests Ecoregion.
8. Most of the landscape in the lake's catchment is either forested or used for agriculture. Forested land (both upland and wetland) covers approximately 45%; pasture and grazing land about 20%; and row crops 12% of the catchment area. An additional 3% of the catchment is developed in some other fashion (residential or commercial properties, for example)⁴. In addition, there are three feedlots in the catchment. This level of development exceeds the 25% threshold for disturbance beyond which water quality tends to decline⁵.
9. Mean total phosphorus and chlorophyll *a* concentrations (43.2 and 16.8 µg/L, respectively) exceed the impaired waters standard and is outside the expected range for the Northern Lakes and Forests Ecoregion⁵.
10. The lake is considered an impaired water for mercury, and the Minnesota Pollution Control Agency (MPCA) has issued a consumption advisory for fish caught in the lake.
11. MPCA recently completed its assessments for lakes and streams in Lake Sebie's watershed and determined that the lake is impaired for excess nutrients. A TMDL plan will be prepared for this lake in 2019⁶.
12. Crow Wing County administers the only public water access on the lake, on the southwest shore. This site has a dock and concrete ramp for launching boats but no public beach.
13. Secchi depth readings have been showing a trend of decreasing water clarity over the last several years. From 2007 to 2014, this decrease averages approximately 2.95 feet per decade. Average summertime water transparency over this interval ranged from approximately 7 feet in 2007 to about 4 feet in 2014, with an overall mean of approximately 5.2 feet. This exceeds the impaired waters standard of 6.5 feet⁵. The lake's trophic status is eutrophic⁷.
14. The proposed method of the Lake Improvement District formation is by citizen petition.

1: Natural Heritage Information System, MN DNR- EWR

2: Wild Rice Lakes and Rivers in Minnesota Shapefile, MN DNR-Division of Fish & Wildlife- Wildlife Unit

3: Sebie Lake LID Management Plan

4: National Land Cover Database 2011- U.S. Geological Survey

5: 2015 Report on Sebie Lake, RMB Environmental Laboratories, Inc.

6: MPCA website; <https://cf.pca.state.mn.us/water/watershedweb/wdip/waterunit.cfm?wid=18-0161-00>

7: Bonnie Finnerty, MPCA Watershed Project Manager, Personal Communication

Issue Analysis

Aquatic Invasive Species Management

CLP was discovered in Sebie Lake in 1995. CLP can grow in dense patches, interfering with surface recreational use. The Sebie Lake Improvement District and the Sebie Lake Association have adopted the goal of reducing CLP coverage to non-nuisance levels to improve surface water use and water quality.

The most recent aquatic vegetation survey available for the lake was conducted in 1995. At that time, the aquatic plant community was diverse and abundant. An aquatic plant survey conducted by the Minnesota Biological Survey in June 1995 found 39 native aquatic and wetland plant species and one non-native plant species in the lake. Submerged, emergent, free floating, floating leafed, and wetland shoreline species were present. In addition, wild rice was documented in the lake in 1999. This abundant and diverse plant community provided good and varied habitat for the lake's fauna. It is essential to protect and maintain these plants as they are important for shoreline protections, maintaining water quality, and providing critical fish habitat. Because the DNR was not provided with any additional information from any more recent surveys, we cannot comment on the current diversity of the lake's aquatic plant community.

The Sebie Lake Association has been treating CLP with herbicides since 2004. No documentation of previous aquatic plant surveys, delineations of treatment areas or CLP patches, or reports of acres treated were submitted with the LID proposal, so it is not possible to evaluate the extent of the CLP problem or the efficacy of past treatments. No evidence has been presented to support the conclusion that CLP is present at nuisance levels in the lake, and, according to the local MN DNR aquatic invasive species specialist, the CLP population in Sebie Lake is insignificant⁸. It therefore has not been established that there is a need to treat CLP in this lake. It also appears that the Sebie Lake Association has not yet adopted a Lake Vegetation Management Plan (LVMP) under the guidance of the MN DNR. According to the proposal, it appears that the LID is relying on its contractor to delineate proposed areas for treatment and conduct pre-and post-treatment vegetation surveys, with plans submitted to the DNR for approval prior to treatment. If this LID is approved, the DNR strongly encourages it to contact Tim Plude (timothy.plude@state.mn.us, 218-203-4354) to develop an AVMP suitable for the lake. CLP has unique life history patterns (emergence and growth early in the spring, followed by midsummer senescence) that must be taken into account when treatments and monitoring surveys are conducted. Any long-term herbicide management of CLP should be conducted in accordance with a DNR-approved AVMP and be monitored with regular CLP surveys.

The petition does not discuss monitoring, cleaning stations, or educational efforts at the public access site on the lake, but such efforts are a key component in managing and limiting the spread of AIS, and MN DNR encourages the LID to adopt such activities as part of its AIS management strategy. Crow Wing County AIS Prevention Program classifies the risk of AIS infestation from Sebie Lake's public access as 'moderate', based on overall usage, proximity to AIS infested waters, and infested status⁹. Crow Wing County and the DNR Watercraft Inspection Program can provide additional guidance to the LID or the lake association on AIS monitoring and prevention of additional AIS infestations in Sebie Lake. The local contact for the DNR's Watercraft Inspection Program, Keri Hull (keri.hull@state.mn.us, 218-203-4357), can provide guidance on establishing and staffing cleaning stations at these sites. In addition, the DNR AIS Grants Coordinator Wendy Crowell (wendy.crowell@state.mn.us, 651-259-5085)

8: Timothy Plude, DNR Invasive Species Specialist- Personal Communication

9: Crow Wing County 2018 AIS Prevention Plan

or DNR Ecosystem Management and Protection Section Manager Ann Pierce (ann.pierce@state.mn.us, 651-259-5119) may be able to provide information on possible funding opportunities for AIS prevention and monitoring efforts.

The petition only addresses management efforts aimed at CLP. However, it is possible that additional AIS may be introduced into Sebie Lake in the future, and the DNR suggests that the LID also consider monitoring and, if necessary, management for possible additional AIS as part of its mission. If this occurs, the LID should coordinate with the DNR to devise, adopt and carry out any additional management actions needed.

Water Quality

Sebie Lake has elevated total phosphorus and chlorophyll *a* concentrations. The primary stated goal of CLP management is to reduce phosphorus levels, but no evidence has been provided that this problem can be mitigated via management of CLP. Although the presence of CLP can increase the concentration of available nutrients in the lake during the latter part of the growing season, due to CLP's distinctive seasonal cycle of very early season growth followed by dieback and concomitant release of nutrients sometime during the summer, it has not been established that this is a factor in this lake. According to DNR Fisheries, there are no scientific studies that show that applying herbicides to lakes to control any type of aquatic vegetation improves water quality¹⁰. In addition, according to the local DNR aquatic invasive species specialist, CLP is not dominant, representing about 15% of the littoral area of the lake, so the negative impact of CLP dieback on water quality in this lake would be minor at best. A decade of large-scale CLP control effort from 2004-2013 has not slowed or reversed undesirable trends in water clarity and total phosphorus over the same time period. Clearly the driver of water quality decline is from some other source.

There are several other sources for phosphorus and other nutrient accumulation in Sebie Lake. These include internal loading, input from the watershed and riparian properties, and noncompliant septic systems. All of these need to be evaluated before a feasible phosphorus management plan can be developed. Sebie Lake has two inlets, which carry runoff from a very large upstream watershed (105:1 watershed:lake ratio) with more than 25% disturbance (agriculture, including three feedlots; forestry; and various types of development). 25% is commonly viewed as the threshold at which water quality begins to show deterioration from disturbance and because this watershed exceeds this threshold, it is quite possible that the elevated phosphorus concentrations in the lake are due, at least in part, to input from the watershed. However, the two inlets are not being monitored for phosphorus concentrations so it is not possible to evaluate this scenario at this time. The lake may also have elevated external phosphorus inputs or internal release from lake sediments, which can easily happen in shallow lakes such as Sebie when wind or temperature changes mix the lake water. Other possible sources of phosphorus input into the lake include effluent from noncompliant septic systems and runoff from riparian properties. Right now, there is too little information to evaluate whether any of these are major factors. More information and a more comprehensive understanding of phosphorus in Sebie Lake is necessary to develop a tenable phosphorus reduction plan.

The DNR strongly encourages the LID, or the Lake Association, to start monitoring both inlets for phosphorus. If the lake is receiving elevated concentrations of phosphorus from one or both of these inlets, then additional actions would be necessary to reduce phosphorus input into the lake. Because this LID is very small (less than 40 landowners, and including only the private riparian parcels on the lake), the LID's direct ability to address phosphorus input from the watershed is highly constrained. The LID would need to work with the MPCA, Crow Wing County, or the Soil and Water Conservation District to come up with a collaborative plan to reduce phosphorus loading from the watershed.

10: Kevin Martini, DNR Aquatic Plant Management Specialist, personal communication

The 2015 RMB Environmental Laboratories, Inc. report for Sebie Lake includes findings and recommendations that should be carefully considered prior to concluding that the management of curly leaf pondweed or any vegetation will improve water quality. There are monitoring recommendations, specific project implementations and future studies that are included within the plan and targeted toward improving the water quality in Sebie Lake.

MPCA has recently listed Sebie Lake as impaired for excessive nutrients and is working on a TMDL plan, but this will not be available until next year. When this is available, the MPCA and local property owners should be in a better position to evaluate the lake's needs and devise feasible programs to reduce nutrients, and then build the LID's objectives and programs around the restoration activities specified in the TMDL plans. This would be a much more effective strategy to reduce nutrients in the lake than the one currently proposed.

Recommendations/Conclusions

Proposed LID Boundaries

The boundaries of the proposed LID include only private properties riparian to Sebie Lake. MR Part 6115.0920 subpart 5 requires that the boundaries include all lands and waters within the direct drainage basin of the lake (shown on the attached map). However, this rule also allows the County Board or City Council to create a boundary less than the entire drainage basin with written Commissioner approval if the boundary selected includes a sufficient amount of the lake's watershed to develop and implement feasible solutions to the problems the LID intends to address. Restriction of the district's boundary to the private riparian properties is sufficient to address the CLP management for which the LID is being proposed. Therefore, in accordance with these rules, the DNR approves the proposed boundaries identified in the resolution.

Advisory Comments & Recommendations

To effectively manage and monitor CLP long-term, we recommend that the LID proposers work with the MN DNR aquatic invasive species specialist to update Sebie Lake's Lake Vegetation Management Plan (LVMP) before undertaking further herbicide treatment. Furthermore, Sebie Lake's more fundamental problem is its elevated phosphorus concentrations, which is not addressed in the Sebie Lake LID management plan, except for reducing CLP. However, the proposed plan of action of removing CLP will probably result in little to no improvement in water quality. On the contrary, the DNR is not aware of any scientific studies that show that applying herbicides to control aquatic vegetation improves water quality in lakes. DNR Fisheries does not support the concept that treating curly-leaf pondweed is going to improve water quality in this lake.

The MPCA is currently working on Sebie Lake's water quality problem, and the LID should be in a much stronger position to pursue programs to improve water quality in this lake, alone and in coordination with the MPCA and other entities, after the MPCA devises its strategy. The DNR therefore strongly encourages the LID to use every feasible nutrient reduction method available to them, and we urge the LID and Crow Wing County to expand the stated mission of this LID to include these additional projects, which will be much more effective for reducing phosphorus than CLP management. We also strongly encourage Crow Wing County to give the LID flexibility to adopt any additional projects suggested by the MPCA's forthcoming TMDL study. The LID proposers and Crow Wing County may also want to consider delaying the formation of this LID for a year and revising its goals to take advantage of the additional information that will be available to it when the MPCA completes the TMDL study.

Thank you for consideration of these comments. Please contact Kathy Metzker, DNR Land Use Hydrologist at 651-259-5694, if you have any questions. If approved, please provide the name and address of the primary contact of the Board of Directors for the LID and remind the LID of its obligation to provide DNR notice of annual meetings and copies of annual reports per MS § 103B.571.

Sincerely,
DIVISION OF ECOLOGICAL AND WATER RESOURCES

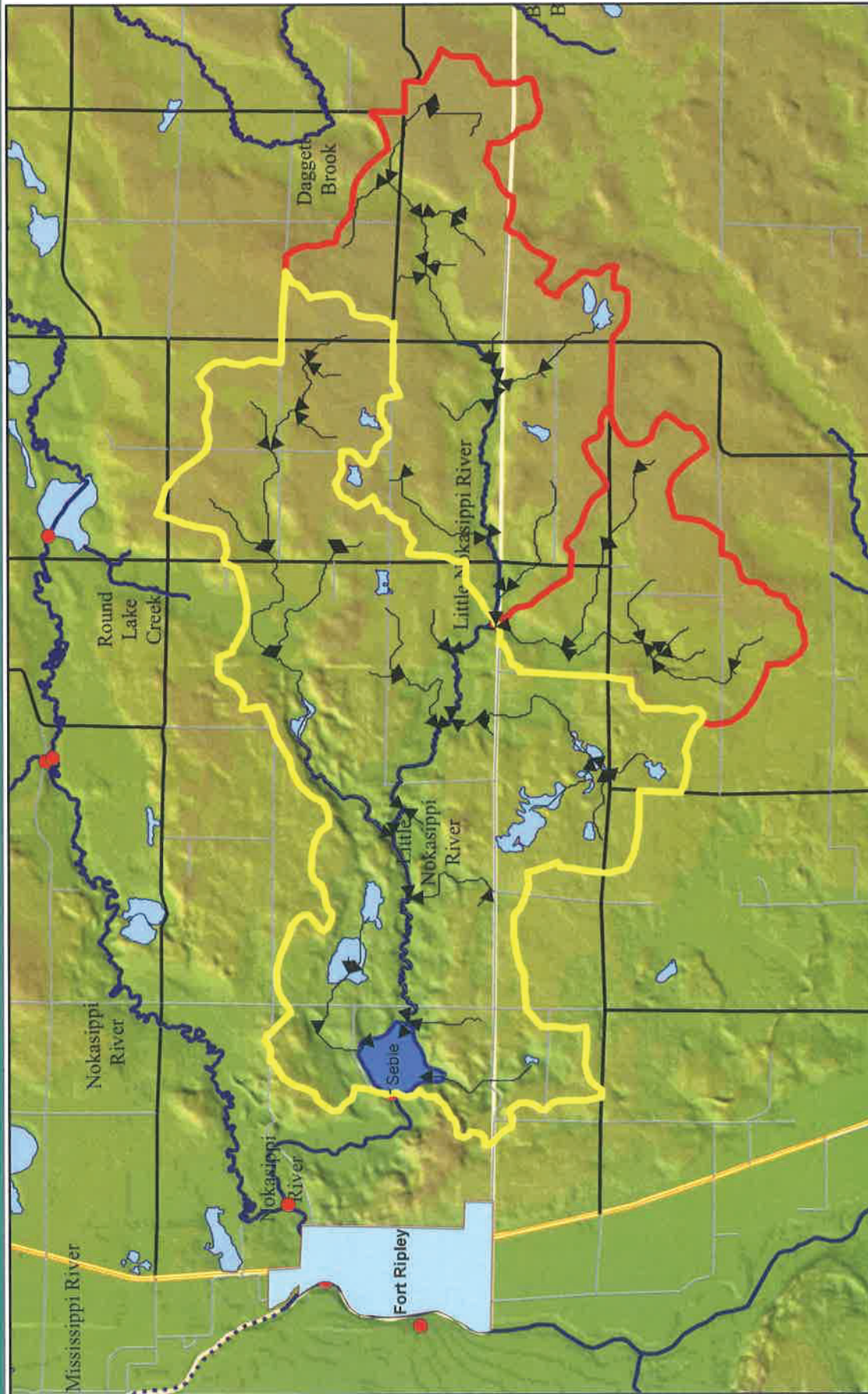


Julie Ekman
Manager, Conservation Assistance and Regulations (CAR) Section

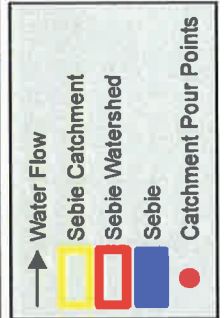
Attachments

c: Jennifer Shillcox, Land Use Programs Supervisor
Heidi Lindgren, Area Hydrologist (Crow Wing County)
Jacob Frie, Environmental Services Supervisor (Crow Wing County)
Tim Plude, DNR Aquatic Invasive Species Specialist
Daniel Petrik, Land Use Specialist
Bonnie Finnerty, Watershed Project Manager- MPCA
Kevin Martini, APM Specialist- DNR Fisheries
Michael Duval, DNR EWR NE-West District Manager
Mike Stacken, Sebie LID representative
Bob Grissom, Sebie LID representative

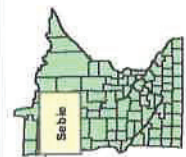
Sebie Lake Watershed



Watershed	Area	
	Acres	Square Miles
Sebie Lake DOW Lake No. 18016100	180	0.28
Direct Catchment Watershed Little Nokasippi River	10,650	16.84
Total Upstream Contributing Watershed	10,830	23.75



The watershed data presented here are part of the National Watershed Boundary Dataset (WBD). A Hydrologic Unit (HU) is the smallest division in the nested, hierarchical watershed classification system of the WBD. Electronic data for use in a GIS (Geographic Information System) can be downloaded from the DNR Data Deli: <http://deli.dnr.state.mn.us/>



Wild Rice Lake Survey Report



DOW Lake ID: 18016100 **Lake Name:** Sebie

Survey Date: 01/01/1999 **Alt. Name:**

Location Information

Legal Description

Township: 43 Range: 32 Section: 36

Primary County: Crow Wing

Work Area Name:

Wildlife Work Area: D212

General DOW Lake Information

Basin Area (Acres): 180

Drainage Area (Acres): 0

PWI Class: P

Number of Public Accesses: 1

Miles of Shoreline: 2

Shoreland Class Code: 2

DOW Wetland Type: 5

Secchi Depth (feet): 6

Watershed ID: 10070

USGS Quad: N12a

Sounding Map ID: C1997

DOW Maximum Lake Depth: 27

DOW Mean Lake Depth: 0

Wild Rice Information

Wild Rice Present (Y/N): Yes

Acres of Wild Rice: 2

Managed (Y/N): No

Managed By:

Management Type:

Ownership:

Wild Rice Comments:

Structure (Y/N): No

Structure Type: None

Structure Description:

Mgmt recommendations:

Location of wild rice stands:

Density and condition:

History of harvests:

Tuesday, July 03, 2018
Part 1 - Page 1

Information Provided by: Minnesota Department of Natural Resources
Division of Wildlife
Shallow Lakes Program

Attachment: MN DNR Advisory Report (7_18_2018) (2952 : Establishment of Sebie Lake Improvement District)