



# 2018 AIS Program Yearend Summary

## Comfort Lake–Forest Lake Watershed District

### Lake Management Districts:

#### Bone Lake District

- Moody Lake
- Bone Lake

#### Little Comfort Lake District

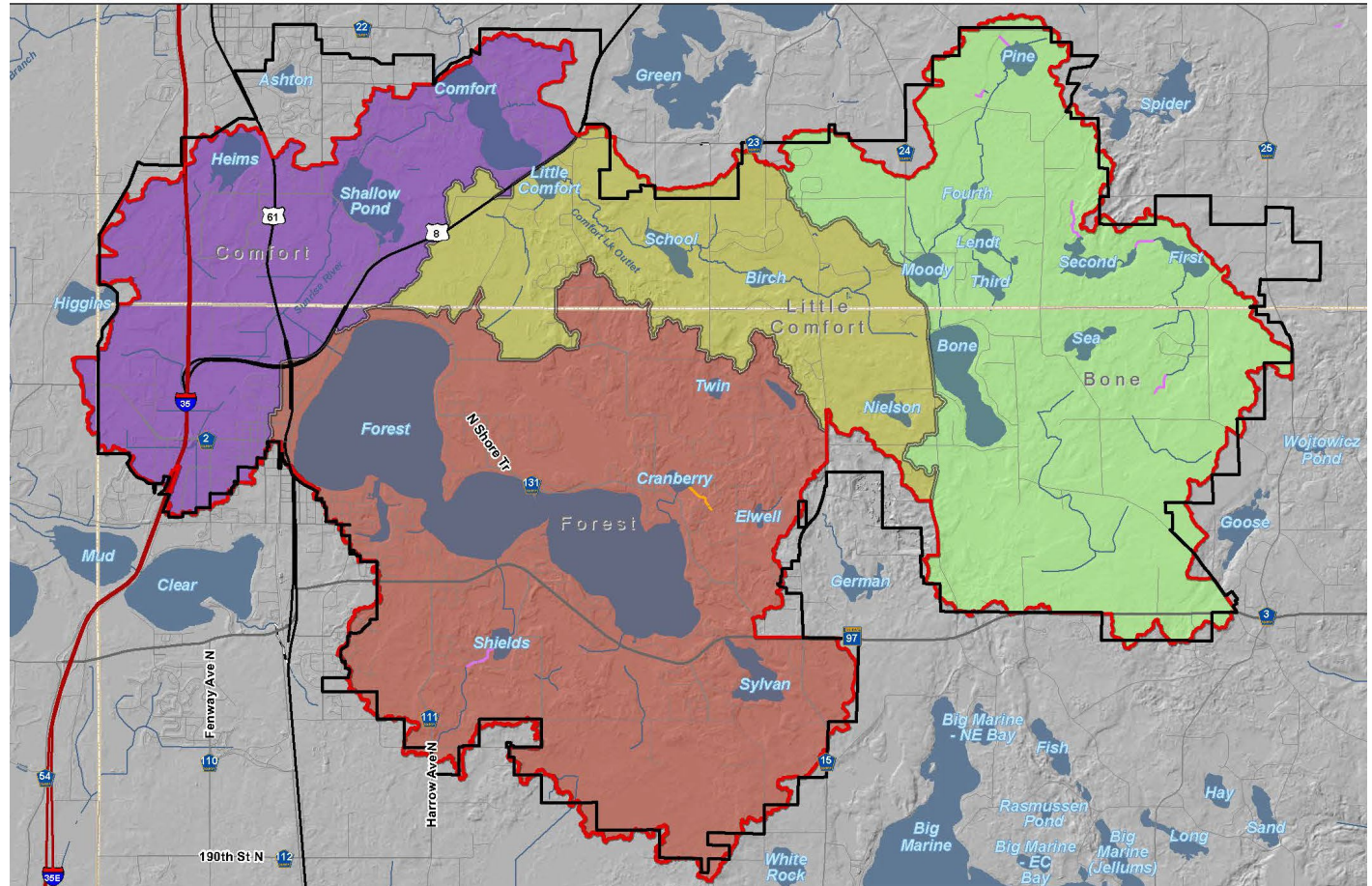
- Little Comfort Lake

#### Forest Lake District

- Shields Lake
- Lake Keewahtin
- Forest Lake

#### Comfort Lake District

- Comfort Lake



Comfort Lake-Forest Lake Watershed District

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# AIS Budget Summary



Lake	Funding Sources		Estimated Yearend Expense Totals			Balance**	Littoral Acreage	Expense/Littoral Acre
	CLFLWD Local	Grants/Cont.	Blue Water Science	Contractor/ Other	EOR			
District-Wide*	\$10,260			(\$1,736)		\$8,524		
Moody	\$0	\$0	\$0	\$0		\$0	22	\$0.00
Bone	\$10,800	\$4,500	(\$7,240)	(\$10,424)		(\$2,364)	124	\$142.45
Little Comfort	\$0	\$0	\$0	\$0		\$0	16	\$0.00
Shields	\$3,500	\$0	\$0	(\$6,500)		(\$3,000)	22	\$295.45
Keewahtin	\$0	\$0	(\$800)	\$0		(\$800)	67	\$11.94
Forest	\$79,000	\$67,330	(\$15,300)	(\$65,701)		\$65,329	1,531	\$52.91
Comfort	\$11,000	\$5,500	(\$7,140)	(\$11,663)		(\$2,303)	90	\$208.92
<b>Total</b>	<b>\$114,560</b>	<b>\$77,330</b>	<b>(\$30,480)</b>	<b>(\$96,024)</b>	\$ -	<b>\$65,386</b>		

EOR AIS Program Management Costs		
Month of Services	Invoice #	Expense
January	N/A	N/A
February	N/A	N/A
March	N/A	N/A
April	N/A	N/A
May	N/A	N/A
June	N/A	N/A
July	N/A	N/A
August	N/A	N/A
September	N/A	N/A
October	N/A	N/A
November		
December		
	Running Total	\$ -

Budget Notes
*District-wide budget line items include General Program Mgmt, Comprehensive Plan & Policy Development, Early Detection & Rapid Response (ZM samplers), and AIS Prevention at Boat Launch Sites
**Use up to \$32,000 from remaining budget balance to fund District vehicle purchase.



# Moody Lake

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## 2018 Yearend Summary

### Winter Aeration System

- The District continued operation of aeration system in winter months (2017-2018) to increase dissolved oxygen and reduce winterkills. This was the third winter the District ran the aerator.
- Oxygen levels were monitored throughout winter. The dissolved oxygen readings were ample for most fish species (i.e. above 4 mg/L) throughout the winter months.
- Due to the long winter and late ice-out conditions the aerator ran until May 2<sup>nd</sup>, after which time staff and EOR canoed around the lake and collected the signs.
- Staff is currently preparing to publish public notice warning about thin ice during aeration operation and explanation of aeration system purpose.

### Curly-leaf Pondweed (CLP)

- The District did not treat curly-leaf pondweed in Moody Lake in 2018. In 2015 the District was notified by the DNR that the external phosphorus load to Moody Lake should be addressed before internal loading from CLP is managed via chemical treatment. Therefore, a permit for herbicide treatment of the full delineated acreage was not granted. This is largely due to the fact that Moody Lake is classified as a Natural Environment Lake (this is unlike most other District lakes which are classified as Recreational Development or General Development).
- The 2019 budget contains \$4,000 for Moody Lake AIS Management. Staff will work with DNR over the winter to ensure necessary plans and approvals are in line for a 2019 herbicide treatment to control curly-leaf pondweed. With external loading now largely addressed through the completion of the Moody Lake Wetland Restoration Project, herbicide treatment should be permitted in 2019.

### Fish Survey

- District staff previously reached out to the DNR Hinckley Area fisheries office to coordinate timing of fish surveys in future years. They indicated that Moody Lake is not surveyed on a regular basis. The last fish survey on Moody Lake was performed in 2012 and the next survey is not yet scheduled.
- Since the District performed a survey in 2015, it should consider doing so again around 2020 or 2021.

# Moody Lake AIS Prevention and Management



		Sub Totals				Annual	Timeline											
		Budget	Grants	BWS	Other	Balance	April	May	June	July	August	September	October	November	December	January	February	
Moody Lake 2018 Activities		\$ -	\$ -	\$ -	\$ -	\$ -												
Curly-Leaf Pondweed	Work Task	2018 Budget				Total Expense												
	Survey					\$ -												
	Summary	\$ -				\$ -												
	Total	\$ -		\$ -	\$ -	\$ -												
Aeration System	Work Task	2018 Budget*	Grants	BWS	Other	Total Expense												
	Permitting					\$ -					WD							
	Setup - Public Notice	\$ -			\$ -	\$ -								WD				
	Operation/Inspections - Electricity				\$ -	\$ -	WD							WD				
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Rough Fish Management	Work Task	2018 Budget	Grants	BWS	Other	Total Expense												
	Survey	\$ -				\$ -												
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
2018 Work Plan and Budgeting							WD/EOR											

\*Aeration system dollars removed because not under AIS Program in budget (under 3010 - Operations and Maintenance)

2017 Work	Status
CLP	No survey or treatment in 2017
Aeration system	Ongoing permitting, operation and maintenance
Rough fish survey	Last performed: 2015. Next survey: 2020 or 2021

Moody Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	C	C	C	D+	D+
Mean summer phosphorus concentration below (µg/L)	60	40	40	86	102
Mean summer secchi depth at or above (ft)	3.3	4.6	4.6	1.9	2.6

2018 Work	Status
Aeration system	System was deactivated after ice-out and signs collected.
CLP	Chemical treatment of CLP not allowed by the DNR in the past. Staff has restarted conversations with DNR in 2018 re 2019 treatment



# Bone Lake

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## 2018 Yearend Summary

### Curly-leaf Pondweed (CLP)

- **Delineation:** Blue Water Science (BWS) performed delineation survey on May 8, 2018, identifying two half-acre patches of moderate to heavy growth. Due to late ice-out this year, the survey occurred two weeks later than usual.
- **Treatment:** Due to small treatment area size, herbicide treatment would likely not be effective. Oftentimes small treatment patches do not achieve the necessary concentration and exposure time due to wind/wave dispersion. As such, the Board of Managers approved funding for Steve McComas to lead a volunteer hand pulling workshop in coordination with the Bone Lake Association. The workshop was held at a shoreline residence on June 28.
- **Assessment:** BWS performed the assessment survey on June 6, 2018, which was the time period of peak CLP growth in area lakes. However, CLP growth had expanded only slightly and was found at 14 sites at light to moderate densities
- **Report:**
  - BWS: Delineation and Assessment Report (Summary distributed in December, full report in January 2019).

### Eurasian Watermilfoil (EWM)

- **Delineation:** BWS performed delineation survey on June 6, 2018, identifying growth in multiple areas ranging from light to heavy. No large areas were delineated for EWM treatment. The delineation map was sent to the Bone Lake Association immediately after receipt.
- **Treatment:** The District did not treat EWM in 2018. Eurasian watermilfoil was covered during the informational hand-pulling workshop.
- **Assessment:** BWS performed the assessment survey on July 9, 2018, and observed that EWM remained fairly widespread at varying densities. Moderate to heavy water lily growth was also observed on July 9<sup>th</sup>. Water lily growth records are useful because in past years the MN Department of Natural Resources has adjusted permitted herbicide treatment areas in order to avoid impacts to native water lilies.
- **Report:**
  - BWS: Delineation and Assessment Report (Summary distributed in December, full report in January 2019).

### Point-Intercept Macrophyte Survey

- **Survey:**
  - Maintained and managed stop logs in the two fish barriers located at the inlet and outlet of the lake
- **Report:**
  - BWS: Point-Intercept Survey Report (Summary distributed in December, full report in January 2019).

## **Rough Fish Management**

- Fish Barriers:
  - Maintained and managed stop logs in the two fish barriers located at the inlet and outlet of the lake
  - Maintained [online spreadsheet](#) that is regularly updated with stop log statuses

## **Zebra Mussels**

- Detection Monitoring: One volunteer monitored a sampler plate on their private dock for early detection. No zebra mussels detected in 2018.

## **Watercraft Inspections** (brief overview; see full report for more detail)

- Hours: Inspectors performed 520 inspection hours on Bone Lake. Based on funding allocations, this year's goal was 525 hours.
- Surveys: 500 inspection surveys were performed on Bone Lake.
- Reports:
  - Chisago County: 2018 AIS Prevention Report (Expected in early 2019)
  - CLFLWD: 2018 Watercraft Inspection Program Report

# Bone Lake AIS Prevention and Management



		Sub Totals				Annual	Timeline											
		CLFLWD Local	Grants	BWS	Contractor	Balance	April	May	June	July	August	September	October	November	December	January	February	
Bone Lake 2018 Activities		\$ 10,800	\$ 4,500	\$ (7,240)	\$ (10,424)	\$ (2,364)												
Curly-Leaf Pondweed	Work Task	CLFLWD Local	Grants	BWS*	Contractor	Total Expense												
	Delin-Report			\$ (2,100)		\$ (2,100)												
	Permitting/Public Notice	\$ 2,800				\$ -												
	Management			\$ (440)		\$ (440)												
	Total	\$ 2,800	\$ -	\$ (2,540)	\$ -	\$ (2,540)												
Eurasian Watermilfoil	Work Task	CLFLWD Local	Grants	BWS	Contractor	Total Expense												
	Delin-Report			\$ (2,000)		\$ (2,000)												
	Permitting/Public Notice	\$ 2,000				\$ -												
	Management		\$ -		\$ -	\$ -												
	Total	\$ 2,000	\$ -	\$ (2,000)	\$ -	\$ (2,000)												
Rough Fish Management	Work Task	CLFLWD Local	Grants	BWS	Contractor	Total Expense												
	Spawning Observations	\$ -				\$ -												
	Harvest					\$ -												
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Zebra Mussels	Work Task	CLFLWD Local	Grants	BWS	Contractor	Total Expense												
	Samplers					\$ -												
	Total	\$ -		\$ -	\$ -	\$ -												
Watercraft Inspections**	Work Task	CLFLWD Local	Grants/Cont.	BWS	Contractor	Total Expense												
	Inspection Hours	\$ 6,000	\$ 4,500		\$ (10,424)	\$ (10,424)												
	Total	\$ 6,000	\$ 4,500	\$ -	\$ (10,424)	\$ (10,424)												
Macrophyte Survey	Work Task	CLFLWD Local	Grants/Contrib	BWS	Contractor	Total Expense												
	Point-Intercept Survey			\$ (2,700)		\$ (2,700)												
		\$ -	\$ -	\$ (2,700)	\$ -	\$ (2,700)												
2018 Work Plan and Budgeting							WD/EOR											

Figures in italics are cost estimates/haven't been invoiced yet  
 \*Plan for \$440 for Blue Water Science to lead hand pulling event  
 \*\*Planned watercraft inspection funding sources include:  
 CLFLWD levy: \$6,000 (1 access)  
 Washington County AIS Prevention Funds: \$1,000  
 Bone Lake Association: \$2,000  
 City of Scandia: \$1,000  
 Scandia Lions Club: \$500

2017 Work	Status
CLP delin & assessment	Final report received (Not approved yet)
CLP treatment	3.89 acres treated on May 12, 2017
EWM delin & assessment	Final report received (Not approved yet)
EWM treatment	No treatment occurred in 2017
Watercraft inspections	315 hours and 277 inspections in 2017
Zebra mussel early detection	No zebra mussel sightings in 2017
Common carp	Little spawning activity observed in 2017

Bone Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	C	C	B	B-	C
Mean summer phosphorus concentration below (µg/L)	40	40	30	30	39
Mean summer secchi depth at or above (ft)	4	4	7	5.8	4.4

2018 Work	Status
CLP delin & assessment	Delineated two, 0.5-acre patches on 5/8/18. Coord. w/ BLA/BWS for hand pulling effort on June 28.
EWM delin & assessment	Delineated growth in multiple spots on 6/6/18. Included EWM pulling during CLP pulling effort, per BWS rec.
Zebra mussel early detection	No zebra mussel sightings in 2018
Common carp	Continued operation of fish barriers
Watercraft inspections	520 inspection hours & 500 inspections performed
Point-Intercept Macrophyte Survey	Completed during week of Sept 3







# Little Comfort Lake

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## 2018 Yearend Report

### **Curly-leaf Pondweed (CLP)**

- The District did not treat curly-leaf pondweed on Little Comfort Lake this year. Due to staff turnover, a plant survey was not completed this year. Staff will plan to check on CLP growth in 2019.

### **Zebra Mussels**

- The District is still seeking a volunteer to monitor a zebra mussel sampler plate for Little Comfort Lake. As the Comfort Lake zebra mussel population expands over the years, sampler plates will help to track trends.

# Little Comfort Lake AIS Prevention and Management



		Sub Totals				Annual	Timeline											
		Budget	Grants	BWS	Contractor	Balance												
Little Comfort Lake 2018 Activities		\$ -	\$ -	\$ -	\$ -	\$ -	April	May	June	July	August	September	October	November	December	January	February	
Curly-Leaf Pondweed	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense												
	Survey					\$ -		WD										
	Summary	\$ -				\$ -		WD										
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Zebra Mussels	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense												
	Samplers					\$ -	WD											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
2018 Work Plan and Budgeting							WD/EOR											

2017 Work	Status
CLP survey	Survey performed by staff. Treatment not recommended
Zebra mussel early detection	Plate sampling did not occur. Will occur in 2018

Little Comfort Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	C	C	B	C	C
Mean summer phosphorus concentration below (µg/L)	40	40	30	43	64
Mean summer secchi depth at or above (ft)	5	5	7	3.6	4.5

2018 Work	Status
CLP survey	Low densities in previous years suggest full delin/assessment not necessary.
Zebra mussel early detection	No sampler in 2018



# Shields Lake

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## 2018 Yearend Summary

### **Rough Fish Management**

- Fish Barrier:
  - The District continued operation of electric fish barrier located on tributary between Shields Lake and Forest Lake. The maintenance agreement with Smith-Root Inc. was terminated so as to reduce expenses for annual maintenance site visit. The fish barrier is still operational, but without support from Smith-Root.
  - Design and project bidding for the mechanical fish barrier installation project were completed in 2018. Construction was originally planned for fall 2018, but changes in steel pricing created issues with the originally-selected contractor. The project has been re-bid and a new contractor will be selected for 2019 construction.
- Carp Surveys:
  - Carp Solutions Inc. completed electrofishing surveys in August and September. Carp Solutions estimates the biomass of carp currently in the lake is 530 kg/ha, or 5.3 times the management threshold. Carp Solutions recommends that at least 200, but ideally between 600-900 carp should be removed from the lake, or 60-80% of the population. The relatively large size of each carp means that the fish would have more power to dig deeper into sediments, which would not only cause internal phosphorus loading, but also potentially reduce the lifespan of the proposed Shields Lake alum treatment to be completed in fall 2019. A carp removal effort will be pursued prior to fall 2019.

### **Zebra Mussels**

- The District is seeking a volunteer to monitor a zebra mussel sampler plate on a private dock on Shields Lake. A sampler plate is no longer deployed on the public fishing pier because of past issues with damage and theft.

### **Curly-leaf pondweed (CLP)**

- The District has not treated curly-leaf pondweed in Shields Lake in recent years due to multiple factors such as high levels of external phosphorus loading and lack of recreational public boat launch.
- The 2019 budget contains \$4,000 for Shields Lake AIS Management. Like Moody Lake, Shields Lake is classified as a Natural Environment Lake. Staff will work with DNR over the winter to ensure necessary plans and approvals are in line for a 2019 herbicide treatment to control curly-leaf pondweed. External loading will be fully addressed by the completion of the Shields Lake Stormwater Harvest & Irrigation Reuse System in 2018. As such, internal phosphorus loading reduction through CLP herbicide treatment should be permitted in 2019.

# Shields Lake AIS Prevention and Management



		Sub Totals				Annual	Timeline												
		Budget	Grants	BWS	Contractor	Balance	April	May	June	July	August	September	October	November	December	January	February		
Shields Lake 2018 Activities		\$ 3,500	\$ -	\$ -	\$ (6,500)	\$ (3,000)													
Fish Barrier	Work Task	2018 Budget	Grants	Staff/EOR	Contractor	Total Expense													
	Retrofit Project					\$ -							Contractor						
	Planning/Inspections/Oversight					\$ -	WD/EOR												
	Total	\$ -	\$ -	\$ -	\$ -	\$ -													
Zebra Mussels	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense													
	Samplers					\$ -		WD											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -													
Curly-Leaf Pondweed	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense													
	Survey					\$ -													
	Summary					\$ -													
	Total	\$ -	\$ -	\$ -	\$ -	\$ -													
Rough Fish Management	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense													
	Survey	\$ 3,500			\$ (6,500)	\$ (6,500)					Contractor								
	Total	\$ 3,500	\$ -	\$ -	\$ (6,500)	\$ (6,500)													
2018 Work Plan and Budgeting							WD/EOR												

Figures in italics are cost estimates/haven't been invoiced yet

2017 Work	Status
Zebra mussel early detection	Plate sampling did not occur. Will occur in 2018
Curly-leaf pondweed	No CLP survey/management proposed until watershed phosphorus load is addressed

Shields Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	D	C	C	D-	D-
Mean summer phosphorus concentration below (µg/L)	100	60	60	191	239
Mean summer secchi depth at or above (ft)	4.26	4.26	4.26	2.2	2.9

2018 Work	Status
Zebra mussel early detection	No sampler in 2018
Fish barrier upgrades/maint.	Construction to be completed by July 1, 2019
Curly-leaf pondweed	Staff in communication with MN DNR about managing CLP in Shields Lake after the watershed P load is addressed
Rough fish management	Three electrofishing surveys completed in Aug/Sept, est. biomass ~530 kg/ha, carp removal recommended



# Lake Keewahtin

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## 2018 Yearend Summary

### **AIS early detection survey**

- Blue Water Science (BWS) and District staff performed a survey on August 16. No new invasive species such as Eurasian watermilfoil, flowering rush, or starry stonewort were found. Purple loosestrife and curly-leaf pondweed, both pre-existing, were the only invasives to be found.
- Report
  - BWS: Survey Report

### **Purple loosestrife**

- In 2016 and 2017, purple loosestrife-eating beetles were collected in White Bear Lake and released at Lake Keewahtin.
- Locations of purple loosestrife were documented in the AIS early detection survey on August 16.
- Report:
  - BWS: Survey Report (Report in January 2019).

### **Zebra mussels**

- One volunteer monitored a sampler plate on private dock for early detection. No zebra mussels detected in 2018.

# Lake Keewahtin AIS Prevention and Management



		Sub Totals				Annual	Timeline											
		Budget	Grants	BWS	Contractor	Balance	April	May	June	July	August	September	October	November	December	January	February	
Lake Keewahtin 2018 Activities		\$ -	\$ -	\$ (800)	\$ -	\$ (800)												
Purple Loosestrife	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense												
	Check-Up Assessment					\$ -				WD								
	Biocontrol Collection and Release					\$ -				WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
AIS Detection Survey	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense												
	Survey			\$ (800)						WD/BWS								
	Total	\$ -	\$ -	\$ (800)	\$ -	\$ -												
Zebra Mussels	Work Task	2018 Budget	Grants	BWS	Contractor	Total Expense												
	Samplers			\$ -		\$ -				WD								
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Curly-leaf Pondweed	Work Task	2018 Budget	Grants/Contrib	BWS	Contractor	Total Expense												
	Scuba diver hand pulling					\$ -												
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
2018 Work Plan and Budgeting							WD/EOR											

Figures in italics are cost estimates/haven't been invoiced yet

2017 Work	Status
AIS detection survey	Completed on 7/27/17. No new AIS found
Biocontrol collection and release	Collected and released on 5/31/17
Purple loosestrife check-up	Locations documented on 7/27/17
Zebra mussel early detection	Volunteer observed no ZM in 2017

Lake Keewahtin Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	A	A	A	A	A
Mean summer phosphorus concentration below (µg/L)	20	20	20	14	15
Mean summer secchi depth at or above (ft)	10	10	10	14.2	14.8

2018 Work	Status
AIS early detection survey	Completed on Aug 16, no new invasives found
Purple loosestrife check-up	Completed on Aug 16
Zebra mussel early detection	Volunteer observed no ZM in 2018
Curly-leaf pondweed pulling	Plan to perform in 2019



# Forest Lake

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## 2018 Yearend Summary

### Curly-leaf Pondweed (CLP)

- **Delineation:** Blue Water Science (BWS) performed delineation survey on May 8 and May 16, 2018 identifying 16.6 acres for treatment. It is estimated that the late ice-off conditions inhibited curly-leaf growth this year.
- **Treatment:** Lake Management Inc. treated 16.6 acres on May 30, 2018 using an average treatment depth of 9 feet.
- **Assessment:** BWS performed assessment on June 15, 2018. The assessment indicated that CLP was controlled in the treatment areas. There is some CLP in 1st lake (west basin), but mostly light growth.
- **Reports:**
  - BWS: Delineation and Assessment report (Summary distributed in December, full report in January 2019).

### Eurasian Watermilfoil (EWM)

- **Delineation:** BWS performed delineation surveys on May 8, May 16, and June 15, 2018 identifying 40.74 acres for treatment.
- **Treatment:** The District did not treat EWM in 2018. The Forest Lake Lake Association contracted with Clarke Aquatic Services to treat the entire delineated acreage using split applications on July 23 and 24, 2018.
- **Assessment:** BWS observed fair control in the treated areas with mostly light growth in a few scattered areas within the treatment polygons. EWM was also found in several patches outside of areas that were not treated.
- **Reports:**
  - BWS: Delineation and Assessment report (Summary distributed in December, full report in January 2019).

### Flowering Rush

- **Treatment Round 1:** PLM Lake and Land Management Inc. (PLM) performed the first round of spot spray treatment of all observable flowering rush patches. The first round of treatment was conducted on July 13<sup>th</sup>; which was earlier in the season compared to 2017. The earlier treatment was a recommendation of PLM based on previous successful methodology in Detroit Lakes. The cumulative treatment acreage for round one was 32.5 acres.
- **Assessment Survey Round 1:** On July 25<sup>th</sup> Blue Water Science performed an assessment survey to evaluate treatment effectiveness. It found mostly small patches of flowering rush at 126 sites. A few patches were observed within treatment areas, but most were outside the treatment areas.
- **Treatment Round 2:** Using information from the assessment survey, PLM performed the 2<sup>nd</sup> round of herbicide treatment on August 21<sup>st</sup>. The treatment acreage was able to be greatly reduced, while still expecting effective results. In total, 3.75 acres were spot sprayed during the 2<sup>nd</sup> round of treatment.

- Flower Cutting: With the help of Washington Conservation District, District staff performed two rounds of manual flower removal so as to prevent the spread of the viable seeds. Overall, stem collection counts were significantly lower than in 2017. It is hypothesized that the combination of herbicide treatments and flower removals is effective in reducing the amount of re-growth year after year.
  - First round occurred on 8/15/18; approximately 150-250 stems (flowers) were collected.
  - Second round occurred on 9/10/18; approximately 75-175 stems (flowers) were collected (half as much as round 1).
- Final Assessment: BWS observed good control during assessment; surveyed 0.06 acres of flowering rush post-treatment. For comparison, flowering rush coverage was initially 7.8 acres in 2014.
- Reports:
  - BWS: Delineation and assessment report (Summary distributed in December, full report in January 2019).

### **Zebra Mussels**

- Monitoring: Three zebra mussel sampling plates were deployed around Forest Lake this year. Zebra mussel growth densities were variable across the lake, but in general showing an increasing trend over time. Zebra mussels were discovered in Forest Lake in 2015. It is expected that densities will continue to rise over the upcoming years, then potentially crash after reaching a peak.

### **Watercraft Inspections** (brief overview; see full report for more detail)

- Hours: District inspectors performed 1,983 inspection hours on Forest Lake. Based on funding allocations, this year's goal was 2,500 hours. DNR inspectors performed 310 inspection hours on Forest Lake (at no cost to the District). Inspection hours on Forest Lake totaled 2,293.
- Surveys: a combined total of 5,546 inspection surveys were performed on Forest Lake (4,577 by District inspectors, 969 by DNR inspectors).
- Reports:
  - Chisago County: 2018 AIS Prevention Report (Expected in early 2019)
  - CLFLWD: 2018 Watercraft Inspection Program Report



# Forest Lake AIS Prevention and Management



		Sub Totals				Annual	Timeline										
		CLFLWD Local	Grants/Cont.	BWS	Contractor	Balance	April	May	June	July	August	September	October	November	December	January	February
Forest Lake 2018 Activities		\$ 79,000	\$ 67,330	\$ (15,300)	\$ (65,701)	\$ 65,329											
Curly-Leaf Pondweed	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Delin-Report			\$ (2,800)		\$ (2,800)											
	Permitting/Public Notice	\$ 28,800			\$ -	\$ -											
	Management		\$ 13,830		\$ (10,658)	\$ (10,658)											
	Total	\$ 28,800	\$ 13,830	\$ (2,800)	\$ (10,658)	\$ (13,458)											
Flowering Rush	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Delin-Report			\$ (6,100)		\$ (6,100)											
	Permit/Outreach/Pub. Notice	\$ 28,800	\$ 700		\$ (1,791)	\$ (1,791)											
	Management		\$ 11,300		\$ (11,611)	\$ (11,611)											
	Total	\$ 28,800	\$ 12,000	\$ (6,100)	\$ (13,402)	\$ (19,502)											
Eurasian Watermilfoil	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Delin-Report			\$ (3,400)		\$ (3,400)											
	Permitting/Public Notice	\$ 3,400				\$ -											
	Management					\$ -											
	Total	\$ 3,400	\$ -	\$ (3,400)	\$ -	\$ (3,400)											
Zebra Mussels	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Samplers					\$ -											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -											
Watercraft Inspections*	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Inspection Hours	\$ 18,000	\$ 41,500	\$ -	\$ (41,533)	\$ (41,533)											
	Total	\$ 18,000	\$ 41,500	\$ -	\$ (41,533)	\$ (41,533)											
Plant Harvester	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Permit Fees	Total Expense											
	DNR Aquatic Plant Mgmt Permitting				\$ (107)	\$ (107)											
	Harvester Operation					\$ -											
	Total	\$ -	\$ -	\$ -	\$ (107)	\$ (107)											
Macrophyte Survey	Work Task	CLFLWD Local	Grants/Contrib.	BWS	Contractor	Total Expense											
	Point-Intercept Survey			\$ (3,000)		\$ (3,000)											
	Total	\$ -	\$ -	\$ (3,000)	\$ -	\$ (3,000)											
2018 Work Plan and Budgeting							WD/EOR										

Figures in italics are cost estimates/haven't been invoiced yet

\*Watercraft inspection funding sources include:

- CLFLWD levy: \$18,000 (3 accesses)
- Washington County AIS Prevention Funds: \$15,500
- Forest Lake Lake Association: \$2,500
- City of Forest Lake: \$23,500

2017 Work	Status
CLP delin & assessment	Final report received (Not approved yet)
CLP treatment	Treated 169 acres on May 9th, 2017
EWM delin & assessment	Final report received (Not approved yet)
EWM treatment	Treated 10 acres in June and 23 acres in August
FR delin & assessment	Final report received (Not approved yet)
FR treatment	Treated 40 acres in August and 31 acres in Sep.
Watercraft inspections	2,752 hours of paid inspections occurred in 2017
ZM population monitoring	Zebra mussels observed in 1st, 2nd, and 3rd Lakes

Forest Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	C	C	B	B-	C+
Mean summer phosphorus concentration below (µg/L)	37	37	30	35	35
Mean summer secchi depth at or above (ft)	5	5	7	7.5	6.0

2018 Work	Status
CLP delin, treatment & assessment	5/8/18 & 5/16/18. Delineated 16.6 acres to treat. Treated all 16.6 acres on 5/30/18. Assessment on
EWM delin & assessment	Delineation on 6/15/18. FLLA treated on 7/23 & 7/24
FR delin & assessment	2 rounds of treatment & flower cutting. Assessment survey found good control (0.06 acres of FR)
ZM population monitoring	ZM discovered in 2015, densities increasing over time
Watercraft inspections	1,983 paid inspection hours & 4,577 inspections performed
Point-Intercept Macrophyte Survey	Completed during week of Sept 3





# Comfort Lake

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## 2018 Yearend Summary

### Curly-leaf Pondweed (CLP)

- Delineation: Blue Water Science (BWS) performed delineation survey on May 8, 2018, identifying no areas of nuisance growth for treatment by the District. Due to late ice-out this year, the survey occurred two weeks later than usual.
- Treatment: The District did not treat CLP on Comfort Lake in 2018 (same as 2016 and 2017).
- Assessment: BWS performed assessment on June 6, 2018, identifying no major changes since the delineation survey.
- Reports:
  - BWS: Delineation and Assessment report (Summary distributed in December, full report in January 2019).

### Eurasian Watermilfoil

- Delineation: BWS performed delineation survey on June 6, 2018, identifying growth in multiple areas ranging from light to heavy. The delineation map was sent to the Comfort Lake Association immediately after receipt.
- Treatment: The District did not treat EWM in 2018. There was evidence of spot treatments occurring in nearshore areas. A hand removal demonstration was conducted on July 8 at a lakeshore residence.
- Assessment: BWS performed the assessment survey on July 9, 2018 and found EWM growth had been reduced and was growing at light to moderate densities. No heavy EWM growth was observed on July 9, 2018.
- Reports:
  - BWS: Delineation and Assessment report (Summary distributed in December, full report in January 2019).

### Zebra Mussels

- Monitoring: Two zebra mussel sampling plate was deployed on Comfort Lake this year. At the end of the summer the plate showed moderate coverage of young adult sized zebra mussels. Zebra mussels were discovered in Comfort Lake in 2017. It is expected that densities will continue to rise over the upcoming years, then potentially crash after reaching a peak.

### Watercraft Inspections (brief overview; see full report for more detail)

- Hours: Inspectors performed 575.5 inspection hours on Comfort Lake. Based on funding allocations, this year's goal was 575 hours.
- Surveys: 727 inspection surveys were performed on Comfort Lake.
- Reports:
  - Chisago County: 2018 AIS Prevention Report (Expected in early 2019)
  - CLFLWD: 2018 Watercraft Inspection Program Report

# Comfort Lake AIS Prevention and Management



		Sub Totals				Annual Balance	Timeline											
		CLFLWD Local	Grants/Cont.	BWS	Contractor		April	May	June	July	August	September	October	November	December	January	February	
Comfort Lake 2018 Activities		\$ 11,000	\$ 5,500	\$ (7,140)	\$ (11,663)	\$ (2,303)												
Curly-Leaf Pondweed	Work Task	CLFLWD Local	Grants/Cont.	BWS	Contractor	Total Expense												
	Delin-Report			\$ (1,400)		\$ (1,400)		BWS							BWS			
	Permitting/Public Notice	\$ 2,700				\$ -	WD											
	Hand Pulling			\$ (440)		\$ (440)	WD/BWS/Volunteers											
	Total	\$ 2,700	\$ -	\$ (1,840)	\$ -	\$ (1,840)												
Eurasian Watermilfoil	Work Task	CLFLWD Local	Grants/Cont.	BWS	Contractor	Total Expense												
	Delin-Assess			\$ (2,300)		\$ (2,300)		BWS							BWS			
	Permitting/Public Notice	\$ 2,300				\$ -												
	Nitrogen Project*			\$ (3,000)		\$ (3,000)												
	Total	\$ 2,300	\$ -	\$ (5,300)	\$ -	\$ (5,300)												
Zebra Mussels	Work Task	CLFLWD Local	Grants/Cont.	BWS	Contractor	Total Expense												
	Samplers					\$ -	WD											
	Total	\$ -	\$ -	\$ -	\$ -	\$ -												
Watercraft Inspections**	Work Task	CLFLWD Local	Grants/Cont.	BWS	Contractor	Total Expense												
	Inspection Hours	\$ 6,000	\$ 5,500		\$ (11,663)	\$ (11,663)	WD/Chisago Co.											
	Total	\$ 6,000	\$ 5,500	\$ -	\$ (11,663)	\$ (11,663)												
2017 Work Plan and Budgeting							WD/EOR											

Figures in italics are cost estimates/haven't been invoiced yet

\*Board moved at March 22nd meeting to fund this project from reserve

\*\*Planned watercraft inspection funding sources include:

CLFLWD levy: \$6,000 (1 access)

Chisago County AIS Prevention Funds: \$5,000

Comfort Lake Association: \$500

2017 Work	Status
CLP delin & assessment	Final report received (Not approved yet)
CLP treatment	No treatment in 2016
EWM delin & assessment	Final report received (Not approved yet)
EWM treatment	Treated 7.5 acres on 5/11/16
Watercraft inspections	659.5 hours and 610 total inspections occurred in 2017
Zebra mussel monitoring	Volunteer monitoring plates did not detect adult ZMs

Comfort Lake Water Quality Goals					
	2020 Goal	2030 Goal	2040 Goal	2017 Data	5-Year Average
Water quality rating at or above	C	C	B	C+	C+
Mean summer phosphorus concentration below (µg/L)	40	40	30	31	33
Mean summer secchi depth at or above (ft)	5	5	7	5.8	5.4

2018 Work	Status
CLP delin & assessment	Delineated no significant patches on 5/8/18. Coord. w/ CLA/BWS for CLP/EWM hand pulling effort on July 8.
EWM delin & assessment	Delineated widespread growth on 6/6/18. Sent map to CLA. Included EWM pulling during CLP pulling effort, per BWS rec.
Zebra mussel monitoring	ZM discovered in 2017, densities increasing over time
Watercraft inspections	575.5 inspection hours & 727 inspections performed