

# NORMANDALE LAKE WATER QUALITY IMPROVEMENT PROJECT

## FINDINGS OF FACT

JUNE 13, 2018

### Background

The Nine Mile Creek Watershed District Board of Managers (Board) is the Responsible Governmental Unit (RGU) for environmental review of the Normandale Lake Water Quality Improvement Project. The preparation of the discretionary Environmental Assessment Worksheet (EAW) was completed in accordance with Minnesota Statutes chapter 116D and implementing regulations administered by the Minnesota Environmental Quality Board (EQB).

The EAW was filed with the EQB and circulated to the EQB's EAW Distribution List for review and comment. The notice was published in the EQB Monitor on April 30, 2018, announcing a 30-day comment period which ended on May 30, 2018. A news release was issued informing the public that the EAW was available on the Nine Mile Creek Watershed District's (District's) website and at the District's office. The news release directed people wishing to make comments to file them with the Board.

### Brief Project Description

In response to a request from the City of Bloomington, Nine Mile Creek Watershed District (District) is proposing a phased water quality improvement project on Normandale Lake that was among the capital improvement projects included in the District's 2017 Water Management Plan. The lake presently contains an abundance of curly-leaf pondweed, an aggressive invasive aquatic plant, which results in limited plant diversity. The low plant diversity in combination with low dissolved oxygen levels in the water column pose concerns for the lake's aquatic communities. Excessive aquatic plants and filamentous algae in Normandale Lake cause late-summer algal blooms, resulting in an occasionally strong hydrogen sulfide odor and impediment of recreational use (boating, walking paths, etc.) in and around the lake.

The proposed Project includes a series of water quality improvement approaches to address concerns associated with a prevalence of curly-leaf pondweed in Normandale Lake and the release of phosphorus from lake-bottom sediments (internal loading). Methods proposed to control curly-leaf pondweed and improve the overall ecological health of the lake include lake-level drawdown, herbicide treatment, and alum treatment. Additional methods that will be considered following the completion of the herbicide treatment (2024) include aquatic plant harvesting and in-lake oxygenation.

### Lake Drawdown

One way to control curly-leaf pondweed, and to a lesser extent internal phosphorus release from sediment, is to draw down the water level in Normandale Lake to allow the lake-bed to freeze over the winter. Curly-leaf pondweed primarily propagates through production of dormant vegetative propagules called turions. Exposure to a winter freeze can kill the turions, thus disrupting curly-leaf pondweed's reproductive cycle. As such, a drawdown of Normandale Lake to an elevation between 804 and 805 feet

(with drawdown goal elevation of 804 feet) is the first method proposed to minimize curly-leaf pondweed in Normandale Lake.

Several timing guidelines influence lake drawdown. Based on project communications with the Minnesota Department of Natural Resources, (MDNR), the agency prefers that lake drawdown occur prior to September 15 to minimize impacts to the area's turtle community as it prepares for winter hibernation. In addition, the drawdown should ideally be able to maintain low lake levels from December to February to maximize sediment freeze and turion die-off.

An existing, 18-inch bypass pipe is located on the east side of Normandale Lake to convey flows below 808 feet from the lake into Nine Mile Creek. However, using the existing bypass pipe alone is not sufficient to draw down the lake in advance of turtle overwintering activities. As such, drawdown is expected to occur through one of three methods: 1) increasing the discharge capacity of the bypass outlet, 2) using the existing bypass outlet with supplemental pumping, or 3) installing a larger bypass outlet with temporary pumping. A final decision on drawdown method will be made in advance of project permitting.

Upon completion of any identified drawdown method, Normandale Lake would take approximately three to four weeks to refill, depending on baseflow conditions of Nine Mile Creek and precipitation during the refill period.

#### *Herbicide Treatment*

It is expected that drawdown will stunt curly-leaf pondweed by destruction of turions for the portion of the lake that is effectively drawn down. However, the proposed project includes an additional management method to control remaining actively-growing curly-leaf pondweed. Once the lake has refilled after the drawdown, herbicide treatment with endothall, a curly-leaf pondweed-selective herbicide, is proposed. To maximize its effectiveness, endothall would be applied in early spring when water temperature is 55-60°F (typically late-April or early-May). Since curly-leaf pondweed primarily grows in cooler water conditions, applying endothall in early spring would remove curly-leaf pondweed when native plant species are seasonally suppressed. Endothall would be applied from a treatment boat or barge and, therefore, would require Normandale Lake to refill prior to treatment. Endothall application will also require an amendment to the existing U.S Army Corps of Engineers permit.

It is expected that Normandale Lake would be monitored for 21 days after endothall treatment to confirm that sufficient herbicide was applied to control curly-leaf pondweed. Since endothall typically degrades within 21 days of treatment, monitoring is also expected to confirm that the herbicide is degrading on schedule for native plants to subsequently grow.

To effectively remove curly-leaf pondweed, whole-lake treatment could be necessary for a period of up to five years. However, spot treatments on certain portions of the lake with continued curly-leaf growth may be considered appropriate, depending on future vegetation monitoring results.

#### *Alum Treatment*

The next water quality improvement method that may be undertaken as part of the proposed Project addresses internal loading, or release of phosphorus from lake-bottom sediments. The proposed Project would apply an alum treatment to Normandale Lake in spring 2019, following winter drawdown and at

approximately the same time as the endotoxin treatment. As with the application of endotoxin, alum would be applied from a treatment boat or barge and would require Normandale Lake to refill prior to treatment. Conducting the alum treatment before aquatic plants are re-established in the lake would allow the aluminum floc to reach the sediment more uniformly, subsequently more efficiently binding phosphorus in the sediment.

A single alum treatment is included with the proposed Project. It is expected that Normandale Lake will be re-assessed in approximately five years to determine if an additional alum treatment is warranted.

### *Aquatic Plant Harvesting*

The fourth water quality improvement included with the proposed Project involves the possible harvesting of aquatic plant material at the conclusion of the five-year long endotoxin treatment. When aquatic plants undergo senescence (i.e. winter die-off), they decay and release phosphorus contained in plant tissue into the aquatic environment, which subsequently reduces dissolved oxygen in the water column. Removing plant biomass helps remove plant-bound phosphorus from the system. Aquatic plant removal also helps increase the longevity of an alum treatment as it reduces the amount of phosphorus from plants that is deposited on the lake bottom.

In accordance with the 1979 USACE permit, harvesting, if necessary, would be limited to the eastern portion of the lake within an approximately 40-acre area. Up to two harvesting events would be conducted. Once harvested, aquatic plant material would be removed from the project area and disposed of at an appropriate composting facility.

### *In-Lake Oxygenation*

If the water quality improvement methods proposed above do not yield desired results as quickly as anticipated, District and Bloomington will consider installing an in-lake oxygenation system to boost dissolved oxygen levels in Normandale Lake. Addressing low dissolved oxygen concentrations in Normandale Lake is recommended for several reasons, including: (1) to prevent the generation of foul smelling hydrogen sulfide, (2) to help keep the lake sediments aerated and prevent internal loading as new, incoming phosphorus is deposited onto the lake bottom, and (3) to provide oxygen to fish species that cannot survive at low oxygen concentrations (e.g., 2-3 mg/L) that persist in the lake during the summer and to prevent winter fish kill.

A hypolimnetic oxygenation system employing side-stream saturation (SSS) would be deployed to mitigate low oxygen conditions in Normandale Lake. The SSS would withdraw water from the bottom of the lake, inject pure oxygen in a way that would allow oxygen gas to dissolve into the water, then pump the oxygenated water back to the bottom of the lake. The oxygenation system would be installed in a deeper portion of Normandale Lake, allowing dissolved oxygen input to be focused over the areas that are typically the most affected by low oxygen levels. It is expected that the oxygen supply would be generated on-site by a compressor supplying air to a pressure swing adsorption molecular sieve.

### *Project Schedule*

The proposed Project is anticipated to begin with the drawdown of Normandale Lake starting in August 2018, allowing the drawdown to be largely complete in advance of the September 15 turtle

overwintering recommendation. It is expected that the lake may experience fluctuation in water level (known as rebound) in the fall in response to large rainfall events, but that it could be drawn back down fairly quickly by either drawdown method. The lake would generally remain drawn down to an elevation of up to 804 feet until early-March 2019, at which point the bypass pipe would be closed to allow the Normandale Lake to refill. Normandale Lake is expected to take 3-4 weeks to refill to its normal elevation of 808 feet, based on analysis of historic springtime runoff (rainfall and snowmelt).

In early- to mid-April, endotoxin would be applied to Normandale Lake, depending on the timing of ice out. An alum treatment would follow the endotoxin treatment, likely in mid- to late-May. Aquatic plant harvesting would follow if necessary, likely in June and August of 2024. The need for an in-lake oxygenation system would be determined in 2024 and installed as appropriate.

### Summary of EAW Comments Received and Associated Responses

The 30-day EAW review and comment period began April 30, 2018 and terminated May 30, 2018. A total of eight written comments were received during the public comment period, six from government agencies and two from citizens, as noted below:

- Hennepin County Public Works Department
- Adam Sands (citizen)
- Minnesota Department of Transportation
- Minnesota State Historic Preservation Office
- Paul Erdmann (citizen)
- Minnesota Department of Natural Resources
- Minnesota Pollution Control Agency
- Metropolitan Council

The following table provides a summary of these comments and responses to them. Comment letters are available for review in **Exhibit A**.

**Hennepin County Public Works Department; dated 4/30/2018**

<b>Number</b>	<b>Comment</b>	<b>Response</b>
1	Can you provide a pdf or link to the EAW?	<i>An electronic copy of the EAW and an online link to the EAW have been provided.</i>

**Adam Sands (citizen); dated 5/9/2018**

<b>Number</b>	<b>Comment</b>	<b>Response</b>
2	The EAW hardly mentions the importance of the lake as a migratory stop-over both in the spring and fall for migrating waterfowl. I note that work will not start until later in the spring/early summer after northward spring migration. However, has there been thought put into the southward autumn migration?	<i>Many lakes in the area, including Normandale Lake, can serve as stop-over resources for migrating waterfowl. During the drawdown period, Normandale Lake may become less attractive for migrating waterfowl, causing birds to seek refuge at other nearby lakes (Bush Lake, Anderson Lakes, Hyland Lake, Lake Edina, etc.). Effects to migratory waterfowl are expected to be temporary, lasting only for the duration of the lake drawdown. Normandale Lake is expected to again function as a migratory waterfowl resource upon completion of the drawdown phase.</i>

**Minnesota Department of Transportation; dated 5/15/2018**

<b>Number</b>	<b>Comment</b>	<b>Response</b>
3	MnDOT has reviewed the EAW and has no comments.	<i>Comment noted.</i>

**Minnesota State Historical Preservation Office; dated 5/23/2018**

<b>Number</b>	<b>Comment</b>	<b>Response</b>
4	Based on our review of the project information, we conclude that there are no properties listed in the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project.	<i>Comment noted.</i>

5	<p>Please note that this comment letter does not address the requirements of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.</p>	<p><i>Comment noted. As described in Table 3 of the EAW, U.S. Army Corps of Engineers (USACE) permitting will be required for certain project components. Section 106 review and consultation will be facilitated by the USACE as part of that agency's permitting process.</i></p>
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**Paul Erdmann (citizen); dated 5/29/2018**

Number	Comment	Response
6	<p>I'm concerned about the potential for turtle and other wildlife mortality resulting from this project. Normandale Lake is bounded by busy roads on the east, north, and west sides of the lake. Turtles and other wildlife will be forced to flee during the drawdown, and this could bring wildlife across roads where they could be struck and killed or injured by vehicles. Human safety should also be considered, as some people will swerve to avoid wildlife, while others may notice a mass exodus of turtles and work to prevent them from being hit, putting themselves in danger. Poaching and illegal harvesting of turtles should also be considered. I did not live in Bloomington when it occurred, but I have heard multiple times that turtle mortality was very high</p>	<p><i>To minimize potential harm to both turtle and human populations, fencing will be installed around the perimeter of Normandale Lake in advance of lake level drawdown activities. The intent of the fencing is to direct turtles to areas where they can safely cross beneath adjacent roadways as they seek alternate overwintering habitat. The turtle fencing will be inspected regularly and maintained as needed.</i></p> <p><i>City of Bloomington parks, maintenance, and law enforcement staff will be informed of the project and asked to be alert to human and turtle interactions (roadway safety, turtle harassment, poaching, etc.).</i></p>

	during the Anderson Lake drawdown, and for many members of that community, this is all that they remember about the project.	
7	If cofferdams and sheet piling are used as part of the project, this will impede wildlife's ability to flee the site.	<i>Fencing will be placed to provide a land bridge at the location of the temporary weir on Nine Mile Creek upstream of the lake and the existing lake outlet to allow turtles to access upstream and downstream habitat during the drawdown.</i>
8	The timing for the drawdown seems speculative and uncertain, at best, in regards to having the drawdown complete by September 15th to minimize impacts to turtles. The timeline provided in the EAW doesn't seem to match up- if the drawdown takes 7 months to complete, dewatering should have started in February (which would certainly impact turtles and other wildlife). It appears to me that it is doubtful that the drawdown will be complete by September 15th, meaning that the likelihood of turtles trying to hibernate in the remaining lake over winter increases, which is what the DNR is recommending against.	<i>The drawdown phase of the project would last for approximately 7 months, from the time that drawdown activities are initiated to the time that the lake begins to re-fill in the spring. The project has been designed to complete the majority of the initial drawdown by September 15 with consideration to turtle hibernation activities. Though the initial drawdown would take a matter of weeks, water level fluctuations may occur periodically throughout the fall drawdown period when precipitation and runoff entering the lake from rain and snow events exceeds the capacity of the bypass pipe. The frequency and extent of water level increases will be dependent on the amount and intensity of rainfall events that occur during the drawdown period.</i>
9	Though there may not be many state listed species within 1-mile, Nine Mile Creek feeds into a wetland a few miles away that has a population of state endangered Blanchard's Cricket Frog ( <i>Acris blanchardi</i> ). This species is not addressed in the EAW and should be as the dewatering and subsequent runoff may reach this population of frogs.	<i>Please see response to DNR in comment number 20 below.</i>

10	<p>I would ask that the District do their utmost to prevent turtle/wildlife mortality in planning this project. Please consider having a wildlife/turtle specialist review the plans prior to proceeding. Use silt fencing/other fencing to aid wildlife in leaving the lake. Please consider hiring trained turtle/wildlife biologists to monitor populations during the drawdown, as they could assist wildlife and capture and relocate if needed.</p>	<p><i>To minimize potential harm to both turtles and humans, fencing will be installed around the perimeter of Normandale Lake in advance of the lake-drawdown activities. The intent of the fencing is to direct turtles to areas where they can safely cross beneath adjacent roadways as they seek alternate overwintering habitat. The fencing will be positioned to provide a land bridge at the location of the temporary weir on Nine Mile Creek upstream of the lake and at the existing lake outlet to allow turtles to access upstream and downstream habitat during the drawdown. The turtle fencing will be inspected regularly and maintained as needed.</i></p> <p><i>City of Bloomington parks, maintenance, and law enforcement staff will be informed of the project and asked to be alert to human and turtle interactions (roadway safety, turtle harassment, poaching, etc.).</i></p> <p><i>The District will consult with staff from the Minnesota Department of Natural Resources regarding additional best practices to minimize potential impacts to turtles.</i></p>
11	<p>The EAW states that endothall is "curly-leaf pondweed-selective." It is my understanding that endothall will also kill/damage desirable native species such as native pondweeds, coontail, wild celery, Chara, and others. Please clarify.</p>	<p><i>As noted in Section 6b of the EAW, applying endothall in early spring would remove curly-leaf pondweed when native plant species are seasonally suppressed. This early-spring approach will prevent or minimize damage to the native species.</i></p>
12	<p>Will this be applied as endothall dipotassium salt or endothall N, N-dimethylalkylamine salt? This second one degrades into endothall acid which is more toxic</p>	<p><i>Endothall dipotassium salt will be applied.</i></p>



	to wildlife than the dipotassium salt (2-3 orders of magnitude more toxic). Endothall N, N-dimethylalkylamine salt is considered moderately to highly acutely toxic to fish and aquatic inverts and there have been several major fish kills because of this chemical in MN. Please clarify.	
13	Vegetation surveys should be done downstream from the lake in Nine Mile Creek, before, during, and after chemical treatments to monitor how these treatments are impacting aquatic vegetation outside of the lake. Fish and macroinvertebrate surveys could also be performed.	<p><i>Endothall does have the potential to kill other native plant species, especially other species in the monocotyledon group. However, as noted in Section 6b of the EAW, applying endothall in early-spring would kill curly-leaf pondweed when native plant species are seasonally suppressed. The early-season application will minimize or prevent impacts to native plant species. Herbicide treatment would be completed within the parameters of the label's recommended dosage and in compliance with the Invasive Aquatic Plant Management Permit that will be required for the project.</i></p> <p><i>The District is planning to complete baseline fish surveys in Normandale Lake in summer 2018 (prior to the project) and will consider future fish surveys within 5 years of project completion.</i></p>
14	Please provide robust BMPs- energy dissipation, continuous human monitoring, and other BMPs to reduce downstream impacts caused by dewatering. When pumps are running and no one is around to see what is happening- this is when failures and disasters occur.	<i>Comment noted. Project design will include energy-dissipation BMPs for dewatering activities and will also include an operations and maintenance protocol. Project implementation will include frequent observation of field conditions.</i>
15	It seems to me that the purpose of this project is to largely improve aesthetics, with some water quality	<i>As stated in Section 6d of the EAW, the purpose and need of the proposed Project is to improve water quality and ecological health</i>

	<p>benefits added in. It seems that more effort is first needed in the watershed to the north of the lake providing inputs to the lake- working on source control first. I know that the WD is making efforts to address this currently. That being said, Normandale Lake is a shallow, man made lake that will never function or look like a deep water lake. It could, however, function as a shallow lake- wetland complex, providing water quality benefits and wildlife habitat, and still be aesthetically pleasing to the community.</p>	<p><i>of Normandale Lake by addressing concerns associated with a prevalence of curly-leaf pondweed in the lake and release of phosphorus from lake-bottom sediment. The District believes that aquatic plants play an important role in maintaining the health of shallow lakes such as Normandale Lake and seeks to improve the ecological health of the lake by protecting and improving the aquatic plant community.</i></p>
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**Minnesota Department of Natural Resources; dated 5/30/2018**

<b>Number</b>	<b>Comment</b>	<b>Response</b>
16	<p>Pertaining to the lake-level drawdown, as part of the Work in Public Waters Permit, the DNR will require that the drawdown be complete by September 15th and that silt fences be installed to keep turtles off the roadways while fleeing the dewatering. In addition to installing silt fences, we recommend that someone routinely patrol the perimeter of the fencing/road edge for escaped turtles and release turtles in an area that will provide deep enough water to support overwintering.</p>	<p><i>Comment noted. Coordination with MNDNR is ongoing regarding project permitting and associated requirements. Turtle fencing will be installed around the perimeter of Normandale Lake in advance of the lake-drawdown activities. The fencing will be inspected regularly and maintained as needed. District will work in coordination with the City of Bloomington parks, maintenance, and law enforcement to ensure staff are informed of the project and asked to be alert to human and turtle interactions (roadway safety, turtle harassment, poaching, etc.).</i></p>
17	<p>Please describe how deep the open water extent area will be after the drawdown. Will this area be deep enough to not freeze over and provide a viable</p>	<p><i>The deepest portion of Normandale Lake is at an elevation of approximately 800 feet. However, tailwater conditions in Nine Mile Creek downstream of the existing lake outlet and bypass pipe</i></p>

	winter refuge for turtles? In addition to installing silt fence to funnel turtles off of roadways, might it be possible to funnel turtles to this area for winter refuge?	<i>are anticipated to control the drawdown elevation between an elevation of 802 and 803. The remaining water depth of 2-3 feet may freeze over and is not expected to be sufficient winter refuge for turtles. Instead, the turtle fencing will be installed around the perimeter of Normandale Lake in advance of lake draw down activities. The intent of the fencing is to direct turtles to areas where they can safely cross beneath adjacent roadways as they seek alternate overwintering habitat upstream and downstream of the project. The fencing will be positioned to provide a land bridge at the location of the temporary weir on Nine Mile Creek upstream of the lake and the existing lake outlet to allow turtles to access upstream and downstream habitat during the drawdown. The turtle fencing will be inspected regularly and maintained as needed.</i>
18	Pertaining to the treatment of curly-leaf pondweed, as noted in the EAW, an Invasive Aquatic Plant Management Permit is required from the DNR. The DNR has a Guidance Document for selective treatment of invasive aquatic plants; we recommend that this Guidance be reviewed prior to applying for a permit (the web address is provided below).	<i>Comment noted. As identified in the referenced guidance document, the timing, concentration of herbicide and duration of exposure are all important aspects in conducting a selective endothall treatment.  District will utilize the referenced guidance document and other available research literature, as well as consultation with DNR, herbicide manufacturers and applicators, and other aquatic plant experts to develop a plan for the endothall herbicide treatment.</i>
19	Please describe which type of endothall will be applied (endothall dipotassium salt or endothall N, N-dimethylalkylamine salt).	<i>Endothall dipotassium salt will be applied.</i>
20	Downstream of Normandale Lake is one of only two Minnesota populations of the Cricket Frog ( <i>Acris</i>	<i>The dipotassium salt formulation of endothall applied at concentrations approved by the US EPA (0.5-5.0 ppm) has not</i>

	<p><i>blanchardis</i>), a state-listed endangered species. As an amphibian, this species is likely more sensitive to both the herbicide and alum treatments than other wildlife species. Please describe how long the treatments will persist in the water column, and how far the water will move in that time frame (if endothall salt persists in the water column for 10 days, how far will water move in 10 days?).</p>	<p><i>been found to be toxic to fish, invertebrates, waterfowl and wildlife. Standard toxicity studies, required to fulfill EPA registration requirements for pesticides, have been conducted. The concentrations of endothall found to be toxic to mammals, birds, fish, and aquatic invertebrates far exceeds the rate of application and resultant concentrations that would be encountered in the aquatic environment.<sup>1,2</sup> The EPA registration requirements did not require that toxicity tests be conducted on the cricket frog.</i></p> <p><i>However, an endothall risk assessment completed by the United States Department of Agriculture<sup>3</sup> mentions the results of a study by Reeder et al. (1998)<sup>4</sup> that did not detect any adverse impacts from exposure to endothall. Reeder et al were specifically looking for abnormalities to sexual organs and noted that no abnormalities were found in three cricket frog specimens collected from an endothall-treated pond. The EPA assumes that fish may be a useful surrogate for aquatic life-stages of amphibians. Toxicity testing for various fish species indicates that endothall concentrations greater than 9 mg/L are lethal to the most sensitive fish species, trout.<sup>3</sup> The endothall concentration in the outflow from Normandale Lake would be no greater than 1 mg/L.</i></p>
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<sup>1</sup> Menninger, Holly. 2012. Endothall FAQ. Cornell Cooperative Extension, Monroe County. Accessed on June 4/2018.

<http://monroe.cce.cornell.edu/environment/invasive-nuisance-species/aquatic-invasives/hydrilla/management-options/herbicides/endothall-faq>

<sup>2</sup> Edwards, Debra. 2005. Reregistration Eligibility Decision (RED) for Endothall. EPA 738-R-05-008. Accessed on June 4, 2018.

[https://archive.epa.gov/pesticides/reregistration/web/pdf/24d\\_red.pdf](https://archive.epa.gov/pesticides/reregistration/web/pdf/24d_red.pdf)

<sup>3</sup> Durkin, PR. 2009. Endothall Human Health and Ecological Risk Assessment Final Report. Accessed on June 4, 2018.

[https://www.fs.fed.us/foresthealth/pesticide/pdfs/052-16-04a\\_Endothall.pdf](https://www.fs.fed.us/foresthealth/pesticide/pdfs/052-16-04a_Endothall.pdf)

<sup>4</sup> Reeder, A.L., G.L. Foley, D.K. Nichols, L.G. Hansen, B. Wikoff, S. Faeh, J. Eisold, M.B. Wheeler, R. Warner, J.E. Murphy, and V.R. Beasley. 1998. Forms and Prevalence of Intersexuality and Effects of Environmental Contaminants on Sexuality in Cricket Frogs (*Acris crepitans*). *Environmental Health Perspectives*. Volume 106, Number 5. Pp.261-266.

		<p><i>After application, microbial degradation of endothall into carbon, hydrogen, oxygen, and organic acids reduces its concentration until it is no longer detected in the water column. Endothall residual samples collected from the Anderson lakes in Eden Prairie and Bloomington, Minnesota, approximately 30 days after application of endothall verified that the endothall was no longer detectable. Hence, we anticipate endothall will no longer be detectable in Normandale Lake by 30 days after treatment.</i></p> <p><i>From the time of application until it is no longer detectable in Normandale Lake, endothall will be present in the outflow from the lake. However, as the creek flows downstream, the endothall concentration will be reduced by groundwater dilution, surface runoff dilution following precipitation events, and microbial degradation.</i></p> <p><i>Cricket frogs in Minnesota generally emerge from dormancy in late-April and breed during late-May through July. Endothall treatment of Normandale Lake is expected to occur during April or early-May, when the lake temperature is between 55° and 60° F. Endothall treatment dates for the Southeast Anderson Lake project completed by the District were April 24, 2009, April 15, 2010, May 5, 2011, April 6, 2012, and May 9, 2013. Based on the anticipated treatment dates for Normandale Lake, endothall is unlikely to be detectable in the lake during most of the cricket frog breeding season.</i></p>
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		<p><i>In summary, although some endotoxin from Normandale Lake may be conveyed to the Minnesota River Valley where the cricket frog resides, the low concentration is not expected to cause harm per EPA toxicity testing which used fish as a surrogate for amphibians.</i></p> <p><i>Based upon laboratory settling tests, the alum floc resulting from the Normandale alum treatment is expected to settle to the lake's bottom fairly quickly. Approximately 84 percent of the floc is expected to settle to the bottom within the first 20 minutes and more than 99 percent is expected to settle within 8 hours<sup>5</sup>. Hence, very little alum floc would exit the lake.</i></p> <p><i>As long as the PH of its environment is greater than 5.5 and less than 9.0, alum floc is considered safe for aquatic organisms<sup>6</sup>. PH has been measured in Nine Mile Creek between Normandale Lake and the Minnesota River Valley since 1968. Measurements have always been greater than 5.5 and less than 9.0. The average PH of the Main Stem of Nine Mile Creek for the past 20 years is 7.7.<sup>7</sup></i></p> <p><i>Although it is possible that a small amount of alum floc could be conveyed to the Minnesota River Valley, it would be considered safe for aquatic organisms, including the cricket frog.</i></p>
21	Treatment of phosphorus with alum on a shallow, flow-through lake like Normandale may be a	<i>When aluminum is applied to a lake as a solution of alum (aluminum sulfate), it forms an insoluble aluminum hydroxide.</i>

<sup>5</sup> Ramsey Washington Metro Watershed District. 1997. Alum Floc Settling Laboratory Tests. Unpublished Data.

<sup>6</sup> Gensemer, R.W. and R.C. Playle. 1999. The Bioavailability and Toxicity of Aluminum in Aquatic Environments. Critical Reviews in Environmental Science and Technology, 29 (4):315-450.

<sup>7</sup> Barr Engineering Company. 2018. 2017 Stream Water Quality Monitoring Report. Prepared for Nine Mile Creek Watershed District.

	<p>challenge. The Project Proposers should take into consideration factors that could disrupt the alum layer, thus reducing the length of time you would expect water quality benefits, such as wind fetch, carp (and/or other benthic feeding fish species), and recreational activities.</p>	<p><i>The aluminum binds with phosphorus in the sediment to prevent it from recycling back into the water column. The aluminum phosphorus bond is permanent. Resuspension of the bound phosphorus will not impact the effectiveness of the alum treatment since the aluminum phosphorus bond is permanent. The resuspended material would again settle to the bottom and the aluminum-bound phosphorus would not be impacted. Previously, the District completed a successful alum treatment on Southwest Anderson Lake, a shallow lake, in 2012. The lake's average pre-treatment total phosphorus concentration of 100 µg/L compares with a post-treatment average total phosphorus concentration of 20 µg/L. The data verify the success of the alum treatment on this shallow lake.</i></p> <p><i>All alum treatments have an effective lifespan that is a function of a number of factors. It is difficult to anticipate the lifespan of this treatment. We recognize that the large size of the tributary watershed may reduce the lifespan relative to a large and deep lake with a large watershed. However, the District intends to monitor and assess the effectiveness of this treatment going forward and determine if an additional treatment is necessary. It is important to recognize that the overall project should improve oxygen conditions in the lake and this will also help to reduce internal loads in the future and extend the lifespan of the treatment.</i></p>
22	<p>The EAW mentions that the Edina Streambank Stabilization Project on Nine Mile Creek, located upstream of Normandale Lake, is expected to reduce</p>	<p><i>The South Fork of Nine Mile Creek does contribute flow to Normandale Lake. The District has undertaken numerous projects and programs to address phosphorus loading to Normandale</i></p>

	<p>external phosphorus loading to Normandale Lake. Is the South Fork of Nine Mile Creek contributing to external phosphorus loading to Normandale Lake as well? If so, the DNR recommends that these sources be addressed prior to any alum treatments to Normandale Lake.</p>	<p><i>Lake, including construction of several stormwater ponds and other stormwater treatment best management in Minnetonka and Eden Prairie (Minnetonka Lakes Water Quality Improvement Project, Eden Prairie Lakes Water Quality Improvement Project) that reduced phosphorus loading to the South Fork of Nine Mile Creek. Other projects by the District that have reduced phosphorus loading to Normandale Lake have included stabilization of the North Fork of Nine Mile Creek in Hopkins, stabilization of the North Fork of Nine Mile Creek in Edina, curly-leaf management in upstream Anderson Lakes, and alum treatment to reduce internal phosphorus loading in upstream Bryant and Southwest Anderson Lakes. In addition, the District continues to implement its stormwater permitting program, which requires installation of permanent stormwater best management practices on many developing and redeveloping sites, and its cost share program, where cost-share funding is provided for projects located tributary to both the North Fork and the South Fork of Nine Mile Creek. The District intends to inspect portions of the South Fork of Nine Mile Creek in upcoming years, and address erosion issues, as needed, in 2022-2023 (District 2017 Water Management Plan). Notwithstanding the past and ongoing efforts by the District to reduce external phosphorus loading to Normandale Lake, the lake bottom sediments are rich with legacy phosphorus from several decades of deposition. The proposed alum treatment will demobilize much of the phosphorus that has accumulated in the lake bottom sediments over the past few decades. The District recognizes that it may be necessary to repeat the alum treatment</i></p>
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		<i>every 5 to 10 years due to the lake's downstream location within the large watershed and the associated inflow of sediment and phosphorus.</i>
23	We recommend that the Nine Mile Creek Watershed District consider incorporating invertebrate and amphibian surveys into this project in order to better understand temporary and long term impacts the treatments may have on these organisms.	<i>The District presently completes macroinvertebrate surveys at their Marsh Lake monitoring station, which is the most proximate downstream monitoring location to Normandale Lake.</i>
<b>Minnesota Pollution Control Agency; dated 5/30/2018</b>		
<b>Number</b>	<b>Comment</b>	<b>Response</b>
24	Water Resources (Item 11) – Please note that a MPCA construction stormwater permit is only required 1 on acre or more of land is disturbed above the ordinary high water level (OHWL) of the lake. Areas below the OHWL are under the jurisdiction of the Minnesota Department of Natural Resources. If the MPCA permit is obtained for up gradient work, the Project proposer will need to ensure that redundant down gradient sediment control best management practices are used adjacent to the lake.	<i>Comment noted. The presently proposed work will not disturb one or more acre of land surface.</i>
25	Noise (Item 17) – The MPCA recommends that all equipment used during proposed drawdown and related activities is fitted with the appropriate mufflers, and that consideration is given to the hours of pump operation. State noise standards are	<i>Comment noted. Project design will incorporate noise minimization measures. Coordination with the City of Bloomington is ongoing regarding project permitting and associated requirements.</i>

	significantly higher between the hours of 7 a.m. to 10 p.m.	
<b>Metropolitan Council; dated 5/30/2018</b>		
<b>Number</b>	<b>Comment</b>	<b>Response</b>
26	Council staff review finds the EAW complete with respect to regional concerns and raises no major issues of consistency with Council policies. An Environmental Impact Statement is not necessary for regional purposes.	<i>Comment noted.</i>
27	The EAW text could benefit from some clarification of the relationship between Normandale Lake and the Council's 2040 Regional Parks Policy Plan (Plan). Reference to the 2611-acre Hyland-Bush-Anderson Lakes Park Reserve should more accurately be referred to as a <u>Regional</u> Park Reserve.	<i>Comment noted. The purpose of EAW review and comment period is not to revise the EAW, but rather to identify significant possible adverse environmental effects from the project. District plans and communications on the project will reflect the proper status and description of the Hyland-Bush-Anderson Lakes Park Reserve as a regional park reserve.</i>
28	Later in the section, the EAW cites the Council's 2040 Regional Parks Policy Plan but it does not describe its specific relevance or applicability to Normandale Lake. It should state that Normandale Lake is part of the larger <u>regional</u> park reserve. Furthermore, the EAW should state that regional park reserves, like regional parks, provide for a diversity of outdoor recreation activities, but are significant in their size, and have at least 80% of the park area preserved as natural lands that protect the ecological functions of native landscapes.	<i>Comment noted. The purpose of EAW review and comment period is not to revise the EAW, but rather to identify significant possible adverse environmental effects from the project. District plans and communications on the project will reflect the correct status and description of Normandale Lake as part of the larger regional park reserve.</i>

29	Section 9b, which is unspecific, provides an opportunity to articulate how the proposed project would enhance water quality and the aquatic environment, furthering the objectives of the Plan.	<i>Comment noted. The purpose of EAW review and comment period is not to revise the EAW, but rather to identify significant possible adverse environmental effects from the project. District communications on the project have and will continue to reflect the purposes and goals of the project.</i>
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## Environmental Issue Summary

Based on the information contained in the EAW and in the written comments received, the Normandale Lake Water Quality Improvement Project does not create significant negative environmental issues. Adverse impacts to the environment would all only be temporary in nature and related to project implementation. Long-term effects are beneficial to both the natural and human environments.

## Comparison of Potential Impacts with Evaluation Criteria under Minnesota Rules

In deciding whether a project has the potential for significant environmental effects and whether an Environmental Impact Statement (EIS) is needed, the RGU must consider the impacts that may be reasonably expected to occur from the project with four criteria by which potential impacts must be evaluated (Minnesota Rules, Part 4410.1700, Subp. 7A through 7D).

### A. Type, extent, and reversibility of environmental impacts

Based upon information provided in the EAW and the responses to review comments, the potential environmental effects of the project will be limited in extent, temporary, or reversible. In general, long-term project effects are beneficial both to the natural and human environments.

- B. Cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project.

The Normandale Lake Water Quality Improvement Project is not dependent on the initiation or development of any other project.

For each of the environmental effects listed in the EAW and Responses to Comments, the Normandale Lake Water Quality Improvement Project would potentially contribute to only minor, temporary increases in cumulative potential effects on the project area relative to other contributors. Cumulative effects resulting from the proposed project are largely positive in nature. There are no related projects affecting the proposed project area at this time that would result in significant cumulative impacts when combined with the proposed project.

- C. The extent to which environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project.

Mitigation of any impacts from the project will be achieved through design and inclusion of best management practices (BMPs), and compliance with regulations currently in place, including permit approvals, enforcement of regulations, or other programs as listed in the following table:

Unit of Government	Type of Application	Justification
U.S. Army Corps of Engineers	Modification of existing City of Bloomington Section 404 Permit	Required for endofthall treatment.
U.S. Army Corps of Engineers	Section 404 Permit	Required for installation of new bypass pipe.
Minnesota Department of Natural Resources	Work in Public Waters Permit	Required for installation of new bypass pipe.
Minnesota Department of Natural Resources	Invasive Aquatic Plant Management Permit	Required for herbicide treatment of curly-leaf pondweed
Minnesota Department of Natural Resources	Lake Vegetation Management Plan	Component of Invasive Aquatic Plant Management Permit application
Minnesota Department of Natural Resources	Variance Letter	Required for whole-lake herbicide treatment of curly-leaf pondweed
Minnesota Pollution Control Agency	General Stormwater Permit for Construction	Permit to control and treat construction-related stormwater. Required if project-related ground disturbance exceeds 1 acre.
Minnesota Pollution Control Agency	Section 401 Water Quality Certification	Approval that the project will not contribute to long-term water quality concerns. Issued as part of USACE permit.
City of Bloomington	Project Approval	Required to ensure project complies with applicable City regulations and/or standards.
City of Bloomington	Building Permit	As needed for potential future oxygenation system
Nine Mile Creek Watershed District	District Permit	Required to ensure project complies with watershed rules.

D. The extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EIS's.

No other environmental effects, other than what is noted in the EAW, are anticipated. Environmental effects related to project activities, including stormwater management and invasive species control, can be controlled per the results of the following studies:

Minnesota Pollution Control Agency. 2005. State of Minnesota Stormwater Manual. Minnesota Pollution Control Agency, St. Paul, MN.

Minnesota Invasive Species Advisory Council. 2009. A Minnesota State Management Plan for Invasive Species. State of Minnesota, St. Paul, MN.

**Attached Exhibits:**

- A. EAW Review Comments

Exhibit A  
EAW Review Comments

**From:** [Erica Sniegowski](#)  
**To:** [David.Jaeger@hennepin.us](mailto:David.Jaeger@hennepin.us)  
**Cc:** [Steve Kloiber](#)  
**Subject:** RE: EAW request for Normandale Lake Water Quality Improvement Project  
**Date:** Tuesday, May 1, 2018 8:33:24 AM  
**Attachments:** [Normandale Lake EAW Submittal Package\\_final.pdf](#)

---

Hi David-

A copy of the EAW is attached. The EAW is also available at:

<https://www.ninemilecreek.org/normandale-eaw/>

Thanks,

Erica Sniegowski | Program and Project Manager | Nine Mile Creek Watershed District  
12800 Gerard Drive, Eden Prairie, MN 55346 | 952.658.9024 (Cell) | 952.358.2276 (Office)  
[ninemilecreek.org](http://ninemilecreek.org)

---

**From:** Steve Kloiber <[steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)>  
**Sent:** Tuesday, May 1, 2018 6:14 AM  
**To:** Erica Sniegowski <[esniegowski@ninemilecreek.org](mailto:esniegowski@ninemilecreek.org)>  
**Subject:** Fwd: EAW request for Normandale Lake Water Quality Improvement Project

><(((('\*>  
<\*)))))><

Begin forwarded message:

**From:** David J Jaeger <[David.Jaeger@hennepin.us](mailto:David.Jaeger@hennepin.us)>  
**Date:** April 30, 2018 at 11:48:29 AM CDT  
**To:** "[steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)" <[steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)>  
**Subject:** **EAW request for Normandale Lake Water Quality Improvement Project**

Howdy Steve. Can you please forward back a .pdf of the above or a file sharing link for its retrieval? Thanks, Dave.

David Jaeger  
Transportation – Design  
Hennepin County – Public Works  
1600 Prairie Drive  
Medina, MN 55340-5421  
Phone – 612-348-5714  
[david.jaeger@hennepin.us](mailto:david.jaeger@hennepin.us)



**Disclaimer:** If you are not the intended recipient of this message, please immediately notify the sender of the transmission error and then promptly delete this message from your computer system.

**From:** Steve Kloiber  
**To:** [Erica Sniegowski](mailto:Erica.Sniegowski)  
**Subject:** Fwd: Normandale Lake EAW  
**Date:** Wednesday, May 9, 2018 8:17:36 PM

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Another question on the EAW. I haven't issued any kind of response acknowledging the question yet.

><((((\*>  
    <\*)))))><

Begin forwarded message:

**From:** "Sands, Adam (Minneapolis)" <[adam.sands@willistowerswatson.com](mailto:adam.sands@willistowerswatson.com)>  
**Date:** May 9, 2018 at 9:45:30 AM CDT  
**To:** "[steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)" <[steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)>  
**Subject:** Normandale Lake EAW

Hi Steve,

I won't be able to attend a hearing or one of the other meetings about the Normandale Lake clean up but had a comment/question.

The EAW hardly mentions the importance of the lake as a migratory stop-over both in the spring and fall for migrating waterfowl. I note that the work will not start until later in the spring/early summer after the northward spring migration. However, has there been thought put into the southward autumn migration?

Thanks!  
Adam

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This e-mail has come to you from Towers Watson Delaware Inc.

**From:** [Randy Anhorn](#)  
**To:** [Erica Sniegowski](#); [Shanna R. Braun](#); [Janna Kieffer](#); [Steve Kloiber](#)  
**Subject:** FW: EAW18-008 Normandale Lake  
**Date:** Tuesday, May 15, 2018 1:16:18 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)

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FYI

**Randy Anhorn** | Administrator | Nine Mile Creek Watershed District  
12800 Gerard Drive | Eden Prairie, MN 55346 | 952-835-2078 | [www.ninemilecreek.org](http://www.ninemilecreek.org)

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**From:** Scheffing, Karen (DOT) <karen.scheffing@state.mn.us>  
**Sent:** Tuesday, May 15, 2018 1:15 PM  
**To:** Randy Anhorn <ranhorn@ninemilecreek.org>  
**Cc:** Sherman, Tod (DOT) <tod.sherman@state.mn.us>; Wiltgen, Jennifer (DOT) <jennifer.wiltgen@state.mn.us>; Muhic, P Cameron (DOT) <cameron.muhic@state.mn.us>  
**Subject:** EAW18-008 Normandale Lake

Randy

Thank you for the opportunity to review the EAW for the Normandale Lake improvements. MnDOT has reviewed this document and has no comments. Please contact me if you have any questions

Thanks

Karen

Karen Scheffing  
Principal Planner  
1500 W County Road B2  
Roseville MN 55113  
651-234-7784

May 23, 2018

Mr. Steve Kloiber  
NMCWD  
12800 Gerard Drive  
Eden Prairie, MN 55346

RE: EAW - Normandale Lake Water Quality Improvement Project  
T116 R21 S16, 17, 20, 21  
Bloomington, Hennepin County  
SHPO Number: 2018-1841

Dear Mr. Kloiber:

Thank you for providing this office with a copy of the Environmental Assessment Worksheet (EAW) for the above-referenced project.

Based on our review of the project information, we conclude that there are no properties listed in the National or State Registers of Historic Places, and no known or suspected archaeological properties in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

Please contact our Environmental Review Program at (651) 201-3285 if you have any questions regarding our review of this project.

Sincerely,



Sarah J. Beimers  
Environmental Review Program Manager

**From:** Paul Erdmann  
**To:** [steve.kloiber@comcast.net](mailto:steve.kloiber@comcast.net)  
**Cc:** [Erica Sniegowski](#)  
**Subject:** Normandale Lake EAW Comments  
**Date:** Tuesday, May 29, 2018 4:19:11 PM

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Greeting Mr. Kloiber- I offer the following comments on the Normandale Lake EAW.

### **Turtles/Wildlife**

I'm concerned about the potential for turtle and other wildlife mortality resulting from this project. Normandale Lake is bounded by busy roads on the east, north, and west sides of the lake. Turtles and other wildlife will be forced to flee during the drawdown, and this could bring wildlife across roads where they could be struck and killed or injured by vehicles. Human safety should also be considered, as some people will swerve to avoid wildlife, while others may notice a mass exodus of turtles and work to prevent them from being hit, putting themselves in danger. Poaching and illegal harvesting of turtles should also be considered. I did not live in Bloomington when it occurred, but I have heard multiple times that turtle mortality was very high during the Anderson Lake drawdown, and for many members of that community, this is all that they remember about the project.

If cofferdams and sheet piling are used as part of the project, this will impede wildlife's ability to flee the site.

The timing for the drawdown seems speculative and uncertain, at best, in regards to having the drawdown complete by September 15th to minimize impacts to turtles. The timeline provided in the EAW doesn't seem to match up- if the drawdown takes 7 months to complete, dewatering should have started in February (which would certainly impact turtles and other wildlife). It appears to me that it is doubtful that the drawdown will be complete by September 15th, meaning that the likelihood of turtles trying to hibernate in the remaining lake over winter increases, which is what the DNR is recommending against.

Though there may not be many state listed species within 1-mile, Nine Mile Creek feeds into a wetland a few miles away that has a population of state endangered Blanchard's Cricket Frog (*Acris blanchardi*). This species is not addressed in the EAW and should be as the dewatering and subsequent runoff may reach this population of frogs.

I would ask that the District do their utmost to prevent turtle/wildlife mortality in planning this project. Please consider having a wildlife/turtle specialist review the plans prior to proceeding. Use silt fencing/other fencing to aid wildlife in leaving the lake. Please consider hiring trained turtle/wildlife biologists to monitor populations during the drawdown, as they could assist wildlife and capture and relocate if needed.

### **Endothall/Chemical treatment**

The EAW states that Endothall is "curly-leaf pondweed-selective." It is my understanding that endothall will also kill/damage desirable native species such as native pondweeds, coontail, wild celery, Chara, and others. Please clarify. Will this be applied as endothall dipotassium salt or endothall N, N-dimethylalkylamine salt? This second one degrades into endothall acid which is more toxic to wildlife than the dipotassium salt (2-3 orders of magnitude more toxic). Endothall N, N-dimethylalkylamine salt is considered moderately to highly acutely toxic to fish and aquatic inverts and there have been several major fish kills because of this chemical in MN. Please clarify.

Vegetation surveys should be done downstream from the lake in Nine Mile Creek, before, during, and after chemical treatments to monitor how these treatments are impacting aquatic vegetation outside of the lake. Fish and macroinvertebrate surveys could also be performed.

### **Dewatering**

Please provide robust BMPs- energy dissipation, continuous human monitoring, and other BMPs to reduce downstream impacts caused by dewatering. When pumps are running and no one is around to see what is happening- this is when failures and disasters occur.

### **General**

It seems to me that the purpose of this project is to largely improve aesthetics, with some water quality benefits added in. It seems that more effort is first needed in the watershed to the north of the lake providing inputs to the lake- working on source control first. I know that the WD is making efforts to address this currently. That being said, Normandale Lake is a shallow, man made lake that will never function or look like a deep water lake. It could, however, function as a shallow lake- wetland complex, providing water quality benefits and wildlife habitat, and still be aesthetically pleasing to the community.

Thank you for the opportunity to provide comments. Please let me know if you have any questions.

Sincerely,

Paul Erdmann  
7515 Izaak Walton Road W  
Bloomington, MN 55438

**Minnesota Department of Natural Resources  
Ecological and Water Resource  
1200 Warner Road  
St. Paul, MN 55106**

May 30, 2018

Randy Anhorn  
District Administrator  
12800 Gerard Drive  
Eden Prairie, MN 55346

**Re: Normandale Lake Water Quality Improvement Project**

Dear Randy Anhorn,

The Minnesota Department of Natural Resources (DNR) has reviewed the Environmental Assessment Worksheet (EAW) for the Normandale Lake Water Quality Improvement Project. The project proposes a water quality improvement project to address concerns associated with curly-leaf pondweed and phosphorus. Several improvement approaches are being proposed, including a lake-level drawdown, herbicide treatment, and alum treatment; additional other treatments are possible in the future. We offer the following comments for your consideration.

Pertaining to the lake-level drawdown, as part of the Work in Public Waters Permit, the DNR will require that the drawdown be complete by September 15<sup>th</sup> and that silt fences be installed to keep turtles off the roadways while fleeing the dewatering. In addition to installing silt fences, we recommend that someone routinely patrol the perimeter of the fencing/road edge for escaped turtles and release turtles in an area that will provide deep enough water to support overwintering. Please contact non-game biologist Erica Hoaglund with any questions, or to discuss additional mitigation measures ([Erica.Hoaglund@state.mn.us](mailto:Erica.Hoaglund@state.mn.us) or 651-259-5772). Please describe how deep the open water extent area will be after the drawdown. Will this area be deep enough to not freeze over and provide a viable winter refuge for turtles? In addition to installing silt fence to funnel turtles off of roadways, might it be possible to funnel turtles to this area for winter refuge?

Pertaining to the treatment of curly-leaf pondweed, as noted in the EAW, an Invasive Aquatic Plant Management Permit is required from the DNR. The DNR has a Guidance Document for selective treatment of invasive aquatic plants; we recommend that this Guidance be reviewed prior to applying for a permit (the web address is provided below). Please describe which type of Endothall will be applied (endothall dipotassium salt or endothall N, N-dimethylalkylamine salt). Downstream of Normandale Lake is one of only two Minnesota populations of the Cricket Frog (*Acris blanchardis*), a state-listed endangered species. As an amphibian, this species is likely more sensitive to both the herbicide and alum treatments than other wildlife species. Please describe how long the treatments will persist in the water column, and how far the water will move in that time frame (if endothall salt persists in the water column for 10 days, how far will water move in 10 days?). Please contact Erica Hoaglund to discuss.

Pertaining to the application of alum to control phosphorus, this activity does not fall under the DNR's authority (this activity is regulated by the MPCA), however in the past the MPCA has sought input from the DNR and we have provided input on treatment timing or design to reduce impacts to non-target organisms and enhance

treatment longevity. Treatment of phosphorus with alum on a shallow, flow-through lake like Normandale may be a challenge. The Project Proposers should take into consideration factors that could disrupt the alum layer, thus reducing the length of time you would expect water quality benefits, such as wind fetch, carp (and/or other benthic feeding fish species), and recreational activities. The EAW mentions that the Edina Streambank Stabilization Project on Nine Mile Creek, located upstream of Normandale Lake, is expected to reduce external phosphorus loading to Normandale Lake. Is the South Fork of Nine Mile Creek contributing to external phosphorus loading to Normandale Lake as well? If so, the DNR recommends that these sources be addressed prior to any alum treatments to Normandale Lake.

We recommend that the Nine Mile Creek Watershed District consider incorporating invertebrate and amphibian surveys into this project in order to better understand temporary and long term impacts the treatments may have on these organisms.

On behalf of the DNR, thank you for consideration of these comments.

Sincerely,

/s/ Rebecca Horton  
Region Environmental Assessment Ecologist

CC: Erica Hoaglund

Website address:

Guidance for selective treatment of invasive aquatic plants in Minnesota:

[https://files.dnr.state.mn.us/eco/invasives/guidance\\_trt\\_inv\\_aq\\_plants\\_apr\\_04.pdf](https://files.dnr.state.mn.us/eco/invasives/guidance_trt_inv_aq_plants_apr_04.pdf)



May 30, 2018

Board of Managers  
Nine Mile Creek Watershed District  
12800 Gerard Drive  
Eden Prairie, MN 55346

Re: BWSR Advisory Report for Normandale Lake Water Quality Improvement Project, Nine Mile Creek Watershed District

Dear Watershed District Managers,

On behalf of the Board of Water and Soil Resources, I offer this advisory report in accordance with Minnesota Statutes, Section 103D.605, Subdivision 2. The following documents were provided for BWSR review:

- 2018 Engineer's Report by Barr Engineering, Inc., dated April 2018, including the main report and Appendices A - H

#### General Comments

The engineer's report is generally well written and easy to follow. It appears that substantial effort, over a significant period of time, has gone into understanding the problem; evaluating options, constraints and other considerations; and settling on recommendations to improve the water quality of Normandale Lake. It's my understanding that circa 1979 - 1981 Normandale Lake was impounded by constructing an embankment / outlet structure, and habitat islands created by dredging in the eastern half of the lake. I also understand that Nine Mile Creek Watershed District and the City of Bloomington are committed to maintaining Normandale Lake as an open water recreational and aesthetic asset.

Reference is made to the following components of the report:

- Sections of the main report addressing project history and permitting considerations;
- Appendix B, 1979 USACE Permit, and associated correspondence on July 2, 1987 and August 4, 1987; and
- Appendix C, USACE Correspondence re: Lake Management, letter dated March 22, 2018.

The 8-4-87 USACE letter to the city of Bloomington indicates: "In summary, the city has committed itself to the current situation by flooding an emergent wetland and creating a shallow impoundment with its attendant water stagnation and aquatic vegetation features." "In view of the above, we do not believe a modification of the permit to allow mechanical harvesting of the west half of the lake is warranted." The 3-22-18 USACE letter indicates: "Compensatory mitigation for this project included maintaining a vascular plant bed in the western half of Normandale Lake. Therefore, based on the current proposal and available information, we would not be inclined to modify the permit to allow for plant harvesting activities in the western portion of the lake."

This history and perspective seems to frame the proposed approach to implement lake drawdown to "freeze-out" curly leaf pondweed and use Endothall, as necessary, to selectively eradicate any remaining curly leaf pondweed, which is reportedly acceptable under the USACE permit and will require DNR permits. It's my understanding that alum treatment is considered necessary to control internal recycling of phosphorus in the lake and is expected to have a life span of 5 - 10 years. Potential aquatic macrophyte harvesting appears to be a more complicated practice for Normandale Lake, due to the USACE permit condition and the pros and cons of the practice.

Although I am not a water quality and aquatic invasive species expert, the rationale for recommending Option 4 appears to be sound, as well as the prioritization and incremental implementation of some of the associated lake management practices, based on monitoring of the results of the primary practices proposed.

### **Specific Comments**

*Figure 2-5, p. 9:* The Mesotrophic range for Total Phosphorus is not labeled on all of the graphs.

*Figure 2-7, pp. 10-11:* The horizontal line on Figure 2-7 at 5 mg/l Dissolved Oxygen is not defined, although it is in Section 2.3.2.

*Section 2.4.1 Aquatic Plants and Figure 2-10, pp. 13-14:* I note that Eurasian watermilfoil is not shown in the chart, presumably because it's not a significant aquatic plant in Normandale Lake at this time. However, I also note that Eurasian watermilfoil reportedly grows abundantly immediately upstream from the lake. I expect that this is not a conflict of information, but is curious to me.

*Section 3.3 External Phosphorus Loading, pp. 20-21:* The second to last sentence about phosphorus removal by plants seems to overstate removal vs. plant uptake and recycling of phosphorus. The last paragraph seems to downplay the value of ongoing external phosphorus reduction upstream of Normandale Lake, which seems inconsistent with the previous paragraph.

*Section 4.1.1 Drawdown Permitting, p. 24 and Section 7.1 Surface Waters (Wetlands), p. 50:* The location of the existing wetland area north of West 84<sup>th</sup> St. along Nine Mile Creek is not identified on a map. Section 7.1 does not mention the proposed temporary control for water levels in this wetland mentioned in Section 4.1.1.

*Figure 4-1, p. 25:* The legend is missing the symbol for Parcel Boundary.

*Section 5.1 and Table 5-2, pp. 46-47:* The estimated costs and source of funding for the anticipated monitoring activities are not defined.

If you have questions about this advisory report, please call me at 651-297-2907, or email at [al.kean@state.mn.us](mailto:al.kean@state.mn.us).

Sincerely,



Allan M. Kean, PE  
Chief Engineer

cc: John Jaschke, Executive Director  
Dave Weirens, Assistant Director  
Kevin Bigalke, Central Region Manager  
Steve Christopher, Board Conservationist  
Ben Carlson, Wetland Specialist  
Jason Spiegel, DNR Area Hydrologist

May 30, 2018

Mr. Randy Anhorn, Administrator  
Nine Mile Creek Watershed District  
12800 Gerard Drive  
Eden Prairie, MN 55346

**RE: Normandale Lake Water Quality Improvement Project  
Environmental Assessment Worksheet (EAW)**  
City of Bloomington, Hennepin County  
Metropolitan Council District 5  
Metropolitan Council Review File No. 20933-1

Dear Mr. Anhorn:

The Metropolitan Council (Council) received the EAW for the proposed Normandale Lake Water Quality Improvement Project on April 26, 2018. Council staff review finds the EAW complete with respect to regional concerns and raises no major issues of consistency with Council policies. An Environmental Impact Statement is not necessary for regional purposes.

Council staff offer the following comments are offered for your consideration.

***Item 9 – Land Use*** (Michael Larson, 651-602-1407)

The EAW text could benefit from some clarification of the relationship between Normandale Lake and the Council's *2040 Regional Parks Policy Plan (Plan)*. Reference to the 2611-acre Hyland-Bush-Anderson Lakes Park Reserve should more accurately be referred to as a Regional Park Reserve.

Later in the section, the EAW cites the Council's *2040 Regional Parks Policy Plan*, but it does not describe its specific relevance or applicability to Normandale Lake. It should state that Normandale Lake is part of the larger regional park reserve. Furthermore, the EAW should state that regional park reserves, like regional parks, provide for a diversity of outdoor recreation activities, but are significant in their size, and have at least 80% of the park area preserved as natural lands that protect the ecological functions of the native landscape.

Section 9b, which is unspecific, provides an opportunity to articulate how the proposed project would enhance water quality and the aquatic environment, furthering the objectives of the Plan.

This concludes the Council's review of the EAW. The Council will take no formal action on the document. If you have any questions or need further information, please contact Jim Larsen, P.E., Principal Reviewer, at 651-602-1159.

Sincerely,



Lisa Beth Barajas, Manager  
Local Planning Assistance

CC: Tod Sherman, Development Reviews Coordinator, MnDOT - Metro Division  
Steve Elkins, Metropolitan Council Member, District 5  
Michael Larson, Sector Representative  
Judy Sventek, MCES Water Resources Assessment Manager  
Raya Esmaeili, Reviews Coordinator

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