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5.22 Klawitter Pond Watershed Management Plan

5.22.1 General Information

Klawitter Pond is a landlocked, 4.5-acre pond located south of T.H. 36 and west of Keats Avenue North, in the City of Lake Elmo. The south side of Klawitter Pond is surrounded by the Rolling Hills Estates residential development. The lots in the development are at least 2.5 acres each. The northeast corner of the pond is part of the open space of the cluster development Prairie Hamlet.

The tributary area of the pond is 168 acres and includes a portion of the City of Grant. Figure 5.22-1 shows the Klawitter Pond watershed. Most of the current development within the watershed is single family residential; approximately half of the watershed remains undeveloped. The area of the watershed within the City of Grant is zoned residential, with proposed lot sizes ranging from 2.5 acres to 10 acres. Future (2030) estimated land use within the tributary watershed is entirely rural or large-lot residential land use. Current (2010) and future (2030) estimated land use of the Klawitter Pond watershed is shown on Figure 5.22-2.

Recreational use of Klawitter Pond is currently limited to adjacent residents who use the lake for canoeing, kayaking, and aesthetic viewing.

<table>
<thead>
<tr>
<th>Klawitter Pond Watershed Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tributary Area (acres)</td>
</tr>
<tr>
<td>MDNR-Designated Basins within Watershed</td>
</tr>
<tr>
<td>Downstream Watershed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Klawitter Pond Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDNR Designation</td>
</tr>
<tr>
<td>Surface Area (acres)</td>
</tr>
<tr>
<td>Mean Depth (feet)</td>
</tr>
<tr>
<td>Maximum Depth (feet)</td>
</tr>
<tr>
<td>Volume Below Discharge Elevation (acre-feet)</td>
</tr>
<tr>
<td>Discharge Elevation</td>
</tr>
<tr>
<td>Outlet Type</td>
</tr>
<tr>
<td>MDNR Ordinary High Water Level (OHW)</td>
</tr>
<tr>
<td>100-Year Flood Level</td>
</tr>
<tr>
<td>VBWD “Allowable Fill” (cubic yards/linear foot of shoreline) (See Section 4.7.)</td>
</tr>
<tr>
<td>VBWD Water Quality Priority Category</td>
</tr>
</tbody>
</table>

1. Elevation in NGVD29 vertical datum
2. Elevation in NAVD88 vertical datum
5.22.2 Water Quality Management Plan

The VBWD classified and will manage Klawitter Pond as a Low Priority waterbody (see Section 4.1 – Water Quality) due to the lack of public access and likelihood of being classified as a wetland by the Minnesota Pollution Control Agency (MPCA). This is consistent with its classification in the 2005 VBWD Plan. In the VBWD 1995 Plan, Klawitter Pond was classified as a Level V (wetland) waterbody.

The water quality of Klawitter Pond is generally poor. The VBWD has a non-degradation water quality policy which sets “action triggers” for all of its major waterbodies. Section 4.1 – Water Quality discusses the action triggers in more detail. Action triggers for VBWD lakes consider the following water quality parameters (summer average) relative to MPCA water quality standards and prior water quality data (i.e., trend analysis):

- Secchi disc depth
- Total phosphorus
- Chlorophyll $a$

Specific water quality implementation tasks for Klawitter Pond include the following:

1. The VBWD will cooperate with other entities to monitor the water quality of Klawitter Pond at the interval(s) specified in Section 4.1 – Water Quality for Low Priority waterbodies. As for all Low Priority waterbodies, the VBWD will perform additional monitoring or other actions on a case-by-case (see Table 4.1-6).

   The VBWD will evaluate the average summertime water quality (total phosphorus, chlorophyll $a$, and Secchi disc transparency) and compare it to water quality standards (if applicable) and applicable action triggers (described in Section 4.1.7.5).

2. The VBWD will cooperate with other entities in support of macrophyte management efforts. VBWD efforts may include:

   - point-intercept surveys of aquatic vegetation
   - preparation of lake vegetation management plans (LVMP)
   - completion of Invasive Aquatic Plant Management (IAPM) Permit applications
   - design of herbicide treatment programs
   - participation in meetings with MDNR staff
   - other technical analysis
3. The VBWD will continue to implement its Rules and Regulations (2013, as amended) in the Klawitter Pond watershed. The VBWD Rules address water quality performance standards for development and redevelopment projects, as well as required vegetated buffers around VBWD lakes, streams, and wetlands. The VBWD Rules and Regulations are included in this Plan as Appendix A-4.5.

5.22.2.1 Water Chemistry Data

Water quality sampling has been conducted on Klawitter Pond annually since 2002. The VBWD conducted water quality sampling in annually since then. Water quality samples are typically analyzed for total phosphorus and chlorophyll $a$, while Secchi disc transparency is measured in the field at the time of sampling (see Appendix A-4.1 – Water Quality Background Information).

The most recent 10-year average summer water quality data is presented in Table 5.22-1 and illustrated in Figure 5.22-3.

Table 5.22-1 Summary of Klawitter Pond summer average water quality (2004-2013)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>10-year Average (2004-2013)</th>
<th>Trend in Average</th>
<th>MPCA Standard$^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Phosphorus</td>
<td>ug/L</td>
<td>112.4</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Chlorophyll $a$</td>
<td>ug/L</td>
<td>35.4</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Secchi Disc Depth</td>
<td>m</td>
<td>0.66</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

$^1$ MPCA eutrophicication water quality standards are not applicable to wetlands

While water quality in Klawitter Pond fluctuates annually, water quality has been consistently poor since monitoring began in 2002. Summer average Secchi disc transparency is consistently less than 1 meter, with a minimum of 0.4 meters observed in 2010. The second highest observed summer average chlorophyll $a$ concentration and third highest summer average total phosphorus concentration were also observed in 2010. Water quality observed in 2012 and 2013 was comparatively better than previous years, with summer average total phosphorus concentrations of about 70 ug/L and Secchi disc transparencies of 0.8 to 0.9 meters.

The most recent 10-years of data identify no statistically significant trends in total phosphorus, chlorophyll $a$, or Secchi disc transparency.

5.22.2.2 Biological Data

Biological data including macrophyte (large aquatic plant), phytoplankton (non-rooted floating plants – algae), zooplankton (microscopic aquatic animals), and fisheries data can provide insight into the ecological quality of a waterbody. Section 4.2 (Water Quality Background Information) provides more information about the importance of fisheries and other biological data.
The Klawitter Pond fishery is not currently managed by the MDNR, and no stocking or surveying activities have been conducted on Klawitter Pond in the past 10 years. Although the MDNR has no survey information concerning the pond’s fishery, it was reportedly used as a muskellunge rearing pond during 1981, 1983, and 1984. The MDNR no longer uses Klawitter Pond as a rearing pond.

In addition to being used at one time as a rearing pond, the pond was used by the MDNR Fisheries Research unit for a catch and release study of walleyes during the mid-1980s. Selected participants in the study used different types of bait and angled for walleye. All fish were released immediately after being caught. The MDNR has no information concerning the lake’s fishery since completion of the study.

Klawitter Pond does not have a fisheries-use classification, and no fish consumption advisories have been issued for the pond. The MDNR’s Lakefinder website includes the most current data on Klawitter Pond and is available at: http://www.dnr.state.mn.us/lakefind/lake.html?id=82036800

The VBWD conducted a macrophyte survey on Klawitter Pond on June 3, 2009. Appendix A-5.22 shows the findings from this survey. The VBWD collects macrophyte data to identify the conditions of plant growth throughout the lake. Macrophytes are the primary producers in the aquatic food chain, converting the basic chemical nutrients in water and soil into plant matter through photosynthesis, which becomes food for all other aquatic life. While macrophytes can negatively impact the recreational use of a water body, they are critical to the ecosystem as fish and wildlife habitat.

Klawitter Pond has a small plant community with emergent, floating, and submergent species all represented. The macrophyte population is found around the pond shoreline. All species observed in the 2009 survey are native to Minnesota.

The VBWD has not conducted any phytoplankton (non-rooted, floating plants - algae) or zooplankton (microscopic aquatic animals) surveys on Klawitter Pond.

5.22.3 Water Quantity Management Plan

As of the writing of this Plan, the VBWD has no plans to control water levels on Klawitter Pond. The VBWD had a MDNR staff gage installed at the pond in 2002, and a volunteer for the VBWD measures the water levels. Figure 5.22-4 shows the water levels. The VBWD will continue to monitor the levels of Klawitter Pond as volunteer opportunities and access allow.

In 2003, Washington County contracted with the VBWD to develop a 100-year flood level for Klawitter Pond that would be approved by the Federal Emergency Management Agency (FEMA). The VBWD used a hydrologic and hydraulic model (XP-SWMM) to run a 50-year simulation of the water levels of Klawitter Pond. A statistical analysis was performed on the resulting annual high water levels to determine the 1% probability flood level (i.e., the 100-year event). The study determined 100-year flood level of Elevation 962.4 (NAVD88 datum). The 100-year flood level for Klawitter Pond is included on FEMA’s Washington County Flood Insurance Rate Map (FIRM) is
Elevation 963 (NAVD88 datum). Prior to this detailed study, the VBWD used its 100-year annual runoff method to establish a 100-year flood level of Klawitter Pond (see Section 4.7).

The 1988 VBWD water management plan listed the normal level of Klawitter Pond at Elevation 948 and the 100-year flood elevation of the pond as Elevation 966; these were lowered to Elevation 947 and 961 respectively during the permit review process for the Rolling Hills Estates development. Updated analysis of drainage areas and allowing for storage available in upstream watersheds resulted in the lower flood level.

Based on a 100-year flood level of Elevation 962.4, there appears to be one home within the 100-year floodplain of Klawitter Pond. The VBWD does not plan to implement any project to protect this home. The homeowners will be encouraged to purchase flood insurance.

In 2013, the National Oceanographic and Atmospheric Administration (NOAA) published Atlas 14, Volume 8 (see Section 4.7.6). Atlas 14 contains updated precipitation data for Minnesota and supersedes data sources used to establish the VBWD and FEMA 100-year flood elevations within the Klawitter Pond subwatershed. Over the next several years, the VBWD will update its hydrologic-hydraulic modeling of major subwatersheds, including Klawitter Pond. Updated modeling will incorporate the most recent precipitation data (see Section 4.7.7) which may increase 100-year flood levels relative to the existing levels.

5.22.4 References


Current (2010) Land Use
- Farmstead
- Seasonal/Vacation
- Single Family Detached
- Manufactured Housing Park
- Single Family Attached
- Multifamily
- Retail and Other Commercial

Future (2030) Land Use
- Agricultural
- Rural or Large-Lot Residential
- Single Family Residential
- Multifamily Residential
- Commercial

Figure 5.22-2
KLAWITTER POND WATERSHED
CURRENT (2010) AND FUTURE (2030) LANDUSE
2015-2025 Watershed Management Plan
Valley Branch Watershed District

Source: Metropolitan Council 2010
Figure 5.22-3

Klawitter Pond Water Quality
2015 - 2025 Watershed Management Plan
Valley Branch Watershed District
Pond is landlocked
Observed elevations in NGVD29 datum
100-year flood level in NAVD88 datum
Appendix A-5.22 Additional Macrophyte Information
KLAWITTER POND MACROPHYTE SURVEY RESULTS
June 3, 2009
Valley Branch Watershed District

FIELD NOTES:
- Macrophyte densities estimated as follows:
  1=light; 2=moderate; 3=heavy
- No macrophytes found in water >1-2 feet
- Shoreline consists of mainly grasses. Scirpus fluviatilis sporadic around lake perimeter, denser areas are marked on map
- Low water level

Legend
- Emergent Plants
- Floating Leaf Plants
- Submerged Aquatic Plants
- No Aquatic Vegetation

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>largeleaf pondweed</td>
<td>Potamogeton amplifolius</td>
</tr>
<tr>
<td>white waterlily</td>
<td>Nymphaea tuberosa</td>
</tr>
<tr>
<td>small yellow waterlily</td>
<td>Nuphar microphyllum</td>
</tr>
<tr>
<td>softstem bulrush</td>
<td>Scirpus validus</td>
</tr>
<tr>
<td>river bulrush</td>
<td>Scirpus fluviatilis</td>
</tr>
<tr>
<td>cattail</td>
<td>Typha sp.</td>
</tr>
</tbody>
</table>

Imagery Source: 2008 AE

In the field, macrophytes were observed as follows:
- Nymphaea tuberosa
- Nuphar microphyllum
- Potamogeton amplifolius
- Scirpus validus
- Scirpus fluviatilis
- Typha sp.