Medicine Lake
Excess Nutrients
TMDL project:
Modeling Status

Steering Committee Meeting #3
March 12, 2009
Presented by: Hans Holmberg, LimnoTech

Photo by: Terrie Christian—President, AMLAC
Watershed Modeling Status

- Making refinements based on input from cities
- Updating with recent rain data
- Assessing where the phosphorus is coming from
- Starting to look for opportunities to reduce phosphorus loads
Model Refinements

- Have conducted meetings with:
  - New Hope
  - MnDOT
  - Plymouth
  - Golden Valley
  - Minnetonka

- Identified new ponds & minor shifts in watershed delineations
Recent Rain Data

Annual Precipitation

- **Golden Valley**
- **MSP**

<table>
<thead>
<tr>
<th>Year</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precipitation (in)</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>35</td>
<td>25</td>
<td>25</td>
<td>35</td>
<td>25</td>
<td>27</td>
</tr>
</tbody>
</table>
Recent Rain Data

Annual Rainfall, April-October

- Precipitation (in): 0, 5, 10, 15, 20, 25, 30, 35, 40
- Golden Valley
Where is the P coming from?

<table>
<thead>
<tr>
<th>Site</th>
<th>Total Phosphorus Loading (lbs/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
</tr>
<tr>
<td>Plymouth Creek</td>
<td>1484</td>
</tr>
<tr>
<td><em>Fernbrook</em></td>
<td>1125</td>
</tr>
<tr>
<td>Industrial Park 1</td>
<td></td>
</tr>
<tr>
<td>Industrial Park 2</td>
<td></td>
</tr>
<tr>
<td>18th Avenue</td>
<td></td>
</tr>
<tr>
<td>Ridgedale Creek</td>
<td>276</td>
</tr>
<tr>
<td>Medicine Lake 1</td>
<td>239</td>
</tr>
<tr>
<td>Medicine Lake 2</td>
<td>138</td>
</tr>
<tr>
<td>Medicine Lake 3</td>
<td>258</td>
</tr>
<tr>
<td>Medicine Lake 4</td>
<td>398</td>
</tr>
<tr>
<td>Medicine Lake 5</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3934</td>
</tr>
</tbody>
</table>
Medicine Lake

1780 lbs/yr

2235 lbs/yr

35 lbs/yr

60 lbs/yr

300 lbs/yr

524 lbs/yr

239 lbs/yr

91 lbs/yr

40 lbs/yr
0.88 lbs/ac/yr
0.52 lbs/ac/yr
0.38 lbs/ac/yr
0.34 lbs/ac/yr
0.31 lbs/ac/yr
~0.62 lbs/ac/yr
0.08 lbs/ac/yr
0.12 lbs/ac/yr
0.42 lbs/ac/yr
Next Steps

- Finalize watershed characterization in P8
  - Sub-watershed delineations
  - New ponds
- Calibrate P8 model to data
- Apply model to assess most cost-effective means of reducing P
Questions???