

**MINNESOTA POWER ISLAND LAKE DRAFT OPERATING PLAN - November, 2005 (Revised)**

TIMEFRAME	DRY CONDITION	NORMAL TO WET CONDITION
<p><b><u>Pre-Winter Drawdown Period</u></b>  <b><u>(November Mtg to discuss overwinter drawdown)</u></b>                      (November 1<sup>st</sup> through January 31<sup>st</sup>)</p> <ul style="list-style-type: none"> <li>➤ Review past 6 months of precipitation, including data from October</li> <li>➤ Assess antecedent conditions and determine if in dry period</li> <li>➤ Determine if dry winter is predicted</li> <li>➤ Document process and decisions</li> </ul>	<p>Determine if dry conditions are present, and adjust drawdown schedule (maximum of 2.5 feet drawdown reduction see below). Future adjustment of drawdown schedule may eventually be based upon a long-term forecast by the National Weather Service and the State Climatology Office. Pre-winter drawdown adjustments will not be made unless consensus is reached concerning the accuracy of the long term forecast.</p> <p>Maintain FERC license minimum flow (cfs):                      November - 180                      December - 170                      January and February - 175                      March - 215</p>	<p>Drawdown to 27.8 feet by March 31<sup>st</sup>.</p> <p>Maintain FERC license minimum flow (cfs):                      November - 180                      December - 170                      January and February - 175                      March - 215</p>
<p><b><u>Mid-Winter Drawdown Period</u></b>  <b><u>(February Mtg to discuss extent of drawdown)</u></b>                      (February 1<sup>st</sup> through March 31<sup>st</sup>)</p> <ul style="list-style-type: none"> <li>➤ Review updated precipitation data and forecast to determine if in dry period</li> <li>➤ Review current snow cover</li> <li>➤ Review model runoff prediction</li> <li>➤ Determine if adjustments are necessary</li> <li>➤ Document process and decisions</li> </ul>	<p>Maintain FERC license minimum flow requirement. Evaluate if dry conditions are present and adjust drawdown schedule. Drawdown adjustment decisions may include snow depth, moisture content, frost depth, spring runoff forecast, etc. A spring runoff forecast will be developed by the National Weather Service and the State Climatology Office depending upon availability of weather observer volunteers.</p> <p>Maximum reduction of overwinter drawdown to 30.3 feet (which is 2.5 feet above the normal 27.8 feet).</p> <p>Maintain FERC license minimum flow (cfs):                      November - 180                      December - 170                      January and February - 175                      March - 215</p>	<p>Drawdown from 38.5 to 27.8 feet (10.7 feet) or below if there is an above normal amount of snow cover</p> <p>Maintain FERC license minimum flow (cfs):                      November - 180                      December - 170                      January and February - 175                      March - 215</p>
<p><b><u>Spring Refill Period</u></b>  <b><u>(Mid-April to Mid-May Mtg to discuss refill forecast)</u></b>                      Dry Refill Period - April 1<sup>st</sup> through July 15<sup>th</sup>                      Normal to Wet Refill Period - April 1<sup>st</sup> through June 1<sup>st</sup></p> <ul style="list-style-type: none"> <li>➤ Review updated precipitation data and spring runoff forecast</li> <li>➤ Determine if dry period persists</li> <li>➤ Develop a modified plot of Island Lake Reservoir elevations for the calendar year showing minimum discharge, actual discharge, inflow, normal refill curve, upper dry refill curve, and lower dry refill curve.</li> <li>➤ Document process and decisions.</li> </ul>	<p>The Q95 minimum flow (cfs) are:                      April - 186 (84 cfs less than current minimum)                      May - 219 (106 cfs less than current minimum)                      June - 263 (77 cfs less than current minimum)                      July - 164 (1 cfs less than current minimum)</p> <p>If a Dry Drawdown Period is declared in the previous period, and when the current U.S. Drought Monitor indicates D1 status or greater (moderate, severe, extreme, or exceptional drought), the Q95 minimum flow (cfs) or inflow, whichever is less, will be implemented.</p> <p>If a Dry Drawdown Period is declared in the previous period and the current U.S. Drought Monitor indicates DO status (abnormally dry), the Q95 minimum flow (cfs) will be instituted only after the actual Reservoir Refill elevation line intersects with the halfway point between the normal refill rule curve and the upper dry refill curve.</p> <p>The Upper Dry Refill Rule curve is established by drawing a line from the lowest elevation achieved by March 31 to the target Upper Dry Refill Elevation (37.5 feet) on July 15.</p>	<p>Maintain FERC license minimum flow (cfs):</p> <p>April - 270                      May - 325                      June - 340                      July - 165</p>

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<p><b><u>Spring Refill Period</u></b></p>	<p>If a Dry Drawdown Period is <u>not</u> declared in the previous period, Q95 outflows (or inflow if less) will be instituted only under the following conditions:</p> <ol style="list-style-type: none"> <li>1) When the current U.S. Drought Monitor indicates D1 status or greater (D2 and above) <u>and</u>, the actual Reservoir Refill elevation line intersects with the half-way point between the Normal Refill Rule Curve and the Upper Dry Refill Curve. The Upper Dry Refill Rule curve is established by drawing a line from the lowest elevation achieved by March 31 to the target Upper Dry Refill Elevation (37.5 feet) on July 15.</li> <li>2) If the current U.S. Drought Monitor indicates D0 status (abnormally dry) <u>and</u> the actual Reservoir Refill elevation Line intersects with the Upper Dry Refill Curve.</li> </ol> <p>If Reservoir Elevations are greater than the Upper Dry Refill Curve (37.5 feet), then outflows will revert to normal minimums.</p> <p>If the reservoir area is not on the current U.S. Drought Monitor (not in D0 to D4 status), the Q95 minimum flow (cfs) will not be implemented.</p>	
<p><b><u>Reservoir Target Refill Date through Summer and Fall</u></b> (June, July, August, September, October)</p> <ul style="list-style-type: none"> <li>➤ Normal to Wet Refill Period</li> <li>➤ June 1<sup>st</sup> Target Date</li> <li>➤ Dry Refill Period July 15<sup>th</sup> Target Date</li> <li>➤ Document process and decisions</li> </ul>	<p>Target date for refill is July 15th. Dry refill range is 36.0 to 37.5 feet by July 15th. Between July 16<sup>th</sup> and September 1st, if lake elevation is less than 37.35 feet, outflow will be adjusted to inflow per 1996 agreement with the DNR.</p> <p>Q95 minimum flow (cfs) or inflow, whichever is less:</p> <p>June - 263 (77 cfs less than current minimum) July - 164 (1 cfs less than current minimum) August - 57 (108 less than current minimum) September - 44 (121 less than current minimum) October - 58 (122 less than current minimum)</p> <p>If Reservoir Elevations are greater than the Upper Dry Refill Curve (37.5 feet), then outflows will revert to normal minimums.</p>	<p>Target refill elevation of 38.5 feet by June 1<sup>st</sup>. Maintain 38.5 feet elevation. Between June 1st and September 1st, if lake elevation is less than 37.35 feet, outflow will be adjusted to inflow per 1996 agreement with the DNR. Maintain FERC license minimum flow (cfs):</p> <p>June - 340 July - 165 August - 165 September - 165 October - 180</p>

Note: Q 95 values will be adjusted by gage data after 10 years of data has been collected.

Note: If there are changes to the drought monitor intensity definitions over time, terms used in this plan will be adjusted as warranted.