Lake Sarah Meeting
August 26, 2004

Tom Hovey
DNR Waters
Ordinary High Water Level

- Elevation 979.9’ (formerly 979.5’)
- Boundary of public waters and p.w. Wetlands
- An elevation...highest water level that has been maintained for a sufficient period of time to leave evidence on the landscape
100 Year Flood Elevation

- 981.2’ (FEMA Flood Insurance Study)
- Synonymous with 1% chance flood and regional flood
Ordinary High Water Level

state jurisdiction extends waterward
range of water-level fluctuation varies from lake to lake
ordinary high-water level
record high water level
average water level
cattail, bulrush, sedges, and other aquatic vegetation

Shoreline cross section.
Runout Elevation

That elevation at which water begins to flow out of a basin
Brief History

- Water levels
- Runout levels
Historic Lake Levels thru ‘02

Lake Sarah Historical Lake Levels

- ELEVATION
- 100 Year Flood / No Wake
- Ordinary High V
Relevant Elevations

- 100 year flood elevation - 981.2’
- Ordinary High Water Elevation – 979.9’
- Outlet Elevation (2003) – 979.3’
- Approximate Runout Elevation Today – 978.5’
- Water Surface Today (8/26/04) – 978.8’
- Suggested Range – 978.3’ to 978.8’
- Runout Elevation (1986) – 978.2’
- Runout Elevation (1974) – 977.9’
- Runout Elevation (1942) – 977.3’
Lake Sarah Outlet - 1941
Lake Sarah Outlet - 1976
Lake Sarah Outlet - 2004
Water Levels - 2004

Lake Sarah Lake Levels 2004

Reading Dates

Lake Level
100 Year Flood 9/17/1 - No wake
Ordinary High Water 9/19/99
Unauthorized Alterations

May 2004

- More harm than good?
Laws Affecting Project

- Minnesota Statutes 103G
- Minnesota Rules, Part 6115
  - Structures in Public Waters
  - Water Level Controls
- Local and Regional Plans and programs
Permit No. 2004-3025

- Originally authorized excavation of the channel, and lowering the runout by 6” to 12”
- Amendment requested to authorize placement of the cable concrete product
- Runout should be within elevation range recommended in DNR Lake Sarah Outlet report.
Factors Affecting Decision

- History of outlet elevation
- Need for project
- Building based on flood elevation of 981.2'
- Relationship of runout to the OHW
- Effects on recreation
- Maintenance requirements
- Opportunity
Physical Realities vs. Regulatory
Sarah Lake Outlet Channel
Pre-Cleanout

Legend
- WS 60 cfs
- WS 40 cfs
- WS 20 cfs
- WS 12 cfs
- WS 5 cfs
- WS 1 cfs
- Ground

Main Channel Distance (ft)

Elevation (ft)
## Alternatives Table

<table>
<thead>
<tr>
<th>Runout</th>
<th>upper weir above Alt. No.1</th>
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</thead>
<tbody>
<tr>
<td>Alternative 1: 2 ft @ 978.3</td>
<td>978.9</td>
</tr>
<tr>
<td>Alternative 2: 2 ft @ 978.8</td>
<td>979.3</td>
</tr>
<tr>
<td>Alternative 3: 2 ft @ 978.55</td>
<td>979.05</td>
</tr>
<tr>
<td>Alternative 4: 6 ft @ 978.8</td>
<td>979.2</td>
</tr>
<tr>
<td>Alternative 5: 4 ft @ 978.7</td>
<td>979.1</td>
</tr>
</tbody>
</table>

**100-yr; 10-day storm peak lake level**
Sarah Lake Outlet Channel
RS = 38.5  New outlet weir, Alternative No. 1
Alternative 4

Sarah Lake Outlet Channel
RS = 38.5  New outlet weir, Alternative No. 4

Legend
- WS 40 cfs
- WS 20 cfs
- WS 12 cfs
- WS 5 cfs
- WS 1 cfs
- Ground
- Bank Sta
Higher Outlet = Lost Storage

27-365W – Extra Storage

Lake Sarah
The Outlet - Sept. 2003

Co. Rd. 92

Channel in 27-365W

U.S. end 60” RR Culvert
The End?
For More Info.

Tom Hovey
DNR Waters
1200 Warner Road
St. Paul, MN 55106
651.772.7923
Tom.hovey@dnr.state.mn.us
Shady Beach Resort
Lake Sarah Recreation