



Medicine Lake TMDL Implementation

January 25, 2012 CEAM Annual Meeting
Stormwater—TMDL Implementation Panel

Greg Wilson
Barr Engineering Company

Outline

- Medicine Lake background
- TMDL (and categorical wasteload) allocations
- Options for TMDL implementation
- Adaptive management



Medicine Lake background

Second largest lake in Hennepin Co.

Bayed lake system with 2-mile fetch

12,000-acre fully developed watershed

High lake flushing rate, intermittent mixing

Excess nutrients/chl-a

Lake improvement projects span more than 20 years

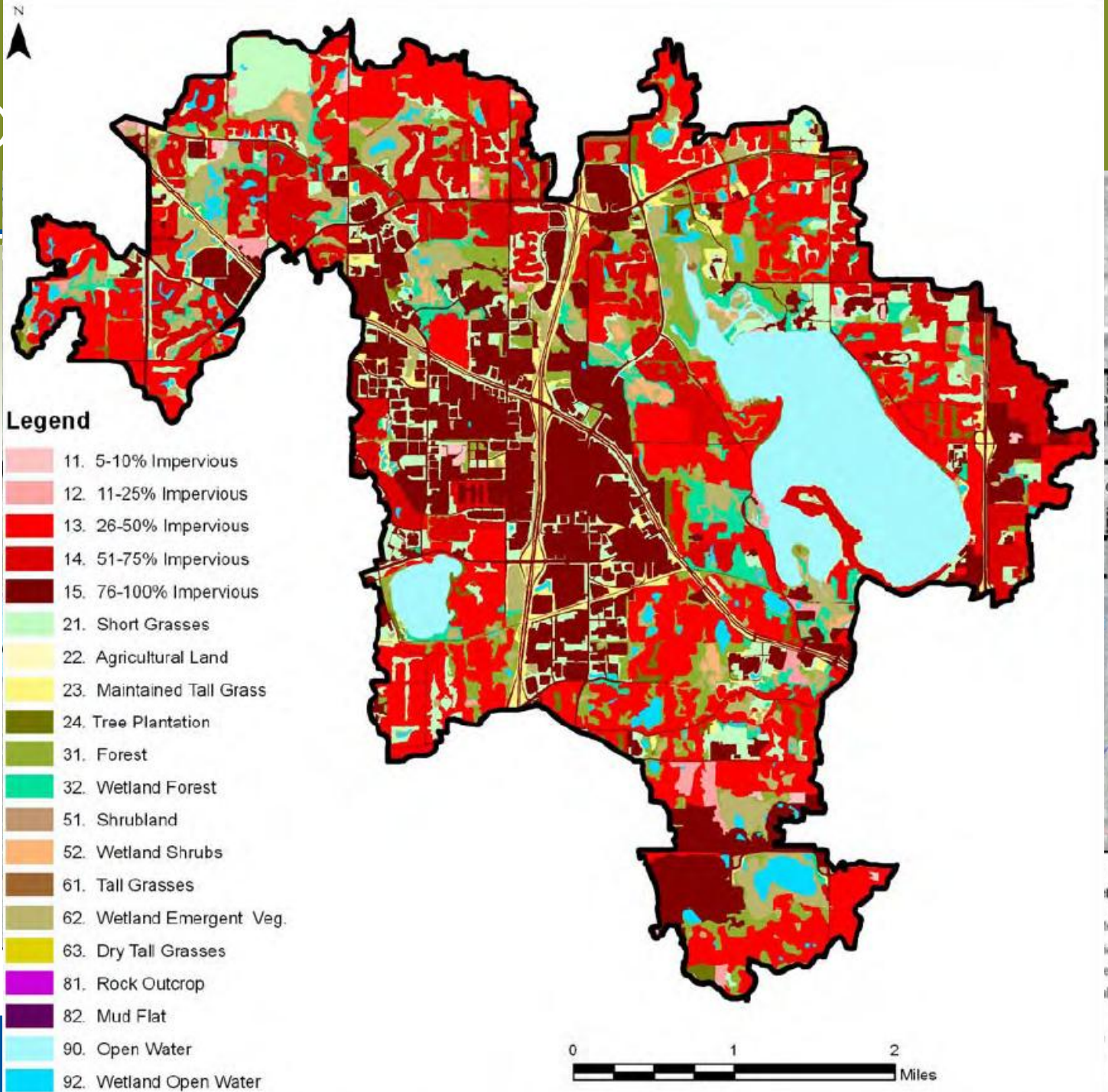


Med

Seven MS4s

Plymouth and
Medicine Lake
are direct; rest
indirect

Plymouth
represents 83%
of watershed
area



Watershed
Watershed
Watershed
Watershed
Watershed

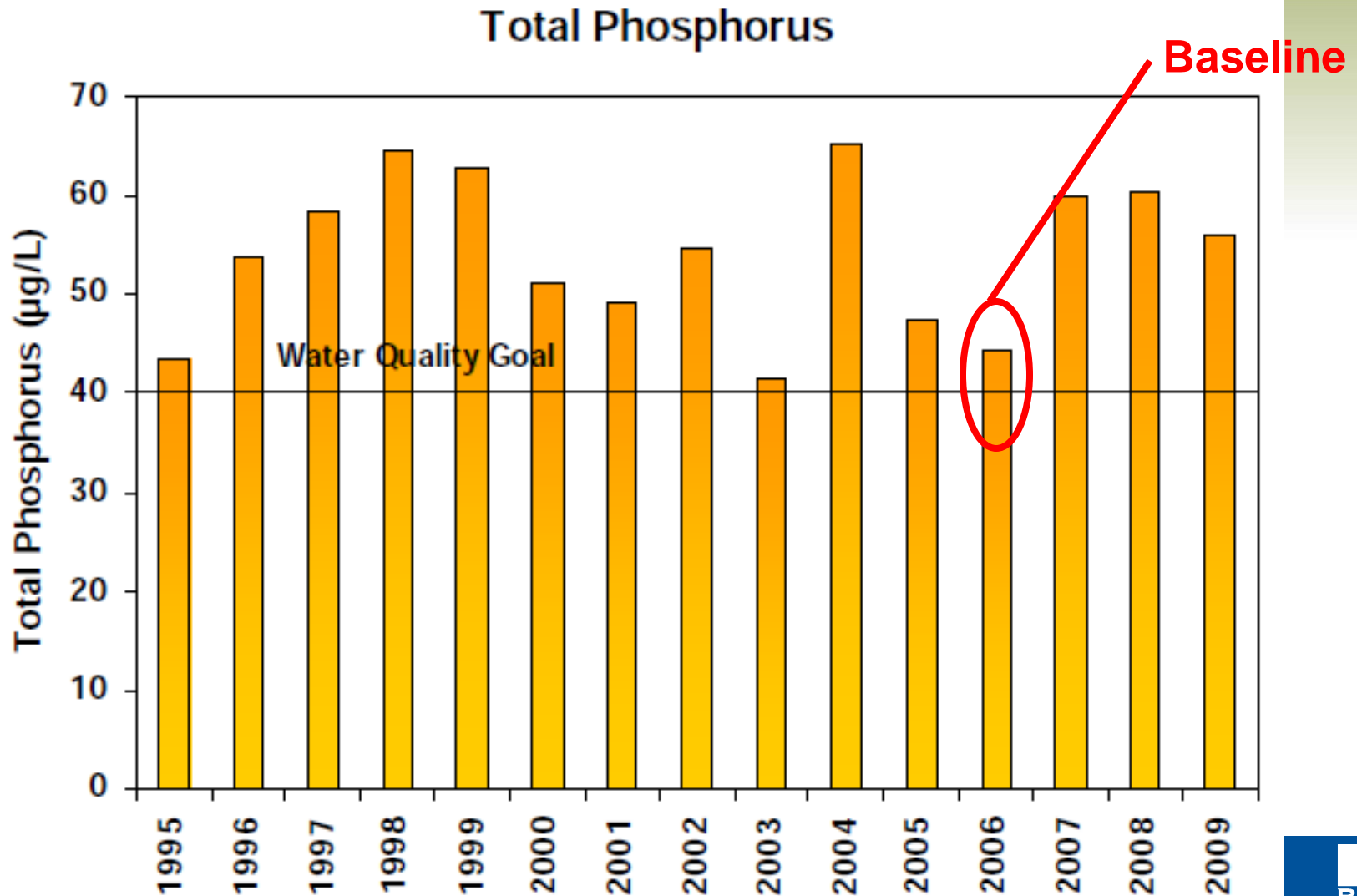
TMDL allocations

TMDL and Allocation Summary.

Point Sources	Permit #	Gross WLA (i.e. loading to Medicine Lake) (lbs/year TP)						
Categorical WLA								
City of Plymouth	MS400112	<table border="1"> <thead> <tr> <th>Source</th> <th>LA (lbs/day TP)</th> </tr> </thead> <tbody> <tr> <td>Atmospheric deposition</td> <td>0.69</td> </tr> <tr> <td>Internal load from lake sediment and curlyleaf pondweed die-off/senescence above background (defined as 2006 conditions)</td> <td>0.0</td> </tr> </tbody> </table>	Source	LA (lbs/day TP)	Atmospheric deposition	0.69	Internal load from lake sediment and curlyleaf pondweed die-off/senescence above background (defined as 2006 conditions)	0.0
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City of Medicine Lake	MS400104							
City of Minnetonka	MS400035							
City of Golden Valley	MS400021							
City of New Hope	MS400039							
Construction Stormwater	Various							
Industrial Stormwater	Various							
Individual WLAs								
Hennepin County	MS400138	48						
Mn/DOT	MS400170	94						
Honeywell*	MN0063266	6						
Minntech*	MN0063541	0						
Total WLA		3,230						
Load Allocation		253						
Margin of Safety (MOS)		270						
TOTAL		3,753						

*The actual "end-of-pipe" allocation for Honeywell and Minntech is greater than the value presented in this table.

TMDL allocations



Categorical wasteload allocations

- WLA, distributed based on watershed area, represents 28% reduction from existing baseline load
- WLA can be categorical if:
 - Data are not adequate for assigning individual WLAs
 - Reasonable assurances, collectively by the MS4s (e.g., watershed organization with regulatory authority, consistent goals)
- Bassett Creek Watershed Management Commission will serve as convener of action for categorical WLA

Categorical WLA		
City of Plymouth	MS400112	3,082
City of Medicine Lake	MS400104	
City of Minnetonka	MS400035	
City of Golden Valley	MS400021	
City of New Hope	MS400039	
Construction Stormwater	Various	
Industrial Stormwater	Various	

Options for TMDL implementation

- Seven alternatives involving various BMP combinations evaluated in TMDL implementation plan
 - Used P8 watershed model (2007 land use & 2006 climate conditions as a baseline) to assess reductions
 - BATHTUB in-lake model (2006 baseline) wasn't used
- Only one alternative met the WLA reduction goal
 - Assumed that particle removal factor could be increased from 1 to 3 due to pond retrofits/improved maintenance
 - Remaining alternatives were at least 288 lbs. short
- TMDL doesn't incentivize MS4s to target internal load

Current TMDL implementation efforts

- Plymouth Creek restoration and water quality ponding at West Medicine Lake Park and Golden Valley
 - About 1,000 lbs. phosphorus reduction
- Wood Creek, Timber Creek, and County Road 9/61 projects (~200 lb. reduction)
- Vacuum-assisted street sweeping
 - ~630 lbs. reduction, with significant fraction offset by other BMPs
- RWGs w/ street reconstruction, education, curlyleaf management, redevelopment requirements

Adaptive management

- Document implementation projects and track progress toward meeting necessary load reduction
 - Coordinated by Bassett Creek (as lead categorical entity) in conjunction w/ annual SWPPP reporting
- Verification monitoring—annually in-lake, watershed monitoring every 5 years; sediment monitoring



Recommended reading

- Technical Guidance Used by MPCA to Develop Policies for Setting TMDL WLAs for Regulated Stormwater
(wq-strm7-03.pdf)



Thank you



resourceful. naturally.

