Item 8B.
BCWMC 1-16-14
Online Information

WATER QUALITY STANDARDS:

WHAT THEY ARE, HOW THEY ARE USED AND HOW THEY ARE EXPECTED TO CHANGE

Minnesota Pollution Control Agency

Presentation to Barr Engineering
December 23, 2013
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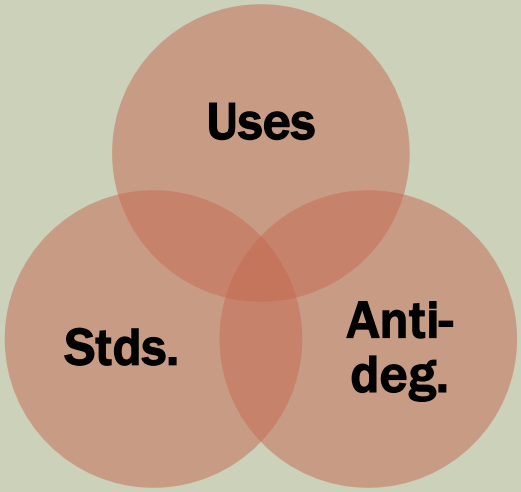
WHAT ARE WQ STANDARDS?

- Foundational part of the Clean Water Act
- CWA objective:
  - "Restore and maintain the chemical, physical and biological integrity of the nation's waters"
  - "Fishable and swimmable" interim goal
- Address three key questions:
  1. What and who are we protecting?
  2. What conditions are protective?
  3. How do we maintain high water quality?

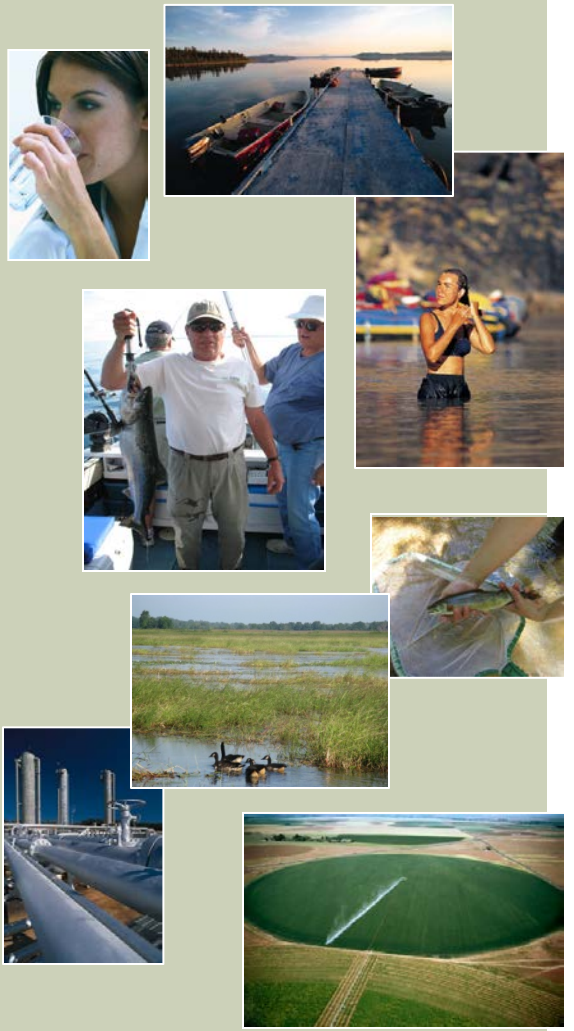


WHAT/WHO IS PROTECTED?

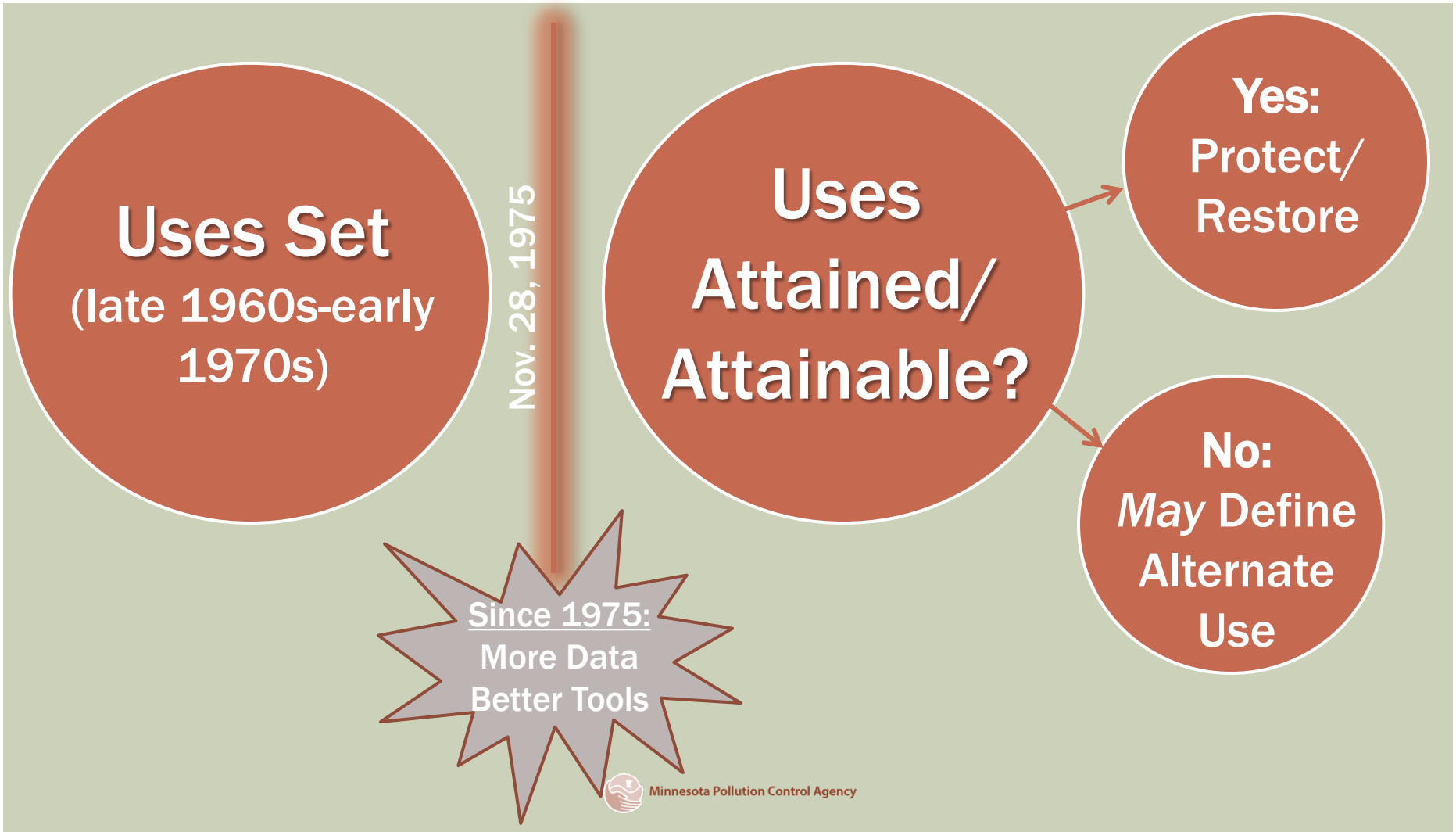
- Waters assigned beneficial uses
- Clean Water Act (Section 303(c)(2)(A)):
  - "…use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agriculture, industrial, and other purposes, and also…use and value for navigation."
- Minnesota Statutes (Section 115.44, Subd. 3):
  - "…best usage in the interest of the public…"

BENEFICIAL USES

- Seven Use Classes in MN Rules:
  1. Domestic Consumption
  2. Aquatic life and recreation
  3. Industrial use and cooling
  4. Agricultural and wildlife use
  5. Aesthetics and navigation
  6. Other uses
  7. Limited resource value
- Waters have multiple uses
- Existing Use



CAN BENEFICIAL USES BE CHANGED?



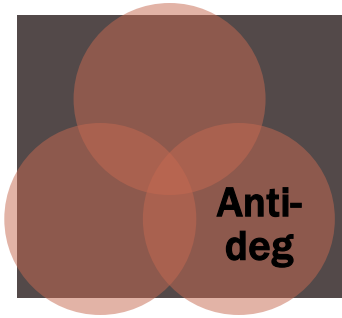
Stds.

WHAT CONDITIONS ARE PROTECTIVE?

- Standards identify the conditions needed to support the beneficial use
- Generally statewide or region-specific
- Can be narrative (descriptive) or numeric

Aquatic Life & Recreation examples:

Standard	"…no material increase in undesirable slime growths or aquatic plants, including algae…"	6.9 ng/L total mercury in water (outside of Lake Superior Basin)	5.0 mg/L oxygen as a daily minimum, 50% of the days when receiving water flow equals the 7 day, 10-year low flow ($7Q_{10}$)
Protects for:	Aesthetics, swimming	People and wildlife eating fish	Fish survival



HOW IS GOOD WATER QUALITY PROTECTED?

- Antidegradation is a key protection tool
- Different levels of protection:
  1. Maintain existing uses
  2. Protect high quality waters
     - Avoid impacts

     Only allow degradation if:
     - Minimize impacts and demonstrate need for important social or economic development
     - Maintain existing uses
  3. Maintain exceptional waters (ORVWs)

STANDARDS DEVELOPMENT

- Required by Clean Water Act and MN Statutes
- Relies on best available information
- Public review of standards at least every 3 years
  - Revise based on new information (new science)
  - Revisions follow state Administrative Procedures Act (public input)

WQ STANDARDS: SUMMARY

- It all goes back to uses
- Required by Clean Water Act and MN Stat.
- Public review at least every 3 years
- Three components:

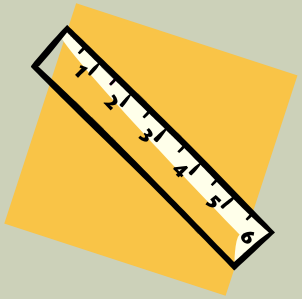
1. **Beneficial use classifications** for waterbodies

2. **Numeric and narrative criteria** that protect those beneficial uses

3. **Nondegradation requirements** to provide extra protection to high quality waters

HOW ARE STANDARDS USED?

- Measures/benchmarks
  - Communication
  - Monitoring and Assessment
- Controls
  - Permitted Effluent Limits (WQBEL)
  - Antidegradation review
  - TMDLs



STANDARDS & TMDLS

- The standard determines impairment
- The standard sets the goal
  - The condition(s) needed to achieve the use
- The Implementation Plan lays out the response and timeframe
  - Timeline and approach can reflect long-term nature of the restoration effort
  - Approaches include permits and best management practices

COMMON QUESTIONS

- What if my lake or stream reacts differently than other MN waters?
- What if there isn't technology available to meet the WQ-based effluent limit?
- What if we can't afford to meet the standard or limit?

Common assertion: The standard is unattainable (and therefore it's wrong)

SITE/CASE-SPECIFIC REFINEMENTS

- Standards reflect beneficial uses
- Tools for site- or case-specific situations
- Generally fall into two categories:

Standards Adjustments	Implementation Tools
• Site-Specific Standard • Use Attainability Analysis	• Permit Compliance Schedule • Permit Variance

STANDARDS ADJUSTMENTS

- Site-Specific Standard
  - Maintain beneficial use
  - Refine the numeric standard based on site-specific conditions
  - Public review and comment
- Use Attainability Analysis (UAA)
  - Remove/Modify a beneficial use (not an existing use)
  - Define alternate use based on site-specific data
  - Public review and comment

IMPLEMENTATION TOOLS

- Permit compliance schedule
  - Allow time for to achieve permit conditions
  - Must achieve permit conditions “as soon as possible”
  - Generally not available for new facilities
- Permit variance
  - Allows a temporary departure from the limit if specific conditions are demonstrated

WHAT'S THE BOTTOM LINE?

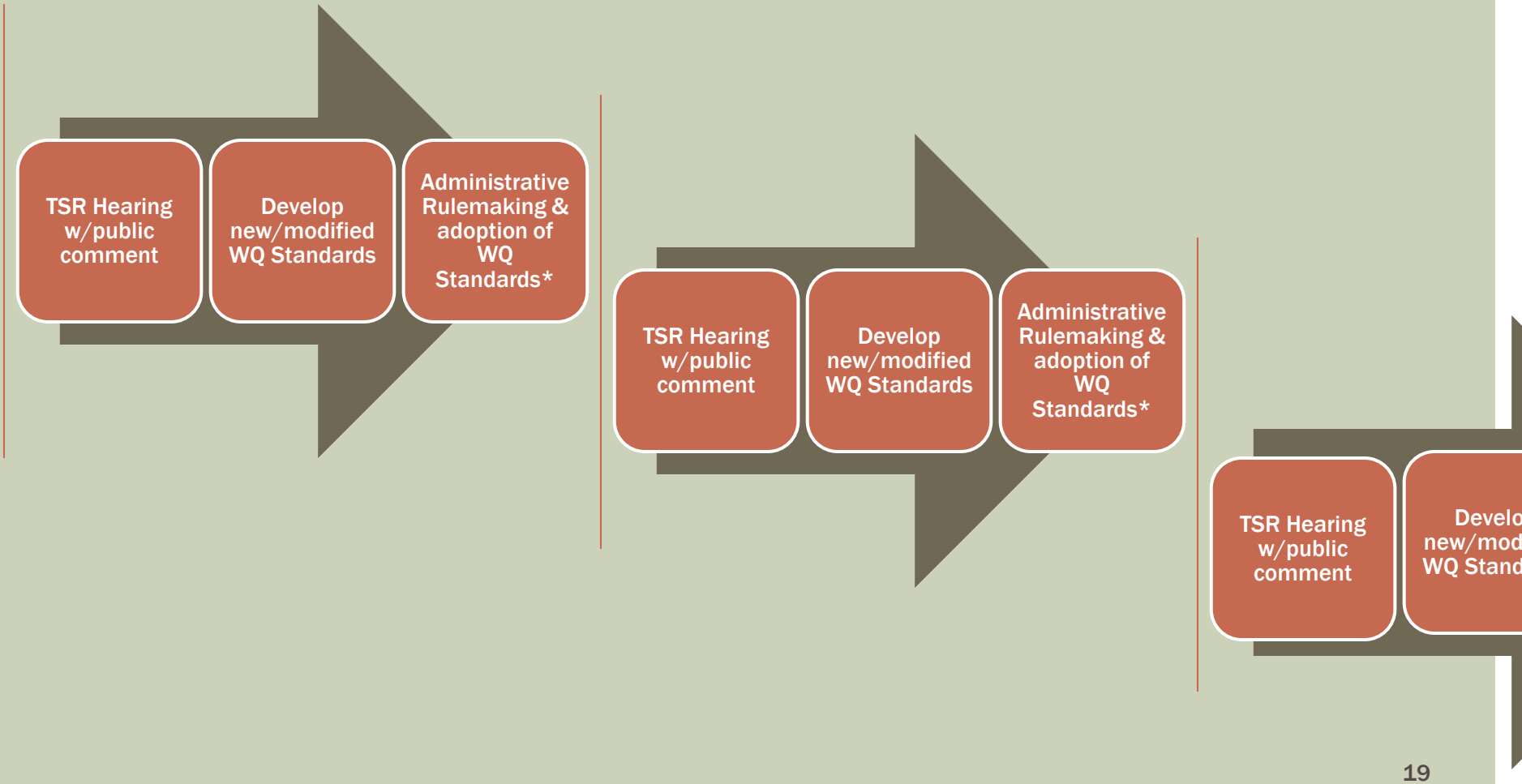
- Standards are the foundation for protecting and restoring clean water
- ID conditions that are protective, based on what and who we are protecting
- Reflect scientific knowledge
- Public review
- Allow for site-specific approaches

THE TRIENNIAL STANDARDS REVIEW IS…

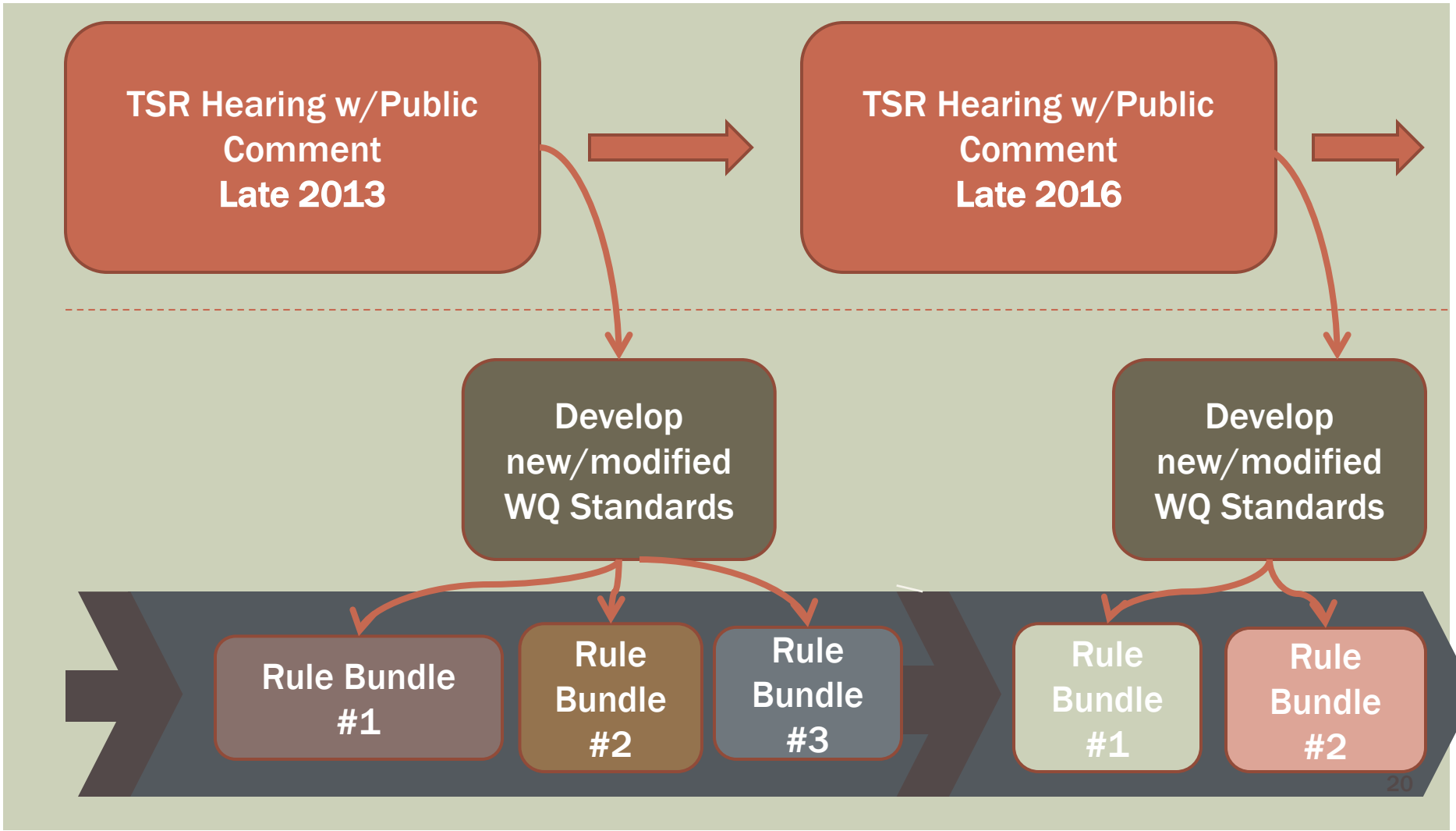
A requirement of the federal Clean Water Act:

> "..at least once each three year period…hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting the standards"
>
> [CWA Section 303(d)]

AN EVERY THREE YEAR, LINEAR PROCESS



MPCA'S PROPOSED TSR PROCESS



MPCA TRIENNIAL STANDARDS REVIEW

- MPCA requests comments on nine topics being considered for rule adoption
- Comments on topics believe we should be working on
- Also any new information concerning variances presently issued
- Submit comments to MPCA by Jan 15, 2014

THE NINE TOPICS MPCA IS CONSIDERING

1. Update Pollutant-specific Standards to Protect Human Health
2. Update Recreational (E. coli) Standards
3. Revise Domestic Consumption Designations and Standards
4. Consider New National Criteria to Protect Aquatic Life; cadmium, copper, nonylphenol ethoxylates, acrolein, ammonia, carbaryl, diazinon, tributyltin, and selenium (draft)

THE NINE TOPICS MPCA IS CONSIDERING

5. Revise Chloride Standard for Aquatic Life Protection
6. Develop Nitrate Standard for Aquatic Life Protection
7. Revise Standards for Industrial and Agricultural Uses, not including wild rice
8. Update Outstanding Resource Value Waters List
9. Review Limited Resource Value Waters

RULE REVISIONS ON THE DOCKET

- River Eutrophication Standards
- TSS replacing Turbidity
- Revised Human Health Methods
- Use Class Changes (Class 1, 2A, 2B, 7)
- Nondegradation/Antidegradation
- Tiered Aquatic Life Uses
- Variance Rules
- Wild Rice Sulfate Standard

WILD RICE SULFATE STANDARD

- Study evaluating 10 mg/L sulfate standard to protect wild rice
- Clarify 'water used for production of wild rice"
- Clarify period wild rice sensitive to elevated sulfate levels
- Studies complete Dec 2013
- MPCA standards evaluation Feb 2014
- Expert Review Panel

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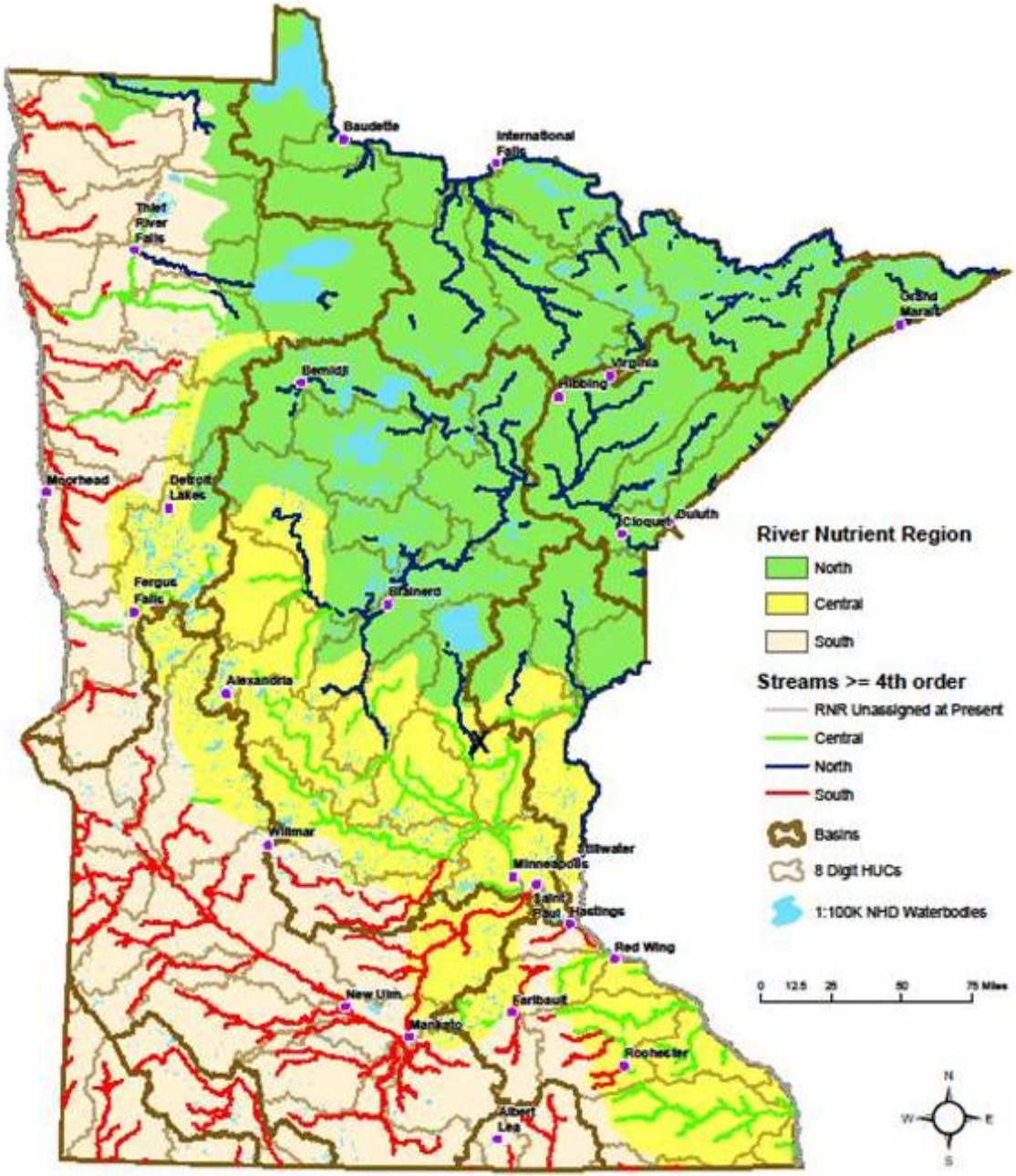
Following slides are additional information not presented

River Nutrient Regions (RNR)



RNR map developed to provide basis for regionalizing criteria. Used ecoregion map as a primary basis with modifications based on:

- Relative ecoregion composition of rivers
- Review of WQ data
- Analysis and maps created at 8 and 11 digit HUC level

Note - this map will likely be used for TSS/turbidity standard application as well

Draft criteria by River Nutrient Region

	Nutrient	Stressor		
Region	**TP ($\mu g\ L^{-1}$)**	**Chl-T ($\mu g\ L^{-1}$)**	**DO flux ($mg\ L^{-1}$)**	**BOD ($mg\ L^{-1}$)**
North	60	10	≤4.0	≤1.5
Central	110	25	≤4.5	≤2.5
South	170	40	≤5.0	<3.0

- Must exceed TP criterion and a stressor (response) criterion (Chl-T, BOD, or DO flux), or elevated pH (>9.0)
- Assessment based 6-8 measurements per year collected between June and September from two summers (mean based on 12-16 samples total)
- Different criteria will apply to excessive periphyton

2013 TRIENNIAL STANDARDS REVIEW

- **Meeting Format**
  - 1:30 to 2:00 PM – Opening remarks & presentation
  - 2:00 PM to 4:30 PM – Public comments and discussion
- **Meeting is being webcast and recorded**
  - On-line participants can email questions to:

minnrule7050@pca.state.mn.us

1. UPDATE POLLUTANT-SPECIFIC STANDARDS TO PROTECT HUMAN HEALTH

- People can be exposed to pollutants by: eating fish, recreating in water, or drinking water (Class 1 designation)
- Considering:
  - Updating existing pollutant-specific HH-WQS
  - Adding new pollutant-specific HH-WQS for pollutants without standards

2. UPDATE RECREATIONAL STANDARDS

- Protects people from pathogens during recreational use of surface waters
  - Current standards based on EPA's 1986 national criteria for *E. coli.;* new national criteria were issued by EPA in 2012
- MPCA is planning to revise existing standards for Lake Superior with new criteria
- MPCA is considering revising existing standards for inland waters statewide

3. REVISE CLASS 1 DESIGNATIONS AND STANDARDS

- Class 1 waters are protected for drinking water (Domestic Consumption)
  - All groundwater
  - Select surface waters

- Federal Safe Drinking Water Act standards currently apply
- Need to update based on newer Minnesota regulations and groundwater protection programs

4. CONSIDER NEW NATIONAL CRITERIA TO PROTECT AQUATIC LIFE

- States are required to consider new national criteria published by EPA.
- Considered these pollutants in 2008 Triennial and draft standards were developed: cadmium, copper, nonylphenol ethoxylates
- New criteria for these pollutants as of 2013: acrolein, ammonia, carbaryl, diazinon, tributyltin, and selenium (draft)

5. REVISE CHLORIDE STANDARD FOR PROTECTION OF AQUATIC LIFE

- Current chloride standard for aquatic organisms based on 1988 EPA national criteria
- A revised approach being researched by EPA; MPCA will evaluate results once available
- Draft results suggest revisions needed

6. DEVELOP NITRATE STANDARDS FOR PROTECTION OF AQUATIC LIFE

- Concern about nitrate's impact on aquatic life raised by stakeholders and legislature
- MPCA developed draft nitrate standards but work is on hold while EPA conducts additional toxicity tests
- Once EPA tests are completed, MPCA will resume development of nitrate standards

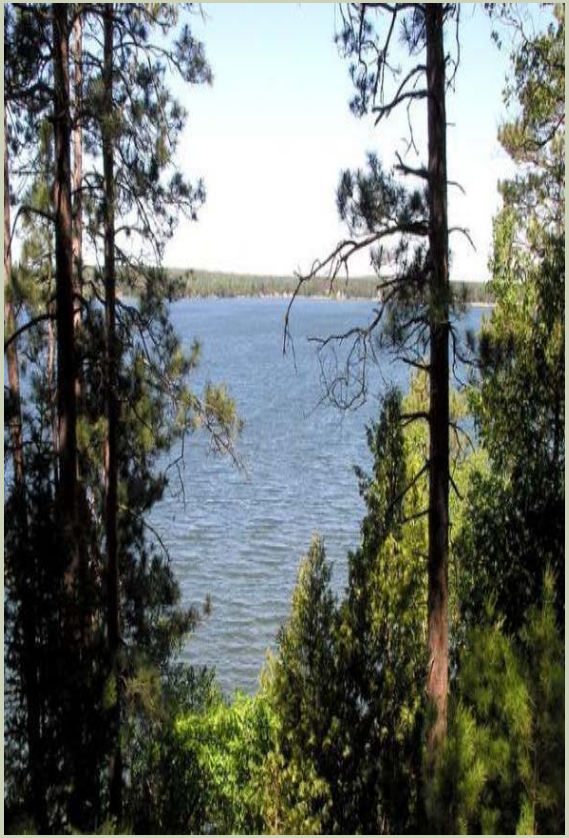
7. REVISE STANDARDS FOR CLASS 3 AND CLASS 4 WATERS

- Industrial uses include cooling water (Class 3)
- Agricultural uses primarily relate to irrigation (Class 4A)
- Source of drinking water for livestock and wildlife (Class 4B)
- Options being considered:
  - Replace Class 3 numeric standards with narrative
  - Update Class 4A* and 4B standards
  - Apply Class 4A standards seasonally

*Topic does not include Class 4A sulfate WQS for protection of wild rice, which is already a priority for revision.

8. UPDATE LIST OF OUTSTANDING RESOURCE VALUE WATERS

- ORVWs receive highest level of water quality protection and are designated in rule
- Update ORVW lists to reflect waters associated with scientific and natural areas and calcareous fens currently designated by the DNR



9. REVIEW CLASS 7 LIMITED RESOURCE VALUE WATERS

- Class 7 - Limited Resource Values Waters
  - New data and review on all Class 7 waters
  - New requests for reclassification
- Future revisions may be considered under the Tiered Aquatic Life Use (TALU) rulemaking