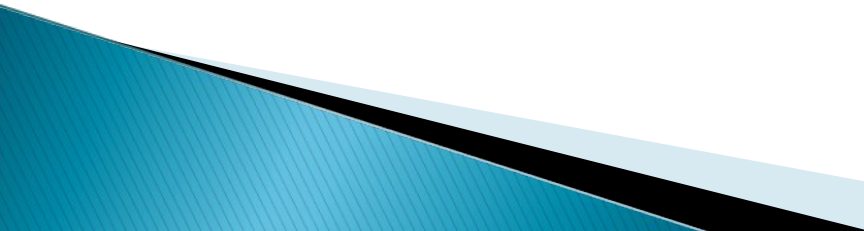


Nutrient Management Status For Colorado's Waters

- ▶ Water Quality Use Impacts from Nutrients
 - ▶ Water Quality Overview
 - ▶ Management Approach
 - ▶ Monitoring Approach
 - ▶ Summary
- 

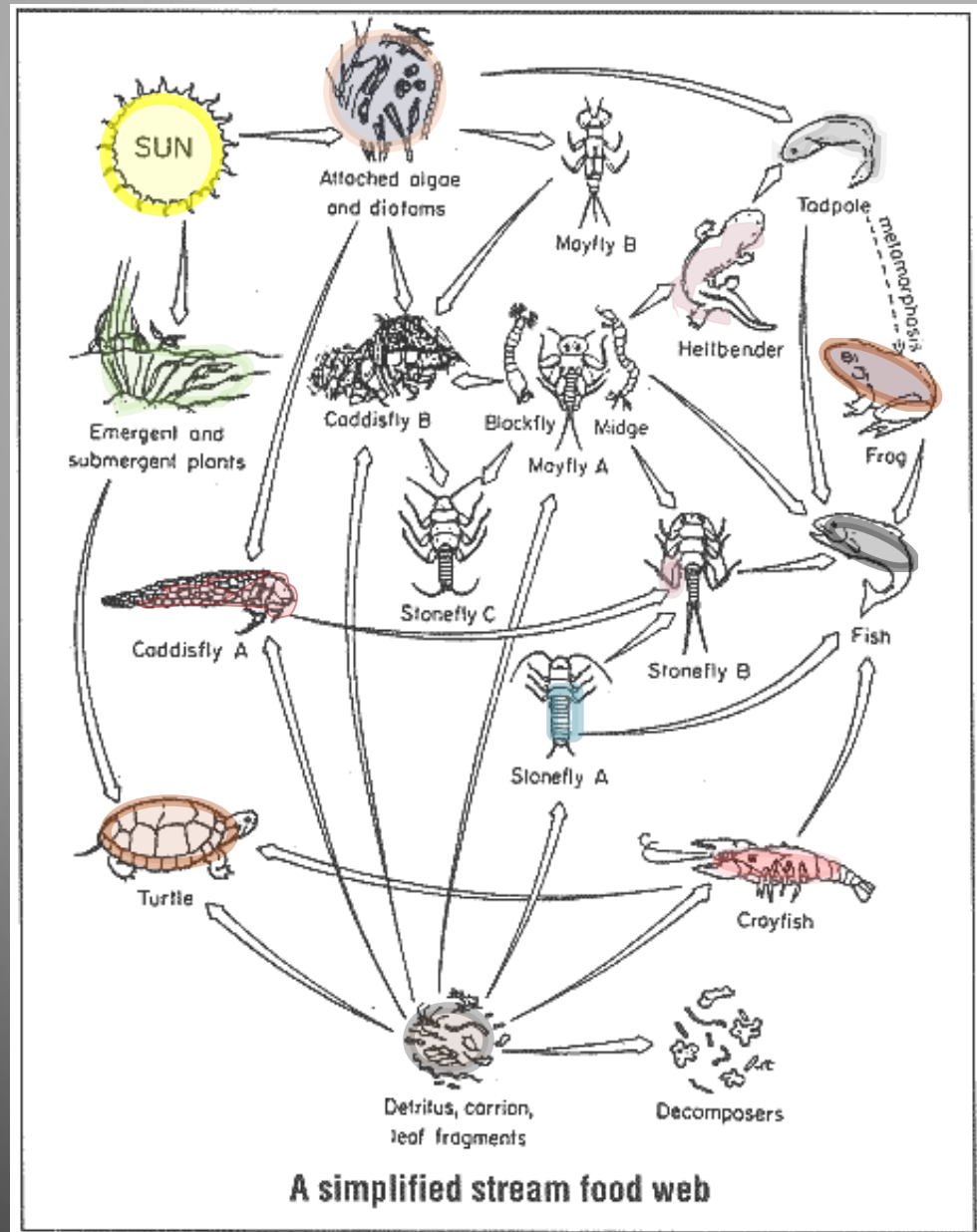
Nutrient Enrichment – Water Supply Impacts

Water Supply

- Increased carcinogenic disinfection by-products
- Taste and odor



Nutrient Enrichment – General aquatic life impacts



Nutrient Enrichment – Recreation and Aquatic Life Impacts

- Increased algae blooms
- Most noticeable in lakes and reservoirs
- Affects public perception
- Excessive attached vegetation in streams



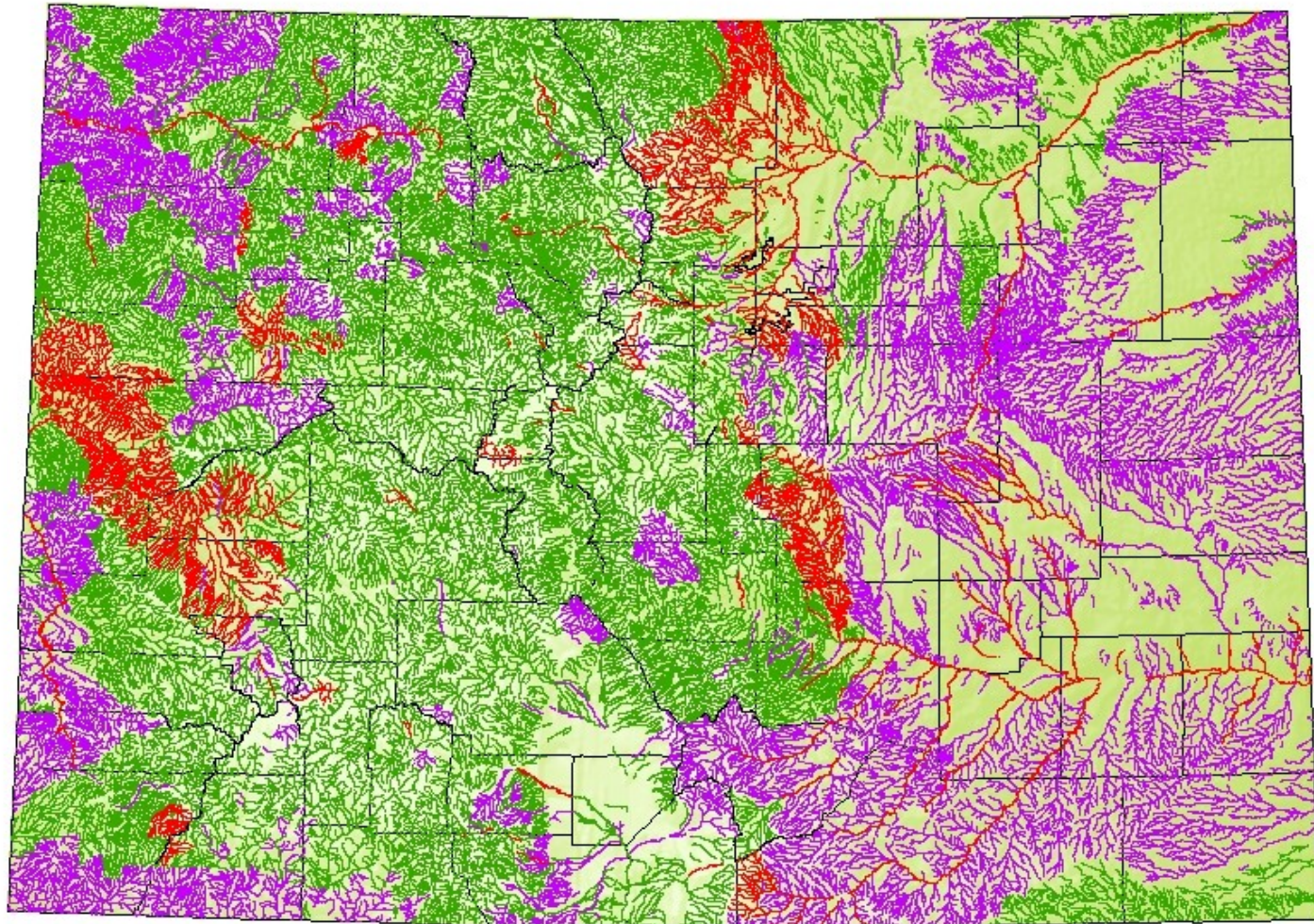
Nutrient Enrichment – Agricultural Use Impacts

- ▶ Impacts to water diversions
- ▶ Excessive attached vegetation



Status of Water Quality in Colorado

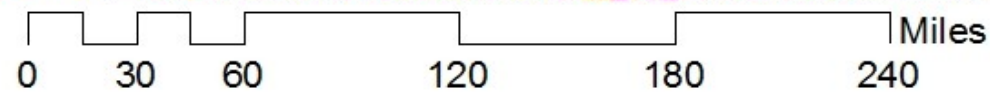
2010 Integrated Report



Legend

IR Category

- Attaining
- Unknown
- Impaired

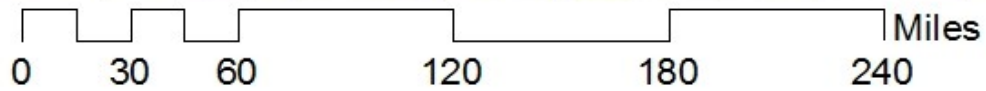
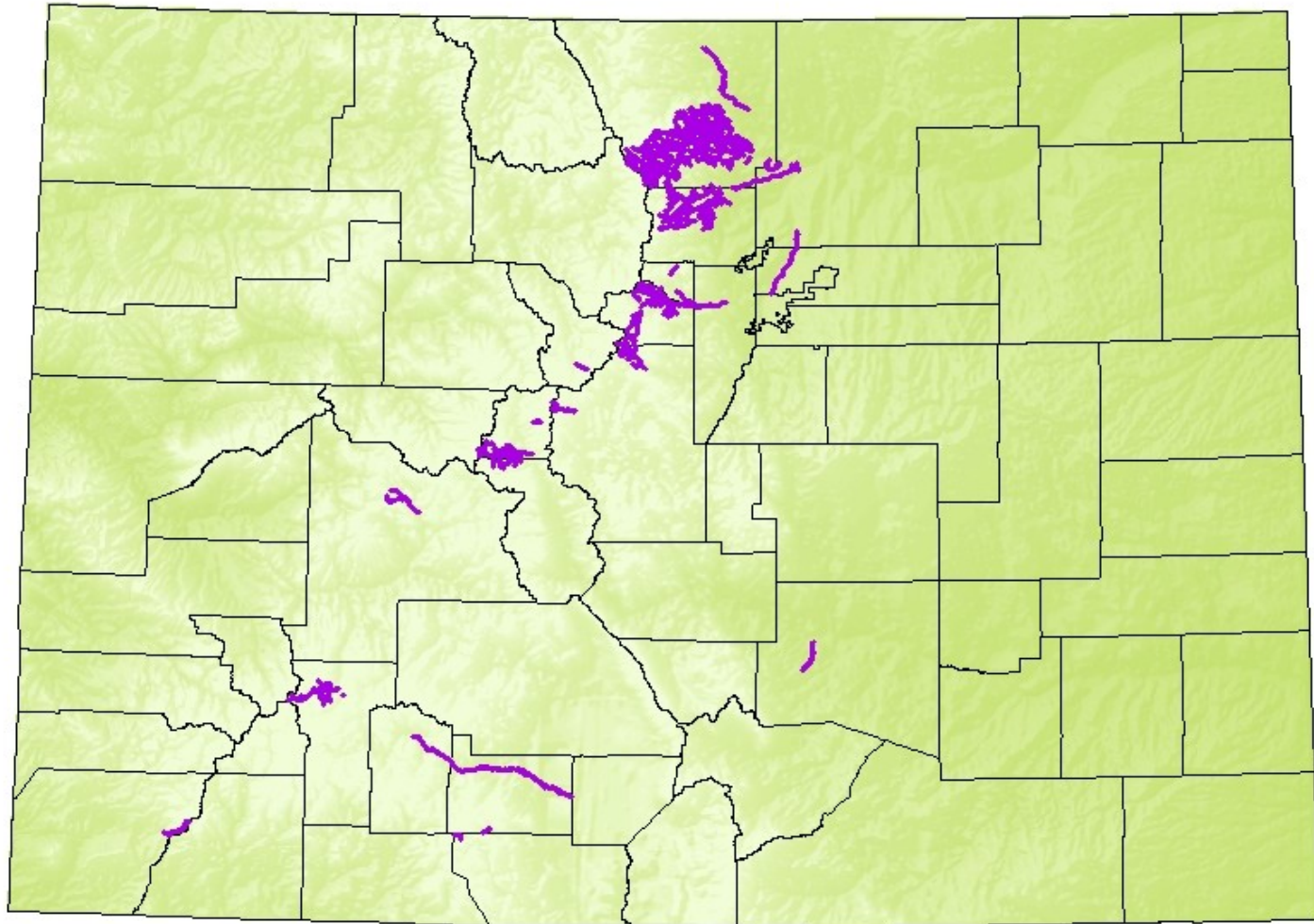


Colorado Department
of Public Health
and Environment




Colorado Water Quality Impaired Water Bodies

Impairments of Cd, Cu, Zn, Pb



Legend

 Cd, Cu, Zn, Pb

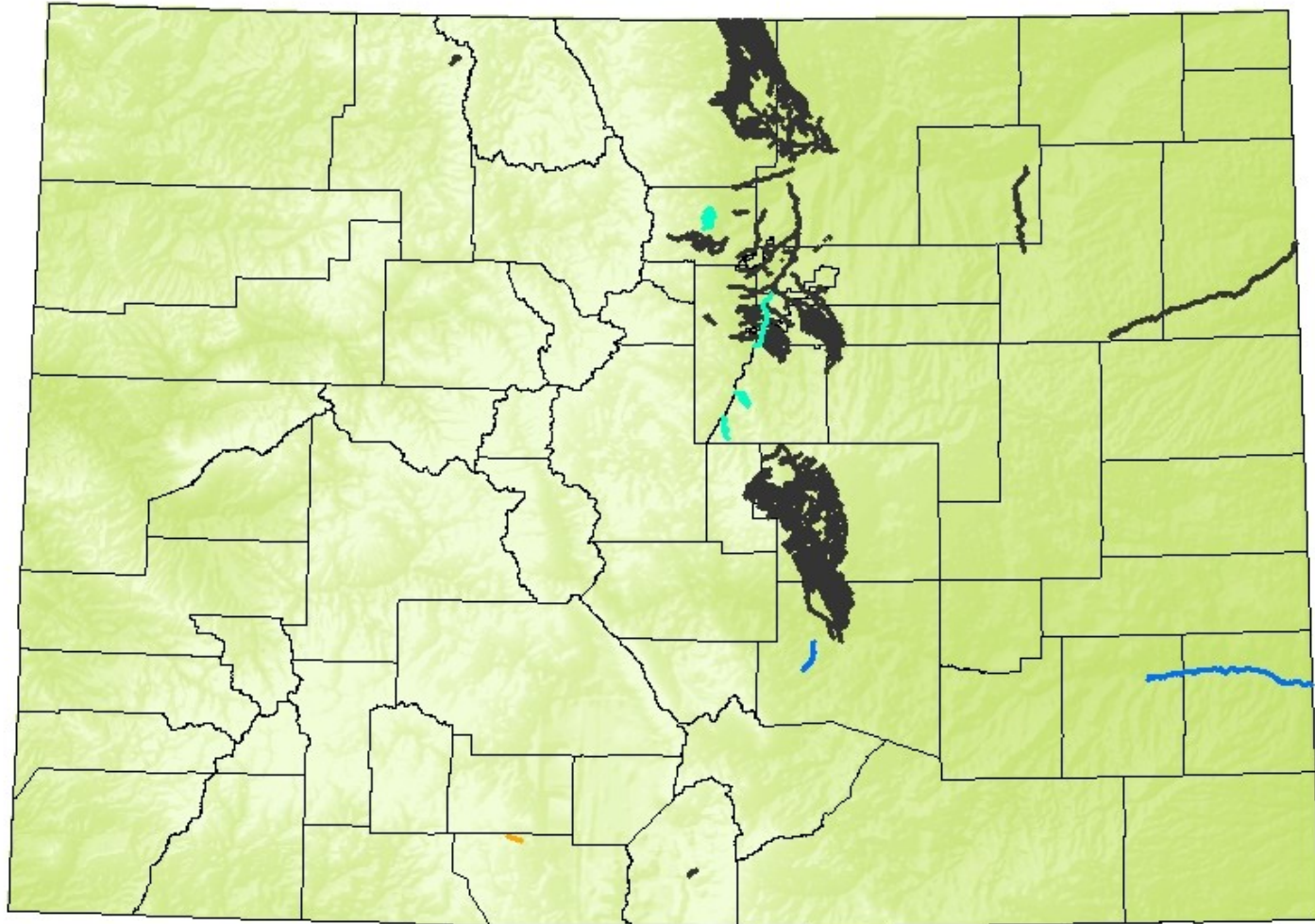


Colorado Department
of Public Health
and Environment



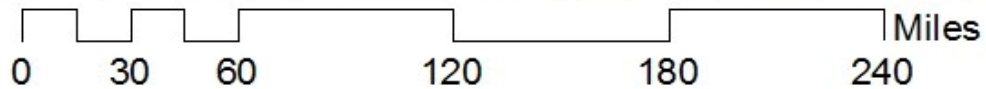
Colorado Water Quality Impaired Water Bodies

Impairments of Al, As, E. coli, U



Legend

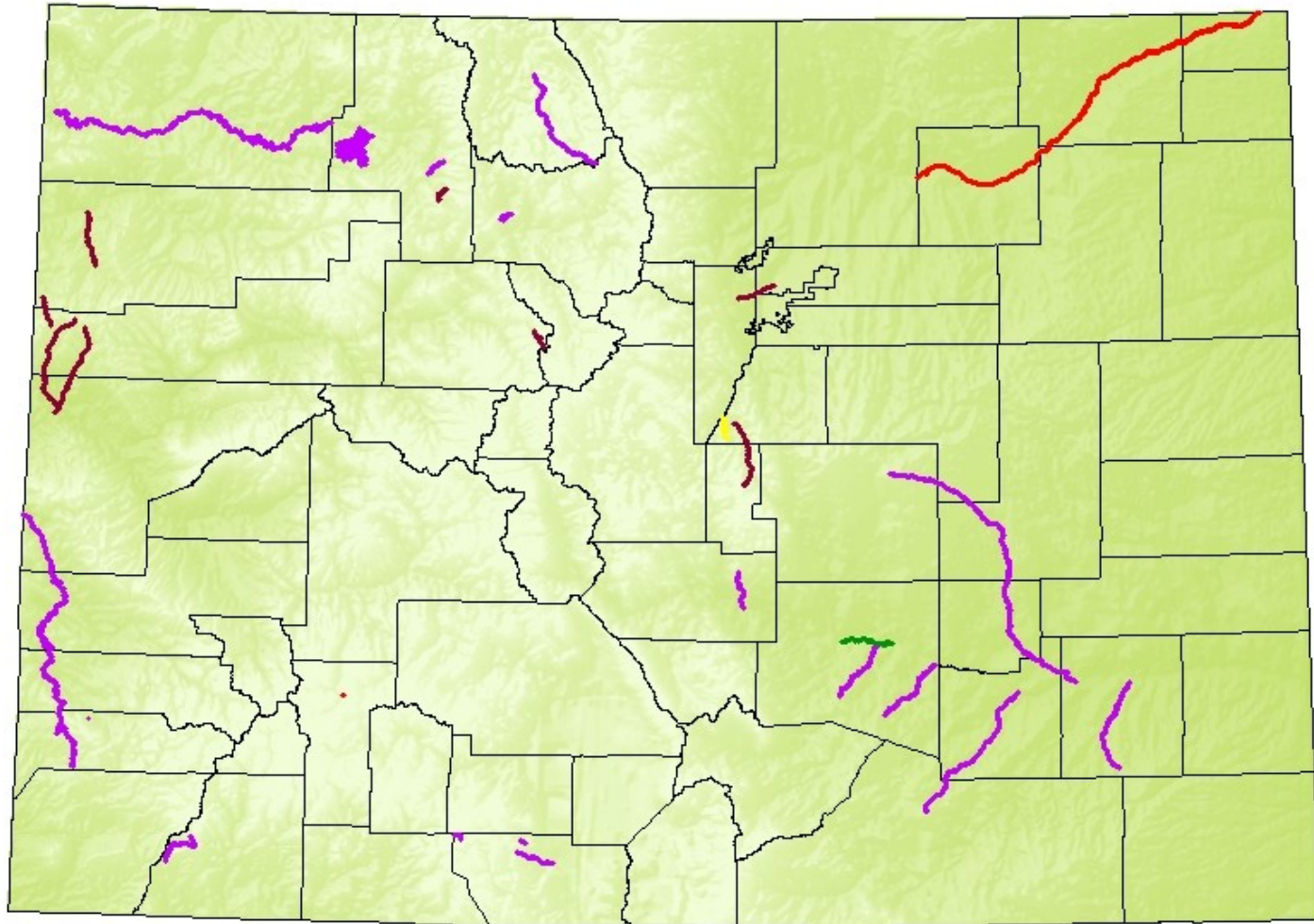
- Al
- As
- E.coli
- U





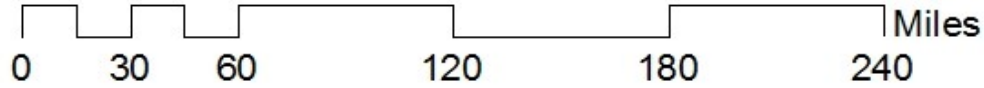
Colorado Water Quality Impaired Water Bodies

Impairments of SO₄, Fe, Sediment, Mn, Hg



Legend

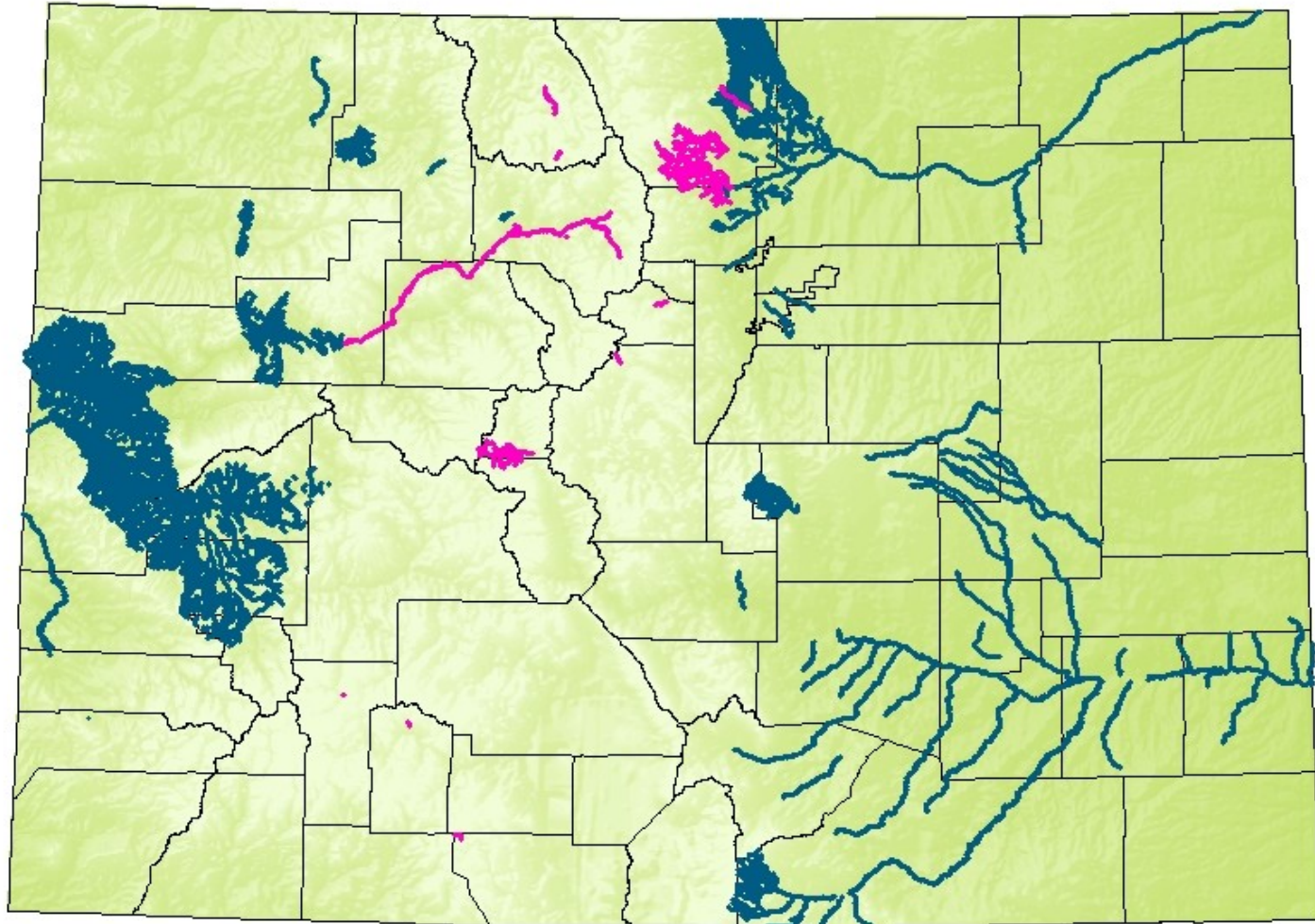
- SO₄
- Fe
- Sediment
- Mn
- Hg







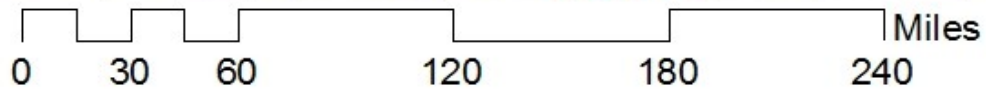
Colorado Water Quality Impaired Water Bodies

Impairments of Temperature, D.O., pH, Se



Legend

-  D.O., pH, Temperature
-  Se



Lake Impairments for DO and pH by Basin

▶ Arkansas

- Lower Basin

 - 熄 Trinidad Reservoir

- Upper Basin

 - 熄 DeWeese Reservoir

 - 熄 Brush Hollow Reservoir

▶ Colorado

- North Platte

 - 熄 Lake John

- Upper Basin

 - 熄 Shadow Mountain Reservoir

Lake Impairments for DO and pH by Basin

▶ Gunnison

◦ Lower Basin

☹ Fruitgrowers Reservoir

☹ Crawford Reservoir

◦ San Miguel

☹ Miramonte Reservoir

Lake Impairments for DO and pH by Basin

▶ Rio Grande

- Alamosa: La Jara Reservoir
- Closed Basin
 - 熄 San Luis Lake (M&E)
- Rio Grande
 - 熄 Smith Reservoir (M&E)
 - 熄 Sanchez Reservoir

▶ San Juan

- Piedra
 - 熄 Williams Creek Reservoir (M&E)
- San Juan
 - 熄 Echo Canyon

Lake Impairments for DO and pH by Basin

- ▶ South Platte
 - Bear Creek
 ~~烟~~ Bear Creek Reservoir
 - Cherry Creek
 ~~烟~~ Lollipop Lake
 - Clear Creek
 ~~烟~~ Arvada Reservoir
 - Cache la Poudre
 ~~烟~~ Seaman Reservoir

Lake Impairments for DO and pH by Basin

- ▶ South Platte Continued
 - Lower Basin
 - 炆 North Sterling (M&E)
 - 炆 Jackson
 - Middle Basin
 - 炆 Milton Reservoir
 - 炆 Barr Lake
 - 炆 Horse Creek Reservoir (M&E)
 - 炆 Prospect Lake

Lake Impairments for DO and pH by Basin

▶ South Platte Continued

◦ Upper Basin

燬 Rocky Mountain Lake

燬 Ferril Lake

燬 Smith Lake

燬 Berkeley Lake

燬 Duck Lake

燬 Barnum Lake

燬 Garfield Lake

Parkfield Lake

Huston Lake

Aqua Golf Lake

Overland Lake

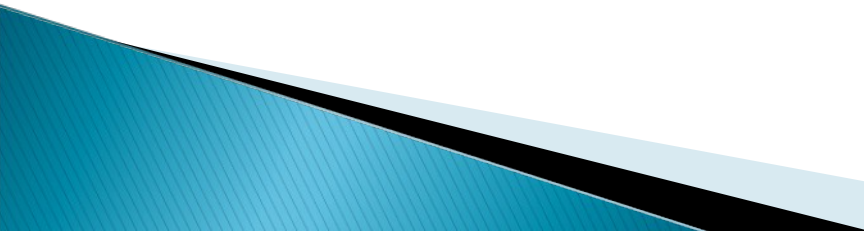
Proposed Regulatory Approach

- ▶ Proposed Regulation 31 (Basic Standards) Revisions
 - Direct Use Water Supply Lake/Reservoirs
 - New subsection for nutrients
 - Interim Phosphorus, Nitrogen, and Chlorophyll a values
 - Exceptions to delayed implementation
 - Interim Nitrogen values use limitations

Nutrient Management Control Regulation

- ▶ **Proposed Monitoring Requirements**
 - **Point Source Monitoring**
 - **Process Water Dischargers**
 - **Municipal Separate Storm Sewer Systems**
 - **NPS/Unpermitted Point Source Monitoring**

Summary

- ▶ Monitoring is based on answering questions.
 - ▶ Information is the backbone of good decision making.
 - ▶ Good decisions = Protection/Restoration of water quality.
 - ▶ Future nutrient management depends all 3 elements.
- 

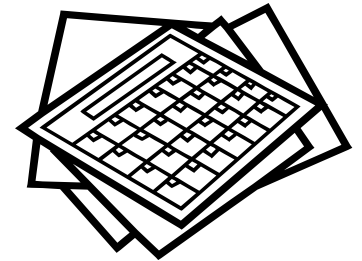
Questions?



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dick.parachini@state.co.us
303/692-3516

Proposed Implementation Schedule

- ▶ WQCC Rulemaking Hearing –
March 2012
- ▶ P and Chl a interim values –
Effective 2012
- ▶ N interim value – Effective 2017
- ▶ All interim values effective 2022



Nutrient Numeric Criteria Development Summary

- ▶ Lakes and Reservoirs
 - Aquatic Life and Recreation
 - High Quality Water Supply
- ▶ Rivers and Streams
 - Aquatic Life
 - Recreation

