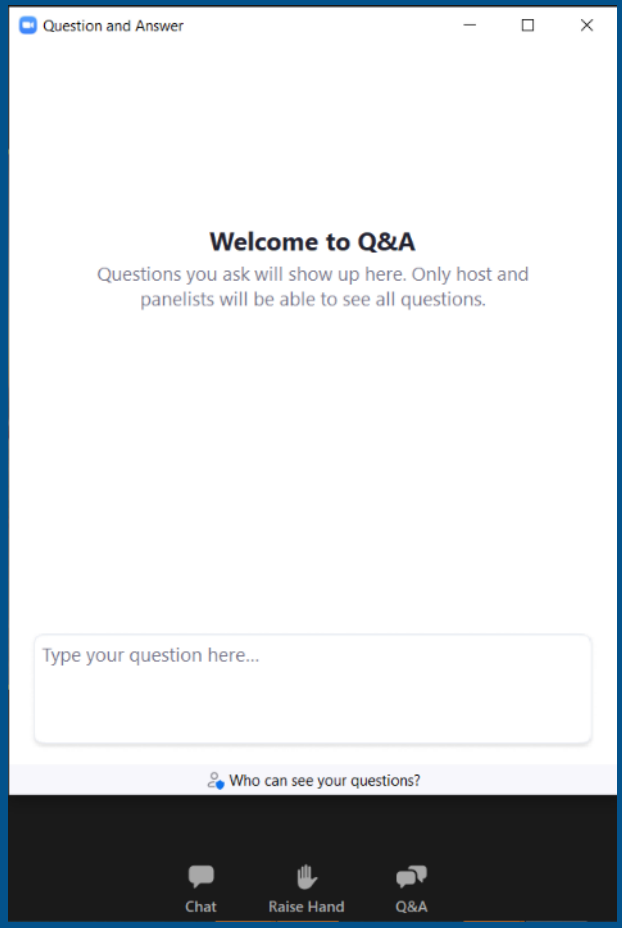
Nutrient Work Group

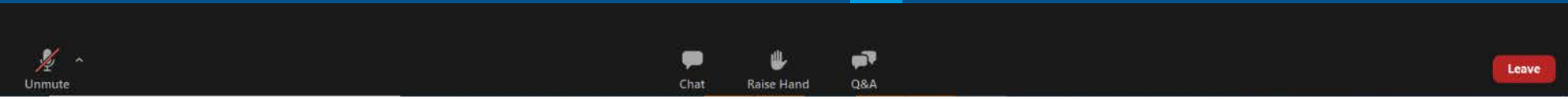
April 13, 2022

DEQ MONTANA

Welcome!

- This meeting has been converted to a webinar
- NWG members will be panelists
- Members of the public can raise their hand or use the Q&A feature to ask questions during the public comment portion of the meeting
- *9 raises your hand if you're on the phone
- State your name and affiliation before providing your comment





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Agenda

Meeting Goal: Discussion of updated regulatory framework and AMP process

Preliminaries

- Nutrient Work Group Roll Call

Updated Regulatory Framework and AMP Process

- DEQ Presentation, Q&A
- Rulemaking Timeline
- Agendas for Remaining NWG Meetings

As Time Allows: Discussion Document

- Item 5 of Discussion Document
  - Proposed Solutions
  - Nutrient Work Group Dealbreakers

Public Comment & Close of Meeting

- Public Comment

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Introductions

Nutrient Work Group Members

Interest Group	Representative	Substitute
Point Source Discharger: Large Municipal Systems (>1 MGD)	Louis Engels	
Point Source Discharger: Middle-Sized Mechanical Systems (<1 MGD)	Shannon Holmes	
Point Source Discharger: Small Municipal Systems with Lagoons	Rika Lashley	
Point Source Discharger: Non-POTW	Alan Olson	
Municipalities	Kelly Lynch	
Mining	Tammy Johnson	
Farming-Oriented Agriculture	John Youngberg	
Livestock-Oriented Agriculture	Jay Bodner	
Conservation Organization - Local	Kristin Gardner	
Conservation Organization – Regional	Sarah Zuzulock	
Conservation Organization – Statewide	David Brooks	
Environmental Advocacy Organization	Guy Alsentzer	
Water or Fishing-Based Recreation	Wade Fellin	
Federal Land Management Agencies	Andy Efta	
Federal Regulatory Agencies	Tina Laidlaw	
State Land Management Agencies	Jeff Schmalenberg	
Water Quality Districts / County Planning Departments	Nick Banish	
Soil & Water Conservation Districts – West of the Continental Divide	Samantha Tappenbeck	
Soil & Water Conservation Districts – East of the Continental Divide	Dan Rostad	
Wastewater Engineering Firms	Scott Buecker	
Timber Industry	Julia Altemus	

DEQ's Proposal for an Updated Regulatory Framework

April 13, 2022

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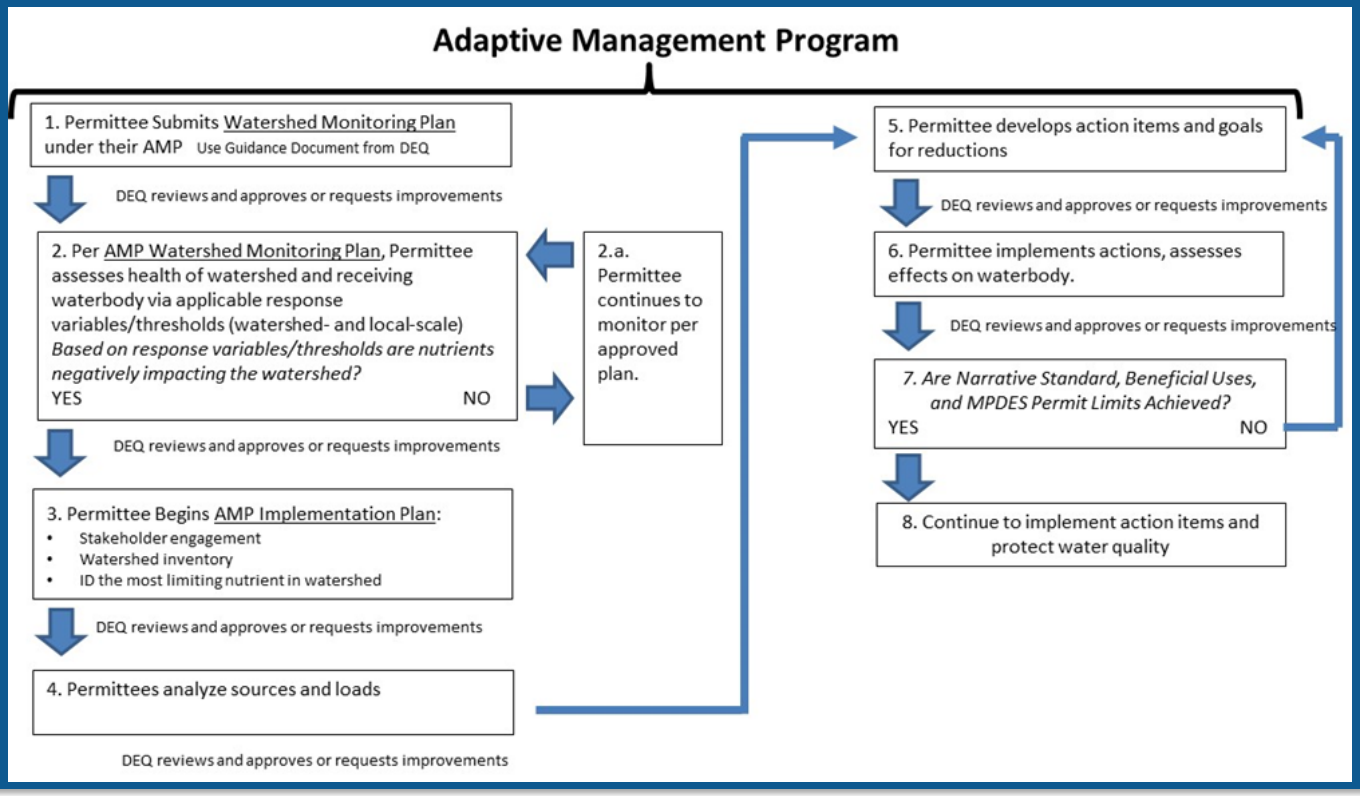
DEQ's Previously-proposed Regulatory Framework (10/2021)

- All permittees under the adaptive management program
- Permit limits based on response variables (at least initially)
- No water quality standards variance



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What DEQ Heard and How we Addressed it

Topic/Issue	Proposed Action
Concerns that effluent limits were based on response variables and thresholds	Response variable and thresholds used as confirmational data
Phosphorus is first, per SB 358, where appropriate	Via the AMP, allows permittees to demonstrate P control approach can work
Technical expertise/cost for small towns	Recognizes—upfront—that small town lagoons can't afford additional nutrient removal
Point source concerns over controlling nutrient sources at the watershed scale	Initial work under AMP is focused on individual facility
Incremental approach	P reductions first, and then phased AMP requirements
Concern that DEQ needs to use familiar CWA regulatory tools	In addition to AMP approach, variances and compliance schedules would also be available

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Updated Regulatory Framework, 4/2022

Includes options for regulated community:

Adaptive Management Program (AMP): Process for permittees to analyze response variables and nutrients and seek optimal nutrient-reduction solutions over time

Compliance Schedule (CS): Defined timeframe for a permittee to achieve new/more stringent water quality-based effluent limit

Variance: Discharger-specific, defined timeframe when a water-quality standard is not readily achievable (per Ninth Circuit Court of Appeals, variances may be based upon economic factors and need not set a date certain for dischargers to comply with underlying water quality criteria). EPA tool, MT Water Quality Act tool (75-5-320, MCA)

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Updated Regulatory Framework, 4/2022

Discharger categories or waterbodies are addressed differently:

Mechanical POTWs: For most cases P control first, see results

Lagoons: DEQ develops multi-discharger variance for TP, TN

- Based on economic impacts of nutrient control
- Option to opt out, go AMP pathway if desired

Industry: P prioritization under AMP if appropriate, monitor response variables. If controls ineffective, move to additional nutrient controls under AMP or CS (or variance)

Large Rivers (Yellowstone): DEQ develops mechanistic model for river, allocates P limits to dischargers to meet modeled DO, pH, etc.

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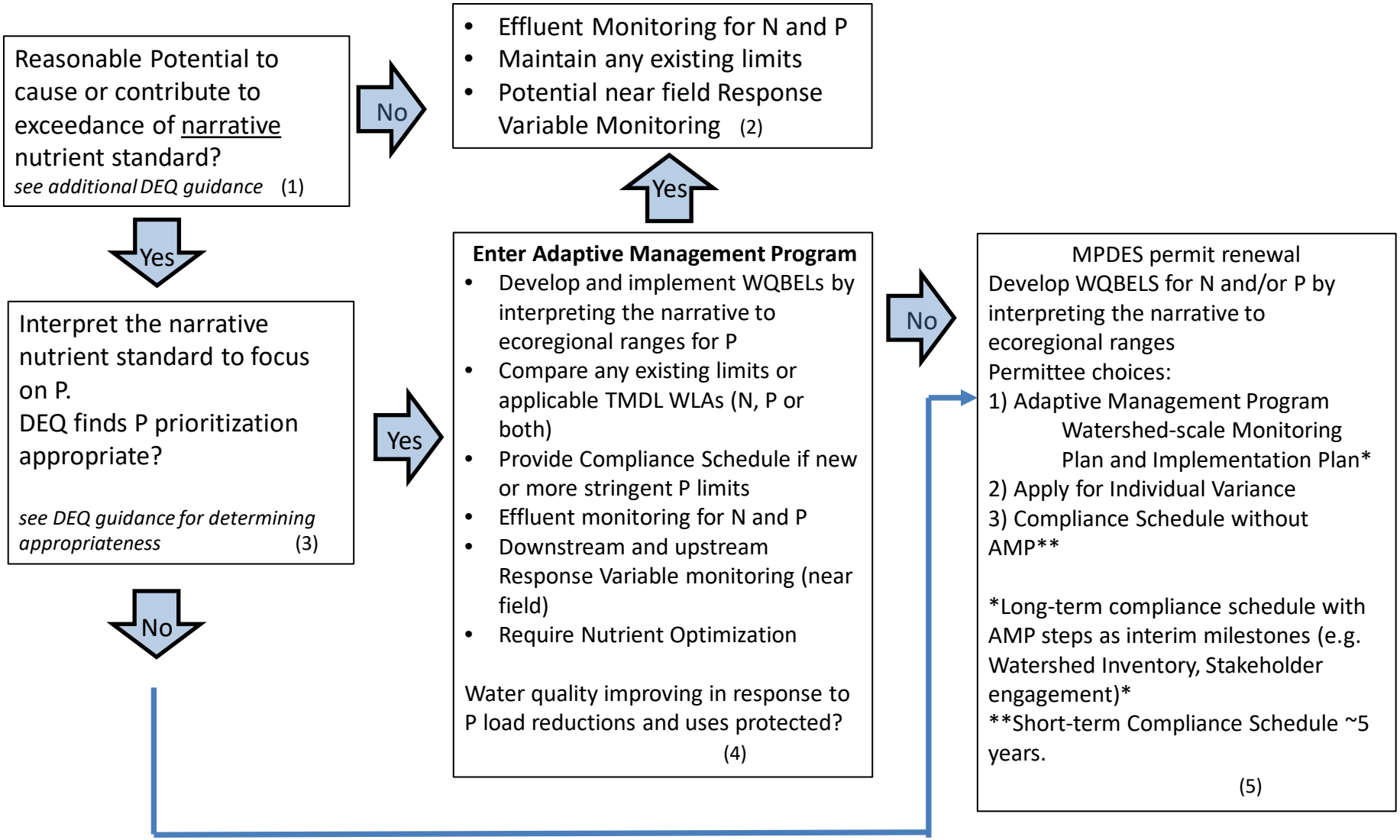
Publicly-owned Mechanical Facilities



Qualitative Reasonable Potential for Narrative Water Quality Standards

Condition of the Receiving Waterbody

- Impairment status (303d list)
- Downstream segment: distance to, impairment status, lake or reservoir present
- Low flow condition (7Q10, 14Q5)
- Proximity of other dischargers that might cause cumulative effects

Condition of the Facility

- Type of facility and treatment
- Upgrades and age of treatment
- Effluent concentrations
- Optimization work undertaken
- Compliance history
- Compliance inspections—notes, O&M deficiencies, neglected infrastructure

Pollutant Characteristics

- Environmental fate/persistence

ARM 17.30.1344 and 40 CFR 122.44

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Publicly-owned Lagoons

Reasonable Potential to cause or contribute to an exceedance narrative nutrient standard?
see additional DEQ guidance (1)

No

- Effluent Monitoring for N and P
- Maintain any existing limits (2)

Yes

Develop Water-quality based effluent limits by interpreting the narrative to ecoregional ranges for both N and P.

Limits achievable based on current effluent concentrations? (3)

No

Provide and implement variance (Highest Attainable Condition)

- Cap at current N and P loads
- Develop, Implement and Maintain a Pollutant Minimization Program

DEQ driven process for development of multi-discharger variance under 75-5-320, MCA (4)

Or (option)

Enter Adaptive Management Program

- Long-term compliance schedule with AMP steps as interim milestones, P prioritization (6)

Yes

Implement effluent limits in MPDES Permit (5)

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Industrial Facilities

Reasonable Potential to cause or contribute to an exceedance of narrative nutrient standard?
see additional DEQ guidance (1)

No

- Effluent Monitoring for N and P
- Maintain any existing limits
- Potential near field Response Variable monitoring (2)

Yes

Develop Water quality-based effluent limits by interpreting the narrative to ecoregional ranges for pollutants of concern (N, P or both)

Limits achievable based on current effluent concentrations? (3)

No

Prioritizing P appropriate? (3b)

Yes

Yes

Enter Adaptive Management Program

- Develop and implement WQBELs for P by interpreting the narrative to ecoregional ranges
- Effluent monitoring for N and P
- Compare any existing limits or applicable TMDL WLAs (N, P or both)
- Provide Compliance Schedule if new or more stringent P limits
- Downstream and upstream Response Variable monitoring (near field)

Water quality improving in response to P load reductions and uses protected? (4)

No

No

Permittee chooses for each pollutant WQBEL:
1) Adaptive Management Program
Watershed scale Monitoring Implementation Plan*
2) Individual Variance
3) Compliance Schedule without AMP**

Long-term compliance schedule with AMP steps as interim milestones (e.g. Watershed Inventory, Stakeholder engagement)
**Short-term Compliance Schedule ~5 years.

(5)

Yes

Implement effluent limits in MPDES Permit (3a)

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Ecoregional Ranges*

Ecoregional Zone	Ecoregion (Level III)	Ecoregion (Level IV)	Maximum Recommended Range	
			Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
Western	Northern Rockies (15)	all	20 - 40	210 - 1,210
Western	Canadian Rockies (41)	all	23 - 62	325 - 821
Western	Idaho Batholith (16)	all	20 - 62	210 - 718
Western	Middle Rockies (17)	all except 17i	20 - 40	210 - 1,210
Western	Middle Rockies (17)	Absaroka-Gallatin Volcanic Mountains (17i)	61 - 105[b]	Use values from the lower end of the range for the Middle Rockies (17)
Western (transitional)	Northwestern Glaciated Plains (42)	Sweetgrass Upland (42l), Milk River Pothole Upland (42n), Rocky Mountain Front Foothill Potholes (42q), and Foothill Grassland (42r)	23 - 80[c]	445 - 775
Western (transitional)	Northwestern Great Plains (43)	Non-calcareous Foothill Grassland (43s), Shields-Smith Valleys (43t), Limy Foothill Grassland (43u), Pryor-Bighorn Foothills (43v), and Unglaciated Montana High Plains (43o)[a]	20 - 41[d]	439 - 1,125
Eastern	Northwestern Glaciated Plains (42)	all except those listed above for 42	70 - 150	540 - 1,830
Eastern	Northwestern Great Plains (43) and Wyoming Basin (18)	all except for those listed above for 43, and 43c below	70 - 150	540 - 1,830
Eastern	Northwestern Great Plains (43)	River Breaks (43c)	None recommended	None recommended

[a] For the Unglaciated High Plains ecoregion (43o), the range applies only to the polygon located just south of Great Falls, MT.

[b] Based on the 25th and 75th percentiles of the natural background concentrations in this level IV ecoregion.

[c] Lower end based on streams' origins in the Canadian Rockies; upper end based on 75th percentile of natural background for these ecoregions.

[d] Lower end based on similarity to Middle Rockies, upper end based on Elk Creek reference site.

*Subject to final review and refinement prior to rulemaking

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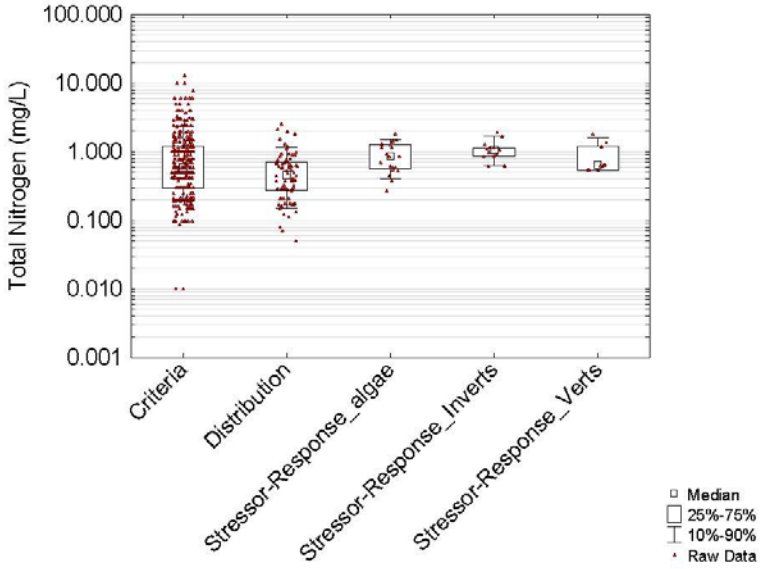
Across the US, protective TP criteria are in a fairly narrow concentration range

EPA United States Environmental Protection Agency

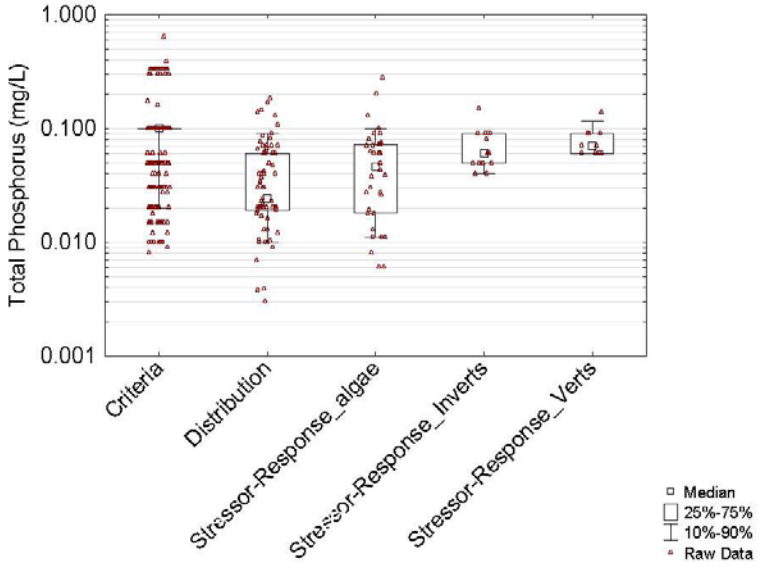
Results: Published Studies in Streams

- Across the United States
- For Streams: 90% of values where impacts occur very by less than a factor of 10

Total Nitrogen: 0.20 to 1.1 mg/L



Total Phosphorus: 0.01 to 0.10 mg/L



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Potential for Point-Nonpoint Nutrient Trading

Morrison-Maierle and Kieser & Associates (2014)

Overall Conclusion: "There appears to be a relatively limited number of potential PS/NPS trading opportunities in Montana."

- 27 PS facilities had some potential for trade
  - 14 appear to have demand, supply and economic conditions that may lead them to consider trading for TN
  - Zero facilities had the potential for economically viable TP trading
  - Major limitation on Montana trading potential is "due to very low rainfall during the critical months of July to September (typically < 2 inches) when instream nutrient standards must be met."

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Clark Fork River: 1 wastewater upgrade brought 33% reduction in basin phosphorus

TABLE 1. Actions Taken to Remove Nutrients from the Clark Fork River and Their Effectiveness Over the Period 1989-2005.

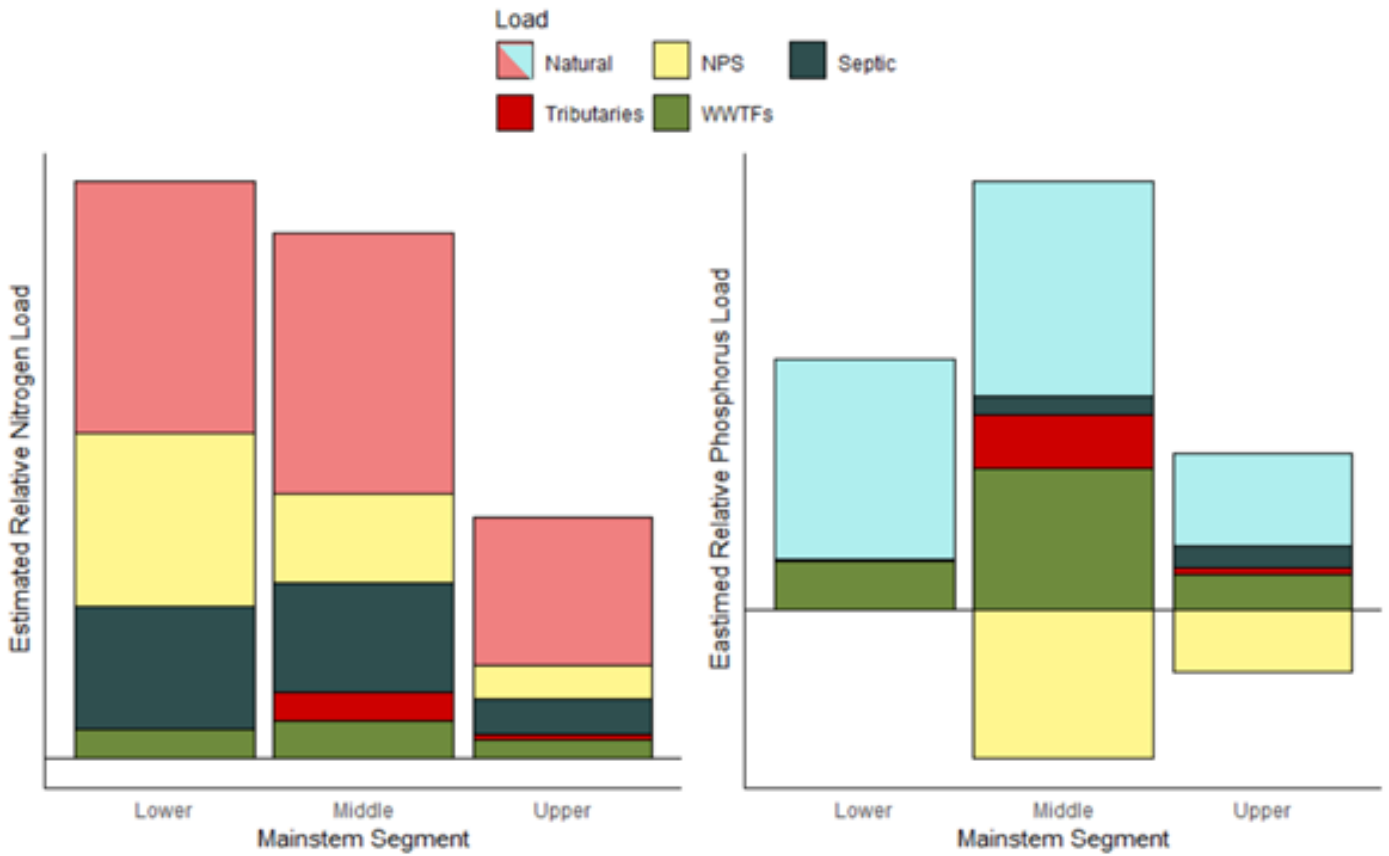
			Approximate Load Reduction Realized as of 2005 (kg/day)	
Nutrient Source	Action Taken	Sampling Site Immediately Below Action	**TN**	**TP**
Butte wastewater facility*	Constructed stormwater detention basins to reduce stormwater overflow to the sanitary sewers; reduced industrial loads; grew sod with effluent in summer. (Note: new membrane bioreactor facility planned to be operational by 2015.)	7	-54	**7**
Deer Lodge wastewater facility	Replaced old leaking sewer lines; developed a land application system for effluent to reduce direct July-September discharge to the river to zero (Note: reductions occurred only up to 2008, since facility returned temporarily to direct discharge in 2008.)	10	11	**2**
Missoula County	Connected thousands of existing home septic systems to the central sewer	18	35	**1**
Missoula wastewater facility	Upgraded and expanded the facility to biological nutrient removal (BNR; operational late 2004)	18	273	**76**
Smurfit-Stone Container Corporation	Reduced nutrient additions to treatment systems; no direct discharge to river July-Aug (used storage ponds)	22	97	**22**
Basin wide	Phosphate laundry detergent ban emplaced in 1989	all sites	0	**121**
		Total load reduction to river (kg/day):	361	**230**

* Butte's nitrogen load *increased* over this time, so shown as negative.

From Suplee *et al.* (2012)

Bitterroot River: In 2022, WWTFs are the major anthropogenic total P source

The largest source of nutrients overall comes from natural background sources of nutrients, which is reasonably expected because the Bitterroot River is not impaired by nutrients.



From: DEQ (2022). Draft Bitterroot River Nutrient Protection Plan.

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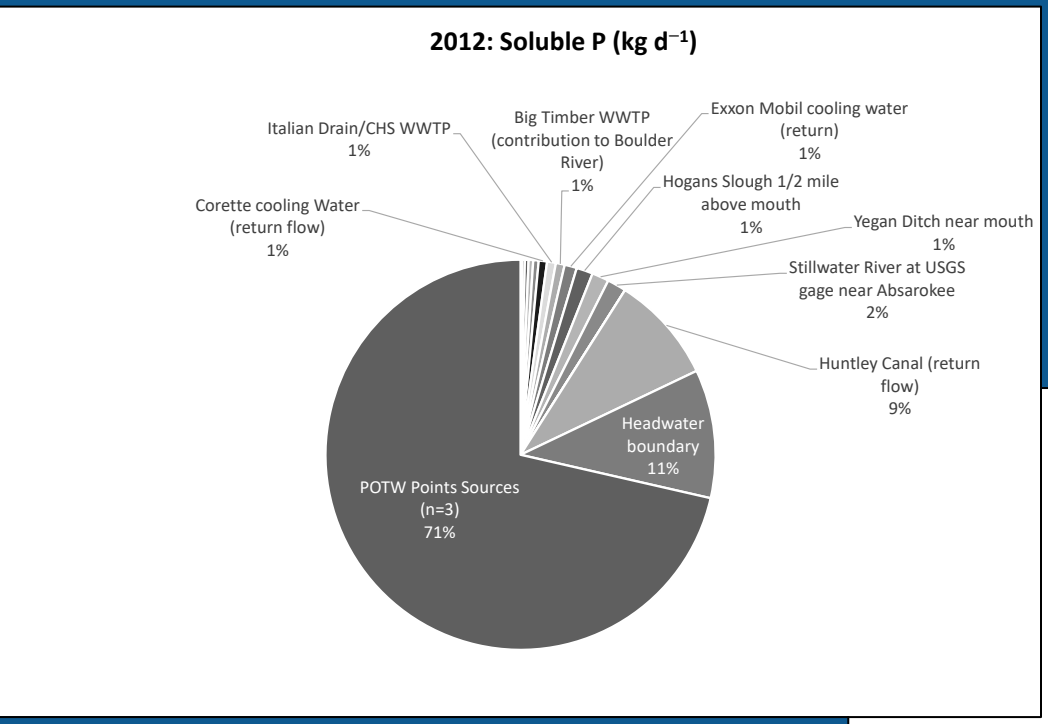
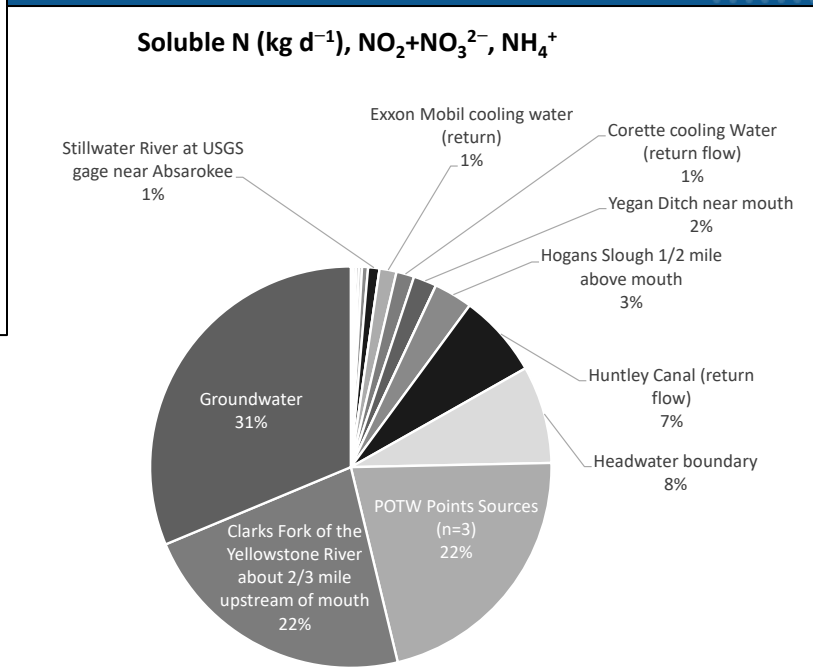
Yellowstone River, Summer Low Flow 2012

Three point sources were 71% of the daily SRP load*. Facility upgrades have since occurred on all three (2022 conditions next slide).

Soluble nitrogen sources more dispersed (three point sources were 22%; less today).



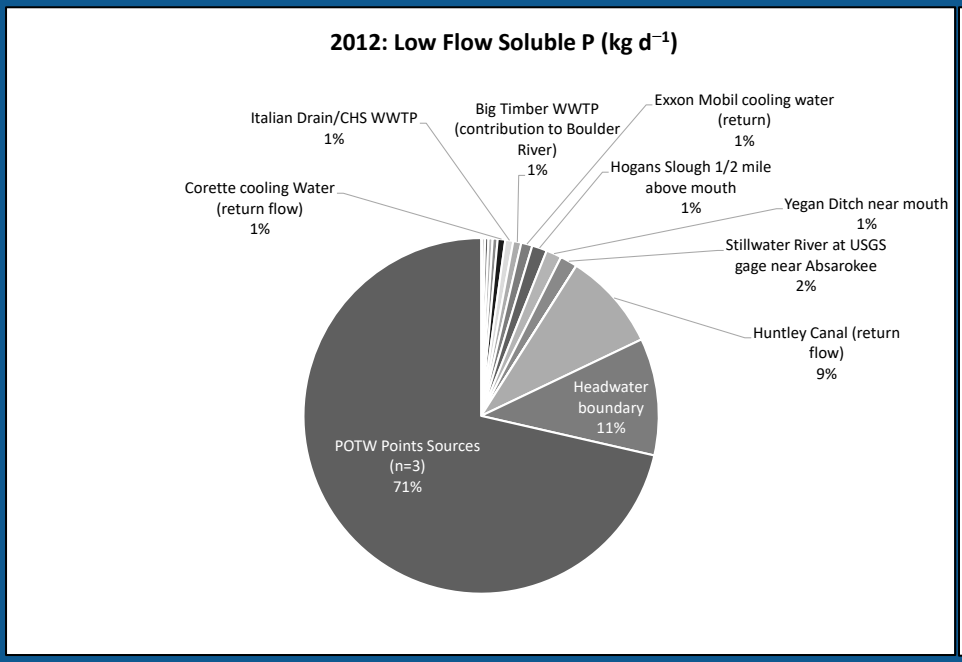


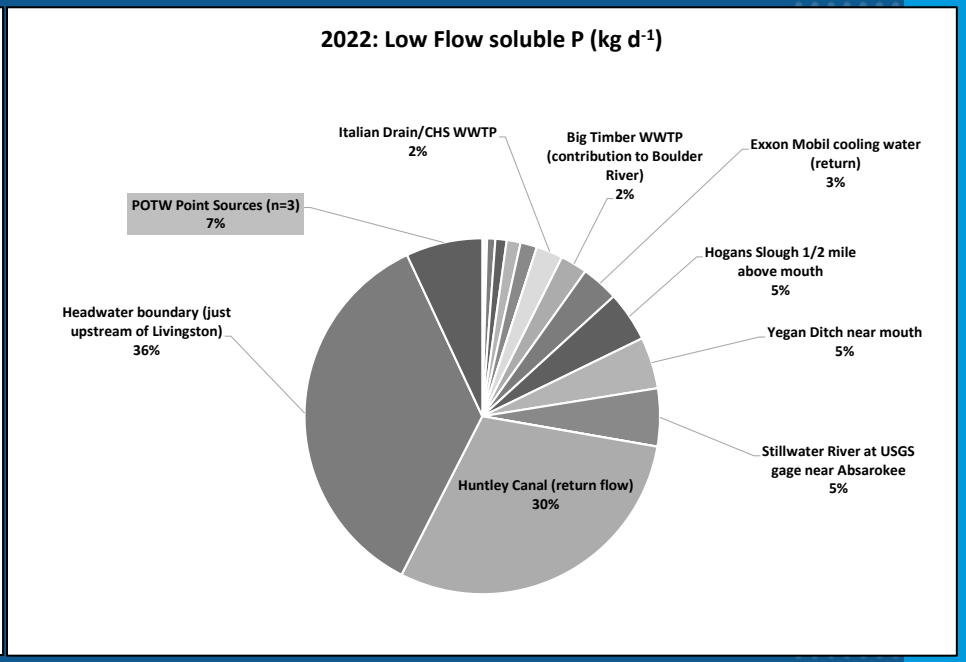
*Yellowstone River from Livingston to the Big Horn River confluence.

Yellowstone River, Summer Low Flow

SRP: 2012 *vs*. 2022

Facility upgrades have greatly reduced POTW contributions of SRP to the river*





*Yellowstone River from Livingston to the Big Horn River confluence.

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Questions / Discussion

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Rulemaking Timeline

- Initiate rulemaking at WPCAC by first week of June 2022
- 45-day public comment period starts July 8, 2022
- Hearing: around August 22, 2022
- Response to comments
- Department Head signs rule no later than September 27, 2022, rule filed no later than September 27, 2022
- Publishes by October 7, 2022

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Agendas for Remaining Meetings

Meeting	Proposed Topics
April 27	• Discuss DEQ's updated regulatory framework proposal • Focus discussion on draft Rule
May 11	• Summary of comments received on proposal to date • Focus discussion on draft Circular DEQ-15
May 25	• Focus discussion on draft Guidance • NWG next steps

PUBLIC COMMENT

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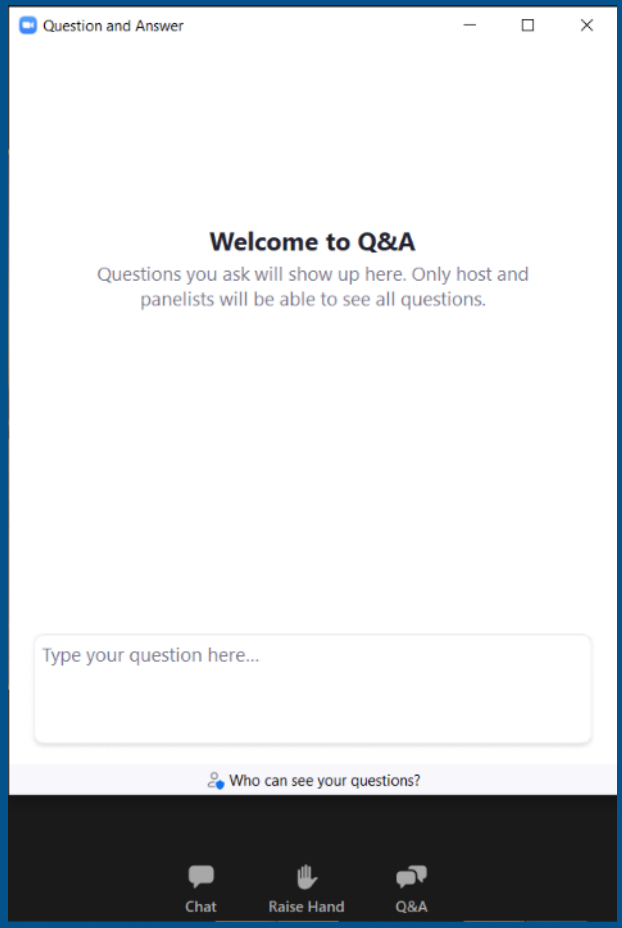
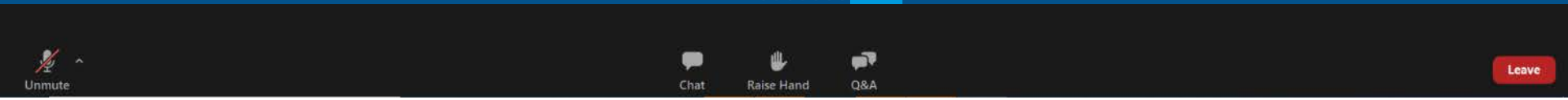
Questions/ Comments

- Raise hand (*9 if on the phone) or type questions into the Q&A
- DEQ will unmute you if you wish to provide your comment orally
- If calling by phone, press*6 to unmute
- State your name and affiliation before providing your comment





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Next Meeting

- Next Meeting:
  April 27, 2022 at 9 a.m.

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Thanks for Joining Us

Contact:
Christina Staten
CStaten@mt.gov

To submit comments or questions

Submit Comments or Questions

https://deq.mt.gov/water/Councils

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