



## Special Meeting of the Board Drinking Water Quality Policy Framework Workshop

March 29, 2023

8:30am – 11:30am

Held at Bellevue City Hall 1E-108 (In-Person Only)

Time	Agenda Item	Board Action
8:30am	<b>Call to Order and Approval of Agenda</b> Penny Sweet, Board Chair	
	<b>Roll Call</b> Ray Hoffman, Chief Executive Officer	
	<b>Discussion regarding the development of a policy framework for future drinking water quality proposals</b> (See attached presentation)	Discussion
	<b>Feedback and/or direction to Cascade staff based on Discussion</b>	
	<b>Executive Session (if needed)</b>	
	<b>Announcement of Next Regular Board Meeting – April 26, 2023, at 3:30 p.m. held at Cascade’s office and via Zoom</b> Penny Sweet, Board Chair	
11:30 am	<b>Adjourn</b> Penny Sweet, Board Chair	



# Drinking Water Quality Policy Development Framework

Board of Directors Workshop  
March 29, 2023

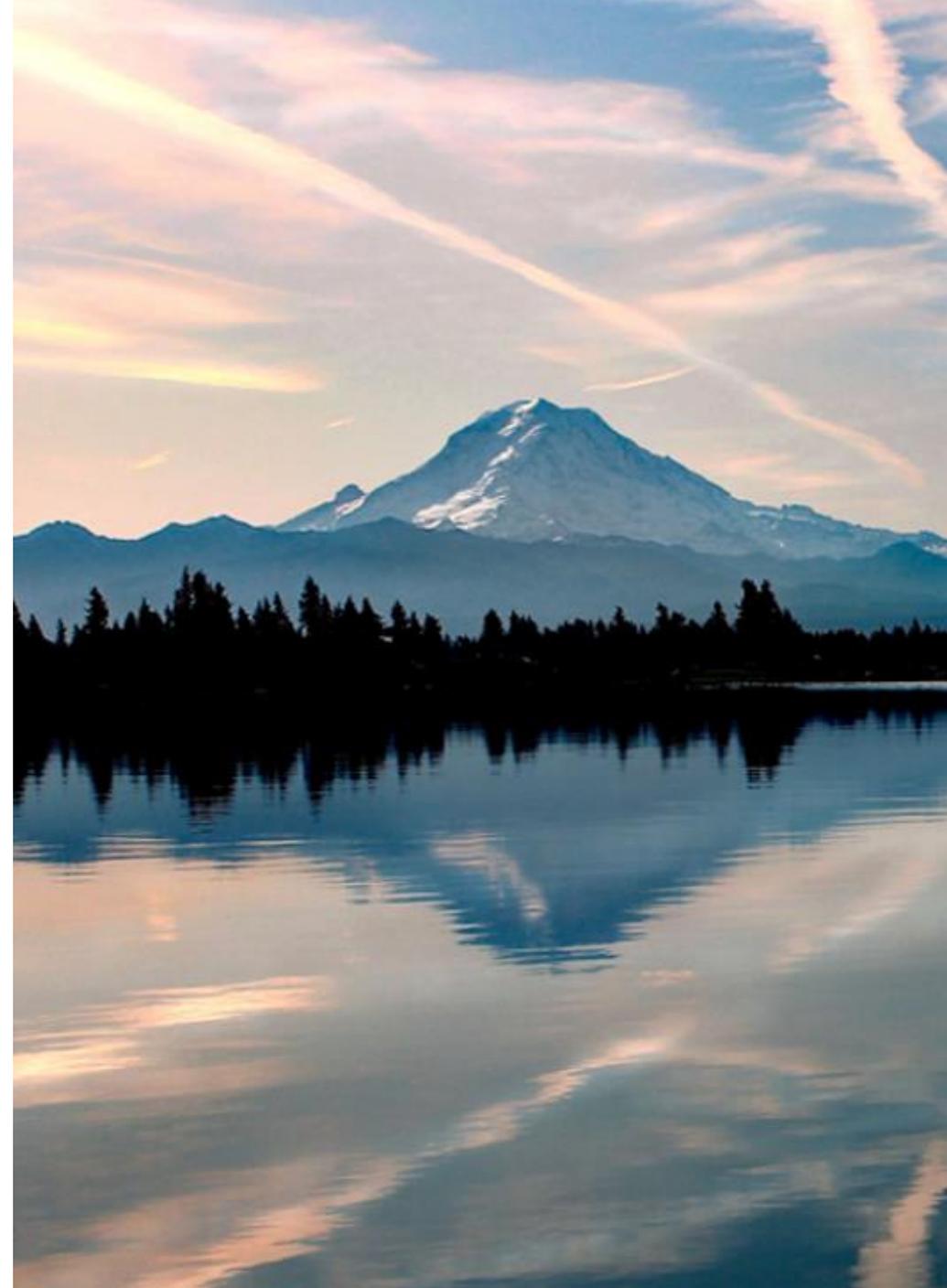
# Workshop Purpose

Since Lake Tapps Reservoir will not be used for municipal supply for many years, a ***Drinking Water Quality Policy Framework*** is needed to guide decisions on which water quality actions should be taken prior to building out the reservoir.

Today's main objective is to get feedback on the draft Policy Framework (our decision-making process) so that it can be finalized and ready for future use.

## Workshop Agenda:

1. Drinking water quality background
2. Review and discuss the components of the draft Policy Framework
3. Wrap-up and next steps





# Drinking Water Quality Background



# Cascade's Mission

- **Mission:** Provide safe, clean and reliable water to our members in a cost-effective and environmentally responsible way.
- To fulfill Cascade's mission, need to protect reliability and resiliency of the reservoir as a future source of drinking water.
- Water quality is a key factor.



# Current Obligations

- Lake Tapps Community Agreement:
  - Control milfoil as required by law or to meet Cascade's operational goals.
  - Provide ongoing program for stream flow, lake level, and water quality data collection.
- Water right permits and the White River Management Agreement:
  - Determine if tailrace releases are causing water quality criteria violations. If so, improve water quality in the tailrace and monitor its releases.
- Pierce County Noxious Weed Board:
  - Control noxious weeds.



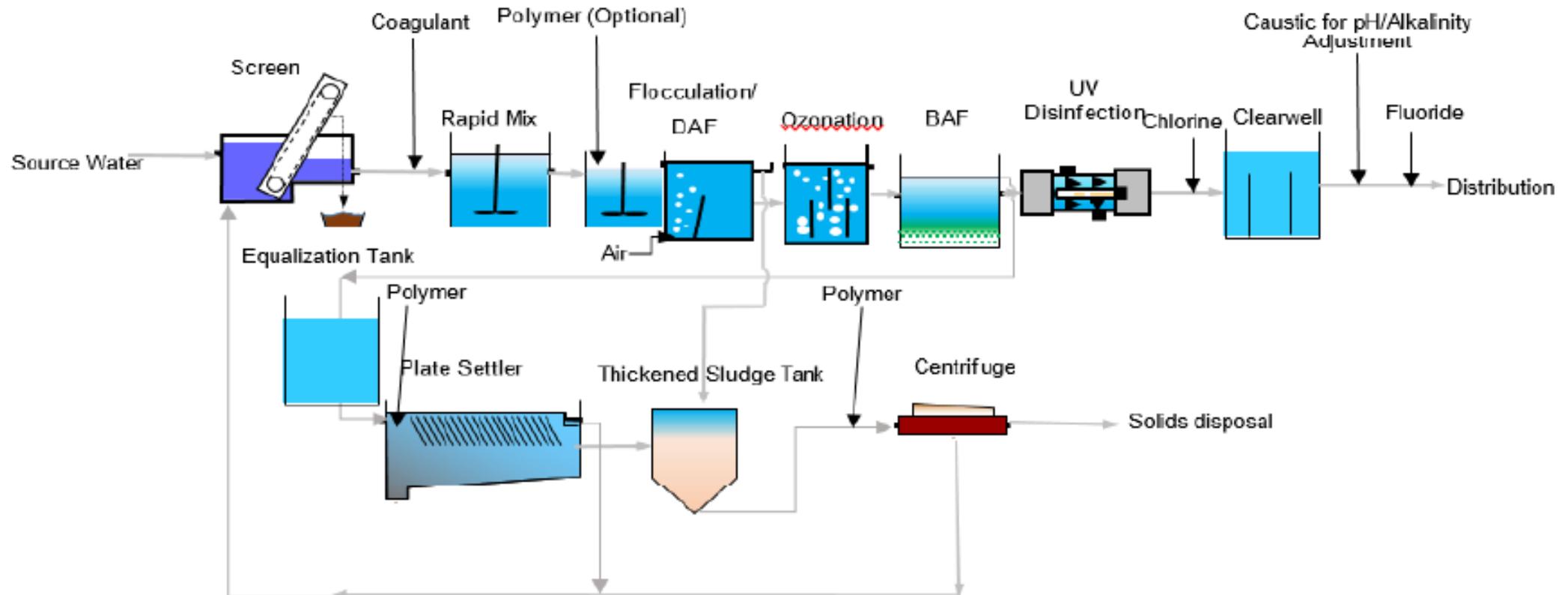
# Known Future Obligations

- Per WAC 246-290 Cascade must have a watershed control program prior to providing municipal water supply that includes control measures to minimize or eliminate adverse source water quality impacts.
- Finished water must meet EPA and DOH requirements.
- Water right permits development schedule:
  - Construction to start 12/31/2065;
  - Full water use by 12/31/2085.

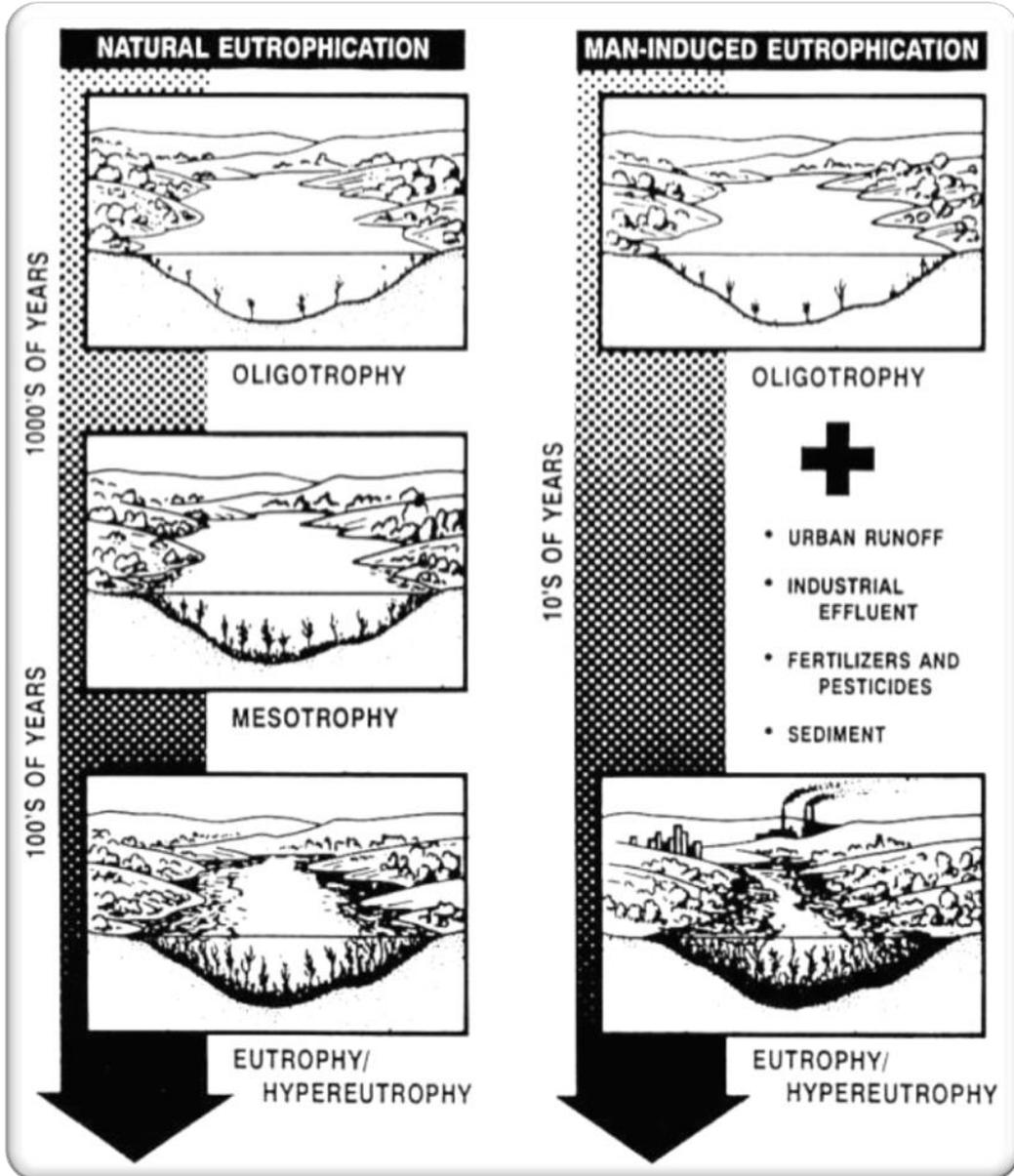


# Future Drinking Water Treatment Plant

- Granular media filtration, pretreatment, and post-filtration.
- Will meet known EPA and DOH regulated contaminants, have capacity to treat future pollutants that aren't yet identified or regulated, and provide treated water that can be blended with other municipalities' finished water.



# Limnology of Lakes and Reservoirs



- Lakes and reservoirs naturally age, typically over thousands of years (“natural eutrophication”).  
*open water ecosystem → wetlands → dry land*
- Reservoirs age more quickly than lakes.
- Human activities accelerate the aging process (“cultural” or “human-induced eutrophication”).
  - Excess pollutants facilitate algae growth, including Harmful Algae Blooms (HABs) that may produce toxins.
  - Climate change impacts contribute to conditions that are suitable to HAB growth.
- Source control can slow down and reverse aging.

# Limnology and Water Quality of Lake Tapps Reservoir



- Reservoir is in middle age condition and healthy with low levels of pollutants:
  - Pollutants found in flowline;
  - Sporadic algae blooms;
  - Some algae toxins in reservoir.
- Likely sources: stormwater runoff, fertilizers, urban development, agricultural activities, septic tank leaks.
- If no water quality or source control measures taken:
  - More algae blooms due to increased pollutant loading and climate change impacts;
  - More toxic algae production;
  - Accelerated aging process.

# Other Likely Impacts of Taking No Water Quality Actions



- Future water treatment plant:
  - Higher capital and operating costs to deliver the same amount of water due to increased algae/toxins;
  - Reduced finished water quality (taste, odor, color, disinfection by-products);
  - Risk of operational problems, such as clogging filters, and supply reliability.
- Difficulty in meeting future stricter regulations (Clean Water Act/pollutant loading reduction).

# Lessons Learned from Others



Lake Youngs - Algae on Intake Gate

- Lake Whatcom – 2009 filter clogging resulted in mandatory conservation for nine months.
- Lake Youngs – 2004 taste and odor issues; 2008+ clogging problems.
- Detroit Reservoir (Salem, Oregon) – toxins caused treatment plant to shut down for 80 days.

→ *All three situations would have been worse if source control programs weren't in place.*

- Implications for Lake Tapps Reservoir:
  - Multiple tools (source control, treatment, monitoring) needed to ensure the reservoir's resiliency and supply reliability.
  - Source control measures needed before construction begins on the reservoir.



Lake Youngs - Algae Mucilage on Equipment

# Current Water Quality Activities

- Completion of two-year monitoring and sampling.
- Annual chemical herbicide treatment of milfoil.
- Partnership with Tacoma-Pierce County Health on TappsWise and reminders to inspect septic systems.
- Coordination with Bonney Lake, Buckley, and Pierce County to minimize impacts from new development.
- Annual contract with USGS to install gauges and collect hydrologic data.
- Inventory of sources of stormwater outfalls to the flowline and around the reservoir.



# Lake Whatcom Management Program

- Recreational lake and drinking water source for more than 100,000 residents.
- 1998: placed on State's list of polluted waters; Interlocal Agreement between Bellingham, Whatcom County, and Lake Whatcom Water and Sewer District to address water quality.
- 2020-2024 work plan has 10 program areas to address watershed issues; focus is reducing phosphorus levels in the lake.



# Consultant Recommendations

Herrera recommended the actions below in their 2022 sampling and monitoring report. These are examples of the types of actions Cascade may explore and propose to the Board for consideration in the future.

1. Prepare a Drinking Water Quality Plan (Lake Management Plan).
2. Establish a routine, long-term monitoring program.
3. Install a flow gauging station at Lake Tapps inflow.
4. Explore operational changes to reduce pollutants entering the flowline during high turbidity river events.
5. Explore ways to increase pollutant retention in the flowline to reduce inputs into the reservoir.
6. Identify major pollutant sources and possible controls.
7. Continue to educate homeowners and lake users.



# Need for WQ Policy Framework

If the Board concurs Cascade should explore actions to maintain Lake Tapps Reservoir's water quality to protect its resiliency as a future source of drinking water, staff needs Board policy direction on future water quality proposals. (Note: what we invest in and when investments are made are TBD.)

- Agreement on the reasons to invest in new water quality actions; desired outcomes.
- Agreement on the criteria we'll use to decide which actions are worth implementing.

→ *A structured and streamlined **decision-making process** (i.e., **Policy Framework**)*



Questions or Comments on  
Background Information?





# *10 Minute Break*





# Draft Policy Framework

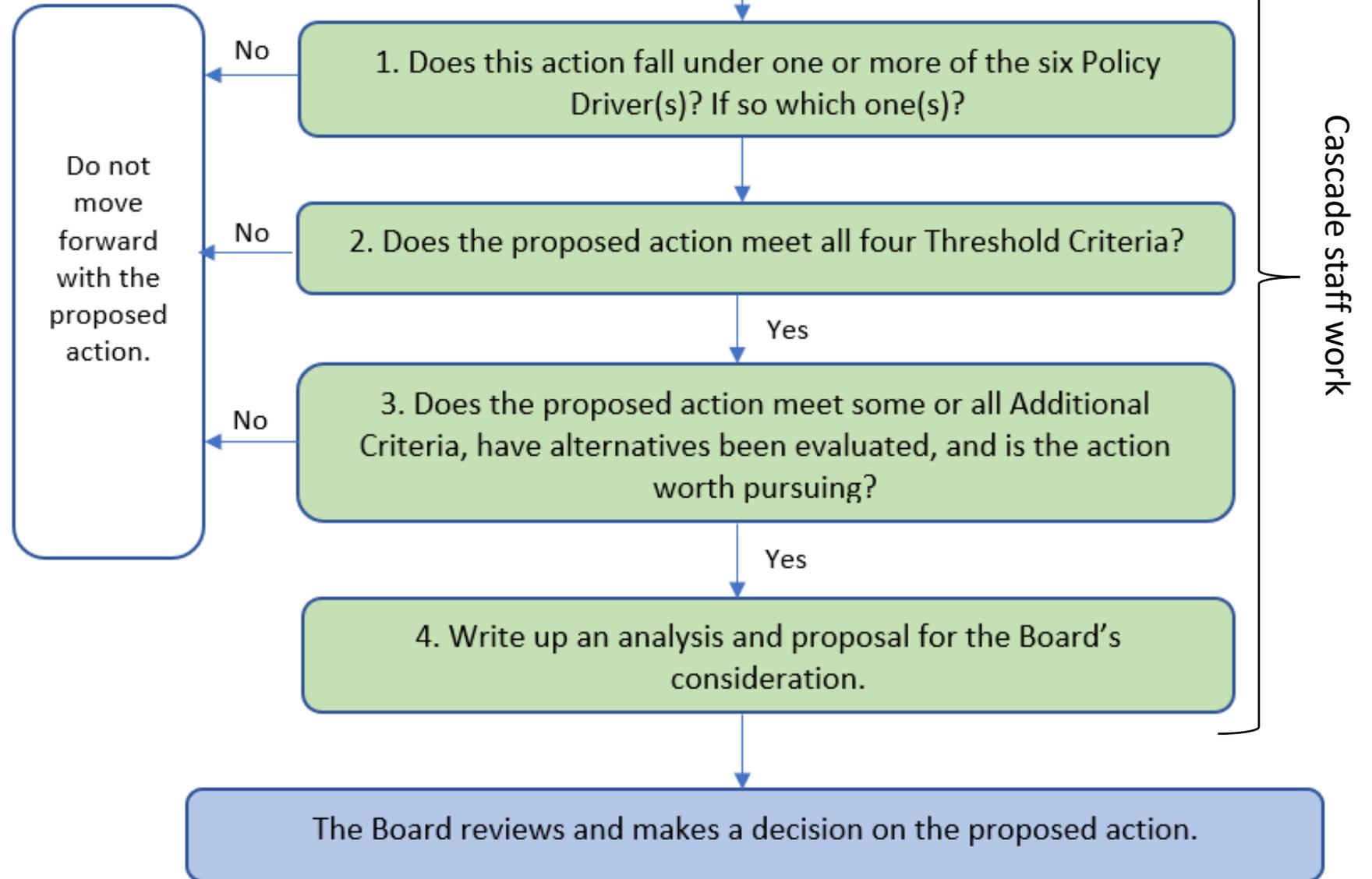


# Policy Framework Overview

- Purpose: Provide a structured decision-making process for future water quality proposed actions.
- Two main components of Policy Framework:
  - 1. Policy Drivers** – What’s driving the proposal and what are the desired outcomes?
    - Three primary drivers;
    - Three secondary drivers.
  - 2. Criteria** – Regardless of the Policy Driver, how will we decide which actions are worth pursuing and proposing to the Board for consideration?
    - Four threshold criteria (must be met);
    - Five additional criteria (must be considered after meeting threshold criteria).



# Application of Policy Framework



# Policy Framework Component #1: Policy Drivers

Future drinking water quality proposed actions will fall under one or more categories (**Policy Drivers**):

- **Primary Drivers** are more internally focused and generally within Cascade’s control.
- **Secondary Drivers** are more externally focused and less within Cascade’s control.

Primary Drivers	Secondary Drivers
<ol style="list-style-type: none"> <li>1. Future Treatment Plant Requirements for Drinking Water</li> <li>2. Regulatory or Contract Water Quality or Lake Management Obligations</li> <li>3. Cascade’s Operational Needs</li> </ol>	<ol style="list-style-type: none"> <li>4. Responsibilities of Others that Impact Water Quality</li> <li>5. Partnerships and Funding Opportunities</li> <li>6. Being a Good Community Steward</li> </ol>

# Policy Driver 1: Treatment Plant Requirements

## **1. Future Treatment Plant Requirements for Drinking Water (Primary)**

Improvements, programs, policies, or other actions implemented by Cascade which are likely to reduce capital and/or operating costs for future drinking water treatment. Evaluation will consider known or anticipated federal or state regulatory treatment requirements for drinking water, consideration of emerging drinking water quality issues, or water quality expectations for introducing Lake Tapps water supplies to regional systems not owned by Cascade.

# Policy Driver 2: Obligations

- 2. Regulatory or Contract Water Quality or Lake Management Obligations (Primary)**  
Improvements, programs, policies or other actions necessary to meet:
- a) Minimum requirements of regulatory agencies for owning, managing and operating a lake and a surface water system to be used for drinking water supplies.
  - b) Obligations under current and future water rights issued by the State.
  - c) Requirements of agreements or inherited obligations as part of the acquisition of the Lake Tapps project. Includes agreements with Puget Sound Energy, the Tribes, Lake Tapps homeowners, property deeds, and agreements acquired from Puget at the time of ownership transfer.
  - d) County and City regulatory obligations as a property owner.
  - e) Agreements executed by Cascade since the purchase of the Lake Tapps system.

# Policy Driver 3: Operational Needs

## **3. Cascade's Operational Needs (Primary)**

Improvements, or operations and maintenance practices that are likely to reduce current and/or future costs.

# Policy Driver 4: Others' Responsibilities

## 4. Responsibilities of Others that Impact Water Quality (Secondary)

Working with the State, County, Cities and property owners to implement policies, regulations, programs, or practices that benefit the Lake Tapps system water quality. This may include, but not be limited to the following:

- a) Working with other agencies in the implementation of their regulatory obligations.
- b) Working with other agencies in the development of regulations and policies that benefit water quality.
- c) Working with other agencies to develop plans and programs that benefit the unique characteristics of the Lake Tapps watershed.
- d) Working with property owners in assuring compliance with regulatory requirements or agreements.

# Policy Driver 5: Partnerships

## **5. Partnerships and Funding Opportunities (Secondary)**

Water quality benefits derived as a result of partnerships with other agencies, groups, or private parties. Water quality issues may compose all or part of such arrangements and costs and benefits for water quality elements may need to be evaluated as part of all of the elements of such arrangements. Funding opportunities include grants, loans, or other financial considerations that would prioritize an improvement or program that would not otherwise be considered at that time.

# Policy Driver 6: Community Stewardship

## **6. Being a Good Community Steward (Secondary)**

Programs or actions that would be considered as part of being a neighbor, good steward of resources, and presence in the community. Programs and actions would have associated tangible and measurable or intangible benefits to Cascade either short or long term.

# Exercise #1 - Policy Drivers



# Policy Framework Component #2: Criteria

Regardless of the Policy Driver, all proposed actions will be evaluated against two sets of **Criteria**:

1. Must first meet four ***Threshold Criteria***.
2. If Threshold Criteria met, must be evaluated against all applicable ***Additional Criteria***.
3. After applying both sets of criteria, evaluate alternatives to achieve the desired outcome.
4. If action is still worth pursuing, write an analysis and proposal for Board consideration.

Threshold Criteria (Must be met for all proposed actions)	Additional Criteria (Applied after meeting threshold criteria)
<ol style="list-style-type: none"> <li>1. Meets one or more Strategic Plan goals</li> <li>2. Identifiable drinking water quality benefits</li> <li>3. Available funding</li> <li>4. Available staffing capacity</li> </ol>	<ol style="list-style-type: none"> <li>5. Cost beneficial</li> <li>6. Ease of implementation</li> <li>7. Reduces Cascade’s risk</li> <li>8. Maintains or enhances key stakeholder relationships</li> <li>9. Maintains or improves public trust</li> </ol>

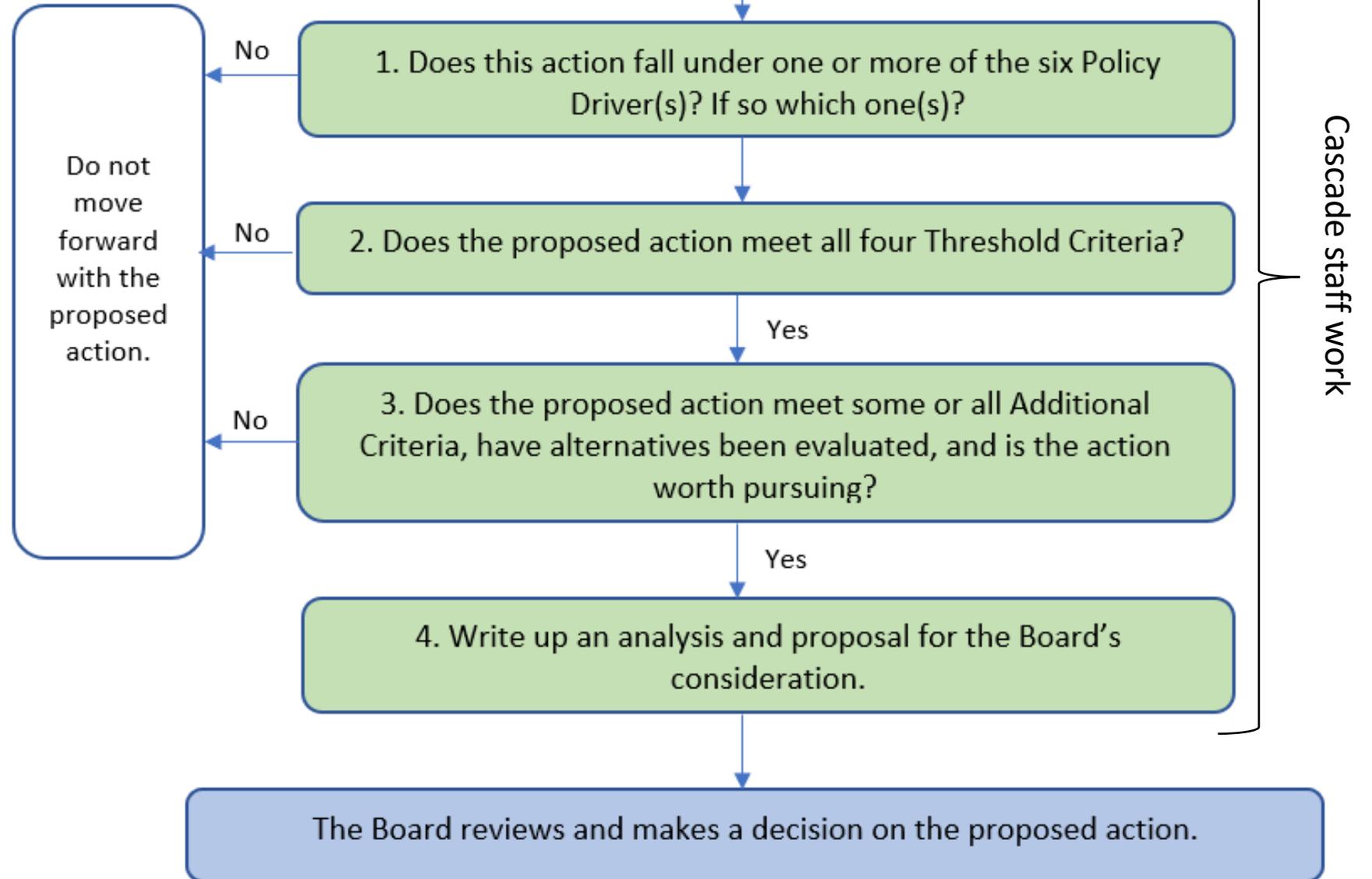
# Threshold Criteria

All Four Threshold Criteria Must Be Met	
A. Meets one or more Strategic Plan Goals.	Proposals should meet at least one of the six strategic goals in the following focus areas: Asset Management, Water Resources, Environmental Stewardship, Regional Leadership, Good Governance, Emerging Issues.
B. Specific drinking water quality benefits to Cascade can be identified.	Proposals must result in a benefit to drinking water quality. The benefits can either be quantifiable or non-quantifiable but must be identified.
C. Funding is available.	Funding / budget / cash flow needs to be available.
D. Cascade has staffing capacity to implement the project.	Even if funding is available (Criterion C), Cascade needs to have the staffing resources to implement the proposal. This might require contracting out staffing needs.

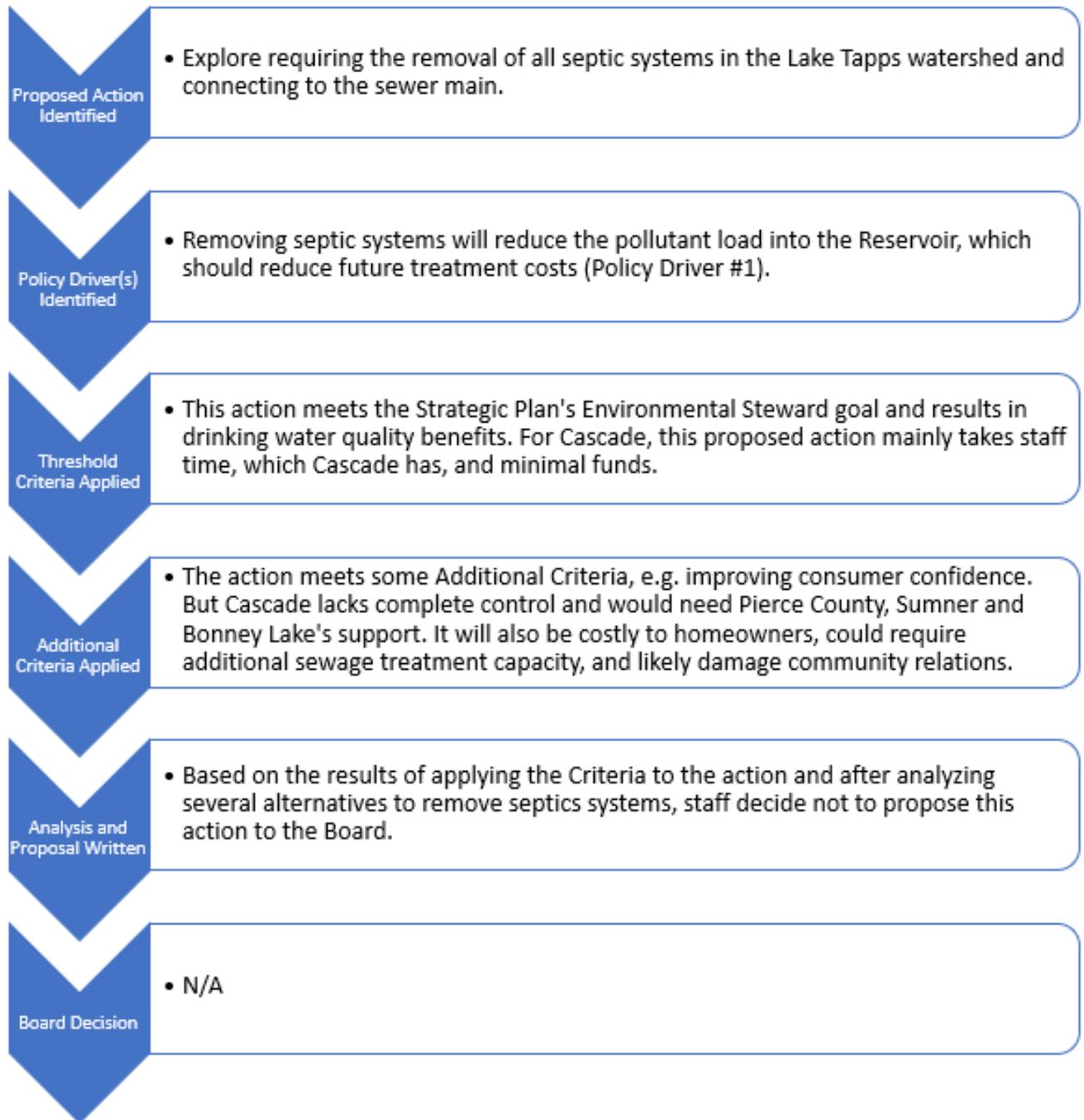
# Additional Criteria

All applicable Additional Criteria must be applied after meeting all Threshold Criteria	
E. Project is cost-beneficial (benefits exceed costs over the project's life).	From an economics analysis perspective, the proposal should have a positive net present value. In addition, the project should be compared to the cost to treat the problem.
F. Ease of implementation.	How easy or difficult an action is to implement – beyond funding and staffing capacity – needs to be considered. This may include the level of control Cascade has over the proposal versus dependency on another party.
G. Reduces Cascade's risk (e.g., legal, regulatory, operational, financial, etc.) or still results in benefits if risk doesn't materialize.	Risks are lumped together here but can be separated out individually. This criterion includes both the probability and consequence of the risk. Proposals should demonstrate that benefits will still accrue regardless of whether or not the risk occurs.
H. Maintains or enhances relationships with key stakeholders (e.g., regulators, Tribes, community, other agencies).	Proposals that enhance short-term stakeholder relationships can yield significant long-term benefits, particularly if there are future proposals that require stakeholder support.
I. Maintains or improves public trust (e.g., consumer confidence).	Proposals that improve public confidence in future drinking water quality, even if they don't reduce future treatment costs, may be beneficial particularly if there are other current and/or future proposals that require stakeholder support.

# Application of Policy Framework



# Example 1: Removing Septic Systems



## Example 2: Expanding the TappsWise Program

### Proposed Action Identified

- Expand the TappsWise Program by growing the current suite of programs (e.g. natural yard care, septic tanks outreach, water quality monitoring, financial incentives, etc.) to address residential nonpoint sources of phosphorus pollution in the Lake Tapps Reservoir.

### Policy Driver(s) Identified

- Since Cascade and the Tacoma-Pierce County Health Department currently sponsor TappsWise, a program expansion would fall under partnerships (Policy Driver #5).

### Threshold Criteria Applied

- This action meets the Strategic Plan's Environmental Steward goal and results in drinking water quality benefits. The estimated cost of \$50K-\$100K is available in the O&M budget but requires transferring budget from other line items. Cascade staffing is available for its responsibilities in implementing the program expansion.

### Additional Criteria Applied

- This action meets several Additional Criteria, such as improving consumer confidence and stakeholder relationships, being relatively easy to implement, and having a positive life-cycle net present value. It does, however, require additional staffing resources at the Health Department.

### Analysis and Proposal Written

- Based on the results of applying the Criteria to this action and an analysis of options for the program expansion (e.g. different dollar amounts), staff decide to recommend a budget of \$75K per year.

### Board Decision

- After reviewing and discussing staff's analysis and proposal, the Board approves the TappsWise program expansion and directs staff to evaluate the program effectiveness after a year and report back.

# Exercise #2 - Policy Framework



Additional Questions  
or Comments on the  
Policy Framework?



# Next Steps

- Finalize Policy Framework
- Board approval via agenda memo
- Return to RMC with ideas on how to bring forward water quality proposals for Board consideration

