Utah Lake Water Quality Study (ULWQS)
Steering Committee
August 25, 1:00 PM to 4:00 PM
Virtual Meeting
Meeting Summary - FINAL

ATTENDANCE:
Steering Committee Members and Alternates: David Barlow, Scott Bird, Craig Bostock, Gary Calder, Eric Ellis, Erica Gaddis, Heidi Hoven, Chris Keleher, Rich Mickelsen, Dave Norman, Jay Olsen, Mike Rau, Jesse Stewart, Neal Winterton, and Gerard Yates

Science Panel Members: Mitch Hogsett and Michael Mills

Members of the Public: Jeff DenBleyker, Mark Ogren, David Richards, Chris Thunhorst, and Lauren Willes

Utah Division of Water Quality (DWQ) staff: Scott Daly, Jodi Gardberg, and John Mackey

Technical Consultants and Guest Speakers: Kevin Kratt, Mike Paul, and Kateri Salk

Facilitation Team: Heather Bergman and Samuel Wallace

ACTION ITEMS

Who	Action Item	Due Date	Date Completed
Peak Facilitation Group	Prepare a one-stop summary that outlines the considerations from the Steering Committee and POTWs for implementation planning.	Sep. 10	
Scott Daly and Tetra Tech	Take the feedback from the Steering Committee members and draft an implementation roadmap that outlines the different elements that will be considered throughout the implementation planning process.	Sep. 24	
Steering Committee Members	Review the draft implementation roadmap once it is available.	Oct. 15	

DECISIONS AND APPROVALS
The ULWQS Steering Committee members approved the Numeric Nutrient Criteria (NNC) Technical Framework with the expectation that the links and references provided in the document are complete and point to the appropriate documents.

GROUND RULES AND PROCESS COMMITMENTS OVERVIEW
Heather Bergman, Peak Facilitation Group, gave an overview of the Steering Committee ground rules and process commitments. The ground rules and process commitments of the Steering Committee are listed below.

- The Steering Committee process commitments are:
    - Seek to learn and understand each other's perspective
    - Encourage respectful, candid, and constructive discussions
    - Seek to resolve differences and reach consensus

    - As appropriate, discuss topics together rather than in isolation
    - Make every effort to avoid surprises
- The Steering Committee ground rules are:
    - Focus on the task at hand
    - Have one person speaking at a time
    - Allow for a balance of speaking time by providing succinct statements and questions
    - Listen with respect

STEERING COMMITTEE MEMBERSHIP UPDATE

Juan Garrido has stepped down from his role as an alternate member of the Steering Committee because he has accepted a new job. DWQ reached out to Bruce Ward, who has agreed to serve in the alternate role to Brad Stapley.

SCIENCE PANEL UPDATE

Steering Committee members received a document that provided an update on ongoing Science Panel studies.

NNC TECHNICAL FRAMEWORK UPDATE

Kateri Salk, Tetra Tech, provided an update on the NNC Technical Framework. Her update is summarized below.

- At the last Steering Committee meeting, members reviewed the NNC Technical Framework. Members at that time indicated they needed more time to provide feedback. Following the meeting, several members provided comments on the NNC Technical Framework. Tetra Tech worked with those who provided comments and revised the NNC Framework accordingly.
- The previous version of the NNC Technical Framework outlined that harmful algal bloom (HAB) conditions threatened agricultural uses. Tetra Tech received a comment that it is cyanotoxins, not HABs, that directly threaten agricultural uses. Tetra Tech updated the NNC Framework by using "cyanotoxins" when describing agricultural use concerns instead of HABs. They made these changes in both the Overview and Background section and the Agricultural Use section. These changes reflect that the primary concern of the agricultural community is the production of cyanotoxins and their potential impacts on crop irrigation and stock watering and that the agricultural community does not necessarily have concerns over nutrient concentrations themselves.
- Tetra Tech has been working on its analysis report. They have edited the NNC Framework to reflect the updates in the analysis report. These edits include clarifying that Tetra Tech has conducted a phytoplankton and zooplankton analysis and cyanotoxin analysis.
- There was a comment that the Environmental Protection Agency's (EPA) drinking water health advisories, mentioned in the Downstream Uses section, only apply to finished water and not raw surface water. Drinking water facilities can remove toxins from raw surface water to reach the EPA's drinking water health advisory thresholds. Tetra Tech removed the cyanotoxin drinking water standards from the NNC Framework because they do not apply to the raw surface water of Utah Lake and the Jordan River. The section emphasizes that future analyses could examine the relationship between cyanotoxins in raw surface water and cyanotoxins in finished drinking water, depending on the available data.
- There was a comment asking Tetra Tech to clarify the nitrate standards. The Utah Division of Drinking Water applies a ten mg/l nitrate standard to finished drinking. DWQ also applies a ten mg/l nitrate standard to raw water for class 1C waters. Tetra Tech updated the

NNC Framework to make sure these standards were clear. Drinking water facilities tend not to reduce nitrate into other forms of nitrogen.

- There were several places in the document where Tetra Tech clarified that the ULWQS Steering Committee and Science Panel, not DWQ, will be simulating scenarios using the mechanistic models and conducting a user perception survey.
- Tetra Tech expanded the Pathway to Criteria Section to lay out what will happen with implementation planning alongside the development of recommended numeric nutrient values. The development of the implementation plan and the range of numeric values for criteria will occur concurrently. The implementation plan will consider how the numeric nutrient criteria will be implemented. The section emphasizes the need for a holistic approach and consideration of the economic costs and benefits and the impacts on public health and the environment. Both tracks will be coordinated within the ULWQS workgroup to ensure the criteria recommendations align with the regulatory requirements.

Steering Committee Member Clarifying Questions

Steering Committee members asked several clarifying questions about the revised NNC Technical Framework. Questions are indicated in italics with corresponding answers in plain text.

Does Utah Lake have a 1C designated use for drinking water?
No, but the Jordan River does.

Who are the ultimate decision-makers for evaluating uncertainty?
The Science Panel will evaluate uncertainty using the uncertainty guidance framework. They will make recommendations to the Steering Committee. The Steering Committee will then take that information and make a recommendation to the Water Quality Board.

There was a suggestion to add toxins as part of the modeling. Is it possible to model toxins?

- The Water Quality Analysis Simulation Program (WASP), the model used to simulate water quality in Utah Lake, does not have the capacity to mechanistically model toxins.
- There are two types of analyses as part of the ULWQS: mechanistic models and empirical stressor-response analysis. Mechanistic models generate an output based on pre-programmed formulas, also known as a reaction network. The empirical stressor-response analysis relies on empirical data from Utah Lake to derive relationships between two variables.
- The WASP mechanistic model does not have toxins as an output. However, it can model cyanobacterial abundance. The researchers can then estimate the algal toxins by connecting the cyanobacterial abundance and algal toxins through an empirical stressor-response analysis.
- Table 9 in the NNC Framework displays which endpoints they can estimate using mechanistic modeling and empirical stressor-response analyses.

Steering Committee Member Comments

Steering Committee members provided feedback on the revised NNC Technical Framework. Their comments are summarized below.

- The Framework refers to the "Utah Division of Drinking Water" and "DWQ" nitrate standards in the Downstream Uses section. These agencies do not set the water quality standards; the Utah Water Quality Board does. This section should refer to the administrative codes set by the Utah Water Quality Board, not the agencies.

- Tetra Tech should use the abbreviation "ULWQS" and not "WQS" to avoid confusion when referring to the Utah Lake Water Quality Study in the document. "WQS" is an abbreviation for Water Quality Standards.
- The NNC Technical Framework still has some places where the link is broken or leads to the wrong document. These links should be replaced.
- The Empirical Analysis subsection should specifically mention cyanotoxins as part of the analysis.

Steering Committee Member Approval

The ULWQS Steering Committee members approved the NNC Technical Framework with the expectation that the links and references provided in the document are complete and point to the appropriate documents.

IMPLEMENTATION PLANNING (PHASE 3) KICKOFF

Erica Gaddis, DWQ, provided an overview of the implementation planning phase of the ULWQS. Her comments are summarized below.

- The purpose of the implementation planning is to determine the pathway to reach any future numeric nutrient criteria. The ULWQS Steering Committee will begin implementation planning even though there is no value for the numeric nutrient criteria.
- The NNC Technical Framework outlines how the ULWQS will determine numeric nutrient criteria but does not outline how to implement any future standards. The Steering Committee will develop a similar roadmap for implementation that will outline how the Steering Committee will develop an implementation plan, including what things to consider and what scenarios to look at.
- The implementation plan will ultimately provide an approach for on-the-ground implementation that looks at various sources throughout the watershed. The implementation plan will also consider the timeline for implementation and incorporate projected growth and uncertainty. The ULWQS implementation plan will consider cost and feasibility, which is a requirement in Title 19-5-105. The Steering Committee will also need to consider the regulatory implementation components (i.e., what permitting approaches should be taken to achieve the numeric nutrient criteria).
- EPA has created a framework that highlights the nine elements of a watershed plan, which could serve as the framework for the implementation plan. Developing a plan that follows the nine-element watershed plan format qualifies an entity for federal dollars for nonpoint source projects. The steps to writing a nine-element watershed plan include: 1) building partnerships, 2) characterizing the watershed, 3) finalizing goals (i.e., numeric nutrient criteria) and identifying solutions, 4) designing an implementation program, 5) implementing the watershed plan, and 6) measuring progress and making adjustments. Designing an implementation program involves estimating finances, developing an informational/educational program, outlining a project schedule, setting milestones, establishing indicators to measure progress, and finalizing a monitoring plan.
- The implementation plan will ultimately follow an adaptive management approach, where partners evaluate progress and outcomes and adjust accordingly.
- Today's meeting is focused on brainstorming what factors should be considered in implementation planning. Partners can identify specific sources they want to evaluate. Other plans have looked at agricultural sources, stormwater, municipal wastewater, septic tanks, industrial discharges, natural sources (e.g., sediments), and atmospheric deposition.
- The implementation plan should consider nutrient loading variability in wet and dry years.

- Below is a list of questions the Steering Committee should consider for the implementation planning process:
    - Are there some key scenarios Steering Committee members would like to evaluate that would inform implementation planning?
    - How and when should different sources implement nutrient management practices to reduce nutrient loads?
    - How can the implementation plan be drafted to be most actionable and user-friendly? (Other plans identified nutrient reduction best management practices, the nutrient reduction goal, and the critical areas to implement practices. Other plans assigned load reduction responsibilities based on land ownership.)
    - What are the Steering Committee's thoughts about the timeframe that the implementation plan should cover? (Timeframes should also incorporate uncertainty and growth into implementation.)
    - How should the implementation plan address uncertainty and growth (i.e., should the implementation plan reserve nutrient loads for future growth, or should partners commit to future reductions)?
    - Who are the key implementation partners, and when/how should the Steering Committee engage them?
    - Who should conduct the economic analysis, and what should it include? (Publicly owned treatment works (POTWs) want to conduct their economic analyses internally.)
    - Should the implementation explore a formal water quality trading program? If so, what elements should be included? (A water quality trading program involves having a regulatory mechanism for entities to trade with one another and pay for water quality credits.)

Steering Committee Member Clarifying Questions
Steering Committee members asked several clarifying questions about the implementation planning. Questions are indicated in italics with corresponding answers in plain text.

Where are the boundaries of the watershed that the Steering Committee will consider for implementation?
Deer Creek will serve as the boundary for the watershed.

Does the Deer Creek boundary begin at the Deer Creek Reservoir Dam, or does the boundary include Heber Valley?
The thought was to put the boundary at the dam and exclude Heber Valley, but the exact location of the boundary is up for discussion.

At one point in the implementation planning, will the Steering Committee take a deeper dive into each source and develop a plan for possible solutions?

- The watershed model will help identify hotspots for nutrient loading and the application of best management practices. The nine-element watershed plan framework is one way to create a plan for possible solutions. The first steps of the implementation plan are to categorize sources, establish the magnitude of contributions, after which the plan will identify specific projects.
- Developing possible solutions also involves evaluating different projects for their cost-efficiency and recovery timelines.

Is it possible to estimate the cost per pound of nutrient reduction?
There are a handful of best management practices for stormwater and agriculture nutrient loading. There is a way to evaluate these best management practices for their effectiveness and cost per acre. It is all possible to generate an estimated cost to enhance point sources, such as POTWs.

At some point in the implementation planning process, will partners commit to implementing low-hanging fruit projects?
In the total maximum daily load (TMDL) plan, EPA asks for reasonable assurance that projects can be implemented. The answer to this question will be different if the ULWQS Steering Committee partners pursue a water quality trading system.

POTW PERSPECTIVE ON IMPLEMENTATION PLANNING
A group of POTW representatives met with DWQ to discuss their priorities and considerations for implementation planning. Rich Mickelsen, Timpanogos Special Service District, provided an overview of POTW perspectives and considerations for implementation planning. His comments are summarized below.

- From the POTW perspective, they want to know what they will have to do to reach numeric nutrient criteria by 2030. It normally takes POTWs about five years to go through a design and build phase, which does not give them much time to implement. It is a challenge for some POTWs to meet the one mg/l total phosphorus criteria by 2025 without going lower.
- POTWs talked about what they wanted the model to do. They want clarification on the inputs, outputs, and assumptions of the watershed and in-lake models. They want to see the models include changes in the plant chemistry and the associated biota impacts, a no-human scenario, and the impact of atmospheric deposition on nutrients.
- POTWs identified several scenarios they would like to see modeled:
    - Scenario 1: 10 mg/liter total inorganic nitrogen & 1 mg/liter total phosphorus
    - Scenario 2: 6 mg/liter total inorganic nitrogen & 0.3 mg/liter total phosphorus (i.e., limit of technology)
    - Scenario 3: Consider limits that would encourage alternate discharge methods like reuse, and the feasibility of direct potable reuse under current flows and growth flows.
- POTWs discussed attainability and adaptive management. They want to take an adaptive management approach in phases as they reduce loads so that they do not incur costs that are not necessary or will not result in significant changes.
- POTWs talked about who will conduct the engineering analyses. Some of the larger facilities have conducted engineering analyses, but smaller facilities have not. The POTWs will consider secondary nutrient removal, tertiary nutrient removal, and advanced methods (e.g., electrodialysis reversal, reverse osmosis).
- POTWs discussed population growth and how to account for additional nutrient loading from growth. They did not discuss the impacts of the "Island Project" at the meeting, but that is a factor to consider too.
- POTWs talked about environmental tradeoffs, including innovative ideas to reduce nutrient loading into Utah Lake. As part of the environmental tradeoffs, they discussed water reuse. There may be a point at which the water is so clean that it gets recycled for reuse. This consideration would be included in scenario three.

- POTWs talked about different permitting considerations. There was no conclusion on which direction to go as it relates to permitting. The POTWs are potentially going to get together to continue talking about permitting options.
- Timing and sequencing are important to the POTWs. DWQ has already committed to not implementing any potential new numeric nutrient criteria before 2030.
- POTWs requested modeling a no-human scenario to determine if no human nutrient loading would improve water quality. They want to increase the certainty that any reduction in nutrients will result in changes in Utah Lake to justify costs.
- POTWs want to include nonpoint sources in the implementation planning analysis, including agricultural and stormwater sources. There may be an option to implement a water quality trading program between point source and nonpoint source entities.

Steering Committee Member Clarifying Questions
Steering Committee members asked several clarifying questions about the POTW perspective on implementation planning. Questions are indicated in italics with corresponding answers in plain text.

Is there a reason why there is not a scenario using the technology-based limit, which would include a one mg/l phosphorus limit and no limit for nitrogen?
There is no specific reason. That scenario could be added to the list of scenarios.

Much of the nonpoint source contamination is coming into Utah Lake via shallow groundwater. Is there data on the proportion of nutrients coming via nonpoint sources versus point sources?
Data is available on the proportion of nutrients coming via nonpoint sources versus point sources, but the data is not great. One of the first runs of the watershed model will be to identify the proportion of loads coming from different sources.

IMPLEMENTATION ROADMAP CONSIDERATION BRAINSTORM
Steering Committee members discussed what considerations should be included in the implementation roadmap. Their comments are summarized below.

- As Utah County continues to grow, the expectation is that water uses will move from agricultural uses to municipal and industrial (M&I) uses. Assuming no new transbasin diversions, the same volume of water will be passing through the system even though the population will be increasing. However, the water will transition from coming from nonpoint sources to coming from point sources. If the nonpoint source nutrient concentration is higher than the point source nutrient concentration, the nutrient loading should decrease as land-use changes from agriculture to municipal and industrial use. The implementation plan should consider this shift in water uses and how that affects nutrient loading.
- One potential way to address the shift in water uses is to assign nutrient reduction goals to the agricultural sector. If a water right is transferred from agricultural use to municipal and industrial use, there could be a mechanism to transfer that nutrient load reduction goal as well.
- Around 50% of the water that leaves Utah Lake is through evaporation. Reuse would be beneficial, considering the valley is in a 20-year drought. There is a need to be creative with M&I water uses.
- The implementation should consider whether there are geographic differences in how different entities treat and reduce nutrient loads. For example, the Provo POTW releases effluent into Provo Bay, while others release the effluent into other parts of the lake.

- The water balance of the lake should be considered through implementation. Water is coming into Utah Lake, but water is also coming out, which is necessary to satisfy downstream water rights. Water volume is an important consideration during the implementation planning process.
- The implementation planning process should include a conservation element. Water coming from Utah Lake is important for downstream habitat.
- The implementation plan should consider a water quality trading program. A trading system could help identify the easiest projects for reducing nutrients by allowing entities to determine whether it is more cost-effective to reduce their nutrient loading internally or buy credit by investing in a project to reduce nutrient loading elsewhere. A water quality trading system requires a third party to administer the program and monitor projects. Under a water quality trading program, any trading between point and nonpoint sources would have to make sure nonpoint source reductions are maintained in perpetuity or for the duration of a contract. One challenge with a water quality trading system is setting up a process for third-party verification and paying for the associated costs.
- When considering a water quality trading program, the Steering Committee should consider whether this system would involve trading only within the watershed or outside of the watershed as well, including inputs from atmospheric deposition.
- There are options to optimize water use on agricultural lands. A water quality trading program should include these options and see if there are benefits to water quantity to Utah Lake and the Jordan River from implementing these programs.
- The implementation plan should consider the sewage systems of the new homes being developed. Some homes being built have individual site systems and are not tied to treatment facilities. Most counties and cities have a plan that outlines their intention to annex areas. The implementation plan should analyze existing loads from these septic tanks. If septic tank loading is higher than the effluent from POTWs, there may be an incentive for POTWs to upgrade septic tank systems and get credit for the nutrient reduction.
- The implementation plan should consider the impacts of reuse.
- The implementation plan should consider environmental impacts to the Great Salt Lake in the context of water reuse. It may be challenging to consider the Great Salk Lake because the ULWQS will not dictate any changes to water rights. Although it may be challenging to include the Great Salt Lake in the implementation planning process, it is important to have it in the bigger picture conversation.
- There are concerns that reuse will impact the Great Salt Lake. The amount of water in the Utah Lake Basin is finite. Whether the water is used by agriculture or POTWs, it will eventually make its way into the lake. Extra conservation efforts do not increase the amount of water in the basin itself.
- Aquifer storage and recovery (ASR) should be considered in the implementation planning process.
- It would be helpful to have a pie chart that projects how nutrient loading by source changes over time, in addition to a pie chart that shows the current allocation of nutrient loading by source.

Public Comments

Members of the public provided comments on the considerations for the implementation roadmap. Their comments are summarized below.

- The implementation plan should consider ecological/ecosystem restoration methods, such as reducing carp and vegetation stabilization, in addition to engineered solutions. Ecosystem improvements can have significant benefits to lakes.
- There should be a management scenario for zero population growth.

Implementation Roadmap Next Steps

- Peak Facilitation Group will prepare a one-stop summary that outlines the considerations from the Steering Committee and POTWs.
- Some combination of Scott Daly, DWQ, and the Tetra Tech consultants will take the feedback from the Steering Committee members and draft an implementation roadmap that outlines the different things that will be considered throughout the implementation planning process.
- Steering Committee members said they were not interested in joining a drafting committee to help write the implementation plan roadmap. However, they will review and edit a draft implementation plan roadmap once available. They are also available to answer any questions from Scott Daly and the Tetra Tech consultants.
- DWQ is running out of funding to develop the implementation plan. They have the funding to develop the implementation plan roadmap, but they will need funding to support the plan's development.

WATER QUALITY MODEL DEVELOPMENT PRESENTATION

Scott Daly, DWQ, provided an overview of how the in-lake and watershed water quality models fit into the overall ULWQS process. Kevin Kratt, Tetra Tech, then presented the process for developing the in-lake and watershed water quality models for Utah Lake. Their comments are summarized below.

Water Quality Modeling Overview

- In the past, University of Utah researchers received funding to develop a lake and watershed model for the Jordan River and Utah Lake. Their model primarily looked at changing water quality in the context of climate change and population growth. The ULWQS models will expand upon the modeling completed by the University of Utah.
- The University of Utah completed the lake model last summer, and they are completing the watershed model now. Their watershed model does not include nutrients from upstream; it focuses primarily on water delivery.
- The Science Panel reviewed the University of Utah's models to identify issues and gaps. Science Panel members worked with DWQ staff to draft a request for proposals (RFP) to hire a modeling team to create a lake and watershed model that addresses gaps in the University of Utah's models. The Science Panel identified that it would be important for the watershed model to connect to the lake model.
- DWQ put out the RFP to solicit bids, and they worked with the Science Panel to evaluate proposals. They announced Tetra Tech as the winning bidder. Tetra Tech will have two tasks: 1) enhance the existing in-lake models and 2) develop the watershed model.
- Kevin Kratt will be the team lead for the development of the watershed and in-lake models. Kateri Salk and Mike Paul, Tetra Tech, will help transfer the model into the criteria development process.

Water Quality Development Process

- The Tetra Tech team was recently awarded the contract for developing the in-lake and watershed water quality models. They have been under contract for less than a month.

- The watershed model will identify where nutrients are coming from under current conditions. It will also identify how nutrient loading has changed in the past and how it might change in the future under various conditions (e.g., land-use changes, best management practices, climate change, etc.). The goal of the watershed model is to lead directly into the implementation planning effort.
- The watershed model will connect to the lake model to show how nutrient loading and flows affect water quality in Utah Lake. The connection between the watershed and lake models will give the ULWQS a better handle on how the nutrients impact water quality once they enter Utah Lake.
- The in-lake model is a mechanistic model. The Tetra Tech team will develop model algorithms for processes, such as how nutrient loading stimulates the growth of phytoplankton. Once they have the algorithms, they will input data (e.g., temperature, weather conditions, nutrient loads, flows). The model will then generate outputs (e.g., water level, the concentration of nutrients in the lake, etc.).
- The model will give ULWQS members insight into how the in-lake system performs and responds. There are multiple ways to use the model to answer charge questions, such as whether it is possible to achieve an improved stable state. The model is meant to be a tool in the toolbox and complement other ongoing work and studies.
- There is an existing in-lake model for Utah Lake built on the Environmental Fluid Dynamics Code (EFDC) hydrodynamic model and the Water Quality Analysis Simulation Program (WASP) model. The ULWQS Science Panel identified enhancements to the model, including adding a wave model. The Tetra Tech team is looking at the existing model and considering how to incorporate the enhancements. The enhancements to the in-lake model should be complete by next summer or fall. The Tetra Tech team will prepare a memorandum with their findings after evaluating the existing in-lake models.
- The watershed model is also a mechanistic model. The model inputs will come from landscape features, and the algorithms will identify what those landscape features mean for water quality and streamflow into the lake. The model will address questions like how much runoff is occurring in urban areas versus natural areas. It will also track in-stream processes as well.
- The watershed model will create the pie chart of expected loading from different sources, including developed lands, point sources, atmospheric depositions, and septic systems. It will also help identify where the nutrients are coming from to implement best management practices to reduce nutrient loading. The watershed model will allow the ULWQS Steering Committee to run different scenarios and see how different conditions impact the total nutrient loading and what that means for water quality in Utah Lake.
- The first step to developing the Utah Lake watershed model is identifying the appropriate watershed model to serve as the foundation. Some watershed models are better at certain things than others. The ULWQS Science Panel is helping develop the objectives of the watershed model and the criteria to evaluate and rank multiple models. Once there is a list of criteria, Tetra Tech will evaluate models and recommend an option to the ULWQS Science Panel and Steering Committee.

Steering Committee Member Clarifying Questions

Steering Committee members asked several clarifying questions about the water quality models. Questions are indicated in italics with corresponding answers in plain text.

Is funding a limiting factor for developing the water quality models?
DWQ has the funding to develop water quality models. The water quality models are critical for implementation planning.

Should the Steering Committee expect to receive updates on the water quality modeling efforts?
The Tetra Tech team expects to have recommendations on the watershed model in a month or so. They will be enhancing the existing lake model until next summer, so there is no immediate urgency for an update.

NEXT STEPS

- Scott Daly, DWQ, and Tetra Tech will work on putting together the implementation roadmap.
- The Science Panel is working on developing the interim report on the charge questions. Subgroups will be meeting from now through September to draft the report by October. The report does not represent a conclusion of the Science Panel's work. There is still a year left of studies and data collection. The interim report is meant to take stock of the current work of the Science Panel.
- The expected timeline is to produce numeric nutrient criteria by 2023. The hope is that Science Panel members will stay on to engage in the implementation part of the ULWQS following the selection of numeric nutrient criteria. There may be an opportunity to add more scientists from different fields, such as an economist or social scientist, at that time.
- The next time the Steering Committee will likely need to meet is in October or November.