

Utah Lake Water Quality Study (ULWQS)
Science Panel Update
August 25, 2021

Overview

At the last ULWQS Science Panel meeting, Science Panel members discussed updates to the Carbon, Nitrogen, and Phosphorus Budget Study and the Wasatch Front Water Quality Council (WFWQC) Atmospheric Deposition Study. They also reviewed the first draft of the criteria to help select and develop a watershed model. Science Panel subgroups continue to meet to review ongoing studies, including the Littoral Sediment Study, Phosphorus-Binding Study, and Timpanogos Special Services District (TSSD) Mesocosm Study. The Science Panel also formed subgroups to provide initial answers to the ULWQS charge questions for the Steering Committee to review at future meetings.

Status of Ongoing Studies

Charge Question Report

- **Primary Investigators:** All Science Panel members
- **Purpose:** Assess available information and data, develop initial responses based on the data, and identify remaining knowledge gaps.
- **Status:** The Science Panel will begin meeting as subgroups to develop initial responses to the charge questions this week. The subgroups will continue to meet until the end of September.

Carbon, Nitrogen, and Phosphorus Budget Study

- **Primary Investigator:** Dr. Kateri Salk, Tetra Tech
- **Purpose:** Determine the nutrient loads and amount of water entering and leaving Utah Lake annually.
- **Status:** Tetra Tech updated the study to incorporate new data from the Wasatch Front Water Quality Council. A Science Panel subgroup will meet to review the final report over the next month.

Paleo Study

- **Primary Investigator:** Dr. Janice Brahney, Utah State University
- **Purpose:** Determine the historical condition of Utah Lake and describe how water quality changed over time.
- **Status:** Sediment cores from five locations in the lake are being analyzed for nutrient concentration, diatoms, algal pigments, and other water quality indicators. Lab restrictions are easing allowing rapid progress for these analyses.

Bioassay Study

- **Primary Investigator:** Dr. Zach Aanderud, Brigham Young University
- **Purpose:** Determine which nutrients are controlling algal growth and how it changes across the lake and throughout the year.
- **Status:** The study was completed in May 2021.

Sediment Nutrient Interactions

- **Primary Investigator:** Dr. Ramesh Goel, University of Utah
- **Purpose:** Determine the importance of nutrient exchanges between the sediments and water column.
- **Status:** The study was completed in May 2020.

Phosphorus-Binding Study

- **Primary Investigator:** Dr. Josh LeMonte, Brigham Young University
- **Purpose:** Determine how phosphorus molecules interact with other molecules, like calcium, once they are in Utah Lake and how those interactions affect how much phosphorus is available for living organisms (e.g., algae and cyanobacteria)
- **Status:** A Science Panel subgroup reviewed and provided feedback on the literature review and sampling analysis plan. Dr. LeMonte has begun collecting samples in Utah Lake.

Littoral Sediment Study

- **Primary Investigator:** Dr. Erin Rivers, Utah State University
- **Purpose:** Determine how the wetting and drying of sediments due to changing lake levels affect nutrient cycling.
- **Status:** A Science Panel subgroup reviewed and provided feedback on the literature review and sampling analysis plan. The investigation team has begun collecting samples in Utah Lake.

Atmospheric Deposition Study

- **Primary Investigator:** Wasatch Front Water Quality Council (WFWQC)
- **Purpose:** Provide estimates of the wet and dry deposition to the surface of Utah Lake from the atmosphere.
- **Status:** Dr. Theron Miller, WFWQC, presented the 2020 findings at the Science Panel meeting on July 26. Wasatch Front Water Quality Council is preparing a report with the 2020 results and will continue collecting data for the next two years.

Mesocosm Study

- **Primary Investigator:** Timpanogos Special Services District (TSSD)
- **Purpose:** Determine the effects of carp on nutrient cycling, zooplankton, phytoplankton, macrophytes in Utah Lake, in addition to the effects of turbidity on primary producers and the role of macrophytes in the biogeochemistry of the lake.
- **Status:** TSSD researchers completed their research plan. A Science Panel subgroup will meet to provide feedback on the research plan.

Utah Lake Water Quality Models

- **Primary Investigator:** Tetra Tech
- **Purpose:** Enhance the existing in-lake models and develop a new model for the watershed.
- **Status:** Tetra Tech was recently awarded the contract to begin the modeling effort. Tetra Tech is evaluating the existing lake model developed by the University of Utah as a first step to implementing model enhancements recommended by the Science Panel. Tetra Tech is developing the criteria to help select which watershed model they use. ULWQS Science Panel and Steering Committee members will have the opportunity to provide feedback. More details on this effort will be shared during this meeting.