



State of Utah

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MEMORANDUM

TO: Water Quality Board

FROM: Jodi Gardberg, Standards and Technical Services Section Manager

THROUGH: Walter L. Baker P.E.

DATE: August 9, 2016

SUBJECT: Harmful Algal Bloom in Utah Lake and the Jordan River

On July 13, 2016, the Utah Lake State Park contacted the Department of Environmental Quality (DEQ) Division of Water Quality (DWQ) and reported an unusually large algal bloom extending from Provo Bay to the State Park Harbor.

Sampling and analysis confirmed an extensive bloom of cyanobacteria, including a species that has the potential to produce three types of cyanotoxins. Cyanobacteria cell count concentrations in some areas were three to four times the health risk threshold considered dangerous by the World Health Organization (WHO, 1999). As a result, the Utah Department of Health (DOH) and the Utah County Health Department officially closed the lake to the public on July 15, 2016 based on the DOH/DEQ harmful algal bloom guidance (see link below).

Utah Poison Control received hundreds of calls from members of the public who were experiencing symptoms of exposure including gastrointestinal distress, vomiting, headaches, and rashes after recreating in the lake before the closure.

On the same day the lake was closed, aerial reconnaissance showed the bloom moving into the Jordan River. Numerous canals on the east and west side of the valley draw their secondary water from Utah Lake and the Jordan River. DWQ received a flood of phone calls from members of the public who received their secondary water from the Jordan River and wanted to know if it was safe for them to use this water for crop irrigation, livestock watering, and food production. On July 16, 2016, the Department of Agriculture and Food (DAF) issued a strong advisory against using the water for irrigation or livestock watering.

Since July 13, DWQ has collected water samples, with the aid of Salt Lake and Utah County Health Departments and Salt Lake City Metropolitan Water District, on Utah Lake, Jordan River, their tributaries, and canals and analyzed samples for cyanobacteria species identification, cyanobacteria cell-count concentrations and the presence of cyanotoxins. Numerous multi-agency conference calls were conducted to coordinate the effort, discuss results, dispense information to the public, and discuss actions.

With a decrease in algal cell concentrations and confirmation that cyanotoxins were at low-risk or non-detect levels in the Jordan River, "Warning" signs along the river have been changed to "Caution" signs at access points. Likewise, the canals have been reopened and secondary water was deemed safe to use by the DAF for irrigation and livestock watering. On July 28, Utah Lake was re-opened to boating, but not swimming, waterskiing or full-immersion water sports and on August 2, a "Caution" advisory was issued that opened the lake to swimming and other water activities but to avoid areas of scum. DWQ and partners continue to sample weekly on Utah Lake, the Jordan River, its tributaries, and canals and will do so until 2 consecutive samples are low in cyanobacteria cell counts and toxin levels.

Federal, state, and local agencies involved:

- Local: Utah County Health Department, Salt Lake County Health Department, Salt Lake City, Irrigation companies, water districts, other affected municipalities
- State: Utah Department of Environmental Quality (Division of Water Quality and the Planning and Public Affairs Office); Department of Natural Resources (Division of Wildlife Resources, Parks and Recreation, Forestry, Fire and State Lands, Public Information Office); Department of Health; Department of Public Safety
- Federal: US Fish and Wildlife Service, Environmental Protection Agency

DEQ personnel involved: Ben Holcomb, Walt Baker, Erica Gaddis, Jodi Gardberg, Jimi Harris, Jake Vander Laan, Chris Bittner, Jeff Ostermiller, Kevin Okleberry, Scott Daly, Sandy Wingert, Marshall Baillie, Calah Worthen, Suzan Tahir, Dan English, Rob Bird, and Brent Shaw, Ben Brown, Alex Anderson, and Ryan Parker.

OPP personnel involved: Donna Spangler, Christine Osborne, Amy Christensen, Terry Davis, Jodie Swanson, Pam Jacob, and multiple field staff:

- Daily web updates at: <http://deq.utah.gov/locations/U/utahlake/algal-bloom.htm>
- DOH/DEQ guidance used to determine appropriate level of health risk and action for harmful algal blooms:
<http://www.deq.utah.gov/Pollutants/H/harmfulalgalblooms/docs/2015/08Aug/HABGuidanceUDOHHFinal.pdf>

Conditions that can cause harmful algal blooms: high temperatures, ample sunlight and calm conditions in nutrient-rich waterbodies.