

Compromised Water Quality at Milford Lake and Potential Remediation Strategies

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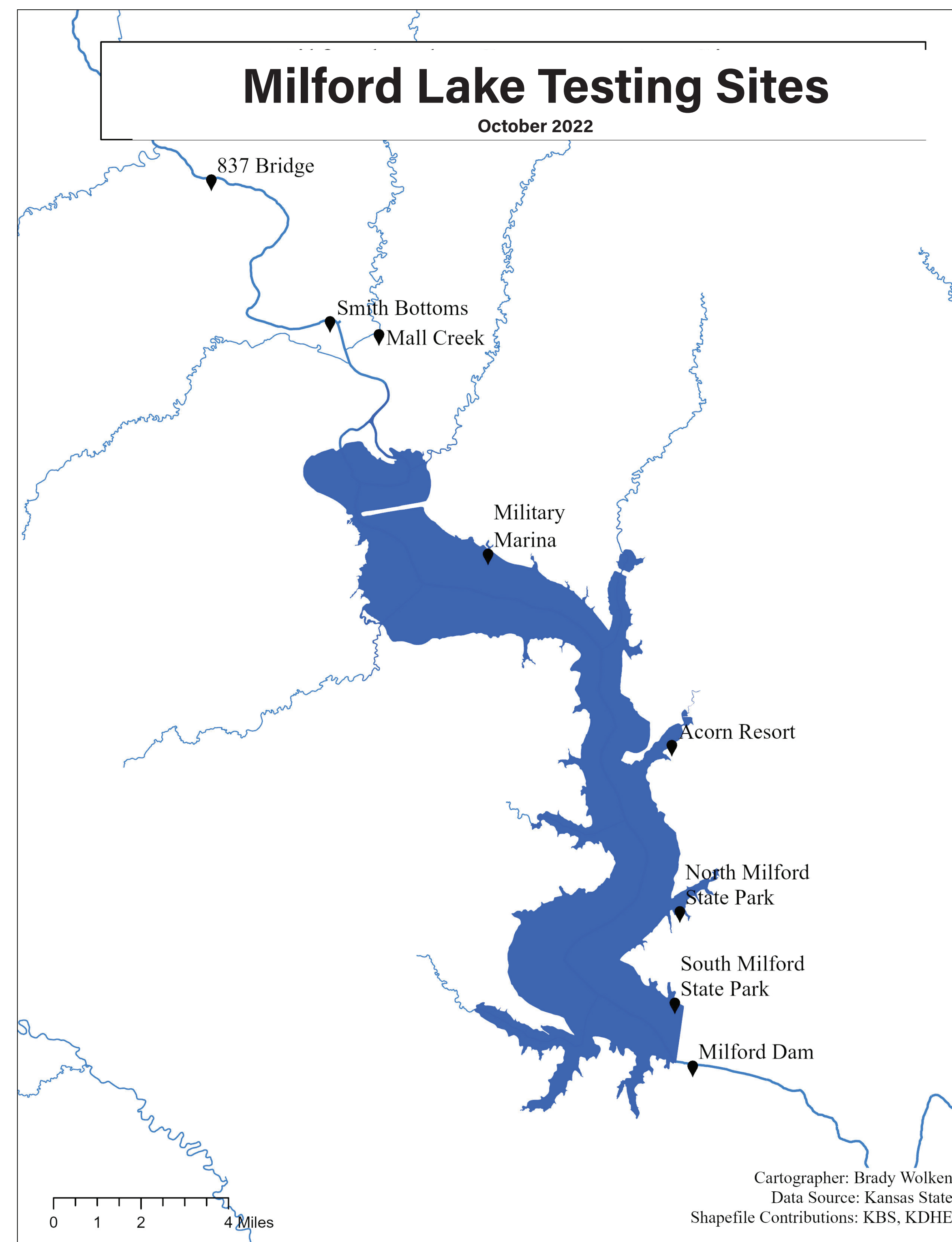
Introduction

Milford Lake, located just west of Junction City, Kansas, provides a wide range of recreational activities including fishing, hunting, boating, swimming and camping. These activities provide economic stimulation for the area, but toxic algal blooms may hinder this.

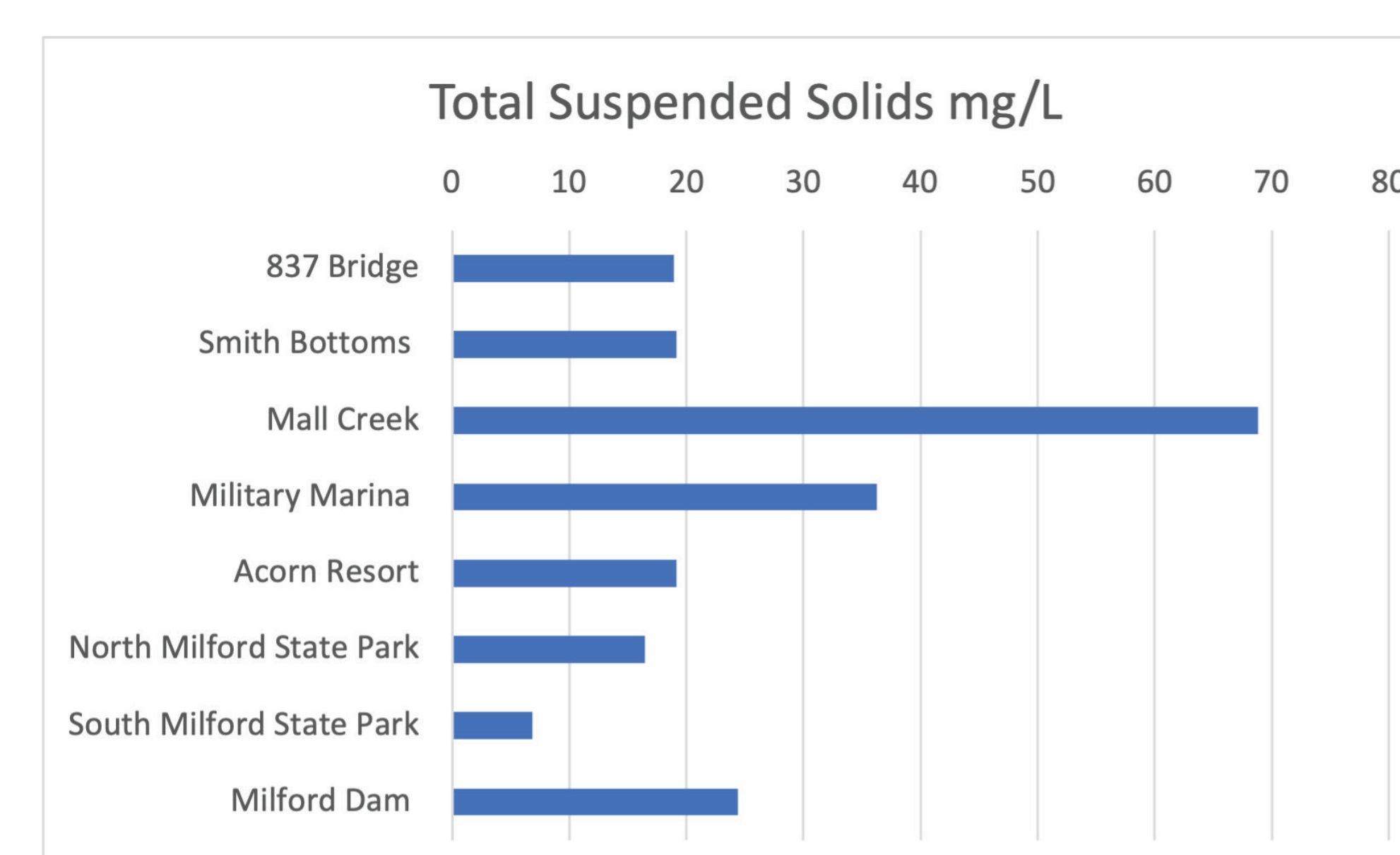
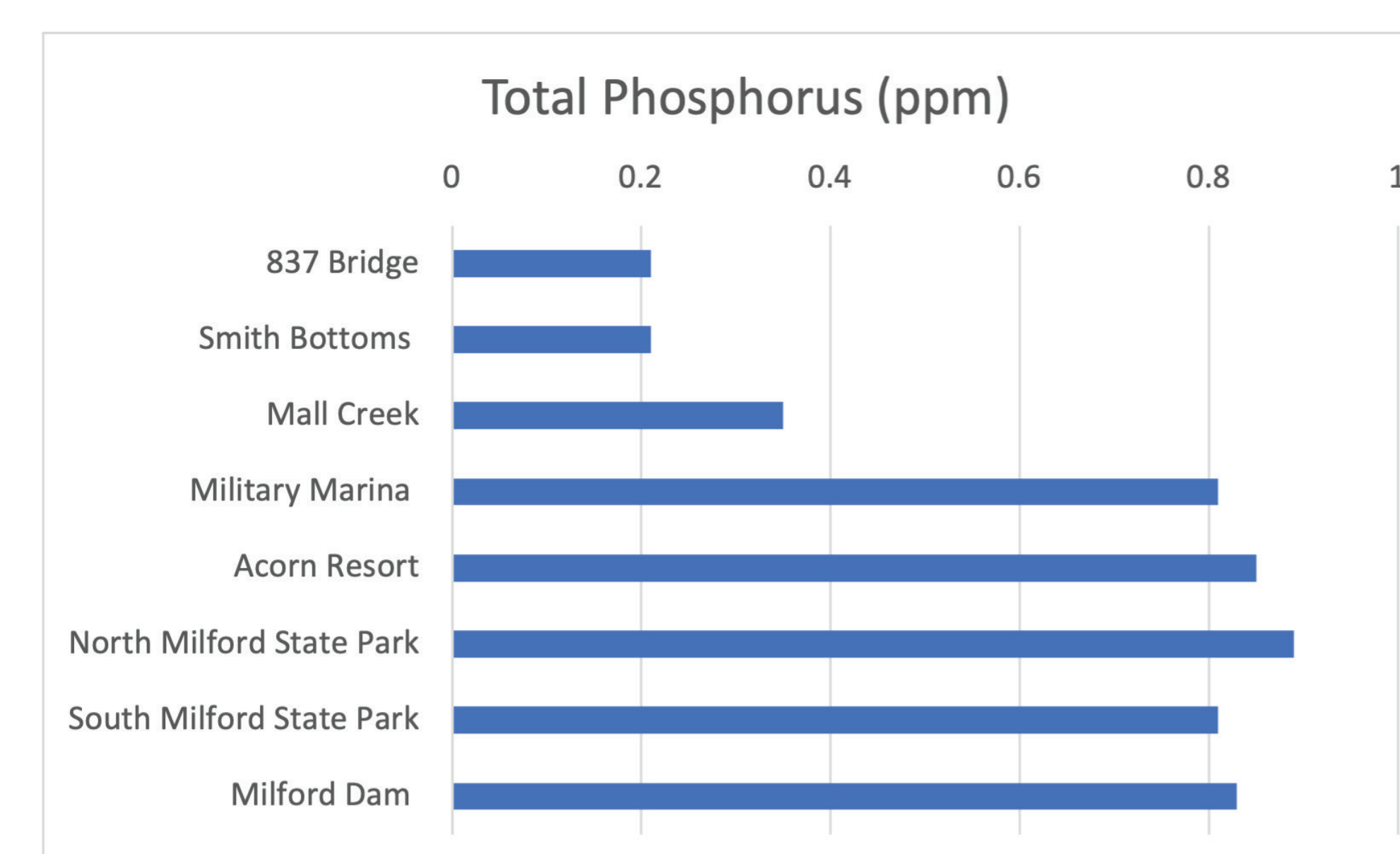
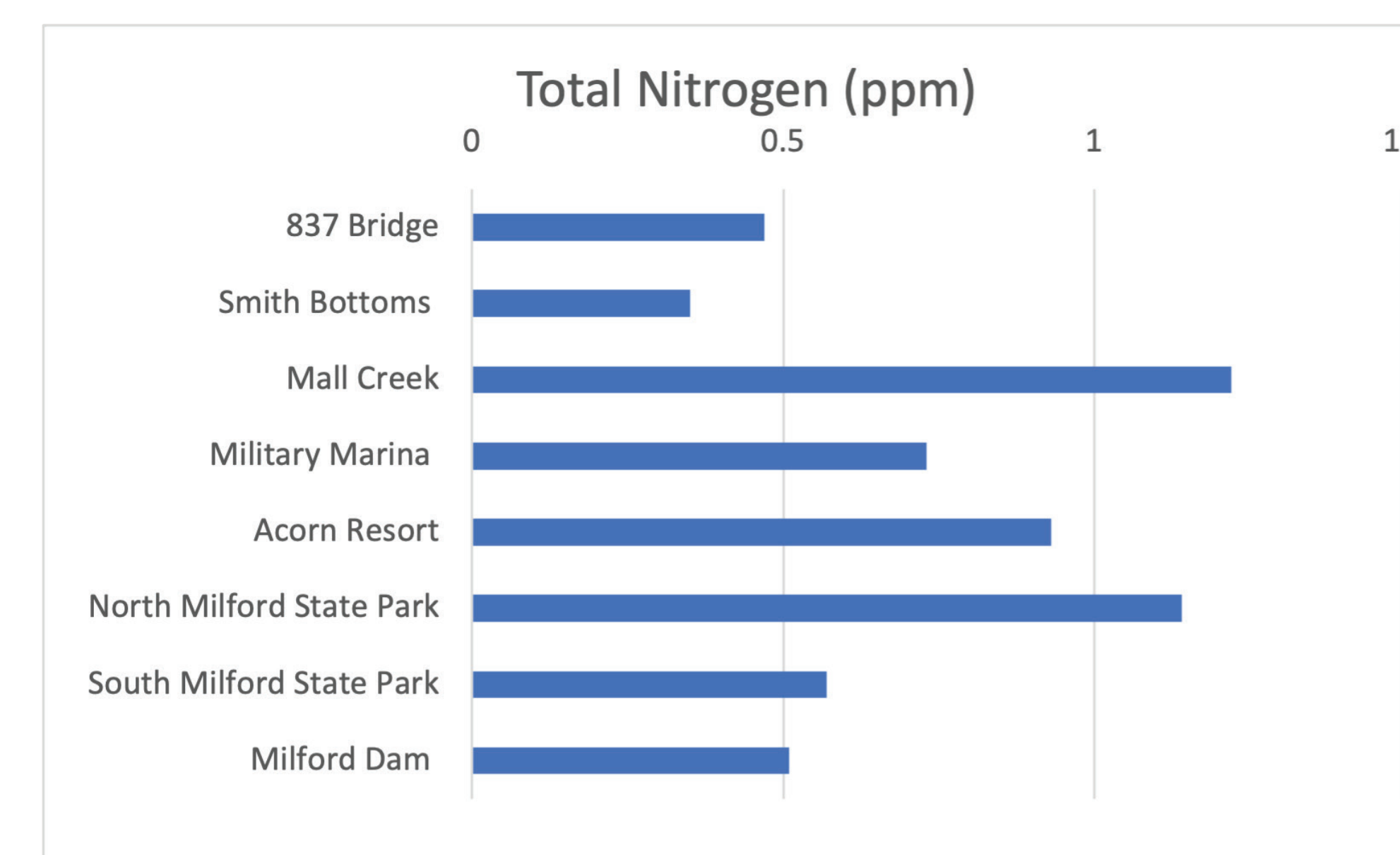
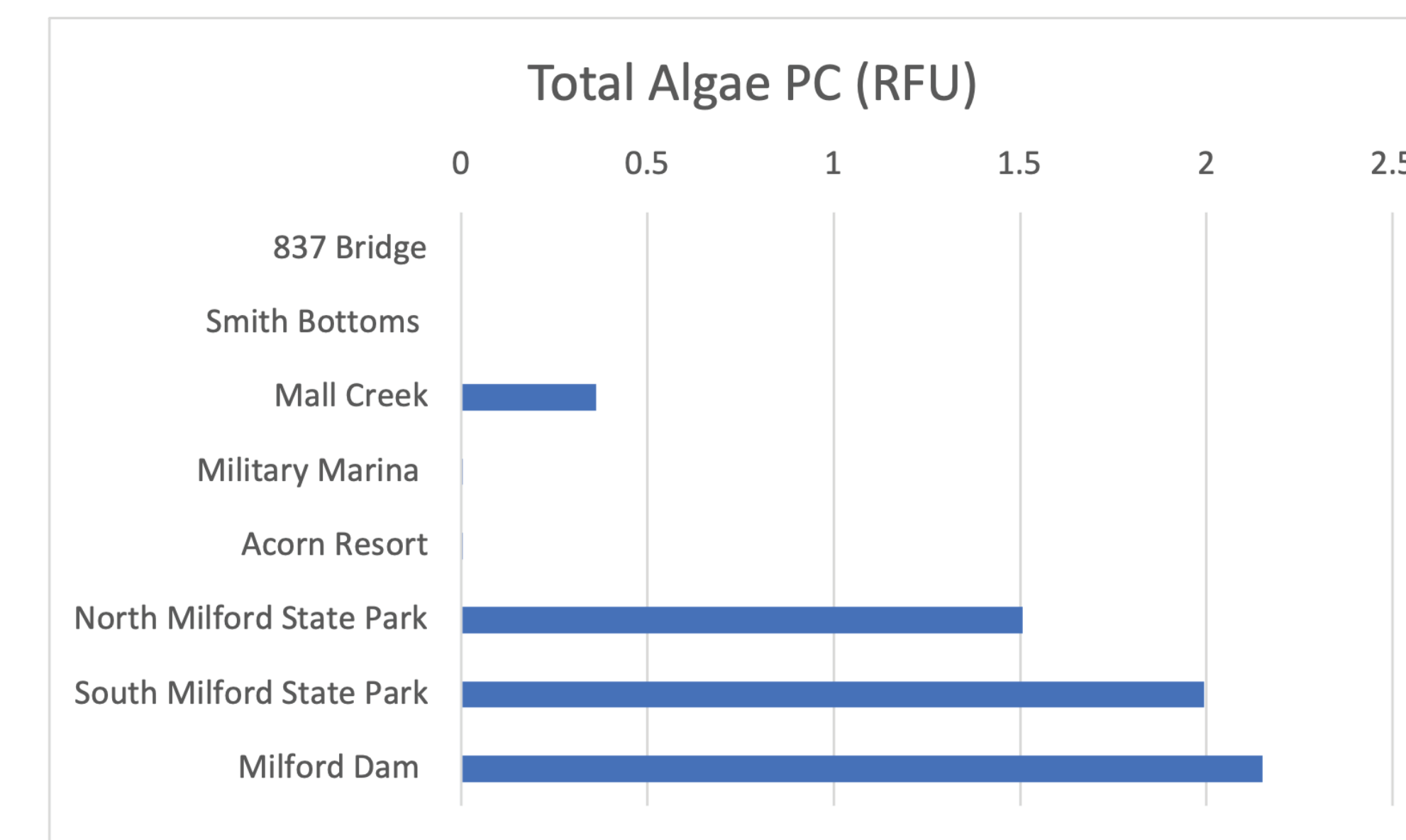
For over a decade, Milford Lake has seen an alarming rise in toxic algal blooms, resulting in lake shutdowns and limitations to activities. There are multiple contributing factors that cause pollution and that lead to these algal blooms, including agricultural runoff, obstructions from infrastructure, effluent from sewage treatment plants, and other human-factors.

It is important to resolve this issue as toxic algal blooms lead to poor visitor experiences, decreased recreation-based revenue, and pose threats to the health and safety of both humans and animals.

This research looks into the wide range of factors that accompany algal blooms, including water quality, recreation-based economies, visitor experiences, local perspective, health & safety and wildlife. Our goal is to identify potential remediation strategies.



Data/Results



Solutions

Our research group recommends the following methods to remediate the harmful algal blooms at Milford Lake:

- Conduct research on how algal blooms affect the local economy and citizens' from day-to-day.
- Provide more detailed and up-to-date information regarding the harm that algal blooms can cause, as well as when the blooms are at their peak concentrations.
- Conduct further research on impacts of health and safety to both humans and wildlife in Wakefield and Milford, Kansas.
- Design and install rain gardens and floating wetlands where they will create the most benefit to Milford Lake and the surrounding areas.
- Conduct an annual or semi-annual sediment release to allow for the movement of stagnant water and sediments in the lake.

We believe that these methods are the most cost effective and proactive solutions to restore the lake and the surrounding area. The implementation of these methods would lead to improved health of the lake ecosystem, increased tourism to the area, and also benefit the biodiversity of plants and animals.

References

Map: Created by Brady Wolken. Data sourced from Kansas State. Shape files can be contributed to KBS and KDHE.

Graphs: Created by Brady Wolken. Data collected from group research, as well as the Soil Laboratory at Kansas State University.

Methods



1 We collected water samples from each of the eight testing locations (as seen on the map above).

2 We tested each sample for nitrate, phosphate, and ammonium. We also sent samples to the soil lab on campus to ensure that our results were accurate.

3 After we had finished the chemical testing, we used a vacuum filtration system to separate the liquids from the solids. The solids were collected by a filter.

4 We then placed the filters from each sample into the oven in the lab for 24 hours to ensure that there was no liquid remaining.

5 Finally, we weighed the samples and subtracted the weight of the filter to determine the amount of suspended solids in each sample. This data can be seen in the four graphs to the right.

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