STRATEGIC RESEARCH PLAN PRIORITIZING

Utah Lake Water Quality Study
Science Panel Call
January 23, 2020
Salt Lake City, UT

Goals

■ Review Prioritization

– *Where we landed*

– *Where we are going*

**Utah Lake Water Quality Study—
Strategic Research Plan
DRAFT**

December 4, 2019
Version 2.0
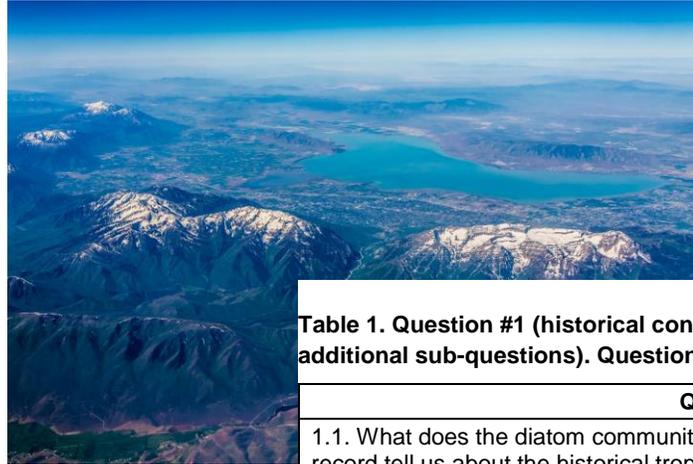
PRESENTED TO

**Utah Department of Environmental Quality
Division of Water Quality**
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Table 1. Question #1 (historical condition) is divided into four subsets of questions (some of which have additional sub-questions). Questions that are not currently being addressed are highlighted in yellow.

Questions	Being addressed
1.1. What does the diatom community and macrophyte community in the paleo record tell us about the historical trophic state and nutrient regime of the lake?	Partially
i. Can diatom (benthic and planktonic) and/or macrophyte extent or presence be detected in sediment cores? And if so, what are they?	Paleo RFP
ii. What were the environmental requirements for diatoms and extant macrophyte species?	No
iii. How have environmental conditions changed over time?	Data analysis
1.2. What were the historic phosphorus, nitrogen, and silicon concentrations as depicted by sediment cores? (add calcium, iron, and potentially N and P isotopes)	Paleo RFP
1.3. What information do paleo records (eDNA/scales) provide on the population trajectory/growth of carp over time? What information do the paleo records provide on the historical relationship between carp and the trophic state and nutrient regime of the lake?	No
1.4. What do photopigments and DNA in the paleo record tell us about the historical water quality, trophic state, and nutrient regime of the lake?	Paleo RFP

Prioritization Exercise

■ You have a list of proposed ideas

■ You've also been given a list of mapping the charge question needs to existing work

■ Work in groups to prioritize

■ Recommended format: modified Delphi method
    – *Step 1: Rank right away – highest priority to least*
    – *Step 2: Discuss/deliberate*
    – *Step 3: Re-vote and report back*

Remember the exercise – where we landed

	Original rank Grp 1	Grp 2	Combined Rank
Original Ideas			
10. How Large is Internal vs External Loading (How long would recovery take?)	1	2.5	1.9
8. Calcite Scavenging (how bioavailable is SRP – does bioassay address?)	2	3.5	3.4
9. Sediment Budgets (C, N, and P; nutrient flux chambers)	5	2.3	3.9
11. Adding modules to the WQ models (sediment diagenesis, calcite scavenging)	5	5.0	5.2
2. Carp Effects on Zooplankton (and does this influence algal response)	7	9.8	9.6
6. Lake Level (Effect on Macrophytes; ~~Effect on Biogeochemistry~~)	7	8.8	9.0
1. Carp Effects on Macrophytes ~~(and linkage to biogeochemistry)~~	8	9.8	9.9
4. Macrophyte recovery potential (Provo Bay demo)	8	11.0	10.7
7. Turbidity Effect on Primary Producers	9	10.3	10.6
13. Recreational Surveys (not universal support)	9	8.5	9.6
3. Macrophyte role (to biogeochemistry)	10	10.8	11.1
12. Alternative models (PCLake – cyano/macrophyte state change)	11	11.5	12.0
5. Toxin Production and N Species	12	10.5	12.3
Novel Ideas			
15. Carp effects on nutrient cycling	3		
14. Environmental controls on toxin production	4		
16. Lake-level effects on biogeochemistry and nutrient cycling	6		
16. Bioassays that incorporate sediment (next phase mesocosms)		4.25	
15. Resuspension rates from bioturbation		9.00	
14. Additional atmospheric deposition data		9.75	

JAN/FEB
Where we are going – resurvey (monkey)

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Where we are going – move from ideas to projects

Original Ideas	Original rank Grp 1	Grp 2	Combined Rank
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What projects would best answer these questions?

FEB/MAR

RFPs