



UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY

**WATER
QUALITY**

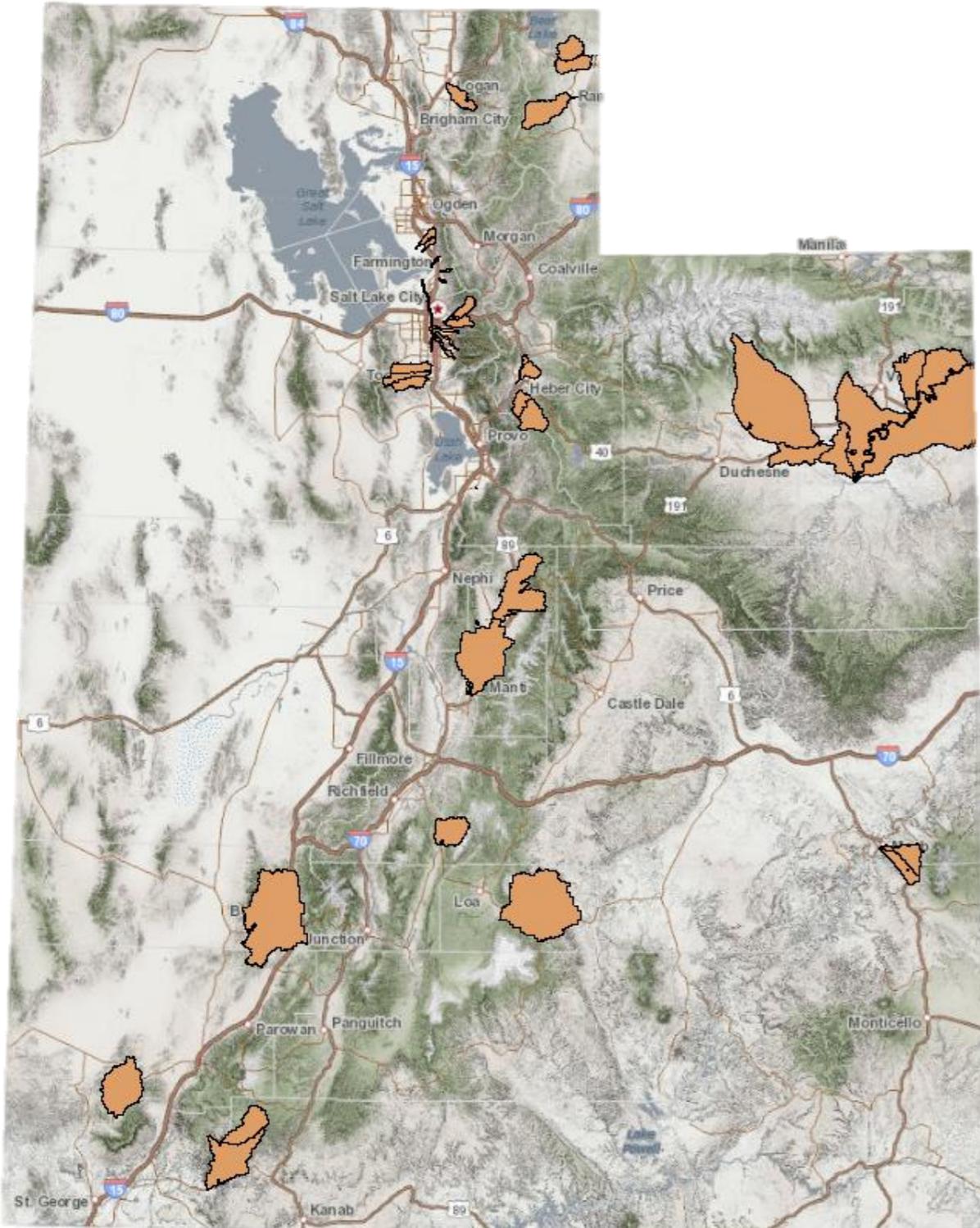
E. coli Monitoring Prioritization

2016 Integrated Report: E. coli Assessment Results Summary



2014 and 2016 Impaired AUs (E. coli)

2016: 15 new Assessment Units impaired for E. coli



Assessment Unit Name	Assessment Unit ID
Otter Creek-4	UT16030002-001_00
San Pitch-3	UT16030004-005_00
Beaver River-2	UT16030007-002_00
Pinto Creek	UT16030006-002_00
Mill Creek1-Moab	UT14030005-005_00
Pack Creek	UT14030005-011_00
Barnard Creek	UT16020102-043_00
Stone Creek-1	UT16020102-046_00
Blacksmiths Fork-1	UT16010203-020_00
Salem Lake	UT-L-16020202-001_00
Main Creek-2	UT16020203-010_00
Six Mile Creek	UT16010101-002_00
Spring Creek-Heber	UT16020203-027_00
San Pitch-3	UT16030004-005_00
San Pitch-5	UT16030004-009_00

Development of E. coli Monitoring Prioritization System



Process Overview

Step 1: Define Criteria

- Scoring categories were identified to target areas of high visitation and/or recreation and/or areas with known E. coli problems

Step 2: Assign Scores

- Each assessment unit was assigned a score in 9 different scoring categories

Step 3: Total Scores

- Higher score indicates a higher priority for monitoring

Scoring Categories

Scoring Category	Description	Draft Score	Draft Score Type
2A Beneficial Use	Assessment unit has a 2A beneficial use (protected for frequent primary contact)	1 or Blank	Yes/No
Perennial Waterbody	Assessment unit contains a perennial waterbody	0.5	Yes/No
State Park	The assessment unit intersects a State Park	1 or Blank	Yes/No
State Park Visitation	Annual State Park Visitation	0-1	Percentile
National Park	The assessment unit intersects a National Park	1 or Blank	Yes/No
Fisheries Visitation (Lakes Only)	Fisheries visitation from 2011-2012 Department of Natural Resources Survey (lakes only)	0-1	Percentile
Impaired for E. coli (2016 Integrated Report)	The assessment unit was impaired for E. coli in the 2016 Integrated Report	1 or Blank	Yes/No
Boat Ramp	Score based on number of boat ramps in the Assessment Unit	0-1	Percentile
Special Request	Local knowledge, Health Department request, DWQ water quality study (TMDL), etc.	1 or Blank	Yes/No

Scoring Categories - Considerations

- 1) 'Special Request' category has not been populated. This will be undertaken closer to the sampling season.
- 2) Visitation for fisheries was only populated for lakes (not rivers) due to lack of spatial information associated with rivers visitation numbers.
- 3) Scoring system does not include visitation for each National Park/Monument
- 4) Scoring system targets Assessment Units and not locations and does not provide information on how many locations to target within each Assessment Unit.

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Results

Breakdown of Scores

900 Total Assessment Units

235 Assessment Units Score >1

110 Assessment Units Score >1.5
(22 of these are lakes)

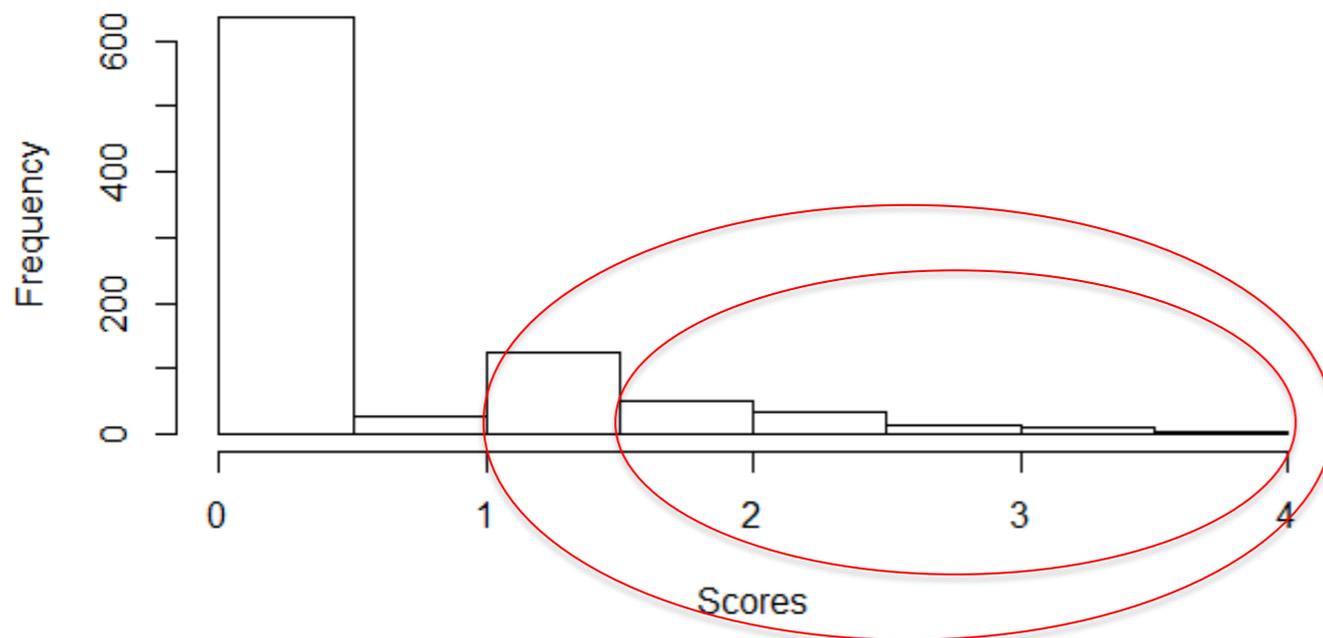
Monitoring Capacity (Assessment Units per Year)

Lakes: 20-25

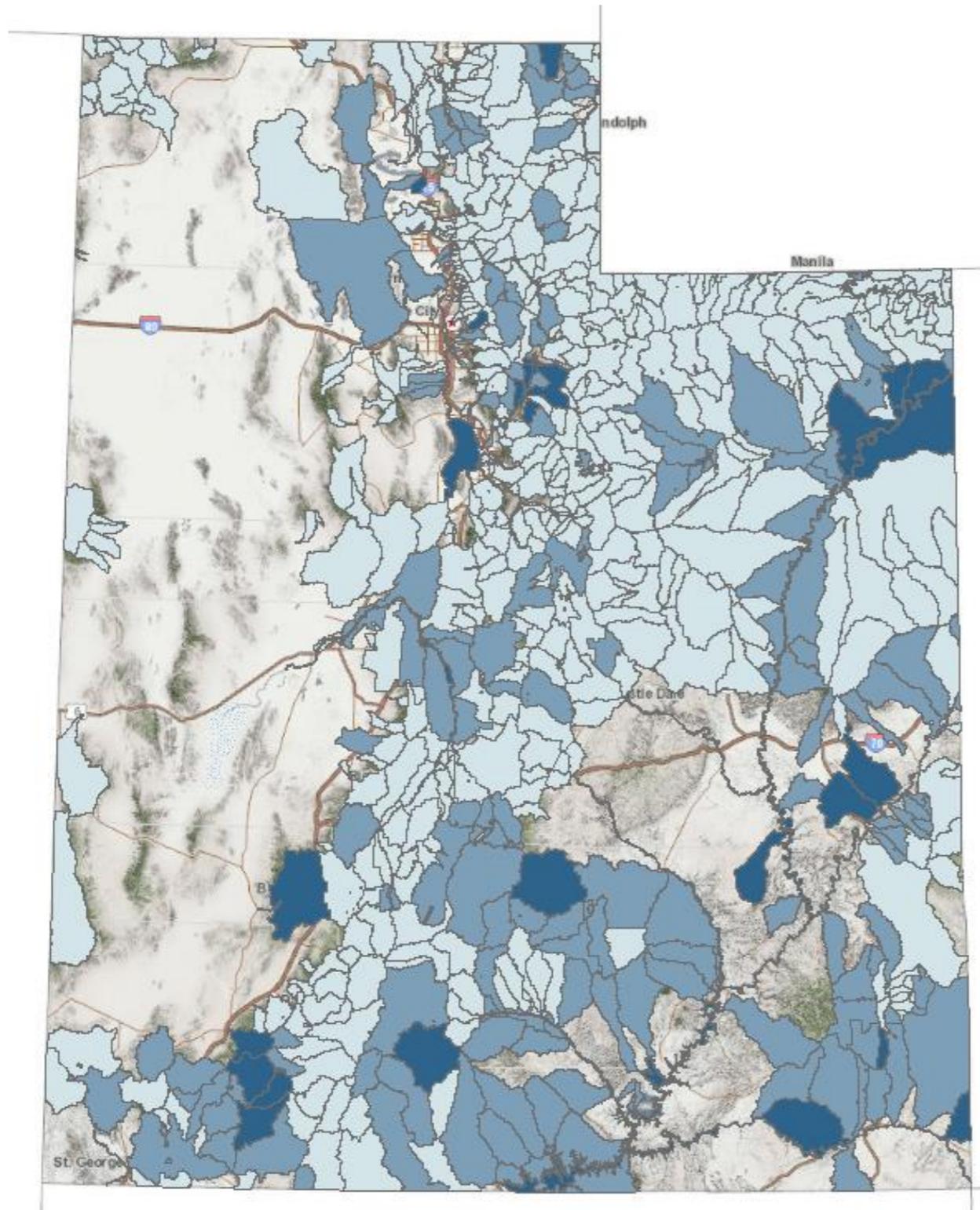
River/Stream: 60-70

Total: 80 – 100

Histogram of Scores

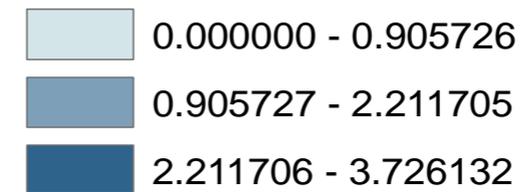


Visualizing the Results



Legend

Assessment Unit Final Score



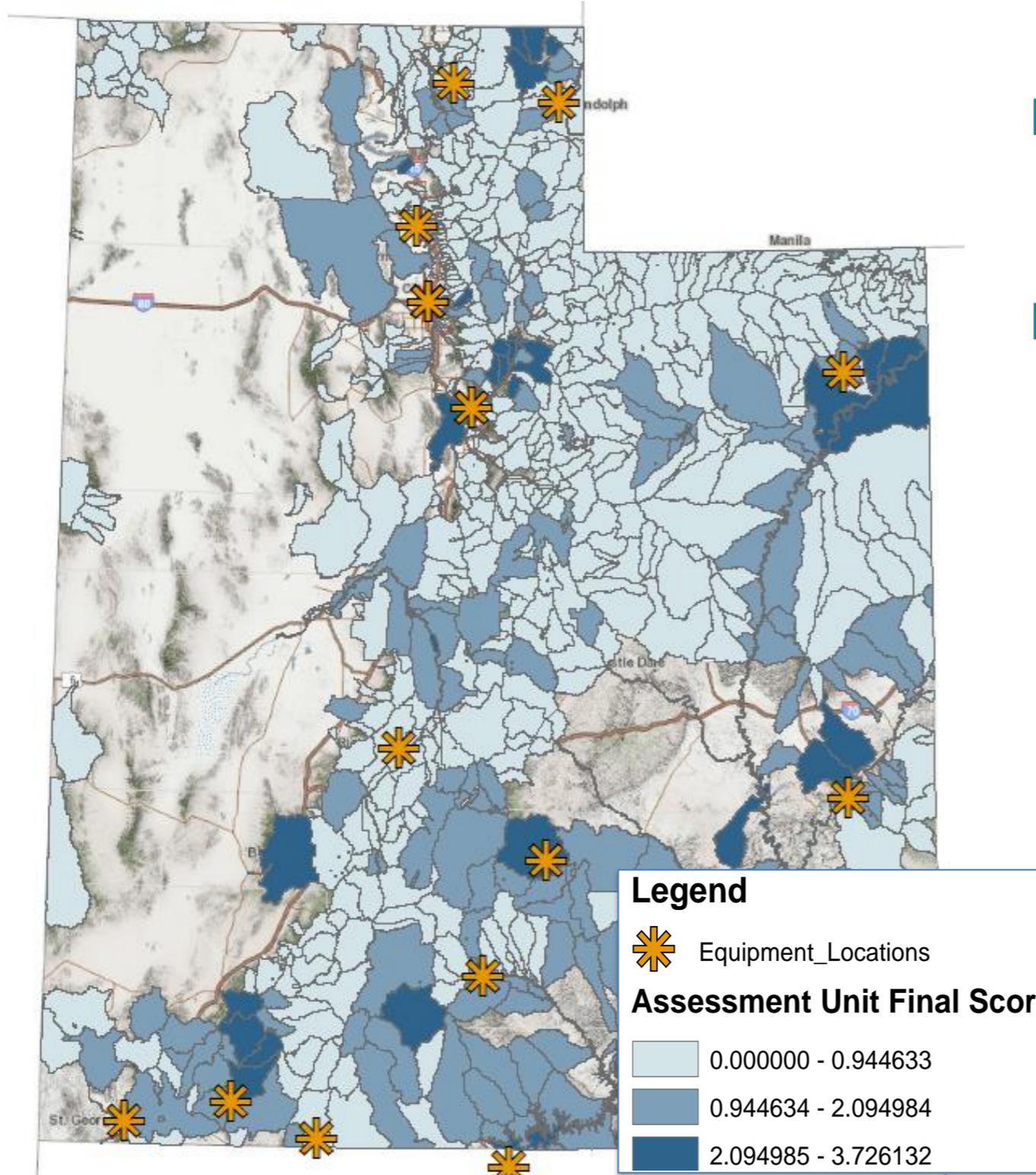
Visualizing the Results – Top Lakes

Assessment Unit ID Number	Assessment Unit Name	Final Score
UT-L-16020102-004_00	Willard Bay Reservoir	3.08
UT-L-16020203-003_00	Jordanelle Reservoir	3.04
UT-L-16020203-001_00	Deer Creek Reservoir	3.01
UT-L-16010201-003_00	Bear Lake	2.96
UT-L-14060004-006_00	Starvation Reservoir	2.69
UT-L-16020101-002_00	Rockport Reservoir	2.63
UT-L-16020201-004_01	Utah Lake	2.57
UT-L-16020102-020_00	East Canyon Reservoir	2.52
UT-L-14070006-001_00	Lake Powell	2.51
UT-L-15010008-024_00	Quail Creek Reservoir	2.39
UT-L-16030004-005_00	Palisade Lake	2.38
UT-L-16030003-007_00	Yuba Reservoir	2.36
UT-L-14060010-006_00	Steinaker Reservoir	2.20
UT-L-14060009-026_00	Millsite Reservoir	2.17
UT-L-14060010-008_00	Red Fleet Reservoir	2.17
UT-L-16020310-001_00	Gilbert Bay	2.09
UT-L-14060009-034_00	Huntington Lake North	2.07
UT-L-14040106-021_00	Flaming Gorge Reservoir	2.05
UT-L-15010008-001_00	Gunlock Reservoir	2.03
UT-L-16020202-001_00	Salem Lake	2.00
UT-L-16020310-004_00	Farmington Bay	1.99
UT-L-16020310-003_00	Bear River Bay	1.84
UT-L-16030002-004_00	Otter Creek Reservoir	1.35
UT-L-14060007-005_00	Scofield Reservoir	1.32
UT-L-14060004-001_00	Strawberry Reservoir	1.30
UT-L-16010203-005_00	Hyrum Reservoir	1.28
UT-L-16020101-003_00	Lost Creek Reservoir	1.14
UT-L-16020101-001_00	Echo Reservoir	1.12
UT-L-16020102-014_00	Pineview Reservoir	1.10

Visualizing the Results – Top River/Stream

Assessment Unit ID Number	Assessment Unit Name	Final Score
UT14080205-001_00	San Juan River-1	3.73
UT14080205-003_00	San Juan River-1 Tributaries	3.63
UT14060002-003_00	Brush Creek	3.57
UT15010008-015_00	North Fork Virgin River-1	3.50
UT15010008-013_00	North Fork Virgin River-2	3.50
UT14070003-008_00	Fremont River-3	3.50
UT16020203-004_00	Provo River-4	3.33
UT16020203-009_00	Main Creek-1	3.20
UT14030005-004_00	Colorado River-4	3.10
UT14060001-004_00	Green River-2	2.70
UT14070007-001_00	Paria River-1	2.63
UT14030005-003_00	Colorado River-3	2.60
UT16020204-001_00	Jordan River-1	2.53
UT14080201-008_00	Westwater Creek-Blanding	2.52
UT16030006-001_00	Coal Creek	2.52
UT16030007-002_00	Beaver River-2	2.50
UT15010008-017_00	Deep Creek	2.50
UT14080202-001_00	McElmo Creek	2.50
UT14070001-003_00	Colorado River-2	2.50
UT14060008-006_00	Barrier Creek	2.50
UT14060008-002_00	Green River-5	2.50
UT14060001-001_00	Green River-2 Tributaries	2.50
UT14060001-001_00	Green River-2 Tributaries	2.50
UT14060001-001_00	Green River-2 Tributaries	2.50
UT14060001-001_00	Green River-2 Tributaries	2.50
UT14030005-018_00	Courthouse Wash	2.50
UT14030005-007_00	Salt Wash	2.50
UT16020203-028_00	Provo Tributaries-Heber	2.50
UT16020203-026_00	Heber Valley	2.50

Monitoring Limitations



Equipment Locations

- 8 Hour holding time for samples

Personnel

- Rely heavily on Cooperators and volunteers
- Not possible to monitor all priority locations

Discussion

Scoring Categories:

- 1) What other criteria are important when considering prioritization?
 - example: proximity to urban areas
- 2) Scores and weights appropriate?

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Questions?



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