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Great Salt Lake Enhancement Projects Report Summary

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From: Erica Gaddis, Ph.D., Senior Water Resources Director

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Re: Great Salt Lake Enhancement Projects

PROJECT PURPOSE AND NEED

On behalf of the State of Utah Division of Forestry, Fire and State Lands and Division of Water Resources and the Great Salt Lake Advisory Council, SWCA Environmental Consultants (SWCA) has developed a database of implementation projects that could benefit the Great Salt Lake (GSL). The Great Salt Lake Enhancement Projects (project) aims to gather information from a diverse range of stakeholders regarding proposed projects that could increase water delivery, improve or conserve GSL habitat, or provide other tangible benefits to the lake. The resulting list of projects will be used to identify funding mechanisms and opportunities for future collaboration. This includes projects surrounding the GSL and, where appropriate, those that extend into the Weber River, Bear River, and Jordan River watersheds.

The GSL is the largest saline lake in the Western Hemisphere, connecting people, land, water, and food. The lake is essential to Utah's economy, contributing approximately \$1.9 billion annually (adjusted for inflation from 2012) and 7,700 jobs (State of Utah 2023). The lake is also essential to Utah's climate by providing 5% to 10% of the snowpack and supporting critical habitat for migratory birds on the North American flyways. The lake has undergone significant drying over the last few decades and reached a record low in 2022, dropping to 4,188.5 feet above mean sea level with wide-ranging ecological, economic, and public health effects (Utah Division of Water Resources 2023).

While several efforts are underway to develop long-term solutions to protect the GSL, numerous immediate projects could be implemented to maintain and improve lake levels and habitat in the short term. This project provides a master list of GSL projects that have been collected from over 60 GSL stakeholders.

METHODS

To collect valuable insights into upcoming projects or suggestions for projects that could benefit the GSL, SWCA interviewed 24 key stakeholders, received 22 project responses from a survey, and held a stakeholder workshop with over 30 attendees. The stakeholders surrounding the GSL represent academics, commissions/councils, consultants, duck clubs, state and federal agencies, irrigation and water districts, local tribes, nonprofits, and private industry (Table 1).

SWCA and the Projects Advisory Team (PAT) created a list of questions and project categories prior to the stakeholder interviews, survey development, and workshop to help develop the Great Salt Lake Enhancement Project Database (projects database).

Table 1. Summary of Projects Collected from Various Stakeholders

Stakeholder Category	Data Source			Total
	Interviews	Survey	Stakeholder Workshop	
Academics	1	4	4	9
Commissions/Councils	4	0	0	4
Consultants	9	0	1	10
Duck Clubs	0	0	5	5
Federal Agencies	32	1	5	38
Industry	3	0	0	3
Irrigation Districts	14	0	0	14
Local Government	5	0	0	5
Nonprofits	7	2	18	27
State Agencies	1	15	16	32
Tribes	1	0	0	1
Water Districts	13	0	0	13
Total	90	22	49	161

Note: Values represent number of projects collected.

Interviews

In total, SWCA and PAT identified 28 key stakeholders to interview for the project; 24 of those were successfully interviewed for 1 hour. A total of 90 projects were collected through interviews (see Table 1).

Survey

SWCA developed a survey using Survey123 software to easily distribute and capture additional projects from those not interviewed. The survey was shared and distributed to over 100 stakeholders, including those who had previously been interviewed. In total, 22 projects were submitted (see Table 1).

Workshop

A stakeholder workshop was held at the Eccles Wildlife Education Center on October 25, 2023. Over 40 stakeholders RSVPed to the meeting, and approximately 30 attended. The workshop was an opportunity

to expand the project reach to those outside of the individuals who were interviewed. The meeting consisted of an introduction to the project by SWCA staff and PAT, followed by breakout sessions facilitated by SWCA staff. A total of six breakout session groups gathered additional projects for the database and provided an opportunity for stakeholders to learn and collaborate on GSL projects. During the workshop, a total of 63 projects were discussed, including 49 projects that were not previously captured through the interviews and the survey (see Table 1).

RESULTS

The projects database comprises 161 projects gathered through interviews, the survey, and the stakeholder workshop (see Table 1).

Project Categories and Status

Each project in the projects database was tagged with one or more of the following categories:

1. Water Delivery
2. Water Conservation
3. Infrastructure
4. Habitat Conservation/Restoration
5. Research, Assessment, and Monitoring to Inform Management of GSL
6. In-Lake Engineered Solutions
7. Policy and Community Engagement

Each project also includes a status of “conceptual,” “in progress,” “planned,” or “shovel ready” (Figure 1). Overall, most of the projects in the database fall under the Research, Assessment, and Monitoring to Inform Management of GSL and Habitat Conservation/Restoration categories. The In-Lake Engineered Solutions category has the fewest projects. Of the projects in the Research, Assessment, and Monitoring to Inform Management of GSL category, approximately 50% were conceptual and approximately 30% were in progress. Most planned projects fall into the Water Delivery, Water Conservation, or Infrastructure categories.

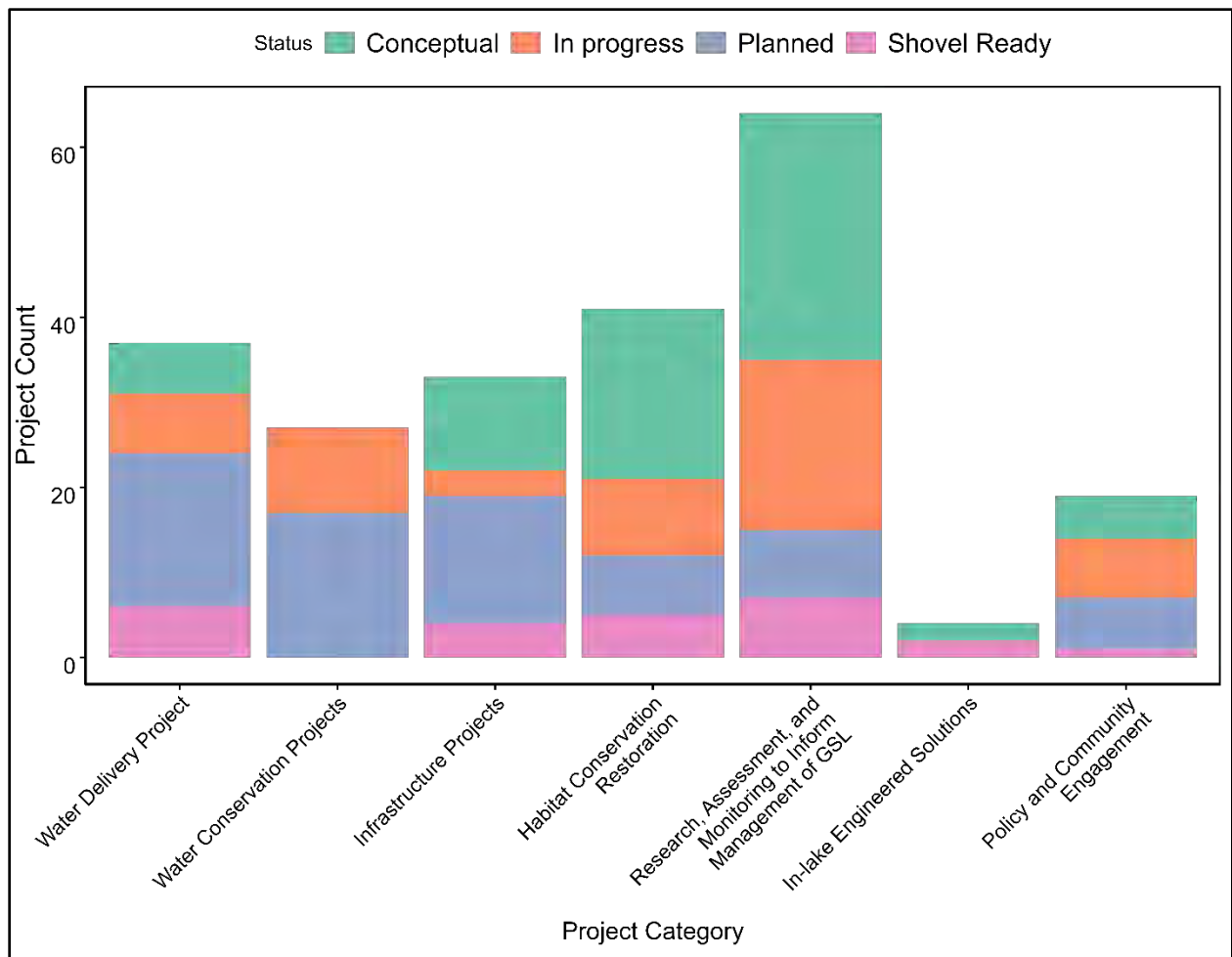


Figure 1. Project categories with associated project status.

Note: Projects could fall into one or more project category.

Project Locations

Each project was categorized by geographic location (Figure 2). Overall, 62% of the projects are not GSL adjacent. Most projects, outside of the GSL, are within the Bear River (15%) or Jordan River–Utah Lake (16%) watersheds.

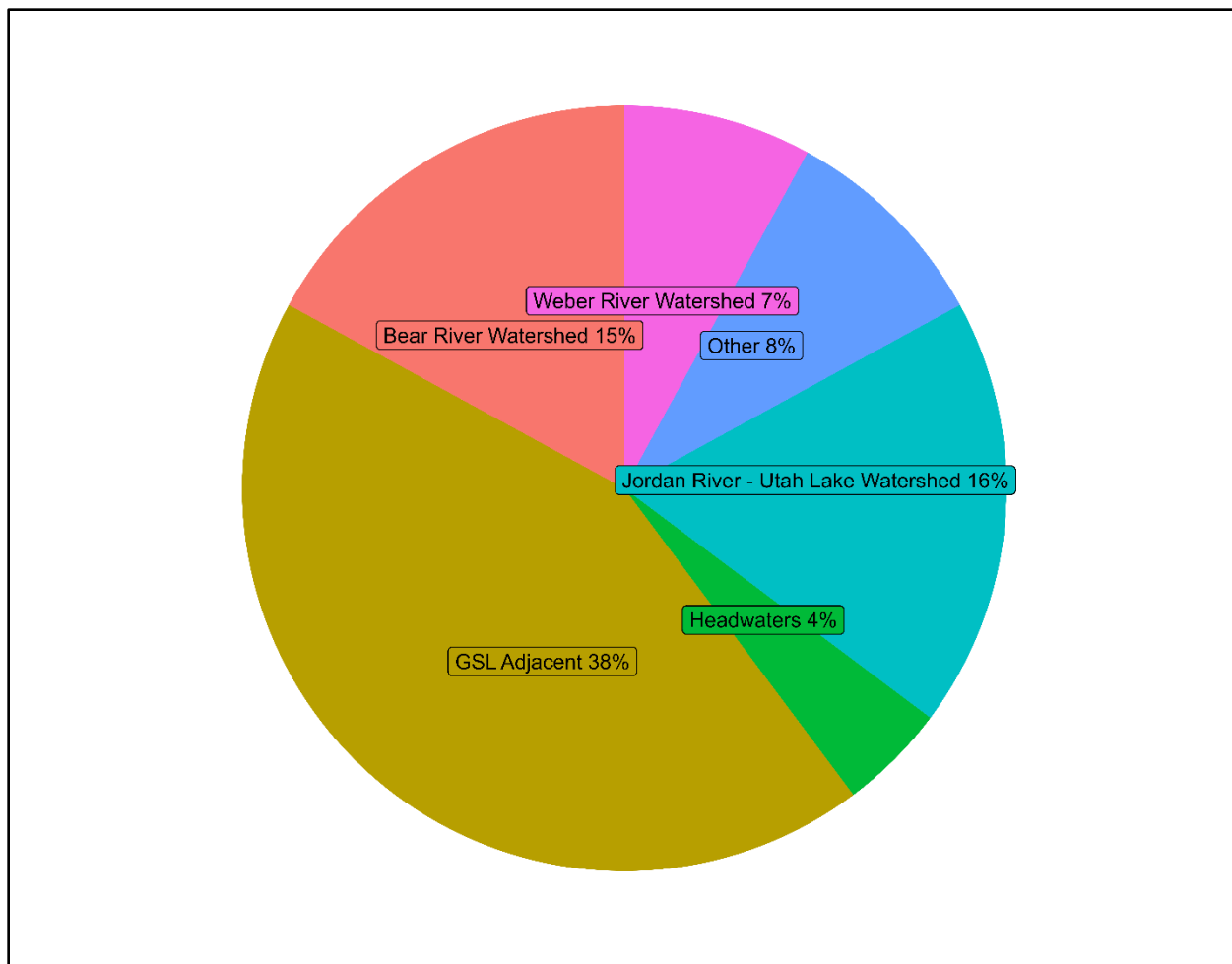


Figure 2. Project geography.

Note: Projects could fall into one or more location.

Great Salt Lake Benefits

Projects were also categorized by the benefits provided to the GSL (Figure 3). Nearly half of the projects benefit either GSL levels (26%) and/or habitat (23%), and approximately one-third (32%) benefit the lake through providing data and information about the GSL. Air quality (2%) and salinity (4%) were benefits with the lowest percentage of projects.

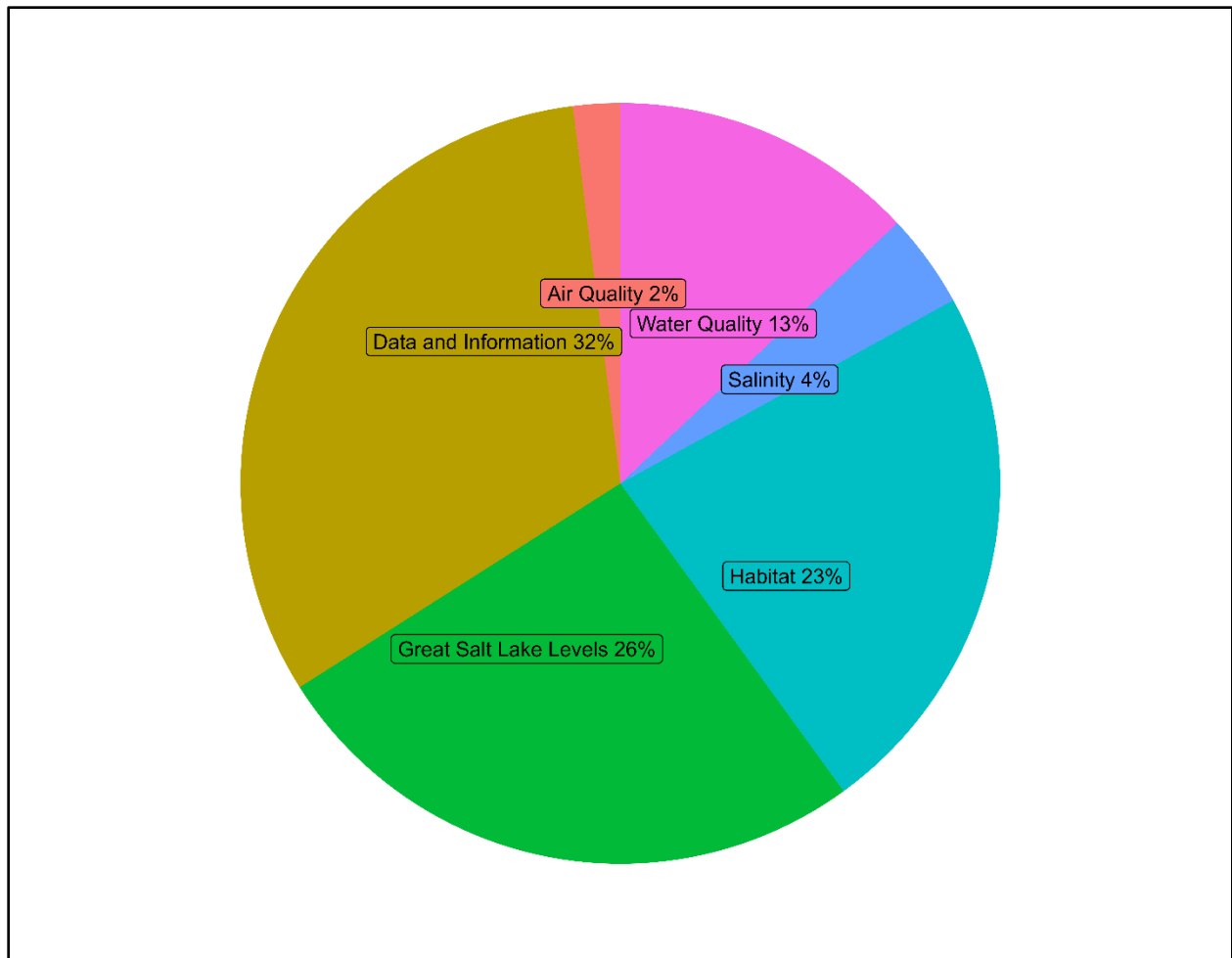


Figure 3. Great Salt Lake benefits.

Note: Projects can fall into one or more benefit category.

Project Costs

Only 74 of the projects provided estimates on cost; the cost to complete those projects is estimated to be over \$600 million (Table 2). Of the total cost, approximately 20% of funding has been secured, leaving over \$500 million unfunded.

Table 2. Project Costs

Project Cost Statistics	Estimated Cost	Funding Secured	Remaining Funding Needed
Minimum	\$15,000	\$0	\$0
Maximum	\$230,000,000	\$47,600,000	\$230,000,000
Average	\$3,953,636	\$808,194	\$3,173,800
Total	\$636,535,431	\$130,119,299	\$510,981,732

Water Strategies for the Great Salt Lake and Great Salt Lake Resolution Recommendations

Two working groups have provided suggestions on how to ensure the preservation of the GSL. The Great Salt Lake Advisory Council developed 12 water strategies for the GSL (Great Salt Lake Advisory Council 2023). The Great Salt Lake Resolution (HCR-10) Steering Group developed five recommendations to ensure adequate water flows to the GSL and its wetlands (HCR-10 Steering Group 2020). The projects database includes tags for each of the strategies and recommendations. Most projects fall under Watershed Best Practices or Agricultural Water Conservation for the Water Strategies for the GSL and under Improve Information and Decision-Making for the HCR-10 Recommendations (Table 3).

Table 3. Water Strategies for the Great Salt Lake and Great Salt Lake Resolution Recommendations

Strategies and Recommendations	Number of Projects
Water Strategies for the Great Salt Lake	
Recognizing a Right to Conserved Water	11
Split Season Leasing	0
Shepherding Water	8
Secondary Metering	1
Municipal and Industrial Water Conservation	18
Watershed Best Practices	25
Water Acquisition*	10
Agricultural Water Conservation	22
Agency Coordination	11
Groundwater Management	2
Quantifying Conserved Water	0
HCR-10 Recommendations	
Educate and Engage	17
Improve Information and Decision-Making	74
Optimize Agricultural Water Use	23
Optimize Municipal and Industrial Water Use and Land use/Water Planning	24
Refine Legal and Policy Options	9

Note: Projects could fall into one or more category and some projects did not fit into any categories.

*Water Acquisition is classified as two strategies (7 & 10) in the Water Strategies for the Great Salt Lake.

SUMMARY

Key takeaways from the projects database consist of the following:

- Most projects fall under the Research, Assessment, and Monitoring to Inform Management of GSL category with half of those being conceptual.
- 62% of projects are not GSL adjacent.

- Projects will primarily benefit the GSL by providing data and information (32%), improving lake levels (26%), or by protecting and preserving habitat (23%).
- Approximately 80% of funding for the projects has not been secured.

The projects database stores important information for what is needed to improve various aspects of the GSL and the stakeholders who need to be involved in their planning and implementation. The projects database serves as tool for the State of Utah to use as GSL funding becomes available.

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