



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Utah Water Science Center
2329 West Orton Circle
Salt Lake City, UT 84119-2047

November 4, 2020

Mr. James Harris
Environmental Scientist
DEQ - Department of Environmental Quality
195 N 1950 W
Salt Lake City, UT 84116

Dear Mr. Harris:

Enclosed is our standard joint-funding agreement for the project(see attached) Utah Water Science Center Water Resources Investigations, during the period October 1, 2020 through September 30, 2021 in the amount of \$38,721 from your agency. U.S. Geological Survey contributions for this agreement are \$17,500 for a combined total of \$56,221. Please sign and email fully-executed original to Randy Miles rjmiles@usgs.gov or mail to the address above.

Federal law requires that we have a signed agreement before we start or continue work. For technical questions, please contact Ryan Rowland by phone number (801) 908-5036 or email rowland@usgs.gov.

This is a fixed cost agreement to be billed in April via Down Payment Request (automated Form DI-1040). Please allow 30-days from the end of the billing period for issuance of the bill. If you experience any problems with your invoice(s), please contact Randall Miles at phone number (801) 908-5058 or email at rjmiles@usgs.gov.

The results of all work performed under this agreement will be available for publication by the U.S. Geological Survey. We look forward to continuing this and future cooperative efforts in these mutually beneficial water resources studies.

Sincerely,

CORY
ANGEROTH

Digitally signed by CORY
ANGEROTH
Date: 2020.11.04
14:27:45 -0700

Cory E. Angerth
UT WSC Director

Enclosure
21ZKJFA007 (2)

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR
Water Resource Investigations

Customer #: 6000001549
Agreement #: 21ZKJFA007
Project #: ZK00DNF
TIN #: 87-6000545

Fixed Cost Agreement YES[X] NO[]

THIS AGREEMENT is entered into as of the October 1, 2020, by the U.S. GEOLOGICAL SURVEY, Utah Water Science Center, UNITED STATES DEPARTMENT OF THE INTERIOR, party of the first part, and the DEQ - Department of Environmental Quality party of the second part.

1. The parties hereto agree that subject to the availability of appropriations and in accordance with their respective authorities there shall be maintained in cooperation Water Resource Investigations (per attachment), herein called the program. The USGS legal authority is 43 USC 36C; 43 USC 50, and 43 USC 50b.

2. The following amounts shall be contributed to cover all of the cost of the necessary field and analytical work directly related to this program. 2(b) include In-Kind-Services in the amount of \$0.00

- (a) \$17,500 by the party of the first part during the period October 1, 2020 to September 30, 2021
- (b) \$38,721 by the party of the second part during the period October 1, 2020 to September 30, 2021
- (c) Contributions are provided by the party of the first part through other USGS regional or national programs, in the amount of: \$0

Description of the USGS regional/national program:

- (d) Additional or reduced amounts by each party during the above period or succeeding periods as may be determined by mutual agreement and set forth in an exchange of letters between the parties.
- (e) The performance period may be changed by mutual agreement and set forth in an exchange of letters between the parties.

3. The costs of this program may be paid by either party in conformity with the laws and regulations respectively governing each party.

4. The field and analytical work pertaining to this program shall be under the direction of or subject to periodic review by an authorized representative of the party of the first part.

5. The areas to be included in the program shall be determined by mutual agreement between the parties hereto or their authorized representatives. The methods employed in the field and office shall be those adopted by the party of the first part to insure the required standards of accuracy subject to modification by mutual agreement.

6. During the course of this program, all field and analytical work of either party pertaining to this program shall be open to the inspection of the other party, and if the work is not being carried on in a mutually satisfactory manner, either party may terminate this agreement upon 60 days written notice to the other party.

7. The original records resulting from this program will be deposited in the office of origin of those records. Upon request, copies of the original records will be provided to the office of the other party.

8. The maps, records or reports resulting from this program shall be made available to the public as promptly as possible. The maps, records or reports normally will be published by the party of the first part. However, the party of the second part reserves the right to publish the results of this program, and if already published by the party of the first part shall, upon request, be furnished by the party of the first part, at cost, impressions suitable for purposes of reproduction similar to that for which the original copy was prepared. The maps, records or reports published by either party shall contain a statement of the cooperative relations between the parties. The Parties acknowledge that scientific information and data developed as a result of the Scope of Work (SOW) are subject to applicable USGS review, approval, and release requirements, which are available on the USGS Fundamental Science Practices website (<https://www.usgs.gov/about/organization/science-support/science-quality-and-integrity/fundamental-science-practices>).

U.S. Department of the Interior
U.S. Geological Survey
Joint Funding Agreement
FOR

Customer #: 600001549
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Project #: ZK00DNF
TIN #: 87-6000545

Water Resource Investigations

9. Billing for this agreement will be rendered In April 2021. Invoices not paid within 60 days from the billing date will bear Interest, Penalties, and Administrative cost at the annual rate pursuant the Debt Collection Act of 1982, (codified at 31 U.S.C. § 3717) established by the U.S. Treasury.

USGS Technical Point of Contact

Name: Ryan Rowland
Hydrologist
Address: 2329 W Orton Circle
West Valley City, UT 84119
Telephone: (801) 908-5036
Fax: (801) 908-5001
Email: rrowland@usgs.gov

Customer Technical Point of Contact

Name: James Harris
Environmental Scientist
Address: 195 N 1950 W
Salt Lake City, UT 84116
Telephone: (801) 536-4360
Fax:
Email: JamesHarris@utah.gov

USGS Billing Point of Contact

Name: Randall Miles
Administrative Officer
Address: 2329 West Orton Circle
West Valley City, UT 84119
Telephone: (801) 908-5058
Fax: (801) 908-5001
Email: rjmiles@usgs.gov

Customer Billing Point of Contact

Name: James Harris
Environmental Scientist
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Telephone: (801) 536-4360
Fax:
Email: JamesHarris@utah.gov

U.S. Geological Survey
United States
Department of Interior

DEQ - Department of Environmental Quality

Signature

CORY
By ANGEROTH Digitally signed by
CORY ANGEROTH
Date: 2020.11.04
14:28:13 -07'00' Date: 11/04/2020
Name: Cory E. Angeroth
Title: UT WSC Director

Signatures

By Kim Shelley Date: 12/17/2020
Kim Shelley (Dec 17, 2020 09:17 MST)
Name: Kim Shelley
Title: Deputy Director, DEQ

By _____ Date: _____
Name:
Title:

By _____ Date: _____
Name:
Title:

FISCAL YEAR 2021 - WORK PLAN FOR U.S. GEOLOGICAL SURVEY (USGS) GAGES AND WATER QUALITY SAMPLING AT GREAT SALT LAKE

SUMMARY BUDGET TABLE:

Gage Name	Costs
GSL Farmington Bay Outflow at Causeway Breach - USGS 410401112134801	\$19,065
Bi annual monitoring of the water column and brine shrimp at 8 sites	\$25,881
USGS laboratory analysis	\$11,275
Total	\$56,221
USGS matching funds	\$17,500
Utah Division of Water Quality Total Funds	\$38,721

TASKS:

1. OPERATE AND MAINTAIN LAKE GAGES

Gage Costs include:

- Operation and maintenance of the lake gage (real time data: <http://waterdata.usgs.gov/ut/nwis/current/?type=flow>)
- Measurement of gage height, temperature, velocity and discharge data
- Approximately 9 field visits per year.
- Quality Assurance and Quality Control of Data
- Input and Data Storage in the NWIS system (<http://waterdata.usgs.gov/ut/nwis/sw/>)
- Available data: Real time, Daily data, Daily statistics, Monthly statistics, Annual statistics:

Gage information:

- USGS 410401112134801 GSL Farmington Bay Outflow at Causeway Breach Location: Latitude 41°04 01, Longitude 112°13 48 referenced to North American Datum of 1927, Davis County, UT, Hydrologic Unit 16020310, near west end of Antelope Island State Park causeway, about 9 miles west-southwest of Syracuse

2. SAMPLE COLLECTION AND LAKE PROFILING

Water and brine shrimp samples will be collected by the USGS in June and October 2021 at 8 sites in the open-waters of Gilbert Bay, Great Salt Lake (Figure 1). The Davis County Health Department will collect water samples at 2 sites in Farmington Bay and the Utah Division of Water Quality will sample 1 site in Bear River Bay. Two water samples will be collected at each site; at 0.2 m below the water surface and 0.5 m above the lake bottom. Water-quality samples will be collected according to Standard Operating Procedures (SOPs). A composite brine-shrimp sample will also be collected at each sample site in Gilbert Bay using a plankton tow net. Brine-shrimp samples will be collected according to the SOPs. A limnological profile for selected field parameters will be collected at each lake site and entered into the USGS NWIS database. Field parameters to be collected will include pH, specific conductance, dissolved oxygen, dissolved oxygen percent saturation, oxidation-reduction potential, water depth, secchi depth and water temperature. An itemized budget of sampling costs is included in Table 1.

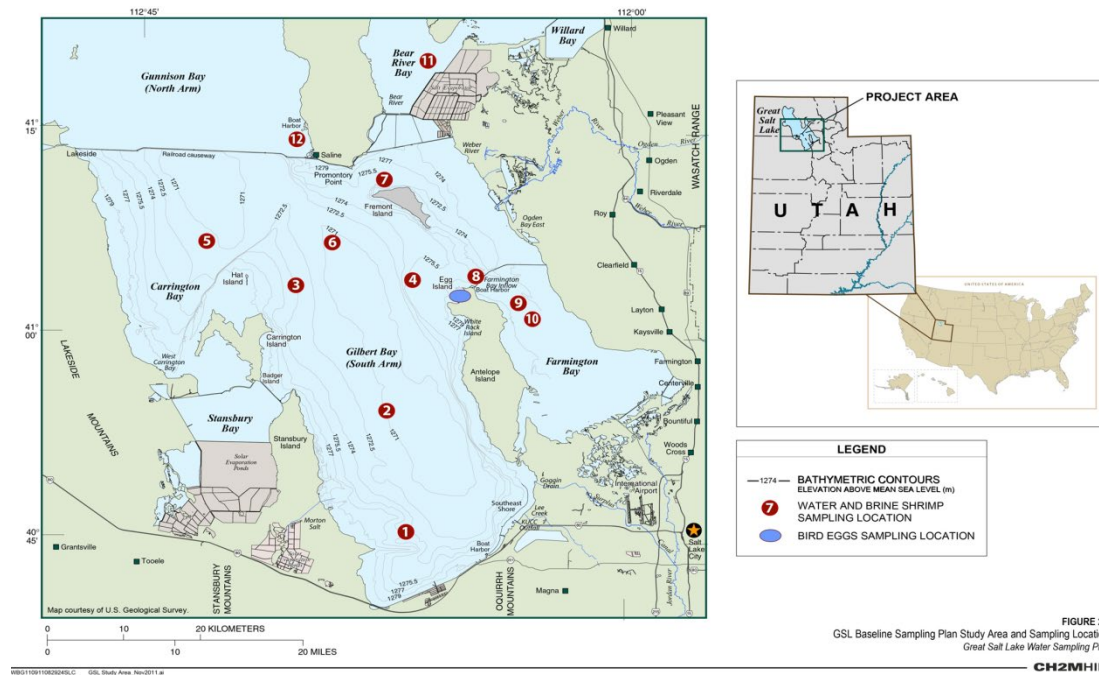


Figure 1 UDWQ Great Salt Lake Monitoring Locations

Table 1 Water Quality Sampling Budget

Category	Cost
Personnel (160 hours, 2 people)	22,345
Boat use (6 days)	1,640
Vehicle	256
Equipment	513
Fuel	666
Field supplies	461
Subtotal	25,881

SAMPLE PROCESSING AND LABORATORY ANALYSES

Because of sample matrix issues, the water samples are “non-routine,” requiring a variety of USGS and non-USGS laboratories to meet the data quality objectives for the project. The determination of whole water nutrients (TN, TP, and ammonia) will be done at the USGS National Water Quality Laboratory in Lakewood, Colorado. Chlorophyll-a concentration in water samples will be determined at the USGS laboratory in Salt Lake City. All trace-element water and brine shrimp samples will be submitted to a contract laboratory selected by UDEQ/DWQ for analyses. The contract laboratory will provide the USGS with mercury sample containers, sample preservation

requirement, and sampling supplies for mercury sampling (pre-cleaned Teflon tubing and Teflon weights) at least 5 days before each sampling event. All samples will be submitted to the USGS and contract laboratories with appropriate chain-of-custody forms and procedures. All the nutrient and chlorophyll-a data will be archived in the USGS NWIS database. During each sampling trip, a process blank, field replicate, and matrix spike sample will be collected and submitted for analyses. An itemized budget of sampling costs is included in Table 2.

Table 2 USGS Laboratory Budget

Category	Cost
Nutrient water samples (TN, TP, ammonia)	8,405
Chlorophyll-a sample processing and analysis	2,870
Subtotal	11,275