

EXHIBIT A
Scope of Work

Delta Aquatic Resource Inventory for Landscape Scale Evaluation
of Wetlands in the Delta and Suisun Marsh

1. AUTHORITY

This contract agreement (Agreement) is entered into between the Sacramento-San Joaquin Delta Conservancy, hereinafter referred to as the “Delta Conservancy,” and the Aquatic Science Center, hereinafter referred to as “the Contractor”.

The Agreement is being funded under the U.S. Environmental Protection Agency (U.S. EPA) 2017 Wetland Development Program Grant (award number: XXXXX). The U.S. EPA has awarded the Conservancy \$300,000 in FY 17-18, of which \$264,000 is to be allocated to the Contractor. This project aligns with the Delta Conservancy’s 2017-2022 Strategic Plan goals to “establish the Conservancy as a leader in gathering and communicating scientific and practical information about the Delta ecosystem and economy,” and to “lead efforts in protecting, enhancing, and restoring the Delta ecosystem in coordination with other governmental and non-governmental entities and citizens in the Delta”.

2. BACKGROUND/PURPOSE

Both the Delta Plan and the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) call for careful tracking of restoration efforts and reporting on performance measures, (Chap 188, Section 79716). Sharing data related to restoration projects across agencies in a coordinated fashion nevertheless remains a challenge and requires a common basemap to assist with better tracking of these efforts and assess projects relative to each other. This Agreement is to develop a common basemap of aquatic resources for the Delta and establish a standard regional typology for the Delta Aquatic Resource Inventory (DARI).

Under this Agreement, the Contractor will train local Geographic Information System (GIS) staff to develop a GIS dataset, build mapping expertise, and create a dataset that will be integrated into EcoAtlas and used for regional watershed restoration planning, tracking, and reporting. A subset of the California Aquatic Resource Inventory (CARI), DARI is the Delta version of the California-wide dataset. This regionalization will be facilitated by the CARI Standard Operating Procedures (SOP), approved by California Wetland Monitoring Workgroup, which accommodates regional SOPs to address region-specific variations in classification and nomenclature (<http://www.sfei.org/cari>).

The DARI SOP were developed through a collaborative effort of the San Francisco Estuary Institute-Aquatic Science Center and the Department of Water Resources. This project will complete DARI mapping for the whole Sacramento-San Joaquin Delta and make it available through the online EcoAtlas toolset that supports the California Wetland and Riparian Area Monitoring Plan (WRAMP).

The expected outcomes of the project are:

- (1) Completed integration of DARI GIS into CARI and EcoAtlas;
- (2) More users who are trained to perform mapping according to Standard Operating Procedures; and
- (3) Increased access to key information, displayed in a dynamic, GIS-based landscape context, to facilitate a broader, shared understanding of resource condition.

The contractor is expected to work closely with Delta Conservancy staff and partners in a collaborative team effort.

3. TERMS OF AGREEMENT

The term of this Agreement is October XX, 2017, or the date of the Agreement’s execution, whichever is later, through December 31, 2020.

The Conservancy has the option to extend the term of this Agreement. Any amendment to this Agreement requires written approval by both parties.

4. TASKS

Task 1. Data Compilation

The purpose of this task is to develop a Quality Assurance Project Plan (QAPP) for collecting and acquiring digital imagery data, and to acquire and, if necessary, geo-rectify digital imagery of the Delta and compile other necessary input data to assist with mapping the areas of the Delta not yet inventoried.

Subtasks:

1. Develop QAPP for collecting and acquiring digital imagery data
2. Acquire digital imagery from a public repository, such as the National Agriculture Imagery Program published by the USDA Farm Service Agency
3. Geo-rectify acquired digital imagery, if necessary
4. Compile digital imagery of the Delta with other necessary input data to assist with mapping
5. Upload digital imagery to the servers at SFEI-ASC's Data Center. SFEI-ASC serves as a regional repository for imagery and other remote sensing data for the Delta-Suisun Marsh region

Cost: \$14,318

Deliverables: Approved QAPP, and digital imagery of the Delta compiles and ready for use in developing the DARI GIS dataset

Task 2. Coordination and DARI Mapping SOP Training

The purpose of this task is to develop a Bay-Delta Habitat Mapping Workgroup. This workgroup will coordinate with GIS staff and wetland ecologists, who have expertise with wetlands in the Delta and Suisun Marsh, to provide input in the development of the DARI basemap. Also included in this task is an update the DARI Mapping SOP (as warranted); training of GIS staff within agencies in the Delta; and development of protocols for the submission of new or revised data to the DARI basemap (e.g. by restoration programs, natural resource managers, or researchers) using the existing CARI Editor Tool, and for incorporating these data to enable the long-term maintenance of the basemap.

Subtasks:

1. Form a Bay-Delta Habitat Mapping Workgroup
2. Update DARI Mapping Standard Operating Procedures (SOP), as needed
3. Train GIS staff to develop capacity to apply DARI Mapping SOP
4. Develop protocols for submitting new or revised data using the existing CARI Editor Tool and incorporating these data into the basemap

Cost: \$44,416

Deliverables: Updated DARI Mapping SOP, and protocols for submitting new and revised data and for maintaining the DARI basemap

Task 3. Apply DARI Mapping SOP

The purpose of this task is for SFEI-ASC the Contractor to apply the DARI Mapping SOP and wetland classification system to the areas of the Delta not yet inventoried. Mapping will focus on the unmapped perennial and seasonal wetlands on the diked islands, as these have not been mapped yet, while tidal marsh wetlands have been reasonably mapped by others, including VegCAMP. Therefore, the Contractor will incorporate the existing tidal marsh map as is into the DARI basemap and use the CARI online editor tool

Subtasks:

1. Compile existing tidal marsh maps and incorporate into the DARI basemap
2. Apply the DARI Mapping SOP and wetland classification to areas not yet inventoried

Cost: \$145,600

Deliverables: Draft DARI GIS dataset

Task 4. Quality Assurance/Quality Control Review.

The purpose of this task is to conduct QA/QC review on the draft DARI dataset (produced in Task 3) and receive input from regional stakeholders and resource managers participating in the Bay-Delta Habitat Mapping Workgroup. The QA/QC review process includes providing a draft DARI GIS dataset to the Bay-Delta Habitat Mapping Workgroup for review. This is an additional step to the procedures outlined in the DARI SOP to ensure the data meet standards of the National Wetlands Inventory of the US Fish and Wildlife Service. This task provides an opportunity for the Workgroup to suggest corrections and provide additional comments before integrating the dataset into EcoAtlas

In addition, interested resource managers and scientists can use the CARI editor (an online mapping tool of EcoAtlas) to suggest corrections that will be reviewed and incorporated as appropriate into the final DARI GIS as budget and time allow.

Subtasks:

1. Perform QA/QC review as outlined in the DARI SOP
2. Provide a draft DARI GIS dataset for review to the Bay-Delta Habitat Mapping Workgroup
3. Incorporate suggested corrections as appropriate and as budget and time allow

Cost: \$20,295

Deliverables: Updated DARI GIS dataset and basemap

Task 5. Integrate DARI into EcoAtlas

The purpose of this task is to integrate the final DARI GIS data into CARI and display this information in EcoAtlas, including the interactive map and summaries provided in the Landscape Profile Tool. This task will develop the capacity to assess projects relative to each other on a common basemap.

Subtasks:

1. Integrate final DARI GIS dataset into CARI and the Landscape Profile Tool available in EcoAtlas

Cost: \$16,614

Deliverables: Completed integration of DARI GIS into CARI and EcoAtlas

Task 6. Project Management

The purpose of this task is to ensure the successful implementation of the project; coordinate with federal, state, and other stakeholders; and perform budget tracking, outreach and presentations, and progress reporting.

Subtasks:

1. Deliver project deliverables on time and within budget
2. Prepare outreach materials including fact sheets and presentation slides and conduct outreach through meetings and trainings
3. Prepare and submit invoices and progress reports

Cost: \$22,757

Deliverables: Outreach materials, invoices, and progress reports

Table 1. Deliverables and Timeline.

Table shows the deliverables and timeline for each task. This is a three-year project with an expected start date in December 2017 and end date in December 2020.

Tasks	Milestones/Products	Start	End
Task 1. Data Compilation	Compiled Digital Imagery	Dec-17	Sep-18
	Prepare QAPP	Dec-17	Sep-18
	Updated Imagery ready for developing DARI GIS	Apr-18	Dec-18
Task 2. Coordination and DARI Mapping SOP Training	Conduct training meetings	Sep-18	Apr-20
	Updated DARI SOP	Apr-20	Jun-20
	Protocols for updating the DARI basemap	Apr-20	Jun-20
Task 3. Apply DARI mapping SOP	Draft DARI GIS dataset	Sep-18	May-20
Task 4. Quality Assurance/Quality Control Review	Stakeholder QA/QC meeting to review the draft DARI GIS dataset	May/June-20	
	Review updates received through the CARI Editor	Jun-20	Aug-20
	Updated DARI GIS dataset and basemap	Aug-20	Oct-20
Task 5. Integrate DARI into EcoAtlas	DARI available through EcoAtlas	Oct-20	Dec-20
Task 6. Project Management:	Successful implementation of project, coordination, tracking budget, managing contract, invoicing and progress updates	Dec-17	Dec-20

Table 2. Reporting Period Schedule.

Table shows the estimated start and end date for each reporting period based on Agreement execution date and every 6 months thereafter until completion.

Reporting Period	Start Date	End Date
1	Agreement Execution Date	December 31, 2017
2	January 1, 2018	June 30, 2018
3	July 1, 2018	December 31, 2018
4	January 1, 2019	June 30, 2019
5	July 1, 2019	December 31, 2019
6	January 1, 2020	June 30, 2020
7	July, 2020	December 31, 2020
8	October 1, 2020	December 30, 2020

5. AUTHORIZED KEY CONTACTS

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