SOLANO COUNTY WATER AGENCY

AGREEMENT FOR PROFESSIONAL SERVICES

THIS AGREEMENT, **effective July 1, 2024** is between SOLANO COUNTY WATER AGENCY, a public agency existing under and by virtue of Chapter 573 of the 1989 statutes of the State of California, hereinafter referred to as "Agency" and THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, hereinafter referred to as "Contractor."

The Agency requires services for the **Cache Slough Water Quality, Productivity and Fisheries Study**; and the Contractor is willing to perform these services pursuant to the terms and conditions set out in this Agreement.

IT IS MUTUALLY AGREED, as follows:

1. SCOPE OF SERVICES

The Agency hereby engages the Contractor, and the Contractor agrees to perform the services for evaluating the **Cache Slough Water Quality, Productivity and Fisheries Study**, as described in Exhibit A, in accordance with the terms of this Agreement and any applicable laws, codes, ordinances, rules or regulations. In case of conflict between any part of this Agreement, this Agreement shall control over any Exhibit.

2. COMPENSATION

Compensation for services shall be as follows: Percentage of effort for personnel plus any allowed reimbursable expenses based on costs incurred as indicated on any allowed reimbursable expense in Exhibit B **not to Exceed $1,774,000** for all work contemplated by this Agreement.

3. METHOD OF PAYMENT

Upon submission of an invoice by the Contractor and upon approval of the Agency's representative, the Agency shall pay the Contractor quarterly in arrears for fees and allowed expenses incurred the prior month, up to the maximum amount provided for in paragraph 2 of this agreement.

4. TIME OF PERFORMANCE

This Agreement shall become effective as of **July 1, 2024** and continue until **June 30, 2027** as directed by the Agency.

5. WARRANTY

Except as provided herein, the University makes no warranty respecting the accuracy of data or materials furnished hereunder nor the results to be obtained from using such data or materials for intended purpose or any other purpose. University liability shall be limited to the amount of this order. The Agency has relied upon the ability and training of the

Contractor as a material inducement to enter into this Agreement. The Contractor hereby represents that all of its work will be performed in accordance with the requirements of applicable federal, state and local laws, it being understood that acceptance of the Contractor's work by Agency shall not operate as a waiver or release.

6. MODIFICATION AND TERMINATION

This Agreement may be modified or amended only by written instrument signed by the parties hereto, and the Contractor's compensation and time of performance of this Agreement shall be adjusted if they are materially affected by such modification or amendment.

Any change in the scope of the services to be done, method of performance, nature of materials or price thereof, or to any other matter materially affecting the performance or nature of the professional services will not be paid for or accepted unless such change, addition or deletion be approved in advance, in writing, by the Agency's General Manager.

This Agreement may be terminated by the parties at any time, without cause, upon written notification to the other.

Following termination by the Agency or the Contractor, the Contractor shall be reimbursed for all expenditures made in good faith, including any uncancellable obligations, in accordance with the terms of this Agreement that are unpaid at the time of termination.

7. PERMITS

Permits required by governmental authorities will be obtained at the Contractor's expense, and the Contractor will comply with local, state and federal regulations and statutes including Cal/OSHA requirements.

8. MUTUAL INDEMNIFICATION

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA shall defend, indemnify and hold harmless SOLANO COUNTY WATER AGENCY, its agencies, officers, employees, and agents from and against any and all liability, loss, expense, attorneys' fees or claims for injury or damages arising from the performance of this agreement, but only in proportion to and to the extent such liability, loss, expense, attorneys' fees or claims for injury or damages are caused by or result from the negligence or intentional acts or omissions of THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, its agencies, officers, employees and agent.

SOLANO COUNTY WATER AGENCY shall defend, indemnify and hold harmless THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, its agencies, officers, employees and agents, from and against any and all liability, loss, expense, attorneys' fees or claims for injury or damages arising from the performance of this agreement, but only in proportion to and to the extent such liability, loss, expense, attorneys' fees or claims for injury or damages are caused by or result from the negligence or intentional acts or

omissions of SOLANO COUNTY WATER AGENCY, its agencies, officers, employees and agent.

9. INSURANCE

By his/her signature hereunder, Contractor certifies that he/she is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and that Contractor will comply with such provisions before commencing the performance of the professional services under this agreement. Contractor and subcontractors will keep workers' compensation insurance for their employees in effect during all work covered by this agreement.

Contractor will file with the Agency, before beginning professional services, certificates of insurance satisfactory to the Agency evidencing general liability coverage of not less than $1,000,000 per occurrence ($2,000,000 general and products-completed operations aggregate (if used)) for bodily injury, personal injury and property damage; auto liability of at least $1,000,000 for bodily injury and property damage each accident limit; workers' compensation (statutory limits) and employer's liability ($1,000,000) (if applicable); requiring 30 days (10 days for non-payment of premium) notice of cancellation to the Agency. Any insurance, self-insurance or other coverage maintained by the Agency, its directors, officers, employees, or authorized volunteers shall not contribute to it. The general liability coverage shall give the Agency, its directors, officers, employees, and authorized volunteers insured status using ISO endorsement CG2010, CG2033, or equivalent. Coverage is to be placed with a carrier with an A.M. Best rating of no less than A- :VII, or equivalent, or as otherwise approved by the Agency. In the event that the Contractor employs other contractors (subcontractors) as part of the work covered by this agreement, it shall be the Contractor's responsibility to require and confirm that each subcontractor meets the minimum insurance requirements specified above.

If any of the required coverages expire during the term of this agreement, the Contractor shall deliver the renewal certificate(s) including the general liability additional insured endorsement to the Agency at least ten (10) days prior to the expiration date.

10. COMPLIANCE WITH LAW

The Contractor shall be subject to and comply with all federal, state and local laws and regulations applicable with respect to its performance under this Agreement, including but not limited to, licensing, employment and purchasing practices; and wages, hours and conditions of employment.

11. SUBCONTRACT AND ASSIGNMENT

This Agreement binds the officers, employees and agents of the Contractor. The Contractor shall not enter into subcontracts for any work contemplated under this Agreement and shall not assign this Agreement or monies due or to become due, without the prior written consent of the General Manager of the Agency or his designee, subject to any required state or federal approval.

12. NONRENEWAL

The Contractor understands and agrees that there is no representation, implication, or understanding that the services provided by the Contractor under this Agreement will be purchased by the Agency under a new agreement following expiration or termination of this Agreement, and waives all rights or claims to notice or hearing respecting any failure to continue purchase of all or any such services from the Contractor.

13. NOTICE

Any notice provided for herein are necessary to the performance of this Agreement and shall be given in writing by personal delivery or by prepaid first-class mail addressed as follows:

AGENCY	CONTRACTOR
Chris Lee, General Manager Solano County Water Agency 810 Vaca Valley Parkway, Suite 203 Vacaville, CA 95688	Ahmad Hakim-Elahi, Executive Director Office of Research, Sponsored Programs University of California 1850 Research Park Drive, Suite 300 Davis, CA 95618

The parties have executed this Agreement the day and year first above written. If the Contractor is a corporation, documentation must be provided that the person signing below for the Contractor has the authority to do so.

Solano County Water Agency a Public Agency	University of California
By: _____ Chris Lee General Manager	By: _____ Ahmad Hakim-Elahi Executive Director

FOR SCWA USE ONLY

Contract Period: 7/1/2024 to 6/30/2027
File Number: AG-U-1
Account Manager: Alex Rabidoux
G/L Account #: 6165N
Job Cost #: 6116
Contract Type: Professional Services

EXHIBIT A – SCOPE OF WORK

North Delta Arc Water Quality, Productivity and Fisheries Study

PI : John Durand, Ph.D.

Center for Watershed Sciences

University of California, Davis

530-601-3001

jrdurand@ucdavis.edu

SCOPE OF WORK

OVERVIEW

The North Delta and Suisun Marsh form the principal remaining habitat for native fishes in the upper San Francisco Estuary. Suisun Marsh, Cache Slough, Lindsey Slough, Liberty Island, the Yolo Bypass, and the Deep Water Ship Channel form an arc of fresh and brackish habitats that offer the highest potential for tidal restoration projects.

The North Delta Arc and Water Quality Study was started in 2012 to describe the Cache-Lindsey Slough Complex (CLC) and its response to restoration and environmental changes. During the course of the study, the region has been subject to drought, record water flows, experimental water releases, and tidal restoration projects. The study has tracked water quality, nutrients, food-web dynamics, and fish populations in the CLC. Maintaining this time series offers an opportunity to understand basic estuarine ecosystem function, the effect of climate change and sea-level rise, and the influence of tidal restoration actions. It also serves as a platform from which to mount targeted experimental approaches that answer nuanced questions about the function of restoration, flows, and other changes to the system.

UC Davis Center for Watershed Sciences (CWS) has produced a series of reports, dissertations and papers that are often surprising, and useful for understanding how social and environmental demands can overlap or compete. The study has been funded by an array of previous sponsors, including California Fish and Wildlife Ecosystem Restoration and Prop 1 grants, and the State and Federal Contractors Water Agency. While there is wide agreement that the region benefits from consistent monitoring because of its important status as a refuge for native fish, and the opportunities for restoration and alternative management, the San Francisco Estuary's Interagency Ecological Program has struggled to maintain its own current long-term ecological monitoring programs. The Solano County Water Agency has stepped in since 2017 because of its investment in regional assets that overlap with the region of study.

The research has shown that the region is a deeply linked ecological-agricultural system. The terminal ends of the tidal sloughs in the region contain rich and productive food webs, with high concentrations of phytoplankton and zooplankton (Montgomery 2017, Luke 2023). These in turn

create feeding opportunities for pelagic fish (which have become rare in the San Francisco Estuary) (Smits et al. *in prep*). Much of this lower food web activity is due to seeding from managed waterways like Ulatis Creek and irrigation drains (Williamshen 2024). At the same time, careful timing and management of water diversions may help boost productivity at key times in the life history of fishes (Jasper 2020).

We found that there are real differences in ecological function between Cache and Lindsey sloughs that are due to three factors: water withdrawals and inputs for agriculture and urban water supplies (Jasper 2020), exchange rates with the Sacramento River (Williamshen et al. 2023, Williamshen 2024), and the proliferation of submersed aquatic weeds, primarily in Lindsey Slough (Williamshen et al. 2023, Smits et al *in prep*). The upper reach of Cache Slough is extraordinarily productive of aquatic food and fishes, and this is probably related to the greater influence of Ulatis Creek over the Sacramento River in that region (Williamshen 2024 and Smits *in prep*).

We propose to continue to monitor fish community composition, aquatic weed invasions, and water quality in the Cache Lindsey complex, as well as in Shag Slough, the Stairsteps, and the North Delta Mitigation Bank on Liberty Island. The Lookout Slough tidal restoration project has been subject to delays but appears to be set to breach in 2024 and 2025. Since our study has the only long-term pre-project data for the region, we would like to conduct a comparative study of pre and post-project conditions in order to continue our studies on the effectiveness of tidal restoration.

We would also like to add a new component to our research, driven by our growing understanding of the impact of Ulatis Creek and other ephemeral water sources on tidal wetland habitats. The focus would be on the streams in southern Solano County that empty into Suisun Marsh after meandering through a variety of wild, agricultural and urbanized landscapes. These streams include Union, Green Valley, Ledgewood and Suisun creeks. We believe that these freshwater inputs help stimulate and disperse food web constituents and create a dynamic habitat for fishes. Union Creek is particularly interesting to us because it interfaces with a major tidal wetland restoration. The Hill Slough restoration requires active management of water flows, but there remains a great deal of uncertainty about the operations. We would like to focus on the Union Creek-Hill Slough system, including a biological survey of SCWA land holdings, which include riparian corridors, grassland habitat and vernal pools. These systems are mostly unstudied.

Suisun Marsh and the Cache-Lindsey Complex are closely related systems. Although aquatic researchers think of them as somewhat distant parts of the estuary, the upper reaches of the two are only about six miles apart and separated by less than 50 feet of elevation. Freshwater sources both emanate from the Vaca Hills. We propose thinking of these aquatic features in a broader landscape context, and as an integral part of Solano County's environmental heritage.

OBJECTIVES

1. Study the effects of environmental change in the north Delta, especially in regards to warming climate, extreme climate events, and aquatic weed invasions.

2. Examine the effects of water management and restoration in north Delta, in order to optimize environmental management strategies and reduce stakeholder conflicts.

3. Provide baseline data and evaluate new restoration projects in Lookout Slough and other sites (including Hill Slough, Little Egbert and Lower Yolo Ranch).

4. Understand the effect of perennial and seasonal creeks on wetlands, water quality and food webs in both the CLC and Suisun Marsh.

5. Recommend actions to support successful restoration outcomes for food webs and desirable fishes.

6. Recommend actions to manage invasive plants and animals.

7. Recommend flow regimes and water management practices that would optimize water-quality conditions for consumptive use and environmental restoration.

QUESTIONS & HYPOTHESES

Question: How do small freshwater inputs like agriculture drains and regional creeks affect the water quality, food webs and fish communities in downstream tidal wetlands?

Hypotheses: Periodic flow-pulses provide turbid, nutrient-filled water that stimulates primary production and facilitates wetlands restoration. Reservoirs and captured water on the creeks provide opportunities for flow pulses with high concentrations of plankton that may stimulate tidal wetlands food production.

TASK 1 – Continuation of long-term study of Cache-Lindsey, Stairsteps and Lookout Slough Project: fish, inverts and water quality

Objective: Examine the effects of water management and climate change in north Delta, in order to offer new environmental management strategies and reduce stakeholder conflicts.
Question: How have fish communities changed over time, especially across drought and flood, species invasions, and wetland restoration projects?
Hypothesis: Open water habitat in the CLC is transforming into an undesirable state for native species as a function of warming temperatures and invasives. Restoration may provide buffers at the margins under certain circumstances, or may accelerate invasion of undesirable aquatic plants in open water.
Scope:

a. Monthly fish trawls at historic sites;
b. Monthly water quality grab sampling;
c. Run water quality transects as needed to understand restoration channel networks;

d. Electrofishing twice per year;
e. Collect zooplankton samples as part of special studies;
f. Logistics:
   Time frame: 12 months for 3 years
   Equipment: Work skiff
   Electrofishing Boat
   Truck
   Staffing: 2 graduate researchers + 2 specialists

TASK 2 – Suisun Creeks: Studies of flow, fish communities and food web dynamics at the stream-tidal wetland interface in Union Creek and Hill Slough

Objective: To understand how ecological connections between upland habitats and downstream freshwater and brackish tidal marshes affect habitat restoration.
Question: What is the effect of creek flows on water quality conditions, food webs and fish communities in tidal wetlands?
Hypothesis: Flows provide turbid, nutrient-filled water that stimulates primary production and facilitates wetlands restoration. Reservoirs on the creeks provide opportunities for flow pulses—these same flows discourage invasive organisms from colonizing.
Scope:

a. Monthly fish seining & trawling
b. Monthly water quality sampling
c. Water quality transects as needed
d. Zooplankton sampling as needed in spring/fall
e. Annual backpack efishing for upstream surveys
f. Logistics:
   Time frame: 12 months for three years
   Equipment: Small skiff with trawls
   Backpack e-fisher
   Truck
   Staffing: 2 graduate researchers + 2 specialists

TASK 3: **Union Creek Property Habitat Assessment**
Objective: To evaluate the biological resources on SCWA-owned property adjacent to Hill Slough, as a part of the effort in Task 2.
Scope:

a. Physical/geologic assessment: Inventory and mapping of landscape features and geology (including riparian corridors, vernal pools, rangeland, etc)
b. Hydrologic assessment: Evaluate connectivity of Union Creek to adjacent landscape
c. Biological assessment: Vegetation, invertebrates and vertebrates
d. Logistics:
   Time frame: Completed in Year 1
   Equipment: Truck, Survey Gear

SCHEDULE

2024-2027

- Years 1-3, Monthly: CLC and Hill Slough fish and WQ grabs (Tasks 1 & 2)
- Years 1-3, Semi-annually: Electrofishing in CLC (Task 1)
- Years 1-3, Monthly to Seasonal: CLC Zooplankton collection (Task 1 & 2)
- Year 1: Fish survey of Union Creek watershed (Task 2)
- Year 2: Biological survey of SCWA Union Creek property (Task 3)
- Year 3: Final reports and papers

EXHIBIT B

Proposed Budget:

	2024-25	2025-26	2026-27	Totals
Personnel	**$ 310,000**	**$ 322,000**	**$ 406,000**	**$ 1,038,000**
Supplies	**$ 30,000**	**$ 30,000**	**$ 30,000**	**$ 90,000**
Overhead (61%)	**$ 198,000**	**$ 205,000**	**$ 243,000**	**$ 646,000**
Totals	**$ 538,000**	**$ 557,000**	**$ 679,000**	**$ 1,774,000**

EXHIBIT C

Additional Supporting Information

List of Deliverables:

DELIVERABLE	TYPE	DATE
2024 Annual North Delta Arc Report	Report	7/1/2025
2025 IEP/Bay-Delta Science Presentation	Conference Presentation	9/1/2025
2025 Annual North Delta Arc Report	Report	7/1/2026
2026 IEP/Bay-Delta Science Presentation	Conference Presentation	9/1/2026
2026 Annual North Delta Arc Report	Report	7/1/2027
2027 IEP/Bay-Delta Science Presentation	Conference Presentation	9/1/2027
Env. assessment of Union Creek Property	Report	9/1/2027
Recmds. on water flows on Hill Slough site	Report	9/1/2027
Paper: Fluvial inputs to tidal wetlands	Paper	9/1/2027
Final North Delta Arc Project Report	Report	9/01/2027