



MEMORANDUM

TO: SLDMWA Board of Directors, Alternates

FROM: Rebecca Akroyd, Interim General Counsel

DATE: December 3, 2018

RE: Science Funding Overview and Status Update

This memorandum has been prepared to present a high-level status update on science that the San Luis & Delta-Mendota Water Authority has funded or is currently funding, either independently or in coordination with other entities, during the current fiscal year (FY 19). The table below identifies items that are funded through the Water Authority’s technical budget, which is paid for through the “Leg Ops” fund. The table does not include any studies that are considered litigation support items or technical funding that is unrelated to science (e.g. funding for specific storage projects).

1. SLDMWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
A	Fish Food on Flooded Farm Fields 2018 study	PI: Jacob Katz/CalTrout Funding Partners: NCWA, MWD, SWC	\$50,000 [Total Budget \$500,000]	Study of flooded rice ground relative to food production for native fish. Goal to better understand aquatic food web productivity on managed floodplains.	Sept. 2018: 2018 draft report Oct. 2018: 2019 draft study plan Dec. 2018: 2018 final report
B	2018 Operations Analysis of Shasta	PI: James Anderson / Cramer Fish Sciences	\$25,000	Study of 2018 Shasta operations / egg mortality model,	Completed in Spring of 2018

1. SLDMWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
	Operations/Egg Mortality Model ¹			alternative temperature strategy for Shasta operations.	
C	Development of eDNA monitoring tool for detection of Delta Smelt ²	PI: Cramer Fish Sciences Funding Partner: SWC	\$63,000 [Total Budget \$126,000]	Goal to develop an accepted eDNA monitoring tool for species detection in tidally mixed aquatic ecosystems in the Delta, and to advance eDNA aquatic monitoring towards a state-of-science that can be applied in the context of scientific, policy, and regulatory decision-making.	Sept. 2018: Experiment 1, detection across technical replicates Sept. 2018: Experiment 2, defined relationship between volume and DNA detection Dec. 2018: Experiment 4, interaction between volume and distance Jan. 2019: Experiment 3, signal strength of eDNA from field experiment
D	Sacramento-San Joaquin Delta Fallowing Pilot Evapotranspiration Monitoring Program ³	PI: Land IQ, LLC; UC Davis; Cooperating farmers Funding Partner: SWC	\$150,000 [Total Budget \$300,000]	Study between April 1, 2018 and September 30, 2018 of consumptive use on between 2,000 and 4,000 acres in the legal Delta during the 2018 irrigation season. Goal to identify a method of reliable measurement of the reduction in consumptive use associated	March – Sept. 2018: Collect data and perform station maintenance periodically Oct. – Dec. 2018: Removal and recalibration of field instrumentation; data analysis and draft report

¹ Board action taken on March 8, 2018.

² Board action taken August 16, 2018.

³ Board action taken July 13, 2017.

1. SLDMWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
				with temporary crop idling on lands within the legal Delta.	Oct. 2018 – May 2019: Final quality controlled data to Land IQ June 2019: Final report
E	Developing a Science Plan to Assess the Effects of Ambient Environmental Conditions and Management Actions on Delta Smelt-Tasks 1/2 ⁴	PI: Denise Reed Funding Partner: SWC	\$27,500 [Total Budget \$55,000]	Goal to develop a Delta Smelt science plan to inform management decisions related to Delta Smelt that will utilize an adaptive management framework that identifies specific monitoring, research, modeling, and evaluation activities designed to assess the effects of ambient conditions and management actions on Delta Smelt. Part of the CAMT 2018 Workplan.	Feb. – Apr. 2018 – Task 1: Develop draft framework and objectives for science plan Feb. – June 2018 – Task 2: Characterize existing knowledge and decision-relevant uncertainties.
F	Establishing Environmental Baselines for the Shallow Shoals of Tule Red: Bathymetry, Water Quality, and	PI: Susan De La Cruz / U.S. Geological Survey	\$166,712 [originally approved by SFCWA]	Study of Tule Red tidal restoration project that is expected to provide food resources and rearing habitat to contribute to the recovery of native fish and wildlife. Goal to gather baseline data needed to better understand the effects of	Q3 2018: Collect, maintain, calibrate loggers [all quarters]; collect bathymetry of shoal; quarterly progress report [all quarters] Q4 2018: Geospatial analyses for Digital Elevation Model;

⁴ Board action taken March 8, 2018.

1. SLDMWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
	Macroinvertebrate Densities ⁵			the tidal marsh restoration process on the Project intertidal mudflat and subtidal (together shallow shoals) areas.	collect benthic macroinvertebrates Q1 2019: Inundation model; isotope analyses; data and statistical analyses Q2 2019: Continued progress on activities above Q3 2019: Continued progress, plus project briefing, final USGS open file report, and data management plan and delivery Proposed end date of March 2022
G	Interior Delta Export Effects Study ⁶	PI: Brad Cavallo / Cramer Fish Sciences \$1.3 million funding via CDFW's 2017 Prop 1 Restoration Grant Program	\$100,000 [Total budget \$1.3 million] [originally approved by SFCWA]	Study of specific data gaps related to export operation effects on juvenile salmonids. Goal to fill information gaps on juvenile salmonid survival in the south Delta to update salmonid loss models, optimize survival for salmonids near salvage facilities, and support water reliability through enhanced coordinated operations.	Through June 2020 / Task 1: Project management and grant administration Through Dec. 2018 / Task 2: Team coordination and hydrodynamic modeling

⁵ Board action taken March 23, 2018.

⁶ Board action taken March 23, 2018.

1. SLDMWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
H	Developing a Science Plan to Assess the Effects of Ambient Environmental Conditions and Management Actions on Delta Smelt-Task 3 ⁷	PI: Denise Reed Funding Partner: SWC	\$10,000	See main description above. Task 3 goal to develop a monitoring and evaluation approach to assess effectiveness of management actions targeting Delta Smelt that leverages, to the extent possible, existing efforts.	Dec. 2018: Completion of monitoring and evaluation approach
SLDMWA-FUNDED SCIENCE TOTALS			\$592,212		

2. SFCWA-FUNDED SCIENCE					
Study Subject		Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline
I	Analysis of Phytoplankton Blooms and Ambient Phytoplankton Populations in the Delta ⁸	PI: Brian Bergamaschi / U.S. Geological Survey	\$66,062	Study of phytoplankton abundances and biogeochemical rates and review of phytoplankton bloom events data. Goal to analyze existing data to improve understanding of controls on phytoplankton blooms in the north Delta, and to assess the relationship of those blooms to zooplankton	Nov. 2018: phytoplankton enumeration table expected Task 1 (samples): Feb. 2018 Task 2 (samples II): Nov. 2018 Task 3 (data aggregation): Feb. 2018 Task 4 (analysis): Nov. 2018 Task 5 (report prep): Jan. 2019 Report to be delivered as scientific journal article

⁷ Board action taken August 16, 2018.

⁸ Board action for each of the three SFCWA-funded studies taken April 5, 2018.

2. SFCWA-FUNDED SCIENCE					
Study Subject	Contract Partners	Committed Amount	Description of Work / Objective(s)	Timeline	
			population abundances and growth rates.		
J	Measuring Impact of Control of Yellow Starthistle in the Northern Sac. Valley and Superior California on Watershed Runoff and Groundwater Levels	PI: Joseph DiTomaso/UC Davis; Deas/Watercourse Engineering	\$145,627	Study of the water benefits of yellow Starthistle (YST) control. If there appears to be replicable water supply benefit from YST removal, will prepare plan of recommended YST removal in California that results in increased runoff and/or improved groundwater levels.	Dec: 2018: Baseline monitoring scheduled to conclude Sep. 2017-Sep. 2020: Long-term treatment/monitoring Oct.-Dec. 2020: compile and publish study results
K	Fish Food on Flooded Farm Fields 2018 study	PI: Jacob Katz/CalTrout	\$300,000	See description above.	See description above.
SFCWA-FUNDED SCIENCE TOTALS		\$511,689			