

**COOPERATIVE AGREEMENT TO CONDUCT A COLIPHAGE
EVALUATION STUDY AT TWO VENTURA COUNTY BEACHES**

**Between the Ventura County Watershed Protection District and
the Southern California Coastal Water Research Project**

This Cooperative Agreement to Conduct a Coliphage Evaluation Study at Two Ventura County Beaches ("Agreement") is made this ___ day of ____ 2019, between the Ventura County Watershed Protection District (hereinafter called "District") and the Southern California Coastal Water Research Project (hereinafter called "SCCWRP"), a California Joint Powers Authority (District and SCCWRP are hereinafter collectively called "Parties").

RECITALS

WHEREAS, District is required by Order R4-2010-0108 NPDES Permit No. CAS004002 to participate in the Southern California Bight Project (hereinafter called "Bight '18"), a regional monitoring collaboration that examines how human activities have affected the health of Southern California coastal waters; and

WHEREAS, District intends to participate in a Bight '18 microbiology coliphage evaluation study at two Ventura County beaches (hereinafter called "Study"); and

WHEREAS, there are several EPA-approved methods for enumerating bacterial indicators; and

WHEREAS, The United States Environmental Protection Agency (hereinafter called "EPA") released a new method in August 2018 (hereinafter called "Method 1642") for enumeration of male-specific and somatic coliphages in ambient waters; and

WHEREAS, coliphage measured by Method 1642 has also been proposed by EPA for use as a new beach water quality indicator; and

WHEREAS, performance of Method 1642 has not been tested across the range of beach conditions found in Southern California; and

WHEREAS, it is not known how levels of coliphage compare to those of current bacterial water quality indicators; and

WHEREAS, the coliphage study intends to answer questions surrounding levels of male-specific and somatic coliphages found at a

range of beach types in southern California and the applicability of Method 1642 at these beaches; and

WHEREAS, SCCWRP is a California Joint Powers Authority established in 1969 and governed by a commission comprised of the California State Water Resources Control Board, USEPA Region IX, Ocean Protection Council, California Regional Water Quality Control Board (Los Angeles, San Diego, and Santa Ana Regions), City of Los Angeles Bureau of Sanitation, Los Angeles County Sanitation Districts, Orange County Sanitation District, City of San Diego Public Utilities Department, Ventura County Watershed Protection District, Los Angeles County Flood Control District, Orange County Public Works, and County of San Diego Watershed Protection Program; and

WHEREAS, SCCWRP facilitates and is project manager for Bight '18; and

WHEREAS, DISTRICT wishes to cooperate with SCCWRP and to reimburse SCCWRP for the cost of conducting the Study in accordance with the scope of work shown in Exhibit A ("Scope of Work").

AGREEMENT

NOW, THEREFORE, IT IS AGREED by and between the Parties hereto as follows:

Section 1. Purpose.

This Agreement is entered into for the purpose of participation in the Bight '18 coliphage study as required by Order R4-2010-0108 NPDES Permit No. CAS004002. The Parties agree to execute such further instruments and to take such further action as may reasonably be necessary to carry out the intent of this Agreement.

Section 2. Term.

The term of this Agreement shall begin on July 23, 2019, and end on December 31, 2021

Section 3. Scope of Work.

SCCWRP shall perform or cause to be performed the tasks described in "Scope of Work" attached hereto as Exhibit A. Said tasks include: (1) Support and Training (2) Intercalibration Study (3) Lab Analysis, and (4) Data Analysis and Reporting.

Section 4. Schedule.

All tasks to be performed under this Agreement shall be completed within the time frames described in Exhibit A. All work at the sites required under this Agreement shall be completed by December 31, 2021.

Section 5. Payment.

(a) District shall compensate SCCWRP as specified in the "Project Budget" attached hereto as Exhibit B. Unless advance written approval is given by District, SCCWRP shall not be entitled to compensation in excess of the Project Budget. The amounts set forth in Exhibit B shall be full compensation for all work to be performed on the Project by SCCWRP or others, including all direct and indirect costs.

(b) District shall pay SCCWRP within thirty (30) days of receiving a written invoice from SCCWRP. Unless otherwise directed, payments will be sent and made payable to:

Southern California Coastal Research Project
Attention: Bryan Nece, Administrative Officer
3535 Harbor Blvd., Suite 110
Costa Mesa, CA 92626

Section 6. Relationship of Parties.

Nothing herein is intended to create or is to be construed as creating a joint venture, partnership, agency, or other entity between the Parties. The rights and obligations of the Parties shall be independent of one another and shall be limited to those expressly set forth herein.

Section 7. Indemnification and Hold Harmless.

District shall defend, indemnify, and hold SCCWRP, its officers, employees, and agents harmless from and against any and all liability, loss, expense, or claims for injury or damages arising out of District's performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of District, its officers, agents, or employees.

SCCWRP shall defend, indemnify, and hold District, its officers, employees, and agents harmless from and against any and all liability, loss, expense, or claims for injury or damages arising out of SCCWRP's

performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of SCCWRP, its officers, agents, or employees.

This section shall survive the termination or expiration of this Agreement.

Section 8. Insurance.

SCCWRP, at its sole cost and expense, shall obtain and maintain, or cause its contractor to obtain and maintain, in full force during the term of this Agreement, the following types of insurance:

(a) General Liability "occurrence" coverage in the minimum amount of \$2,000,000 combined single limit (CSL) bodily injury & property damage each occurrence and \$4,000,000 aggregate, including personal injury, broad form property damage, products/completed operations, broad form blanket contractual and \$50,000 fire legal liability.

(b) Workers' Compensation coverage, in full compliance with California statutory requirements, for all employees and Employer's Liability in the minimum amount of \$1,000,000.

All insurance required will be primary coverage as respects District and any insurance or self-insurance maintained by District will be excess of this insurance coverage and will not contribute to it.

District, its board, officers, employees, agents, and volunteers are to be named as Additional Insured as work is conducted under the terms of this Agreement on all policies required (except Workers' Compensation and Professional Liability).

Section 9. Supplies and Equipment

In the event that SCCWRP purchases supplies or equipment hereunder, title to such supplies and equipment will vest in SCCWRP.

Section 10. Disputes

In the event of any dispute, claim, question, or disagreement arising from or relating to this Agreement or the breach thereof, the parties shall use their best efforts to settle the dispute, claim, question, or disagreement. To this effect, they shall consult and negotiate with each other in good faith and, recognizing their mutual interests, attempt to reach a just and equitable solution satisfactory to both parties.

Section 11. Termination.

Either District or SCCWRP may terminate this Agreement for any reason by giving 60 days' notice of termination in writing to the other party. In the event of such termination by District, SCCWRP shall take all reasonable steps to immediately stop work and minimize further costs. SCCWRP shall be entitled to be reimbursed for all work performed prior to receipt of such notice of termination, and noncancelable obligations committed to prior to receipt of notice of termination. SCCWRP shall take all reasonable steps to avoid incurring noncancelable commitments after notice of termination is received. SCCWRP shall obtain District's written approval prior to incurring any commitments for the purchase of supplies and equipment that are noncancelable after a notice of termination is received.

Section 12. Assignment.

This Agreement may not be assigned without advance written consent of District.

Section 13. Entire Agreement.

This Agreement constitutes the complete and exclusive understanding of the Parties and supersedes all prior understandings and agreements, whether written or oral, with respect to the subject matter herein, and correctly sets forth the rights, duties and obligations of each to the other.

Section 14. Amendment.

This Agreement may be amended only upon the written approval of the Parties.

Section 15. No Third-Party Beneficiaries.

Nothing expressed or mentioned in this Agreement is intended or shall be construed to give any entity or person, other than the Parties, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provisions herein contained.

Section 16. Notices

All notices required under this Agreement will be made in writing and addressed or delivered as follows:

To District: Ventura County Watershed Protection District
 800 South Victoria Avenue

Ventura, California 93009
Attn: Mr. Arne Anselm, Deputy Director

To SCCWRP: Southern California Coastal Water Research Project
3535 Harbor Blvd., Suite 110
Costa Mesa, CA 92626
Attn: Dr. Steve Weisberg, Executive Director

Either party may, by giving written notice in accordance with this section, change the names or addresses of the persons of departments designated for receipt of future notices. When addressed in accordance with this section and deposited in the United States mail, postage prepaid, notices will be deemed given on the third day following such deposit in the United States mail. In all other instances, notices will be deemed given at the time of actual delivery.

Section 17. Governing Law; Venue.

This Agreement shall be governed by the laws of the State of California and venue for any legal action or proceeding shall be in the Superior Court for the State of California, County of Ventura.

Section 18. Execution of Agreement.

This Agreement may be executed in counterpart and the signed counterparts shall constitute a single instrument.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the dates opposite their respective signatures:



Dr. Steve Weisberg
Executive Director, SCCWRP



Date

Mr. Glenn Shephard, PE
Director, Watershed Protection District

Date

Scope of Work: Bight '18 Microbiology Coliphage for Ventura County Watershed Protection District

Evaluation of EPA Method 1642 for Enumeration of Male Specific and Somatic Coliphage in Recreational Waters and Wastewater

Background

There are a number of EPA-approved methods for enumerating bacterial indicators (*Enterococcus*, *E. coli*, total and fecal coliforms), and these methods have historically been used to measure the microbiological quality of recreational waters. Recently, there has been interest in development of a viral indicator of fecal contamination. As such, EPA released a new method (EPA Method 1642) in August, 2018 for enumeration of male-specific and somatic coliphages in ambient waters (recreational waters and wastewater effluent). Coliphage measured by Method 1642 has also been proposed by the EPA for use as a new beach water quality indicator.

Performance of Method 1642 has not been tested across the range of beach conditions found in southern California, nor is it known how levels of coliphage compare to those of our current bacterial water quality indicators. This study aims to answer questions surrounding levels of male-specific and somatic coliphages found at a range of beach types in Southern California and the applicability of Method 1642 at these beaches.

Study Questions Defined by the Bight' 18 Microbiology Committee

- Is Method 1642 performance consistent across Southern California beaches?
- How do measurements of *Enterococcus* compare to those of somatic and male-specific coliphages in beach waters?
- Is there a seasonal difference in magnitude and frequency of somatic and male-specific coliphages in beach water between wet and dry weather?

Approach

County of Ventura will sample at two sites that are already part of their routine beach water quality monitoring efforts. Samples will be collected and analyzed for somatic and male-specific coliphage as well as cultivable *Enterococcus*. Results of this study will be included in the larger Bight 18' effort and used to gauge the applicability of Method 1642.

Study design

In dry weather, a minimum of 30 samples total, per site, will be collected over two years during the AB 411 period (April – October). All dry weather samples will be collected in the morning to mirror routine monitoring procedures and limit degradation of the microbial signal due to sunlight exposure.

During wet weather, the number of samples collected (desired: 30 samples total per site) will depend on the number of qualified storm events. A qualified storm event is defined as at least 0.10" rainfall at the closest rain gauge to the sampling site following an antecedent dry period of three or more days. Wet weather sampling will extend across two wet seasons, as sampling opportunities will be dependent on the number of qualified storm events.

For both wet and dry weather samples, two-liter samples will be collected by County of Ventura Environmental Health. Cal State Channel Islands (CSCI) students or faculty will pick up samples from the Ventura County Health Laboratory and transport samples on ice to CSCI where they will be processed for male-specific and somatic coliphage. County of Ventura Environmental Health performs routine water column bacteria monitoring as required by other state programs, and the water samples collected for this study will be processed in parallel for cultivable *Enterococcus* using EPA Method 1600 at the County lab.

Training on Method 1642

Training on sample handling, ultrafiltration, processing, and measurement of somatic and male-specific coliphages will be provided by SCCWRP to CSCI student workers and faculty. Training will occur prior to sample collection with additional support provided throughout the course of the study.

Laboratory Intercalibration

CSCI will participate in a laboratory intercalibration exercise to ensure comparability of data produced across all laboratories participating in the Bight '18 Microbiology study. If CSCI does not meet the quality assurance standards set by the Bight '18 Microbiology Committee, they will be provided technical assistance by SCCWRP staff until they demonstrate proficiency in Method 1642.

Schedule

- For the intercalibration study, CSCI processed 10 laboratory-created samples: February 20th - April 17th, 2019.
- Coliphage analysis of environmental samples will commence as soon as CSCI demonstrates satisfactory performance, following completion of the Intercalibration study. Dry weather sampling is anticipated to conclude October, 2020 with wet weather sampling concluding April, 2021.
- Data review and reporting are anticipated to occur during Summer and Fall 2021.

Data Reporting and Analysis

CSCI will provide all coliphage data to SCCWRP. County of Ventura will provide all *Enterococcus* data to SCCWRP. SCCWRP will compile, QA/QC, review, and summarize the coliphage and *Enterococcus* data collected. SCCWRP will report preliminary results to the Ventura County Watershed Protection District at the conclusion of each wet and dry season (twice annually).

References

U.S. Environmental Protection Agency. Method 1642: Male-specific (F+) and Somatic Coliphage in Recreational Waters and Wastewater by Ultrafiltration (UF) and Single Agar Layer (SAL) Procedure. EPA 820-R-18-001. May, 2018.

Project Budget: Bight '18 Microbiology Coliphage for Ventura
County Watershed Protection District

**Evaluation of EPA Method 1642 for Enumeration of Male
Specific and Somatic Coliphage in Recreational Waters and
Wastewater**

Budget

Task	Cost			Note
	2019	2020	2021	
Lab Analysis	\$59,986	\$43,669	\$18,715	Primarily CSCI Student Wages
Intercalibration Study	\$10,402			
Support and Training	\$14,290	\$11,144	\$3,715	Provided by SCCWRP
Supplies	\$9,020	\$1,971	\$845	
Travel	\$2,750	\$1,250	\$750	
Data Analysis and Reporting	\$4,783	\$2,112	\$3,923	Provided by SCCWRP
Annual Totals	\$101,231	\$60,146	\$27,947	
Project Total	\$189,324			