



**Date Posted: Wednesday September 11, 2019**

## **REQUEST FOR PROPOSALS (RFP)**

### ***Benefits and Challenges in Pathogen Removal When Blending Advanced Treated Water with Raw Water Upstream of a Surface Water Treatment Plant in DPR (RFP 5049)***

**Due Date:** Proposals must be received by 2:00 pm Mountain Time on Tuesday, October 22, 2019

**WRF Project Contact:** Justin Mattingly, [jmattingly@waterrf.org](mailto:jmattingly@waterrf.org)

#### **Project Sponsors**

This project is co-funded by The Water Research Foundation (WRF), the California State Water Resources Control Board (SWB), and contributors to the *Advancing Potable Reuse Initiative* as part of the SWB Grant D1705003.

#### **Project Objectives**

- Define the benefits and challenges of conventional drinking water treatment processes following advanced water treatment for direct potable reuse (DPR), and their influence on pathogen removal and public health protection.
- Provide guidance on how to optimize conventional treatment after blending advanced treated water and raw water supplies.
- Explore pathogen credit validation approaches for conventional processes (i.e., coagulation, flocculation, sedimentation, and media filtration) when advanced treated water is added prior to conventional processes.
- Better understand the potential benefits and challenges of blending advanced treated water at surface water treatment plants (SWTP) after filtration and prior to disinfection.

#### **Budget**

Applicants may request up to \$100,000 in WRF funds for this project. WRF funds requested and total project value will be evaluation criteria considered in the proposal selection process.

#### **Background and Project Rationale**

States and communities throughout the United States are looking to develop guidance and/or regulations to implement raw water augmentation – blending of advanced treated water and raw water prior to conventional drinking water treatment in a SWTP. As part of this process, it is important to determine the benefits and challenges associated with raw water augmentation and treating the blended water.

In California, advanced water treatment typically includes reverse osmosis (RO), and results in very low-turbidity, low-alkalinity, and low-dissolved organic carbon (DOC) waters. This water is virtually

pathogen-free, but is typically not amenable to conventional surface water treatment processes other than disinfection. One approach is to blend the high-quality water with surface water at a drinking water treatment plant. However, blending may be detrimental to some conventional treatment water quality goals, so developing proper blending practices will require a review of conventional process optimization. Moreover, the variability of blending ratios or surface water quality during normal operations may require more sophisticated and innovative optimization strategies. On the other hand, blending may have positive impacts on some processes; therefore, a holistic evaluation is needed.

It is also important to determine the effect of blending on the efficacy and costs of conventional treatment processes. Optimization of conventional treatment may be needed to achieve expected pathogen removal credits to meet potential regulations for direct potable reuse or for treatment of surface water under the Surface Water Treatment Rule. The alternative would be blending the high-quality advanced treated water with treated surface water prior to final disinfection and distribution. Potential benefits could be beneficial stabilization and reduced costs that could be provided by the conventionally treated water to the blend of advanced treated water, as well as the dilution effect for each.

This project will address key technical issues to assist regulators in assigning pathogen removal credits to conventional treatment processes for blends of surface and advanced treated water. This research may also be helpful in better understanding existing Surface Water Treatment Rule log removal credits from conventional treatment processes.

### **Research Approach**

The following elements should be included in the team's research approach:

Task 1 – Literature Review: Review existing literature on water quality impacts of raw water augmentation on conventional drinking water treatment processes, including review and discussion of pathogen removal in the context of direct potable reuse. This review should include clear identification of downstream surface water treatment processes.

Task 2 – Modeling: Conduct water quality and process modeling for raw water augmentation based on water quality from potential raw water augmentation sites. Potential examples may include, but not be limited to, Colorado River water, Hetch Hetchy water, and other similar systems. This should include estimated impacts on pathogen removal by conventional treatment processes. The impact of stabilization measures after advanced treatment (e.g., corrosion control) on conventional treatment processes should be taken into consideration where appropriate.

Task 3 – Testing: Conduct jar testing to validate water quality modeling of the impact of advanced treated water on raw water sources and conventional treatment processes, including pathogen removal through turbidity and other relevant surrogate parameters. Recommendations for additional testing should also be included where appropriate.

Task 4 – Analysis and Recommendations: Develop recommendations on the benefits and challenges associated with blending advanced treated water with raw water prior to a SWTP and the impacts on treated water quality and pathogen removal credits.

### **Expected Deliverables**

- Literature review
- Final report summarizing the water quality modeling the bench-scale studies, and recommendations for treatment optimization

### **Communications Plan**

Please review WRF's *Project Deliverable Guidelines* for preparing a communications plan. The guidelines are available at <https://www.waterrf.org/project-report-guidelines>. Conference presentations, webcasts, peer review publication submissions, and other forms of project information dissemination are typically encouraged.

### **Project Duration**

The anticipated period of performance for this project is 18 months from the contract start date. See SWB deadline information below.

### **References and Resources**

The following list includes examples of research reports, tools, and other resources that may be helpful to proposers. It is not intended to be comprehensive, nor a required list for consideration.

- WE&RF Project Reuse-14-10: *Direct Potable Reuse Monitoring: Testing Water Quality in a Municipal Wastewater Effluent Treated to Drinking Water Standards*
  - WRF Project 4536: *Blending Requirements for Water from Direct Potable Reuse Treatment Facilities*
  - WRF Project 4780: *Evaluating Post Treatment Challenges for Potable Reuse Applications*
  - WRF Project 4953: *Considerations and Blending Strategies for Drinking Water System Integration with Alternative Water Supplies*
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### **Proposal Evaluation Criteria**

The following criteria will be used to evaluate proposals:

- Understanding the Problem and Responsiveness to RFP (maximum 20 points)
- Technical and Scientific Merit (maximum 30 points)
- Qualifications, Capabilities, and Management (maximum 20 points)
- Communication Plan, Deliverables, and Applicability (maximum 15 points)
- Budget and Schedule (maximum 15 points)

### **Proposal Preparation Instructions**

Proposals submitted in response to this RFP must be prepared in accordance with the WRF document *Guidelines for Research Priority Program Proposals*. The current version of these guidelines is available at <http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx>, along with *Instructions for Budget Preparation*. The guidelines contain instructions for the technical aspects, financial statements, indirect costs, and administrative requirements that the applicant must follow when preparing a proposal. Additionally, there are unique requirements for this SWB funded project, as detailed below.

### **Eligibility to Submit Proposals**

Proposals will be accepted from domestic or international entities, including educational institutions, research organizations, governmental agencies, and consultants or other for-profit entities. However, for this specific project, because a portion of the funding is from California, there are territory

limitations that can be reviewed at <https://oag.ca.gov/ab1887> that prohibit individuals and/or organizations from certain states from participating in this project. ***See funding provisions below.***

WRF's Board of Directors has established a Timeliness Policy that addresses researcher adherence to the project schedule. The policy can be reviewed at <http://www.waterrf.org/funding/Pages/policies.aspx>. Researchers who are late on any ongoing WRF-sponsored studies without approved no-cost extensions are not eligible to be named participants in any proposals. Direct any questions about eligibility to the WRF project contact listed at the top of this RFP.

### **Administrative, Cost, and Audit Standards**

WRF's research program standards for administrative, cost, and audit compliance are based upon, and comply with, Office of Management and Budget (OMB) Uniform Grants Guidance (UGG), 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, and 48 CFR 31.2 Contracts with Commercial Organizations. These standards are referenced in WRF's *Guidelines for Research Priority Program Proposals*, and include specific guidelines outlining the requirements for indirect cost negotiation agreements, financial statements, and the Statement of Direct Labor, Fringe Benefits, and General Overhead. Inclusion of indirect costs must be substantiated by a negotiated agreement or appropriate Statement of Direct Labor, Fringe Benefits, and General Overhead. Well in advance of preparing the proposal, your research and financial staff should review the detailed instructions included in WRF's *Guidelines for Research Priority Program Proposals* and consult the *Instructions for Budget Preparation*, both available at <http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx>.

***For this specific project, however, indirect costs are limited to and may not exceed \$25,847.03, as no funding from the State of California can be used for indirect costs by any recipient (prime or sub) at any contracting level.***

### **Budget and Funding Information**

The maximum funding available from WRF for this project is \$100,000. The applicant must contribute additional resources equivalent to at least 33 percent of the project award. For example, if an applicant requests \$100,000 from WRF, an additional \$33,000 or more must be contributed by the applicant. Acceptable forms of applicant contribution include cost-share, applicant in-kind, or third-party in-kind that comply with 2 CFR Part 200.306 cost sharing or matching. The applicant may elect to contribute more than 33 percent to the project, but the maximum WRF funding available remains fixed at \$100,000. **Proposals that do not meet the minimum 33 percent of the project award will not be accepted.** Consult the *Instructions for Budget Preparation* available at <http://www.waterrf.org/funding/Pages/proposal-guidelines.aspx> for more information and definitions of terms.

### **Period of Performance**

It is WRF's policy to negotiate a reasonable schedule for each research project. Once this schedule is established, WRF and its sub-recipients have a contractual obligation to adhere to the agreed-upon schedule. Under WRF's No-Cost Extension Policy, a project schedule cannot be extended more than nine months beyond the original contracted schedule, regardless of the number of extensions granted. The policy can be reviewed at <http://www.waterrf.org/funding/Pages/policies.aspx>.

## Utility and Organization Participation

WRF encourages participation from water utilities and other organizations in WRF research. Participation can occur in a variety of ways, including direct participation, in-kind contributions, or in-kind services. To facilitate their participation, WRF has provided contact information, on the last page of this RFP, of utilities and other organizations that have indicated an interest in this research. Proposers are responsible for negotiating utility and organization participation in their particular proposals. The listed utilities and organizations are under no obligation to participate, and the proposer is not obligated to include them in their particular proposal.

## Funding Provisions

The SWB is funding approximately 75% of this project through their Proposition 1 bond funds. The agreement No. D1705003 entitled 'Research to Advance Potable and Non-potable Reuse in California' between SWB and WRF was fully executed on March 30, 2018.

- Indirect Costs – SWB grant funds may not be used for any Indirect Costs (Gov. Code, § 16727), however WRF will cover **up to approximately 25%** of the project budget (not including in-kind) for indirect costs. Still, we must see the indirect cost breakout to substantiate to the State of CA that their funds are not used for indirect costs of any recipient on the team (whether prime or sub). ***See FAQs below for further requirements on providing budgets and indirect costs.***

Definition per the SWB grant: "Indirect Costs" means those costs that are incurred for a common or joint purpose benefiting more than one cost objective and are not readily assignable to the Research (i.e., costs that are not directly related to the Research). Examples of Indirect Costs include, but are not limited to: central service costs; general administration of the Recipient; non-research specific accounting and personnel services performed within the Recipient's organization; depreciation or use allowances on buildings and equipment; the costs of operating and maintaining non-research specific facilities; tuition and conference fees; generic overhead or markup; and taxes.

- Travel – Prohibition, Prior Approval, Reimbursement
  - Prohibition – SWB grant funds may not be used for any travel to or research in banned states that are identified by the Attorney General pursuant to Government Code section 11139.8, subd.(e), unless otherwise approved by the Grant Manager. The list of states identified by the Attorney General can be found here: <https://oag.ca.gov/ab1887>.
    - The Recipient shall not perform research in, travel to, or hold any meetings in states that are identified.
    - The Recipient shall ensure that the SWB, the Governor of the State, or any authorized representative of the foregoing, will have safe and suitable access to the Research site at all reasonable times during Research work.
  - Prior Approval – Travel to be reimbursed by grant funds requires prior written authorization. Please allow at least two (2) weeks' notice for WRF to gain approval from SWB.
  - Reimbursement – Reimbursement shall be at rates not to exceed those set by the California Department of Human Resources. These rates may be found at <http://www.calhr.ca.gov/employees/pages/travel-reimbursements.aspx>. Reimbursement will be at the State travel and per diem amounts that are current as of the date costs are incurred by the Recipient.

- Subcontracting – The Recipient shall not contract or allow subcontracting with excluded parties. The Recipient shall not contract with any party who is debarred or suspended or otherwise excluded from or ineligible for participation in any work overseen, directed, funded, or administered by the SWB program for which this funding is authorized. For any work related to this Agreement, the Recipient shall not contract with any individual or organization on the SWB’s List of Disqualified Businesses and Persons that is identified as debarred or suspended or otherwise excluded from or ineligible for participation in any work overseen, directed, funded, or administered by the SWB program for which funding under this Agreement is authorized. The SWB’s List of Disqualified Businesses and Persons is located at [https://www.waterboards.ca.gov/water\\_issues/programs/enforcement/fwa/dbp.html](https://www.waterboards.ca.gov/water_issues/programs/enforcement/fwa/dbp.html).
- Deadline – The current SWB grant agreement states that final deliverables are due by January 31, 2021. For WRF to comply with this requirement, all deliverables are due to WRF by October 31, 2020. The appropriations end date for grant funds has been extended to June 30, 2024, however a formal modification to the agreement will require several months to execute. Please consider these timing challenges in the proposal – while the project duration should be honored in the fulfilling the scope, a premature end date may be needed until the extension modification is granted.

#### **Application Procedure and Deadline**

**Proposals are accepted exclusively online in PDF format, and they must be fully submitted before 2:00 pm Mountain Time on Tuesday, October 22, 2019.** All proposal documents must be compiled into two (2) PDF files consisting of your technical review documents and your financial review documents. All forms and components of the proposal are available in the *Proposal Component Packet* zip file on the proposal website at <https://proposals.waterrf.org/Pages/RFPs.aspx>. An FAQ and a tutorial are also available. A login is required to access the proposal website and download the packet. Proposers are encouraged to create logins and verify the validity and compatibility of the system well in advance in order to avoid last-minute errors or delays.

The online proposal system allows submission of your documents until the date and time stated in this RFP. To avoid the risk of the system closing before you press the submit button, do not wait until the last minute to complete your submission.

Questions to clarify the intent of this RFP and WRF’s administrative, cost, and financial requirements may be addressed to the WRF project contact, Justin Mattingly at (571) 699-0024 or [jmattingly@waterrf.org](mailto:jmattingly@waterrf.org). Questions related to proposal submittal through the online system may be addressed to Caroline Bruck at (303) 347-6118 or [cbruck@waterrf.org](mailto:cbruck@waterrf.org).

## Utility and Organization Participants

The following utilities have indicated interest in possible participation in this research. This information is updated within 24 business hours after a utility or an interested organization submits a volunteer form, and this RFP will be re-posted with the new information. **(Depending upon your settings, you may need to click refresh on your browser to load the latest file.)**

N/A

## FAQs on SWB Funded Projects

**Q: Are any indirect costs covered for these projects?**

**A:** Yes, but only up to approximately 25% of the budget (not including in-kind contribution from the applicant). This includes the prime recipient, as well as subcontractors and consultants. The State of CA does not cover any indirect costs – those are funded by WRF and need to be clearly budgeted and submitted with the required supporting indirect cost documentation as per the *Guidelines for the Research Priority Program Proposals*, Section 17. Please see the Indirect Costs column in the table below for the exact values of allowed indirect costs for each project:

Project #	Research Title	Total Costs	Direct Costs	Indirect Costs
5047	Guidelines for the Demonstration of Pathogen Log Removal Credits in Wastewater Treatment	\$80,000.00	\$59,322.38	<b>\$20,677.62</b>
5048	Integrating Real-Time Collection System Monitoring Approaches into Enhanced Source Control Programs for Potable Reuse	\$200,000.00	\$148,305.94	<b>\$51,694.06</b>
5049	Public Health Benefits and Challenges for Blending of Advanced Treated Water with Raw Water Upstream of a Surface Water Treatment Plant in DPR	\$100,000.00	\$74,152.97	<b>\$25,847.03</b>
5050	Applicability of the UV/Chlorine AOP: Assessment of Applicability, Operational issues, and Potential By-Products	\$150,000.00	\$111,229.45	<b>\$38,770.55</b>
5051	Geochemical Considerations for Managed Aquifer Recharge (MAR) Implementation in Potable Reuse	\$112,000.00	\$83,051.33	<b>\$28,948.67</b>
5052	Standardizing Methods with QA/QC Standards for Investigating the Occurrence and Removal of ARB/ARGs in Wastewater and Advanced Treated Water	\$200,000.00	\$148,305.94	<b>\$51,694.06</b>

**Q: Is there a special budget form for the SWB projects? How do I show required indirect costs?**

**A:** No, there is not a special budget form for the SWB projects. However, under this RFP all of the proposer’s (prime’s) participants (subcontractors [subs], consultants, and contractors) must each complete the standard WRF [Budget Form](#), and all subs, consultant, and contractor Budget Forms need to be submitted to the proposer to be included along with the proposer’s online submission to WRF.

Indirect costs (base, rate and resulting expense) are shown on each entity’s (proposer and all participants) individual Budget Form (above).

Additionally, each entity must provide indirect cost rate documentation in accordance with Section 17 of the *Guidelines for Research Priority Program Proposals*. As with the Budget Form, each entity must submit their indirect cost rate documentation to their proposer to be included in the online submission to WRF.

If any entity cannot provide the required indirect cost rate documentation (as described in Section 17), then the proposer must count that entity's entire budget towards the indirect cost recovery cap. WRF is able to separately budget for the payment of indirect costs that are equal to or less than the amount/percentage of the total WRF budget for the cap as indicated in this RFP. **Proposals that do not meet this requirement in accordance with the indirect cost rate cap will not be accepted.**

Finally, if for genuine and necessary protection of confidential business information, subs are restricted from submitting their indirect cost rate documentation (see Section 17 of the *Guidelines*) through their proposer, they may send that one document only (NOT the Budget Form, which has to be submitted only to the proposing entity, and NOT financial statements (Balance Sheet and Income Statement) or any other forms in the proposal (none of which are required by WRF from any of the proposer's subs) to Steve Sidars at [ssidars@waterrf.org](mailto:ssidars@waterrf.org).

**Q: I am located in a banned state; can I participate on a research team?**

**A:** No, due to the SWB funding of this research, projects cannot in any way be connected to work in banned states (team members or participating agencies from banned states are not permitted). This is even the case if services are donated.

**Q: Can a project meeting or workshop be held in a banned state?**

**A:** No, this is not allowed, since SWB employees are not permitted to travel to banned states.

**Q: I am located in a banned state; can my utility provide in-kind services towards the project?**

**A:** No. The SWB cannot be connected with research performed/data collected in banned states.

**Q: Is prior approval for all travel, even for regular work at a utility, necessary? What is the process to gain approval?**

**A:** Yes, prior approval is needed, as the SWB must ultimately provide this authorization. Please request a travel authorization form from your Research Manager. If there is frequency to your travel/site visits, you can indicate so in the form to request multiple trips. Plan to submit these requests to your Research Manager quarterly to avoid last-minute requests for approval.