WaterStart RFP · Round 16

Release date: August 12, 2020

WaterStart requests proposals from water technology companies to solve immediate demands for innovation by our members. If you are a company that is ready to prove their ability to scale-up by solving one of the priorities below, please apply!

Drinking Water Priorities

1. Novel hypolimnetic aeration and oxygenation for improved water quality management.
2. Management and monitoring of disinfection by-products (DBP) and its precursors.
3. Technologies that allow the rapid detection and quantification of metals in water.
4. Technologies for valve indication.
5. On-line E. coli analyzer.
6. Low whole-life cost, low waste and low carbon solution for nitrate removal in potable water treatment.
7. Immersive Digital Technologies.

Wastewater Priorities

8. Technology to reduce the amount of PFAS in biosolids.
9. Rapid microbiological identification.
10. Automated odor detection and analysis.
11. Raw Sewage Influent Storage Systems and Tanks.

Please note! Supporting technical and business information can be found in page 3-6.
These can also be found on our CHANNELS Platform. Registration instructions located on page 2.

Deadline for submission: **Sept 11, 2020** Evaluations completed by: **November 1, 2020**

Summary and Background

WaterStart is nonprofit collective of globally recognized leaders who are adapting to change by scaling up new solutions to water challenges. We are in search of technology providers with novel solutions to specific priorities ready to be proven through large-scale pilots. If you're a tech company ready to scale-up by working with globally recognized customers with opportunities to enter new markets by solving imminent challenges in water, please apply.

The priorities listed above represent the collective needs among WaterStart members committed to installing innovative water technology solutions. Proposals should address one or more of these specific priorities. Grants are awarded on a competitive basis and range from $25,000 to $150,000.

Proposal Guidelines

To view more details related to the above priority descriptions and submit a proposal to this RFP, an account with WaterStart's online knowledge sharing platform, Channels for Innovation (CHANNELS) must be created.

To create an account, visit WaterStart's website at https://waterstart.com/ and follow these steps:

1. In the upper-right corner you will click on "Become a Member/Login"
2. Click "Sign Up" and then select "I Am a Tech Provider"
3. Fill in basic email and company information to create an account

Once the account is created, you will able to log into CHANNELS and view and respond to all RFPs released by WaterStart.

To respond to this RFP, please follow these steps:

1. Click on "RFPs" and find the open RFP that you are responding to (Round 16)
2. Click on "Learn More"
3. Click on "Submit RFP"
4. Answer the 14 questions and upload any supplemental information. Supplemental information **must not exceed 5 pages in length**.
5. Click on either "Save Draft" to complete later or "Submit RFP" to submit your response

Evaluation Criteria

Criteria for judging applications will be based on:

1. Degree of technology's alignment with listed priority
2. Stage of technology readiness
3. Degree of shared risk
4. Degree of implementation risk

Questions?

Please feel free to contact our team at proposals@waterstart.com should you need any assistance.

Full Length Priorities

Drinking Water Priorities

1. **Novel hypolimnetic aeration and oxygenation for improved water quality management.**

Description: WaterStart member is seeking technology to assist in the management and mitigation of water quality issues arising from low dissolved oxygen (DO) levels for use in source water storages.

Low DO events have been associated with the release of nutrients (e.g. phosphorus) and metals (e.g. iron and manganese) from lake sediments within the hypolimnion. This may result in impacts to water quality, algal blooms and, taste and odour issues direct treatment or mitigation of this reduction in raw water quality either necessitates the addition of costly additives during water treatment or results in reduced operation of WTPs.

As a potential alternative, our member seeks a novel hypolimnetic aeration and oxygenation system suitable for a small to medium water storages. In particular, solution should be suitable for locations typical of catchment water storages with restricted access i.e. systems with low energy requirements. Priority will also be given to solutions that require minimal maintenance or operational requirements and may also include autonomous technologies and combined real-time water quality measurements.

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2. **Management and monitoring of disinfection by-products (DBP) and its precursors**.

Description: WaterStart member is seeking technology that may assist in the management and monitoring of organic precursors (Natural Organic Matter, NOM) and disinfection by-products (DBPs). Solutions should, ideally, require minimal maintenance, calibration and handling of waste reagents.

The presence of high levels of NOM within raw water sources can result in significant increases in treatment costs due to the requirement for organics removal prior to disinfection to minimize the potential for the formation of DBPs, such as trihalomethanes (THMs) and haloacetic acids (HAAs).

Therefore, our member seeks technologies that demonstrate the following capabilities:

A. **Improved Organic Removal** - to reduce the cost of water treatment by minimizing/optimizing the use of coagulants, other processes or plug-in units that may be independent of coagulation for organics removal**; and**/or
B. **Online real-time dedicated monitoring (stationary)** for the measurement of organics (e.g. DOC) or DBP within water treatment process.
C. **Portable units** for the measurement of organics (e.g. DOC) or DBP within water treatment process.
D. **Predictive modelling** for DBP formation within a water distribution system.

Solutions should be suitable for, or trials easily up-scaled to, full-size water treatment plants up to 600 ML day^{-1} and must be compliant to drinking water standards (NSF-60 and AS4020) and appropriate for the drinking water management under the ADWG.

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3. **Technologies that allow the rapid detection and quantification of metals in water.**

Description: WaterStart member is seeking technology to rapidly and accurately test for in-water concentrations of metals (e.g. total and soluble aluminum, iron, and manganese in drinking water). Potential solutions should have the ability to measure concentrations relevant to WHO and Australian environmental and ADWG values in real-time for environmental compliance. The solution should ideally require minimal maintenance, calibration and handling of waste reagents.

Therefore, our member seeks technologies that demonstrate the following capabilities:

A. **Field Monitoring** (i.e. mobile) for concentrations of metals in drinking water.

B. **Real-time online Monitoring** (i.e. stationary) for concentrations of metals in drinking water (i.e. iron and manganese).

Solution should be suitable for, or trials easily up-scaled to, full-size water treatment plants up to 600 ML day-1 and must be compliant to drinking water standards (NSF-60 and AS4020) and appropriate for the drinking water management under the ADWG.

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4. **Technologies for valve indication.**

Description: Our member is seeking a solution to help monitor the current state of distribution and transmission valves. At the most basic level, a simple indicator (open/closed) that is low cost and require minimal maintenance (ie. binary 1/0 for open or closed).

Beyond this, our member seeks a system that can provide a record of when the valve was operated, or, alerts when operated. This would be a system that can transmit up to a platform that is monitored by a Control Room or integrated into existing systems such as IoT, AMR/AMI. An ideal system could also interface with H2ONet.

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5. **On-line E. coli analyzer.**

Description: Our member is seeking a solution that would allow users to get E. coli results faster compared with traditional culture-plate methods.

6. **Low whole-life cost, low waste and low carbon solution for nitrate removal in potable water treatment.**

Description: Rising nitrate trend levels in groundwater sources require new treatment installations to reduce nitrate levels to maintain treated water quality compliance. Nitrate removal is currently

undertaken using an Ion Exchange process which is energy intensive and produces high salt brine waste which is often costly to dispose.

In consideration of this, WaterStart member is seeking low whole-life-cost low waste (particularly Brine waste) and carbon solution for nitrate removal in potable water treatment. Driver is for optimized nitrate removal treatment process.

Solutions must comply with the Water Supply (Water Quality) Regulations 2016 (As Amended) for England and achieve Regulation 31 compliance before its eventual use.

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7. **Immersive Digital Technologies**

Description: Our member is seeking innovative technologies to allow operators, planners, and engineers to interface with SCADA and asset data in a virtual setting. Using this technology, the member wishes to interact with assets, extract information and visualize operational changes.

As an example, this system would allow an operator to interact with a pumping station in a virtual 3D environment; i.e. pump data, water flow and the consequences of asset failure could be experienced.

Solutions can be AR/VR, holographic, or other. At a minimum, the solution should be completed and/or qualified through prior demonstration (i.e. commercial ready).

Wastewater Priorities

8. **Technology to reduce the amount of PFAS in biosolids.**

Description: Our member is seeking a solution to detect and reduce the concentration of PFAS in sludge / biosolids before it is placed in landfill. As current processes are expensive, the member is seeking a safe, effective and less costly process (i.e. % removal p/tonne of wastewater sludge).

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9. **Rapid microbiological identification**

Description: Our member is seeking a solution that would allow users to extract and identify microbial population more efficiently and rapidly compared with traditional culture-plate methods.

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10. **Automated odor detection and analysis.**

Description: Our member is seeking a solution which can analyze data from a number of different sources (i.e. Odor detection devices, complaints, historical information and other instrumentation) to detect the origin of odor release events.

Solution may include both instrumentation for early detection and warning, and software to pinpoint the source of the odor. Instrumentation may be located in high H2S atmospheres with no available power.

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11. **Raw Sewage Influent Storage Systems and Tanks**

Description: WaterStart member seeks an innovative solution to managing the temporary storage of large volumes of sewage influent at treatment works which can occur during heavy rain events. Solutions should allow for temporary storage of the excess influent prior to returning back through the works when flows become manageable again.

The solution should offer low carbon, smart alternatives to standard concrete influent holding tanks. High density (low spatial coverage) solutions will be considered as a benefit. While it is not essential, systems equipped with smart monitoring to provide automated status reporting will be an additional benefit. Systems should work in conjunction with existing stormwater/sewer surge systems. Systems between 1-200 cubic meters will be considered.