**U.S. Environmental Protection Agency**
**Office of Science Advisor, Policy and Engagement**
**Office of Research and Development**
***Innovative Water Technology Grant Program***

# MODELS TO PREDICT THE REMOVAL OF EMERGING MICROPOLLUTANTS FROM WATER BY NOVEL ADSORBENTS IN FIXED-BED COLUMN PROCESSES

**This is the initial announcement of this funding opportunity.**

**Funding Opportunity Number:** EPA-G2024-ORD-F1

**Assistance Listing Number**: 66.521

Solicitation Opening Date: ***July 30, 2024***
Solicitation Closing Date: ***October 2, 2024***: 11:59:59 pm Eastern Time

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## I. FUNDING OPPORTUNITY DESCRIPTION

For Updates and Additional Information see EPA Research Funding Opportunities.
View research awarded under previous solicitations at EPA Research Grant Areas.

### A. Introduction

Water treatment and distribution systems face many challenges in providing safe drinking water. Trace concentrations of some dissolved organic water pollutants (less than 100 micrograms per liter) such as pharmaceuticals and personal care products (PPCPs) or per- and polyfluorinated substances (PFAS) can have adverse effects on human health and aquatic ecosystems, yet these "micropollutants" or "emerging contaminants" (Narwal et al., 2023) are not easily removed by conventional adsorbents such as granular activated carbon (GAC). Conventional sorbents also have a low affinity for many micropollutants, and background constituents such as natural organic matter (NOM) compete for sorption sites and reduce micropollutant sorption efficiency.

The development of new "next-generation" adsorbents (Ateia et al., 2020) show considerable promise for more efficient and effective removal of micropollutants because of their modular design, tunable functionality, and in some cases, tailorable porosity; however, limited information is available on their reliability and treatment performance. For the purposes of this funding opportunity, a "next-generation adsorbent" is defined as a modular adsorbent that has been designed and synthesized to have specific characteristics and functionalities to selectively remove a certain class or classes of contaminants in a fashion that isn't defined by existing modeling programs. Models are needed to predict and understand the effectiveness of novel sorbents for removing micropollutants from both wastewater and drinking water. The purpose of this funding opportunity is to fund research to develop, test and deploy predictive models for novel adsorbents for removal of emerging micropollutants from water and to estimate how well the adsorbents will work for specific classes of micropollutants in full-scale, fixed-bed, flow-through unit operations. "Fixed-bed, flow-through" unit operations (Patel 2019) means the adsorbent media is installed into a contactor (e.g., column or bed, fixed-bed) and water is passed through the apparatus or unit operation (flow-through) and replaced upon media exhaustion or loss of performance. Although geared toward the application of novel adsorbents, the models developed under this funding opportunity are expected to contribute to the development of

innovative water technologies for wastewater and drinking water processing systems, which would be used to develop new and improved drinking water treatment processes.

The Innovative Water Technology Grant Program is designed to accelerate "the development and deployment of innovative water technologies that address pressing drinking water supply, quality, treatment, or security challenges of public water systems, areas served by private wells, or source waters." Under the program, EPA shall make grants "(1) to develop, test, and deploy innovative water technologies; or (2) to provide technical assistance to deploy demonstrated innovative water technologies." The models developed, tested and deployed under this solicitation for novel adsorbents for the removal of micropollutants from water are expected to contribute to the development of innovative water technologies for drinking water systems and expected to lead to the development of new and improved drinking water and wastewater treatment processes.

The EPA anticipates funding approximately one award under this funding opportunity up to $1,000,000 in federal funds per award. A minimum 35% non-federal cost share/match of the total project costs is required. See Section III.B. for more details.

EPA recognizes that it is important to engage all available minds to address the environmental challenges facing the Nation. EPA seeks to expand the environmental conversation by including members of communities which may have not previously participated in such dialogues to participate in EPA programs. For this reason, EPA strongly encourages all eligible applicants identified in Section III, including minority serving institutions (MSIs), to apply under this opportunity.

For purposes of this solicitation, the following are considered MSIs:

1. Historically Black Colleges and Universities, as defined by the Higher Education Act (20 U.S.C. § 1061(2)). A list of these schools can be found at Historically Black Colleges and Universities;

2. Tribal Colleges and Universities (TCUs), as defined by the Higher Education Act (20 U.S.C. § 1059c(b)(3) and (d)(1)). A list of these schools can be found at Tribal College or University;

3. Hispanic-Serving Institutions (HSIs), as defined by the Higher Education Act (20 U.S.C. § 1101a(a)(5)). A list of these schools can be found at Hispanic-Serving Institutions;

4. Asian American and Native American Pacific Islander-Serving Institutions; (AANAPISIs), as defined by the Higher Education Act (20 U.S.C. § 1059g(b)(2)). A list of these schools can be found at Asian American and Native American Pacific Islander-Serving Institutions;

5. Predominately Black Institutions (PBIs), as defined by the Higher Education Act (20 U.S.C. 1059e(b)(6)). A list of these schools can be found at Predominately Black Institutions;

6. Native American-Serving Non-Tribal Institutions (NASNTIs), as defined by the Higher Education Act (20 U.S.C § 1059f(b)(2)). A list of these schools can be found at Native American-Serving Non-Tribal Institutions; and

7. Alaska Native and Native Hawaiian-Serving Institutions (AANHs), as defined by the Higher Education Act (20 U.S.C § 1059d(b)(2) and (b)(4)). A list of these schools can be found at Alaska Native and Native Hawaiian-Serving Institutions.

## B. Background, Goals, and Objectives

Dissolved organic micropollutants can include PPCPs, PFAS, polybrominated biphenyls (PBBs) and dioxins, and are increasingly being detected at low levels in surface waters and groundwater. There is concern that even low levels of these compounds may have an adverse impact on human health and aquatic life (USEPA, 2017; USEPA, 2023). Addressing removal of these contaminants from water is a priority under Research Areas 7, 8 and 9 of EPA's FY 2022-2026 Strategic Research Action Plan (StRAP) for Safe and Sustainable Water Resources (SSWR) (https://www.epa.gov/planandbudget/strategicplan).

Currently, GAC and ion exchange (IX) resins are the most common sorbents used to remove micropollutants from water. However, these conventional sorbents have critical deficiencies, such as slow adsorption kinetics and low affinity toward many micropollutants. In addition, micropollutant concentrations in contaminated waters are usually orders-of-magnitude lower than background constituents, such as NOM and other ions, which compete with micropollutants for sorption sites and reduce micropollutant removal efficiencies. These shortcomings result in higher removal costs for many micropollutants thus prompting the need to develop more effective sorbents that exhibit selective and rapid micropollutant removal with high capacity and facile regeneration.

Over the past decade, new classes of materials have shown promise as next-generation adsorbents, such as metal-organic frameworks (MOFs), covalent organic frameworks (COFs), porous organic polymers (POPs), porous aromatic frameworks (PAFs), porous cyclodextrin-based polymers and others. These novel materials have been at the forefront of research as novel sorbents because of their modular design, tunable functionality, and, in some cases, tailorable porosity. Limited information is available on the performance, reliability, secondary impacts, capital costs, and operation and maintenance (O&M) costs of novel sorbents in the context of micropollutant treatment and only limited treatment performance data is available in relevant water systems. Models are needed to predict and understand the effectiveness of novel sorbents for removing specific classes of micropollutants from water. Specifically, there is a need for mechanistic treatment performance models to help predict full-scale performance of novel adsorbents that can capture characteristics of the media within a unit process and relate it to experimentally acquired treatment data (e.g., pilot studies).

Comprehensively assessing the performance of novel sorbents relative to GAC or IX is challenging due to the limited availability of data and lack of relevant performance models. It is important to note that existing models for fixed-bed columns (e.g., pilot, full-scale, or rapid small

scale column tests [RSSCTs]) are likely not suitable for novel adsorbents. Current models for GAC and IX capture adsorption mechanisms, associated mass transfer, and other mechanisms that impact adsorption (i.e., NOM fouling) in ways appropriate for those media, where novel sorbents are expected to have more complex removal or selectivity mechanisms that would not be captured by current models. Consequently, a model (or models) to predict treatment performance for the same water system using relevant engineering design metrics would assist in the identification of the circumstances in which novel sorbents are cost-effective and would help achieve meaningful micropollutant reductions. Better models would effectively target the design of adsorbents for removal of micropollutants and address some of the challenges to treating drinking water while limiting damage to aquatic systems.

Model development herein refers to the development of mechanistic models. Mechanistic models include various parameters that describe adsorption and associated transport at a macroscopic scale. These models typically contain parameters to represent the impact of the kinetics of mass transport (film transfer, pore and surface diffusion as appropriate) and some type of capacity or selectivity term. These fundamental parameters are used as part of a model that represents retention and transport within a full-scale treatment system (typically a fixed-bed adsorber for media like GAC and IX media). Full-scale system treatment performance can then be predicted based on system size (depth and diameter of adsorber), media type and size, mass of media, and treatment flow rate. Mechanistic models predict macroscopic treatment performance using microscopic characteristics and are different than the more general semi-quantitative models. Semi-quantitative models employed in the adsorption literature typically have the form of a logistic function (examples Bohart-Adams, Thomas, or Clark models). These models are often used even when the underlying assumptions used to derive them are not valid, making their application purely empirical. For instance, pseudo-second order kinetics are commonly assumed even in systems where mass transport is rate determining.

Jarvie et al. (2005) and Worch (2021) describe GAC modeling, which includes both mass transfer parameters and Freundlich isotherm, and can capture long term impacts of NOM fouling based on water type. The Freundlich isotherm assumes the potential for multilayer adsorption, where alternate research could consider the Langmuir isotherm—which assumes only single layer adsorption. Another common example, discussed in detail by Haupert et al. (2021), is the assumption of a single adsorbate Langmuir isotherm applied to a multi-adsorbate system. In these cases, such models may result in plausible-looking breakthrough curves but may fail to accurately predict system performance with changes to the underlying system such as bed depth or flow rate. It is therefore not possible to use purely empirical models to connect bench-scale, pilot-scale, and full-scale system performance. Unlike GAC, ion exchange systems require consideration of the exchange of ions directly to represent contaminant removal during treatment. Similarly, Smith et al. (2023) describes a model that is capable of accounting directly for the ion exchange process, rather than defaulting to an empirical Langmuir or Freundlich isotherm. Novel sorbents, particularly those tuned to have high PFAS selectivity, are expected to function using different adsorption/removal/selection mechanisms and so will rely on new fundamental formulations. These changes in model components may impact the importance of mass transfer coefficients, contaminant/micropollutant selectivity/capacity, fouling mechanisms, or combinations of these mechanisms.

Research into novel sorbents (MOFs, COFs, POPs, PAFs, etc.) is needed to explore the underlying chemical or structural characteristics that are significant for micropollutant adsorption/removal. Specifically, the chemical moieties or other material characteristics that lead to improved selectivity of various classes of micropollutants. Theories and associated models that capture these processes are needed, with the goal of usable models that provide engineering predictions to support media selection or system design. Better models would more effectively target the design of adsorbents for micropollutant removal from drinking water and aquatic systems and could address some of the treatment challenges in assuring clean and safe drinking water and limiting damage to aquatic systems.

**C. Authority and Regulations**

The authority for this funding opportunity and resulting award is contained in Section 2007 of America's Water Infrastructure Act of 2018, 42 U.S.C. 300j-1a.

For research with an international aspect, the above statute is supplemented, as appropriate, by the National Environmental Policy Act, Section 102(2)(I).

Note that a project's focus is to consist of activities relating to (1) developing, testing, and deploying innovative water technologies; or (2) providing technical assistance to deploying demonstrated innovative water technologies.

Additional applicable regulations include: 2 CFR Part 200 and 2 CFR Part 1500.

**D. EPA Strategic Plan Linkage/Expected Outputs and Outcomes**
*Note to applicant: The term "output" means an environmental activity, effort, and/or associated work products related to an environmental goal or objective, that will be produced or provided over a period of time or by a specified date. The term "outcome" means the result, effect, or consequence that will occur from carrying out an environmental program or activity that is related to an environmental or programmatic goal or objective.*

The activities to be funded under this solicitation support EPA's FY 2022-2026 Strategic Plan. The award made under this solicitation will support Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.1: Ensure Safe Drinking Water and Reliable Water Infrastructure, of the Plan. All applications must be for projects that support the goal(s) and objective(s) identified above.

The proposed research award supports the Innovative Water Technology Grant Program's objective to provide grants to eligible entities to develop, test, and deploy innovative water technologies. The resulting models developed for novel adsorbents for removal of micropollutants are expected to contribute to the development of innovative water technologies for drinking water systems and lead to development of new and improved drinking water and wastewater treatment processes. This research is expected to provide states and communities

with new methods to help maintain clean and safe water and drinking water free of specific classes of micropollutants.

EPA also requires that grant applicants adequately describe environmental outputs and outcomes to be achieved under assistance agreements (see EPA Order 5700.7A1, Environmental Results under Assistance Agreements). Applicants should include specific statements describing the environmental results of the proposed project in terms of well-defined outputs and, to the maximum extent practicable, well-defined outcomes that will demonstrate how the project will contribute to the goal(s) and objective(s) described above.

**Outputs and Outcomes**

Outputs expected from the research funded under this funding opportunity may include, but are not limited to: predictive models for fixed-bed, flow-through treatment performance, including describing how well novel adsorbents will work for specific classes of micropollutants; demonstration, testing, and deployment of the model(s) developed and case studies; experimental data on adsorption of a specific class of micropollutants on at least two classes of novel adsorbents in flow-through, fixed-bed processes; information for drinking water utilities, wastewater treatment plant engineers and design engineers developing treatment systems; novel mechanistic models for micropollutant removal in water treatment systems; publications of research results in peer-reviewed journals, reports and presentations; and software or other simulation tools implementing the developed models. It is expected that the model development and code for these models will be made publicly available upon completion of this project.

Potential outcomes from the research funded under this funding opportunity may include but are not limited to: reduced costs of testing and deploying innovative micropollutant removal technologies, improved public health and reduced risks to human health and ecosystems from micropollutant removal from water with demonstrated innovative water technologies.

**E. Specific Research Areas of Interest**

The overall goal of the research funded through this funding opportunity is to advance knowledge associated with the development of mechanistic predictive models for novel adsorbents (Ateia et al., 2020) for the effective removal of micropollutants in fixed-bed flow-through column configurations representative of full-scale treatment unit operations. Development and testing of these models are expected to provide predictions for which classes of novel adsorbents can most effectively remove specific classes of micropollutants in real-world applications. They are expected to be used as part of an effort to develop new and improved water treatment processes and contribute to the development and deployment of innovative water treatment technologies for drinking water and wastewater systems. These models are expected to help water utilities and water system engineers better predict the performance of novel adsorbents and make decisions on which new treatment technologies to select and deploy. Applicants should develop a mechanistic model (or models) for flow-through systems that includes (1) predictive treatment of media capacity, selectivity, or other measures of adsorption affinity and (2) appropriate treatment of adsorption kinetics, including applicable mass transport processes in full-scale unit operations. Model development is expected to be supported by

experimental data collected in experiments similar to those that would be used if media were being studied for full-scale use (i.e., at least some flow-through system data needs to be used to validate models, in addition to any batch data). Additional data may also be collected to investigate specific mechanistic or selectivity features unique to the tested sorbents.

**Research Areas**

**Applications should address both Research Areas 1 and 2 below.** Applicants should respond to all the research topics listed under each research area. Applications that do not address both research areas and all the research topics under each research area may not be rated as highly under the evaluation process described in Section V as those that do. If a topic in Areas 1 and 2 is not addressed, the applicant should explain why it isn't relevant for the proposed work. In addition, in accordance with the Innovative Water Technology Grant Program, the proposed research should have the potential to: (A) reduce ratepayer or community costs or costs of future capital investments; (B) significantly improve human health or the environment; or (C) provide additional drinking water supplies with minimal environmental impact. Projects that do not have the potential to address either A, B or C may not be rated as highly under the evaluation process described in Section V as those that do. Applicants may cooperate with a private entity, including a farmer, farmer cooperative, or manufacturer of water technologies. Note that for-profit organizations, except for privately owned public water systems meeting the definition of a public water system in 42 U.S.C 300f(4), are not eligible for subawards under this grant program but may receive procurement contracts. See "Coalitions" under Section IV.E Funding Restrictions.

**Research Area 1.** With the goal of developing new models to predict effectiveness for at least two classes of novel adsorbents, provide a rationale for selecting the adsorbents and the modeling approaches. Applications should address the following research topics:

a. Define the classes of novel adsorbents being proposed for use (at least two), provide justification for their selection and define the types and classes of micropollutants that are expected to be removed by these novel adsorbents.
b. Explain the design parameters showing how the type of adsorbent, apparatus design, and how the micropollutants studied may interrelate.
c. Describe the treatment contexts and practical applications (e.g., drinking water treatment, wastewater treatment, environmental remediation, etc.) that are targeted in the application.
d. Why are existing fixed-bed, flow-through models limited and would a new modeling approach be valuable? Provide justification for selecting the specific micropollutants to be studied within the chosen micropollutant classes and explain how these specific micropollutants will help support the steps of building a new model.
e. For the novel adsorbents selected and the targeted classes of micropollutants, explain how the new model(s) will test the removal hypotheses. Describe the model(s) and associated theory being proposed that account for the unique characteristics of the targeted classes of micropollutants.

**Research Area 2.** Develop, test and deploy a novel model (or models) to predict how well the selected novel adsorbents work for selected micropollutants under a variety of environmentally relevant conditions for flow-through, fixed-bed processes. The experimental data should include sufficient tests to justify the model(s). The testing should show that the proposed model(s) can be deployed and will work under environmentally relevant conditions sufficient to justify the model(s).

For the purposes of this funding opportunity, "deploying a model" indicates a model capable of being run by utilities, engineers, and the general public that have a functional knowledge of programming and water treatment; and that the model with appropriate predictive functionality for a given adsorbent and associated data input capabilities is made publicly available in a standard programming language (e.g., Python, R, C/C++) that can be easily run and is open-source. "Environmentally relevant conditions" indicates that a model should be able to predict treatment performance in water conditions found in real-world water matrices that would be treated by the modeled sorbent and capture the impact of natural organic matter or other co-occurring species that could deleteriously or favorably impact treatment performance.

The model(s) should be developed, tested and deployed so they can feasibly be used by water utilities and engineers and can predict adsorbent performance for specific classes of micropollutants. They should be designed to contribute to the application of innovative water treatment technologies for drinking water and wastewater systems and contribute to developing new and improved water treatment media and processes.

Applications should address the following research topics:

a. Describe what experimental data will be developed on adsorption of those micropollutants for the novel adsorbents chosen (at least two different classes of adsorbents), with the goal of developing a new model for a flow-through, fixed-bed process. This should address both adsorption capacity and kinetics.
b. Explain how additional relevant water quality or operating conditions (e.g., pH, temperature, NOM) are included in the model.
c. What are the types of flow-through, fixed-bed validation studies that would be run? Explain the validation methods to test the model. The outcomes should be mechanistic and linked to physical parameters. Models based on black box concepts or statistical correlations (e.g., machine learning, QSPR) will not be considered responsive to this funding opportunity.
d. Describe how the model(s) will be able to accurately predict how the adsorbents will work for large-scale treatment under conditions relevant to the chosen contexts and/or applications. Is the proposed framework flexible enough to work at multiple sites or over a range of conditions? Explain how your proposed experiments will demonstrate this capability.
e. Describe how the model(s) can be used to further develop related adsorption media with improved performance characteristics.

f. The model(s) developed should be tested and deployed in real-world conditions and the results evaluated for effectiveness. The applicant should make sure that sufficient micropollutants are tested to justify the model.

**Innovation**

To the maximum extent practicable, research applications should embody innovation. Innovation for the purposes of this funding opportunity is defined as the process of making changes; a new method, custom, or device. Innovative research can take the form of wholly new applications or applications that build on existing knowledge and approaches for new uses. Research applications should include a discussion on how the proposed research is innovative (see Section IV.C.5.iii.a). Reviewers will draw from the above-mentioned innovation definition in the review/evaluation process of research applications (see Section V.A).

## F. References


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**G. Special Requirements**

It is EPA Policy to ensure that the results of EPA-funded extramural scientific research are accessible to the public to the greatest extent feasible consistent with applicable law; policies and Orders; the Agency's mission; resource constraints; and U.S. national, homeland and economic security. This entails maximizing, at no charge, access by the public to peer-reviewed, scientific research journal publications or associated author manuscripts, and their underlying digital research data, created in whole or in part with EPA funds, while protecting personal privacy; recognizing proprietary interests, confidential business information, and intellectual property rights; and avoiding significant negative impact on intellectual property rights, innovation, and U.S. competitiveness.

Applications submitted under this announcement should include a Scientific Data Management Plan (SDMP) that addresses public access to EPA-funded scientific research data. See the SDMP clause in Section IV for details on the content of an SDMP. Applicants will also be asked to provide past performance information on whether journal publications or associated author manuscripts, and the associated underlying scientific research data and metadata, under prior assistance agreements were made publicly accessible. These items will be evaluated prior to award.

Reasonable, necessary and allocable costs for data management and public access may be included in extramural research applications and detailed in the budget justification described in Section IV.

Agency policy and ethical considerations prevent EPA technical staff and managers from providing applicants with information that may create an unfair competitive advantage. Consequently, EPA employees will not review, comment, advise, and/or provide technical assistance to applicants preparing applications in response to EPA funding opportunities. EPA employees cannot endorse any specific application.

Multiple Investigator applications may be submitted as: (1) a single Lead Principal Investigator (PI) application with Co-PI(s) or (2) a Multiple PI application (with a single Contact PI). If you choose to submit a Multiple PI application, you must follow the specific instructions provided in Sections IV and V of this funding opportunity. For further information, please see the EPA Implementation Plan for Policy on Multiple Principal Investigators (Research Grants Guidance and Policies).

This solicitation provides the opportunity for the submission of applications for projects that may involve human subjects research. All applications should include a Human Subjects Research Statement (HSRS; described in Section IV.C.5.iii.c of this solicitation). If the project involves human subjects research, it will be subject to an additional level of review prior to funding decisions being made as described in Sections V.D and V.G of this solicitation.

If the applicant is a non-profit organization, the applicant must verify that it provides to small public water systems, onsite technical assistance, circuit-rider technical assistance programs, multistate, regional technical assistance programs, onsite and regional training, assistance with implementing source water protection plans, and assistance with implementing monitoring plans, rules, regulations, and water security enhancements. The application must include a non-profit verification (see "Non-Profit Verification" in Section IV.C.5.iii.e).

These awards may involve the collection of "Geospatial Information," which includes information that identifies the geographic location and characteristics of natural or constructed features or boundaries on the Earth or applications, tools, and hardware associated with the generation, maintenance, or distribution of such information. This information may be derived from, among other things, a Geographic Positioning System (GPS), remote sensing, mapping, charting, and surveying technologies, or statistical data.

### H. Additional Provisions for Applicants Incorporated into the Solicitation

Additional provisions that apply to sections III, IV, V, and VI of this solicitation and/or awards made under this solicitation, can be found at EPA Solicitation Clauses. These provisions are important for applying to this solicitation and applicants must review them when preparing applications for this solicitation. If you are unable to access these provisions electronically at the website above, please contact the EPA point of contact listed in this solicitation (usually in Section VII) to obtain the provisions.

## II. AWARD INFORMATION

It is anticipated that a total of approximately $1,000,000 will be awarded under this announcement, depending on the availability of funds, quality of applications received, and other applicable considerations. The EPA anticipates funding approximately one award under this funding opportunity. Requests for amounts in excess of a total of $1,000,000 in federal funds per award, including direct and indirect costs, will not be considered. In addition, a minimum non-federal cost share/match of 35% of the total project costs which is equivalent at a minimum to 53.846% of the federal funds awarded (which may include in-kind contributions - see Section III.B. for more details), must be included. The minimum 35% non-federal cost share/match, equal to a minimum of $538,462 (assuming the applicant requests $1,000,000 in EPA funds) must be included. Including matching, total project costs can exceed $1,538,462 (if the applicant proposes more than the minimum required non-federal cost share/match), however, the federally funded portion of the budget must not exceed $1,000,000. Applications which do not demonstrate how the applicant will provide the minimum non-federal cost share/match will be

deemed ineligible. The total project period requested in an application submitted for this funding opportunity may not exceed 4 years.

The EPA reserves the right to reject all applications and make no awards under this funding opportunity. The EPA reserves the right to make additional awards under this announcement, consistent with Agency policy, if additional funding becomes available after the original selections are made. Any additional selections for awards will be made no later than six months after the original selection decisions.

In appropriate circumstances, EPA reserves the right to partially fund applications by funding discrete portions or phases of proposed projects. If EPA decides to partially fund an application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process. Awards may be fully or incrementally funded, as appropriate, based on funding availability, satisfactory performance, and other applicable considerations.

EPA intends to award only grants under this announcement.

Under a *grant,* EPA scientists and engineers will not be substantially involved in the execution of the research. However, EPA encourages interaction between its own laboratory scientists and grant Principal Investigators after the award of an EPA grant for the sole purpose of exchanging information in research areas of common interest that may add value to their respective research activities. This interaction must be incidental rather than substantial to achieving the goals of the research under a grant. Interaction that is "incidental" does not involve resource commitments by EPA.

## III. ELIGIBILITY INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

### A. Eligible Applicants

Public water systems, institutions of higher education (IHEs), research institutions or foundations, regional water organizations and certain nonprofit organizations as further described below, located in the U.S. or its territories or possessions are eligible to apply. Profit-making firms and individuals are not eligible to apply.

Public water system, as defined by 42 U.S.C. 300f(4), means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. Such term includes (i) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Privately and publicly owned public water systems that meet the definition of a public water system in 42 U.S.C. 300f(4) are eligible to apply.

A Regional Water Organization, for purposes of this program, is an association or similar incorporated non-profit or governmental entity that represents or coordinates the operations of public water systems in a defined geographic area under a compact, charter or binding contractual agreement.

Consistent with the definition of Nonprofit organization at 2 CFR § 200.1, the term nonprofit organization means any corporation, trust, association, cooperative, or other organization that is operated mainly for scientific, educational, service, charitable, or similar purpose in the public interest and is not organized primarily for profit; and uses net proceeds to maintain, improve, or expand the operation of the organization. Note that 2 CFR § 200.1 specifically excludes Institutions of Higher Education from the definition of non-profit organization because they are separately defined in the regulation. While not considered to be a nonprofit organization(s) as defined by 2 CFR § 200.1, public or nonprofit Institutions of Higher Education are, nevertheless, eligible to submit applications under this funding opportunity. As provided at 42 U.S.C. 300j-1a(a)(2)(E) and 42 U.S.C. 300j-1(e)(8)(A) eligibility is limited to ". . . nonprofit organizations that provide to small public water systems onsite technical assistance, circuit-rider technical assistance programs, multistate, regional technical assistance programs, onsite and regional training, assistance with implementing source water protection plans, and assistance with implementing monitoring plans, rules, regulations, and water security enhancements." For-profit colleges, universities, trade schools, and hospitals are ineligible.

Nonprofit organizations that are not exempt from taxation under section 501 of the Internal Revenue Code must submit other forms of documentation of nonprofit status; such as certificates of incorporation as nonprofit under state or tribal law. Nonprofit organizations exempt from taxation under section 501(c)(4) of the Internal Revenue Code that lobby are not eligible for EPA funding as provided in the Lobbying Disclosure Act, 2 U.S.C. 1611.

Foreign governments, international organizations, and non-governmental international organizations/institutions are not eligible to apply.

National laboratories funded by Federal Agencies (Federally-Funded Research and Development Centers, "FFRDCs") may not apply. FFRDC employees may cooperate or collaborate with eligible applicants within the limits imposed by applicable legislation and regulations. They may participate in planning, conducting, and analyzing the research directed by the applicant, but may not direct projects on behalf of the applicant organization. An award recipient may provide funds through its assistance agreement from the EPA to an FFRDC for research personnel, supplies, equipment, and other expenses directly related to the research.

Federal Agencies may not apply. Federal employees are not eligible to serve in a principal leadership role on an assistance agreement. Federal employees may not receive salaries or augment their Agency's appropriations through awards made under this program unless authorized by law to receive such funding.

The applicant institution may enter into an agreement with a Federal Agency to purchase or utilize unique supplies or services unavailable in the private sector to the extent authorized by law. Examples are purchase of satellite data, chemical reference standards, analyses, or use of instrumentation or other facilities not available elsewhere. A written justification for federal involvement must be included in the application. In addition, an appropriate form of assurance that documents the commitment, such as a letter of intent from the Federal Agency involved, should be included.

Potential applicants who are uncertain of their eligibility should contact the Eligibility Contact listed under Section VII. Agency Contacts.

**B. Cost sharing**

As required under 42 U.S.C. 300j-1a(e), each applicant must contribute a minimum non-federal cost share/match of 35% of the total allowable project costs. This is equivalent at a minimum to 53.846% of the federal amount.

For example, if an applicant requests $1,000,000 in EPA funds, a minimum of $538,462 must be included. Including matching, total project costs can exceed $1,538,462 (if the applicant proposes more than the minimum required non-federal cost share/match), however, the federally-funded portion of the budget must not exceed $1,000,000.

If the applicant is successful, the assistance agreement will display cost share as a percentage of total project costs. Cost share may include in-kind contributions. In order to be eligible for funding consideration, applicants must demonstrate in their applications how they will meet the required minimum 35% cost share/match in accordance with 2 CFR § 200.306.

The cost share/match may be provided in cash or can come from in-kind contributions, such as the use of volunteers and/or donated time, equipment, etc., subject to the regulations governing matching fund requirements at 2 CFR §200.306. Cost share/matching funds are considered grant funds and are included in the total award amount.

All contributions, including cash and third party in-kind, shall be accepted as cost sharing or matching when such contributions meet all of the following criteria: (1) Are verifiable from the non-Federal entity's records; (2) Are not included as contributions for any other Federal award; (3) Are necessary and reasonable for proper and efficient accomplishment of project or program objectives; (4) Are allowable under Subpart E—Cost Principles of 2 CFR Part 200; (5) Are not paid by the Federal Government under another Federal award, except where the Federal statute authorizing a program specifically provides that Federal funds made available for such program can be applied to matching or cost sharing requirements of other Federal programs; (6) Are provided for in the approved budget when required by the Federal awarding agency; and (7) Conform to other provisions of 2 CFR Part 200, as applicable.

Any restrictions on the use of grant funds (examples of funding restrictions are described in Section IV.E of this announcement) also apply to the use of cost share/matching funds.

## C. Other

All applications will be reviewed for eligibility and must meet the eligibility requirements described in Sections III.A., B., and C. to be considered eligible. Applicants deemed ineligible for funding consideration as a result of the threshold eligibility review will be notified within 15 calendar days of the ineligibility determination.

a. Applications must substantially comply with the application submission instructions and requirements set forth in Section IV of this solicitation or else they will be rejected. However, where a page limit is expressed in Section IV with respect to the application, or parts thereof, pages in excess of the page limitation will not be reviewed. Applicants are advised that readability is of paramount importance and should take precedence in application format, including selecting a legible font type and size for use in the application.

b. In addition, initial applications must be submitted through Grants.gov as stated in Section IV of this solicitation (except in the limited circumstances where another mode of submission is specifically allowed for as explained in Section IV) on or before the application submission deadline published in Section IV of this solicitation. Applicants are responsible for following the submission instructions in Section IV of this solicitation to ensure that their application is timely submitted. Please note that applicants experiencing technical issues with submitting through Grants.gov should follow the instructions provided in Section IV, which include both the requirement to contact Grants.gov and email a full application to EPA prior to the deadline.

c. Applications submitted outside of Grants.gov will be deemed ineligible without further consideration unless the applicant can clearly demonstrate that it was due to EPA mishandling or technical problems associated with Grants.gov or SAM.gov. An applicant's failure to timely submit their application through Grants.gov because they did not timely or properly register in SAM.gov or Grants.gov will not be considered an acceptable reason to consider a submission outside of Grants.gov.

If an applicant submits more than one application under this announcement, each application must be submitted separately, and the scope of work proposed in each application must be significantly different from the other application(s) in order for them to all be deemed eligible. If applications are submitted with scopes of work that do not significantly differ, then EPA will only accept the most recently submitted application and all other applications will be deemed ineligible.

If an application is submitted that includes any ineligible tasks or activities, that portion of the application will be ineligible for funding and may, depending on the extent to which it affects the application, render the entire application ineligible for funding.

In order to be deemed eligible, an application submitted by a non-profit organization must include a non-profit verification (see "Non-Profit Verification" in Section IV.C.5.iii.e) stating

that the non-profit organization provides to small public water systems, onsite technical assistance, circuit-rider technical assistance programs, multistate, regional technical assistance programs, onsite and regional training, assistance with implementing source water protection plans, and assistance with implementing monitoring plans, rules, regulations, and water security enhancements.

Applications which do not provide the required non-federal cost share/match will be deemed ineligible. Also, applications exceeding the funding limits or project period described in Section II will be rejected without review. Further, applications that fail to demonstrate a public purpose of support or stimulation (e.g., by proposing research which primarily benefits a Federal program or provides a service for a Federal agency) will not be funded.

## IV. APPLICATION AND SUBMISSION INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

**Formal instructions for submission through Grants.gov are in Section F.**

### A. Grants.gov Submittal Requirements and Limited Exception Procedures

Applicants must apply electronically through Grants.gov under this funding opportunity based on the grants.gov instructions in this announcement. If your organization has no access to the internet or access is very limited, you may request an exception for the remainder of this calendar year by following the procedures outlined here. Please note that your request must be received at least 15 calendar days before the application due date to allow enough time to negotiate alternative submission methods. Issues with submissions with respect to this opportunity only are addressed in Section IV.F. *Submission Instructions and Other Submission Requirements*.

### B. Application Package Information

Use the application package available at Grants.gov (see Section IV.F. "Submission Instructions and Other Submission Requirements"). Note: With the exception of the current and pending support form (available at Research Funding Opportunities: How to Apply and Required Forms), all necessary forms are included in the electronic application package. Make sure to include the current and pending support form in your Grants.gov submission.

### C. Content and Form of Application Submission

The application is made by submitting the materials described below. **Applications must contain all information requested.**

#### 1. Standard Form 424

The applicant must complete Standard Form 424, Application for Federal Assistance. Instructions for completion of the SF-424 are included with the form. However, note that EPA

requires that the entire requested dollar amount appear on the SF-424, not simply the proposed first year expenses. **Note that a minimum non-federal cost share/match of 35% of the total project costs which is equivalent at a minimum to 53.846% of the federal funds awarded must be included.** The form must contain the signature of an authorized representative of the applying organization. Please note the form will be automatically signed by the authorized organization representative when the "Sign & Submit" button is clicked in the Grants.gov Workspace.

**2. Key Contacts, EPA Form 5700-54**

The applicant must complete the "Key Contacts" form found in the Grants.gov application package. An "Additional Key Contacts" form is also available at Research Funding Opportunities: How to Apply and Required Forms. The Key Contacts form should also be completed for major subawards (i.e., principal investigators). Do not include information for consultants or other contractors. Please make certain that all contact information is accurate.

For Multiple PI applications: The Additional Key Contacts form ***must*** be completed (see Section I.G. for further information). *Note: The Contact PI must be affiliated with the institution submitting the application. EPA will direct all communications related to scientific, technical, and budgetary aspects of the project to the Contact PI; however, any information regarding an application will be shared with any PI upon request.* The Contact PI is to be listed on the Key Contact Form as the Project Manager/Principal Investigator (the term Project Manager is used on the Grants.gov form, the term Principal Investigator is used on the form located at Research Funding Opportunities: How to Apply and Required Forms). For additional PIs, complete the Major Co-Investigator fields and identify PI status next to the name (e.g., "Name: John Smith, Principal Investigator").

**3. EPA Form 4700-4, Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance** (For tips on completing the form see: Tips for Completing EPA Form 4700-4.)

**4. SF-424A Budget Information - Non-Construction Programs**

Prepare a master budget table using Standard Form 424A, Budget Information for Non-Construction Programs, available in the Grants.gov electronic application package. Provide the federal funds being requested and non-federal cost share being contributed in "Section A-Budget Summary" under the "New or Revised Budget" heading. In "Section B-Budget Categories", provide the object class budget category (a. - k.) amounts for each budget year under the "Grant Program, Function or Activity" heading. Each column reflects a separate budget year. For example, Column (1) reflects budget year 1. The total budget will be automatically tabulated in column (5).

**Please note that a minimum non-federal cost share/match of 35% of the total project costs which is equivalent at a minimum to 53.846% of the federal funds awarded is required. Cost-shared amounts must be listed in the SF-424A and described in the budget**

**justification.**

Applicants may not use subawards to transfer or delegate their responsibility for successful completion of their EPA assistance agreement. Note: Prior to naming a contractor (including consultants) or subrecipient in your application as a "partner", please carefully review Section IV.d, "Contracts and Subawards", of EPA's Announcement Clauses that are incorporated by reference in this announcement (See Section I.H). EPA expects recipients of funding to comply with competitive procurement contracting requirements as well as EPA's rule on Participation by Disadvantaged Business Enterprises in EPA Programs in 40 CFR Part 33. The Agency does not accept justifications for sole source contracts for services or products available in the commercial marketplace based on a contractor's role in preparing an application.

**5. Project Narrative, submitted using Project Narrative Attachment Form and prepared as described below:**

**i) Table of Contents**

Provide a list of the major subdivisions of the application indicating the page number on which each section begins.

**ii) Abstract** (2 pages)

**The abstract is a very important document in the review process.** Therefore, it is critical that the abstract accurately describes the research being proposed and conveys all the essential elements of the research. Also, the abstracts of applications that receive funding will be posted on EPA's Research Grants website.

The abstract must include the information described below (a-i). Examples of abstracts for current grants may be found on EPA's Research Grants website.

a. Funding Opportunity Title and Number for this application.

b. Applicant Type: Provide the applicant type (from the list below) per the definitions provided in Section III.A:
Public water system
Institution of higher education
Research institution or foundation
Regional water organization
Non-profit organization that provides to small public water systems, onsite technical assistance, circuit-rider technical assistance programs, multistate, regional technical assistance programs, onsite and regional training, assistance with implementing source water protection plans, and assistance with implementing monitoring plans, rules, regulations, and water security enhancements.

c. Project Title: Use the exact title of your project as it appears in the application. The title must be brief yet represent the major thrust of the project. Because the title will be used by those not familiar with the project, use more commonly understood terminology. Do not use general phrases such as "research on."

d. Investigators: For applications with multiple investigators, state whether this is a single Lead PI (with co-PIs) or Multiple PI application (see Section I.G.). For Lead PI applications, list the Lead PI, then the name(s) of each co-PI who will significantly contribute to the project. For Multiple PI applications, list the Contact PI, then the name(s) of each additional PI. Provide a website URL or an email contact address for additional information.

e. Institution(s): In the same order as the list of investigators, list the name, city and state of each participating university or other applicant institution. The institution applying for assistance must be clearly identified.

f. Project Period and Location: Show the proposed project beginning and ending dates and the performance site(s)/geographical location(s) where the work will be conducted.

g. Project Cost: Show the total funding requested from the EPA (include direct and indirect costs for all years) as well as the non-federal cost share/match. Indicate how you will meet the required match requirement.

h. Project Summary: Provide three subsections addressing: (1) the objectives of the study (including any hypotheses that will be tested), (2) the experimental approach to be used (a description of the proposed project) and (3) the expected results (outputs/outcomes) of the project and how it addresses the research needs identified in the solicitation, including the estimated improvement in risk assessment or risk management that will result from successful completion of the proposed work.

i. Supplemental Keywords: Without duplicating terms already used in the text of the abstract, list keywords to assist database searchers in finding your research. A list of suggested keywords may be found at: Research Funding Opportunities: How to Apply and Required Forms.

**iii) Research Plan, Quality Assurance Statement, Human Subjects Research Statement, Scientific Data Management Plan, Non-Profit Verification (for applications from non-profit organizations) and References**

a. Research Plan (16 pages)

Applications should focus on a limited number of research objectives that adequately and clearly demonstrate that they meet the funding opportunity's requirements. Explicitly state the main hypotheses that you will investigate, the data you will create or use, the analytical tools you will use to investigate these hypotheses or analyze these data and the results you expect to achieve. Research methods must be clearly stated so that reviewers can evaluate the appropriateness of

your approach and the tools you intend to use. A statement such as: "we will evaluate the data using the usual statistical methods" is not specific enough for peer reviewers.

This description must not exceed sixteen (16) consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. While these guidelines on page size, point type and margins establish the minimum type size requirements, applicants are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the application.

The description must provide the following information:

(1) Objectives: List the objectives of the proposed research and the hypotheses being tested during the project, and briefly state why the intended research is important, how it supports the Agency's research priorities and how it fulfills the requirements of the solicitation. This section should also include any background or introductory information that would help explain the objectives of the study. If this application is to expand upon research supported by an existing or former assistance agreement awarded under an EPA program, indicate the number of the agreement and provide a brief report of progress and results achieved under it.

(2) Approach/Activities: Outline the research design, methods, and techniques that you intend to use in meeting the objectives stated above.

(3) Innovation: Describe how your project shifts current research or engineering paradigms by using innovative theoretical concepts, approaches or methodologies, instrumentation or interventions applicable to one or more fields of research.

(4) Expected Results, Benefits, Outputs and Outcomes: Describe the expected outputs and outcomes resulting from the project, which includes describing how the proposed research has the potential to: (A) reduce ratepayer or community costs or costs of future capital investments; (B) significantly improve human health or the environment; or (C) provide additional drinking water supplies with minimal environmental impact. This section should also discuss how the research results will lead to solutions to environmental problems and improve the public's ability to protect the environment and human health. A clear, concise description will help the Office of Research and Development (ORD) and peer reviewers understand the merits of the research.

(5) Project Management: Discuss other information relevant to the potential success of the project. This should include facilities, personnel expertise/experience, project schedules with associated milestones and target dates, proposed management, interactions with other institutions, etc. This includes qualifications and experience in providing training and technical assistance to small public water systems. If applicable, provide resources available to specific senior/key person(s), such as additional research space or personnel and in-kind contributions with an estimated dollar value of $5,000 or more that support the research activity for use on the project/application being proposed. If applicable, also

provide information on postdoctoral scholars, students, or visiting scholars who are supported by an external entity, and whose research activities are intended for use on the project/application being proposed. Describe the approach, procedures, and controls for ensuring that awarded grant funds will be expended in a timely and efficient manner and detail how project objectives will be successfully achieved within the grant period. Describe how progress toward achieving the expected results (outputs and outcomes) of the research will be tracked and measured. Applications for multi-investigator projects must identify project management and the functions of each investigator in each team and describe plans to communicate and share data.

(6) Appendices may be included but must remain within the 16-page limit.

b. Quality Assurance Statement (QAS) (3 pages)

A QAS is required for projects involving collection or processing of environmental information, sampling and analysis, conducting surveys, modeling, method development, or the development of environmental technology (whether hardware-based or via new techniques). The QAS should discuss the plans for processes that will be used to ensure that the products of the research satisfy the intended project objectives. Follow the guidelines provided below to ensure that the QAS describes a system that complies with EPA quality assurance standards. Additional QA requirements apply after award and are included in the terms and conditions of the assistance agreement.

**Address each section below by including the required information or explaining why the section does not apply to the proposed research. Applicants may be asked to provide additional information for incomplete responses.**

(1) Identify the individual who will be responsible for the quality assurance (QA) and quality control (QC) aspects of the research along with a brief description of this person's functions, experience, and authority within the research organization. Describe the organization's general approach for conducting quality research. *(QA is a system of management activities to ensure that a process or item is of the type and quality needed for the project. QC is a system of activities that measures the attributes and performance of a process or item against the standards defined in the project documentation to verify that they meet those stated requirements.)*

(2) Discuss project quality objectives, any hypotheses to be tested, and the quantitative and/or qualitative procedures that will be used to evaluate the success of the project.

(3) Address each of the following project elements as applicable:

(a) Collection of new/primary data:
*(**Note:** In this case the word "sample" is intended to mean any finite part of a statistical population whose properties are studied to gain information about the whole.*

*If certain attributes listed below do not apply to the type of samples to be used in your research, simply explain why those attributes are not applicable.)*

(i) Discuss the plan for sample collection and analysis. As applicable, include sample type(s), frequency, locations, sample sizes, sampling procedures, and the criteria for determining acceptable data quality (e.g., precision, accuracy, representativeness, completeness, comparability, or data quality objectives).

(ii) Describe the procedures for the handling and custody of samples including sample collection, identification, preservation, transportation, and storage, and how the accuracy of test measurements will be verified.

(iii) Describe or reference each analytical method to be used, any QA or QC checks or procedures with the associated acceptance criteria, and any procedures that will be used in the calibration and performance evaluation of the analytical instrumentation.

(iv) Discuss the procedures for overall data reduction, analysis, and reporting. Include a description of all statistical methods to make inferences and conclusions, acceptable error rates and/or power, and any statistical software to be used.

(b) Use of existing/secondary data (i.e., data previously collected for other purposes or from other sources):

(i) Identify the types of secondary data needed to satisfy the project objectives. Specify requirements relating to the type of data, the age of data, geographical representation, temporal representation, and technological representation, as applicable.

(ii) Specify the source(s) of the secondary data and discuss the rationale for selection.

(iii) Establish a plan to identify the sources of the secondary data in all deliverables/products.

(iv) Specify quality requirements and discuss the appropriateness for their intended use. Accuracy, precision, representativeness, completeness, and comparability need to be addressed, if applicable.

(v) Describe the procedures for determining the quality of the secondary data.

(vi) Describe the plan for data management/integrity.

(c) Method development:

*(**Note:** The data collected for use in method development or evaluation should be described in the QAS as per the guidance in section 3A and/or 3B above.)*

Describe the scope and application of the method, any tests (and measurements) to be conducted to support the method development, the type of instrumentation that will be used and any required instrument conditions (e.g., calibration frequency), planned QC checks and associated criteria (e.g., spikes, replicates, blanks), and tests to verify the method's performance.

(d) Development or refinement of models:

*(**Note:** The data collected for use in the development or refinement of models should be described in the QAS as per the guidance in section 3A and/or 3B above.)*

(i) Discuss the scope and purpose of the model, key assumptions to be made during development/refinement, requirements for code development, and how the model will be documented.

(ii) Discuss verification techniques to ensure the source code implements the model correctly.

(iii) Discuss validation techniques to determine that the model (assumptions and algorithms) captures the essential phenomena with adequate fidelity.

(iv) Discuss plans for long-term maintenance of the model and associated data.

(e) Development or operation of environmental technology:

*(**Note:** The data collected for use in the development or evaluation of the technology should be described in the QAS as per the guidance in section 3A and/or 3B above.)*

(i) Describe the overall purpose and anticipated impact of the technology.

(ii) Describe the technical and quality specifications of each technology component or process that is to be designed, fabricated, constructed, and/or operated.

(iii) Discuss the procedure to be used for documenting and controlling design changes.

(iv) Discuss the procedure to be used for documenting the acceptability of processes and components and discuss how the technology will be benchmarked and its effectiveness determined.

(v) Discuss the documentation requirements for operating instructions/guides for maintenance and use of the system(s) and/or process(s).

(f) Conducting surveys:

*(**Note:** The data to be collected in the survey and any supporting data should be described in the QAS as per the guidance in section 3A and/or 3B above.)*

Discuss the justification for the size of the proposed sample for both the overall project and all subsamples for specific treatments or tests. Identify and explain the rational for the proposed statistical techniques (e.g., evaluation of statistical power).

4. Discuss data management activities (e.g., daily activity record-keeping procedures, data verification and validation procedures).

Applicants should contact the Technical Contact listed under Section VII. *Agency Contacts* regarding questions pertaining to Quality Assurance.

c. EPA Human Subjects Research Statement (HSRS) (4 pages)

Human subjects research supported by the EPA is governed by EPA Regulation 40 CFR Part 26 - Protection of Human Subjects. This includes the Common Rule at subpart A and prohibitions and additional protections for pregnant women and fetuses, nursing women and children at subparts B, C and D. While retaining the same notation, subparts B, C and D are substantively different in 40 CFR Part 26 than in the more commonly cited 45 CFR 46. Particularly noteworthy is that research meeting the regulatory definition of intentional exposure research found in subpart B is prohibited by that subpart in pregnant women, nursing women and children. Research meeting the regulatory definition of observational research (any research that is not intentional exposure research) found in subparts C and D is subject to the additional protections found in those subparts for pregnant women and fetuses (subpart C) and children (subpart D). These subparts also differ markedly from the language in 45 CFR 46. For more information, please see: Basic Information about Human Subjects Research.

Procedures for the review and oversight of human research subject to 40 CFR Part 26 are also provided in EPA Order 1000.17A. These include review of projects for EPA-supported human research by the EPA Human Subjects Research Review Official (HSRRO). Additional requirements must be met and final approval must be received from the HSRRO before the human subjects' portion of the research can begin. When reviewing human observational exposure studies, EPA Order 1000.17A requires the HSRRO to apply the principles described in the SEAOES document and grant approval only to studies that adhere to those principles.

All applications submitted under this solicitation should include a HSRS as described below. For more information about what constitutes human subjects research, please see: Basic Information about Human Subjects Research. For information on the prohibition on the inclusion of vulnerable subjects in intentional exposure research, please see: Protection of Human Subjects.

**Human Subjects Research Statement (HSRS) Requirements**
If the proposed research **does not** involve human subjects as defined above, provide the following statement in your application package as your HSRS: "The proposed research does not involve human subjects." Applicants should provide a clear justification about how the proposed research does not meet the definition (for example, all samples come from deceased individuals OR samples are purchased from a commercial source and provided without identifiers, etc.).

If the proposed research **does** involve human subjects, then include in your application package a HSRS that addresses each applicable section listed below, referencing the specific location of the information in the Research Plan, providing the information in the HSRS or explaining why the section does not apply to the proposed research. (Not all will apply). Please note that even research that has been determined to be exempt from the human subjects regulations by an IRB (or other human subject research official at the institution) must be reviewed by the EPA HSRRO. Therefore, consider exempt research to include human subjects work for this EPA solicitation. Do not exceed **four** consecutively numbered, 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. The factors below are not intended to be exhaustive of all those needed for the HSRRO to provide the final approval necessary for research to be conducted but provide a basis upon which the human subjects oversight review may begin.

NOTE: Researchers must provide evidence of an assurance (also known as Federal Wide Assurance [FWA]) on file with the U.S. Department of Health and Human Services (HHS) or other Federal Agency that it will comply with regulatory provisions in the Common Rule. In special circumstances where there is no such assurance, EPA will work with investigators to obtain an assurance from HHS or another source.

**Complete all items below for studies involving human subjects.**
Protection of Human Subjects (Adapted from National Institutes of Health Supplemental Instructions for PHS 398 and SF424 (R&R) II-10)

1. Risks to Human Subjects
    a. Human Subjects Involvement, Characteristics and Design
        • Describe and justify the proposed involvement of human subjects in the work outlined in the Research Strategy section.
        • Describe the characteristics of the subject population, including their anticipated number, age range, and health status, if relevant.
        • Describe and justify the sampling plan, including retention strategies and the criteria for inclusion or exclusion of any subpopulation.
        • Explain the rationale for the involvement of special vulnerable populations, such as pregnant women, children, or others who may be considered vulnerable populations.
        • If relevant to the proposed research, describe procedures for assignment to a study group. As related to human subject's protection, describe and justify the selection of an intervention's dose, frequency, and administration.
        • List any collaborating sites where human subjects research will be performed and describe the role of those sites and collaborating investigators in performing the proposed research. Explain how data from the site(s) will be obtained, managed, and protected.
    b. Sources of Materials
        • Describe the research material obtained from living individuals in the form of specimens, records, or data.
        • Describe any data that will be collected from human subjects for the project(s) described in the application.

• Indicate who will have access to individually identifiable private information about human subjects.
• Provide information about how the specimens, records, and/or data are collected, managed and protected as well as whether material or data that include individually identifiable private information will be collected specifically for the proposed research project.

c. Potential Risks

• Describe all the potential risks to subjects posed by participation in the research (physical, psychological, financial, legal, or other), and assess their likelihood and seriousness to the human subjects.
• Where appropriate, describe alternative treatments and procedures, including the risks and potential benefits of the alternative treatments and procedures, to participants in the proposed research.

2. Adequacy of Protection Against Risks

a. Recruitment and Informed Consent

• Describe plans for the recruitment of subjects (where appropriate) and the process for obtaining informed consent. If the proposed studies will include children, describe the process for meeting requirements for parental permission and child assent.
• Include a description of the circumstances under which consent will be sought and obtained, who will seek it, the nature of the information to be provided to prospective subjects and the method of documenting consent. If a waiver of some or all of the elements of informed consent will be sought, provide justification for the waiver.

b. Protections Against Risk

• Describe planned procedures for protecting against or minimizing potential risks, including risks to privacy of individuals or confidentiality of data and assess their likely effectiveness.
• Research involving vulnerable populations, as described in the EPA regulations, Subparts B-D, must include additional protections. Refer to EPA guidance and regulations:

Prohibition of Research Conducted or Supported by EPA Involving Intentional Exposure of Human Subjects who are Children or Pregnant or Nursing Women
Basic Information about Human Subjects Research
Protection of Human Subjects

Additional Protections for Pregnant Women and Fetuses Involved as Subjects in Observational Research Conducted or Supported by EPA
Basic Information about Human Subjects Research
Protection of Human Subjects

Additional Protections for Children Involved as Subjects in Observational Research Conducted or Supported by EPA
Basic Information about Human Subjects Research

Protection of Human Subjects

• Where appropriate, discuss plans for ensuring necessary medical or professional intervention in the event of adverse effects to the subjects. Studies that involve clinical trials must include a general description of the plan for data and safety monitoring of the clinical trials and adverse event reporting to the IRB, the Data and Safety Monitoring Board (DSMB) (if one has been established for the trial), the EPA and others, as appropriate, to ensure the safety of subjects.

3. Potential Benefits of the Proposed Research to Human Subjects and Others
   • Discuss the potential benefits of the research to research participants and others.
   • Discuss why the risks to subjects are reasonable in relation to the anticipated benefits to research participants and others.
   • Please note that financial compensation of subjects is not considered to be a benefit of participation in research.
4. Importance of the Knowledge to be Gained
   • Discuss the importance of the knowledge to be gained as a result of the proposed research.
   • Discuss why the risks to subjects are reasonable in relation to the importance of the knowledge that reasonably may be expected to result.

**Note that an Interventional Study (or Clinical Trial)** is a clinical study in which participants are assigned to receive one or more interventions (or no intervention) so that researchers can evaluate the effects of the interventions on biomedical or health-related outcomes; the assignments are determined by the study protocol.

d. Scientific Data Management Plan (2 pages)

Applications submitted in response to this solicitation should include a Scientific Data Management Plan (SDMP) that addresses public access to EPA-funded scientific research data by including the information below:

(1) If the proposed research described in the application is expected to result in the generation of scientific research data, the application should include a Scientific Data Management Plan (SDMP) of up to two single-spaced pages (this is in addition to any application page limits described in Section IV of this solicitation that apply to other parts of the application package) describing plans for providing long-term preservation of, and public access to, the scientific research data and accompanying metadata created and/or collected under the award (including data generated under subawards and contracts) funded in whole or in part by EPA. The SDMP should indicate that recipients will make accessible, at a minimum, scientific research data and associated metadata underlying their scientific research journal publications funded in whole or in part by EPA. SDMPs should reflect relevant standards and community best practices for data and metadata and make use of community-accepted repositories whenever practicable. The contents of the SDMP (or absence thereof) will be considered as part of the application review process for selected applicants as described in Section V and must be deemed acceptable for the

applicant to receive an award. The SDMP should include the following elements (Note: If any of the items listed below do not apply, please explain why):

i. Types of scientific research data and metadata expected to be generated and/or collected under the award.
ii. The location where the data will be publicly accessible.
iii. The standards to be used for data/metadata format and content.
iv. Policies for accessing and sharing data including provisions for appropriate protection of privacy, security, intellectual property, and other rights or requirements consistent with applicable laws, regulations, rules, and policies.
v. Plans for digital data storage, archiving, and long-term preservation that address the relative value of long-term preservation and access along with the associated costs and administrative burden.
vi. Description of how data accessibility and preservation will enable validation of published results or how such results could be validated if data are not shared or preserved.
vii. Roles and responsibilities for ensuring SDMP implementation and management (including contingency plans in case key personnel leave the project).
viii. Resources and capabilities (equipment, connections, systems, software, expertise, etc.) requested in the research application that are needed to meet the stated goals for accessibility and preservation (reference can be made to the relevant section of the research application's budget justification).
ix. If appropriate, an explanation as to why data accessibility and/or preservation are not possible.

(2) If the proposed research is not expected to result in the generation of scientific research data, provide the following statement (not subject to any application page limits described in Section IV of this solicitation) in your application as the SDMP: "The proposed research is not expected to result in the generation of scientific research data." If scientific research data are generated after award, the recipient agrees to update the statement by providing EPA with a revised SDMP (see content of SDMP described above) describing how scientific research data and accompanying metadata created and/or collected under the award (including data generated under subawards and contracts) will be preserved and, as appropriate, made publicly accessible.

e. Non-Profit Verification (1 page)

For applications from non-profit organizations, provide the following statement in your application package verifying that you meet the non-profit eligibility requirement:

"I verify that [insert name of organization] provides to small public water systems, onsite technical assistance, circuit-rider technical assistance programs, multistate, regional technical assistance programs, onsite and regional training, assistance with implementing source water protection plans, and assistance with implementing monitoring plans, rules, regulations, and water security enhancements."

f. References: References cited are in addition to other page limits (e.g., research plan, quality assurance statement).

**iv) Budget Justification** *[3 pages in addition to the Section IV.C.5.iii page limitations]*

Identify the amount requested for each budget category and describe the basis for calculating the personnel, fringe benefits, travel, equipment, supplies, contractual support, and other costs identified in the SF-424A. **Cost shared amounts must be described in the budget justification under each applicable category.** The budget justification should not exceed three consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins. EPA provides detailed guidance on preparing budgets and budget justifications in the Agency's Interim General Budget Development Guidance for Applicants and Recipients of EPA Financial Assistance.

Budget information must be supported at the level of detail described below:

a. Personnel: List all staff positions by title. Give annual salary, percentage of time assigned to the project, total cost for the budget period, project role, and specify any annual cost of living adjustments. Compensation paid for employees engaged in grant activities must be consistent with payments for similar work within the applicant organization. Note that for salaries to be allowable as a direct charge to the award, a justification of how that person will be directly involved in the project must be provided. General administrative duties such as answering telephones, filing, typing, or accounting duties are not considered acceptable.

   Below is a sample computation for Personnel:

| **Position/Title** | **Annual Salary** | **% of Time Assigned to Project** | **Year 1** | **Year 2*** | **Year 3*** | **Total** |
|---|---|---|---|---|---|---|
| Project Manager | $70,000 | 50% | $35,000 | $36,050 | $37,132 | $108,182 |
| Env. Specialist | $60,000 | 100% | $60,000 | $61,800 | $63,654 | $185,454 |
| Env. Health Tech (cost share) | $45,000 | 100% | $45,000 | $46,350 | $47,741 | $139,091 |
| **Total Personnel Request** | | | **$95,000** | **$97,850** | **$100,786** | **$293,636** |
| **Total Personnel Cost Share** | | | **$45,000** | **$46,350** | **$47,741** | **$139,091** |
| **Total Personnel (EPA + Cost Share)** | | | **$140,000** | **$144,200** | **$148,527** | **$432,727** |

***There is a 3% increase after Year 1 for all personnel for cost of living adjustments.**

Note this budget category is limited to persons employed by the applicant organization ONLY. Those employed elsewhere are classified as subawardees, program participants, contractors, or consultants. Contractors and consultants should be listed under the "Contractual" budget heading. Subawards made to eligible subrecipients are listed under the "Other" budget heading. Participant support costs such as stipends or travel assistance for trainees (e.g., interns or fellows) are listed under the "Other" budget heading.

b. Fringe Benefits: Identify the percentage used and the basis for its computation. Fringe benefits are for the personnel listed in budget category (a) above and only for the percentage of time devoted to the project. Fringe benefits include but are not limited to the cost of leave, employee insurance, pensions and unemployment benefit plans. The applicant should not combine the fringe benefit costs with direct salaries and wages in the personnel category.

   Below is a sample computation for Fringe Benefits:

| **Position/Title** | **Base Fringe % Rate** | ***Year 1*** | ***Year 2**** | ***Year 3**** | **Total** |
|---|---|---|---|---|---|
| Project Manager | 47.22% | $16,527 | $17,022 | $17,533 | $51,082 |
| Env. Specialist | 50.83% | $30,498 | $31,413 | $32,355 | $94,266 |
| Project Manager (cost share) | 49.16% | $22,122 | $22,786 | $23,469 | $68,377 |
| **Total Fringe Benefits Request** | | | | | **$145,348** |
| **Total Fringe Benefits Cost Share** | | | | | **$68,377** |
| **Total Fringe (EPA + Cost Share)** | | | | | **$213,725** |

***An annual inflation rate of 3% has been factored into years 2 and 3 of the fringe benefits.**

c. Travel: In a table format, specify the estimated number of trips, purpose of each trip, number of travelers per trip, destinations, and other costs for each type of travel for applicant employees. Travel costs for program participants should be specified in the "Other" budget category. Explain the need for any travel, paying particular attention to travel outside the United States. Foreign travel includes trips to Mexico and Canada but does not include trips to Puerto Rico, the U.S. territories or possessions. **If EPA funds will not be used for foreign travel, the budget justification must expressly state that the applicant will not use EPA funds for foreign travel without approval by EPA.** Include travel funds for annual progress reviews (estimate for two days in Washington, D.C.) and a final workshop to report on results.

   Below is a sample computation for Travel:

| **Purpose of Travel** | **Location** | **Item** | **Computation** | **Cost** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| EPA Progress Review | Washington DC | Lodging | 4 people x $100 per night x 2 nights | $800 |
| | | Airfare | 4 people x $500 round trip | $2,000 |
| | | Per Diem | 4 people x 50 per day x 2 days | $400 |
| **Total Travel** | | | | **$3,200** |

d. Equipment: Identify all tangible, non-expendable personal property to be purchased that has an acquisition cost of $5,000 or more per unit and a useful life of more than one year. Equipment also includes accessories and services included with the purchase price necessary for the equipment to be operational. It does not include: (1) equipment planned to be leased/rented; or (2) separate equipment service or maintenance contracts. Details such as the type of equipment, cost, and a brief narrative on the intended use of the equipment for project objectives are required. Each item of equipment must be identified with the corresponding cost. Particular brands of equipment should not be identified. General-purpose equipment (office equipment, etc.) must be justified as to how it will be used on the project. (Property items with a unit cost of less than $5,000 are considered supplies).

e. Supplies: "Supplies" are tangible property other than "equipment" with a per item acquisition cost of less than $5,000. Include a brief description of the supplies required to perform the work. Costs should be categorized by major supply categories (e.g., office supplies, computing devices, monitoring equipment) and include the estimated costs by category.

f. Contractual: List the proposed contractual activities along with a brief description of the scope of work or services to be provided, the proposed duration of the contract/procurement, the estimated cost, and the proposed procurement method (competitive or non-competitive). **Any procurement of services from individual consultants or commercial firms (including space for workshops) must comply with the competitive procurement requirements of 2 CFR Part 200.317-200.327. Please see EPA Solicitation Clauses for more details.** EPA provides detailed guidance on procurement requirements in the Agency's Best Practice Guide for Procuring Services, Supplies, and Equipment Under EPA Assistance Agreements.

Examples of Contractual costs include:

i. Consultants – Consultants are individuals with specialized skills who are paid at a daily or hourly rate. EPA's participation in the salary rate (excluding overhead) paid to individual consultants retained by recipients or by a recipient's contractors or subcontractors is limited to the maximum daily rate for a Level IV of the Executive Schedule (formerly GS-18), to be adjusted annually.

ii. Speaker/Trainer Fees – Information on speakers should include the fee and a description of the services they are providing.

g. Other: List each item in sufficient detail for the EPA to determine the reasonableness of its cost relative to the research to be undertaken. "Other" items may include equipment

rental, telephone service and utilities and photocopying costs. Note that subawards, such as those with other universities or nonprofit research institutions for members of the research team, are included in this category. **Provide the total costs proposed for subawards as a separate line item in the budget justification and brief description of the activities to be supported for each subaward or types of subawards if the subrecipients have not been identified.** Subawards may not be used to acquire services from consultants or commercial firms. Please see EPA Solicitation Clauses for more details. The "Other" budget category also includes participant support costs such as stipends or travel assistance for trainees (e.g., interns or fellows). **Provide the total costs proposed for participant support costs as a separate line item in the budget justification and brief description of the costs. If EPA funds will not be used for foreign travel by program participants, the budget justification must expressly state that the applicant will not use EPA funds for foreign travel without approval by EPA.**

Below is a sample computation for Other:

| Item | Description | Year 1 | Year 2 | Year 3 | Total |
|---|---|---|---|---|---|
| Publication costs | The costs incurred will be for dissemination of results in peer reviewed journal publications. | $0 | $3,000 | $3,000 | $6,000 |
| Tuition Cost-share | Graduate students (2) | $15,000 | $15,000 | $15,000 | $45,000 |
| Subaward to X University | To conduct all work related to evaluation of experimental mouse models | $100,000 | $100,000 | $100,000 | $300,000 |
| Subaward to Y University – cost share | To conduct fish models | $20,000 | $20,000 | $20,000 | $60,000 |
| Other: Participant Support Costs | Participant Incentives (100 x $25) | | | | $2,500 |
| Other: Participant Support Cost Share | Participant Incentives (100 x $25) | | | | $2,500 |
| Total Publication Request | | | | | $6,000 |
| Total Tuition – Cost Share | | | | | $45,000 |
| Total Subaward Request | | | | | $300,000 |
| Total Subaward – Cost Share | | | | | $60,000 |
| Total Participant Support Request | | | | | $2,500 |
| Total Participant Support – Cost Share | | | | | $2,500 |
| **Total Other Request** | | | | | $308,500 |
| **Total Other – Cost Share** | | | | | $107,500 |
| **Total Other (EPA + Cost Share)** | | | | | $416,000 |

h. Indirect Costs: For additional information pertaining to indirect costs, please see the IDC Competition Clause at EPA Solicitation Clauses.

**v) Resumes** (2 Pages Per Resume)

Provide resumes for each senior/key person[1]. Senior/key persons typically do not include undergraduate and graduate students. The resume is not limited to traditional materials but should provide materials to clearly and appropriately demonstrate that the senior/key person has the knowledge needed to perform their component of the proposed research. The resume for each senior/key person must not exceed two consecutively numbered (bottom center), 8.5x11-inch pages of single-spaced, standard 12-point type with 1-inch margins.

In addition to professional preparation (e.g., education and training), the resume should also include academic, professional or institutional appointments and positions, whether or not remuneration is received, and whether they are full-time, part-time, or voluntary. A list of products that demonstrate the individual's qualifications to carry out the project as proposed should also be included.

For a complete listing of what information needs to be disclosed, please see **NSPM-33 Implementation Guidance Pre-award and Post-award Disclosures Relating to the Biographical Sketch and Current and Pending (Other) Support** at NSTC Research Security Subcommittee NSPM-33 Implementation Guidance Disclosure Requirements & Standardization.

**vi) Current and Pending Support**

Current and pending support information is used to assess the capacity of the individual to carry out the research as proposed and helps assess any potential scientific and budgetary overlap/duplication, as well as overcommitment with the project being proposed. Complete a current and pending support form (provided at Research Funding Opportunities: How to Apply and Required Forms) for each senior/key person (see footnote 1). Senior/key persons typically do not include undergraduate and graduate students. Include all current and pending support regardless of source. Senior/key persons will certify that the information contained in their current and pending support form is current, accurate, and complete. For applications selected for funding, EPA will require senior/key persons to update, as needed, their current and pending support disclosure prior to award and at any subsequent time the agency determines appropriate during the term of the award.

Current and pending research support means all resources made available, or expected to be made available, to an individual in support of the individual's research and development efforts, regardless of: (i) whether the source of the resource is foreign or domestic; (ii) whether the resource is made available through the entity applying for a research and development award or directly to the individual; or (iii) whether the resource has monetary value. Current and pending

[1] Individual identified by the applicant and designated by EPA who will contribute in a substantive, meaningful way to the scientific development or execution of a research and development project proposed to be carried out with a research and development award from a Federal research agency.

research support also includes in-kind contributions requiring a commitment of time and directly supporting the individual's research and development efforts, such as the provision of office or laboratory space, equipment, supplies, employees, or students.

Consistent with the Guidance for Implementing National Security Presidential Memorandum 33 (NSPM-33) on National Security Strategy for United States Government-Supported Research and Development, senior/key persons are required to disclose contracts associated with participation in programs sponsored by foreign governments, instrumentalities, or entities, including foreign government-sponsored talent recruitment programs. Note that non-disclosure clauses associated with these contracts are not acceptable exemptions from this disclosure requirement.

Senior/key persons should disclose current or pending participation in, or applications to, programs sponsored by foreign governments, instrumentalities, or entities, including foreign government-sponsored talent recruitment programs.

Senior/key persons should disclose consulting activities when any of the following scenarios apply: (i) the consulting activity will require the senior/key person to perform research as part of the consulting activity; (ii) the consulting activity does not involve performing research, but is related to the senior/key person's research portfolio and may have the ability to impact funding, alter time or effort commitments, or otherwise impact scientific integrity; or (iii) the consulting entity has provided a contract that requires the senior/key person to conceal or withhold confidential financial or other ties between the senior/key person and the entity, irrespective of the duration of the engagement.

Senior/key persons should also disclose in-kind contributions with an estimated dollar value of $5,000 or more not intended for use on the project/application being proposed and have an associated time commitment; postdoctoral scholars, students, or visiting scholars who are supported by an external entity, whose research activities are not intended for use on the project/application being proposed and have an associated time commitment; travel supported/paid by an external entity to perform research activities with an associated time commitment; startup company based on non-organization-licensed IP; and startup packages from other than the proposing organization.

For a complete listing of what information needs to be disclosed, please see **NSPM-33 Implementation Guidance Pre-award and Post-award Disclosures Relating to the Biographical Sketch and Current and Pending (Other) Support** at NSTC Research Security Subcommittee NSPM-33 Implementation Guidance Disclosure Requirements & Standardization.

**In accordance with Section 223(a)(1) of the *William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021* (42 USC 6605(a)(1)), senior/key persons are required to certify that the information provided in their current and pending support form is current, accurate, and complete. Each senior/key person who provides a pending and support form must also provide a certification attesting that the information contained in**

**the form is current, accurate, and complete.** Senior/key persons should add the certification as an additional page to their current and pending support form.

False representations may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

***Note to all prospective applicants requiring multiple Current and Pending Support Form pages:*** Due to a limitation in Adobe Acrobat's forms functionality, additional pages cannot be directly inserted into the original PDF form and preserve the form data on the subsequent pages. Multiple page form submissions can be created in Acrobat 8 and later using the "PDF Package" option in the "Create PDF from Multiple Files" function. If you have an earlier version of Adobe Standard or Professional, applicants will need to convert each PDF page of the form to an EPS (Encapsulated Post Script) file before creating the PDF for submission. The following steps will allow applicants with earlier versions of Adobe Standard or Professional to create a PDF package:

1. Populate the first page of the PDF and save it as an EPS (Encapsulated Post Script) file.
2. Reopen the form and populate it with the data for page 2. Save this page as a different EPS file. Repeat for as many pages as necessary.
3. Use Acrobat Distiller to convert the EPS files back to PDF.
4. Open Acrobat Professional and combine the individual pages into a combined PDF file.

**vii) Applicant Current and Pending Support Certification** (1 Page)

The applicant's Authorized Organization Representative (AOR) is required to provide a certification that each individual employed by the organization and identified on the application as a senior/key person has been made aware of the certification requirements identified in the *William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021,* Section 223(a)(1) (42 USC 6605(a)(1)).

False representations may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

**viii) Guidelines, Limitations, and Additional Requirements**

a. Letters of Intent/Letters of Support

*Letters of intent* to provide resources for the proposed research or to document intended interactions are limited to one brief paragraph committing the availability of a resource (e.g., use of a person's time or equipment) or intended interaction (e.g., sharing of data, as-needed consultation) that is described in the Research Plan. EPA employees are not permitted to provide letters of intent for any application.

*Letters of support* do not commit a resource vital to the success of the application. A letter of support is written by businesses, organizations, or community members stating their support of

the applicant's proposed project. EPA employees are not permitted to provide letters of support for any application.

Note: Letters of intent or support must be part of the application; letters submitted separately will not be accepted. Any letter of intent or support that exceeds one brief paragraph (excluding letterhead and salutations), is considered part of the Research Plan and is included in the 16-page Research Plan limit. Any transactions between the successful applicant and parties providing letters of intent or support financed with EPA grant funds are subject to the contract and subaward requirements described here at EPA Solicitation Clauses.

b. Funding Opportunity Number(s) (FON)

At various places in the application, applicants are asked to identify the FON.

**The Funding Opportunity Number and Title are:**
EPA-G2024-ORD-F1, Models to Predict the Removal of Emerging Micropollutants from Water by Novel Adsorbents in Fixed-Bed Column Processes

By submitting an application in response to this solicitation, the applicant grants the EPA permission to make limited disclosures of the application to technical reviewers both within and outside the Agency for the express purpose of assisting the Agency with evaluating the application. Information from a pending or unsuccessful application will be kept confidential to the fullest extent allowed under law; information from a successful application may be publicly disclosed to the extent permitted by law.

**D. Submission Dates and Times**

Applications **must be transferred to Grants.gov no later than 11:59:59 pm Eastern Time** on the solicitation closing date. Applications transferred after the solicitation closing date and time will be deemed ineligible without further consideration. EPA will not accept any changes to applications after the solicitation closing date.

It should be noted that this schedule may be changed without prior notification because of factors not anticipated at the time of announcement. In the case of a change in the solicitation closing date, a new date will be posted on EPA's Research Grants website and a modification posted on Grants.gov.

Solicitation Closing Date: **October 2, 2024**, 11:59:59 pm Eastern Time (applications ***must*** be submitted to Grants.gov by this time, see Section IV.F "Submission Instructions and Other Submission Requirements" for further information).

NOTE: Customarily, applicants are notified about evaluation decisions within six months of the solicitation closing date. Awards are generally made 9-12 months after the solicitation closing date.

## E. Funding Restrictions

The funding mechanism for all awards issued under ORD solicitations will consist of assistance agreements from the EPA. All award decisions are subject to the availability of funds. In accordance with the Federal Grant and Cooperative Agreement Act, 31 U.S.C. 6301 et seq., the primary purpose of an assistance agreement is to accomplish a public purpose of support or stimulation authorized by federal statute, rather than acquisition for the direct benefit or use of the Agency. In issuing a grant, the EPA anticipates that there will be no substantial EPA involvement in the design, implementation, or conduct of the research. However, the EPA will monitor research progress through annual reports provided by grantees and other contacts, including site visits (as needed), with the Principal Investigator(s).

EPA award recipients may incur allowable project costs 90 calendar days before the Federal awarding agency makes the Federal award. Expenses more than 90 calendar days pre-award require prior approval of EPA. All costs incurred before EPA makes the award are at the recipient's risk. EPA is under no obligation to reimburse such costs if for any reason the recipient does not receive a Federal award or if the Federal award is less than anticipated and inadequate to cover such costs.

If you wish to submit applications for more than one EPA funding opportunity you must ensure that the research proposed in each application is significantly different from any other that has been submitted to the EPA or from any other financial assistance you are currently receiving from the EPA or other federal government agency.

Collaborative applications involving more than one institution must be submitted as a single administrative package from one of the institutions involved.

Each proposed project must be able to be completed within the project period and with the initial award of funds. Applicants should request the entire amount of money needed to complete the project. Recipients should not anticipate additional funding beyond the initial award of funds for a specific project.

Coalitions

Groups of two or more eligible applicants may choose to form a coalition and submit a single application under this funding opportunity; however, one entity must be responsible for the grant. Coalitions must identify which eligible organization will be the recipient of the grant and which eligible organization(s) will be subrecipients of the recipient (the "pass-through entity"). *Subawards* must be consistent with the definition of that term in 2 CFR 200.1 and comply with EPA's Subaward Policy. The pass-through entity that administers the grant and subawards will be accountable to EPA for proper expenditure of the funds and reporting and will be the point of contact for the coalition. As provided in 2 CFR 200.332, subrecipients are accountable to the pass-through entity for proper use of EPA funding.

For-profit organizations, except for privately owned public water systems meeting the definition of a public water system at 42 U.S.C. 300f(4), are not eligible for subawards under this grant

program but may receive procurement contracts. Any contracts for services or products funded with EPA financial assistance must be awarded under the competitive procurement procedures of 2 CFR Part 200 and/or 2 CFR Part 1500, as applicable. The regulations at 2 CFR 1500.10 contain limitations on the extent to which EPA funds may be used to compensate individual consultants. Refer to the Best Practice Guide for Procuring Services, Supplies, and Equipment Under EPA Assistance Agreements for guidance on competitive procurement requirements and consultant compensation. Do not name a procurement contractor (including a consultant) as a "partner" or otherwise in your application unless the contractor has been selected in compliance with competitive procurement requirements.

**F. Submission Instructions and Other Submission Requirements**

***Please read this entire section before attempting an electronic submission through Grants.gov.***

***If you do not have the appropriate internet access to utilize the Grants.gov application submission process for this solicitation, see Section IV.A above for additional guidance and instructions.***

***Note: Grants.gov submission instructions are updated on an as-needed basis. Please provide your Authorized Organizational Representative (AOR) with a copy of the following instructions to avoid submission delays that may occur from the use of outdated instructions.***

1. SAM.gov (System for Award Management) Registration Instructions: Organizations applying to this funding opportunity must have an active SAM.gov registration. If you have never done business with the Federal Government, you will need to register your organization in SAM.gov. If you do not have a SAM.gov account, then you will create an account using login.gov[2] to complete your SAM.gov registration. SAM.gov registration is FREE. The process for entity registrations includes obtaining Unique Entity ID (UEI), a 12-character alphanumeric ID assigned an entity by SAM.gov, and requires assertions, representations and certifications, and other information about your organization. Please review the Entity Registration Checklist for details on this process.

If you have done business with the Federal Government previously, you can check your entity status using your government issued UEI to determine if your registration is active. SAM.gov requires you renew your registration every 365 days to keep it active.

Please note that SAM.gov registration is different than obtaining a UEI only. Obtaining an UEI only validates your organization's legal business name and address. Please review the Frequently Asked Question on the difference for additional details.

[2] Login.gov a secure sign in service used by the public to sign into Federal Agency systems including SAM.gov and Grants.gov. For help with login.gov accounts you should visit the help center.

Organizations should ensure that their SAM.gov registration includes a current e-Business (EBiz) point of contact name and email address. The EBiz point of contact is critical for Grants.gov Registration and system functionality.

Contact the Federal Service Desk for help with your SAM.gov account, to resolve technical issues or chat with a help desk agent: (866) 606-8220. The Federal Service desk hours of operation are Monday – Friday 8am – 8pm ET.

2. Grants.gov Registration Instructions: Once your SAM.gov account is active, you must register in Grants.gov. Grants.gov will electronically receive your organization information, such as e-Business (EBiz) point of contact email address and UEI. Organizations applying to this funding opportunity must have an active Grants.gov registration. Grants.gov registration is FREE. If you have never applied for a federal grant before, please review the Grants.gov Applicant Registration instructions. As part of the Grants.gov registration process, the EBiz point of contact is the only person that can affiliate and assign applicant roles to members of an organization. In addition, at least one person must be assigned as an Authorized Organization Representative (AOR). Only person(s) with the AOR role can submit applications in Grants.gov. Please review the Intro to Grants.gov-Understanding User Roles and Learning Workspace – User Roles and Workspace Actions for details on this important process.

Please note that this process can take a month or more for new registrants. Applicants must ensure that all registration requirements are met in order to apply for this opportunity through Grants.gov and should ensure that all such requirements have been met well in advance of the application submission deadline.

Contact Grants.gov for assistance at 1-800-518-4726 or support@grants.gov to resolve technical issues with Grants.gov. Applicants who are outside the U.S. at the time of submittal and are not able to access the toll-free number may reach a Grants.gov representative by calling 606-545-5035. The Grants.gov Support Center is available 24 hours a day 7 days a week, excluding federal holidays.

3. Application Submission Process: To begin the application process under this grant announcement, go to Grants.gov and click the red "Apply" button at the top of the view grant opportunity page associated with this opportunity.

The electronic submission of your application to this funding opportunity must be made by an official representative of your organization who is registered with Grants.gov and is authorized to sign applications for Federal financial assistance. If the submit button is grayed out, it may be because you do not have the appropriate role to submit in your organization. Contact your organization's EBiz point of contact or contact Grants.gov for assistance at 1-800-518-4726 or support@grants.gov.

Applicants need to ensure that the Authorized Organization Representative (AOR) who submits the application through Grants.gov and whose UEI is listed on the application is an AOR for the applicant listed on the application. Additionally, the UEI listed on the application must be

registered to the applicant organization's SAM.gov account. If not, the application may be deemed ineligible.

Please submit all of the application materials described below using the Grants.gov application package accessed using the instructions above.

The application package consists of the following mandatory documents.

(a) Application for Federal Assistance (SF 424): Complete the form except for the "competition ID" field.

(b) EPA Key Contacts Form 5700-54: Complete the form. If additional pages are needed, see (e) below.

(c) EPA Form 4700-4, Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance: Complete the form.

(d) SF-424A, Budget Information for Non-Construction Programs: Provide the federal funds being requested and non-federal cost share being contributed in "Section A-Budget Summary" under the "New or Revised Budget" heading. In "Section B-Budget Categories," provide the object class budget category (a. - k.) amounts for each budget year under the "Grant Program, Function or Activity" heading. Each column reflects a separate budget year.

(e) Project Narrative Attachment Form: Attach a single electronic PDF file labeled "Application" that contains the items described in Section IV.C.5.i through IV.C.5.viii.a (Table of Contents, Abstract, Research Plan, Quality Assurance Statement, Human Subjects Research Statement, Scientific Data Management Plan, Non-Profit Verification [for applications from non-profit organizations], References, Budget Justification, Resumes, Current and Pending Support, Applicant Current and Pending Support Certification, and Letters of Intent/Support) of this solicitation. *In order to maintain format integrity, this file must be submitted in Adobe Acrobat PDF.* Please review the PDF file for conversion errors prior to including it in the electronic application package; requests to rectify conversion errors will not be accepted if made after the solicitation closing date and time. If Key Contacts Continuation pages (see Research Funding Opportunities: How to Apply and Required Forms) are needed, attach them using the Project Narrative Form.

4. Application Submission Deadline: Your organization's AOR must submit your complete application package electronically to EPA through Grants.gov no later than **October 2, 2024**, 11:59:59 pm Eastern Time. Please allow for enough time to successfully submit your application and allow for unexpected errors that may require you to resubmit.

Applications submitted through Grants.gov will be time and date stamped electronically. Please note that successful submission of your application through Grants.gov does not necessarily

mean your application is eligible for award. Any application submitted after the application deadline time and date deadline will be deemed ineligible and not be considered.

5. Technical Issues with Submission: If applicants experience technical issues during the submission of an application that they are unable to resolve, follow these procedures **before** the application deadline date:

a. Contact Grants.gov Support Center **before** the application deadline date.

b. Document the Grants.gov ticket/case number.

c. Send an email with the FON (EPA-G2024-ORD-F1) in the subject line to electronic-grant-submissions@epa.gov **before** the application deadline time and date and it **must** include the following:
i. Grants.gov ticket/case number(s)
ii. Description of the issue
iii. The entire application package in PDF format.

Without this information, EPA may not be able to consider applications submitted outside of Grants.gov. Any application submitted after the application deadline time and date deadline will be deemed ineligible and **not** be considered.

Please note that successful submission through Grants.gov or email does not necessarily mean your application is eligible for award.

EPA will make decisions concerning acceptance of each application submitted outside of Grants.gov on a case-by-case basis. EPA will only consider accepting applications that were unable to submit through Grants.gov due to Grants.gov or relevant SAM.gov system issues or for unforeseen exigent circumstances, such as extreme weather interfering with internet access. Failure of an applicant to submit prior to the application submission deadline date because they did not properly or timely register in SAM.gov or Grants.gov is not an acceptable reason to justify acceptance of an application outside of Grants.gov.

## V. APPLICATION REVIEW INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

### A. Peer Review

All eligible grant applications are reviewed by appropriate external technical peer reviewers based on the criteria and process described below. This review is designed to evaluate each application according to its scientific merit. The individual external peer reviewers include non-EPA scientists, engineers, social scientists, and/or economists who are accomplished in their respective disciplines and proficient in the technical subjects they are reviewing.

Prior to the external technical peer review panel meeting, all reviewers will receive access to electronic copies of all applications. Each application will be assigned to a minimum of three

primary peer reviewers, one of whom will be assigned the role of Rapporteur. Each reviewer will be assigned up to approximately 10 applications on which to serve as a primary reviewer. During the review period leading up to the panel meeting, primary reviewers read the entire application package for each application they are assigned. The primary reviewers will also prepare a written individual evaluation for each assigned application that addresses the peer review criteria described below and rate the application with a score of Excellent, Very Good, Good, Fair, or Poor. To promote a better panel discussion, all reviewers must, at a minimum, read the abstracts of all applications.

At the beginning of the panel meeting, each primary reviewer will report their ratings for the applications they reviewed. Those applications receiving at least two ratings of *Very Good* or one rating of *Excellent* from among the primary reviewers will then be further discussed by the entire panel in terms of the peer review criteria below. In addition, if there is one *Very Good* rating among the primary reviewers of an application, the primary reviewer, whose initial rating is the *Very Good*, may request discussion of the application by the peer review panel. All other applications will be declined for further consideration.

After the discussion of an application by the panel, the primary reviewers may revise their initial ratings and if they do so, this will also be documented. The final ratings of the primary reviewers will then be translated by EPA into the final peer review score (Excellent, Very Good, Good, Fair or Poor) for the application. This is reflected in a peer review results document developed by the Rapporteur which combines the individual initial and final evaluations of the primary reviewers and captures any substantive comments from the panel discussion. This score will be used to determine which applications undergo the internal relevancy and past performance review discussed below. A peer review results document is also developed for applications that are not discussed. However, this document is a consolidation of the individual primary reviewer initial evaluations, with an average of the scores assigned by the primary reviewers.

Peer reviewers consider an application's merit based on the extent to which the application demonstrates the criteria below. Criteria are listed in descending order of importance (i.e., Criteria 1 has the heaviest weight).

1. **Research Merits** (subcriteria are in descending order of importance):

    a. The degree to which the application demonstrates that the research is original and contributes to the scientific knowledge in the topic area. And the degree to which the application demonstrates that the project (and its approach) is defensible and technically feasible, and uses appropriate and adequate research methods.

    b. The degree to which the application demonstrates that the project results will produce benefits to the public (such as improvements to the environment or human health) and will be disseminated to enhance scientific and technological understanding.

2. **Responsiveness**: The degree to which the application demonstrates that the research is responsive to the objectives and research areas of interest specified by the funding opportunity, including whether it addresses both research areas and all research topics described in Section I.E of the funding opportunity and the degree to which the research has the potential (A) to reduce ratepayer or community costs or costs of future capital investments; (B) to significantly improve human health or the environment; or (C) to provide additional drinking water supplies with minimal environmental impact.

3. **Project Management** (subcriteria are equally weighted):

    a. **Investigators**: The degree to which the application demonstrates that the Principal Investigator(s) and other key personnel have the appropriate qualifications to effectively perform the project (including research training, demonstrated knowledge of pertinent literature, experience and publication records). This includes qualifications and experience in providing training and technical assistance to small public water systems.

    b. **Management**: The degree to which the application demonstrates that the project will be adequately managed to ensure the timely and successful achievement of objectives using appropriate project schedules and milestones. And the degree to which the application demonstrates the applicant will adequately track and measure progress toward achieving expected results (outputs and outcomes).

    c. **Resources and Cost Controls**: The degree to which the application demonstrates that the facilities, equipment and budget are appropriate, adequate, and available. And the degree to which the application demonstrates that well-defined and acceptable approaches, procedures and controls are used to ensure timely and efficient expenditure of awarded grant funds.

4. **Other Factors**

    a. **Innovation**: The degree to which the application demonstrates that the research will challenge and seek to shift current research or engineering paradigms by using innovative theoretical concepts, approaches or methodologies, instrumentation or interventions applicable to one or more fields of research.

## B. Relevancy Review

Applications receiving final peer review scores of Excellent or Very Good will then undergo an internal relevancy review, as described below, conducted by experts from the EPA, including individuals from the Office of Research and Development (ORD) and program and regional offices involved with the science or engineering proposed. All other applications are

automatically declined. The purpose of the relevancy review is to ensure an integrated research portfolio for the Agency and help determine which applications to recommend for award.

Prior to the relevancy review panel meeting, all relevancy reviewers will receive electronic copies of all applications that passed peer review as well as a full set of abstracts for the applications. Each application will be assigned to a minimum of three primary relevancy reviewers, one of whom will be assigned the role of Rapporteur. Each reviewer will be assigned up to approximately 10 applications on which to serve as a primary relevancy reviewer. During the review period leading up to the relevancy review panel meeting, all reviewers will be instructed to read the full set of abstracts and the entire application package for each application they are assigned. They will also prepare a written individual evaluation for each assigned application that addresses the relevancy review criteria described below and rate the application with a score of A, high relevance to EPA mission; B, relevant to EPA mission; C, moderately relevant to EPA mission; D, possibly relevant to EPA mission; or E, not relevant to EPA mission.

All applications that pass peer review will be discussed by the relevancy review panel with the Rapporteur initiating the discussion. If the primary relevancy reviewers revise their initial scores after the discussion by the panel they will document the reasons for the revisions. After the discussion, the primary relevancy reviewers will provide their final score for the applications they are assigned. The final ratings of the primary reviewers will then be translated by EPA into the final relevancy review score (A, B, C, D, or E) for the application.

The final relevancy review score (A, B, C, D, or E) and final peer review score (Excellent or Very Good) will be used to place each application in one of 6 ranking tiers: Tier 1 = A/Excellent; Tier 2 = A/Very Good or B/Excellent; Tier 3 = B/Very Good or C/Excellent; Tier 4 = C/Very Good or D/Excellent; Tier 5 = D/Very Good; Tier 6 = E/Excellent or E/Very Good.

The internal relevancy review panel will assess the relevancy of the proposed research to the EPA's mission and priorities based on the following criteria that are listed in descending order of importance (i.e., Criteria 1 has the heaviest weight):

1. The degree to which the proposed science/research is relevant to EPA's priorities as described in Goal 5: Ensure Clean and Safe Water for All Communities, Objective 5.1: Ensure Safe Drinking Water and Reliable Water Infrastructure, of EPA's FY2022-2026 Strategic Plan.

2. The degree to which results (i.e., outputs/outcomes) of the research have broad application or affect large segments of society.

3. The degree to which the research is designed to produce data and methods that can immediately and/or with little to no translation be utilized by the public, states, and tribes to better assess or manage environmental problems.

**C. Past Performance History Review**

Those applicants who received final scores of Excellent or Very Good as a result of the peer review process will also be asked to provide additional information for the past performance history review pertaining to the proposed Lead PI's (in the case of Multiple-PI applications, the Contact PI's) "Past Performance and Reporting History." The applicant must provide the EPA with information on the proposed Lead/Contact PI's past performance and reporting history under prior Federal agency assistance agreements (assistance agreements include grants and cooperative agreements but not contracts) in terms of: (i) the level of success in managing and completing each agreement, (ii) history of meeting the reporting requirements and documenting progress towards achieving the expected results (outputs/outcomes) under each agreement, and (iii) whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from those agreements were made publicly accessible.

This information is required only for the proposed Lead/Contact PI's performance under Federal assistance agreements performed within the last five years.

Past performance history review scores are satisfactory (S), nothing to report (NTR) or unsatisfactory (U). For purposes of consideration of an award, scores of S will be considered favorable, NTR will be considered neither favorable nor unfavorable and scores of U will be considered unfavorable and unlikely to result in an award recommendation. Scores of S and U must be justified by the reviewer, with scores of U clearly documented to explain why past performance history cannot be considered satisfactory.
The specific information required for each agreement is shown below and must be provided within one week of EPA's request. A maximum of three pages will be permitted for the response; excess pages will not be reviewed. **Note: If no prior past performance information and/or reporting history exists, you will be asked to so state.**

1. Name of Awarding Agency
2. Grant/Cooperative agreement number
3. Grant/Cooperative agreement title
4. Grantee Institution
5. Brief description of the grant/cooperative agreement
6. A discussion on whether the agreement was successfully managed and completed; if not successfully managed and completed, provide an explanation
7. Information relating to the proposed Lead/Contact PI's past performance in reporting on progress towards achieving the expected results (outputs/outcomes) under the agreement and meeting reporting requirements under the agreement. Include the history of submitting acceptable and timely progress/final technical reports, describe how progress towards achieving the expected results was reported/documented and if such progress was not being made, provide an explanation of whether and how this was reported
8. Information relating to whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from those agreements were made publicly accessible (and if not, explain why not; or explain why this requirement does not apply) to the extent permissible under applicable laws and regulations

9. Total (all years) grant/cooperative agreement dollar value
10. Project period
11. Technical contact (project officer), telephone number and Email address (if available)

In evaluating applicants under the past performance history factor, EPA will consider the information provided by the applicant and may also consider relevant information from other sources, including information from EPA files and from current/prior grantors (e.g., to verify and/or supplement the information provided by the applicant). **If you do not have any relevant or available past performance or past reporting information, please indicate this in your response and you will receive a nothing to report (NTR) score for these factors assuming EPA does not have any information in its files or from other sources that can be considered. If you do not provide any response for these items, you may receive an unsatisfactory (U) score for these factors.**

The past performance history review will be conducted by the EPA and will assess the following criteria which are of equal weight:

1. History of successfully managing and completing these prior Federal assistance agreements, including whether there is a satisfactory explanation for any lack of success.

2. History in meeting reporting requirements under the prior agreements and reporting progress toward achieving results (outputs/outcomes) under these agreements, including the proposed Lead/Contact PI's history of submitting acceptable and timely progress/final technical reports that adequately describe the progress toward achieving the expected results under the agreements. Any explanation of why progress toward achieving the results was not made will also be considered.

3. History of whether journal publications or author manuscripts associated with the journal publications, and the associated underlying scientific research data and metadata, resulting from these prior assistance agreements were made publicly accessible, and if not whether the Lead/Contact PI adequately explained why not, or the Lead/Contact PI explained why the requirement does not apply.

### D. Human Subjects Research Statement (HSRS) Review

Applications being recommended for funding after the Relevancy and Past Performance Review that involve human subjects research studies will have their HSRS reviewed prior to award. The local EPA Human Subjects Officer (HSO) will review the information provided in the HSRS and the Research Plan to determine if the ethical treatment of human subjects is described in a manner appropriate for the project to move forward. The HSO may consult with the EPA Human Subjects Research Review Official (HSRRO) as appropriate. The HSRRO may determine that an application cannot be funded if it is inconsistent with EPA’s regulations at 40 CFR Part 26.

### E. Scientific Data Management Plan (SDMP) Review

EPA will evaluate the merits of the SDMPs for those applications recommended for award. The SDMPs for those applications not recommended for award will not be reviewed. The SDMPs of all applications recommended for award will be evaluated to ensure they are appropriate and adequate (e.g., describe the types of scientific research data and metadata to be collected and/or generated under the proposed research award and include plans for providing long-term preservation of, and public access to, the scientific research data and metadata). SDMPs that indicate the proposed research will not result in the generation and/or collection of scientific research data will also be evaluated to ensure the proposed research will not result in the generation and/or collection of scientific research data and therefore not require a more comprehensive SDMP. Applicants may be contacted regarding their SDMP if additional information is needed or if revisions are required prior to award. If upon review of the SDMP, EPA identifies any issues with the plan, EPA will raise these issues to the applicant, so they may be addressed. Applicants with an unsatisfactory SDMP will not receive an award.

### F. Quality Assurance Statement (QAS) Review

EPA will evaluate the merits of the QAS for those applications recommended for award. The QAS for those applications not recommended for award will not be reviewed. The QAS of all applications recommended for award will be evaluated to ensure they are appropriate and adequate. If upon review of the QAS, EPA identifies any issues with the QAS, EPA will raise these issues to the applicant, so they may be addressed. Applicants with an unsatisfactory QAS will not receive an award.

### G. Funding Decisions

Final funding decisions are made by the ORD selection official based on the ranking tier, the past-performance history review, the evaluation of the SDMP, the evaluation of the QAS, and, where applicable, the assessment of the applicant's human subjects research (see Section IV.C.5.iii.c). In addition, in making the final funding decisions, the ORD selection official may also consider program balance, potential scientific and/or commitment duplication/overlap, disclosure of support, and available funds. Applicants selected for funding will be required to provide additional information listed below under "Award Notices." The application will then be forwarded to EPA's Grants Management and Business Operations Division for award in accordance with the EPA's procedures.

## VI. AWARD ADMINISTRATION INFORMATION

Note: Additional provisions that apply to this section can be found at EPA Solicitation Clauses.

### A. Award Notices

Customarily, applicants are notified about evaluation decisions within six months of the solicitation closing date. Applicants to be recommended for funding will be required to submit additional certifications and an electronic version of the revised project abstract. They may also be asked to provide responses to comments or suggestions offered by the peer reviewers and/or submit a revised budget. The EPA Project Officer will contact the Lead PI/Contact PI to obtain

these materials. Before or after an award, applicants may be required to provide additional quality assurance documentation.

The official notification of an award will be made by the Agency's Grants Management and Business Operations Division. Applicants are cautioned that only a grants officer is authorized to bind the Government to the expenditure of funds; preliminary selection by the ORD selection official does not guarantee an award will be made. For example, statutory authorization, funding or other issues discovered during the award process may affect the ability of EPA to make an award to an applicant. The award notice, signed by an EPA grants officer, is the authorizing document and will be provided through electronic or postal mail.

## B. Administrative and National Policy Requirements

Expectations and responsibilities of ORD grantees and cooperative agreement recipients are summarized in this section, although the terms grants and cooperative agreements are used interchangeably.

### 1. Meetings

Principal Investigators will be expected to budget for, and participate in, All-Investigators Meetings (also known as progress reviews) approximately once per year with EPA scientists and other grantees to report on research activities and discuss issues of mutual interest.

### 2. Approval of Changes after Award

Prior written approval of changes may be required from EPA. Examples of these changes are contained in 2 CFR 200.308. Note: prior written approval is also required from the EPA Award Official for incurring costs more than 90 calendar days prior to award.

### 3. Human Subjects

A grant applicant must agree to comply with all applicable provisions of EPA Regulation 40 CFR Part 26 (Protection of Human Subjects). In addition, grant applicants must agree to comply with EPA's procedures for oversight of the recipient's compliance with 40 CFR Part 26, as given in EPA Order 1000.17A (Policy and Procedures on Protection of Human Research Subjects in EPA Conducted or Supported Research). As per this Order, no human subject may be involved in any research conducted under this assistance agreement, including recruitment, until the research has been approved or determined to be exempt by the EPA Human Subjects Research Review Official (HSRRO) after review of the approval or exemption determination of the Institutional Review Board(s) (IRB(s)) with jurisdiction over the research under 40 CFR Part 26. Following the initial approvals indicated above, the recipient must, as part of the annual report(s), provide evidence of continuing review and approval of the research by the IRB(s) with jurisdiction, as required by 40 CFR 26.109(e).

Guidance for investigators conducting EPA-funded research involving human subjects may be obtained here:
Basic Information about Human Subjects Research
Protection of Human Subjects

**4. Data Access and Information Release**
EPA's requirements associated with data access and information release as well as copyrights, may be accessed at EPA Solicitation Clauses.

Congress, through OMB, has instructed each federal agency to implement Information Quality Guidelines designed to "provide policy and procedural guidance...for ensuring and maximizing the quality, objectivity, utility, and integrity of information, including statistical information, disseminated by Federal agencies." The EPA's implementation may be found at Information Quality Guidelines. These procedures may apply to data generated by grant recipients if those data are disseminated as described in the Guidelines.

**5. Reporting**
A grant recipient must agree to provide annual performance progress reports, with associated summaries, and a final report with an executive summary. The summaries will be posted on EPA's Research Grants website. The reports and summaries should be submitted electronically to the Technical Contact named in Section VII of this announcement.

A grant recipient must agree to provide copies of, or acceptable alternate access to (e.g., web link), any peer reviewed journal article(s) resulting from the research during the project period. In addition, the recipient should notify the ORD Project Officer of any papers published after completion of the grant that were based on research supported by the grant. ORD posts references to all publications resulting from a grant on EPA's Research Grants website.

**6. Acknowledgement of EPA Support**
EPA's full or partial support must be acknowledged in journal articles, oral or poster presentations, news releases, interviews with reporters and other communications. The acknowledgement to be included in any documents developed under this agreement that are intended for distribution to the public or inclusion in a scientific, technical or other journal will be provided in the award's terms and conditions.

## VII. AGENCY CONTACTS

Further information, if needed, may be obtained from the EPA contacts indicated below. Information regarding this funding opportunity obtained from sources other than these Agency Contacts may not be accurate. Email inquiries are preferred.

Technical Contact: Rich Callan; phone: 202-564-4191; email: callan.richard@epa.gov
Eligibility Contact: Ron Josephson; phone: 202-564-7823; email: josephson.ron@epa.gov
Electronic Submissions Contact: electronic-grant-submissions@epa.gov