

PROGRAM ANNOUNCEMENT FOR FY 2014 ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP) ENVIRONMENTAL TOPICS

Non-DoD Federal Pre-Proposal Submittal Instructions

(Reference: Call for ESTCP New Start Proposals, Memorandum from the Director, ESTCP dated January 10, 2013)

1. INTRODUCTION

The Environmental Security Technology Certification Program (ESTCP) is the Department of Defense's (DoD) demonstration and validation (Dem/Val) program for environmental technology. Throughout this document, "**technology**" refers broadly to integrated systems based on any combination of hardware (equipment) and software (processing), materials engineering processes, and resource management devices, methods, tools, or models based on scientific principles. Technologies appropriate for demonstration and validation will be sufficiently mature that all required laboratory or other proof-of-concept work has been completed. Commercial technologies already in use are not considered appropriate for demonstration and validation.

ESTCP is seeking proposals for innovative environmental technology demonstrations as candidates for funding beginning in Fiscal Year (FY) 2014 in the following topic areas:

- 1) Management of Contaminated Groundwater;
- 2) In Situ Management of Contaminated Sediments;
- 3) Wastewater Treatment at DoD Facilities
- 4) Military Munitions Detection, Classification, and Remediation; and
- 5) Regionally Based Airfield Natural Resources Management Technologies/ Methodologies to Reduce Bird/Wildlife Air Strike Hazard (BASH) Threats.

Descriptions of these topic areas are in Appendix A. Complete solicitation details are on the ESTCP website at www.serdp-estcp.org/Funding-Opportunities/ESTCP-Solicitations/Environmental-Technologies-Solicitation.

This Call for Proposals (CFP) is for Non-DoD Federal organizations. DoD organizations (Services and Defense Agencies) wishing to submit proposals to ESTCP should refer to the DoD Call for Proposals. Private sector organizations should refer to the Broad Agency Announcement (BAA). Instructions for the DoD Call for Proposals and the BAA may be found on the ESTCP website www.serdp-estcp.org/Funding-Opportunities/ESTCP-Solicitations/Environmental-Technologies-Solicitation.

1.1 BACKGROUND

The purpose of ESTCP is to demonstrate and validate the most promising innovative environmental technologies that target DoD's most urgent environmental needs and are projected to pay back the investment through cost savings, improved efficiencies, or improved outcomes.

ESTCP responds to high priority DoD environmental technology requirements and the need to improve defense readiness by reducing the drain on the Department's operation and maintenance dollars caused by real world commitments such as environmental restoration, waste and facility management, and range sustainability. The goal is to enable promising technologies to receive regulatory and end-user acceptance and be fielded and commercialized more rapidly. To achieve this goal, ESTCP projects create a partnership between technology developers, responsible DoD organizations, and the regulatory community. This program announcement is seeking proposals from the technology development community.

ESTCP demonstrations are conducted under operational conditions at DoD facilities or locations for which DoD holds environmental responsibility. Candidate technologies are expected to have successfully completed laboratory testing and, when applicable, initial small-scale field testing. The demonstrations are intended to generate supporting cost and performance data for acceptance or validation of the technology. ESTCP demonstration projects are also required to support the future implementation of the tested technology through the development of appropriate guidance, design, and/or protocol documents. ESTCP will not support full-scale demonstrations that are primarily intended to solve an individual installation's problem. Full-scale cleanup is not performed under ESTCP. ESTCP gives priority to those projects that address multi-Service or DoD environmental requirements.

ESTCP projects must:

1. Execute the technology demonstration to validate the technology's performance and expected operational costs:
 - Each project develops a demonstration plan to govern the technical execution and management of the demonstration. Guidance describing the requirements of the ESTCP Demonstration Plan can be found at www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Demonstration-Plans. The demonstration plan is reviewed and must be approved by the ESTCP Office prior to beginning any fieldwork.
 - Each project is expected to generate sufficient pertinent and high quality data to scientifically prove the validity of all claims made for the technology.
 - Cost and performance data will be collected during the demonstration(s) to allow realistic estimates to be derived for full-scale implementation of the technology at the demonstration site and other DoD sites.
2. Transfer the technology:
 - Identify and work with the intended DoD user community to achieve their acceptance and feedback on the usefulness of the technology.
 - Publish appropriate guidance, design, and/or protocol documents to assist the future implementation of the technology.
 - Publish a final report based on the ESTCP Final Report guidance at www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Technical-Reports.
 - Provide a draft cost and performance report for publication by ESTCP based on the ESTCP Cost and Performance Report guidance at www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Technical-Reports.
 - Publish the results of the demonstration in the scientific peer reviewed literature and present results at technical conferences, as appropriate.

3. Provide data and support to achieve regulatory and end-user acceptance:
 - Technologies needing regulatory approval for use will be required to engage the regulatory community at the outset of project execution. Feedback from regulators must be solicited and incorporated into the project's demonstration plan.
 - No single approach for working with the regulatory community is prescribed by the program. Interaction with individual state regulatory organizations, interstate groups, and the U.S. Environmental Protection Agency (EPA) is encouraged. The approach taken should be appropriate for the technology being demonstrated and the regulatory issues associated with implementing the technology.

Offerors selected for demonstration will be teamed with a DoD partner who will be responsible for assisting in selecting the demonstration site, validating the technology's cost and performance, interfacing with the regulatory and user community, and supporting the transfer of the technology across DoD.

1.2 GENERAL INFORMATION FOR FEDERAL SECTOR PROPOSERS (OTHER THAN DOD)

Awardees under this CFP will be selected through a multi-stage review process, including a brief pre-proposal, a full proposal, and an oral presentation. Based upon the pre-proposal evaluation by ESTCP, each of the pre-proposal submitters will be notified as to whether ESTCP requests or does not request the submission of a full proposal. Those submitters who are invited to submit full proposals, but who do not have a DoD partner or a DoD demonstration site, will be assigned a liaison to assist in the identification of an appropriate demonstration site. Each full proposal submitter will be asked to make an oral presentation to the ESTCP Technical Committee. The costs associated with this initial, pre-award presentation shall not be included in the proposal cost estimate. This cost is borne by the proposer.

Based on evaluation of the written proposal and oral presentation, each full proposal submitter will be notified as to whether the Government wishes to enter into negotiation for an award. ESTCP reserves the right to select for award any, all, or none of the proposals received. ESTCP also reserves the right to select a portion of the work proposed in any single proposal for award. Due to the volume of pre-proposals anticipated to be received, ESTCP will not provide debriefs on those that are not requested to submit a full proposal.

General procedural questions may be referred to Ms. Jina Banks-Saunders in the ESTCP Office at 571-372-6565. For technical questions regarding this announcement, contact the individual listed within the topic area description in Appendix A.

1.3 EVALUATION SCHEDULE

DATE	ACTIVITY
January 10, 2013	Call for Pre-Proposals Released
March 14, 2013; 2:00 p.m. Eastern Time	Pre-Proposals Due to ESTCP
June 2013	Request Full Proposals
August 2013	Full Proposals Due to ESTCP
September 2013	Briefings Before ESTCP Technical Committee
October 2013	Project Selection
March 2014	Award/Project Initiation

2. PRE-PROPOSAL INSTRUCTIONS

To be eligible for consideration, readers wishing to respond to this announcement must submit a pre-proposal. Any pre-proposal submitted shall be in response to only one of the ESTCP topic areas set forth in Appendix A of this document. The pre-proposal must concisely describe the technology, including its level of development or maturity, and its cost/benefit. Specific DoD demonstration site(s) may be suggested in the pre-proposal but are not required.

2.1 COVER PAGE

Each pre-proposal must include an ESTCP cover page prepared via the Web Proposal Tracking System (WebPTS) module within the SERDP and ESTCP Management System (SEMS) website.

1. Go to <https://sems.serdp-estcp.org>, and follow the instructions to create a user name and password. If you already have an account, log in and click on the WebPTS tab at the top of the screen if you are not already on that page. As you make entries in the cover page, you may save data that have been entered or submit a completed cover page. A cover page **must** be completed and submitted before an electronic proposal can be uploaded via WebPTS.
2. After you submit your cover page, additional on-screen instructions will be displayed. A **signed** web-generated cover page must be included as the first page of the pre-proposal. The pre-proposal can be signed by the Principal Investigator or other authorized individual. ***Pre-proposals lacking a Cover Page or with an unsigned Cover Page will be considered unresponsive.*** A cover letter beyond this Cover Page is neither required nor desired. The Cover Page is not included in the page limitation.

If you require assistance with WebPTS, contact Amy Kelly at akelly@hgl.com or by telephone at 910-579-8052, or the ESTCP Office at 571-372-6565.

2.2 PRE-PROPOSAL LENGTH AND STYLE

Pre-proposals shall be no longer than five (5) pages and type face not less than 11 point. All margins (top, bottom, left, and right) shall not be less than 1 inch. A one-page curriculum vitae is required for each of the principal performers. One attachment of up to three pages of supporting data may also be submitted. The cover page, curricula vitae, and supporting data including references are not included in the five-page limit.

2.3 PRE-PROPOSAL CONTENT

The pre-proposal must contain the following information:

1. Short Descriptive Title
2. ESTCP Topic Area: Each proposal must list what topic area it addresses.
 - 1) Management of Contaminated Groundwater;
 - 2) In Situ Management of Contaminated Sediments;
 - 3) Wastewater Treatment at DoD Facilities;

- 4) Military Munitions Detection, Classification, and Remediation; or
 - 5) Regionally Based Airfield Natural Resources Management Technologies/
Methodologies to Reduce Bird/Wildlife Air Strike Hazard (BASH) Threats.
3. Lead Organization: Project lead, organization, address, telephone number, fax number, and e-mail address.
 4. Problem Statement: Clearly state the environmental problem the technology demonstration is addressing and its relevance and importance to DoD. Identify the current approach (if one exists) for this problem and discuss its shortcomings.
 5. Technology Description: The technology description should include the following information:
 - a) *Technical Objectives*. Briefly state the objective of the proposed effort.
 - b) *Technology Description*. Describe the technology in sufficient detail to provide an accurate and factual understanding of its theory, functionality, and operation. If appropriate, provide an overall schematic of the technology. Discuss how the technology is innovative.
 - c) *Technology Maturity*. Provide evidence the technology is mature enough for demonstration (include references and funding history). Discuss any development or design work that is required prior to demonstration.
 - d) *Technical Approach*. Provide a broad overview of the experimental design of the demonstration proposed for evaluating the technology. Discuss the major elements of the demonstration and identify the key aspects of the overall approach as they relate to the evaluation of the technology. Include a brief description of a proposed site(s), if known, or the desired site characteristics. Discuss the scale of the proposed tests and any treatability studies that will be required prior to demonstration. Identify specific technical or performance objectives to be validated. Identify methods for measuring and assessing the performance and expected operational costs of the technology. Describe criteria for success of the demonstration and the technology. Describe the technical approach in terms of tasks to be accomplished.
 - e) *Technical Risks*. Identify potential issues of concern and technical risks in taking the technology from the research phase to the proposed scale of the demonstration. Identify any assumptions that have been made that, if not realized, could impact the successful implementation of the project. Discuss how risks will be managed. If the demonstration is not at full scale, discuss any scale-up issues that will remain at the conclusion of a successful demonstration.
 - f) *Related Efforts*. Provide information on any relationship to other similar projects. Identify funding sources for these efforts.
 6. Expected DoD Benefit: Describe the expected benefit in terms of environmental impact and/or reduced cost. Assess the environmental benefit per site or implementation and the expected aggregate benefit for DoD. Provide realistic projections of the number of DoD sites or facilities where the technology could be deployed. Discuss how the information obtained from the demonstration will enable adoption of the technology throughout DoD. Estimate the expected return on investment and the time for payback. Discuss the life-cycle cost advantages over current approaches.
 7. Schedule of Milestones: Provide a project schedule with expected milestones and deliverables for the duration of the project in the form of a Gantt chart. At a minimum,

start and end dates for the demonstration(s) and all required deliverables must be included in the Gantt chart. Required deliverables are found in the reporting guidelines at www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources. Other appropriate milestones include obtaining any required permits, completion of any planned development work or treatability studies, shake down testing, and the like.

8. **Technology Transition:** Describe the method by which the technology will be transitioned to end user(s) or commercialized. Specify how technology transfer methods will differ to reach appropriate audiences (e.g., regulators, consultants, etc). Describe any proposed guidance documents that will assist in future implementation (e.g., guidance, design, and/or protocol documents). Explicitly identify potential first DoD users and follow-on implementation. If there are known institutional or regulatory barriers that affect the transition, they should be described in this section along with recommendations for addressing these barriers.
9. **Performers:** List the name and organization of the lead person(s) for each organization involved in the proposed demonstration and their expected contributions. Provide a one-page curriculum vitae for each of the performers (not included in the five-page limit).
10. **Funding:** State the level of requested funding per year for the duration of the project, including any development, design, or treatability work. Identify costs for any major equipment to be purchased by ESTCP. For planning purposes, proposers should assume a project initiation date of March 1, 2014. Funds required should be broken out by the year in which they will be expended. Although identification of a specific demonstration site is not required for pre-proposals, include an estimate of the cost for a representative field demonstration of the technology. Ensure adequate funds are requested to meet all reporting and travel requirements. ESTCP reporting requirements are available at www.serdp-estcp.org/Investigator-Resources/ESTCP-Resources. List other sources of expected funding to support the demonstration and leveraged resources. Provide a Point of Contact and telephone number for each leveraged resource listed.

3. SUBMITTAL INSTRUCTIONS

Your pre-proposal will be officially submitted on-line via WebPTS. No hard copies are required. **Pre-proposals must be submitted prior to 2:00 p.m. Eastern Time on March 14, 2013.**

Once your proposal has been finalized, create a single PDF that contains all required sections. Make sure to insert the signed and scanned cover page as the first page of the PDF. You are now ready to upload your proposal to the website.

- Log in at <https://sems.serdp-estcp.org> and go to the WebPTS Tab.
- Follow the on-screen instructions. You must SUBMIT your cover page before the proposal upload function will be activated. Instructions for creating your Cover Page can be found in Section 2.1.

NOTE: A system-generated cover page will be appended to your uploaded proposal as the first page. Once your proposal has been uploaded you will receive an on-line confirmation message in WebPTS and an email will be sent to the submitter.

You may continue to modify your cover page and upload revisions to your proposal until the due date. Should you need to re-upload a proposal or revise your cover page, go to “**My Cover Pages,**” select “**Edit**” next to your proposal title, and click on “**Submit**” to arrive at the proposal upload screen. Make sure any changes to the cover page are made first. Prior versions of your proposal will be over-written and only the last version uploaded will remain in the system. It is recommended that you upload your proposal as early as possible prior to the deadline, to ensure a successful and timely submission.

For WebPTS or proposal upload questions, contact Amy Kelly at akelly@hgl.com or by telephone at 910-579-8052, or the ESTCP Office at 571-372-6565.

4. FULL PROPOSAL

After evaluation of the pre-proposals, ESTCP will contact all submitters and either request or not request each to submit a full proposal. At that time, detailed instructions will be provided for the full proposal format. If necessary, ESTCP will coordinate a partnering meeting with an appropriate DoD partner to provide input for the full proposal including, but not limited to, selection of a DoD demonstration site. Full proposals may not be submitted outside the pre-proposal process. Any full proposal that has not been reviewed in the pre-proposal phase will not be evaluated nor considered for award under this CFP.

5. EVALUATION FACTORS FOR PRE-PROPOSALS AND FULL PROPOSALS

The following evaluation factors will be the sole basis for reviewing pre-proposals and full proposals submitted in response to this CFP. ESTCP Relevance and Technology Maturity are pass/fail criteria evaluated at the pre-proposal stage only; proposals not passing these gates will not be further evaluated. Among the other evaluation factors for both pre-proposals and full proposals, Technical Merit is most important, followed by Cost/Benefit of Technology, Transition Potential, and Cost of Proposal.

ESTCP RELEVANCE (PRE-PROPOSAL ONLY)

An assessment will be made whether the submission responds to the DoD environmental requirement as described in the topic area (see Appendix A).

TECHNOLOGY MATURITY (PRE-PROPOSAL ONLY)

An assessment will be made of the appropriateness of the proposed technology for demonstration and validation. Proposed technologies should have completed required proof-of-concept work and have evidence of the technology's capabilities. Technologies should be mature enough that within one year of project initiation any required laboratory treatability work will be completed and a field ready application can be deployed for testing. Standard commercially available instruments or approaches currently deployed at DoD sites will be considered too mature. ESTCP will not consider project submissions that fall in the categories of basic research (scientific foundation) or exploratory development (bench-scale applied research).

TECHNICAL MERIT

An assessment of the technical merit of the proposal will be made. Factors to be considered include: (a) the methodology is scientifically sound; (b) the technology is innovative and is the current state-of-the-art; (c) the technical risks are well characterized; and (d) the technical team is qualified to execute the proposed project.

COST/BENEFIT OF TECHNOLOGY

An assessment of the cost/benefit of the proposed technology, if it were deployed, will be made. Factors to be considered include: (a) the projected cost savings and/or risk reduction are significant; (b) the projected benefits are reasonable and consistent with the proposed technology; and (c) the payoffs from the proposed technology are commensurate with the projected costs and risks.

TRANSITION POTENTIAL

An assessment of the potential for a successful transfer of the technology to the DoD user will be made. Factors to be considered include: (a) there is a well defined DoD user for the technology; (b) there are clearly identified activities that will support and enhance the transfer of the technology; and (c) the technology can be implemented within DoD.

COST OF PROPOSAL

An assessment of the reasonableness of the proposed cost will be made. Costs should be appropriate and traceable to the level of effort required to execute the project.

APPENDIX A Topic Areas

Topic 1: Management of Contaminated Groundwater

Objective

Demonstration projects are sought for tools, methodologies, or technologies that can reduce the cost of managing the Department of Defense's (DoD) long term liability associated with contaminated groundwater. Groundwater contaminants of concern include chlorinated solvents, energetic compounds, metals, emerging contaminants of interest to DoD, or mixtures of these contaminants.

The primary focus of this topic area is innovative technologies and approaches for managing sites and the associated risks where contamination will persist for a significant period of time after an initial remedy is selected. The following areas are of interest:

- Cost-effective management tools or technologies to specifically address chlorinated solvent source zones in complex geological environments that cause persistent groundwater plumes.
- Detailed performance assessments of existing source zone treatment technologies such as in situ bioremediation. Thermal treatment and in situ chemical oxidation assessments will not be considered since recent assessments have been conducted.
- Assessment of how to better combine existing or new technologies to address complex contaminated sites and make informed decisions on transitions from active remediation to passive technologies.
- Risk characterization or remediation of vapors that emanate from contaminated groundwater.
- Optimization, assessment, and/or long-term monitoring tools related to remediation of contaminated groundwater.

Background

The DoD's Installation Restoration Program has set goals to achieve Response Complete (RC) at 95% of Installation Restoration Program (IRP) sites at active installations, and IRP sites at Formerly Used Defense Sites (FUDS) by the end of FY 2021. The Cost to Complete (CTC) at these sites was calculated at \$12.8 billion in FY 2010. Of these sites, groundwater contaminated with chlorinated solvents is often the most intractable problem. Substantial progress has been made in the past 20 years in the development of technologies for remediation of contaminated groundwater; however, challenges remain. Remedial costs are particularly high at sites where (1) contamination is extensive, but concentrations are low, (2) DNAPL is present in the subsurface, (3) site hydrogeology is complex (e.g., fractured bedrock), or (4) site conditions require extensive long-term monitoring. The recently released National Research Council study, "Alternatives for Managing the Nation's Complex Contaminated Groundwater Sites" reviews and highlights the technical challenges DoD faces in managing these sites.

Proposed technologies should have completed all required laboratory work, although site-specific treatability work prior to the field demonstration is acceptable. Technologies and methods are sought that have well-defined demonstration/validation questions to address.

ESTCP demonstrations should address technical and/or regulatory issues that inhibit the widespread use of the proposed approach across DoD. ESTCP supports demonstrations at a scale sufficient to determine the operational performance of the remediation technology and to estimate its expected full-scale costs. Full-scale cleanup of specific sites is not performed under ESTCP. Specific DoD demonstration site(s) may be suggested in the pre-proposal, but are not required.

In June 2011, the Strategic Environmental Research and Development Program (SERDP) and ESTCP co-sponsored a Workshop on *Investment Strategies to Optimize Research and Demonstration Impacts in Support of DoD Restoration Goals*. This workshop identified high priority research topics involving improved assessment and optimization of remediation technologies for treatment of chlorinated solvent-contaminated groundwater. A more detailed description of these issues can be found in the report from the workshop (www.serdp-estcp.org/content/download/12020/145838/version/2/file/Investment+Strategies+Workshop+Report+October+2011.pdf). Proposers are strongly encouraged to review the workshop report for additional detail.

ESTCP has supported the demonstration of a number of technologies designed for protection and remediation of contaminated groundwater. Proposers should be familiar with the ESTCP portfolio of technologies and tools in order to avoid duplication of previous efforts. ESTCP groundwater project descriptions are available on the ESTCP website (<http://serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater>).

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Topic 2: In Situ Management of Contaminated Sediments

Objective

Demonstration projects are sought for innovative in situ technologies that specifically address the management, risk characterization, remediation, or monitoring of sediments contaminated with polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), heavy metals, or mixtures containing these contaminants. Of particular interest are the following:

- Demonstrations of the utility and application of passive samplers.
- Demonstrations of long term efficacy of in situ amendments.
- Demonstrations of tools to evaluate amendment placement.
- Demonstrations of new monitoring tools to reliably predict the long-term performance of remedies and the expected long-term risk reduction.
- Demonstrations of technologies or tools that address the critical needs for advancing the regulatory acceptance and implementation of measures of bioavailability into contaminated sediments cleanup activities.

In July 2012, the Strategic Environmental Research and Development Program (SERDP) and ESTCP co-sponsored a Workshop on *Research and Development Needs for Long-Term Management of Contaminated Sediments*. This workshop identified several high priority demonstration needs for in situ management of contaminated sediments. A more detailed description of these issues can be found in the report from the workshop (http://www.serdp-estcp.org/content/download/16022/182923/file/Sediment%20Workshop%20Report_October%202012.pdf). Proposers are strongly encouraged to review the workshop report for additional detail.

Contaminated marine, estuarine, brackish, and fresh water sediments are of interest. Proposals addressing sediments contaminated with radionuclides will not be considered.

Background

Marine and fresh water sediments are the ultimate receptors of contaminants in effluent from urban, agricultural, industrial, and recreational activities, both at sea and on shore. The Department of Defense (DoD) is responsible for the management of thousands of sites with organic compounds and metals contamination in sediments. A growing body of evidence suggests that sediment removal as a means of contaminant remediation can at times result in more ecological damage or show no measurable ecological improvement. Therefore, development of cost effective in situ management strategies for contaminated sediments at DoD sites is a critical need.

The current regulatory paradigm for characterizing risks associated with the level of contamination in sediments generally does not include measures of the actual bioavailability of these contaminants to human or ecological receptors. However, there is clear and growing evidence that demonstrates that some of these contaminants are less available to potentially harm humans or ecological receptors than is suggested by simply extrapolating effects based on total concentrations of contaminants in bulk soil or sediment.

Proposed technologies should have completed all required laboratory work, although site specific treatability work prior to the field demonstration is acceptable. Specific DoD demonstration site(s) may be suggested in the pre-proposal, but are not required. Technologies and methods are sought that have well defined demonstration/validation questions to address. ESTCP demonstrations should address technical and/or regulatory issues that inhibit the widespread use of the proposed approach across DoD. ESTCP supports demonstration at a scale sufficient to determine the operational performance of the remediation technology and to estimate its expected full-scale costs. Full-scale cleanup of specific sites is not performed under ESTCP.

ESTCP has supported the demonstration of a number of technologies related to contaminated sediments. Proposers should be familiar with the ESTCP portfolio of technologies and tools in order to avoid duplication of previous efforts. ESTCP sediment project descriptions are available on the ESTCP website (<http://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Sediments>).

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Topic 3: Wastewater Treatment at DoD Facilities

Objective

Demonstration projects are sought for innovative, energy efficient, low maintenance systems for decentralized treatment and recycling of wastewater on military installations. Recycling systems can be based on either the extraction or treatment of existing wastewater (i.e., sewer mining) or on source separated wastewater streams (e.g., shower or laundry facilities). Systems that are capable of operating with reduced energy requirements, at a minimum, and systems that produce power or materials that can easily be converted into power (e.g., biogas, H₂, etc.) are of interest. In addition, systems capable of generating water for potable or nonpotable re-use in order to minimize water demand from off-base resources are of interest.

Technologies proposed must be ready for demonstration and validation in the field. Laboratory- or bench-scale work will not be considered, except in the case where brief site-specific treatability studies are warranted. The proposed technology demonstration should lead to a robust, cost-effective, treatment technology as demonstrated by the projected life cycle cost of the technology, including installation, operation, maintenance, and waste repurposing or disposal. The effort should also be demonstrated at a scale that will provide sufficient information to predict the practicability and cost of the proposed technology under full-scale implementation. Data should be provided from the operation of a technology at the demonstration scale that allows one to predict treatment performance and operational and lifetime treatment costs at full-scale.

It is anticipated that technology demonstrations may utilize a slip-stream from existing wastewater treatment facilities, sewer mining, or other decentralized systems. Proposers must specify the anticipated conditions under which their technology will operate most cost-effectively, including parameters such as flow rate, water quality characteristics, and any other factors which may impact performance.

This solicitation is being conducted jointly with the U.S. EPA Office of Research and Development (ORD). Projects will be selected, funded, and managed jointly with the U.S. EPA ORD.

Background

Many DoD installations contain a wastewater treatment facility that is owned and operated by the DoD, although a significant number also rely on local municipal facilities for wastewater treatment. Wastewater treatment processes are generally energy intensive, and any effort to work towards Net Zero energy consumption on military installations must address power consumption by wastewater treatment processes. While many opportunities exist to reduce energy consumption and even produce energy from wastewater treatment processes, production of potable or nonpotable water for re-use also must be considered as an opportunity to further reduce energy costs and improve conservation of natural resources.

In response to Executive Order 13514, DoD goals are focused on increased energy efficiency; measurement and reduction of greenhouse gas emissions from direct and indirect activities; conservation and protection of water resources through efficiency, reuse, and stormwater management; elimination of waste, increased recycling, and pollution prevention; and fostering

markets for sustainable technologies and environmentally preferable materials, products, and services. When applicable, proposers should consider how such issues may be addressed within the context of wastewater treatment, enabling the facility to meet its sustainability targets under the Order.

Proposed technologies should have completed all required laboratory work, although site specific treatability work prior to the field demonstration is acceptable. Specific DoD demonstration site(s) may be suggested in the pre-proposal, but are not required. Technologies and methods are sought that have well defined demonstration/validation questions to address. ESTCP demonstrations should address technical and/or regulatory issues that inhibit the widespread use of the proposed approach across DoD. ESTCP supports demonstration at a scale sufficient to determine the operational performance of the remediation technology and to estimate its expected full-scale costs. Full-scale system installation at specific sites is not performed under ESTCP.

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Topic 4: Military Munitions Detection, Classification, and Remediation

Objective

Demonstration projects are sought for technologies that address the needs listed below:

Live Site Demonstrations: ESTCP has initiated a series of demonstrations at live munitions sites to facilitate the adoption of advanced sensors and analyses in the production environment. Reports describing the results of previous demonstrations in this series are available at www.serdp-estcp.org/Featured-Initiatives/Munitions-Response-Initiatives/Classification-Applied-to-Munitions-Response. Implementation of these classification technologies will require demonstrations at a number of sites spanning a wide range of munitions and site conditions.

As part of this series, demonstrations in one or a combination of the following areas by either individual performers or teams of performers are sought. Demonstrations that involve the use of these technologies as they would be used on production sites or with production teams are of particular interest.

- Data collection with advanced EMI sensors
- Innovative data collection methodologies
- Advanced technologies for data analysis and anomaly classification
- Signal processing technologies that can exploit the current state-of-the-art electromagnetic induction survey data to improve classification capabilities in areas of high clutter density or geologic background
- Use of these advanced techniques in the production environment

Proposals that focus only on data analysis and signal processing technologies can expect data sets from one, or more, of the following advanced sensors to be available:

- MetalMapper (ESTCP Project MR-200603)
- TEMTADS (ESTCP Project MR-200601)
- Man-Portable Vector sensor (ESTCP Project MR-201005)
- Man-portable TEMTADS (ESTCP Project MR-200909)

Details of each of these sensors can be found at www.serdp-estcp.org/Program-Areas/Munitions-Response/Land/Sensors.

Demonstrations in the live site program will be conducted at sites amenable to the use of towed arrays and other large platforms as well as sites on which smaller cart and man-portable sensors will be appropriate. Some sites will be open, with good sky view, while others will have vegetation and other obstructions that restrict access to GPS signals.

Proposers with technologies that may be applicable to only a subset of demonstration sites and conditions should specify in the pre-proposal the conditions under which their technology will operate most effectively. Proposals ultimately selected for funding will be matched with a demonstration site(s) based on these restrictions; therefore, it is imperative that proposers provide a clear description of applicable operating conditions.

To be considered for inclusion in the live site program, technologies should be mature enough that within three months of project initiation any required shakedown testing will be completed and a field-ready system can be deployed for testing. This will generally require testing that has been verified by a neutral third party, either at the Standardized UXO Test Sites or other sites that have supported such testing. Minor variations in practice using standard commercially available instruments or approaches currently deployed at DoD sites will be considered too mature.

Underwater Munitions: Technologies are needed to detect, classify, and remediate military munitions found at underwater sites. Technologies that will facilitate management of underwater munitions sites are also of interest. Capabilities are needed for a wide variety of aquatic environments such as ponds, lakes, rivers, estuaries, and coastal and open ocean areas. Munitions of interest range from small projectiles and mortars to large bombs, although proposals need not address the entire range of potential munitions with a single solution. Water depths up to 35 meters are of primary interest.

Background

As a result of past military training and weapons-testing activities, military munitions, including unexploded ordnance, are present at sites designated for base realignment and closure (BRAC) and at Formerly Used Defense Sites (FUDS). Current estimates indicate that millions of acres of land and water potentially contain munitions contamination. Ongoing military operations deposit additional munitions on active installations, necessitating periodic maintenance. Construction and reconfiguration of ranges can involve substantial costs for unexploded ordnance (UXO) removal and safety support. Using current technologies, the cost of identifying and disposing of munitions in the United States is estimated to be in the tens of billions of dollars.

Proposed technologies should have completed required proof-of-concept work showing evidence of the technology's capabilities. Initial demonstrations may be at a controlled test site, in which case subsequent testing at live munitions response sites will depend on the performance demonstrated during the controlled tests. Demonstrations directly on live sites, with appropriate supporting performance information, will also be considered. These live site demonstrations may be integrated with ongoing munitions response projects or may be part of the series of large-scale ESTCP demonstrations that are currently being executed.

Technologies applicable to the detection and remediation of explosives in soil or groundwater are not responsive to this topic area.

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Topic 5: Regionally Based Airfield Natural Resources Management Technologies/ Methodologies to Reduce Bird/Wildlife Air Strike Hazard (BASH) Threats

Objective

Demonstration projects are sought for cost effective approaches to manage natural resources (e.g., wetlands, water bodies, and plant communities) on or in close proximity to the military airfield environment that will reduce Bird/Wildlife Air Strike Hazard (BASH) threats. This topic seeks proposals that demonstrate innovative technologies and methodologies for habitat management in military airfield environments. ESTCP will give priority to those proposals that address the application of user friendly decision support tools that can synergistically utilize regional biological and aircraft flight data, readily available to an installation, to support airfield management decisions that minimize hazardous animal-aircraft interactions. Of particular interest are those technologies and methodologies that establish and prioritize a range of potential management actions for reducing BASH conflicts on a regional basis versus one-off solutions for individual installations. Technologies that involve demonstrating improved radar systems to identify and/or track animal movement between or within habitat types will not be considered for this topic.

Background

DoD manages numerous airfields across roughly 30 million acres in the United States. Managing airfields to maximize safe flight operations by minimizing the potential occurrence of wildlife that pose flight risks is a highly complex task. Many factors can influence the population levels and behavior of problem fauna, including:

- grass cutting heights and associated frequency and seasonality of cutting activities;
- management of streams, lakes, and other natural water bodies and their associated riparian and shoreline habitats;
- location and management of artificial water bodies and drainage ditches; and
- natural processes, such as:
 - disease
 - food supply and trophic interactions, including predator-prey relationships
 - use of shelter, breeding, or rearing habitat.

To achieve this objective, installation natural resource professionals, in coordination with airfield safety personnel and pilots, must have access to and use the most appropriate and effective tools possible. Currently, military resource managers have a limited set of tools with which to manage natural resources on or in close proximity to the airfield environment. Most BASH management activities tend to rely on standardized approaches that decrease the flexibility needed to adapt management strategies (e.g., for the factors described above) to regional conditions.

Proposed technologies and methodologies should have completed all appropriate proof-of-principle work as applicable. ESTCP supports demonstration at a scale sufficient to determine the operational performance of the technology or methodology and to estimate its expected full-scale implementation costs. Some species- or site-specific field work may be allowed prior to the actual field demonstration if it can be completed during the first year of the project. Specific DoD site(s) may be suggested in the pre-proposal but are not required to be identified until submittal of the full proposal.

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