

## **TOPIC #25: Expeditionary Gray Water Reuse Technologies**

### **1. OBJECTIVE:**

- 1.1.** Potable water and gray water (wastewater that does not contain body or food wastes, i.e., from showers and washing machines.) account for a substantial percentage of the logistics support convoys in current Forward Operating Bases (FOBs). Therefore, reducing water demand, by treating gray water and reclaiming potable water, is needed to reduce the number of convoys necessary to bring in potable water and remove gray water. Water logistics plays an increasing role at the tactical edge, where small FOBs are regularly distributed throughout remote regions.
- 1.2.** Under this topic, the Government invites proposals for water recycle/reuse technology that will, at a minimum, improve the water efficiency at Platoon-sized (50 personnel) FOBs during expeditionary operations. The technologies used in the system shall be scalable such that a system that can support a Company-sized (150 personnel) FOB can be developed using the same technologies.

### **2. DESCRIPTION:**

- 2.1.** Gray water generated is approximately 1,500 gallons per day (gpd) for Platoon-sized FOBs and 4,500 gpd for Company-sized FOBs. For comparison purposes, potable water consumed for troop support (i.e., showers, kitchens, laundries and latrines) is approximately 1,600 gpd for Platoon-sized FOBs and 5,000 gpd for Company-sized FOBs.
- 2.2.** The Army has identified the following areas as key technology challenges to developing and fielding a gray water treatment for reuse system for FOB applications:
  - 2.2.1.** Rapid system start up,
  - 2.2.2.** Ability to adapt to widely varying load conditions,
  - 2.2.3.** Ability to treat water containing lint and surfactants,
  - 2.2.4.** Reduced system footprint and pack out volume and
  - 2.2.5.** Reduced system energy demand.
- 2.3.** The contractor shall develop and demonstrate a water recycle/reuse system that will improve the water efficiency and reduce the overall water resupply demand at Platoon-sized FOBs during expeditionary operations. The technologies used in the system shall be scalable to support a Company-sized FOB. The developed system shall incorporate the following metrics:

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**Table 1. Summary of Threshold/Objective Requirements**

<b>REQUIREMENT</b>	<b>THRESHOLD</b>	<b>OBJECTIVE</b>
Energy Usage	Less than 20 Watt-Hr/Gal	Less than 20 Watt-Hr/Gal
Maintenance Period	2 hours/24 hour period	30 minutes/24 hour period
Operator Attendance	3 visits, totaling no more than 2 hours/24 hours	Unattended for 24 - 72 hours
Recovery	75% of influent	80% of influent or more
Set up Time	Fully operational in 4 hours	Fully operational in 4 hours or less
Operational Temperature	-25 F to 140 F	-25 F to 140 F
Minimization of discharge/by-products and consumables needed	25% reduction compared to the Shower Water Reuse System (SWRS)	Complete elimination of discharge, by-products and consumables
Capacity	1,500-4,500 gallons per day	1,500-4,500 gallons per day
Power Source	Compatible with a military standard generator	Added ability to use variable power sources, including alternative energy sources

**2.3.1. Energy Usage:** An acceptable technology solution shall be energy efficient, using less than twenty (20) watt hours per gallon (threshold).

**2.3.2. Maintenance Period:** The system shall be low-maintenance with a maximum maintenance period of two (2) hours per twenty-four (24) hour period (threshold), with an objective maintenance period of thirty (30) minutes or less per twenty-four (24) hour period.

**2.3.3. Operator Attendance:** The system shall not require more than three (3) operator attended periods per day (in parallel with the maintenance threshold timeframe above) with an objective of providing unattended automatic operation for twenty-four (24) to seventy-two (72) hours.

**2.3.4. Recovery:** The system shall provide high recovery that maximizes reuse with a minimum recovery of 75% (threshold) and an objective recovery of 80% or higher.

**2.3.5. Set Up:** The system shall be quickly deployable and mobile with the ability to be set up and fully operational within four (4) hours.

**2.3.6. Operational Temperature:** The system shall be operational over a wide range of ambient temperatures (-25 F to 140 F).

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- 2.3.7. Minimization of Discharge/By-Products and Consumables Needed:** The system shall be adaptable to variable influent gray water quality. Minimization of the production of any harmful discharge/by-products and any consumables needed is required; 25% reduction compared to the Shower Water Reuse System is optimal with an objective of complete elimination of discharge, by-products and consumables.
- 2.3.8. Capacity:** The system shall be capable to treat a capacity of 1,500-4,500 gallons per day.
- 2.3.9. Power Source:** The ability to use variable power sources, including alternative energy sources, is desirable, although not a requirement for the system. The system must be compatible with a military standard generator.
- 2.4.** The system shall produce an effluent that meets or exceeds the Army Technical Bulletin for Sanitary Control and Surveillance of Field Water Supplies (TB MED 577) guidelines ([armypubs.army.mil/med/DR\\_pubs/dr\\_a/pdf/tbmed577.pdf](http://armypubs.army.mil/med/DR_pubs/dr_a/pdf/tbmed577.pdf)).
- 2.5.** The contractor shall build and demonstrate one (1) quarter-scale to full-scale pallet/skid-mounted prototype demonstrator that can, and will, be tested in a relevant environment (for further testing information, refer to section 2.8 below) to address performance margin requirements of the system. The full-scale system shall not exceed a pack out volume of 416 cubic feet and shall weigh less than 7,110 pounds. If less than a full-scale prototype is provided, scalability of the system to full-scale shall be demonstrated.
- 2.6.** The contractor shall develop a commercial type operators manual and any required training materials. The contractor shall provide training materials and manuals for 15 soldiers.
- 2.7.** The system shall be easy to operate by a non-Military Occupational Specialty (MOS) specific person after one (1) week of training and use of the operations manual. The system shall have the ability to provide unattended automatic operation, provide real time system monitoring, and be self-monitoring.
- 2.8.** The contractor shall conduct a prototype demonstration and deliver the prototype to the Government eighteen (18) months after contract award for Government conducted testing. The contractor shall deliver the prototype to the test site locations. The contractor shall support the subsequent Government conducted testing during the last six (6) months of the contract's period of performance, for a total contract period of performance of twenty-four (24) months. Testing will be performed at up to two (2) testing sites. The Technical Point of Contact (TPOC) will determine the location of each testing site within six (6) months of the contract award date. Testing will last up to thirteen (13) weeks at each location. The contractor shall remain on-site for the

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first week at each location to train the operators and ensure proper operation of the prototype system. After the first week at each testing site, the contractor shall provide on-call support and be prepared to travel to the testing site(s) to fix any problems that may occur with the prototype system. If requested by the contractor, and determined by the TPOC to be necessary, the TPOC will assist the contractor with gaining access to the test sites within nine (9) months of the contract award date.

**2.9. PROPOSALS THAT REFLECT A “PARTIAL TECHNICAL SOLUTION” TO THE TECHNICAL OBJECTIVES AND DESCRIPTION ARE NOT ACCEPTABLE. THE GOVERNMENT WILL CONSIDER ONLY THOSE PROPOSED PROJECTS THAT ADDRESS ALL ELEMENTS OF THE OBJECTIVE AND DESCRIPTION.**

**3. PROJECT DURATION AND ESTIMATED MAXIMUM FUNDING AVAILABLE:**

**3.1. Period of Performance:** The scope of this effort is such that we anticipate a potential duration of twenty-four (24) months (fiscal year 2012 to 2013).

**3.2. Funding:** The maximum government funding available in Fiscal Years 2012 through 2013 is \$1.75M. Subparts 3.2.1. and 3.2.2. below describe the estimated maximum funding available for each fiscal year of the project. Funds which are not expended in a given fiscal year are available in the subsequent years of the project, subject to fund type restrictions. The estimated maximum Government funding available for each fiscal year of the project is as follows:

**3.2.1. Fiscal Year 2012:** \$470,000\*\*

**3.2.2. Fiscal Year 2013:** \$1,280,000\*\*

**3.3. Cost Ceiling/Cost Share:** Proposed projects with costs to the Government exceeding the amount identified in item 3.2., immediately above, and its subparts 3.2.1. and 3.2.2., will be unaffordable. The contractor may propose costs in excess of the Government funded cost ceilings only if the excess costs are to be funded by a cost sharing arrangement. Please note that a cost sharing arrangement is not a consideration for award; therefore, no evaluation preference will be given if a cost share is proposed.

**3.4. Multiple Awards:** The Government anticipates awarding up to two (2) contracts as a result of this topic.

**4. MILESTONE SCHEDULE:**

**1.1. Informal Talks Timeframe:** 01 November 2011 through 01 December 2011.

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- 1.2. Electronic Copies of Proposals Due:** Proposals will be accepted 01 December 2011 through 09 January 2012. Proposals must be received no later than 3:00 P.M. Eastern Standard Time, 09 January 2012.\*

**\*Note:** In accordance with FAR 15.208(a), offerors are responsible for submitting proposals so as to reach the Government office designated in this Broad Agency Announcement (BAA) Topic by the time specified. Offerors are strongly cautioned to submit their proposals allowing adequate time for submission. Any proposal received at the designated Government office after the exact time specified is "late" and will not be considered unless one of the exceptions at FAR 15.208(b) is met.

- 4.1. Estimated Award Date:** 09 April 2012

**5. SPECIAL PROPOSAL INSTRUCTIONS:**

- 5.1.** Effective 13 FEB 2009, all proposals must be submitted using the ASFI Bid Response System (BRS), accessible at <https://acquisition.army.mil/asfi/default.cfm>.

- 5.2.** Topic #25 for proposal submission can be found by searching Contracting Opportunities for "TARBAATOPIC25." As reflected by the results of this search, proposals for Topic #25 may be uploaded via the ASFI BRS at the following URL: [https://acquisition.army.mil/asfi/solicitation\\_view.cfm?psolicitationnbr=TARBAATOPIC25](https://acquisition.army.mil/asfi/solicitation_view.cfm?psolicitationnbr=TARBAATOPIC25)

**6. POINTS OF CONTACT:**

**6.1. TECHNICAL POINT OF CONTACT (TPOC):**

Lateefah Brooks

Address: U.S. Army TARDEC

6501 East 11 Mile Road

Force Projection Technology, RDTA-DP, M.S. 110

Warren, MI 48397-5000

Phone: 586.282.6587

Fax: 586.282.4123

Email: [lateefah.c.brooks.civ@mail.mil](mailto:lateefah.c.brooks.civ@mail.mil)

**6.2. CONTRACTING OFFICER:**

Lynn Byrne

Phone: 586.282.6553

Email: [lynn.m.byrne.civ@mail.mil](mailto:lynn.m.byrne.civ@mail.mil)

**6.3. CONTRACT SPECIALIST:**

Sara Locricchio

Phone: 586.282.7401

Email: [sara.m.locricchio.civ@mail.mil](mailto:sara.m.locricchio.civ@mail.mil)

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