Technology Innovation News Survey

Entries for October 1-15, 2016

Market/Commercialization Information

INDEFINITE DELIVERY ARCHITECT-ENGINEER SERVICES CONTRACT FOR HTRW, PRIMARILY VARIOUS LOCATIONS, ALASKA
U.S. Army Corps of Engineers, USACE District, Alaska.
Federal Business Opportunities, FBO-5465, Solicitations W911KB-17-R-0014 [Unrestricted] and W911KB-17-R-0015 [Small Business set-aside], 2016

The USACE HTRW program covers investigation, planning and design for cleanup of hazardous, toxic, and radiological wastes; debris; military munitions response; and other environmental contaminants at various locations in Alaska. The Alaska District invites submittal of SF330 qualifications statements from businesses both large and small under NAICS code 541330. Firms will be selected for negotiation based on demonstrated competence and qualifications for the required work. Under each solicitation, up to four indefinite-delivery, firm-fixed-price contracts will be awarded. Under Solicitation W911KB-17-R-0014, the contract limit will be $72M over five years shared amongst all awardees in the unrestricted MATOC pool. Under Solicitation W911KB-17-R-0015, the contract limit will be $48M over five years shared amongst all awardees in the Small Business MATOC pool. The first contract awards are anticipated for the 3rd quarter of FY 2017. Contracts are currently in place for like services. The selected A-E firms must have sufficient staff, flexibility, and capability to be available on an as-needed basis. Interested firms may submit SF330 packages by 2:00 PM Alaska time on December 2, 2016. Projects to be performed and funds are not presently available.

W911KB-17-R-0014: https://www.fbo.gov/spg/USA/COE/DACA85/W911KB-17-R-0014/listing.html
W911KB-17-R-0015: https://www.fbo.gov/spg/USA/COE/DACA85/W911KB-17-R-0015/listing.html

COMPARATIVE TEST AND EVALUATION OF EXPEDITIONARY COTS AND NEAR-COTS SYSTEMS

Department of the Navy, Naval Sea Systems Command, NSWC Indian Head, MD.
Federal Business Opportunities, FBO-5461, Solicitations N00174-17-S-0001 [Mass Spectrometry] and N0017417SN0007 [Colorimetric Detection], 2016

The Naval Surface Warfare Center (NSWC), Indian Head Explosive Ordnance Disposal Technology Division is seeking sources for comparative test and evaluation.

- Under Solicitation N00174-17-S-0001, NSWC is seeking sources of expeditionary mass spectrometry-based commercial-off-the-shelf (COTS) and near-COTS systems capable of detecting trace amounts of energetic materials. The system must be flexible and transportable (e.g., a backpack system).
- Under Solicitation N0017417SN0007, NSWC is seeking sources for COTS and near-COTS colorimetric kits capable of detecting energetic trace and bulk.

These notices solicit vendors' information that fully explains their existing systems technology features, capabilities, and performance. NSWC plans to select expeditionary mass spectrometry-based explosive detection systems and colorimetric explosive detection kits for separate comparative studies, followed by final reports that will be made available to government agencies, DoD services, and law enforcement organizations. Interested sources may respond with a technical summary of five or fewer pages.

N00174-17-S-0001: https://www.fbo.gov/spg/DON/NAVSEA/N00174/N00174-17-S-0001/listing.html
N0017417SN0007: https://www.fbo.gov/spg/DON/NAVSEA/N00174/N0017417SN0007/listing.html

ENVIRONMENTAL PLANNING, COMPLIANCE, AND REMEDIATION TECHNICAL SERVICES

Army Contracting Command, ACC - RSA (W9113M) - (SPS), Redstone Arsenal, AL.
Federal Business Opportunities, FBO-5465, Solicitation W9113M-17-R-0001, 2016

This presolicitation synopsis provides notice to industry of the Government's intent to release a formal solicitation for Environmental Planning, Compliance, and Remediation Technical Services (EPCARTS). This notice is not a request for proposals. The EPCARTS procurement will be a competitive 8(a) set-aside resulting in a single-award IDIQ contract under NAICS code 562910. The anticipated period of performance is a 5-year ordering period (3-year base and two one-year options). This acquisition is for services to support the world-wide full-spectrum life-cycle environmental mission of the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command. The space and missile defense customers anticipate that the work will be for environmental remediation, pollution prevention, and environmental planning analyses, compliance, and NEPA support. The current anticipated release date of the RFP is November 22, 2016, with proposals due January 10, 2017. ** Note: A Draft RFP and other background information files are posted separately at https://www.fbo.gov/notices/823a95ce68cb2103b5b46b82251ea91.**

https://www.fbo.gov/notices/ea12ca3da80bdff255a013a55b4e9c97

MOAB URENIUM MILL TAILINGS REMEDIAL ACTION (UMTRA) TECHNICAL ASSISTANCE CONTRACT

Department of Energy, EM Consolidated Business Center, Cincinnati, OH.
Federal Business Opportunities, FBO-5461, Solicitation DE-SOL-0009670, 2016

U.S. DOE anticipates issuing a DRAFT RFP by or about December 21, 2016, to provide support for the Moab Uranium Mill Tailings Remedial Action (UMTRA) Technical Assistance Contract (TAC). The work will be performed at Moab and Crescent Junction, Utah; at Grand Junction, Colorado; and at the contractor's facilities. DOE intends to conduct a presolicitation conference and site tour for this procurement, tentatively scheduled for December 7, 2016. For details and updates, monitor the Moab UMTRA TAC Procurement website at https://www.emdbc.doe.gov/SEB/Moab/. Interested parties are encouraged to review the Draft RFP and provide suggestions, comments, questions, and changes in writing to the POC for consideration by DOE in developing the Final RFP. The Government anticipates a single-award IDIQ contract with an ordering period of five years. This procurement will be 100% set-aside for 8(a) small businesses under NAICS code 562910. The Draft and Final RFP will also be posted on FedConnect at https://www.fedconnect.net/FedConnect/?doc=DE-SOL-0009670&agency=DOE [Note: It may be necessary to copy and paste the URL into your browser for direct access.].

Clean up News

BIOINJECTION PERFORMANCE REVIEW FOR THE BUILDING 100 AREA AND 4.5 ACRE SITE AT THE PINELLAS COUNTY, FLORIDA, SITE

This document summarizes the performance since 2010 of bioinjection (i.e., biostimulation and bioaugmentation) activities on TCE, DCE, and VC contamination at the Building 100 Area and the 4.5 Acre site at the Pinellas County, Florida, site; discusses how best to optimize future injection events; and identifies the approach for the bioinjection event in 2016. VC is now the only contaminant that exceeds its MCL. Dehalococcoides mccartyi (DHM) was conducted at the 4.5 Acre site in 2010 and 2013 to decrease contaminant concentrations to MCLs along the southwest property boundaries (to meet risk-based corrective action requirements) and to remediate the extent of the contaminant plume in the site interior. Bioinjection was conducted at the Building 100 Area in 3 phases from October 2014 through November 2015 to enhance contaminant biodegradation to stabilize or shrink the contaminant plumes. Review of the 4.5 Acre site data demonstrated that EVO and DHM injection resulted in significant concentration decreases at most wells, but full effectiveness was limited...
by elevated sulfate concentrations and by lack of contact of the injected EVO and DHM with the contaminants. Results in the Building 100 Area also suggest that insufficient injectant/contaminant contact is the main factor limiting biodegradation.

EVO/BIOAUGMENTATION FOR TREATMENT OF TRICHLOROETHENE BY BIOBARRIER AND SOURCE INJECTION APPROACH


Enhanced in situ bioremediation (EISB) using emulsified vegetable oil (EVO) was selected to treat chlorinated VOCs (mainly TCE, > 10 mg/L) in a glacial till in the Garfield Groundwater Contamination Site. In order to remove the source and achieve remedial goals, a two-phase approach was selected. The first phase targeted the dissolved and non-aqueous phase contaminant plume in the building. The second phase targeted the non-aqueous phase source area. TVOC concentrations increased at many source area wells between the 2011 and 2012 monitoring periods. In the source area, TVOC concentrations increased from 1,800 µg/L at MW-03-01R to 2,800 µg/L at MW-03-01R. In the building area, TVOC concentrations were higher than in the source area, with concentrations ranging from 1,800 to 6,000 µg/L.

Demonstrations / Feasibility Studies

RESULTS OF THE IN SITE REDUCTION PILOT TEST, GARFIELD GROUNDWATER CONTAMINATION SUPERFUND SITE, NEW JERSEY


At the Garfield Groundwater Contamination Superfund Site, groundwater contaminated with hexavalent chromium (Cr(VI)) from the E.C. Electroplating (ECE) property was treated using emulsified vegetable oil (EVO) and bioaugmentation. The EVO/Bioaugmentation approach was selected because it can be used to treat chromium in groundwater and soil, and it has been shown to be effective in other studies. The pilot test was performed in two separate areas within the boundaries of the E.C. Electroplating (ECE) property. In the source areas, the chromium concentration was reduced from 28,701 µg/L to 1,800 µg/L, and in the building area, the chromium concentration was reduced from 2,800 µg/L to 1,000 µg/L.

EPA FINALIZES CLEANUP PLAN FOR DEFUNCT E.C. ELECTROPLATING PLANT IN GARFIELD, N.J.


At the Garfield Groundwater Contamination Superfund Site, groundwater contaminated with hexavalent chromium (Cr(VI)) from the E.C. Electroplating (ECE) property was treated using emulsified vegetable oil (EVO) and bioaugmentation. The EVO/Bioaugmentation approach was selected because it can be used to treat chromium in groundwater and soil, and it has been shown to be effective in other studies. The pilot test was performed in two separate areas within the boundaries of the E.C. Electroplating (ECE) property. In the source areas, the chromium concentration was reduced from 28,701 µg/L to 1,800 µg/L, and in the building area, the chromium concentration was reduced from 2,800 µg/L to 1,000 µg/L.

IN SITU BIOREMEDIATION PILOT TEST AT THE 500 RAMP AREA: DATA SUMMARY REPORT, FORMER BOEING WICHITA FACILITY, WICHITA, KANSAS

Kansas Department of Health and Environment (KDHE), 381 pp, 2015

The 500 Ramp Area is located in the northeast corner of the Former Boeing Wichita Facility beneath which the dissolved-phase TCE plume in the groundwater emanates from a source area centered near monitoring well MW-03-01R, which historically has exhibited contamination source that historically has been the focus of in situ treatment. Injection through permanent monitoring wells (installed by rotosonic drilling) was selected owing to the difficulty in extracting the plume (tight till with gravel and cobbles). Treatment is focused in the upper aquifer in the source area (where residual DNAPL is present) and in the lower aquifer at off-site biobarriers to intercept the dissolved VOC plume. This poster presents the remediation approach (process, implementation, findings, and next steps planned for EISB optimization).Poster: https://semspub.epa.gov/src/document/02/396453 and the Record of Decision at https://semspub.epa.gov/src/document/02/377027.

APPROVAL REQUESTS: 1,4-DIOXANE PILOT TESTS, PLANTS 2 AND 3, INDUSTRIAL LAND, LANSING, MICHIGAN
Revitalizing Auto Communities Environmental Response (RACER) Trust, [2 reports] 2016

The RACER Trust contractor prepared work plans to provide information required to obtain Michigan Department of Environmental Quality (MDEQ) approval to perform field pilot studies to evaluate technology performance in treatment of 1,4-dioxane. MDEQ approved both work plans.

The 1,4-dioxane bioreactor pilot test is for a moving bed bioreactor (MBBR). Due to the daily volume of water necessary for culturing biomass for testing, a field pilot test is recommended over a bench test. The pilot objective is to evaluate the effectiveness of a directed groundwater remediation system using NZVI to treat 1,4-dioxane present in the weathered bedrock at Plants 2 and 3 (the lower 1,4-dioxane plume). Pilot results will be used to verify the effectiveness of the MBBR system compared to traditional ex situ treatment technologies and provide data for a potential full-scale MBBR system design.

https://p.enfos.com/publicDocs/33182/9d297f3-3f98-41be-89c5-4f4f-3f3f-5a94-f5b5-b9e9-314f-61307-33182 Followup: The MBBR pilot test is scheduled to run from September through November 2016.

The 1,4-dioxane propane biosparge pilot test is an application of enhanced in situ cometabolic biodegradation. Propane biosparging relies on the ability of propane-oxidizing bacteria to degrade 1,4-dioxane while using propane as a primary source of food and energy. The propane and oxygen are used to proliferate seeded propanotrophs, but the propane will be limited such that 1,4-dioxane is consumed as a secondary carbon source. Oxygen will be provided in excess to ensure sufficient electron acceptors. Results of this field pilot will help determine whether the technology can be implemented cost-effectively as a remedy for the lower 1,4-dioxane plume.

https://p.enfos.com/publicDocs/33182/4796f74-3050-473d-8949-8d5e1f30c5 Followup: Phase I of the lower 1,4-dioxane biosparge pilot test was completed June 16-17 at Plant 2, with Phase II following in September 2016. See slides on the proposed application of both technologies at https://p.enfos.com/publicDocs/33182/023486d-4b72-45ba-9c53-42b87ca3ff63.
Advanced phytoremediation systems are being developed for cost-effective removal of petroleum hydrocarbons (PHCs), PAHs, and salt from soils. Plant growth-promoting rhizobacteria (PGPR)-enhanced phytoremediation systems, or PEPS, create abundant root biomass in impacted soils, stimulate exponential growth of rhizobacteria that facilitate partitioning of contaminants out of the soil, degrade PHCs, and sequester salt into plant foliage. Soil remediation is usually complete within 3 years of treatment on PHC sites and longer term on salt sites. PEPS have been successfully deployed for 10 years on many sites located across seven Canadian Provinces/Territories to render the affected soils free of salt impacts. PEPS provide significant cost savings in remote/northern areas where traditional pressure conditions/permafrost persist, distances are significant, and access to landfill is difficult or nonexistent. Field trials are underway to expand PEPS applications. This presentation describes field results obtained from conventional PHC sites located in northern Alberta, emphasizes reclamation studies involving mixed reclaimed soil and grasslands in cemementation studies involving mixed reclaimed soils and grasslands at a produced water spill within a wetland setting, and the use of hydro-seeding for deployment of PEPS on disturbed sites.


SELECTIVITY OF NANO ZEROVALENT IRON IN IN SITU CHEMICAL REDUCTION: CHALLENGES AND IMPROVEMENTS

To date, the overall number of well-characterized field deployments of nanoscale zero-valent iron (NZVI) is still small compared to more widely applied remedies. Apart from the relatively high material cost of NZVI and questions regarding possible nanotoxicological side effects, a major obstacle to the widespread utilization of NZVI in the field is its short persistence in the environment due to natural reductant demand (NRD). The NRD for NZVI mainly is due to reduction of water, but other reactions with naturally present oxidants (e.g., oxygen) occur, resulting in in situ conditions that are reducing (high in ferrous iron phases and H2) but with little or no elemental iron. This can be the main biggest nanomaterial processes that determine the selectivity and longevity of NZVI, summarizes data from prior lab and field studies on the longevity of various common types of NZVI, and describes modifications that could improve NZVI selectivity and longevity for full-scale applications of in situ chemical reduction.

EVALUATION OF VAPOR INTRUSION PATHWAY ASSESSMENT THROUGH LONG-TERM MONITORING STUDIES

A long-term, high-frequency indoor air data set was collected at a house overlying a dilute TCE groundwater plume. The project included permeable reactive barriers, a groundwater and soil gas data and high-frequency monitoring of building conditions and environmental factors. Indoor air TCE concentrations varied over three orders of magnitude under natural conditions, with the highest daily vapor intrusion (VI) activity during fall, winter, and spring months. Simulation of outcomes from common sampling strategies indicated a high probability (up to 100%) of failure to identify long-term exposure. A long-term continuous monitoring and decision control system (CPM) test was conducted to assess its utility as an alternate approach for VI pathway assessment. Indoor air concentrations were similar to maximum concentrations under natural conditions (9.3 µg/m3 average versus 13 µg/m3 for 24 h TCE data) with little temporal variability. A key outcome was the absence of false-negative results. Results suggest that CPM tests can produce worst-case exposure conditions at any time of the year. https://repository.asu.edu/attachments/150778/content/Holton_asu_0010E_15040.pdf

VAPOUR INTRUSION MONITORING METHOD COST COMPARISONS: AUTOMATED CONTINUOUS ANALYTICAL VERSUS DISCRETE TIME-INTEGRATED PASSIVE APPROACHES

A series of common vapor intrusion monitoring scenarios and associated assumptions were derived to evaluate and compare costs of automated methods versus discrete time-integrated methods. Results suggest that for relatively larger sites where five or more locations will be monitored (e.g., large buildings, multifaceted industrial complexes, educational facilities, or shallow groundwater plumes with significant spatial footprints under residential neighborhoods), procurement of continuous-monitoring services is often less expensive than implementation of discrete time-integrated monitoring services. For instance, for a 1-week monitoring campaign, costs per analysis for continuous monitoring ranged from ~1 to 3% of discrete time-integrated method costs for the scenarios investigated. Over the same one-week duration, for discrete time-integrated approaches, the number of sample analyses equals the number of data collection points (which ranged from 5 to 30 for this effort). In contrast, the number of analyses per week for the continuous monitoring option equals 672, or four analyses per hour. Results also suggest that continuous automated monitoring can be cost-effective for multiple one-week campaigns on a quarterly or semi-annual basis in lieu of discrete time-integrated monitoring options.

REMEDATION OF PCB-CONTAMINATED SOIL USING EXTRACTION AND DESTRUCTION: BENCH-SCALE TEST

Researchers evaluated the effectiveness of extracting the PCB Aroclor 1260 from soil sampled from a former electrical plant area, transferring it to a liquid matrix, and then treating the PCB-containing liquid at bench scale using an Activated Metal Treatment System (AMTS). Based on zero-valent magnesium (ZVMg), AMTS is a technology developed by NASA. The initial concentration of untreated soil contained an average of 4.7 ± 0.15 mg/kg of Aroclor 1260. Results showed that mass transfer is possible using ethanol as a liquid matrix. The ZVMg enabled the destruction of the Aroclor 1260, which reached 20% without any buildup of undesirable by-products, such as less chlorinated PCBs.

MEASUREMENT OF PCB EMISSIONS FROM BUILDING SURFACES USING A NOVEL PORTABLE EMISSION TEST CELL

A low-cost emission test cell was developed and proved capable of providing a micro environment where source potentials of individual surface areas (up to 0.15 m2) could be characterized. Sorption on cell surfaces did not affect measurements after 2-4 days; hence emission rates could be determined within a few days. PCB emission rates were different depending on the surface type, even for different surfaces within the same room. The emission test cell can be used to prioritize future or evaluate completed remediation measures of contaminated surfaces. For additional information on the test cell, which was developed during N. Lyng’s study of PCB-contaminated buildings, see her dissertation at http://vbn.au.dk/files/338715098/PHD_Nadia_Lyng_E.pdf.

General News

SOIL DIOXIN RELATIVE BIOAVAILABILITY ASSAY EVALUATION FRAMEWORK
U.S. Environmental Protection Agency, OSWER 9200.2-136, 16 pp, 2015

Until standard procedures for estimating the relative bioavailability (RBA) of PCDD/F in soil are established, there is a need for a consistent approach to evaluate the strengths and weaknesses of assays designs proposed or implemented to support risk assessments.
This report offers a framework for making such evaluations. Specific design parameters that should be subject to evaluation are identified and relevant scientific literature is cited where more in-depth discussion can be found. Whenever possible, minimal requirements for study designs are proposed. This report also identifies issues that have yet to be resolved regarding how RBA assays should be designed and which could be objectives of further research to develop RBA assays for soil PCDD/F and applications to risk assessment. 

**STATE VAPOR INTRUSION GUIDANCE UPDATES**

- The Minnesota Pollution Control Agency issued a variety of new multi-part resources, including intruson screening values and best management practices for VI investigation, mitigation, and public communication. [https://www.pca.state.mn.us/waste/vapor-intrusion](https://www.pca.state.mn.us/waste/vapor-intrusion)

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund Remediation and Technology Innovation at adam.michael@epa.gov or (703) 603-9915 with any comments, suggestions, or corrections.

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