Technology Innovation News Survey

Entries for April 1-15, 2015

Market/Commercialization Information

ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP) POST-REMEDIATION PERFORMANCE ASSESSMENT

U.S. Army Corps of Engineers, USACE HEC, Ft. Belvoir, VA. Solicitation BAA-15-0006, 2015

ESTCP is seeking proposals focused on follow-up monitoring and evaluation of in situ restoration sites as candidates for funding beginning in FY 2015. Monitoring approaches should focus on sites in which pilot- or full-scale in situ restoration was conducted as part of an ESTCP demonstration or at any DoD pilot- or full-scale in situ restoration site where sufficient data exists to conduct a thorough evaluation. The objective is to evaluate the long-term performance and impacts of site restoration technologies. Specific questions to address include 1) how long do remediation impacts persist; and 2) what technologies and site conditions are most likely to lead to long-term performance concerns? And specifically for groundwater sites: 1) how do different groundwater quality parameters change over time; and 2) what mechanisms control long-term groundwater quality? Proposals must be received no later than 2:00 PM ET, June 11, 2015. https://serdp-estcp.org/Funding-Opportunities/ESTCP-Solicitations/Post-Remediation-Assessment-Solicitation

UNIFIED REGIONAL OVERSIGHT CONTRACT (UROC)

Environmental Protection Agency, Office of Acquisition Management, Region V, Chicago, IL.
Federal Business Opportunities, FBO-4921, Solicitation SOL-R5-15-00006, 2015

Contractor support is needed to conduct technical reviews of documents and other materials, provide meeting support, conduct field audits and inspections, review field data, and provide other technical support. This RFP solicits contractor services to provide support to EPA through technical oversight and support of CERCLA and RCRA activities as described in the statement of work and attachments to the notice at FBO.gov. This procurement is a total small business set-aside under NAICS code 541620, with a size standard of $15M. EPA intends to award two or more IDIQ contracts from this solicitation, indefinite-quantity contracts that permit either firm-fixed-price Task Orders or time-and-material Task Orders with fixed labor rates. Technical and price proposals are due no later than 1:00 PM CT on May 26, 2015. Electronic proposals are required and must be sent through the Electronic Acquisition System via the link on FedConnect at https://www.fedconnect.net/FedConnect/?doc=SOL-R5-15-00006&agency=EPA.

ENVIRONMENTAL WORKSHOP TRAINING: TENNESSEE ARMY NATIONAL GUARD

Department of the Army, National Guard Bureau, USPFO for Tennessee, Nashville, TN.
Federal Business Opportunities, FBO-4919, Solicitation W912L7-15-Q-0515, 2015

The contractor will provide 24 half-day (4 instructional hours) shop-level environmental workshops. Each workshop will be based on the Tennessee Army National Guard Hazardous Materials and Waste Management Plan and best management practices for hazardous materials and waste management. In addition, the contractor will describe, demonstrate, and implement specific waste management and spill response procedures. This acquisition is 100% set-aside for service-disabled, veteran-owned small business concerns under NAICS code 541620, small business size standard of $15M. The closing date for this RFP (limit 25 pages) is May 29, 2015, at 3:30 PM CT. https://www.fbo.gov/spg/USA/NGB/DAHA40/W912L7-15-Q-0515/listing.html

SOURCES SOUGHT: GROUNDWATER TREATMENT FACILITY DESIGN & CONSTRUCTION

Department of Energy, S.M. Stoller Corporation (DOE Contractor), Grand Junction, CO.
Federal Business Opportunities, FBO-4920, Solicitation STOL-LM015708-RC, 2015

Stoller Newport News Nuclear, a contractor to U.S. DOE, has issued this sources-sought notice to evaluate the qualifications of a potential subcontractor to design and construct a treatment facility for water contaminated with nitrate and uranium at DOE's Office of Legacy Management Rocky Flats Site in Colorado, ~18 miles northwest of downtown Denver. The site was formerly a nuclear weapons production facility. DOE closed, dismantled, and returned the site to a near-natural state. The site is remote and accessed only by dirt roads at roughly 5,900 ft above mean sea level. Detailed information about the cleanup and closure of the site is available at http://www.lm.doe.gov/rocky_flats/Sites.aspx. The summary attached to the notice at FBO.gov provides information on the setting and applicable parameters, and then lists specific requirements and constraints. Responses are due by or before 11:59 PM ET, June 3, 2015. https://www.fbo.gov/spg/DOE/SMSC/SMSC-GJ/STOL-LM015708-RC/listing.html

ALASKA ENVIRONMENTAL ASSESSMENTS, ENVIRONMENTAL REMEDIATIONS, AND EMERGENCY RESPONSE

Defense Logistics Agency, DLA Energy, Fort Belvoir, VA.
Federal Business Opportunities, FBO-4922, Solicitation SPE600-15-R-0513, 2015

This RFP is for environmental services at Defense Fuel Support Points Eielson, Indian, and Whittier. DLA-Energy will award separate fixed-price requirements contracts for each facility for environmental assessment, environmental remediation, and emergency response services. The anticipated period of performance is September 1, 2015, through August 31, 2019. Proposals in response to this solicitation are due by or before 3:00 PM ET on June 15, 2015https://www.fbo.gov/spg/DLA/J3/DESC/SPE600-15-R-0513/listing.html

REGULATION, EVALUATION AND TECHNICAL SUPPORT FOR THE OFFICE OF EMERGENCY MANAGEMENT

Environmental Protection Agency, Office of Acquisition Management (OEM), Washington, DC.
Federal Business Opportunities, FBO-4920, Solicitation SOL-HQ-15-00002, 2015

To support the OEM mission, U.S. EPA seeks the services of contractors to provide support in developing and implementing prevention programs to reduce the risk of discharging releases of oil and releases of hazardous substances to the environment; building preparedness capacity for oil and hazardous substances emergencies; and responding to emergency events and discharges of oil and releases of hazardous materials. This requirement is for a five-year, multiple-award, IDIQ contract with fixed labor rates for services. Work to be performed under this contract shall be ordered through task orders. Offers are due by 12:00 PM ET, June 18, 2015. OEM may also direct the contractor to provide support to other OSWER offices in accordance with the contract statement of work. The full solicitation is posted at FedConnethttps://www.fedconnect.net/FedConnect/?doc=SOL-HQ-15-00002&agency=EPA.

REMEDIAL ACTION: MADISON COUNTY MINES SUPERFUND SITE, OPERABLE UNIT 3 (OU3) RESIDENTIAL PROPERTIES

Environmental Protection Agency, Office of Acquisition Management, Region VII, Lenexa, KS.
Federal Business Opportunities, FBO-4913, Solicitation SOL-R7-15-00010, 2015

U.S. EPA Region 7 intends to seek the services of an experienced firm to provide remedial action services for OU3 residential properties impacted by human transport of mine waste resulting from nearly two and a half centuries of mining in the Old Lead Belt located in Southeast Missouri, in Madison County and southern St. Francois County. This contract also will include the remediation of the OU4-Conrad Tailings, a 28-acre tailing location with ~12 acres of contamination around its perimeter and downstream sediment, overbank deposits and floodplain, and a county road right-of-way. The intended procurement will be a total small business set-aside. EPA anticipates issuing an indefinite quantity with fixed unit prices contract consisting solely of a three-year base period. Estimated dollar value for this procurement is between $15M - $20M. Release of the RFP is anticipated on or about June 8, 2015, on FedBizOpps at https://www.fbo.gov/spg/EPA/OAM/RegVII/SOL-R7-15-00010/listing.html and on FedConnect at https://www.fedconnect.net/FedConnect/?doc=SOL-R7-15-00010&agency=EPA.

UXO CLEARANCE SERVICES FORT MCCOY, WI

Department of the Army, Army Contracting Command, MICC - Fort McCoy, WI.
Federal Business Opportunities, FBO-4922, Solicitation W911SA-15-R-0018, 2015

This notice is issued to give advance notice of the procurement of UXO clearance services at Fort McCoy, WI. The contractor shall provide surface and subsurface operational range clearance to include explosive ordnance disposal, range scrap and residue inspection, certification, removal, and disposal in accordance with applicable DoD, Department of Army, and Fort McCoy guidance. Posting of the RFP for this requirement, which is set aside for service-disabled, veteran-owned small business concerns, is anticipated during the week of May 18, 2015. https://www.fbo.gov/notices/c6073bc4610bac81e3612373d6e3562

SMALL BUSINESS ENVIRONMENTAL REMEDIAL ACTION CONTRACT FOR SITES IN HAWAII, GUAM, AND OTHER AREAS WITHIN THE NAVAL FACILITIES ENGINEERING COMMAND PACIFIC AREA OF RESPONSIBILITY

Naval Facilities Engineering Command, NAVFAC Pacific, Pearl Harbor, HI.
Federal Business Opportunities, FBO-4918, Solicitation N6274215R1807, 2015

This procurement is to obtain services for performing remedial actions at contaminated sites, predominantly at Navy and Marine Corps installations and other Government agencies and mainly in Hawaii and Guam. The single-award contract will be a cost-plus-award-fee, IDIQ-type contract with a base period and four one-year options. The total maximum value of the contact is $95M. This requirement is a total small business set-aside. The RFP will be available on or about June 1, 2015, at https://www.neco.navy.mil. FBO: https://www.fbo.gov/spg/DON/NAVFAC/N62742/N6274215R1807/listing.html.

Cleanup News

SEMIANNUAL PROGRESS REPORT: THIRD AND FOURTH QUARTERS FISCAL YEAR 2014 (APRIL 1 TO SEPTEMBER 30, 2014) FOR THE LAWRENCE BERKELEY NATIONAL LABORATORY HAZARDOUS WASTE FACILITY PERMIT

Lawrence Berkeley National Laboratory (LBNL), 848 pp, 2015

Activities conducted by LBNL under its RCRA Corrective Action Program consist primarily of 1) continued operation of the corrective measures approved by the CalEPA's Department of Toxic Substances Control to clean up groundwater affected by TCE and 2) monitoring groundwater quality. The corrective measures required for contaminated soil were completed in 2006. The corrective measures required for groundwater currently are in the operation, maintenance, and monitoring stage. Contaminants include PCE, TCE, and daughter products; metals; PCBs; TPH; and tritium. Treatment consists primarily of in situ soil flushing with groundwater capture. Secondary measures in some areas include subsurface injection of HRC®, soil vapor extraction, and monitored natural attenuation. Extracted VOC-contaminated groundwater is treated using granular activated carbon filters and when not injected into the subsurface to flush the soil is otherwise discharged under permit to the sanitary sewer. During the current reporting period, ~2 million gal of water were treated, with more than 154 million gal treated to date. http://www2.lbl.gov/ehs/erp/ERP%20Semiannual%20Report%20FinalFY14.pdf

MITIGATION OF PCB USING PERMEABLE REACTIVE BARRIER TECHNOLOGY AT RESOLUTION ISLAND, NUNAVUT FROM 2005 TO 2013

Rutter, A., I. Kalinovich, R.K. Rowe, D. Jones, N. Plato, and S. Hooey. 2014 RPIC Federal Contaminated Sites National Workshop, 14-16 April, Ottawa, Ontario, 50 slides, 2014

Three permeable reactive barriers (PRBs) at Resolution Island, Nunavut, were installed in 2005 and 2006 to deal with surface runoff of PCBs at the site. These barrier/filter systems are unique in that they are designed to deal with surface sediments as well as surface runoff containing PCBs. This technology was selected because the fractured bedrock at Resolution Island contained soils at PCB concentrations between 1 and 5 ppm (Tier I), between 5 and 49 ppm (Tier II), and ≥50 ppm (CEPA) levels that could not be accessed during excavation. Steep inclines also inhibited access to areas of contaminated soil. Field filter samples showed that partitioning of PCBs between contaminated soil and granular activated carbon filter particles was occurring at levels of 62 ± 11%. This sequestration requires both particle retention within the granular sorptive filters and a maintained contact time between particles for sorption processes to proceed. Eight years after installation, the barriers continue to function very well and are mitigating PCB migration. This presentation describes PRB construction, monitoring results from 2006 to 2013, successful capture of PCB-contaminated sediment, geotextile stability, and plans for decommissioning the barriers.

Slides: http://www.rpic-ibic.ca/documents/RPIC_ECS2014/Presentations/8-Rutter_rpic_talk_21_feb_2014.pdf
Background paper: http://geoeng.ca/Directory/kerry%20Pub/2112%20Kalvinvich%20et%20al%20JEM%20v101%20pp124-133.pdf

SUSTAINABILITY OF USING REACTIVE ZONES TO REMEDIATE CHLORINATED HYDROCARBONS IN URBAN ENVIRONMENT

Veenis, Y.M.M., 2014 RPIC Federal Contaminated Sites National Workshop, 14-16 April, Ottawa, Ontario, 41 slides, 2014

This presentation outlines and compares results from six projects where chlorinated hydrocarbons were remediated in reactive zones created by injecting four different categories of active agents into the groundwater: a mix of zero-valent iron (ZVI) and substrates (three cases), substrates only (one case), activated persulfate (one case), and ozone injection (one case). These technologies differ widely in approach, impact, and carbon footprint. Some have a negative carbon footprint (i.e., they actually fix carbon in the soil) owing to the use of recycled and end-of-life materials to facilitate soil and groundwater treatment. Four cases are full-scale remediation projects, whilst two cases are field pilots. All are located in densely built urban environments. All the cases produced sufficient data for analysis of the remedial processes and contamination effects, thus allowing conclusions to be drawn on the respective technologies' applicability, including a review of costs. Several cases completed regulatory approved closure; others are ongoing.
http://www.rpic-ibic.ca/documents/RPIC_ECS2014/Presentations/11-Veenis_YVE_sustainability.pdf

STATUS REPORT: ACTIVITIES CONCERNING CHROMIUM CONTAMINATION, PG&E HINKLEY COMPRESSOR STATION

Dembach, L., Hinkley Community Advisory Committee Website, 38 slides, 10 Sep 2014

Among other Hinkley news, this status update addresses the current or proposed use of three innovative technologies to address Cr(VI) at the site. For a phytoremediation strategy, California's Lahontan Water Board has authorized new waste discharge requirements for 321 acres of agriculture treatment units (ATUs). Construction of new ATUs is scheduled for fall 2014, with discharge to ATUs to start in spring 2015. Proposed enhancement of in situ reactive zone (IRZ) performance, currently limited by clogged injection wells and tight soils, will require installation of wells to investigate treatment effectiveness (i.e., the extent of Cr remaining in the source area); installation of new ethanol injection wells to replace clogged wells at closer spacing (150 ft versus 300 ft); and expansion of IRZ treatment to the southwest part of the source area. PG&E has submitted a proposal to conduct a 6-month pilot test of an aboveground bioreactor in the IRZ based on 5-20 gpm groundwater extraction. In stage one, acetic acid (vinegar) and phosphoric acid would be added to reduce Cr(VI) to Cr(III). In stage two, groundwater would be aerated through a rock layer and the by-products (Fe and Mn) filtered through a sand filter, with return of treated water to the aquifer upgradient of the central area IRZ.
http://www.hinkleygroundwater.com/wp-content/uploads/2014/09/3-Status-Reports-all-three.pdf

DEWATERING AND REMEDIATION OF THE "EX-WHITEHEAD MOTOFIDES" AREA (PISA, ITALY)

Conti, N., R. Salvadori, and M. Aiello.
Acque Sotterranee: Italian Journal of Groundwater, No 4/138, 29-36, 2014

When remediation of the ex-Whitehead Motofides area began in Marina di Pisa, Italy, in 2007, a dewatering system was needed to allow excavation of contaminated soil in dry conditions. A dewatering system was made of suction pins fixed to a depth of 5.5 m, connected by a junction manifold to the suction and booster vacuum-assisted pump, which directed groundwater toward the treatment plant. Completed at the end of 2008, this mobile groundwater treatment system consisted of a pretreatment section made of reinforced concrete, prefabricated nitrogen sweep elements, and a physical-chemical treatment plant in a continuous loop, with all elements installed entirely upon a skid. At 25 l/s maximum removal potential, the system was able to remove Fe, Mn, residual organic substances such as hydrocarbons, solvents (chlorinated and not), PCBs, and other hazardous constituents, processing a total of 98,167 m^3 of groundwater in ~25 months of activity. The analytic input and output results confirmed high and satisfactory contaminant removal efficiency to concentration values below the regulatory limits.
http://www.acquesotterranee.it/sites/default/files/AS11054.pdf

VRP00241: ALEXANDRIA TOWN GAS

Voluntary Remediation Program (VRP) Site Specific Summary: April 1, 2014 - September 30, 2014. Virginia Department of Environmental Quality, 2014

The three-stage groundwater treatment system for the site of the former Alexandria Town Gas consists of oil-water separation, biosparging, and filtration treatment zones. The system has been operating full time since January 2014, and initial data indicate that it is preventing contaminated groundwater from reaching the river. Free-product gauging and recovery efforts have continued during this time period. The sediment remediation plan outlines a program to dredge sediment that contains residual coal tar constituents from the near-shore area of the Potomac River and replace the material with a multi-layered protective cap, which will serve to a) control vertical groundwater migration, b) provide additional ground water filtration, c) armor the system against aggressive wave action/storm fetch, and d) provide for a naturalized appearance at original grade. Routine maintenance on the existing booms will continue for as long as needed.

Demonstrations / Feasibility Studies

PILOT TESTS OF IN SITU REACTIVE ZONE GROUNDWATER REMEDIATION FOR ARSENIC NEAR A COAL ASH POND

Electric Power Research Institute, EPRI Product ID 3002003769, 112 pp, 2014

Two technologies were evaluated at bench scale for the treatment of dissolved trace elements associated with coal ash impoundments and landfills: (1) application of dissolved iron followed by a chemical oxidant; and (2) application of an organic carbon source to stimulate reducing bacteria and precipitate sulfide mineral phases (a reductive approach). The bench-scale tests demonstrated that both approaches were able to sequester arsenic using site soil and groundwater. Field pilot testing was performed on the oxidative approach only, using a single permanent injection well and nine monitoring wells. Monitoring was performed throughout the well network to 30 ft downgradient over a period of 254 days after completion of the injection. Treatment of arsenic in groundwater was successful, as measured by the decrease in arsenic concentrations at the injection well and immediately downgradient to

CLASSIFICATION DEMO LEADS TO TECHNOLOGY ADOPTION

SERDP-ESTCP Headlines, Spring 2015

The ESTCP Classification Pilot Program successfully demonstrated munitions response classification technologies at the Central Impact Area (CIA) of Camp Edwards on the Massachusetts Military Reservation in Cape Cod, Massachusetts. The demonstration was conducted in conjunction with the National Guard Bureau's Impact Area Groundwater Study Program. Both production contractor geophysicists and the developers of classification methods were able to classify over 90% of the targets of interest successfully and up to 75% of the surrounding clutter. Based on this success, the U.S. Army Corps of Engineers, with concurrence from their regulators, has adopted the MetalMapper sensor for the remaining remediation work at the Camp Edwards CIA, which is estimated to reduce munitions remediation costs by 55%. ESTCP has released a summary report of the demonstration results at
https://www.serdp-estcp.org/content/download/28852/283100/file/Summary%20Report%20-%20Former%20Camp%20Edwards%20-%20with%20Addendum.pdf

INTEGRATED PLUME TREATMENT WITH PERSULFATE OXIDATION AND SULFATE REDUCTION

Shayan, M., N.R. Thomson, J.F. Barker, R. Aravena, D. Hunkeler, E. Madsen, J.W. Molson, and T. Buscheck. 2014 RPIC Federal Contaminated Sites National Workshop, 14-16 April, Ottawa, Ontario, 28 slides, 2014

A pilot study of the sequential use of persulfate-based in situ chemical oxidation (ISCO) and enhanced bioremediation (EBR) was conducted at the University of Waterloo Groundwater Research Facility at Canadian Forces Base Borden near Alliston, Ontario, Canada, where a dissolved plume of specific petroleum hydrocarbon compounds was generated using a diffusive source. Compound-specific isotopic analysis and molecular biology tools were used along with conventionally obtained data to characterize the mass removal processes involved in the coupled treatment. The BIONAPL/3D model (Molson & Frind, 2013) was selected as the basis for developing a numerical modeling tool to simulate the persulfate-based ISCO-EBR treatment train. Key processes captured in the modified model (BIONAPL/PS) include density-dependent advective-dispersive transport, persulfate decomposition, and chemical oxidation of dissolved petroleum hydrocarbons by persulfate and sulfate-reducing biodegradation. This presentation describes the design of the field study, results from extensive field monitoring and data analysis, key attributes of the modified model, and the simulation results. http://www.rpic-ibic.ca/documents/RPIC_ECS2014/Presentations/1-Shayan_ChemOx-SRB_Mahsa_Shayan_RPIC_updated.pdf

H&V FIBER REMEDIAL PERFORMANCE REPORT 2013, H&V FIBER CORPORATION, CORVALLIS, OREGON

Oregon Department of Environmental Quality, DEQ ECSI Number 40, 222 pp, 2014

At the H&V Fiber (formerly Evanite) site, historical release of TCE to soil and groundwater created DNAPL conditions in the Submicro Building source zone. An estimated 90,500 lb of TCE DNAPL was extracted from site soil and groundwater between 1991 and 1993, but TCE mass recovery averaged only 1,000 lb/yr between 2000 and 2012. Soil vapor extraction (SVE) implemented in newly installed wells at the top of the now unsaturated aquifer removed >10,000 lb TCE in each of 2012 and 2013. In 2013, a pilot test was conducted to evaluate enhanced reductive dechlorination (ERD) as a remedial alternative to be applied in the source zone once SVE mass removal became asymptotic. Wells installed upgradient for nutrient injection were controlled via an automated programmable In-Situ Delivery (ISD™) system that produced artificial groundwater gradients via a groundwater recirculation configuration. The nutrient-amended, food-grade carbohydrate substrate (CarBstrate™) selected for the pilot test consists of 80% dextrose, 17% diammonium phosphate, and 3% micronutrient. Completed over a 25-week period from May 7 to October 29, 2013, the ERD pilot successfully stimulated degradation in a former DNAPL zone, with significant concentrations of anaerobic degradation products measured in the test area*See Appendix E (**PDF pages 186-222**) in this report for the ERD pilot summary, as well as other site cleanup information at*
http://www.deq.state.or.us/Webdocs/Forms/Output/FPController.ashx?SourceId=40&SourceIdType=11.

Research

HIGH RESOLUTION SITE CHARACTERIZATION AS KEY ELEMENT FOR PROPER DESIGN AND COST ESTIMATION OF GROUNDWATER REMEDIATION

Dijkshoorn, P., P. Mori, and M.C. Zaffaroni.
Acque Sotterranee: Italian Journal of Groundwater, No 4/138, 17-27, 2014

This paper discusses alternative investigation methods and approaches that help to achieve a more complete (i.e., high-resolution) conceptual site model (CSM). A high-resolution CSM in turn helps to focus the remedial design for a higher remedial efficiency. At a minimum, a more complete CSM will decrease (financial) uncertainty during decision-making when selecting a remedial alternative. Investigation of DNAPL sites is the main focus of this paperhttp://www.acquesotterranee.it/sites/default/files/AS11052.pdf

URANIUM SEQUESTRATION DURING BIOSTIMULATED REDUCTION AND IN RESPONSE TO THE RETURN OF OXIC CONDITIONS IN SHALLOW AQUIFERS

Fuller, C.C., K.J. Johnson, K.C. Akstin, D.M. Singer, S.B. Yabusaki, Y. Fang, and M. Fuhrmann. NUREG/CR-7178, 179 pp, Dec 2014

A proposed approach for groundwater remediation of uranium contamination is to generate reducing conditions by stimulating the growth of microbial populations through injection of electron donor compounds into the subsurface. Sufficiently reducing conditions will result in reduction of soluble U(VI) and precipitation of the less soluble oxidation state U(IV). This process is termed biostimulated reduction. A key issue in remediation of U contamination in aquifers by biostimulated reduction is the long-term stability of the sequestered uranium. Experiments using aquifer sediment to evaluate the effect of ferrous iron addition or biostimulation on remobilization of bioreduced U showed ~9% remobilization of total U removed from solution during biostimulation. Uranium remaining on the sediment was in the reduced form. Although continued sulfate reduction may cause decreased permeability from precipitation of iron sulfide, the greater apparent stability of the sequestered U(IV) provided by sustained biostimulation should be considered in design of field-scale remediation efforts.
http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr7178/

TRANSFER FACTORS FOR CONTAMINANT UPTAKE BY FRUIT AND NUT TREES

Napier, B.A., R.J. Fellows, and L.D. Minc.
NUREG/CR-7174, 93 pp, July 2014

Nearly all computer models that address soil-to-plant uptake of radionuclides use empirically derived transfer factors. Essentially all available soil-to-plant transfer factors are based on measurements in annual crops; few measurements are available for tree fruits. To address this limitation, a sampling of various "standard" crops and fruit and nut trees was made from a single farm. The farm uses irrigation water from the local aquifer via surface irrigation (not overhead sprinklers) and is registered as an organic farm (no pesticides or refined fertilizers are used). Samples of alfalfa and oats (to compare with available transfer factors) and stems, leaves, and fruits and nuts of almond, apple, apricot, carob, fig, grape, nectarine, pecan, pistachio (natural and grafted), and pomegranate were collected, along with local surface soil. Analysis results are presented and converted to soil-to-plant transfer factors. The factors determined for annual crops (e.g., alfalfa, grain (oats)) are very similar to commonly used values, but those determined for fruits and nuts differ from the generic recommendations in the literature. In most cases,

the results of the transfer factors in fruits and nuts from this study are the only data available. http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr7174/

MEMBRANE INTERFACE PROBE PROTOCOL FOR CONTAMINANTS IN LOW-PERMEABILITY ZONES

Adamson, D.T., S. Chapman, N. Mahler, C. Newell, B. Parker, S. Pitkin, M. Rossi, and M. Singletary. Groundwater, Vol 52 No 4, 550-565, 2014

A protocol has been developed for the membrane interface probe (MIP) as a low-cost, rapid data-acquisition tool for qualitatively evaluating the location and relative distribution of mass in zones of low hydraulic conductivity ("low k"). MIP operating parameters were varied systematically at high and low concentration locations at a contaminated site to evaluate the impact of the parameters on data quality relative to a detailed adjacent profile of soil concentrations. Evaluation of the relative location of maximum concentrations and the shape of the MIP versus soil profiles led to a standard operating procedure for the MIP to delineate contamination in low-k zones that includes recommendations for (1) preferred detector (ECD for low concentration zones, PID or ECD for higher concentration zones); (2) combining downlogged and uplogged data to reduce carryover; and (3) higher carrier gas flow rate in high concentration zones. *See additional information in pages 30-33 of the SERDP report,* Management of Contaminants Stored in Low Permeability Zones, *at* http://serdp-estcp.org/content/download/23838/240653/file/ER-1740%20State%20of%20the%20Science%20Review%20Report.pdf.

VADOSE ZONE CHARACTERISATION AT INDUSTRIAL CONTAMINATED SITES

Fernandez de Vera, N., O. Dahan, A. Dassargues, M. Vanclooster, F. Nguyen, and S. Brouyere.
Contaminated Land: Applications in Real Environments (CL:AIRE), London. AB7, 4 pp, 2015

This bulletin presents an overview of contaminant flux measurement techniques, together with a potential alternative for improving characterization techniques and contaminant flux measurement in the vadose zone. The vadose zone experimental setup consists of the combination of cross-hole geophysics and a vadose zone monitoring system, comprising a sleeve inserted in an uncased inclined borehole that contains monitoring units along its depth, allowing continuous measurements of soil water content and water sampling at different depths of the vadose zone. http://theadvocateproject.eu/files/ab7-natalia.pdf

ENHANCING BIOREMEDIATION OF GROUNDWATER BY MICROBIAL INTERACTION WITH A SOLID STATE ELECTRODE: PROOF-OF-CONCEPT

Hedbavna, P., S.F. Thornton, and W.E. Huang.
Contaminated Land: Applications in Real Environments (CL:AIRE), London. AB3, 4 pp, 2014

In this study, the feasibility of using bioelectrochemical systems to enhance the bioremediation of coal tar-contaminated groundwater containing a mixture of phenolic compounds was examined without any addition of nutrients. This experiment serves as a proof-of-concept analysis for potential field-scale implementation in subsequent studies.
http://theadvocateproject.eu/files/AB3_Petra%20(1).pdf

SELECTING REACTIVE MATERIALS FOR PERMEABLE BARRIERS TO REMEDIATE GROUNDWATER CONTAMINATED WITH HEAVY METALS AND BTEX: BATCH AND COLUMN EXPERIMENTS

Obiri-Nyarko, F.
Contaminated Land: Applications in Real Environments (CL:AIRE), London. AB2, 4 pp, 2014

Using mixtures of materials in PRBs may help eliminate or reduce the limitations of single/individual materials by improving permeability, reducing costs, providing multiple mechanisms for contaminant removal, and accelerating removal rates. This bulletin reports on batch and column experiments performed to investigate reactive materials—zero-valent iron (as the control), zeolite, brown coal, compost, mulch, and diatomaceous earth—for future PRB field studies to treat groundwater contaminated with heavy metals and BTEX.
http://theadvocateproject.eu/files/AB2-Franklin.pdf

SELECTIVE ENRICHMENT YIELDS ROBUST ETHENE-PRODUCING DECHLORINATING CULTURES FROM MICROCOSMS STALLED AT CIS-DICHLOROETHENE

Delgado, A.G., D.-W. Kang, K.G. Nelson, D. Fajardo-Williams, J.F. Miceli III, H.Y. Done, S.C. Popat, and R. Krajmalnik-Brown. PLoS One, Vol 9 No 6, 2014

Despite the widespread environmental distribution of *Dehalococcoides mccartyi* (dhc) strains, biostimulation sometimes fails to promote dechlorination beyond cis-DCE. In microcosms established with garden soil and mangrove sediment, treatment also stalled at cis-DCE, although dhc containing the reductive dehalogenase genes tceA, vcrA, and bvcA were detected in the soil/sediment inocula. However, transfers from microcosms stalled at cis-DCE yielded dechlorination to ethene with subsequent enrichment cultures containing up to 109 dhc cells/mL. Proteobacterial classes that dominated the soil/sediment communities became undetectable in the enrichments, and methanogenic activity drastically decreased after the transfers. Investigators hypothesized that biostimulation of dhc in the cis-DCE-stalled microcosms was impeded by other microbes present at higher abundances than dhc that outcompeted dhc for H_2. The garden soil and mangrove sediment microcosms bioaugmented with their respective cultures containing dhc in high abundance were able to compete for H_2 for reductive dechlorination from one biostimulation event and produced ethene with no obvious stall. Overall, the results provide an alternate explanation to consolidate conflicting observations on the ubiquity of dhc and occasional stalling of dechlorination at cis-DCE. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4065118/

General News

VAPOR INTRUSION GUIDANCE

North Carolina Department of Environment and Natural Resources (NC DENR), Division of Waste Management (DWM), 81 pp, Apr 2014

There are two parts to the NC DENR vapor intrusion guidance: the DWM *Vapor Intrusion Guidance* and the DWM *Vapor Intrusion Screening Levels* (Apr 2014, 4 pp). To allow for flexibility in updating information on a frequent basis as U.S. EPA revises the Regional Screening Level Tables, the DWM *Vapor Intrusion Screening Levels* are separate from the main guidance document.
http://portal.ncdenr.org/web/wm/dwm-new-vapor-guidance

PASSIVE SAMPLING FOR GROUNDWATER MONITORING: TECHNOLOGY STATUS

Stroo, H.F., R.H. Anderson, and A. Leeson.
SERDP-ESTCP, 7 pp, Dec 2014

This brief summary provides the results of recent research designed to optimize sampling options for long-term monitoring. It discusses the different types of passive samplers and their performance, their advantages and limitations, and sampling strategies. http://www.vanwalt.com/pdf/information-sheets/passive-sampling-guidance.pdf

GUIDANCE FOR CONDUCTING TECHNICAL ANALYSES FOR LOW-LEVEL RADIOACTIVE WASTE DISPOSAL: DRAFT REPORT FOR COMMENT

Esh, D., C. Grossman, H. Arlt, C. Barr, and P. Yadav.
NUREG-2175, 441 pp, 2015

The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations that govern low-level radioactive waste (LLRW) disposal facilities to require new and revised site-specific technical analyses, permit the development of site-specific criteria for LLRW acceptance based on the results of these analyses, and facilitate implementation and better alignment with current health and safety standards. NRC has prepared this draft guidance to address the implementation of the proposed regulations. Comments on the draft guidance are due by July 24, 2015.
Draft NUREG: http://phadupws.nrc.gov/docs/ML1505/ML15056A516.pdf
Comment submission: http://www.regulations.gov/#!documentDetail;D=NRC-2015-0003-0002

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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