As is common with the books (reports) in this series, a major fraction of the book is taken up by appendices which contain the relevant details of the research and development. This book has three such appendices entitled as follows:

1. Design Manual for the Laser-Induced Fluorescence Cone Penetrometer Tool.
2. Operation and Calibration Manual for the Laser Excitation–Emission Matrix Cone Penetrometer Tool.
3. Excitation–Emission Matrices Collected in the Laboratory, from Hanscom AFB, and at Otis ANGB.

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PII: S0304-3894(01)00280-1

Phytoremediation of Hydrocarbon-Contaminated Soil
M.K. Banks, R.S. Govindaraju, A.P. Schwab, P. Kulakow, J. Finn (Authors); Stephanie Fiorenza, Carroll L. Oubre, C. Herb Ward (Eds.), Lewis Publishers, Boca Raton, FL, 2000, US$ 64.95, 164 pp., ISBN: 1-56670-463-4

Phytoremediation is a relatively new remediation technique but interest in its utility has (according to the preface in this text) "exploded" since the principle investigators proposed this technology demonstration (the demonstration was a project funded by the US Department of Defense via US$ 193 million grant to Rice University and directed by Dr. C. Herb Ward).

The goal of this project, under the above-noted DOD-funded Advanced Applied Technology Demonstration Facility Project for Environmental Remediation Technologies, was to study phytoremediation's effectiveness as a solution for a variety of contaminants in groundwater and soil.

Phytoremediation is being actively studied by numerous researchers with Kansas State University-led projects being in the forefront. The authors of the study had focused their past research on the problem of hydrocarbon contamination, especially polynuclear aromatic compounds in surface and near surface soils. This report contains the results of a study at a US Navy terminal of remediation of soils contaminated with aged diesel fuel. The degradation of diesel and polyaromatic compounds was tested in plots containing three different vegetated treatments; two grasses and a legume and a nonvegetated control. Part I of this monograph reports the results of that project. Part II discusses the design and potential cost of a full-scale implementation of the demonstration system. (As an aside, I note that most books published in this 10-book series have detailed cost data.)

The researchers conclude that active soil management is needed to assure water and nutrient availability for phytoremediation optimization. They claim success, clearly showing that remediation works, being greater in vegetated systems than in nonvegetated controls. They report a 50% increase in removal of total petroleum hydrocarbons (TPHs) — 32% in nonvegetated versus 47% in white clover phytoremediation plots. Moreover, they detected no plateau effect; nor did the hydrocarbons leach from the root zone and the plants did not accumulate hydrocarbons (PAHs) in the soils.

The authors conclude the book with three appendices:

1. Kansas State University Methods for Standard Analysis of Total Recoverable Petroleum Hydrocarbons in Soils Using Infrared Spectrophotometry.
2. Full-Scale Design Drawings and Calculations.
3. Project Cost Spreadsheets.

As with all other books in the series, the subject is well-researched, well-reported and well-documented (especially reporting cost data).

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PII: S0304-3894(01)00281-3

Modular Remediation Testing System

Thomas Reeves, Jonathan Miller, Paul C. Johnson (authors); Katherine Balshaw-Biddle, Carroll L. Oubre, C. Herb Ward (Eds.), Lewis Publishers, Boca Raton, FL, 2000, US$ 64.95, 276 pp., ISBN: 1-56670-468-5

This monograph is one of 10 reports resulting from studies conducted for a project at Rice University, Houston, Texas, under a US Department of Defense (DOD) grant [Advanced Applied Technology Demonstration Facility program (AATDF)]. The goal of the AATDF was to enhance the development of innovative remediation technologies for DOD by facilitating the process from academic research to full-scale utilization.

Most of these reports deal with contaminated site remediation technology, i.e. phytoremediation, reactive barriers, soil vapor extraction, etc. This one uniquely discusses the experience gained in design, construction, transportation, operation, and disassembly of a modular test facility.

Entitled an "Experimental Controlled Release System (ECRS)", this unit was designed to be a modular, portable and durable research tool for testing remediation technologies in a contained, yet realistic setting. The system was built at a pilot-size scale, using full-size standard equipment to provide cost-effective demonstrations at a scale between laboratory bench- and full-scale field implementation. Additionally, the complete system was to be transportable and was transported on a single semi-trailer.

The ECRS was designed to address contaminants, such as ". . . fuels, solvents, petroleum oils and lubricants, heavy metals, and mixtures of these wastes. The media of interest include soil and groundwater. The technologies and processes of interest include in situ contaminant destruction or mobilization, plus enhanced site characterization/monitoring tools.

A main objective is accurate measurement of contaminant removal efficiency through calculation of mass and energy balances. To this end, the ECRS design will be a closed system and researchers will have access to portable analytical equipment, such as a gas chromatograph and a data logger. This instrumentation will be housed in a portable climate-controlled building where researchers will also be able to use or store their own instrumentation for sampling and analysis."

The results of their work are described under the heading "General Attributes of ECRS". The ECRS is a unique, modular testing environment. The major attributes of this