

# ELIMINATING PERPETUAL LNAPL REMEDIAL PROGRAMS

Over the years, environmental professionals have become increasingly frustrated in perpetual light non aqueous phase liquid (LNAPL) remedial programs. After years of wasteful spending, some have actually given up on remedial spending and are leaning more towards monitored natural attenuation (MNA) based cleanup programs even when LNAPL is present. Due to regulatory and off-site drivers, MNA-based strategies are severely restrictive when LNAPL is persistent at the site.

Additionally, most remedial managers are challenged with limited budgets, regulatory pressure, potential for off-site liabilities, and other site-specific drivers. It is often difficult to evaluate whether a few inches of LNAPL in a well is just a nuisance or if several feet is truly indicative of a large reservoir of oil. Conventional tools such as bail-down tests or pump tests are tainted with water, leading to erroneous conclusions on whether a full-fledged long-term remedial program is justified. This often leads to perpetual remedial programs with limited results.

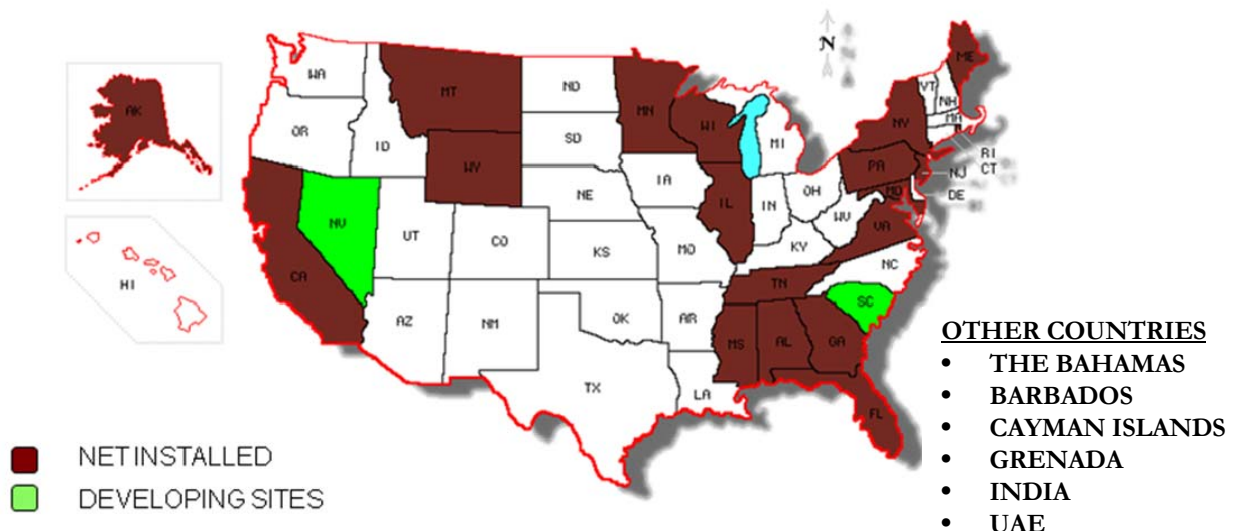
EIC has developed a unique recovery-recharge testing approach which determines if LNAPL recovery is truly sustainable at a given location. If sustainable, test data provides a basis for calculating design recovery rates which is invaluable in properly sizing the recovery systems. If the recovery is unsustainable, however, a less intrusive process such as bailing or monitored natural attenuation (MNA) can be justified on technical merits rather than obscure assumptions. This approach can be applied on a portfolio of sites to eliminate low-risk sites that otherwise demand long-term cash reserves.

During the presentation, EIC will also answer the following related questions:

- How do we know if LNAPL recovery is sustainable?
- What is the optimal LNAPL recovery rate for a site?
- Is long-term remediation justified?
- Is it possible to overcome asymptotic recoveries?
- What is the right remedial process-Active or Passive?
- Is it possible to eliminate water or vapor recovery during LNAPL recovery?
- How do you reduce lifecycle costs?
- How are remedial end points projected and verified?
- How can you detect on-going leaks and spills?
- How is remedial progress measured in a fluctuating WT environment?
- When is MNA feasible?

The presentation includes case histories on several NAPL release sites where EIC personnel have consistently saved time and money during the past 23 years. Instead of finding workarounds, EIC is reaching remedial end-points in record time at several sites around the world. Our unique non-aqueous extraction technique (NET) is engineered to operate in a variety of geologic formations from simple sand-and-gravel aquifers to complex bedrock environments in a wide geographic extent. Clearly, NET has an indelible track record in eliminating perpetual LNAPL remedial programs.

## NET GLOBAL SUCCESS!



Mr. Raj Mahadevaiah is President and CEO of Environmental International Corporation - an environmental engineering firm headquartered in the Atlanta metro area. Mr. Mahadevaiah has a M.S. degree in Civil Engineering (Groundwater Emphasis) from the University of Oklahoma, USA. Also, he is a registered professional engineer in over 13 states within the USA. Over the last 24 years, Mr. Mahadevaiah has developed expertise in conducting, environmental assessments and remediation, project management, and litigation support at over 200 sites in the North America, The Caribbean, The Middle East, South Asia, and other nations world-wide. At numerous sites, he has conducted multimedia due diligence and compliance audits for ISO 14001-related projects involving air, surface water, soil, groundwater, hazardous waste, and noise issues at various facilities. He has designed, implemented, operated, and maintained remediation systems at petrochemical storage and distribution facilities, public and private electric utilities, refineries, conveyance facilities, superfund sites, landfill, RCRA sites, and other hazardous waste facilities. At several sites, Mr. Mahadevaiah has critically evaluated existing remediation systems and developed cost-effective alternatives. He also developed telemetry-based remediation systems to manage remote sites in the Caribbean. In addition, he has solved environmental puzzles from multiple sources, during litigation support, and successfully served as an expert witness in trials for industrial, insurance, and law firms. Apart from over a dozen technical papers presented at various locations worldwide, Mr. Mahadevaiah has also served as a panelist representing the Electric Utility Industry concerning "The RCRA Reauthorization Bill proposed by the US Congress," at the Air and Waste Management Conference held in Vancouver, British Columbia.

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