



Sustainable Petroleum Contamination Treatment

Clean Harbors is the leading provider of environmental, energy and industrial services throughout North America. The company serves a diverse customer base, including a majority of the Fortune 500 companies, thousands of smaller private entities and numerous federal, state, provincial and local governmental agencies. Clean Harbors is now partnering with **Harbor Resource Management Corporation (HRMC)** to introduce a new mobile process to economically treat oil-contaminated material and render it suitable for beneficial use.

Technology Background

HRMC has been developing its material treatment system since 1996 and holds two patents for its proprietary technology. HRMC has performed two contracts for the State of New Jersey, DOT Office of Maritime Resources. One was a Pilot Study of its process in 2001 and the other a full scale Demonstration Project performed in 2005 under a \$2 million contract award whereby a total of 20 truckloads of successfully processed dredged material, containing a total of 332 tons were placed for beneficial use on a golf course. Based on these results it is clear that this process could reduce levels of contaminants from dredged sediment and create a Beneficial Use Product that satisfies the requirements of a particular end user. Both Pilot and Demonstration Reports can be viewed or downloaded from the State of New Jersey, DOT Office of Maritime Resources website under Harbor Resource Environmental Group using the link below. <http://www.state.nj.us/transportation/airwater/maritime/dresediment.shtm>

HRMC Treatment Process

The HRMC Material Process System has been developed to treat petroleum contaminated soil or dredged material and render it into a beneficial use product. It offers a customized ex-situ material process for commercial project. The principal elements of the technology are:

- Particle size separation and reduction to minimize the amount of waste treated
- Chemical oxidation for contaminant reduction
- Moisture removal or dewatering
- Mobile treatment system is scalable and flexible to meet individual project needs
- Treated material can be rendered usable as fill
- Latest treatment patent issued in July 2013

Contamination Reduction Results:

Laboratory Analysis	% Reduction (Overall Average)
SVOC's	75-97%
Liquid Organics	Up to 99%
Polychlorinated Biphenyls (PCBs)	84-96%
Others	46-79%

Eligible contaminants for treatment: Benzene, toluene, ethyl benzene, MTBE, TPH, PAHs, chlorinated solvents, PCBs, organic pesticides.

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