



North Carolina Department of Environment and Natural Resources  
Division of Waste Management

Beverly Eaves Perdue  
Governor

Dexter R. Matthews  
Director

Dee Freeman  
Secretary

**MEMORANDUM**

**TO:** Sean R. Carter, P.E., President  
Matrix Environmental Technologies, Inc.  
PO Box 427  
Orchard Park, NY 14127-0427

**FROM:** Sharon Ghiold, Chairperson  
Innovative Technology Committee  
DENR/DWM/UST Section

**COPY TO:** Grover Nicholson, Section Chief  
Bob Davies, CAB Head

**DATE:** January 24, 2012

**SUBJECT:** **Matrix Oxygen Injection Process** Evaluation  
U.S. Patent No. 5,874,001

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The Underground Storage Tank Section's Innovative Technology Committee (ITC) has evaluated and approves the Matrix Oxygen Injection Process to degrade petroleum contaminants. Per Matrix's Request for Evaluation, the Matrix Oxygen Injection Process produces pure oxygen from compressed air for pulse injection into groundwater at controlled rates, resulting in high transfer efficiency to groundwater and dissolved oxygen saturation levels exceeding 50 mg/L. When the resultant oxygen supply exceeds the total oxygen demand, the system creates optimal conditions for native bacteria to break down petroleum hydrocarbons, gasoline oxygenates, and solvents.

This process is generally not suitable for sites with the following:

- tight cohesive soils (e.g., high clay content)
- non-aqueous phase liquids (NAPL)
- highly contaminated source areas

Oxygen injection systems should not be located in the same enclosure/building as vapor producing systems.