



# NEWS RELEASE

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FOR IMMEDIATE RELEASE

## **Envirogen Technologies' Fluidized Bed Reactor Removes Nitrates from Groundwater at San Diego Mission Valley Terminal**

**“Green” technology achieves complete destruction of contaminants in a reliable, compact and cost-effective treatment system**

**Kingwood, TX, 12 August 2010** -- Envirogen Technologies, Inc. (Envirogen) announced today the successful start-up and operation of a fluidized bed reactor (FBR) system to remove nitrates from contaminated groundwater at Kinder Morgan Energy Partners' Mission Valley Terminal in San Diego, California. The 0.5 million gallon per day (MGD) system is designed to provide a final treatment step for impacted groundwater pumped from an aquifer located beneath the City's Qualcomm Stadium, prior to direct discharge to the watershed. The Envirogen FBR system differs from conventional denitrification technology in that it does not create waste by-products that require further treatment. Biological treatment is a more sustainable approach for addressing denitrification and can handle high levels of nitrates cost effectively.

According to Dr. Todd Webster, Director of the Western Region for Envirogen, the system represents another high-efficiency “green” technology solution for reliable, cost-effective water treatment. “Our FBR technology differs from other denitrification processes in that it completely destroys nitrate, unlike phase transfer schemes, which generate waste by-products requiring further treatment,” Webster explained. “While the FBR is an excellent ‘green’ treatment alternative, it is also a robust and cost-effective technology that can be designed into a very tight footprint and handle both low and high concentrations of nitrates. This made it the best solution to the full range of needs at this site,” he added.

Envirogen's FBR systems are fixed-film bioreactors in which sand or carbon media is suspended, or fluidized, within the reactor vessel by the upward flow of water through the system. The suspended media provides a large surface area for microbial growth and allows a biomass density several times greater than that of other bioreactor designs under similar loading conditions. Microorganisms in the reactor completely consume influent nitrates under anoxic conditions, reducing them to carbon dioxide, water, nitrogen gas and additional biomass growth.

The Mission Valley Terminal FBR installation, operated by Kinder Morgan, is designed to handle flow rates of 350 gallons per minute from multiple wells and reduce influent nitrate levels of 4 mg/L to <1.0 mg/L nitrate. Envirogen Technologies provided system design and manufacture – including vessels, peripheral equipment, media and microbial inoculant – along with installation oversight and additional process control/integration support. The system is largely self-regulating, requiring minimal operator attention and is capable of handling both hydraulic and organic shock loads. A chemical feed assembly automatically delivers a concentrated form of acetic acid as an electron donor to the system as required. The system effluent is sent through a post-aeration step to increase dissolved oxygen prior to discharge to Murphy Canyon Creek in accordance with a National Pollution and Discharge Elimination System (NPDES) permit.

According to Dr. Webster, extensive experience with this and other water treatment technologies allows Envirogen to craft ideal solutions to a broad range of treatment requirements. "At Envirogen, we understand how critical it is for today's water treatment concerns – in both the industrial and municipal sectors – to meet stringent regulations economically and dependably," Webster said. "We approach each challenge with a full toolbox of high-performance technologies, process design expertise and an eye toward low-cost, reliable and environmentally sustainable treatment solutions. In addition, our flexible technology+services business model is designed to help implement and support those solutions, offering all of our customers the best fit for their treatment needs at a low lifecycle cost," he concluded.

#### **About Envirogen Technologies, Inc.**

Headquartered in the Houston suburb of Kingwood, Texas, Envirogen is a technology+services solutions provider that designs, builds and implements systems for business in municipal and industrial water and environmental treatment applications. A primary focus for Envirogen is the concept of 'lifecycle performance,' in which the company provides guaranteed, pay-for-performance, long-term contracts at predictable costs that offer customers the lowest total cost over the lifetime of an equipment installation. Primary applications for Envirogen's systems include treatment of groundwater for the delivery of high-quality potable water, groundwater remediation, wastewater treatment, water re-use, nutrient removal, and odor and VOC control for municipal and industrial markets. In industrial markets such as mining,

hydrocarbon processing and chemical processing, Envirogen also specializes in process water treatment, byproduct recovery and chemical purification. The company conducts business throughout the United States, with regional offices in Southern California, Illinois, New Jersey and Tennessee. For more information on the company, visit [www.envirogen.com](http://www.envirogen.com).

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