



**INTERIM STUDY AND REPORT ON PHASE II OF THE  
FLORIDA ONSITE SEWAGE NITROGEN REDUCTION  
STRATEGIES STUDY (2010)**

**DRAFT October 27, 2010**

**Bureau of Onsite Sewage Programs**

**February 1, 2011**

Ana M. Viamonte Ros, M.D., M.P.H.  
State Surgeon General

Charlie Crist  
Governor

**INTERIM STUDY AND REPORT ON PHASE II OF THE FLORIDA  
ONSITE SEWAGE NITROGEN REDUCTION STRATEGIES STUDY (2011)**

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The 2010 Legislature appropriated \$2.0 million for Phase II of an anticipated 3-5 year project to develop passive strategies for nitrogen reduction for onsite sewage treatment and disposal systems (OSTDS). This followed an initial appropriation of \$900,000 by the 2008 Legislature for the first phase of this study. This report is submitted in compliance with Line Item 486 Section 3, Conference Report on House Bill 5001, General Appropriations Act for Fiscal Year 2010-2011, which appropriated the funding for the study.

The original 2008 legislative direction identified three areas of concern: (1) Quantification of life-cycle costs and cost-effectiveness of passive nitrogen reduction treatment technologies in comparison to more active technologies and to conventional treatment systems; (2) Characterization of nitrogen removal from effluent in the soil underneath the drainfield and in shallow groundwater; and (3) Development of simple models to describe the fate and transport of nitrogen from onsite sewage treatment and disposal systems. The 2010 legislative direction specified that the existing contract for this project would remain in full force; that the Department, the Department's Research Review and Advisory Committee (RRAC), and the Florida Department of Environmental Protection (FDEP) shall work together to provide technical oversight and that DEP would have maximum technical input; that the main focus and priority for work in Phase II shall be in developing, testing, and recommending cost-effective passive technologies for nitrogen reduction; that field installations for this project would be subject to significant testing and monitoring; and that no state agency shall implement any rule or policy that requires nitrogen reducing systems or increases their costs.

The significance of this project is that it evaluates and develops strategies to reduce nitrogen impacts from OSTDS regulated by the Florida Department of Health (FDOH). Excessive nitrogen can have negative effects on public health and the environment. The primary motivations for this study are the environmental impacts that the increased levels of nitrogen in water bodies can cause. Programs within the Florida Department of Environmental Protection identify water bodies impaired by excessive nitrogen, establish targets for maximum nutrient loads, and develop management action plans to restore the water bodies. The relative contribution of OSTDS to total nitrogen impacts varies from watershed to watershed with estimates ranging from below five to more than 20 percent. There is widespread interest in the management of OSTDS and their nitrogen impacts.

The study contract was awarded in January 2009 to a Project Team led by Hazen and Sawyer, P.C., and was based upon an anticipated budget of \$5 million over a 3 – 5 year project timeframe. As a result of the time required for contracting, unspent monies in fiscal year 2008-2009 were re-appropriated in 2009 to complete the initial tasks of the project. The contract identifies the following tasks:

Task A includes a literature review, technology evaluation, prioritization of technologies to be examined during field testing, and further experimentation with approaches tested in a previous DOH passive nitrogen removal study. Objectives of this task are to prioritize technologies for testing at actual home sites and to perform controlled tests at a test facility to develop design criteria for new passive nitrogen reduction systems.

Task B includes installation of top ranked nitrogen reduction technologies at actual homes, with documentation of their performance and cost.

Task C includes several field evaluations of nitrogen reduction in Florida soils and shallow groundwater, and also will provide data for the development of a simple planning model in Task D.

Task D is to develop simple fate and transport models of nitrogen from OSTDS that can be used for assessment, planning and siting of OSTDS.

As of November 2010, the contractor, in coordination with the RRAC and FDOH, had successfully completed parts of Task A, B, C, and D, including literature reviews; ranking of nitrogen reduction technologies for field testing; design and construction of a test facility for further development of passive technologies; development of quality assurance documents for the test facility work, groundwater monitoring, field testing, and nitrogen fate and transport modeling; and completion of several sampling events at the test facility. Current efforts include preparations for field sampling, installation of field sites throughout Florida for the testing of passive systems and to test the soil and groundwater under OSTDS, design and construction of a soil and groundwater test facility, sampling at the soil and groundwater test facility, continued sampling of passive technologies at the test facility, and development of both simple and complex soil models. Sampling and reporting of results would continue through subsequent years and will require funding for fiscal year 2011-2012.

Further information on this project, including previous legislative reports and detailed project reports, can be found on the Department's website:

**<http://www.doh.state.fl.us/environment/ostds/research/Nitrogen.html>**

## **Recommendations**

The FDOH and its Research Review and Advisory Committee recommend that the legislature:

- Provide funding and budget authority to the FDOH in the amount of \$2 million for the fiscal year 2011-2012 for continuation and completion of the contract and associated tasks.
- Allow the FDOH to carry over any remaining funds from 2010 appropriation to fiscal year 2011-2012.

Additional resources will be applied to the next phase of the project, primarily continuation and completion of field monitoring of performance and cost of technologies at home sites and of nitrogen fate and transport in the shallow groundwater, development of various nitrogen fate and transport models which will be calibrated with the field sampling results, and final reporting on all tasks with recommendations on onsite sewage nitrogen reduction strategies.

Continued support for this project will ultimately benefit Florida's onsite system owners and will improve environmental and public health protection.



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Bureau of Onsite Sewage Programs

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State Surgeon General

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Comment [EIKE1]: This will need to be updated.

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## Recommendations

The FDOH and its Research Review and Advisory Committee recommend that the legislature:

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- Allow the FDOH to carry over any remaining funds from ~~2010~~ appropriation to fiscal year ~~2011-2012~~.

Additional resources will be applied to the next phase of the project, primarily continuation and completion of field monitoring of performance and cost of technologies at home sites and of nitrogen fate and transport in the shallow groundwater, development of various nitrogen fate and transport models which will be calibrated with the field sampling results, and final reporting on all tasks with recommendations on onsite sewage nitrogen reduction strategies.

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Deleted: Detailed nitrogen reduction technology evaluations will be forthcoming as part of this project. However, based on previous research in Florida and the results of the literature reviews completed thus far for this project, the FDOH supports consideration of the following recommendations: ¶

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<#>In nitrogen sensitive areas, requiring lower sewage system densities or better treatment than currently allowed. For example, the current allowances for lots platted before 1972 provide for approximately five typical three-bedroom houses per acre for parcels served by private wells and eight typical three-bedroom houses per acre for parcels served by public water systems. ¶

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- A statutory change to allow the use of performance-based treatment systems for establishments other than single family residences without the need for a variance.
- Developing regulations for entities that operate and maintain shared treatment systems (clusters) treating sewage flows within the department's jurisdiction and/or serving an establishment on multiple parcels. This should include requirements for financial assurance, obligations of property owners, and rate setting.
- Identifying funding and cost sharing mechanisms to implement inspection, maintenance or upgrade programs for existing onsite sewage systems.
- Establishing a task force for the study and development of water quality requirements, performance, approval, operation, maintenance and inspection standards for wastewater reuse treatment and waste separation systems, including those that would be constructed within buildings, and delineating the jurisdictional boundaries between the Building Authorities and the Department of Health for such systems.