- B.1 Identification of Home Sites (per homeowner agreement)

Task Descriptionn: The provider will identify individual homeowner sites for their suitability for establishing technologies for field evaluation. Criteria considered in the suitability will include homeowner willingness, site access, number of residents and continuousness of occupancy, power supply, security, location, adequate space, access for monitoring and maintenance, participation in previous or concurrent studies, and pre-existing treatment technologies. The provider will survey the homeowners and/or system users on use characteristics. Agreements will be established between homeowners and the provider for establishing and monitoring treatment systems. Written homeowner agreements will specify the arrangements in regards to responsibility for application for permits, modifications, operation, maintenance, monitoring, inspections, removal or leaving the system in place at study termination. If a homeowner site will also be used for fate and transport studies (Task C), then access will be needed for monitoring equipment in the downgradient direction and lack of interference with other systems must be ascertained. Up to ten (10) home sites at various locations in Florida (e.g. Wekiva Study Area, Wakulla and south Florida) will be identified for potential testing under this task.

Deliverables from Contract: Written agreements between homeowner and provider pdf, completed homeowner survey pdf.

Status: Task Complete

- B.2 Vendor Agreement Report (per vendor agreement)

Task Description: The provider will contact technology vendors to explain the testing project, to identify specifics of the technology offering and special considerations, to delineate to the vendor the arrangements by which testing will be conducted, to identify specific models to be tested, and to obtain a price quotation for purchase or ascertain vendor interest in donating a system. Vendors will agree to specifications that vendors will not be allowed to physically modify or manipulate equipment once installed. Any exceptions to this default policy will be fully documented. Up to 2 vendors will be identified for testing under this task.

Deliverables from Contract: Written agreements between vendor and provider pdf.

Status: Task Complete

- B.3 Draft QAPP for Field Testing

Task Description: A QAPP will be developed to document the objectives, specific systems for testing, and technology configurations that will be tested, operation of the systems, sampling and monitoring methodology and frequency, analytical parameters and methods, and data and document management. The monitoring program will develop performance data sets for total treatment systems and also for intermediate points such as aerobic treatment unit effluent or mixed aerobic effluent with STE and pre-denitrification. Monitoring of intermediate locations will provide data sets for separate evaluation of loading and performance for individual treatment components. The anticipated monitoring program will begin six weeks after startup and approximately 8 sample events per system will be conducted. Monitoring points will include septic tank effluent (STE), aerobic effluent (if applicable), and denitrification filter effluent (if applicable). Anticipated parameters for influent STE include TSS, cBOD5, TKN, NH4+, and NOx, as well as temperature, pH, alkalinity, dissolved oxygen and oxidation reduction potential. Stage 1 and Stage 2 effluents will be monitored for the same parameters, with less frequent analyses for TSS and cBOD5. Lower frequency monitoring will be conducted as necessary for a number of parameters: total phosphorus, PO4, and fecal coliform in STE, aerobic and denitrification effluents, SO4 and H2S in sulfur denitrification filter influent and effluent, and cBOD5 in lignocellulosic filter effluents.

The provider will develop a data management and storage template for cataloging and assessing performance data from disparate treatment systems and technology combinations and influent wastewater characteristics.

The selection of systems for testing will follow the recommendations developed in Task A. The provider will consider the use of and the addition of components to existing systems.

The exact sequencing of installations over the multi-year project will be established in the QAPP based on the priority list developed in Task A and refinements through the study.

Deliverables from Contract: A draft QAPP pdf will be provided to the Department

Status: Task Complete

- B.4 Recommendation for Process Forward (per meeting)

Task Description: Based on the details agreed upon in the final QAPP, the provider will develop a revised cost estimate and recommendation as to the number of systems included in the initial and future funding phases and whether or not to proceed with the remainder of Task B as outlined below, or recommend an amendment to this contract. Both the provider and FDOH shall reach a written agreement prior to moving forward with Task B.

Deliverables from Contract: Meeting summary and recommended scope and budget revisions pdf.

Status: Task Complete

- B.5 Final QAPP Field Testing

Task Description: The department will gather comments on the draft QAPP from RRAC and any other interested parties and transmit such comments to the provider within one month of receiving the draft. The provider will address these comments in preparing final deliverables within one month of receiving comments.

Deliverables from Contract: Final QAPP pdf accepted by FDOH.

Status: Task Complete

- B.6 Field Systems Installation Report (per system)

Task Description: The provider will submit existing system evaluations performed by individuals authorized by the department to perform such work, modifications, or new system permits as appropriate for the respective home sites and shall ensure proper permitting through the department for such permits. The provider will be, or will hire, an engineer of record for innovative or performance-based treatment system applications and identify the maintenance entity for each system. The provider will be responsible for individual field test systems to be purchased or fabricated and installed at individual homeowner sites. Field system installation will include providing all materials and assembly needed to produce a fully functional and working treatment system, including initial test evaluation and installation report. If necessary an existing system evaluation will be conducted per FAC Chapter 64E-6. The provider will ensure that operating permits and maintenance entity contracts for the system exist, as required by FDOH. The provider will address the event if one or several of the homeowners seek to withdraw from the program by assisting with installing a replacement onsite wastewater system or fund system repair or maintenance.

Deliverables from Contract: Copy of final system permit including operating permit if necessary; detailed installation report, construction costs: System 1, System 2, System 3, System 4, System 5, System 6, System 7

Status: Task Complete

- B.7 Field Systems Monitoring Report (per system, per event)

Task Description: Subject to details specified in the QAPP, the provider, in cooperation with the homeowner and the maintenance entity, will operate field technologies for a base period of up to 24 months and monitored for at least the following parameters: temperature, pH, alkalinity, DO, ORP, TKN, NH3, NOx, TSS, C-BOD5. Additional parameters will be monitored less frequently for other parameters of interest (COD, TP, PO4, fecal coliform, total enterococci, and SO4 and H2S for systems with sulfur-based denitrification). Up to 8 sample events will be conducted on each of the systems monitored.

The provider will submit deliverables after each monitoring event for the systems installed in Task B6, which will also include results for flowrate or treated volume, electricity and/or media use, field parameter results, chain of custody forms for samples delivered to analytical laboratory, analytical laboratory reports, and compiled results.

Deliverables from Contract: Monitoring reports in tabular form: System 1 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 2 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 3 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 4 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 5 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 6 Sample events 1, 2, 3, 4, 5, 6, 7, 8; System 7 Sample events 1, 2, 3, 4, 5, 6, 7, 8.

Status: Task Complete

- B.8 Field Systems Operation, Maintenance and Repairs Report (per system)

Task Description: The provider, in cooperation with the homeowner, maintenance entity, and county health department, will maintain copies of records of repairs, maintenance actions, inspection results and system observations. The provider will develop a report form for each entity and a summary report for each treatment system. Records will include date, description of repair and pertinent factors, and repair cost.

Deliverables from Contract: Report form for each system, summary report of observations: System 1, System 2, System 3, System 4, System 5, System 6, System 7.

Status: Task Complete

- B.9 Technical Description of Nitrogen Reduction Technology Report

Task Description: The provider will develop a technical description for each nitrogen reduction technology studied, including information such as if the technology is vendor supplied or custom design, trade name, model number, unit specifications, purported operating principals, description of process flows and hydraulics, physical features including tanks, fixed film media, pumps, aerators, and other appurtenances, addition of chemicals or other materials, performance claims, observations, operational experience and measured performance during the study. The report will include a brief description of nitrogen removal processes and factsheets for each nitrogen removal system studied.

Deliverables from Contract: Draft and final nitrogen reduction technology report.

Status: Task Eliminated.

- B.10 Acceptance of System by Owner Report (per system)

Task Description: At the conclusion of system monitoring, a homeowner acceptance document will be provided that transfers complete ownership and operational responsibility of the system to the homeowner. In the event the homeowner does not desire to keep the study systems, the funds from Task B6 will be utilized to restore the system to its original condition.

Deliverables from Contract: Acceptance of System by Owner Report: System 1, System 2, System 3, System 4, System 5, System 6, System 7

Status: Task Complete

- B.11 LCCA Template Report (draft template and user guidelines)

Task Description: The provider will develop a Life Cycle Cost Analysis (LCCA) template, with the PNRS I LCCA as a starting point and will summarize the features of the template in a user guidelines document. Costs will be expressed in a variety of ways, such as uniform annual cost, cost effectiveness of nitrogen removal, marginal cost effectiveness of additional treatment components etc. The analysis will include equipment, material and installation costs for treatment systems, recurrent costs for energy, maintenance, repair, permitting and monitoring, and replacement of materials such as reactive media or electron donor supply for denitrification. Materials costs include the purchase cost and delivery cost of vendor systems, or costs to purchase and prepare materials and media for custom designed systems. Use of a common LCCA template will enable all nitrogen removal technologies to be evaluated on an equivalent basis, and will be useful for future systems that are not evaluated within this project. In developing the template, the provider will illustrate its use with existing data, such as developed as part of Task A, the Keys Onsite Wastewater Nutrient Reduction Systems study or the information obtained from homeowners surveyed during this task.

Deliverables from Contract: Draft LCCA template and user guidelines pdf.

Status: Task Complete

- B.12 LCCA Template Report

Task Description: The department will gather comments on the draft LCCA from RRAC and any other interested parties and transmit such comments to the provider within one month of receiving the draft. The provider will address these comments in preparing final deliverables within one month of receiving comments.

Deliverables from Contract: Final LCCA template pdf and user guidelines pdf.

Status: Task Complete

- B.13 LCCA Report (per system)

Task Description: Based on the LCCA Template, the provider will conduct an LCCA analysis for each nitrogen reduction technology evaluted during field testing using actual purchase prices, installation cost estimates, and operational costs records.

Deliverables from Contract: LCCA Report pdf (per system tested) including cost analysis.

Status: Task Complete

- B.14 Draft Task B Final Report

Task Description: The provider will develop a final report that will summarize the results of the Task B evaluations of treatment technologies, including an aggregation of technology reports and LCCA completed over the course of the study. The report will provide summary recommendations for deploying the tested technologies to meet the objectives of the Florida Onsite Nitrogen Removal Strategy. The report will include the data on which it is based, in tabular form.

Deliverables from Contract: Draft Task B Final Report pdf.

Status: Task Complete

- B.15 Task B Final Report

Task Description: The department will gather comments on the draft final report from RRAC and any other interested parties and transmit such comments to the provider within one month of receiving the draft. The provider will address these comments in preparing final deliverables within one month of receiving comments.

Deliverables from Contract:
Task B Final Report
Appendices

Status: Task Complete.

- B.16 Change-order Allowance

Task Description: From time to time the Department may find it necessary to make minor changes or adjustments to activities under this task based on results that indicate a potential improvement to the project by making a change. Examples of such changes include additional or revised sample locations and parameters, minor modifications to test systems or field activities based on problems encountered, or conditions that develop requiring expedient actions to correct a potentially serious problem. Up to $ 50,000 will be allocated from the contract budget for such minor changes to research activities under this task. Upon determination by the Department that changes should be made, all or a portion of these funds may be authorized by written notification from the Department to the Provider directing specific changes to research activities be made, and the amount budgeted for the changes specified.

Deliverables from Contract: Deliverables outlined in authorization letters: Authorization to update the Research Review and Advisory Committee on March 24, 2011, Authorization to analyze additives, Authorization to perform a Whole Effluent Toxicity test and ammonia nitrogen analysis, Authorization to enhance design for Site 4 passive nitrogen system, Authorization to provide additional product composition testing, Results of additional product composition testing for Site 2, 3, 4, 5, 6, and 7.

Status: Task Complete