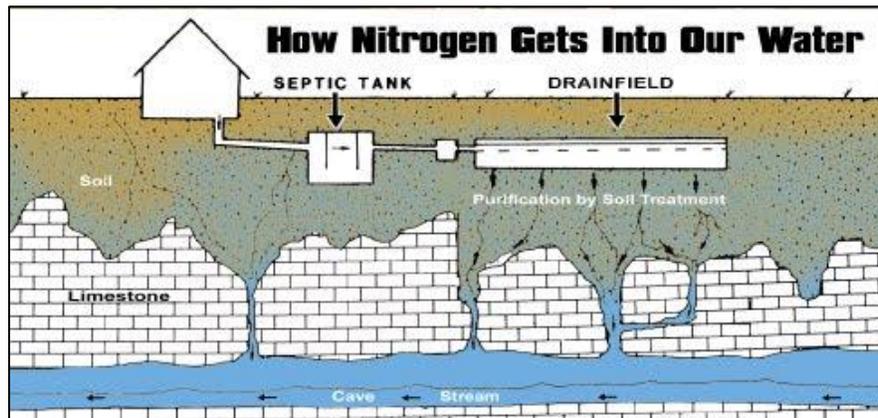


**Responsible Management Entity/Responsible Nutrient Management Entity
(RME's or RNME)**

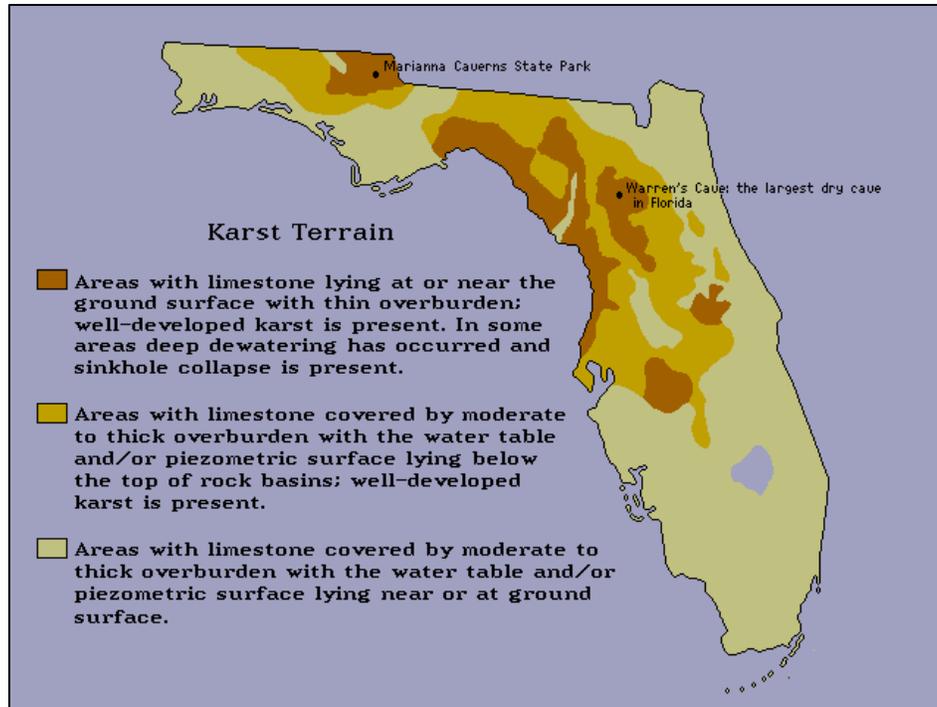
White Paper by 1000 Friends of Florida

The water we drink, bathe in, fish from and depend on is being polluted by wastewater high in nitrates and other pollutants carried in the wastewater and stormwater flows. Pollutants include fecal bacteria, viruses, drugs, hazardous chemicals and nutrients, particularly nitrates from septic systems and fertilizers. If we are to protect our water in many parts of the state, we must take action at to control and reduce this pollution. The longer we delay this action, the more costly it will be to reduce the pollution.

Particularly problematic are septic systems as for many years they have conveniently been used to dispose of human waste into groundwater, and where in sufficiently low density arrangements and proper soils, they work well. Septic systems were designed to address minimization of public health risks from bacteria and viruses. Nevertheless, growing populations of septic systems in sensitive watershed locations are often significant contributors of nutrients, pharmaceuticals and other pollutants. Over the years more than 2.6 million or more have been installed across the state.



In Florida many of our soils are sandy and porous, and our groundwater is at or near the lands surface where it interacts freely with surface waters (i.e., if you speak of surface waters you are also including groundwater and vice versa). Particularly vulnerable areas in Florida are central to north big bend areas where *Karst* landscapes exist. Karst areas are essentially a “swiss cheese” of porous limestone below the ground surface that is very susceptible to contamination, especially where overlaying soils are thin. Also quite vulnerable are lakes and surface waters with slow flows and warm water. Extensive reliance on septic systems for the disposal of human waste in these areas presents difficult water quality management challenges that are not being met.



Local and state governments wrestle with these surface and ground water pollution problems. Other than managing lot sizes or the installation of central sewer, jurisdictions in the Karst and lakes region of the state have few management choices. The RME is a local approach that deserves greater attention and innovative use and is an approach that importantly, can provide the long-term management apparatus to address the complex and distributive non-point source nutrient problems.

A RME is a utility/cooperative around which nutrient management and services can be more holistically addressed (e.g., from septic systems, fertilizers, stormwater, wastewater reuse, etc.). For example, a RME may serve (provide the services):

- As the mechanism by which affected stakeholders in a watershed with a completed Total maximum Daily Load (TMDL) and ongoing Basin Management Action Plan (BMAP) may plan and act to incrementally address the complex pollution reduction actions necessary to make improvement to water quality.
- To make specific watershed science-based decisions on the siting and use of non-central sewer related wastewater treatment and disposal systems such as septic systems, cluster systems or advanced wastewater treatment package plants to limit and reduce nutrient/pollutant impacts.
- As a one-stop management entity for projects and operations for watershed-based responsible nutrient management which overtime uses a host of means to manage the inventoried populations of septic systems and nutrient contributors in a basin toward nutrient reduction(s).

- To coordinate with existing central sewer system provider(s) to guide removal of significant numbers of previously installed septic system where density/intensity of development, environmental vulnerabilities and economics dictate.
- To work and coordinate with local land planning agencies to manage land use densities and intensities to fit the natural landscape limitations and suitability's, helping to match service to the area's vulnerability, needs, costs, etc.

Through the use of a RME, integrated services offer solutions that can be locally tailored to incrementally reduce nutrients and other pollutants over agreed upon timelines. Since such solution sets are specific to each watershed, a locally-based entity serving one or more local jurisdictions is appropriate.

Here are more details on services and areas of emphasis around which a RME or similar local entity may be structured:

- Developing and maintaining an inventory of the many septic systems, cluster and or to-ground discharging package plants and their age, type, condition and density of placement within the basin;
- Identification and mapping of areas and there degree of vulnerability;
- Permitting of septic and other groundwater discharging wastewater treatment and disposal systems (in sync with County Health Department Offices);
- System performance inspections and maintenance approaches of septic and other groundwater discharging wastewater treatment and disposal systems (in sync with County Health Department Offices);
- Provision of education to system owners on Best Management Practices (BMPs) and user awareness of septic systems, location on property, function and care;
- Educational and BMP instruction regarding other citizen/consumer-based pollution problems;
- Establishment of a billing approach for services (e.g., a set monthly/quarterly/yearly fee to all septic system owners and other groundwater discharging systems);
- Training and coordination of efforts with the multiple private service providers that contract with septic systems owners or other to-ground discharging systems to install, maintain or assist in the operation on on-site discharge systems;
- Work collaboratively with one or more central sewer provider (note, a RNME could be the local central sewer provider), local land planning and other regulatory agencies to guide the use of the appropriate septic systems and other wastewater disposal and treatment options to the appropriate locations;
- Planning and implementing the incremental/slow replacement of standard systems in the more vulnerable areas with tested/approved nitrate removing systems (individual or cluster) where economically feasible or planning and guiding hookups to central sewer where appropriate;
- Working with local land planning agencies to coordinate proper land use densities and intensities to fit the natural landscape limitations and suitability's and thus helping to match which system serve what areas based on vulnerability, needs, costs, etc.

- Seeking grants and low interest loans to help develop and infuse a septic system repair/replacement fund and/or connection-to-central system fund.
- Develop innovative finance assistance efforts and/or grants to help existing septic standard system owners replace these system with nitrate removal systems or assist in cover central system hookup costs (especially for those people on fixed lower income, the poor).

Additional tools and management services a RME may be structured to perform can include:

1. Education on Chemical Additives & Restrictions. For septic and central systems - Organic solvents are advertised for use as septic system cleaners and sometimes as substitutes for sludge pumping. These chemicals are often halogenated and aromatic hydrocarbons and can easily contribute to the contamination of receiving waters. Additive restrictions are most effective when used as part of a BMP which involves other source reduction practices such as phosphate bans and use of low-volume plumbing fixtures, as well as mitigative BMPs such as upgrading and maintenance.

2. Heightened Emphasis on Management of Pharmaceuticals. For septic and central systems-- Pharmaceuticals used by humans and their pets usually end up in the domestic waste streams. On-site waste water disposal provides an avenue for the migration of effluent to the underlying aquifers. Recent studies by the USGS in Florida assessed the occurrence and persistence of multiple target pharmaceuticals in septic tank effluent and the aquifer. Compounds such as acetaminophen, caffeine, codeine, carbamazepine, cotinine, erythromycin-18, nicotine, paraxanthine, ranitidine, sulfamethoxazole, trimethoprim, warfarin, 1,7-dimethylxanthine, phenol, galaxolide, and tris (dichloroisotopropyl) phosphate) have been detected in a septic tank effluent and groundwater.

3. Management Approaches for Handling the Population of Septic Systems, Distributed Fertilizer Applications and Corresponding Pollutant Loads. Permitted Inspection and Maintenance for all septic systems (Standard or nitrate removal types) - The high degree of system failure necessitates regular inspections. Homeowners can be provided with educational materials and can serve as monitors of their own systems. A responsible management entity can mail out printed reminders to owners informing them that inspection and perhaps maintenance is due for their systems or, as part of a utility fee approach, may perform periodic inspections (via employees or private contractor services) leading repair, pump outs, upgrades or replacements of the septic system. Maintenance can be required through contracts, operating permits, and local ordinances/utility management.

4. Household Management Of What Goes Into The Ground. For example, Educate to Reduced Use of Garbage Disposers for septic system homeowners (And instead,

encouragement of individual home composting/mulching of the organic kitchen wastes) - Eliminating the use of garbage disposals can significantly reduce the loading of suspended solids, nutrients, and BOD to septic systems, as well as decreasing the buildup of solids in septic tanks, thus reducing pumping frequency. Eliminating garbage disposal use is most effective when used as part of a BMP system which involves other source reduction practices such as phosphate bans and use of low-volume plumbing fixtures, as well as mitigative BMPs such as upgrading and maintenance.

5. Fertilizer/Yard Management (Residential, Commercial and Governmental).

Education on the other major nutrient problems - In particular, Fertilizer Management – This might include Retailer/Outlet Monitoring and Consumer Education on Appropriate Fertilizers Products and use in the Springshed/watershed. In particular, from an individual stewardship perspective, homeowner association education efforts to encourage reduced use of fertilizers could help make a difference. The point of the project's educational emphasis would be that application of fertilizers and other nutrients into the springshed by individual, businesses and even pets is a noticeable component of the nutrient load that will, if un-managed, grow in relative importance overtime.

6. Stormwater Management. Coordinated and strategic to efficiently capture and treat stormwater-based pollutants. A great deal of existing material is available. For example, low impact development, treatment train arrangements, biofiltration, rain gardens, etc. This project will draw from existing stormwater materials but will incorporate these management opportunities into the educational products. Where jurisdictions have in-place a stormwater utility, integrated/coordinated management can be structured to the RME.