

Title:

N-78: Reduce ground water pollution from sources such as septic and storage tank infrastructure to watersheds associated with priority reef areas to improve water quality and reef health.

Background:

- This recommended management action relates to all Southeast Florida Coral Reef Initiative (SEFCRI) counties, inlets and watersheds, as well as all associated coral reef, hardbottom, seagrass, oyster and mangrove habitats.
- This recommended management action is being proposed because groundwater is a major source of freshwater to estuarine and nearshore coastal waters in southeast Florida. Groundwater has been contaminated with pollutants that adversely affect coral reef ecosystems. SEFCRI partners need to identify groundwater pollution sources (to aquifers, subsurface flow), such as septic tanks, saltwater intrusion, deep-well injection and aquifer storage and recovery that affect priority watersheds and, subsequently, evaluate methods to remediate or contain the pollutants.

Objective:

- Some intended outcomes from implementing this recommended management action include: (1) improved groundwater quality, (2) identification of sources and types of pollutants, (3) reduction of septic tank use in the SEFCRI region, (4) implementation of advanced wastewater treatment before disposal via injection in deep wells, and (5) improved infrastructure to increase system capacity and reduce storm-driven treatment bypass events i.e. Combined and Sanitary Sewer Overflows (addressed in N-82).

Intended Benefits and/or Potential Adverse Effects:

- Potential advantages associated with this recommended management action include: (1) improved groundwater quality, (2) a reduction in land based sources of pollution (LBSP) loading to watersheds in southeast Florida, (3) reduction of pollution reaching reef areas, and (4) identification and tracking of sources of pollution in groundwater that may result in new partnerships within SEFCRI.
- No potential disadvantages of implementation of this recommended management action have been identified. There are no anticipated negative environmental impacts or threats of adverse social or economic effects.
- The duration of the benefits of this recommended management action would be recurring.
- Adverse consequences of not reducing groundwater pollution include continued water quality degradation, reduced wetland and aquatic ecological functions, and reduced aquifer capacity for human and environmental needs.

Agencies/ Organizations:

- The lead agencies for implementation of this recommended management action are the Florida Department of Environmental Protection (FDEP), the Florida Department of Health, the United States Geological Survey (USGS), United States Environmental Protection Agency (EPA) and United States Army Corps of Engineers (USACE).
- Individuals or groups that can help draft proposed legislation need to be identified.
- Other potential agencies or organizations who could be involved include county water resource agencies, municipalities, and water utilities.
- The key stakeholders for this recommended management action would include water utilities and homeowners using septic systems.
- The recommended management action is consistent with local, state and federal laws and regulations.

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Permitting/ Enforcement Requirements of RMA:

- There will be no permitting requirements for the recommended management action itself. However, individual projects will require permits.
- There are no enforcement requirements associated with this recommended management action.
- A measurable way to show success with this recommended management action is to quantify the reduction in septic system usage and the reduction of measurable pollutants found in groundwater.

Cost:

- The costs will depend on the level and scale of implementation.
- Potential funding may be acquired through EPA and FDEP.

Time Frame & Extent:

- The anticipated timeframe for implementation of this recommended management action is years to decades.

Miscellaneous Info:

- This recommended action is linked to all recommended management actions that propose to reduce LBSP to the southeast Florida coral reef ecosystem.
- Uncertainties and large information gaps within this recommended management action include the types of pollutants, their loads and the discharge rates to the watersheds (wet season/dry season).
- Supporting and relevant data includes the following:
 - C.D. Reich, P.W. Swarzenski, J.W. Greenwood, and D.S. Wiese. Investigation of Coastal Hydrogeology Utilizing Geophysical and Geochemical Tools along the Broward County Coast, Florida. United States Geological Survey. 2009. Open-File Report 2008-1364.
 - J. Carrie Futch, Dale W. Griffin and Erin K. Lipp. Human enteric viruses in groundwater indicate offshore transport of human sewage to coral reefs of the Upper Florida Keys. Environmental Microbiology 12 (4). 2010. pp. 964-974
 - Peter W. Swarzenski, William H. Orem Benjamin, F. McPherson , Mark Baskaran, Yongshan Wan. Biogeochemical Transport in the Loxahatchee River Estuary, Florida. 2006.
 - The role of submarine groundwater discharge. Marine Chemistry 101. 2006. pp. 248–265
 - Jonathan B. Martin, Jaye E. Cable, Christopher Smith, Moutusi Roy, and Jennifer Cherrier. Magnitudes of submarine groundwater discharge from marine and terrestrial sources: Indian River Lagoon, Florida. Water Resources Research. Vol 43, W05440. 2007.
- Relevant research is ongoing at Nova Southeastern University, USGS, Florida Atlantic University and the National Oceanic and Atmospheric Administration (NOAA).
 - Looking at the goals and objectives below, (cleaning up the water before it goes into the ground/or not putting it in there at all), there is uncertainty that they match up with the work being done by USGS, NOAA etc. whose work is more along the line of sampling groundwater wells and looking at what is in the water. As for status, the Total Maximum Daily Load (TMDL) process may be a possible pathway to address some of the above goals and it already exists. The Coastal Ocean taskforce also had similar recommendations, so collaborating with that group to develop legislation could be worthwhile.

Goals/ Objectives to be achieved:

Refer to the [SEFCRI Coral Reef Management Goals and Objectives Reference Guide](#)

- FL Priorities Goal C1, Obj. 4 / FL Priorities Goal C4 Obj. 5.
- SEFCRI LAS LBSP Issue 4 Goal Obj. 3.

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