



EcoSummary

Wall Spring, Pinellas County; Springs
Coast Watershed
August 19, 1998



BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment.

Purpose

Surface water samples were collected from Wall Springs (also known as Health Spring) in order to gain further information on the ecological health of the watershed for use in the administration of Florida's Ecosystem Management Water Quality Assessment (EMWQAS) and Total Maximum Daily Loads programs. All work conducted by EMWQAS was conducted according to established DEP standard operating procedures and quality assurance plans.

Background

Wall Springs is located in north-central Pinellas County, north of Palm Harbor. It is a walled-in spring that flows into a salt water pond connected to a bayou by a culvert. During high tides, salt water backs up into the spring head. This property was owned by the Wall family and was a popular recreational spot in the early part of the century. The county now owns it and plans to develop it into a nature park. There is low density residential development in the basin, however the land immediately adjacent to the spring is natural. To the west lies Innisbrook, a large golf course and resort that has been in existence for 20 years, but only recently enlarged to the area adjacent to the spring. This golf course was originally built on a large citrus grove that extended from Alderman Road northward along a sandy beach ridge. This area is a discharge area for the surficial aquifer. Pinellas County Pollution Control Facility is also in the vicinity; it had a discharge originally, but went to sprayfield 8 years ago. Twenty three samples collected between 1980 and 1989 yielded an average total nitrogen concentration emanating from Wall Springs of 8.06 mg/l.

Results

Water chemistry samples were taken at the spring head. The tide was out at the time of sampling. A marine invertebrate community was observed, noticeably dominated by gastropods. The riparian zone was that of a single residential estate built long ago on the coast. The water was clear and aqua. The canopy was wide open and periphyton was abundant. Dissolved oxygen was 0.61 mg/l, way below the State standard of 5.0 mg/l (Rule 62 - 302 FAC. However, we were directly sampling ground water, so low DO would be expected. DO in the receiving pond was only 1.97 mg/l, but would likely increase when the tide came in. The total nitrogen (TN) concentration was excessive due to very high nitrate

levels (7.4 mg/l). The median nitrate value for Florida surface waters is 0.1 mg/l. Total phosphate (TP) was relatively low as compared to typical values of Florida streams, at 0.12 mg/l. Total and fecal coliforms were well within the single sample standards (Rule 62 - 302 FAC).

Significance

The waters receiving Wall Spring's discharge, the saltwater pond and St. Joseph's Sound, are nitrogen-limited water bodies, which means that nitrogen, mainly nitrate, is the nutrient most responsible for algal blooms that lead to oxygen depletion, aquatic species imbalances and fish kills. There could be a number of sources of the nitrate, including aged septic tanks, lawn fertilization and golf course fertilization. However, due to the fact that the elevations were found in the 1980's, it would be likely that the contamination began much earlier, potentially from fertilization on citrus groves, even though they no longer exist.. Located on a sandy beach ridge, fertilizer applied to the groves could have readily percolated into the underlying aquifer.

Suggestions

There is not much that can be done to reduce the present nitrate loading from Wall Spring, as it represents historic landuse practices, for the most part. It could take decades for the aquifer to flush out, and in the mean time residential and golf course development and maintenance practices may introduce other potential sources of nitrogen. Best management practices for the care of golf courses should be in place at Innisbrook. Likewise, it is important for residents of the area to be conservative in the care of their lawns, refraining from excessive fertilization that would sustain the nitrate contamination. Maintaining natural vegetation and limiting grass lawn area would reduce the amount of fertilizer needed. Using slow-release organic fertilizers, which are utilized more efficiently by vegetation, would reduce the amount of nitrogen entering the ground water.

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