

# Frequently Asked Questions Regarding Water Quality Issues in the Los Osos Community

Spring 2002 (Edition 2 of 4)

Central Coast Regional Water Quality Control Board



## What are Nitrates, and where do they come from?

Nitrogen is one of the most basic (and plentiful) components of the air we breath and of biological material. Nitrates are a compound of nitrogen and oxygen, and a component of the nitrogen cycle (the natural breakdown process of nitrogen). Nitrogen enters a septic system in the form of ammonia and little change (breakdown) occurs in the septic tank. After it is discharged to the soil, the ammonia typically breaks down to nitrate. The drinking water standard for Nitrate is 45 mg/L. Nitrate levels greater than 45 mg/L have been associated with the occurrence of blue baby syndrome in infants. Other studies indicate an increased exposure to nitrate in the diet or drinking water contributes to an increased prevalence of stomach cancer.

Some have suggested that septic systems are providing denitrification (the natural breakdown process of nitrogen). Denitrification requires specific soil and oxygen conditions to occur. Los Osos and its underlying sandy soils are not ideal conditions for denitrification. The fact that denitrification is not adequately removing nitrogen from septic system discharge is demonstrated by contamination in Los Osos' ground water basin.

It is important to note that nitrates are not the only water quality concern with septic systems. Non-biodegradable soaps, detergents, bathroom and kitchen cleaners and other chemicals disposed down the drain to a septic system are all potential pollutants of ground water. Septic tanks do not have the ability to effectively treat these chemicals. Contamination of a water supply or surface water by bacteria and viruses is another water quality concern. Their presence in a water body can impair other beneficial uses such as shellfish harvesting and recreational uses (boating and kayaking for example).

## Do nitrates come from other sources besides septic systems?

Yes, as mentioned above, the nitrogen cycle converts nitrogen from a variety of sources into nitrate in ground water. Previous studies conducted in Los Osos indicate nitrates in ground water come predominantly from septic systems. Other sources include (to a much lesser degree) agricultural and horticulture operations, animals, and natural sources (atmospheric deposition, soil disturbance, weeds, etc.). What is important to remember is the relative amount (concentration and quantity) from each particular source. The water quality impact (problems created) from each source of nitrate is considered based upon its relative quantity and concentration when compared with other sources.

What we have seen in Los Osos is that as population (and septic tank use) increased from 1950 to present, so have nitrate concentrations in ground water.

## Could we solve the problem by dewatering the shallow aquifer?

Such practice would be more expensive (than the proposed wastewater system) and in direct violation of environmental laws. It would also abandon community goals of having a self-sustaining water supply, and managing wastewater in an environmentally and financially superior manner.

Picture one million gallons a day (30 million gallons a month, 365 million gallons a year) of wastewater going to the Los Osos ground water basin and Morro Bay estuary. That is the quantity of wastewater that is being disposed of every day, every year in Los Osos. Now picture what it would take to dewater an aquifer (assume lowering 20 feet) encompassing 3,000 acres (60,000 acre-feet). 60,000 acre-feet equals 19,548 million or 19.5 billion gallons of

water. Factoring in an average specific yield of 20% for the aquifer equals approximately 4 billion gallons. A system to deal with this much water would require numerous extraction wells, pumps, trenches for utilities, and piping throughout the community. Furthermore, an extensive treatment facility would be needed to handle this extracted water. For reclamation use on agricultural land or greenbelt acres the facility would need treatment processes that meet stringent California Department of Health Services water quality standards. Numerous disposal areas and/or year-round users would need to be secured for the water. Discharge to a surface water body such as Morro Bay or Los Osos Creek would also require extensive treatment of the extracted water to meet strict water quality standards (it is also extremely unlikely that the water would be allowed to be discharged to Morro Bay National Estuary). Equally challenging and problematic is what would be done with the additional one million gallons of wastewater that would continue to be produced each and every day by the community, especially in the winter months. Essentially under this proposal the shallow aquifer would be used as a sewage collection system, which is unacceptable.

### **Were alternatives to the Wastewater Project thoroughly considered?**

To address uncertainties in the earlier proposed Los Osos Community Service District's (CSD) project, the CSD embarked upon an evaluation of multiple wastewater project alternatives. This evaluation of alternatives examined, not only the CSD's original wastewater proposal, but also variations/combinations of it, and several other potential wastewater project alternatives including those analyzed by the County of San Luis Obispo. In addition, the CSD's consultants examined other potential wastewater and septic tank technologies. This evaluation resulted in a technically sound and viable wastewater project.

An earlier proposal, the Advanced Integrated Wastewater Pond System (AIWPS), was initially popular with some community residents because of its perceived low estimated cost. However, the CSD's careful and detailed

evaluation of the proposal demonstrated the current wastewater project to be superior due to: 1) being in line with community goals, values and acceptance, 2) ability to meet regulatory requirements, 3) ability to address the community's water quality problems (ground water and Morro Bay), 4) ability to sustain the community ground water basin and primary drinking water supply, and 5) long term cost-effectiveness.

### **Summary**

Our hope and intent with this series of flyers is to provide some basic facts and scientific information to address questions that have repeatedly come up regarding this subject. We believe the community, through its locally elected Los Osos Community Services District, has been working hard to develop a technically sound and viable wastewater project. Cost of the project is a concern for everyone, and delays will contribute to even greater expense and continued degradation of water quality.

Community members interested in helping secure additional public funding for the project can write their legislative representatives (State Assembly and Senate and U. S. Congress and House of Representatives) requesting such financial support. As always, staff is available to meet or discuss any and all further questions Los Osos community members may have regarding these issues. Contact information is listed below.

### **For More Information**

If you have questions, please contact:

Sorrel Marks, Project Manager at 549-3695 or Gerhardt Hubner, Coastal Watershed Unit Supervisor at 542-4647



**About the Central Coast Regional Water Quality Control Board:** Located in San Luis Obispo, we're part of the California Environmental Protection Agency (Cal/EPA). Our mission is to preserve, enhance, and restore the quality of the Central Coast Region's water resources for the benefit of present and future generations. You can contact us by telephone at (805)-549-3147. **Visit us on the web at:** [www.swrcb.ca.gov/rwqcb3/WMI/Index.htm](http://www.swrcb.ca.gov/rwqcb3/WMI/Index.htm)