

ORANGE WATER AND SEWER AUTHORITY

WASTEWATER BIOSOLIDS RECYCLING

July 2010

PURPOSE: To provide information about OWASA's biosolids recycling program.

OWASA'S OPERATION: The Mason Farm Wastewater Treatment Plant (WWTP) currently treats about 7.5 million gallons per day of domestic sewage from the Carrboro/Chapel Hill community. Additionally, the WWTP accepts and treats about 1 million gallons per year of septage pumped from septic tanks serving the surrounding rural area.

Biosolids are a by-product of wastewater treatment. OWASA's biosolids are produced through a high temperature anaerobic digestion process applied to untreated wastewater sludge according to Federal and State requirements that allow their beneficial reuse as a fertilizer and soil amendment. All OWASA biosolids meet the trace metal requirements necessary to qualify for the Exceptional Quality (EQ) designation of the US Environmental Protection Agency (EPA) and NC Division of Water Quality because of their low concentrations of trace metals (cadmium, lead, zinc, mercury, and others). OWASA's ability to consistently meet these low levels of trace metals likely reflects the lack of industrial dischargers to our community sewer system.

The WWTP produces about four dry tons of biosolids each day. Some of this is applied in liquid form to agricultural land and a portion is "dewatered" to the texture and consistency of moist soil and transported to a private composting facility in Chatham County. OWASA staff continues to follow the development of alternate technologies available for management of biosolids. Efforts to develop a Biosolids Master Plan were deferred until evaluation and optimization work with the wastewater treatment process was completed. Our current goal is to continue the work to optimize the liquid land application program given limitations with staffing, equipment, weather impacts, land availability and regulations.

OWASA has liquid land application permits for a total of 1,156 acres of farm land in Orange, Chatham and Alamance counties. Nearly 90% (1,013 acres) is privately owned. The remaining 143 acres are owned by OWASA as part of a 700-acre tract west of Orange Grove Road in Orange County.

Federal and State regulations specify upper concentration limits for selected trace metals in biosolids. Regulations also specify the "agronomic rates" at which biosolids may be land applied for designated crops; i.e., the maximum amount of biosolids that can be applied to a given field is determined by the nitrogen content of the biosolids and is limited to the nitrogen requirements of the particular crop to which it is being applied. OWASA closely monitors the application rates on each individual field and, historically, has applied at rates well below those allowed by regulation. In the future, application rates may become based on phosphorus limits instead of nitrogen limits. If this occurs, the amount of land needed to support the liquid land application program would increase. Per Federal standards, our biosolids are tested for toxicity and certain other characteristics once a year but trace metals, solids, and nutrients are measured every 60 days. OWASA monitors for groundwater contamination three times per year and measures multiple constituents in plant tissues once a year at OWASA-owned locations that receive biosolids.

NATIONAL PERSPECTIVE: Approximately 7.1 million dry tons of biosolids are generated each year at more than 16,000 municipal wastewater treatment plants in the U.S. About 55% is land applied; the remainder is either composted, landfilled, incinerated and/or processed for energy recovery. Less than 1% of the total U.S. food supply is fertilized with biosolids. A 1996 National Academy of Sciences/National Research Council review of EPA's biosolids management program determined that the use of biosolids on food and other crops presents "negligible risk" when conducted according to federal regulations. It is notable that other soil amendments and fertilizers typically used on agricultural land – especially manure and commercial fertilizers – are only minimally regulated and are not tested for pathogens.

CONCLUSION: OWASA recognizes that some uncertainty still exists about the effects of certain biosolids constituents. We support further study to determine these impacts. However, OWASA also firmly believes that recycling biosolids through a properly managed program in strict compliance with State and Federal permit requirements is a safe, cost effective, and environmentally responsible way of managing this inevitable by-product of the community.

OWASA Biosolids Application Sites

