The CommunityVOICE

Weather

Friday March 9, 2012
Volume 20 Issue 6

In truth, there's no such thing as 'wastewater' on this planet

By Denise Cadman March 1, 2012 12:15 pm

The water on Earth today is the same water that has always been here, recycled over and over again. The hydrological cycle moves water through the physical environment, the atmosphere and soil, and through living organisms. There is no new water, so there is no water to waste.

Water is essential for living organisms. Humans are made of mostly water (about 60 percent). We use water in our households for cooking, cleaning, hydration and hygiene. Even more is used in industries as a vital ingredient in manufacturing and the biggest share goes to agriculture.

As water is used, it is polluted. There are two main sources of polluted water.

The storm drain system drains storm water to the nearest creek, receiving no cleaning. Although storm water is rain water that has travelled across pavement, farm land and recreational areas, picking up pollutants as it moves through the watershed.

The second source of polluted water is the sewer, transporting water from indoor drains from both households and industries. Water in the sewer goes to a sewage treatment plant to be cleaned before being returned to the hydrological cycle.

Processing treatment of sewage water
The Laguna Treatment Plant, serving Santa Rosa, Rohnert Park, Cotati and Sebastopol, treats an average of 20 million gallons of sewage per day. Sewage reaches the Llano Road facility through 500 miles of pipe that carries polluted water away from 220,000 residents and 6,000 businesses and industries.

Sewage receives a three-step or "tertiary treatment" followed by disinfection. In the first step of the treatment process, called "primary," water is separated from the solids. Solids settle allowing them to be removed to anaerobic tanks where they are broken down by bacteria. Bacteria produces methane gas, which is mixed with natural gas and is used to power about one third of the treatment plant's energy needs.

After up to 30 days in the digester, solids are ready for reuse as a fertilizer during the growing season or blended with yard waste and sold as compost. A small quantity may be sent to the

landfill.

Water receives a secondary treatment in aeration basins injected with oxygen to stimulate the growth of bacteria and other microscopic organisms that consume dissolved wastes, cleaning the water of pollutants. The microorganisms are then removed in clarification tanks, where they settle to the bottom and are returned to the aeration basins to repopulate them with fresh bacteria.

The third step or "tertiary treatment," is filtration of water through a four-foot bed of coal, trapping fine suspended solids and some potential pathogens. Lastly, water is disinfected with ultraviolet light, destroying bacteria and viruses.

At this point, the recycled water is ready to return to the environment. Water is initially sent into a series of storage ponds. These ponds are rich with wildlife, including many species of waterfowl. What happens to the water depends on the amount in storage, inflow to the plant and time of year.

Using recycled water
Throughout the year, an average of 13 million gallons per day is sent to the Geysers recharge project (completed in 2003) high in the Mayacamas Mountains. The Geysers steamfield is the largest geothermal operation in the U.S. Recycled water injected into the earth makes enough electricity for up to 100,000 households in the North Bay Area.

During the growing season, recycled water is irrigated over 6,400 acres. About 80 percent of this land is agricultural, growing hay, pasture grasses, wine grapes, turf and vegetables. The remainder is urban reuse for parks, schools, ball fields and golf courses. The majority of land is privately owned, giving landowners an opportunity to replace the use of groundwater (our drinking supply) with recycled water.

The City of Santa Rosa owns about 1,500 acres in the Laguna de Santa Rosa, leasing some of the land to local agricultural producers, but also taking the opportunity for many habitat enhancement projects in the unfarmed areas and buffer zones.

During times of high rainfall and high flow, when irrigation is not possible, water may be discharged into the Laguna de Santa Rosa. Discharge is kept to an absolute minimum as the City of Santa Rosa is committed to the goal of 100 percent beneficial reuse of both water and biosolids.

Denise Cadman is the Natural Resource Specialist for the City of Santa Rosa. This position involves managing 1,500 acres of irrigated and natural area land in the Laguna de Santa Rosa; planting creek corridors, removing invasive species, conducting studies and performing long-term surveys on plants, birds and mammals. An education program compliments these efforts. Cadman teaches at Santa Rosa Junior College as an adjunct faculty member in the Life Science Department and she and her husband operate a draft horse-powered family farm in the Laguna de Santa Rosa. Cadman will be offering a tour of the Laguna Treatment Plant for Cotati Creek Critters in March. It is already full, but if there is sufficient interest, we can organize another at a later date. Contact jenny@creeks.cotati.info for information.