



## The Scoop on *Poop* and Other Stinky Problems

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At the very beginning of *Pond Scum and Agnes Pflumm*, you'll find this quote by R.Buckminster Fuller:

**THERE IS ONE OUTSTANDINGLY IMPORTANT FACT REGARDING  
SPACESHIP EARTH –  
AND THAT IS THAT NO INSTRUCTION BOOK CAME WITH IT.**

Now, imagine for a moment that you are the chief sewage engineer for a county of 330,000 people on Spaceship Earth. That means you've got 330,000 people going to the bathroom and flushing a toilet virtually every second of every day. You probably have over 1,500 miles of water mains and some 500 miles of sewer mains—not to mention a water treatment plant and probably at least two wastewater treatment plants to keep in working order. That's a LOT of **business!** The system's capacity is being stressed to the max, and you are the expert in The Science of Stink.

But even in this country, we have not always had sanitary sewage treatment available. For you historians out there, you should definitely check out **TRACKING DOWN THE ROOTS OF OUR SANITARY SEWERS** [online](#). Compiled by Jon C. Schladweiler of the Arizona Water and Pollution Control Association, it will teach you

about everything from the origin of manholes to why gentlemen escorting ladies began the practice of always walking on the street edge of a sidewalk.

BUT, let's say you DO live in a city which takes care of getting rid of your, um, human waste products. How does all the STUFF get from homes and businesses to the wastewater treatment plant? Because you're an expert, you know that sewage removal pipes are nearly always built alongside a stream, following the natural gradient, or slope, of the land. The problem is hugely difficult, however, when you live in a completely flat area like New Orleans because "the stuff" will only flow downhill.

Savvy engineers like yourself have figured out a way around this problem by building what are called **SEWAGE LIFT STATIONS** to pump the sewage up to higher level.

These usually work quite well, except when they don't. In older cities like Charleston, SC, and New Orleans, LA, where the sewer pipes carry BOTH rainwater and wastewater - a huge rain together with a high tide can spell big TROUBLE, as the lift station pumps can be temporarily overwhelmed. This triggers a backflow valve to open, and the excess "business" goes straight into the nearby stream or even into the streets, as it did in New Orleans after Hurricane Katrina. This is called a **COMBINED SEWAGE OVERFLOW**, OR **CSO** - a very **STINKY** problem indeed.

The same thing can happen on a smaller scale if *anything* clogs / or jams up the pump. One of a lift station engineer's chief headaches are the excessive accumulations of **FOGs** (Fats, Oils, and Grease) which homeowners routinely pour down their kitchen drains.

## What about Stonecreek, USA?

In Chapter 8, Fred Winkybok, chief sewage engineer for Stonecreek, Fred Winkybok exclaims, "SOMEONE KEEPS FLUSHING THEIR UNDERWEAR DOWN THE TOILET! (This was actually a real problem in the community I used as a model for Stonecreek.)

Residential and commercial development in America is at an all time high. But everytime we clear an area and replace it with impervious surfaces like

concrete and asphalt, we create a stormwater runoff nightmare. Most developers in the last quarter of a century have put in **STORMWATER DETENTION PONDS** to handle the runoff, but now everyone's realizing that there's **JUST ONE SMALL PROBLEM: INSTEAD OF FILTERING OUT POLLUTION, THESE PONDS JUST COLLECT IT!** Go to the link above to learn how a community can create a constructed wetland together with the detention pond as **MUCH** better storm water management plan.

Pollution in the form of excess nutrients can cause **EUTROPHICATION** – a process in which excess nutrients entering a pond, lake, or slow-moving stream cause algae to start growing and reproducing like nobody's business, resulting



in stinky, slimy **POND SCUM** forming on the water's surface!

These excess nutrients are a form of **NONPOINT SOURCE POLLUTION**, and may come from many sources like:

- **Fertilizers** that run off from farms, golf courses and your lawns. (Learn about the importance of **creating buffer zones**.)
- **Sediments** that wash from unsecured building site, which can bind nutrients, heavy metals, and other pollutants.
- **Unfenced livestock** that regularly leave their **scat** in a stream, sewage overflows.
- **Failed septic tank systems**, seepage or overflow from which can result in high levels of **fecal coliform** in a stream or river. If the soil around your home is either too porous or not porous enough, a septic system will not work, and a permit to use one will not be granted. To learn how engineers conduct **soil percolation tests** to determine soil suitability, check out this site from the University of Minnesota.

And now YOU know ***THE SCOOP ON POOP AND OTHER STINKY PROBLEMS!***

