

## **Intro to Geology**

### **Lab 10: Wastewater treatment**

**Due: Two weeks from today at start of lab**

Today we visit the Upper Blackstone wastewater treatment facility, located just south of Holy Cross. This facility treats wastewater from Worcester and the surrounding areas, including what leaves Holy Cross via toilets and drains. We will take a tour of the plant and learn about how our local sewage treatment system works. Pay attention to our tour leader, take good notes, and ask questions! More information about the plant can be found online at <http://www.ubwpad.org/>.

**Your assignment: Write a report on what happens to wastewater from your house. 1200 word maximum (about 3 pages, 1.5 spaced). Feel free to include figures or diagrams in addition to the text.**

Use the internet, library, and/or personal communication (phone calls or email) to research what happens to wastewater from your home. Find out if your home is on a municipal sewer or individual septic system. If you don't know, whoever pays the bills at your house should. If you are going home for Thanksgiving Break, ask about it then.

**If your house is on a city sewer system, compare and contrast** your home-town (or region's) wastewater treatment system with the one in Worcester. Below is a non-exhaustive list of information you might look for and compare with Worcester:

- Name and location of the facility (you may want to include a map)
- History/age of the facility
- Bacteria, nitrogen, and phosphorus limits for treated and released water
- Number of people served
- Amount of sewage treated (per year, maximum daily capacity, etc.)
- Main components of treatment system (primary, secondary, tertiary treatment?)
- Where does the treated water go and how are the solids disposed of?
- Other interesting facts or issues related to the treatment system, pollution, updates etc.
- Any other environmental impacts of interest to you
- Consumer costs

Much of this information can probably be found online. Municipal (city) websites are often a good place to start. Cite any online sources (see next page), and be sure to use your own words in your report. Absolutely do not cut and paste from the websites—doing so is plagiarism. Also, people at wastewater treatment facilities are often happy to talk with their customers, so if you aren't finding what you need on the web, find a phone number and call.

**If your home is on an individual septic system, first describe how yours works.** Find out how old it is, the kind of service or maintenance it needs, what ultimately happens to the wastewater and solids that go into it, what type of upkeep is necessary, and what it costs your family to maintain. Again, cite any sources of information. **Then, compare and contrast how an individual septic system cleans water with Worcester's municipal wastewater treatment plant.** Obviously, the size, amount of water treated, and number of people served are going to be different; instead, look for similarities and differences in the treatment processes.

## **Citing sources**

Cite your source both in the text of your report, and in a Sources Cited section at the end of your report.

I am much less concerned with “proper” formatting than with making sure you do in fact cite your sources and you include all the appropriate information. Do I put the date or the title first? When do I put in the page numbers? Should I use footnotes or parenthetical citations? There is no one “right” way to do this, and frankly, every journal requires you to do your citations differently.

If you want more guidance than that, here is a good description of how to cite sources in scientific writing:

<http://www.csus.edu/indiv/k/kusnickj/geology140/citation.html>

Web sources: Include web page and date accessed. See the below website for specific formatting for different types of web sources.

[http://www.classzone.com/books/research\\_guide/page\\_build.cfm?content=citing\\_examples2&state=none](http://www.classzone.com/books/research_guide/page_build.cfm?content=citing_examples2&state=none)

Personal communications: Include the name of the person you communicated with, a title if relevant, and the date of communication, in a text or footnote citation only. Personal communications do not appear in reference lists because the information is not accessible to others.

### **Example:**

My mom’s house is on the Eden Prairie, Minnesota city sewer system. Water and sewer service together cost about \$30 a month. She said that it used to cost more when my brother and I were still in high school and taking 20-minute showers every day (Gloria Gran, personal communication, Nov. 15, 2011).

### **Compare/Contrast papers**

There are a variety of online resources that can help you get started with a compare/contrast paper. Here is an excellent description of this very common essay style from the UNC Writing Center:

<http://writingcenter.unc.edu/resources/handouts-demos/specific-writing-assignments/comparing-and-contrasting>

(All links are posted on Moodle under, “Lab 10 Wastewater links”)