

**Instructor Notes:**

Gaining access to a landfill may be your biggest challenge. I recommend contacting a staff geologist or hydrologist at your local pollution control agency as a start.

I have run this exercise three times as a half-day exercise and the field activities tend to run smoothly with each student getting a chance to participate in both sample and data collection from the various parts of the landfill remediation system. The exercise could also be run on a weekend to reduce time constraints depending on how close the landfill is to your institution (an hour away in my case).

I normally start with a brief review discussion of redox principles near the cascade aeration portion of the remediation system. Here, students have a clear visual reminder of the processes at work in the system and this tends to encourage student questions and discussion. Eh/pH diagrams are appropriate as well. Students also have many questions about closed landfills in general, so it pays to be prepared to address such questions.

It is critical that students understand proper water and sediment sample collection techniques, especially if the goal is to measure trace elements in the samples. The most recent group I brought on this trip were well-prepared in this regard, having learned how to properly collect water samples from wells in a previous field exercise. If your students have not had this training, plan to devote time to do this.

The simple test kits (we use LaMotte brand kits) are nice for a rapid measure of some important contaminants such as Pb, Hg, and As. However, I recommend following this up with a more rigorous measurement in the laboratory.

Once all data and samples have been collected it is nice to use a portable whiteboard so that students can post their data so that students can use it to begin responding to the final discussion questions on the drive back to campus.

Students frequently mention this activity as one of the highlights of the course on their evaluations.