Session: How do water flows interact with a bed made of sand? A day at the St. Anthony Falls Lab **Sedimentology and Stratigraphy**	**Materials needed:** • **Velocity probes** • **Tape measures** • **Rulers** • **Overhead material** • **Tape** • **Vis-à-vis markers** • **Large pad of paper** • **Stopwatches** • **Calculator**

Goals of the session:

- **Students should be able to explain what happens to a sand bed as a unidirectional water flow above it is increased in velocity and/or depth.**
- **Students should be able to explain what happens to a sand bed as wave height, wavelength, and wave period change.**
- **Students should be able to relate these explanations to features encountered in clastic sedimentary rocks.**

Estimated time	**Session outline**
	1. Unidirectional flows a. Work up in velocity b. What should we take note of? c. At ripples: make some synthetic x-strat d. What would unidirectional flows produce in the rock record? 2. Oscillatory flows a. What can we control in the experiment? b. What more should we take note of? c. Pose the question: what would oscillatory flows produce in the sed record?

Session notes

- Point out that you have sheets of paper for note-taking. There will be a lot of discussion and you'll need to take notes.

Homework/write-up

Using your observations from today's lab, respond to the following in a well-written, 2-3 page write-up.

- **Explain what happens to a sand bed as a unidirectional water flow above it is increases in velocity.**
- **Explain what happens to a sand bed as wave height, wavelength, and wave period change.**
- **Relate these explanations to features encountered in clastic sedimentary rocks.**

GEOL 320, Sedimentology and Stratigraphy
How do water flows interact with a bed made of sand?
A day at the St. Anthony Falls Lab

Today we will be using one flume (an open-topped, man-made channel) and one tank with a wave generator to answer the question posed above. The idea is to have you come away from this lab with a strong sense of how moving water interacts with a sand bed and what this implies for understanding sedimentary rocks.

Playing with a flume

For the first set of observations/experiments, we will be running a unidirectional (one-way) water flow over a sand bed. We will start with a low velocity flow and gradually increase its velocity. We might also change flow depth and the tilt of the flume.

1. As a group, let's make a list of some of the things we might look for and measure as we do our experiment:

Playing with a wave tank

For the second set of observations/experiments, we will be running an oscillatory (bi-directional, two-way, etc.) flow over a sand bed.

2. What variables can we control in this experiment?

3. Once again, as a group, let's make a list of some of the things we might look for and measure as we do our experiment (in addition to the things we noted above):