CIVL 1112 – Assignment #3 Name: _____

Objective

The primary purpose of this assignment is to familiarize yourself with the Excel spreadsheet program and develop a tool to help you estimate the yearly cost of operating your project treatment system.

Part 1. Compute the yearly costs of a full-size water treatment system based (WTS) on our prototype WTS work in the lab. Use the cost model for the full-scaled WTS as described in the class notes. To familiarize yourself with the computational procedure by hand, estimate the costs associated with a prototype treatment system with the following characteristics:

- flowrate into the system of 800 ml/min
- system run time of 60 minutes
- the filter consists of 4 inches of anthracite and 4 inches of filter sand
- coagulant dosage of 35 mg/l
- the prototype sedimentation tank has 4 active chambers

Part 2. Develop a *spreadsheet* to estimate the yearly costs of a full-size water treatment system. Use the cost model for the full-scaled WTS as described in the class notes. Check your spreadsheet with the results from Part 1 and with the following prototype treatment system:

- flowrate into the system of 900 ml/min
- system run time of 55 minutes
- the filter consists of 6 inches of anthracite and 2 inches of filter sand
- coagulant dosage of 60 mg/l
- the prototype sedimentation tank has 2 active chambers

Part 3. Use your cost spreadsheet developed in Part 2 to estimate the yearly costs of the prototype WTS runs from the lab. Tabulate your WTS cost data by flowrate, and the number of sedimentation tanks used in the prototype runs, and then construct a graph from the data.

Part 4. Read Chapters 5 and 6 in "*A Mind for Numbers*" by Barbara Oakley.