**Memorandum**

**For: Professor Deborah Sills**

**From: Stephanie Merenbach**

**Subject: Laboratory 3 Part II Deliverables – Chlordane Sorption**

**Date: September 24, 2013**

**Objective**

With the data collected from the laboratory study a model is fitted to a sorption isotherm. This determination will be used to design an initial treatment plan until further tests can be conducted.

**Methods**

Using the software program KaleidaGraph, two different isotherm models are tested to determine the best fit for the collected laboratory data. The first model is a linear model, described in Eq. 5 and the second is a Freundlich model described in Eq. 6.

q = KC (5)

q = KC1/n (6)

where q = mass of adsorbate adsorbed per mass of adsorbent at equilibrium (mg/g),

C = concentration of adsorbate in the aqueous phase at equilibrium (mg/L),

K = Freundlich isotherm soil-water partition coefficient((mg/g)(L/mg)), and

1/n = Freundlich isotherm intensity parameter (unitless).

Between these two models, the one determined to fit the data better will be used. The model selected will be chosen through visual inspection of both figures.

**Results and Discussion**

It was found that the Freundlich model was a much better fit for the laboratory data collected. This could be determined easily through visual inspection upon seeing that the data did not have a linear relationship.

Figure 1. Concentration of chlordane dissolved in aqueous solution (q) vs. concentration of sorbed chlordane (C). The circles indicate data collected while the solid line indicates the Freundlich model.

From this model a preliminary treatment plan can be put into place.