**Memorandum**

To: Deborah Sills, Ph.D.

From: Dylan Cowell

Date: September 24, 2013

Re: Determination of Isotherm Parameters

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**OBJECTIVE**

The purpose of this experiment was to fit the collected sorption data to either a linear or Freundlich isotherm and to determine the parameters of the fitted equation.

**METHODS**

Sorption data of dissolved chlordane concentration (in mg/L) versus adsorbed chlordane concentration (in mg/[g GAC]) was obtained and inputted into KaleidaGraph. The data was then fit with a linear isotherm model and a Freundlich isotherm model, and the two were compared visually to determine which had the better fit to the data. Once the proper isotherm model was determined, a plot of the data points and the curve was created, and the isotherm parameters were reported.

**RESULTS AND DISCUSSION**

Visually, it was apparent that the Freundlich isotherm model was the best fit for the obtained data points. The Freundlich isotherm solid-water partition coefficient (K) is 245 (mg/g)(L/mg). The Freundlich isotherm intensity parameter (1/n) is 0.4. These parameters fit the model shown below.

The plot with the data points and the fitted isotherm model is shown below, as Figure 1.

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| **Figure 1.** Sorption data of dissolved chlordane concentration versus adsorbed chlordane concentration, with the fitted Freundlich isotherm model. |