**Memorandum**

Date: 9/24/2013

To: Mr. Co-Worker

From: Jonathan Drouin

Re: Sorption Data fit to the Freundlich Isotherm



**Objective:**

The found Sorption Data was to be plotted and then fit with either the linear isotherm or the Freundlich Isotherm to find an appropriate K-value for the data. The data was used to figure out whether treating the water with granulated activated carbon (GAC) would reduce the amount of chlordane concentrations in the water below the allowed 2 ppb level.

**Methods:**

With the help of the program KaleidaGraph, the data was fit to the two different isotherm models. After the best fit was determined, the K-value was taken as the slope of the sorption reaction. The 1/n value is also needed.

**Results and Discussion:**

It was determined that the Freundlich Isotherm fit the data better than the linear isotherm. The data was not linear, with the data making a concave up curve. The curve implies that the data is best fit by a non-linear isotherm. The Freundlich Isotherm fit the data very closely as seen below in Figure 1 below, with an R-value of 1. The K-value found from the fit was 285 L/g. A positive K-value implies that as the mass of the adsorbate adsorbed per mass of adsorbent goes up so does the aqueous concentration of the adsorbate. The 1/n value found was 1/.4, which equals 2.5.



**Figure 1:** A plot of the concentration of adsorbate in the aqueous phase against the mass of adsorbate adsorbed per mass of adsorbent. A line is fitted to the data with a K-value of 285 (L/g). The found unitless 1/n value was 2.5.