Field Trip Assignment

Feedback for the Principle of Method

1. The *Principle of Method* is NOT the procedure. Do not include concentrations, volumes, masses. Instead, this section outlines the theory (or principles) that explain how the concentration of the analyte is determined. This includes:

    a. What measured quantities are needed to determine the analyte concentration. You should not report their values (i.e., the actual volume, mass or concentration) in the Principle of Method section, just identify what is important and used in the determination of analyte concentration.
    b. Balanced chemical reactions, and an explanation of why certain reagents are needed in the analysis and if they are added in excess.
    c. For volumetric analysis, what is the stoichiometry of the reactions that relate analyte concentration to titrant concentration? For example, in the DO titration you are counting the moles of O_2 in the sample, by titrating the liberated I_2 with $S_2O_3^{2-}$ (thiosulfate). How is the volume of titrant related to the amount of O_2 present in the original sample? , What is the chemistry of indicators that are used for endpoint determinations?
    d. For spectrophotometric techniques, the colorizing agents and if they are added in excess. What property is being measured (i.e., light intensity) and what property is proportional to concentration and allows you to create a calibration curve (ie. Absorbance).
    e. If you are using an instrument, such as a spectrophotometer, provide the basic principles of how it works (i.e., light source, wavelength selector, slit, sample and detector). A basic overview that shows you understand the fundamentals of the instrument you are using (i.e., The detector, typically a photomultiplier tube, measures light intensity. By measuring the light intensity transmitted through the sample (I_t) and the intensity without the absorbing sample present (I_o), the instrument determines the absorbance ($A = -\log I_t/I_o$). Since the absorbance is proportional to the concentration through Beer's Law ($A = \varepsilon\, l\, c$), standard solutions containing known amount of analyte can be used to generate a calibration curve……

2. This is not an English class, but written communication is an important and necessary skill. Use using proper sentences, punctuation, and spelling. Lab reports (and all technical writing) should be succinctly written using precise language. For example, instead of saying "the amount of titrant added…" say "the volume of titrant added…" Amount could be a mass or a volume or moles, so make it clear to the reader what you mean. The correct word choice demonstrates your understanding and will lead to better grades.

3. Cite references using [#] in the body of the text numbered in the order in which they appear. List cited references as endnotes at the end of your report following the citation format used in the Lab Manual.