**APPENDIX B**

**Biology 106**

**Introductory Organismal Biology**

**Fall 2013**

**Guidelines for Salmon and Dams Conference Report**

**Due Tuesday Dec 3, 2013**

**(bring to the joint conference with the Political Science class)**

The WSU Vancouver faculty has a tradition of connecting our courses to issues that are locally and regionally relevant, often following a theme of “Global Change in a Local Context.” Throughout Biology 106 we have been discussing biological concepts that are applicable to a wide range of organisms living in many kinds of environments on Earth. However, most (if not all) of the topics we have discussed in this course also have relevance to living things and habitats in the Pacific Northwest. Therefore, as a culminating assignment, I would like you to consider an issue in which the biology and ecology of salmon, an iconic organism for our region, intersects with human and social systems, and specifically how scientific understanding of salmon biology may inform and influence management decisions.

**The issue:**

The Cowlitz River is a major tributary of the Columbia River, and has historically supported large seasonal runs of several Pacific salmon species and steelhead trout. Tacoma Public Utilities, the city-owned company that provides electricity service to Tacoma and its surrounding area, owns and operates two hydroelectric dams that were built in the 1960’s on the Cowlitz River.

All utility-owned hydroelectric dams in the United States are under the jurisdiction of the Federal Energy Regulatory Commission (FERC), and must be licensed to ensure the dams are operated safely and with sufficient environmental protections and resource improvements. Dam licenses are issues for up to 30-50 years. When the hydropower dam license expires, the dam owner must renew it through an administrative process called re-licensing.

In the re-licensing process, the FERC most consider not only the power generation potential of a river, but also give equal consideration to energy conservation, protection of fish and wildlife, protection of recreational activities, and preservation of environmental quality. Dams may be re-licensed “as is” or they may be re-licensed after modifications that improve protections for fish and wildlife. Dams may also fail to receive re-licensing approval, which may necessitate substantial modification or complete dam removal.

**The question to consider:**

Should the Federal Energy Regulatory Commission (FERC) relicense the hydroelectric dams on the Cowlitz River? If so, should the FERC require modifications of the dams?

**Your assignment:**

**Write a technical report that consists of two parts: 1) a three-page, double-spaced background information “white paper” that informs decision-makers about the biology and ecology of salmon, including their life history and migration patterns, and the impacts of dams on salmon biology and behavior (see specific questions to address at the end of this document); and 2) a list of arguments in favor of and in opposition to relicensing of dams on the Cowlitz River.** This list must include at least three (3) arguments on each side of the issue, including a detailed justification for each argument (100-word minimum for each justification).

**At the joint conference on Dec 3, each Biology 106 student will bring:**

 **• TWO COPIES of this list of arguments, and**

 **• ONE COPY of the background paper on salmon biology and ecology, written from the perspective of their assigned group of biologists.**

The paper and one copy of the arguments will be due at the beginning of the joint conference. The other copy of arguments you will bring to a small group of other students for discussion. These groups will consist of representatives from each “expert” group identified in the Biology 106 and Political Science 430 classes. The intent of the group discussions is to hear from each “expert” perspective about the research question. This group will be providing their information, ideas, and recommendations to the FERC. However, the discussion is NOT meant to be a debate, and they are not intended to be a time to convince others of your (or your stakeholder’s) own position. In the last 25-30 minutes of the class period, each student will write a “personal” statement summarizing the group’s discussion, any recommendation(s) that emerged, and then make a personal decision about the issue.

The Issues Conference grade will be based on the background paper, the initial list of arguments and the justifications described (60% of the grade), and on the description of the group views, and the justification for the final decision (40% of the grade). I will NOT be judging students based on their ultimate decision, but on the arguments given and the description of how each student arrived at their decision.

**Questions to address in the background information “white paper” for decision-makers (3 pages MAX):**

• Describe your “expert” group perspective (Department of Fish and Wildlife, etc.) and the particular questions, topics and data/information you researched.

• For each question/topic, please describe the data you found and your interpretation of its significance and relevance to the research question.

• Write your background statement as if you were going to present this paper to the FERC commission – it should be readable by an educated person knowledgeable about the Cowlitz River, but who is not expert in your area. It should include citations to your information and references.

Hopefully your report would already include information about at least one species of Pacific salmon that is found in the Cowlitz, but please also include information related to the 3 bullets below in your statement. I should be able to read your statement and see that you are knowledgeable about the life history of Pacific salmon, that you are aware of the timing of different life stages in the Cowlitz/Columbia River, and that you have some idea of the impacts of the Cowlitz dams and/or dams in general on salmon.

• Provide a description of the biology and life history of ONE example Pacific salmon species that is found in the Cowlitz River (either Chinook salmon *Oncorhynchus tshawytscha* or Coho salmon *Oncorhynchus kisutch*). This should include information on their size and appearance, geographic range, diet, and reproduction.

• Provide a description of the migration behavior of your chosen species of Pacific salmon, including when it is found in the Cowlitz River, the lower Columbia River estuary, and the ocean.

• Describe the status of Pacific salmon stocks in the Cowlitz River (e.g. how many salmon currently return to spawn, etc.).

You can use both websites and published literature as your resources. Please be sure to provide a detailed Bibliography (but this is NOT part of the three pages). Please follow the citation style described in the guidelines for Paper #1.

**Bio 106 – PolS 430**

**Socio-Environmental Synthesis Teaching Study**

**Cowlitz River Dam Re-Licensing Conference**

**After participating in the mixed constituency group discussions and conference, please share your own opinions about the dam re-licensing issue, addressing the major questions below. Please limit your statement to 3 pages double-spaced (plus your revised concept map).**

**This essay is due Thursday December 5 at 1:25p in LIB 265, at our next joint meeting.**

**1. Post-synthesis system map:**

a) Re-draw your original “pre-synthesis” system map based on any new information or ideas you have generated since you drew the first map.

b) Summarize in prose form any changes you made to your original concept map.

c) What were the most important reasons why you made any revisions to your original concept map? (e.g. found new information during research, conversations with other stakeholders, etc.)

**2. Mixed group results:**

a) What were your group’s main arguments FOR and AGAINST dam re-licensing?

b) What were the most commonly recommended modifications to the dams that would allow re-licensing?

c) Describe the overall reasoning for the group’s evaluation of the arguments for and against dam re-licensing.

**3. Your opinion:**

a) What do YOU consider to be the most compelling arguments in SUPPORT of dam re-licensing, as they currently exist? Why?

b) What do YOU consider to be the most compelling arguments AGAINST dam re-licensing? Why? Would you recommend any modifications to the dams that would allow them to be re-licensed?

c) If your arguments differ from what your group decided, why is your list different?

d) What is your vote with regard to dam re-licensing? Are you in support of or against it?

e) How did what you learned in the course and/or what you researched for the background paper and/or what you discussed in your group influence your opinion?