The PNWIS 2004 UNIVERSITY STUDENT ENVIRONMENTAL CHALLENGE PROBLEM

Lewis and Clark - Following the Corps of Discovery; Integrating our Environmental Heritage and our Economic Future".

The Purpose

The Environmental Challenge gives teams the opportunity to develop solutions to a mock environmental problem and have the experience of presenting their solution to a panel of environmental professionals teams to present solutions to the problem. We do not give you a lot of numbers to crunch. We are more interested to hear about the issues involved, how you interpreted the problem, how you got to your conclusions, and how well you can communicate your thoughts. We want you to have fun! This exercise gives us all a chance to participate and gets the professionals of tomorrow to interact with the professionals of today.

The Problem

In this problem your team represents a group of consultants who the owners have ask to help them deal with "issues". Your team might be all engineers in real life but in this Problem you morph into whatever and whoever you think that you need to "win" the competition.

A new multi-use building is to be built in Portland that will be principally used by a biotech company doing basic research on cloning. The building is to be located on a 5-acre parcel of land adjacent to the Willamette River. The 20-story building will be mixed use with company office/research facilities occupying the 2nd through 12 floors. The 1st floor will be commercial (shops, restaurants, etc) and the upper eight floors will be apartments/townhouses.

Because of its location, the City will allow no storm water runoff, there must be a 50-foot set back from the river, and there must be a greenway. The building developers, who will also be the owners, need to use as much of the property as they can to maximize lease-able space, but the City also has a requirement for 20% of the property being open space.

A critical element to the development is that an uninterruptible supply of power must be available to keep the substantial refrigeration system in the cloning laboratories operating. Rumor has it that hair samples of Lewis, Clark, and Sacagawea that were

recently discovered in the Smithsonian Museum and will be stored on site. Once they have been processed cannot be unfrozen. Along with the refrigerants, the biotech company uses a number of other chemicals in both small and large quantities. They haven't yet determined the exact quantities, but know that a number of the chemicals are volatiles and that solid and liquid wastes will be generated. The main chemicals are listed in Appendix A.

Backers of the building (a rich software manufacturer) require that the building be constructed as sustainable as possible using the LEEDs standards when and where possible.

The Expectations

Numbers are not what is most important – logic train, process, conceptualizations, and creativity are key. And then you have to present your thoughts in a public forum. Clarity of vision and logic of presentation are critical. Remember you can come up with assumptions, but they need to be able to pass the straight face test. This is like the real world!

We have expectations with regard to the Proposal (see below) and the Presentation (see below). The **Proposal** expectations include identifying team member by name and the role that they are going to have in the presentation (ie Patty Smith is going to be engineer and will address waste issues, Elvis Castello is going to be our 'architect', and Grace Slick is going to be out shaman etc, - you put in the disciplines that you thing you need). In the proposal you should have an outline of the approach that you are going to take and the issues that you will be discussing. Minimally you should address the air and waste issues and considerations with regard to sustainability (during construction and operation – ie. the power needs.) Remember you will only have a maximum time of 20 minutes to present you plan and you have a two page limit for the proposal submittal.

For the **Presentation,** your team will need to demonstrate your understanding of the issues that you addressed in your proposal. Sustainable approaches for these and other site issues are of great interest to the owners. Winning will hinge on approach, clarity, and creativity.

The Proposal

Each team will develop a proposal for problem solution to be submitted on the first day of the conference, November 3. The proposal should include key elements such as areas of expertise, issues to be addressed, and the general approach to the project. The proposal should be in summary form and limited to two pages. The proposal will be a factor in the competition..

The Presentation

Teams should arrive at the conference on the 3rd of November. Presentation of the team solutions to the problem will be held on Friday morning the 5th of November. When we know how many schools will be presenting we will develop a schedule, but figure on the presentations beginning at 8:30 AM. PNWIS will have a projector and a laptop for your use in the presentations should you need one. Plan on a 15 minute presentation with 5 minutes of questions and answers.

The Tweak

No matter how much you do and know, in real life things that are unexpected can and do occur. To this end you should expect when you pick up your registration package that there might be some late breaking information that might alter your approach and require your plan to evolve. The problem and the tweak will require that you find and talk to "experts" and attend the sessions for answers and important information.

Appendix A Chemical List

Compressed gases (H2, N2, He), acids (HCl, HF, H2SO4, HNO3, PO4), some metal derivatives (cupric oxide), and volatile/toxics (aniline, dichlorobenzene, dichloromethane, and ammonia)

Acetone
Benzene
t-Butylbenzene
Butyraldehyde
Chloroform
Chloromethane
Diethylether
Dimethylformamide
Dioxane, 1,4-
Ethylbenzene
Formaldehyde
n-Hexane
Methanol
Methylene Chloride
Toulene
Trichloroethane, 1,1,1-
Trichloroethylene
Trichlorofluoromethane
Xylenes
Tritium (H-3)
Iodine-125