One of the main topics I have been stressing over the past few weeks is ‘management-oriented’ perspectives – i.e., the different levels of technical detail for managers versus engineers / analysts. As you will see, this is a ‘management oriented’ final.

Question 1 (10 pts, 1 page max):

Task: Draw a concept or hierarchical diagram displaying the major concepts in infrastructure management as discussed, read, and presented in class this semester.

Note this is not a “contest” to see who can fit the most concepts onto a diagram – you should organize your descriptions of concepts effectively so that you have no more than 15 concepts. These should be ‘general’ and applicable to all types of infrastructure, not specific like ‘pavement management’. [I would suggest using Visio or PowerPoint here, but you can draw it by hand]

Question 2 (15 pts, 2-3 pages max):

Now assume that instead of preparing a course for undergraduate and graduate students, you are asked to give a 2-day ‘executive education’ course for Pennsylvania Department of Transportation employees who are unfamiliar with infrastructure management. Which concepts would you fit into the course?

Task: Make a syllabus and set of descriptions for this course. Assume 6 hours of lectures per day.

Question 3 (25 pts, 3 page max):

Attached is a dataset on dams in Pennsylvania (from the US Army Corps of Engineers National Inventory of Dams). A brief description of the data records is provided at the bottom of this question.

a) Compare Allegheny County dams to the rest of the state (Pennsylvania) from the database in terms of dam type, purposes, year, hazard, and EAP. You are supposed to discuss how dams in our county are like or unlike the rest. Make sure you come up with ways to visualize these differences.

b) There seem to be a significant number of 'High Hazard' dams in the state and also in the County. This seems like a big problem – is it surprising? Discuss the seriousness of this problem, and whether this value adequately reflects a performance measure representing public concern about dams.

c) Use the Excel 'data mining' macro (at http://www.geocities.com/adotsaha/CTree/CtreeinExcel.html) to see if you can predict the hazard category for dams in the state. Report on the applicability of using the data mining tool for this purpose for this category. Would a different method be more appropriate?

Required Background Readings:

http://crunch.tec.army.mil/nid/webpages/niddatadictionary.html (Data Dictionary of fields and abbreviations used)