SYST 490
Fall

Homework #1: Critical Reading

Describe each of the elements of a System Engineering Design and Analysis (in the table below) for analysis described in the technical paper **Turbidity Reduction for the West and Rhode Rivers** (Askvig, Bode, Cushing and Mullery, 2011).

Notes:
1. Read the paper first, then complete the table.
2. Keep in mind, the paper is not perfect and elements of an SED&A may be incomplete or missing. If an element is missing, note that it is missing and describe what you think should have been done.
3. Keep descriptions short. Bullet points or short paragraphs
4. List the source of your description by page number and paragraph no. (e.g. page 1, para 1,2,3 and 4)
5. Use bullets, short sentences and short paragraphs. No Victorian novels, please.

Q1: What "physical" processes were studied in this design and analysis? What laws of engineering were used to model each process?

A1:

1) *Tidal Flow of Estuary (conservation of mass)*
2) *Dilution (assumed instantaneous and homogeneous)*
3) *Bi-valve filtering (rate equation)*
4) *Bi-valve reproduction and sustainability (not modeled)*
5) *Benthic growth/decay (complex biological processes modeled in VIMS)*

Q2: What is the context of the study?
Q3: Who are the major stakeholders and what are their objectives? Are any of their objectives conflicting?
Q4: What is the Problem Statement? (i.e. what is the gap)?
Q5: What are the proposed solutions?
Q6: What simulation/model was developed to tradeoff proposed solutions?
Q7: What was the Design of Experiment (DOE)?
Q8: What were the results/recommendations?