Limitations of regulatory and community decision-making

I. Introduction
   a. Who am I
      i. DEQ – WB – GL AOC program – attempts holistic environmental management addressing a range of issues from contaminants in fish to degraded habitat to *E.coli* problems to impacts to drinking water. My job is non regulatory and coordinate with community groups and federal and state agency staff ways to find funding, implement remedial actions, monitoring, and restoration, ultimately leading towards restoring Areas of Concern.
      ii. Grad student – MSU – CANR - CARRS - My research is specifically focused primarily on environmental problems, including watershed management and ecosystem restoration with an emphasis on engaging local communities in the decision making process.
   b. Why am I here?
      i. Because of a policy issue in an AOC, I had the opportunity to work with Frank and discuss my interests in environmental policy and decision analysis. Seemed to be a good fit with current EAC project…so here I am!
      ii. Since Frank's presentation is more about the overall (BIG) picture, he asked me to come up with a specific example that cuts through these media specific boundaries and a great example is dredging. I am using dredging as an example because usually is very complex, with lots of technical uncertainties, difficult policy issues, and perplexing value trade-offs.
   c. Overview of presentation
      i. Discuss various roles and interaction among the divisions and stakeholders (LWMD, WHMD, WB, RRD, and applicant.)
      ii. Provide a scenario of a community sponsored dredging project.
      iii. Walk through the **one** typical decision making process within the current regulatory structure regarding whether testing of dredge spoils is required and briefly discuss the community role in the process.
      iv. End with a few of my interests regarding decision analysis and behavioral decision research and hopefully provide a little food for thought of other limitations that impact the decision making process beyond our regulatory structure. This may provide a bridge to future topics we'll be discussing with the EAC

II. General DM process
   a. Dredging overview – Roles and Interactions
      i. Dredging is extremely complex and there are obviously considerable amount of technical uncertainties, difficult policy issues and certainly different priorities from the various stakeholders involved.
      ii. One way to look at it is: There are multiple stakeholders all sitting at a table all with different agendas and priorities. **(6 stakeholders slide)**
         1. LWMD is concerned about the physical impacts of dredging
         2. WB is concerned about impacts of dredging on water quality
         3. WHMD is concerned with the disposal of dredge spoils
         4. RRD is concerned with potentially creating contaminated sites
         5. Applicant is concerned with cost and effectiveness

6. Affected interests (e.g. community, user group such as boaters)

iii. The situation presents difficulties and hence the agency has, over time, made a series of adjustments in order to address these difficulties
    1. Adjustments – see in dredging testing flow chart
    2. Ebb and flow – problem comes and goes with rising and falling GL water levels – as it becomes an issue we need to address, the water levels come up, the urgency recedes; the cycle continues

iv. Throughout the rest of the presentation, I will pose several questions; mostly rhetorical, but intended to encourage you to think about how the agency has adjusted to the pressure and competing concerns, but also to think about how they fit into the big picture. **Specifically, have these adjustments addressed the media specific regulatory structure and do they adequately address higher level policy issues or site-specific environmental and economic considerations?**

v. Acknowledge that LWMD is put under a lot of pressure and are often the focal point since is primary division responsible for permitting this activity. In order to complete their task, they have to be able to accommodate concerns of other divisions.

vi. Therefore, this is not in any way a criticism of our practices, rather use dredging as an scenario because of these internal constraints that all can relate to so Frank can get his conceptual points across.

b. Example – Brief overview of system/site and plans for dredging **(Map slide)**
    i. A River flows through a small town which was mostly industrial land use near the confluence of the river and Lake Michigan.
    ii. The watershed is primarily agricultural with a few residential areas and a few industries remain up river.
    iii. The city wants to enhance and redevelop the river to attract more tourists and revitalize the river area so that it is more attractive to new businesses.
    iv. Firm, fixed budget
    v. The city's current plan is to dredge an area near a public boat launch site and an area along the park to provide access to the marina (privately owned).
    vi. This area has become very shallow over the past 5 years.
    vii. Community controversy
        1. Cost
        2. Concerns about impact to spawning habitat
        3. Disposal options

c. What is the process – Is testing required?
    i. Assume City is working with contractor and already knows that a permit is required from LWMD
    ii. Define project **(LWMD flowchart) -** What information do I need to gather for all decisions DEQ needs to make?
        1. Is it contaminated?
            a. Based on information we know, it could be
            b. It's not listed in CIWPIS and it is not in an AOC
            c. District staff are not specifically aware of contamination – how much do they need to know? Need data or just suspicion?
        2. How many cubic yards are proposed to be dredged?
            a. More than 1000 CY? (use 12,000 cy as example)

b. But why is 1000 important?
c. Example of adjustment – minor project, potential small impact to environment

3. Does applicant have testing data less than 10 years old which shows sediments are clean?
    a. How much data is sufficient?
        i. How many samples are needed for 12k cy? What about cost?
        ii. Example: 6 samples for first 10k + 1 for each additional 10k = 7 samples total. Does that seem like a good amount? Compared to RRD sampling procedures would require 75 samples (15 for first 2000; 6 for 1000 after)
        iii. Can an individual sample or do you need an expert?
    b. Why is 10 years relevant?
        i. Record keeping
        ii. Assume clean then, should be clean now
    c. Another example of adjustment/accommodation
        i. Reducing applicants cost by limiting number of samples, allowing existing data to be used.
        ii. But is that addressing the big picture? What if contamination occurred within the last 10 years? What if sampling missed a pocket of contamination?
        iii. What about what is exposed once dredged?
4. Where will the material be disposed (landfill, CDF, or upland with clean cover and deed restriction)?
    a. Why is it OK to dispose of material upland with a deed restriction with no testing?
    b. What happens if a deed restriction is not complied with or how do we know?
    c. Do we have proof that they have been recorded with the register of deeds?
    d. Who is responsible for keeping track of deed restrictions? LWMD or WHMD?
    e. Adjustment:
        i. better to have out of water
        ii. feasible option for applicant $
        iii. What if applicant wants to remove the deed restriction?
        iv. Do they have to follow other testing protocols (7 vs. 75 samples)?

iii. Who is responsible for regulating this activity?
1. WB oversees the impacts of dredging on water quality
2. WHMD regulates the disposal of dredge spoils
3. RRD is responsible for contaminated sites
4. The LWMD regulates the physical impacts of dredging
5. Adjustment– avoid too many cooks in the kitchen
    a. LWMD primary responsibility

b. Notifies permittee that other permits may be required (ex. NPDES permit for dewatering to surface water from WB)
c. Should there be someone who oversees all aspects of the permit from physical dredging, placement of dredge spoils, register deed, maintain spoils appropriately, and make sure all required permits were obtained? But should that be LWMD responsibility? Who should do this?

d. What if this activity was managed under another authority (solid waste)?
   i. Part 115 allows for placement of potentially contaminated dredge spoils upland which could (does not require testing if placing upland with deed restriction) create a "facility" that must be remediated under Part 201.
   ii. Adjustment:
      1. This is in recognition that if the dredging is not done, the contaminants will remain in the water and continue to be available to the aquatic ecosystem.
      2. Can consider it a 'permitted release' under Part 201.
      3. Is this an acceptable risk allowing potentially contaminated sediments to be placed upland with clean cover and deed restriction? Even at the "Park"?
      4. Is this an appropriate balance between environmental protection and the need to support Michigan's recreational boating economy by not making dredge projects cost prohibitive?

e. What about other considerations?
      1. Where is the sediment coming from?
      2. If it is contaminated, where did it come from?

f. Community desires – **(Map slide)**
   i. Given controversy, a public hearing was scheduled and DEQ staff learned about some of the issues
   ii. Community controversy
      1. Cost – fixed budget
         a. Some don't think justified at all – public funds used for private gain
         b. Some with different priorities of what and where should be dredged
      2. Concerns about impact to spawning habitat – affected interest groups
      3. Disposal options
         a. Upland of dredging in park
         b. Across river in vacant lot – undetermined development use
      4. Future cost to maintain – need to identify source and control first
   iii. What is the role of the DEQ? Should DEQ be more involved in the community decision making process?
      1. Help reduce risk and uncertainty? (spoils at park vs. other site)
      2. Should permit proceed given expressed concerns (impact spawning habitat) or require plans to include no impacts or not authorize dredging only from March 15 to August 31 due to critical spawning, migration, and/or recreation use periods? Does that seem fair?
      3. Did public hearing help with permitting decisions or does the public feel the hearing was meaningful? My experience in attending meetings like this is: agency staff come prepared to get

yelled at and not take it too personal and community members come prepared to try to complain about their own agenda (which may or may not be relevant to the issue at hand) and may leave feeling likely more frustrated than they did when they got there.

4. When does anyone look at this holistically? Who should?
5. What is the role of the community in the decision making process

III. My interests – I am not planning to go into much detail or claim that I actually know much about behavioral decision research or decision analysis. I just want to raise awareness that there are other limitations to our decision making structure beyond the media specific regulatory structure and any new model proposed should consider these types of limitations.

a. Behavioral decision research has shown consistently that "humans are quite bad at making complex, *unaided* decisions."[1] Researchers have shown that people use predictable and systematic biases and have difficulties with making rational decisions – trade offs between options
b. Judgmental Instinct to find easy or adequate options – especially for group decisions
c. Use predictable biases that often ignore or misprocess important information
d. Have insufficient or lack of ability to clarify objectives or create alternatives – could lead to good decision for wrong problem or miss an opportunity to use an innovative approach
e. Which leads to the assumption "that individuals will often **not** make informed, thoughtful choices about complex issues involving uncertainties and value trade-offs." [1] (Including both agency staff and community)
f. Given limitations of decision making, how might we improve decision making processes?
g. Given limitations of the regulatory and community decision-making framework, what does environmental management look like in the future?
h. How can agencies make more 'holistic' decisions that address these limitations? (beyond structure of public involvement process, agency culture, and even legitimate DM criteria, to include limitations of human DM)?

[1] McDaniels, Gregory, Fields. (1999). Democratizing Risk Management: Successful Public Involvement in Local Water Management Decisions. Risk Analysis. V 19. N. 3. P 497 – 510.