

A Competition for University Students

University students, can you solve...

The Environmental Challenge

Florida Section A&WMA 53rd Annual Conference

October 25-26, 2017

Tallahassee, Florida

PURPOSE

The Environmental Challenge gives student teams the opportunity to develop solutions to an environmental problem and present their solution to a panel of environmental professionals. We are very interested in hearing about how you interpreted the problem, the issues you identified, how you approach the problem, how you get to conclusions, and how well you can communicate and defend your thoughts and position. We want you to learn and have fun! This exercise gives us all a chance to participate and gives the professionals of tomorrow an opportunity to interact with the professionals of today.

PROBLEM

The 1972 amendments to the Federal Water Pollution Control Act added Section 303(d) to the federal Clean Water Act requiring states to establish a total maximum daily load (TMDL) program. The purpose of the TMDL program is to identify surface waters (lakes, streams, estuaries) within a state that are not meeting federally approved state surface water quality standards for a particular pollutant, for example total nitrogen or total phosphorus, and identify steps to reduce pollutant loading to the waterbody until it once again meets applicable water quality standards.

Florida has a sophisticated TMDL program and has adopted a rule (Chapter 62-303, Fla. Admin. Code) designed to identify those waters that do not meet applicable surface water quality standards and are in need of a TMDL. Under the Florida Watershed Restoration Act, Florida's Department of Environmental Protection (FDEP) may create a Basin Management Action Plan (BMAP) to implement a TMDL.

FDEP established a BMAP for the Lower St. Johns River (LSJR) to implement a TMDL to address nitrogen and phosphorus impairment in the LSJR. FDEP adopted a BMAP by formal agency order and assigned wasteload allocations and load allocations to stakeholders participating in the BMAP process. Stakeholders include cities, counties, community development districts, electric utilities, regulated industries (e.g. pulp mills, chemical plants) and large land developers. Local members of national environmental groups and interested citizens routinely attend and participate in FDEP BMAP workshops held by FDEP's BMAP staff.

You have been retained by FDEP as a private BMAP facilitator to resolve a serious dispute among the BMAP stakeholders prompted by a new industrial facility having applied for a permit to discharge treated wastewater into the LSJR. The new company, Applied Alchemy

Incorporated (AAI) uses state of the art computer assisted industrial processes to convert raw materials and base chemicals to specialty chemicals for private sector and university testing laboratories. To operate, AAI needs to apply for and receive a permit from FDEP under FDEP's EPA-approved NPDES permitting program.

AAI applied for its NPDES permit and disclosed in its permit application that treated wastewater from the AAI chemical facility, to be discharged to the LSJR, will include total nitrogen and total phosphorus. As required by FDEP, AAI published notice that FDEP had approved a draft permit finding that AAI had provided reasonable assurance that its discharge would not cause or contribute to violations of surface water standards.

Several stakeholders that have participated in the LSJR BMAP process for a number of years have filed comments objecting to the AAI permit application arguing that all wasteload allocations have been distributed and there are no more slices of nutrient pie to share with a new discharger. AAI has retained B. R. Smith who advised FDEP that he helped write FDEP's surface water quality standards back in 1978 and his client is entitled to an equitable apportionment of the pollution pie under the rule adopted by the old Florida Department of Environmental Regulation. Several environmental groups have filed comments in response to the notice of draft permit arguing that the AAI facility will discharge heavy metals into the LSJR which will bioaccumulate in fish and increase the risk of cancer in individuals that rely on fish from the river as a large part of their diet. FDEP has asked you to prepare a white paper summarizing the issues and advising FDEP staff whether it is technically and legally feasible to approve the AAI permit to discharge into the LSJR in light of the TMDL and BMAP.

TECHNICAL GUIDANCE

The TMDL program relies on the NPDES permitting system as a primary implementation tool, which in turn is a requirement of the federal Clean Water Act (CWA) and all must be consistent with the U.S. Constitution. What does the acronym "NPDES" represent? Does anyone have a right to pollute? Is the authorization to pollute granted by the NPDES permit based on a "first-come, first-serve" basis, or some other evaluation/allocation criteria? Is the load allocation forever? Does the permittee have a right to an allocation that they don't need or use?

1. Understand and read carefully the definitions contained in the rules. What is an "impaired water"? How does it relate to "water quality standards" and to "designated uses"? What are the laws and rules trying to protect?
2. What data, assumptions and considerations went into the process of determining that a water body segment was impaired initially? Has anything changed?
3. What assumptions and considerations went into determining the TMDL for the water body segment? What was the basis of the load allocation? Is water quality modeling an exact science? How should the TMDL account for uncertainty? Is the uncertainty a fixed value or can it change with time? What might cause a change in the uncertainty? How might this change the load allocation?
4. Does the water quality in the lower reaches of a river depend on pollutant loadings upstream? If so, should the TMDLs for the lower reaches be lower to account for the upstream loading or should the TMDLs for the upstream reaches be reduced to allow downstream loads? How does the concept of equitable abatement fit into the TMDL process?
5. How does bioaccumulation of heavy metals in fish relate to impairment of waters? What is the relationship between the concentration of heavy metals in fish tissue and cancer risk to humans? Is there an acceptable cancer risk? What assumptions and considerations go into the risk assessment?

These are just a few of the strategies and considerations that could be evaluated and incorporated into your arguments.

ASSIGNMENT

The project teams are to provide a proposal of its approach and strategies. The team must then present its proposal at the AWMA conference in a venue simulating a presentation to the FDEP and the stakeholders in a public forum. As noted above, the environment will simulate the public forum environment and a number of parties (both pro and con) are likely to be present.

EXPECTATIONS

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 effectively, the real world!

We have the following expectations with regard to both your Proposal and Presentation.

PROPOSAL

The proposal can be up to four 8 x 11" pages (not including the cover page) and must be 12 font and 1.5 spacing. Not meeting these requirements will negatively impact your scoring.

Expectations for the Proposal include identifying all team members by name and roles (e.g., "Rusty Steele" is going to be engineer and will address waste issues and "Laura Order" is going to be your attorney, etc. - put in disciplines you think will be needed). Persuasive writing is critical.

The Proposal **submission deadline is midnight EST, October 16th, 2017**, and shall be submitted to flawmaeci@gmail.com. Proposal quality will factor into competition judging.

PRESENTATION

Your team will need to demonstrate your understanding of the strategies that you addressed in your proposal. While faculty guidance may be sought, you **must** present an approach based on your own research and work. Winning will hinge on approach, clarity and creativity.

Presentations will be held on Wednesday, October 25th (the exact time to be announced). A final schedule of the team presentation order will be prepared once the total number of teams competing is known. Be present at least 20 minutes prior to meeting. A projector and laptop (with Microsoft Power Point) will be provided. Please bring a flash drive (memory stick) so your presentation can be loaded onto the laptop. You will be allowed a **maximum of 20 minutes** to present. After your presentation you must remain available to answer questions for up to 20 minutes.

The Challenge Event at the AWMA Conference

Your team will present the proposal in a public forum. The range of interests of the

expected attendees are varied. Your team should be capable to make technical and legal arguments to support your positions. Your team can build its arguments using all means available. Given your team is comprised of both legal, engineering and scientists, the team should confer and ensure that all of its arguments are sound.

At the presentation meeting, potential attendees may include:

1. The media
2. EPA officials
3. FDEP officials
4. concerned citizens
5. politicians
6. Non-governmental organizations

THE TWEAK

On October 20th a tweak will be emailed to the competing teams. This tweak will require the team to address an additional factor to the problem stated above.

You can email your questions regarding the Assignment and tweak.

flawmaeci@gmail.com

Significant questions and answers will be posted at www.flawma.com