MINNESOTA STATE ENVIROTHON

2012 Oral Presentation Scenario
Non-Point Source Pollution/ Low Impact Development

A major metropolitan area in central Minnesota is considering building a new stadium for professional athletic teams. At the same time, a large parcel of land that had been previously used for a munitions plant is being offered for redevelopment. It has been suggested that these two projects should work together.

The land being discussed consists of 1000 acres of land. Approximately 400 acres of that was previously covered by buildings, roads, and parking lots. The other 600 acres has oak woods, open grasslands, and marshes or other wetlands. A popular creek runs along one side of the previously developed land. Gravel roads and mowed trails wind through the natural area. The natural area is home to large populations of birds and other wildlife, and local authorities have advised this natural area be protected from development and the impacts associated with nearby development. The authorities have also indicated that reuse of the previously developed areas is desired, but must meet current environmental standards.

Soils in the previously developed area are classified as "urban complex" indicating the severe alterations from a natural state. The soils are severely compacted; most organic layers have been removed. Much fill material is present, including old concrete rubble and other non-organic fill. The vegetation that exists in the cracks between concrete is dominated by weeds.

The previous development was planned to drain directly into the Creek, without pre-treatment in holding ponds. The Creek is part of a recreation corridor, and is popular for canoeing and kayaking. The Creek enters the Mississippi River, just upstream of the drinking water intake for a large city.

The previous land tenants worked with hazardous chemicals on site, and the site has been declared a Superfund clean-up site.

Nearby land use includes major highways, light industrial business parks and public offices, and a mix of high to moderate density residential housing. At outreach meetings, public comments have been expressed concerning the added traffic that could be expected; air-borne pollutants; noise; potential contamination of surface and ground water; and flooding in major storm events.

One proposal for redevelopment has offered to seek certification under the Leadership in Energy and Environmental Design (LEED) program, as an indication of low-impact design.

You and your team have been asked to explain and provide examples of how the use of low-impact design can mitigate or greatly reduce the public's concerns about environmental impacts. Because a

development plan hasn't been submitted yet, you will be talking in general terms but may include suggestions as illustration. You should be prepared to address the following list of potential elements:

1. Sports arena/stadium with appropriate parking areas. One concept already submitted has planned 260 acres of the site for these uses.
2. Commercial development on the rest of the site. It should refer to the remaining 140 acres (400 acres previously developed, minus 260 for stadium, leaves 140 acres for additional development of supporting facilities). Not the other 600 acres left for wildlife and open space.
3. Transit plan for within the site, such as roads or trails.
4. Storm water management facilities.
5. Wetlands or other natural water bodies.

As part of your presentation, you should explain:

- What is meant by "Low-impact design" (LID)?
- What LID can and can't accomplish (reasonable limits)?
- What options are possible to control the volume of storm water leaving the site?
    - How will the heavily compacted soil affect this?
- What options exist for pre-treating storm water run-off before it reaches the Creek?
- How can soil contamination be nullified through design?
- How can thermal (heat-island) effects be avoided?
    - Why is this a problem?
- What options are possible to muffle noise?
- How does the long-term costs compare between traditional development and low-impact, considering the options you've suggested?

References/LID Websites

- http://www.epa.gov/owow/NPS/lid/
- http://www.lid-stormwater.net/background.htm
- http://www.lowimpactdevelopment.org/
- http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/stormwater-management/low-impact-development-stormwater-management.html
- http://www.cwp.org/
- http://www.psp.wa.gov/stormwater.php
- http://www.bae.ncsu.edu/stormwater/2011lid/program.html
- http://www3.villanova.edu/vusp/about_us/lid-marc.htm
- http://www.unh.edu/unhsc/