



National Decentralized Water Resources Capacity Development Project

Executive Summary



Student Design Competition for Decentralized Wastewater Treatment

University of Arizona
Tucson, Arizona

March 2005

Student Design Competition for Decentralized Wastewater Treatment

**Submitted by University of Arizona
Tucson, AZ**

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DISCLAIMER

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ABSTRACT

The project team developed a process to conduct a student design competition for undergraduate engineers. The project team piloted the process twice in subsequent years using lessons learned from the first round of competition to improve the process and design problem of the second round. The Consortium of Institutes for Decentralized Wastewater Treatment (CIDWT) web site home page provided the location for participants of the student design competition to

- Register
- Obtain the design problem, ancillary data, and information to assemble a solution
- Conduct discussions and ask questions through a forum of threaded discussions (questions could be identified by topic and responded to specifically)

The design competition was introduced in two phases. Phase 1, initiated in the spring semester of 2002, involved the development of many of the components and pilot-testing of the design competition at two universities as a noncompetitive prototype. Phase 2, conducted in Academic Year 2003–2004, modified the competition based on the feedback and results of Phase 1, included an invitation for all consortium-member institutions to participate, and provided cash awards for the top three participating teams.

The two teams participating both years were brought to the annual National Onsite Wastewater Recycling Association (NOWRA) conference to orally present their design reports, as well as display their designs on posters, which were exhibited to the conference participants. For both years, separate judging panels were assembled that included a representative from each of several sectors, including:

- The general public
- A consulting firm
- US EPA
- Higher education
- An attorney (for the first year only)

There were six general categories of criteria that were used to judge the design reports:


- Completeness of design package
- Creativity of design

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- Quality of engineering design
 - Quality of management plan
 - Effective use of project costs/budget
 - Effectiveness of presentation

There were two outcomes of this project:

1. The primary outcome was that 13 undergraduate seniors in engineering
 - Were exposed to a real-life, practical design experience
 - Participated in a national conference
 - Learned more about designing decentralized wastewater treatment systems
2. A secondary outcome was that a design competition methodology was developed and piloted and lessons learned were obtained for future design competitions.

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