Information Item:

University of Minnesota and Metropolitan Council Environmental Services Collaborations

Dr. Paige Novak, U of M Department of Civil, Environmental, and Geo-Engineering

Amy Prok, U of M Department of Civil, Environmental, and Geo-Engineering

Larry Rogacki, MCES Assistant General Manager, Support Services

Environment Committee: February 10, 2015

METROPOLITAN COUNCIL

Agenda

- MCES Internship Program
- U of M Research Collaborations
- Graduate Research Project

MCES Internship Program

- Nine years of supporting professional internships
  - 76 internships completed
  - 15 planned in 2015
- Engineers, Scientists, Geographical Information Systems Specialists, Technical Writers, Business Analysts, Control Technicians

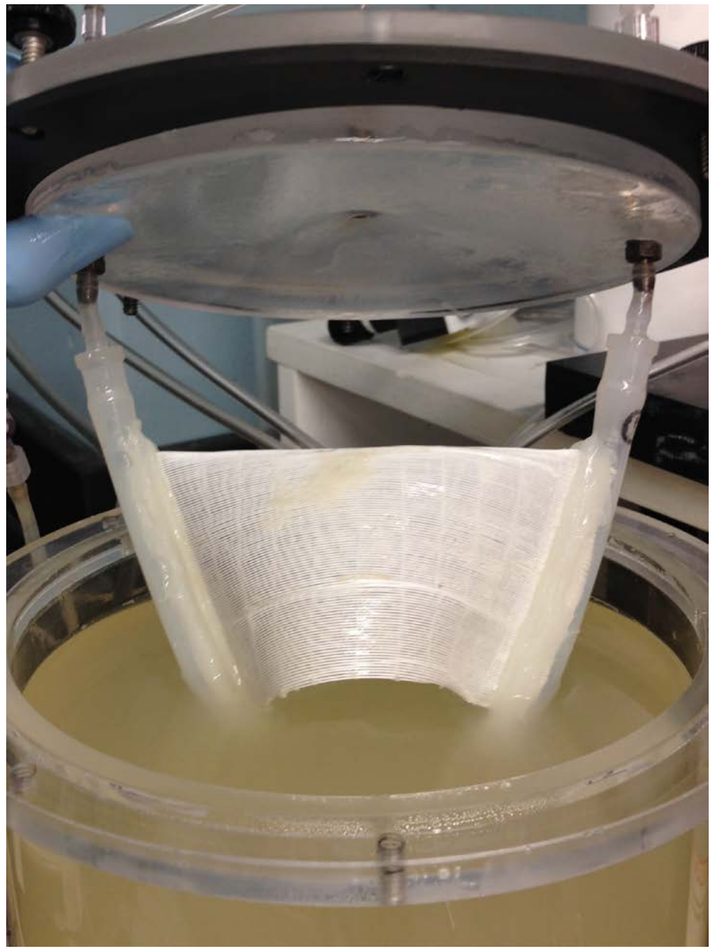
- 14 former interns now regular MCES employees

METROPOLITAN COUNCIL

Long History of Cooperation & Collaboration

Technical support (samples and data); examples:

- Fate of compounds of emerging concern (triclosan, antibiotic resistance, estrogens, plant-based estrogens)
- Hydrogen generation from wastewater



METROPOLITAN COUNCIL

Long History of Cooperation & Collaboration

Larger-scale support (pilot-scale support, funding); examples:

- Algae production and biodiesel potential
- Scum conversion to biodiesel

METROPOLITAN COUNCIL

Evolving & Expanding Partnership

"Wastewater Think Tank"

- Funded by the State of Minnesota to envision the future of wastewater in the state
- Partnership between utilities, Minnesota Pollution Control Agency, U of M, and outside experts

WLSSD

The city of Willmar

METROPOLITAN COUNCIL

Moorhead

Minnesota Pollution Control Agency

METROPOLITAN COUNCIL

Evolving & Expanding Partnership

- MCES engaged with U of M with respect to the MnDRIVE initiative and a possible water technology business cluster
- New research partnership between U of M and MCES on MCES-identified projects

METROPOLITAN COUNCIL

Research Partnership

Initial contract 2013 – 2017 for two projects:

- Enhanced methane generation
  (Completion Summer 2015)
- Second project currently under development
  (Fall 2015 – 2017)

METROPOLITAN COUNCIL

Research Partnership – Problem/Solution

Problem:

– As currently treated, industrial wastewater exerts an energy demand (via oxygen to use and aeration) and generates solids that require disposal

Solution:

– Treat industrial wastewater anaerobically, removing aeration requirements (energy demand) and generating methane as a natural byproduct (energy source)

METROPOLITAN COUNCIL

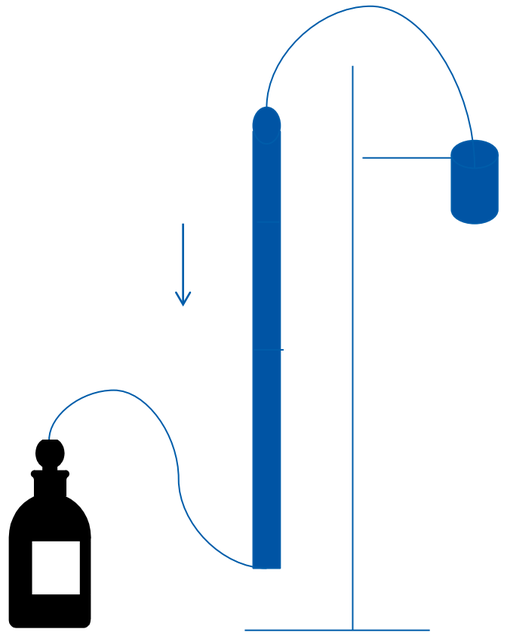
Research Partnership – Need/Outcome

Research Need:

– How should candidate wastes be targeted to identify toxicity and degradability issues?

Research Outcome:

– Developed a method to determine possible toxicity or degradability issues. Currently identifying why such issues occur (microbiologically). Provided guidance on current candidate wastes.



METROPOLITAN COUNCIL

Critical Continued Leadership in the State and Nation

- MCES is supporting real innovation in applied science
- Minnesota could be the next hub of Wastewater and Water Treatment/Water Reuse innovation
  - Strong water technology industry
  - Increasing interactions and cooperation between U of M, industry, the state and localities
- Wastewater Think Tank could be a National Model

METROPOLITAN COUNCIL