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February 2002



ASCE 150TH ANNIVERSARY – PLANNING THE CELEBRATION

By Craig F. Butler, P.E.

Our calendars now have been flipped into the year 2002 and our Society's 150th Anniversary plans are fully underway at both the national and local levels. Here's the latest news from each of the Syracuse Section anniversary committees:

- Participation in the ASCE-sponsored West Point Bicentennial Engineering Design Contest is continuing at a strong pace. As of late December, nationwide interest in the contest has been very strong, with over 30,000 downloads of the contest software and over 10,000 teams registered for the competition. A recent review of ASCE's daily report on the web (URL; <http://bridgecontest.usma.edu/pub.htm>) indicates that participation from Central New York and North Country schools is increasing, but still not at the rate we had been hoping for. On the positive side, teams from Chittenango have submitted designs that are currently listed in the "Top Ten Scoreboard" for our zone! Keep up the great work, teams!

The other good news is that there is still plenty of time to get involved, but the contest time window is rapidly closing. The Section is continuing to solicit volunteers who are willing to spend some time working with your local teachers and students to impart some "real world" knowledge to enhance the design competition experience for the participants. I highly recommend that Section members and others check out this program to see if your local school is participating. If they are, that's great. If not, please encourage someone in your district to get the ball rolling, and offer your assistance (or have them contact our Section Board members). After all, how many contests are you aware of that offer a top prize of a \$15,000 college scholarship, all while having fun and a great learning experience?

- By the time you receive this, the Building Big II, "Build-A—Thon" event will have been concluded. However, participants in the Build-A-Thon will be featured in an upcoming

segment on WCNY TV, along with recognition at the 4th Annual Celebration of Technology Awards Banquet and Exhibition. Many thanks to Pete Headd of WCNY for coordinating this year's event, and also to our supporting colleagues in the Syracuse area Technical Societies Council (TSC). Of course, thanks and congratulations to all of the participants and your "helpers".

- Plans are underway for ASCE participation in the third annual "Celebration of Technology" Exhibition Expo and Banquet following National Engineers' Week in 2002. The date for this event has been set for Friday March 1, 2002 at the Holiday Inn Convention Center in Liverpool. The keynote speaker for this event will be Pam Newberry of the NASA sponsored "Technology for All Americans Project". The event will also include a number of special recognition awards along with displays from the "Building Big II" program. There are also plans for an afternoon presentation addressing technology education for middle school and high school students. Other noteworthy features of the program will include the Exhibition Expo, with displays by area "technology-based" businesses and organizations. This year, of course, the ASCE booth will include several special displays commemorating the 150th Anniversary of our Society. Stay tuned for further details!
- Additional plans on the horizon for our Section's sesquicentennial celebrations include an area "beautification project", hosting of the regional ASCE Student Chapter concrete canoe and steel bridge competitions at Syracuse University, recognition of local civil engineering "historical landmarks", and a golf tournament. Stay tuned for further details on these events.

Now that 2002 has arrived, we have an exceptional opportunity to take advantage of the special events associated with the 150th Anniversary of our Society. We should all be proud of our role as civil engineers, and as ASCE members. As always, please contact me or any other member of the 150th Anniversary committees, for further information and to **GET INVOLVED** in these noteworthy events.

THE ENVIRONMENTAL CORNER

By Todd M. Musterait, P.E.

New Biodegradation Tool Found

John Coates and his colleagues at Southern Illinois University have isolated the first strains of bacteria found to break down benzene without requiring oxygen. Bacteria had previously been found which would break down benzene in aerobic conditions, but oxygen is often lacking in areas of the soil and groundwater where the contaminants are found. Both of the anaerobic strains of *Dechloromonas* bacteria found can use nitrate in lieu of oxygen in breaking down the benzene to carbon dioxide and water. The discovery of these strains by Dr. Coates greatly expands the universe of sites at which bioremediation is feasible.

HISTORY & HERITAGE COMMITTEE

By Jim Tyler

In recognition of National Engineer's Week and ASCE's participation as the lead Society, the following description of a Civil Engineer as it appeared in *Solvay Life* about 80 years ago is reprinted for your reading pleasure. *Solvay Life* was a short-lived publication of The Solvay Process Company in 1920-21.

CIVIL ENGINEERS

By GEORGE FITCH

A CIVIL ENGINEER is a quiet man with a thick coat of sunburn, who spends his time revising climates, editing the landscape and training up rivers into lives of usefulness.

In order to do this the civil engineer does not tear the earth wide open with 100-ton spades or perform other feats of strength. He is usually of ordinary size and if he only used his own hands he could not push around a small creek, let alone a river. The civil engineer does not rely on muscle. When he desires to move a mountain or wipe out a few hundred square miles of desert with a dam he takes his logarithm book and retires to a quiet spot where he fills an acre of brown paper full of figures. At the end

of six months he emerges with a tired air and a carload of blueprints and motions to the steam shovels to come on up and get busy.

The civil engineer is not generally known. This is because he cannot often be found on the street corners or in the clubs or in the act of decorating grand opera with a vast white shirt front. He usually lives in the wilderness in hip boots and a last week's shave. After the ordinary man has lived in a wilderness for a few years his mother wouldn't know him. But after an engineer has lived in a wilderness the same length of time its mother wouldn't know it. The engineer is continually editing and revising nature, rearranging mountains and making rivers back up and go the other way. He is as restless and unsatisfied with the way things look as the woman who always rearranges the parlor furniture while her husband is away so that he may fall over it when he comes home in the dark and receive a pleasant surprise.

The civil engineer has hung railroads on mountain sides, run tunnels under city streets, made oceans shake hands, harnessed up Niagara Falls, made parks out of the Western deserts and has put a reverse gear in the Chicago river. Some day he will begin experimenting with the earth's orbit and we may yet have Christmas at the Fourth of July and a weekly comet service to Mars--who knows? Logarithms and a square jaw working harmoniously can do almost anything.



SESQUICENTENNIAL PICNIC

Set aside Friday June 7, 2002 for this event at P & C Stadium when the Skychiefs host the New York Mets AAA Norfolk Tides. Details in a later Newsletter. All readers invited; come out and help the Syracuse Section celebrate ASCE's 150th Anniversary.

ASCE SYRACUSE SECTION 2001 – 2002 PROGRAM SCHEDULE

Date	Event	Place	Information
<i>First Tuesday of Each Month</i>	<i>ASCE Syracuse Section Board Meetings</i>	<i>C&S Engineers Building</i>	<i>5:15PM; Food/Beverages Provided</i>
February 5, 2002 (will serve as February's Board Meeting)	Dinner Meeting	Hooligan's Cafe	5:30PM; Sit Down Dinner; Collapsed Bridge Presentation
March 1, 2002	Technology Week Expo and Banquet	Holiday Inn Liverpool	Keynote Speaker: Pam Newberry (NASA) Topic: Technology for All Americans Project
April 12-13, 2002	Ice-Breaker Reception Concrete Canoe/Steel Bridge Contest Banquet	SU/Onondaga Lake Park	Students from SU, Clarkson, Cornell, RPI, Union, USMA, SUNY-Buffalo, RIT, etc. will compete, have dinner, and meet local firms
April 20, 2002	Adopt-A-Highway	I81 north of Lafayette Exit	Meet at 9:00AM in McDonald's parking lot
June 7-8, 2002	Syracuse SkyChiefs Game/Picnic	P & C Stadium	Food and drinks within the rightfield picnic area during a SkyChiefs vs. Norfolk Mets Game
June 22, 2002	Adopt-A-Highway	I81 north of Lafayette Exit	Meet at 9:00AM in McDonald's parking lot
August 24, 2002	Adopt-A-Highway	I81 north of Lafayette Exit	Meet at 9:00AM in McDonald's parking lot

ASCE Syracuse Section Dinner meeting

Presentor: Rick Hunkins, P.E. (NYSDOT)

Topic: Truss Bridge Collapse (Route 58 over the West Branch of the Oswegatchie River in St. Lawrence County)

When: February 5, 2002 5:30PM

Where: Hooligan's Café on Rt. 57 Liverpool

Agenda: 5:30PM – 6:00PM Cocktails at the Bar
6:00PM – 7:00PM Dinner downstairs in a private room
7:00PM – 7:30PM February's board meeting (will be kept brief)
7:30PM – 8:30PM Presentation

Cost: Members/Nonmembers \$20
Students \$15
(money will be collected at the restaurant; ASCE will pay the restaurant bill)

Menu: Chicken Marsala, Garden Salad, Fresh Vegetable Medley,
Rice Pilaf or Potato, Rolls/butter, Coffee/tea [Cash Bar]

Contact: Matt Millias – before February 1, 2002
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National Stormwater BMP Database Doubles

By the Urban Water Resources Research Council of the American Society of Civil Engineers

The National Stormwater Best Management Practices (BMP) Database is expected to contain over 160 BMPs as of the end of 2001. This represents substantial growth of the standardized BMP information contained in the database since the initial 71-BMP release to the stormwater management community in June 1999. The Urban Water Resources Research Council of the American Society of Civil Engineers (ASCE), under a cooperative agreement with the U.S. Environmental Protection Agency (EPA), continues to focus on compilation and entry of high quality BMP data into the national database. The significantly expanded database can now be searched on-line or downloaded through the project web site at <http://www.bmpdatabase.org>.

The concept of developing a national database arose in the mid-1990s out of the realization that although there was a plethora of published information on BMP performance, the studies did not follow standardized data collection, reporting and performance evaluation protocols, making a scientific and consistent evaluation of these data difficult. The need for BMP performance information is particularly critical now since the EPA has mandated that most municipalities in the United States with populations larger than 10,000 must obtain a stormwater runoff discharge permit by 2003. One of the key requirements of this permit program is implementation of non-structural and structural best management practices (BMPs) appropriate to local conditions. Communities need to know which types of BMPs are appropriate for them (e.g., which BMPs function best in cold climates or in areas of heavy rainfall) and how to monitor the performance of the BMPs they select to ensure they function properly. The National Stormwater BMP Database and data analyses that are being enabled as a result of this database will permit, in the long term, improvement of the BMP selection and design process so that local stormwater management can be much more effective than it is today.

Thus far, key project tasks have included: (1) collecting and evaluating existing BMP design and performance data, (2) designing and creating the national BMP database, (3) developing BMP performance evaluation protocols, and (4) evaluating the data collected and reporting initial findings. A companion project to develop stormwater BMP monitoring guidance was completed when it became apparent that much of the available BMP data was of limited value due to inconsistent BMP monitoring and reporting protocols used in the past, making evaluation of data and transferability of findings difficult and often impossible. The monitoring guidance manual provides practical and comprehensive guidance and is available as of December 2001 through the project web site.

The database can be used both to track BMP performance, as well as to research performance of BMPs. Key categories of data requested in the database include (1) test site location characteristics, (2) sponsoring and testing agencies, (3) watershed characteristics, (4) BMP design parameters and cost data, (5) monitoring locations and instrumentation, (6) monitoring costs, (7) precipitation data, (8) flow data, and (9) water quality data. The types of structural BMPs currently accepted in the data entry module are various types of detention basins, retention basins, infiltration basins, wetland basins, wetland channels, biofilters/grass strips, filter media, hydrodynamic devices, percolation trenches/dry wells, and porous pavement. Types of nonstructural BMPs accepted in the data entry module include education, recycling, maintenance practices and source controls. The requested data sets were developed with peer review and input from an international group of experts in the stormwater management field. Based on data received to date, the greatest challenge is to ensure the reporting of accurate

precipitation, flow and water quality data. The National Stormwater BMP Clearinghouse reviews new BMP data sets prior to posting to the master database to ensure that required data (e.g., design parameters, flows, water quality data) have been provided and to ensure that the data are technically reasonable (e.g., relationships between peak flows and flow volumes relative to the tributary watershed and precipitation events are evaluated).

Several large data sets received in the last year include multiple BMPs from Dr. Shaw Yu at University of Virginia and Dr. Robert Pitt at University of Alabama-Tuscaloosa, as well as 36 BMPs from the California Department of Transportation. These data are undergoing quality assurance (QA) review and will be posted to the project web site upon completion of the QA reviews. Table 1 summarizes the BMPs according to BMP type currently in the database or expected to be included in the database as of the end of 2001. Table 2 summarizes the types of BMPs currently contained in the database by geographic distribution.

The expanded data set will be analyzed in the summer of 2002 to determine whether new trends regarding BMP performance can be identified. This data analysis effort will build upon the initial findings of the data analysis conducted in 1999, which can be downloaded from the project web site. Some of the preliminary findings include:

- BMP performance should not be based on comparisons using percent removal alone. It may be appropriate to use this measure only on carefully chosen data subsets; for example, sites that have similar stormwater runoff water quality.
- The chosen performance evaluation method can affect reported pollutant removal efficiencies. For example, some BMP types may have been mischaracterized as less effective because of cleaner influent. Most BMPs and biochemical processes will exhibit lower percent removals when the concentrations are low in the influent.
- Retention ponds and wetland basins are not well represented by individual storm-by-storm comparisons because paired inflow and outflow data often are not from the same event.
- Effluent quality is useful for characterizing the effectiveness of the BMP; however, it is still important to determine if the BMP had a statistically significant effect on water quality at each test site.
- Downstream geomorphic and biological responses and aquatic habitat assessment may be better gauges of long-term BMP effectiveness than pollutant removal efficiencies alone, but there is insufficient information at this time to clearly suggest which BMPs may best mitigate the effects of urbanization on receiving waters.
- More BMP performance data are needed for sound statistical analysis of their effectiveness and what design parameters most influence their performance.

For more information, please contact the National Stormwater BMP Databases Clearinghouse operated by Wright Water Engineers on behalf of the project team (303-480-1700 or clary@wrightwater.com) or visit the project web site at www.bmpdatabase.org. The Clearinghouse is available to help facilitate electronic transfer of BMP data into the database and welcomes submissions of BMP data to the master database.

Table 1. Summary of National Stormwater BMP Database Data Sets

	Version 1.0 June 1999	New Studies Anticipated to Be Added to Web Site Winter 2001/2002	Total Anticipated Winter 2001/2002
Detention Basin	7	11	18
Media Filter	5	12	17
Grass Filter/Swale	7	10	17
Hydrodynamic Device	2	14	16
Infiltration Basin	0	0	0
Non-structural (e.g., Street Cleaning, Maintenance)	8	2	10
Percolation Trench/Dry Well	1	0	1
Porous Pavement	5	0	5
Retention Pond	21	18	39
Wetland Basin	7	11	18
Wetland Channel	8	3	11
Other (Inlet Filter/Trap)		4	4
Total	71	85	156

Table 2. Geographic Distribution of BMPs Posted to Web Site as of November 2001.

State	Number of BMPs
AL	8
CA	5
FL	24
GA	2
IL	5
MD	4
MI	5
MN	7
NC	6
NJ	3
OH	1
ON, CAN	1
OR	3
TX	19
VA	11
WA	9
Total	113

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