

ASCE Hails Passage of Water Resources Reform and Development Act



WRRDA is a Linchpin in Modernizing Nation's Ports, **Inland Waterways**, Dams and Levees. The American Society of Civil Engineers applauds the bipartisan passage with an overwhelming 417-3 vote of the Water Resources Reform and Development Act (WRRDA) in the US House of Representatives. It promotes economic growth and jobs with policies that strengthen U.S. infrastructure, allowing the nation to remain competitive in the 21st century. All of the Western Pennsylvania Congress members voted for the bill.

While the House WRRDA bill is a very significant step in the right direction, two steps are yet to be completed, either in conference or through separate legislation. First, the conference must reconcile the

cost sharing difference for the Olmsted project. The House version changes the 50-50 formula to 75% federal and 25% user fee. The industry does not believe it is responsible for the cost-overruns and project delays. It prefers the Senate WRDA version at 100% federal and hopes the conferees can compromise at the 100% level. Second, the user fee adjustment that the industry that pays the fee has been requesting has yet to be resolved. Both of these steps are still necessary to sufficiently fund the waterways infrastructure to sustain our economy.

The biggest impact of WRRDA to the Western PA region is to reduce the Olmsted Lock and Dam amount in the inland waterways trust fund. That dam is on the Ohio River only 17 miles from the confluence with the Mississippi River. Replacing two other locks and dams, the cost of its construction ballooned from \$0.775 Bn to nearly \$3 Bn because it was funded piecemeal and its construction has consequently dragged on since 1983. If the dam were not funded, all barge traffic, a significant source of commerce on the Ohio River, would be suspended. The Olmsted project has siphoned money from the Inland Waterways Trust Fund from being used for other locks and dams. Since the Lower Monongahela lock and dam project is next on the priority list, it is likely to proceed more quickly. The Lower Mon project includes locks and dams 2, 3 and 4 on the Monongahela River in Allegheny, Washington and Westmoreland counties. The Lower Mon Project replaced 1906 fixed-crest dam at Braddock with a gated dam, and will remove Locks and Dam 3 in Elizabeth, and construct two new larger locks (Charleroi Locks) at Locks and Dam 4 in Charleroi. The remaining two are the oldest currently operating navigation facilities on the Monongahela River. The locks have the highest volume of commercial traffic on the entire Monongahela River Navigation System, the pools created by these dams provide industrial and municipal water. These dams are critical to the economy of Southwestern PA.

The civil infrastructure that sustains the Pennsylvania and American economies remains underfunded. The passage of the WRRDA bill, a beginning step, is necessary to provide the resources necessary for the US to compete globally, and for Western Pennsylvania to compete nationally and globally. Legislation for similar funding for surface transportation, highways, bridges, and transit, has languished in Congress and the Legislature, victim of the fear of lawmakers of negative reaction of incompletely informed voters.

The lawmakers charged with adequately funding the state and national infrastructure need your support. As you can see on page 4, some of the lawmakers won by small margins of victory. The importance of your vote is clear.

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The Mullica River Bridge Widening and Rehabilitation project involved the construction of a new 1,230 ft long bridge in southern New Jersey completed in 2011, then rehabilitation of the existing structure. The project is part of a massive effort by the NJTA (New Jersey Turnpike Authority) to add lanes and reduce traffic jams along the Garden State Parkway (GSP).



The specifications called for construction of a two-stage Mechanically Stabilized Earth (MSE) wall with stone columns and a waiting period. This process can be both expensive and time consuming. Bridgeville-based ground improvement contractor **Menard** teamed with its sister company, MSE wall supplier and designer Reinforced Earth Company (RECo), to provide a value engineered solution. The two proposed a one-stage MSE wall system on Controlled Modulus Columns (CMC). This design allowed for construction of the wall in its final configuration without a waiting period for settlement. The CMCs were completed in 2010 and the wall construction followed shortly after.

As a result of this project, the next large bridge construction along the GSP, the Bass River Bridge, was specified for rigid inclusions supporting one-stage walls. The combination of CMCs and RECo walls was once again selected as the design solution for the approach embankments.

Given the way the CMC system is designed, a load transfer platform (LTP) is required between the top of the CMCs and the supported structure to avoid high stress concentrations at the tops of the CMCs. This mechanism relies mostly on the creation of an arch of compacted granular material within the LTP. For the Bass River Bridge project, the close proximity of the top of the CMCs to the first row of strips of the MSE wall (very thin LTP) had caused concerns of overstressing the lower metallic strips within the MSE wall. Stresses within the reinforcing strips in the lower portion of the MSE wall are reduced by stabilizing the foundation with CMCs. But if the tops of the CMCs are too close to these reinforcing strips, then stresses may increase due to differential movement around and in between the CMCs.

Significant differential settlements between points directly located above a CMC and directly between two CMCs were expected at the level of the first strip (around 0.15 feet = 1.75 inches). In addition, a Boussinesq stress distribution analysis was performed to look at the "punching" effect of the CMCs into the RE (Reinforced Earth™) volume as the wall settles. On the basis of this analysis, an increase of up to 10% of the reinforcement was added to the lowest row of the RE wall in the highest sections of the wall, representing a significant cost to the MSE wall construction.

For these reasons, the contractor and wall designer conducted a full scale load test program to confirm/verify the assumptions of the designs and optimize the design of the combined rigid inclusions plus MSE wall. The proposed test program's main target was to evaluate the influence of the CMC plus LTP system on the reinforcing strips within the MSE wall.

Instrumentation installed at three levels within the wall and data was gathered showed that the strips were not significantly impacted by the close proximity to the CMCs. Data showed that differential settlement was adequately reduced over the thickness of the LTP. This confirmed the results of FEM modeling. Overall settlement measurements were also less than predicted.

The combination of MSE walls and rigid inclusions now has a strong technical reference for future construction projects.

For more information, contact **Frederic Masse**, at **DGI-Menard**, **412-257-2750**



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Incumbent

Margin of Victory

PA House District

1: Patrick Harkins (D)	unopposed
2: Florindo Fabrizio (D)	unopposed
3: Ryan Bizzarro (D)	53.8% 2,147
4: Curtis Sonney (R)	unopposed
5: Greg Lucas (R)	55.1% 2,340
6: Brad Roae (R)	unopposed
8: Richard Stevenson (R)	unopposed
9: Chris Sainato (D)	58.2% 3,854
10: Jaret Gibbons (D)	52.8% 1,425
11: Brian Ellis (R/D)	unopposed
12: Daryl Metcalfe (R)	unopposed
14: Jim Marshall (R)	unopposed
17: Michele Brooks (R)	unopposed
19: Jake Wheatley (D)	unopposed
20: Adam Ravenstahl (D)	81.8% 14,783
21: Dom Costa (D)	unopposed
22: Erin Mulchany (D)	65.4% 7,951
23: Dan Frankel (D)	unopposed
24: Edward Gainey (D)	unopposed
25: Joseph Markosek (D)	54.8% 2,697
27: Dan Deasy (D)	unopposed
28: Mike Turzai (R)	unopposed
30: Hal English (R)	56.7% 4,429
32: Anthony DeLuca (D)	75% 13,798
33: Frank Dermody (D)	59.2% 4,733
34: Paul Costa (D)	unopposed
35: Marc Gergely (D)	unopposed
36: Harry Readshaw (D)	unopposed
38: Bill Kortz (D)	unopposed
40: John Maher (R)	unopposed
42: Matthew Smith (R/D)	unopposed
44: Mark Mustio (R)	61.9% 7,732
45: Nick Kotik (D)	66.2% 9,218
46: Jesse White (R/D)	unopposed
48: Brandon Neuman (D)	unopposed
49: Peter Daley (D)	54.7% 2,029
50: Pam Snyder (D)	61.9% 4,871
51: Tim Mahoney (D)	63.4% 5,369
52: Deberah Kula (D)	unopposed
54: Eli Evankovich (R)	65.6% 8,408
55: Joseph Petrarca (D)	56.3% 2,961

56: George Dunbar (R)	58.0% 4,578
57: Timothy Krieger (R)	64.1% 7,244
58: Ted Harhai (D)	unopposed
59: Mike Reese (R)	71.8% 11,688
60: Jeffrey Pyle (R)	64.9% 7,192
62: David Reed (R)	unopposed
63: Donna Oberlander (R/D)	unopposed
64: R. Lee James (R)	unopposed
65: Kathy Rapp (R)	unopposed
66: Sam Smith (R)	unopposed
67: Martin Causer (R)	unopposed
69: Carl Metzgar (R/D)	unopposed
71: Brian Barbin (D)	56.0% 2,646
72: Frank Burns (D)	unopposed
73: Gary Haluska (D)	62.8% 5,469
74: Thomas Sankey (R)	60.9% 4,786
75: Matt Gabler (R)	unopposed
78: Dick Hess (R/D)	unopposed
79: John McGinnis (R)	54.6% 1,911
80: Gerry Stern (R)	unopposed
81: Mike Fleck (R)	unopposed

Pennsylvania Senate District

21: Scott Hutchinson (R)	unopposed
25: Joseph Scarnati (R)	unopposed
35: John Wozniak (D)	51.2% 2,087
37: Matt Smith (D)	52.7% 6,841
39: Kim Ward (R/D)	87.0% 75,579
41: Donald C. White (R)	unopposed
43: Jay Costa (D)	unopposed
45: James Brewster (D)	unopposed
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United States Congress

PA 3: Mike Kelly (R)	54.7% 37,725
PA 5: Glenn Thompson	62.9% 70,750
PA 9: Bill Shuster (R)	61.6% 62,654
PA 12: Keith Rothfus (R)	51.5% 10,032
PA 14: Mike Doyle (D)	77.0% 167,851
PA 18: Tim Murphy (R)	63.8% 88,809

United States Senate

Robert Casey (D)	53.7% 1,490,803
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Annual Gala

Please join us in the Singleton Room of Roberts Engineering Hall, Carnegie Mellon University on the evening of November the Twenty-Third with a reception beginning at Six-Thirty followed by a night of inspiration, information, and delicious food. Semi Formal Attire. \$65 for professionals, \$35 for students. Please RSVP by November the Seventh.

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ASCE Pittsburgh Continuing Education Committee Seeks Members

Continuing education and life-long learning is an important part of a Civil Engineer's career development and licensing requirements. Accordingly, the Continuing Education Committee's main objective is to provide a forum for communications among members of the Pittsburgh Section, members of Technical Groups, and civil engineering educators to share knowledge and information on new practices, techniques, and other information to maintain and advance technical and professional skills of Section members.

The committee is seeking new officers (vice chair and secretary/treasurer) and members for a term of three years. Common activities include (1) participation in bimonthly committee meetings (some may be Web meetings or conference calls), (2) participation in up to 3 meetings per year with other committees or organizations, (3) participation in ongoing email discussions, and (4) periodic review of documents and reports.

Engineers as well as student and faculty members are encouraged to apply by November 15, 2013. Nominations are also welcome. If interested, please email a resume indicating interest (vice chair, secretary/treasurer, student liaison, faculty liaison, committee member) to:

Sam Shamsi, P.E., F.ASCE, Chair, Continuing Education Committee, sam.shamsi@gmail.com

PITTSBURGH GEO-INSTITUTE HOSTED 2012 TERZAGHI LECTURE

The annual lecture was given on October 3 at the PAA by Dr. David E. Daniel, Ph. D., P.E., NAE, Dist. M.ASCE, the current President of the University of Texas at Dallas.

Dr. Daniel's presentation, "Geo-environmental Engineering – Problems Solved and Challenges Remaining," offered a fascinating overview of the evolution of geo-environmental engineering and how the field can adapt to new challenges in the future.

The presentation featured his groundbreaking research on clay liners and permeability and its effect on construction practices at hazardous waste sites. Dr. Daniel's lecture drew distinct parallels between this research and his experience with the investigations of the levee failures in New Orleans and the Deepwater Horizon oil spill.

As the 2012 recipient of the distinguished Terzaghi Lectureship, Dr. Daniel has given his presentation to different ASCE sections throughout this year.



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November 5, 2013, Tuesday, **GENERAL ELECTION DAY**

1. County, Local, and Judicial
2. 7 AM to 8 PM

November 14, 2013, Thursday, Geo-Institute Dinner Meeting

3. Rehabilitation of Thorn Run Dam
4. 6 PM
5. \$25 Pittsburgh Section members, \$35 non-members. No charge for students.
6. Gaetano's Restaurant, 1617 Banskville Road

November 15, 2013 Friday, 21+ Night

1. 6:00 – 10:00 pm.
2. Carnegie Science Center, North Shore
3. \$10 in advance, \$15 at the door.
7. Contact Lauren Dziagwa, **724-519-7361**, imdziagwa@TLCTGroupEng.com

November 19, 2013 Thursday, SEI Dinner meeting

1. 5:30 pm.
2. Cefalo's, Carnegie, PA
3. Jay Fitzgerald of PENNDOT speaking
4. BRADD Software for Automated Simple Span Bridge Design/Drafting
5. \$35/member, \$50/ non-member, \$10/ student
6. 1 PDH can be earned at this event.
7. Contact Linda Kaplan, **412-922-5575**, lkaplan@gfnet.com

December 5, 2013 Friday, December Dinner **SAVE THE DATE**

1. 6:00 pm.
2. Sponsored by YMF
3. Contact Linda Kaplan, **412-922-5575**, lkaplan@gfnet.com



To end 2013 with a strong financial finish, participate in the Section Renewal Race! Renew now for 2014, and if our Section has the highest percentage of renewed members by December 13, 2013, we will win \$1,000. Remember to also pay Section dues. In Pittsburgh, all voluntary contributions go to Student Awards.

Visit www.asce.org/renewal and renew today.

Keep an eye on who's in the lead! See updated standings, access tools, and more detailed contest rules are at www.asce.org/finishline, or www.asce.org/YMfinishline to see YMF results.

Contrary to some claims, did you know that the amount of traffic at PIT is barely affected by passenger fees? Airport traffic is driven by the number of Origins and Destinations (O&D), which are primarily due to the presence of major corporate centers, making many business trips. Good highways and transit attract global corporate presence.

TMDL PART 4

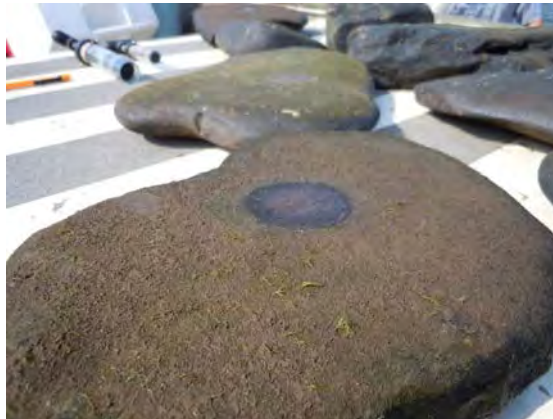
In the last newsletter articles the basics of TMDLs (Total Maximum Daily Loads) were introduced, why one should be interested, what they are, how they are developed, and formulating a TMDL to address sources of water pollution.

TMDLs on water bodies were compared to the total load applied to a bridge.

Background information is collected in an Aquatic Life Use survey (ALU survey). Some of the sources of pollution might be livestock grazing, acid mine drainage (AMD), fertilizer runoff, and water reclamation plant discharges.

This information is based on a presentation made to members of the Environmental and Water Resources Institute in the Pittsburgh Section of ASCE by Bill Brown, Chief of the TMDL Development Section in the Division of Watershed Protection of the Pennsylvania Department of Environmental Protection.

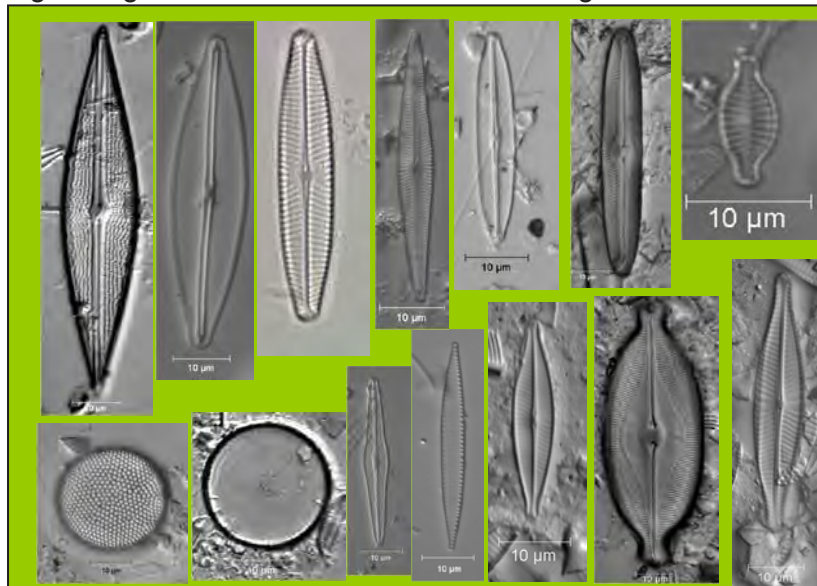
One of the organisms studied in a water body is its algae, its:



- Algal Biomass (Chlorophyll-a)
- Cellular Nutrient Content, and
- Algal Speciation and Community Composition

Part of the analysis is distinguishing between sensitive and tolerant organisms:

Sensitive taxa:



Tolerant Taxa:

“Water may not contain substances attributable to point or nonpoint source discharges in concentration or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant or aquatic life”.

Next issue: Compare findings and new TMDLs to that of reference watersheds.

For more information, contact **Bill Brown**, at PADEP, **717-783-2951**, willbrown@state.pa.us

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