NATIONAL PUBLIC WORKS WEEK: PUBLIC WORKS CONNECTS US
See our NPWW section beginning on p. 16

Also Inside:
• The 2017 Top Ten
• Annual Sustainability Issue
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The APWA Reporter, the official magazine of the American Public Works Association, covers all facets of public works for APWA members including industry news, legislative actions, management issues and emerging technologies.

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Celebrating the community life that public works makes possible

Ronald J. Calkins, P.E., PWLF
APWA President

Like many communities, Ventura, Calif., where I live, has established several sustainability initiatives that reduce energy, conserve resources, protect the environment, and save money. We have hybrid fleet vehicles and electric vehicle charging stations, ENERGY STAR-certified facilities, an urban forestry program, green building standards, and co-generation at our wastewater treatment plant to turn waste gas into electricity. For residents, we host free monthly hazardous waste collection events, collect yard waste for composting, sponsor a food waste composting discount program, offer a rain barrel discount program, and offer city residents a sustainability kit that includes everything from a recycling bin and reusable shopping bag to water-saving devices and recipes for homemade cleaners.

But these initiatives, like those in many cities and towns, are primarily focused on environmental and financial impacts—the “planet” and “prosperity” parts of the “triple bottom line.” Increasingly, communities are looking at, and in some cases re-thinking, the way they address the social, or “people,” aspect of sustainability as well: the public health, safety, education, culture and workforce development considerations that add up to quality of life.

One way that public works departments have often undertaken this type of engagement with their communities is through outreach to local schools. In Ventura, free educational presentations to K-12 schools, as well as after-school and pre-school programs, are part of the city’s sustainability efforts. And during National Public Works Week, which we celebrate this month, many public works departments expand their education and public outreach to include community service projects, art projects, hands-on learning, team competitions, community meals, tours, open houses, fairs and food drives. The civic spirit that drives these activities is critical to building and preserving sustainable communities.

Cities, towns, and counties of all sizes throughout the U.S. and Canada offer some interesting examples of other ways that public works departments are engaged in the social dimension of sustainability. Here are just a few:

Basalt, Colo. (pop. 3,791¹), is one of the few communities in the U.S. that has integrated Complete Streets into its street design manual, stating as its goal: “Creating a pedestrian environment as the highest priority within the overall transportation system and ensuring all modes are adequately considered and properly addressed.”² The town’s design manual recognizes the need for vehicular management, but also “safety, accessibility and pleasure for individuals walking or using alternative transportation to move and enjoy the qualities of Basalt.”
In Blacksburg, Va. (pop. 43,530), the City partners with Virginia Tech and Sustainable Blacksburg to host an annual Sustainability Week that includes community service projects, “Ted Talk”-like presentations, children’s art projects, screenings by local filmmakers, and community garden tours and food tastings. The Public Works Department is also active in town events like the Wheels and Wagons Parade, which features a children’s art contest to decorate a transit bus—a great way to inspire town pride and celebrate the important role of transit in our communities.

Valdosta, Ga. (pop. 56,504), administers a Memorial Tree Program, in which the City, in partnership with the Valdosta Tree Commission, plants trees throughout the community as a memorial for a life or special event. And the Valdosta Engineering Department’s Stormwater Division hosts free, hands-on outreach events where citizens build their own rain barrels.

The first city in Arkansas to issue an urban agri-ordinance, Fayetteville (pop. 79,037) allows residents to grow their own food and sell it out of their homes. The City maintains an extensive urban trail system and has increased funding for sidewalks in recent years, boosting the town’s walkability and connecting downtown and surrounding neighborhoods with the trail system. The city also boasts a vibrant arts and culture scene, including a “First Thursday” local art exhibit each month, and Arts on the Trails, a program that displays local artists’ works along the city’s trail system.

Brandon, Manitoba (pop. 48,859), created a public engagement program inviting citizens to participate in efforts to build a sustainable Brandon, including the land use development process affecting their neighborhoods. Recent events have included an information session on Manitoba’s Building Code and how technical requirements for energy efficiency would impact citizens; a resilience planning workshop addressing how to plan and adapt to increasing storm events; and a networking event focused on a proposed infrastructure funding framework to help grow the community.

The theme of this year’s National Public Works Week is “Public Works Connects Us.” As we celebrate the role of public works in our cities and towns, we also celebrate the civic connections and community life that public works makes possible—and sustainable.

1 All U.S. population estimates from the “2011-2015 American Community Survey 5-Year Estimates”: https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml


n March 28, APWA President Ron Calkins, PWLF, testified before the House Committee on Natural Resources Oversight and Investigations Subcommittee. The subject of the hearing was the Endangered Species Act (ESA) consultation process and its impediments to the economic and infrastructure development. Calkins provided testimony on behalf of APWA and spoke specifically about his 17 years as Public Works Director for the City of Ventura, Calif., where he encountered extensive delays on multiple projects as a result of the ESA consultation process. Calkins, now retired from the City of Ventura, noted the critical need for a balance to be found to protect human health and safety, while safeguarding species.

“The American Public Works Association, which represents more than 29,600 public works professionals across north America, is pleased to be here today to share with you some of the challenges that public works professionals face when dealing with the balance between protecting endangered species and implementing important public works and infrastructure projects to protect the health, safety and welfare of citizens of the United States,” Calkins testified. “APWA believes that we need to modernize the Endangered Species Act in a way that balances species protection with the need to care for essential public works services and infrastructure. Such legislation should contain full integration of sound scientific and economic principles, which ensure that habitats and species can be preserved in harmony with critically needed public projects.”
THE APWA C4S:

APWA’s Center for Sustainability (C4S) delivers resources, education, advocacy and member engagement for public works professionals to implement environmentally, economically and socially responsible projects and services.

Visit www.apwa.net/sustainability to learn more about C4S, the C4S Sustainability Toolkit, Sustainability Works blog and more!
APWA President-Elect Bo Mills, PWLF, was recently featured as an infrastructure panelist at the recent mid-year meeting in Scottsdale, Ariz., of the International Association of Defence Council (IADC) panel discussion titled “Not Aging Gracefully: Liability and Policy Implications of America’s Deteriorating Infrastructure.” The IADC is composed of members who are corporate and insurance defense attorneys and insurance executives in areas of legal reform and professional development.

The infrastructure session panel featured President-Elect Mills and other industry experts including Ray Mullady of Nelson, Mullins Riley & Scarborough LLP in Washington, D.C.; Mike Hurley of Berkley Surety Group in Morristown, N.J.; Pamela McGovern of Aust Legal Inc., in Montreal, Quebec; and Allen Nelson, the former Executive VP of Crawford & Company in Atlanta, Ga. The panel addressed infrastructure and deterioration issues, such as lead contamination in drinking water in Flint, Mich.; the Minneapolis bridge collapse; and failed New Orleans levee as part of the rapid deterioration of America’s infrastructure that has provided media headlines, class action litigation, and difficult policy choices for state and local governments.

An overview of the breadth of the aging infrastructure problem and industries affected included transportation, energy, construction and insurance. The panel reviewed the case law on infrastructure deterioration lawsuits and the facts contributing to the Flint, Mich., lead...
contamination problem, as well as the choices facing state and local governments in dealing with infrastructure issues and public safety concerns. Other topics included opportunities and challenges for the construction industry in remediation of infrastructure, who has the right to sue, liability exposure faced by design professionals, insurance coverage exclusions and limitations and recoverable damages, as well as the likely parties responsible for the costs involved, which often includes product manufacturers, insurers, and municipal or state governments.

“It was very rewarding to bring the public works perspective to this group of attorneys and share how infrastructure is often out of sight and out of mind—until a problem occurs,” said Mills. “I appreciated sharing the scarcity of funding for operations and maintenance. Many public works professionals think that federal funding is great, but getting the dollars to the real problems is often difficult as regulations and required procedures tend to evaporate the bang for the buck.”

Mills also provided the public works perspective of needing to fix the infrastructure first before expanding into new construction. “Policy makers often like to cut the ribbons on new construction, but not on the replacement of a 25-year-old motor on a sewer lift station,” he said. “I hope that the IADC insurance attorneys and executives will reach out to the public works community for understanding the next time that infrastructure issues occur. To be asked by IADC to be a part of the panel is a great accomplishment for APWA and for public works.”

Laura Bynum can be reached at (202) 218-6736 or lbynum@apwa.net.
C4S has been busy since the last Sustainability issue of the Reporter! From the launch of our Sustainability Toolkit to our first Roundtable at the North American Snow Conference, C4S has been focused on bringing available resources to APWA members.

**C4S Sustainability Toolkit**

C4S undertook an effort last year to gather, review and organize nearly two hundred case studies, guidelines, rating systems, websites and other tools relevant to a comprehensive set of sustainability topics and focus areas. The C4S Sustainability Toolkit, launched at PWX in Minneapolis, features a user-friendly interface and multi-tier search-ability by focus area, topic, location and type. C4S continues to add resources to the Toolkit and welcomes contributions. Visit C4S online and the Sustainability Toolkit at http://sustainabilitytoolkit.apwa.net/. If you have suggestions for sustainability resources, ideas about how to promote sustainable practices in public works, or want to collaborate with C4S, contact Anne Jackson at ajackson@apwa.net.

**In the Know**

C4S continues to highlight sustainable practices for APWA members in monthly "In the Know" features which can be found under "APWA News" on APWA's home page. Each month, C4S provides a short description of how citizens, local governments and/or public works professionals are working within their communities to bring about a more sustainable future. Tips and practices highlighted in recent months include:

- **Working Toward a Weather-Ready Nation** (January 2017). The National Weather Service (NWS)'s StormReady® program helps arm America’s communities with the communication and safety skills needed to save lives and property – before, during and after an event.
- **Valdosta Sustainability Programs Include Tree Memorial, Rainwater Catchment and Public Art** (February 2017). Named one of Georgia's first “Cities of Excellence,” Valdosta strives to build partnerships, think creatively and provide endless opportunities.
- **Three Georgia Communities Recognized for Leading the Way in Sustainability** (March 2017). The cities of Norcross, Douglasville and Milton were recently recognized by the Atlanta Regional Commission (ARC) for leading the way to a greener region.
All past “In the Know” can be found under “Groups & Committees” > “Center for Sustainability (C4S)” > “Sustainability Resources” and C4S welcomes your stories! Please share your “tips and practices for a more sustainable future” so we can promote to other members.

**Sustainability Works Blog**

In May 2016, C4S “re-booted” its Sustainability Works blog. Guided by monthly themes to highlight sustainability-related events, tools, and resources, recent blog posts have included an illustration of how to calculate the economic value of natural ecosystems, using Autocase for Green Infrastructure to value an existing one-acre swamp in D.C. to see what would be lost from draining it; an argument for "Managing Your Assets" by making an analogy to cars and outlining a three-phase approach to an asset management system (AMS); and highlights of the American Council for an Energy Efficient Economy (ACEEE)’s State Energy Efficiency Scorecard and suggested strategies to improve statewide energy efficiency efforts. Read more at http://www3.apwa.net/centerforsustainability/blog/Posts.

**C4S on Twitter**

In May 2016, to expand its communications tools and build on renewed activity on its Sustainability Works blog, C4S launched a Twitter account. C4S can now be found on Twitter @apwac4s.

C4S Leaders have hosted two Twitter Town Halls – one on July 25, 2016 and a second on March 16, 2017 – as a way of leveraging their expertise and to share tools and resources with APWA members that support sustainability in public works. C4S Leaders Kim Lundgren, JC Alonzo, Steph Larocque, Jen Winter, Matt Rodrigues, Dwayne Kalyunchuk, Michael Simpson and Denny Wilson have participated as experts in the Town Halls.

**Chapter Outreach**

C4S is thrilled to be engaging with Chapters in 2017 – to share our activities and hear about yours! C4S hosts quarterly conference calls for Chapter Sustainability Liaisons – most recently on March 27th – to provide updates on C4S activities and to give chapter sustainability liaisons...
the opportunity to share their challenges and successes with each other. At recent calls, APWA Colorado Chapter Sustainability Liaison Rich Horstmann provided an overview of his chapter’s experience starting a chapter sustainability committee and C4S Leader and Jennings Randolph Fellow Matt Rodrigues provided an overview of his recent fellowship trip to Sweden to study Vision Zero. The remaining calls for Chapter Sustainability Liaisons to be held in 2017 are scheduled as follows:

- Monday, June 26, 2017 at 3:00 PM ET
- Monday, September 25, 2017 at 3:00 PM ET
- Monday, December 11, 2017 at 3:00 PM ET

If you are working to advance sustainability in your chapter, please join us! For more information, please contact Anne Jackson at ajackson@apwa.net.

**C4S Winter Meeting**

The C4S held its Winter Meeting in January in Hermosa Beach, CA. In addition to its business meeting, hosted by the Hermosa Beach Department of Public Works, C4S co-hosted a meeting with the APWA Southern California Chapter at the Los Angeles Environmental Learning Center at Hyperion in Playa del Ray. Chapter President Robert Newman welcomed C4S, C4S Board Liaison Bill Spearman, Region VIII Director Shahn Ahmad, Fleet & Facilities Director-At-Large Mary Joyce Ivers and a fabulous group of speakers from LA Sanitation who presented on various sustainability programs:

- Doug Walters, LA Sanitation’s Chief Sustainability Officer, provided an overview of the Los Angeles Sustainable City pLAn. [http://plan.lamayor.org/](http://plan.lamayor.org/)
- Azya Jackson, Environmental Engineer Associate with LA Sanitation’s Wastewater Engineering Services Division, presented on the One Water LA Plan, an integrated approach for water supply, wastewater treatment, and stormwater management.
- Karen Coca, Division Manager with LA Sanitation’s Solid Resources Citywide Recycling Division, provided information about the Solid Waste Integrated Resources Plan (SWIRP) – most commonly known as the City’s Zero Waste Plan – which lays out a long term plan through 2030 for the City’s solid waste programs, policies and environmental infrastructure.
- Michael Simpson, C4S Leader and Division Manager with LA Sanitation’s Industrial Waste Management Division, presented on the Division’s Industry Support Program, which aims to promote a circular economy by identifying opportunities to disintegrate an abundance of spent waste and integrate it back into products.
- Gordon Haines, Environmental Specialist with LA Sanitation’s Watershed Protection Division presented on the Envision verified South LA Wetland Park. [https://sustainableinfrastructure.org/envision/project-awards/south-la-wetland-park/](https://sustainableinfrastructure.org/envision/project-awards/south-la-wetland-park/)

C4S thanks the speakers and the Southern California Chapter for their contribution to this great event!

**C4S Strategic Plan and Principles of Sustainability**

At its Winter Meeting C4S also spent time reviewing its 2013 five-year strategic plan and updating its vision, mission and principles of sustainability. Visit C4S online for more information.

**Education**

C4S recently hosted a Roundtable at the North American Snow Conference “Sustainability Planning for Winter Road Maintenance” and is gearing up for a Click, Listen & Learn in June on bicycle infrastructure and a Roundtable at PWX on sustainability rating systems lessons learned. We hope you’ll join us!

Anne Jackson can be reached at (202) 218-6750 or ajackson@apwa.net.
Launching a Sustainability Committee: Bringing together sustainability resources to support local communities

Heather M. Maloney
Administrative Services Manager
City of Napa, California
Member, APWA Center for Sustainability

Sustainability in public works means seeking a balanced approach for a vibrant community today and tomorrow. Public works professionals can play a significant role in a community’s journey towards sustainability by providing an efficient delivery of infrastructure in an environmentally and socially responsible way that provides the best economic choice in the long term. This can translate to widely varying meanings to different communities and is largely based on local values, resources and existing policies. While there are many nationally and internationally recognized guiding principles and resources related to sustainability, the interpretation of these principles and application of the tools to a local region or community can vary widely. This is where a Chapter Sustainability Committee can serve as a highly valuable resource to local communities to provide support and the advancement of sustainability in public works.

The value of a Chapter Sustainability Committee

APWA’s Center for Sustainability (C4S) brings together all of the latest tools, resources, education, and knowledge that public works professionals need to achieve sustainability in their communities. A Chapter Sustainability Committee can add tremendous additional value by translating the variety of resources that C4S offers to the local community in addition to creating a priceless support network for those striving to implement sustainability practices in their communities. C4S encourages the chapter establishment of local sustainability committees in order to bring together the local players who know the local issues, and topics of interest. Each chapter has the opportunity to structure their Sustainability Committee in the way that best meets the needs of the chapter, the members, and the Association.

Some local chapter Sustainability Committees are structured to provide direct influence over their chapter’s activities. Others are established as a resource and best practice sharing group.

Training ground for emerging leaders

In addition to providing direct resources and support to promote sustainability in regions, creating a Sustainability Committee can help to increase chapter membership and provide an excellent training ground for future chapter leaders. The opportunity for an individual to participate in committee work, and the challenge it provides, enhances the feeling of belonging, of playing a significant role in the chapter, and increases loyalty to the Association.

My chapter doesn’t have a Sustainability Committee; how do we start one?

The first step is to select a Chair. This should be someone who can serve the needs of the chapter...

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as a champion for the committee—someone who is passionate, who has clear vision and who knows the local players to start gathering members and committee leaders. Over time, the Chair’s responsibilities will evolve as the committee gains membership and develops a work plan. Along with the committee’s ongoing work and leadership, the Chair should also create a succession plan for their succession along with the recruitment of new committee members. This will ensure consistent vision and effectiveness of the committee. The selection of committee members is integral to the potential effectiveness of the committee. When choosing members for a committee, chapters should balance the selection of successful, experienced members with those who are new to the chapter. Newer members will provide a fresh outside perspective while experienced members provide guidance and history.

After selecting committee members, the membership should establish key objectives and identify a related work plan. Generally, chapter sustainability committees share the following objectives which are supported by C4S:

- Provide relevant educational opportunities through chapter meetings, conference sessions, and the chapter newsletter
- Promote the Envision Rating System through member trainings and educational sessions
- Recognize sustainability leaders, projects and initiatives through chapter awards
- Advocate for the advancement of sustainability goals in their communities

C4S recently completed a Resource Guide for Chapter Sustainability Liaisons and Committees. The Resource Guide was written by C4S members who have started and chaired Sustainability Committees for their local chapters and provides the helpful information they wish they would have known when they were getting started. The Resource Guide includes support on how to get started, how to structure your committee, the value of strategic planning, suggested activities, interfacing with C4S, and interfacing with other chapters and committees. Additionally, the Resource Guide includes survey responses from chapter leaders providing examples of the goals and strategies of committees, how chapters recruit and maintain membership, and the types of activities and information they share in chapter meetings, committee meetings, and additional meetings and presentations.

C4S hosts quarterly calls with chapter sustainability committee leaders and liaisons. The calls provide a support network for participants to share successes and challenges, new programs and activities, etc. in their local committees. C4S members also provide updates on new tools and resources along with leadership support.

The C4S is developing a Mentoring Program for committee chairs that will match existing chairs with other APWA members who have previously been involved as active members or chairs at some time. A mentor can provide valuable insight and suggestions on how to successfully grow and maintain your committee.

To find out more information about starting a sustainability committee in your local chapter or for the chapter committee support resources, please visit the Library of the Center for Sustainability Community on APWA Connect. For more information regarding the resources discussed in this article, contact Anne Jackson at ajackson@apwa.net.

Heather M. Maloney can be reached at (707) 257-9209 or hmaloney@cityofnapa.org.
On March 29, APWA Executive Director Scott Grayson (far right), President-Elect Bo Mills (far left) and Emergency Management Committee member Mark Ray accompanied APWA Government Affairs Manager Marty Williams to the Senate to visit with Senator Amy Klobuchar (MN) and discuss the important role of public works.
This year, the Florida Host Chapter is rolling out the red carpet to make sure you get the most out of your experience in the Sunshine State and in the City Beautiful!

Give Kids The World Service Project – by David Derrick, PWLF, Assistant Public Works Director, City of Greenville, S.C.

Volunteering with Give Kids The World Village inspires hope, creates priceless memories and helps kids with life-threatening illnesses and their families celebrate life. It’s in the laughter of a girl who’s spent too many days in the hospital, and in the smile of a mother who hears her giggle for the first time in months. It’s in the smile of a little boy eating ice cream for breakfast, and in the heart of his parents who, for one magical week, don’t mind a bit.

The Village’s 79-acre, “storybook” resort is a home-away-from-home for children whose one wish is to visit Central Florida’s world-famous theme parks. GKTW is a resort full of whimsy, where no family pays, every child is special and hope grows like wildflowers. GKTW exists to bring out the best in our brave wish children as they bring out the inner child in the adults who love them. Our families often tell us that their time at GKTW helps them find the strength to continue coping with such a serious illness. Here’s how one of the wish families put it recently:

“In the ‘real world’ Olivia is on the sidelines most of the time, but during our stay at GKTW, she was center stage. She WAS the princess. I watched my little girl dance! At the Village, she felt comfortable enough to dance with the other children. There is story after story I could write, but instead I will keep them tucked away and etched on my heart... forever.” – Olivia’s family, Oklahoma

This is APWA volunteer team building with a purpose—four hours spent helping sick kids who, more than anything, just want to be kids. GKTW provides wish families with joyful moments that lead to lasting memories, and we can help them do this because of believers like you. It is our way of giving back, being thankful and a morning you will never forget.

5k Fun Run – by Jorge Vincent Uy, P.E., Pavement Management Engineer, City of Tampa, Florida

Feeling sluggish? Feeling a little heavy these days? Have you met your New Year’s resolution to lose weight? Fear not, PWX is going green by introducing to you the first-ever PWX 5k Fun Run. Please join us bright and early on Tuesday, August 29, at 7:00 a.m. The race is conveniently located outside the Orange County Convention Center, so wake up, come downstairs, and let’s race!

There will be FREE T-shirts, bib numbers and many other goodies and giveaways upon registration. Take this opportunity to wake up to the warm Florida sunshine and run with your closest municipal agencies, consultants, and contractors. Also, what better way to network than to run in the 2017 PWX 5k Fun Run! We hope to see you there. THINK NEW YEAR, NEW ME!

PWX Championship Golf Scramble – by Randy Shane, Technical Marketing Manager, Asphalt Paving Systems, Tampa, Florida

Start your PWX Orlando experience off with an event that no one should miss. Golfers of all abilities and skill levels will relish the opportunity to play at Reunion Resort, which is the only...
destination in the world to boast three Signature golf courses designed by legends Arnold Palmer, Jack Nicklaus and Tom Watson.

The Watson Course will host the PWX four-person scramble on Saturday, August 26, at 8:30 a.m. The Watson Course was named one of the Top 10 Courses to Play in Florida by My Golf Spy in 2016 and is a course you do not want to leave Florida without playing. Combining the beauty of its natural landscaping with a unique and challenging layout, it’s sure to be a memorable experience to take home with you from PWX Orlando.

**Brewery Tour of Central Florida – by Matthew LaChance, Technical Marketing Manager, Ingevity & PWX 2017 Host Committee Co-Chair**

Orlando is known worldwide as a premier tourist destination for its theme parks, but there is much more to the City Beautiful than marine mammals and mouse ears. Orlando also has a vibrant culture of preforming arts, world-class restaurants, and a growing microbrew scene. Come join us for a tour of three of Orlando’s craft breweries and experience a taste of the local flavor.

First stop is the laid-back atmosphere of Ocean Sun Brewing. Enjoy a wide selection of their beers, from their Bumby Blonde Ale to their Blue Bags IPA. Grab a seat at the bar, or lounge in one of the leather couches in the corner.

Next up is the Orlando Brewing Company, one of Orlando’s oldest craft breweries. One of the few USDA-certified organic breweries in the country, and the only one south of Vermont and east of the Mississippi River, Orlando Brewing has set the standard for quality brew in the area. You can find their beers in over 500 locations, but they are best experienced where they are made in the industrial-themed tasting room at the brewery in South Orlando. Whether you prefer a Right on Red Ale or an I4 IPA, or maybe an O-Town Brown Ale, they all will be refreshing on a hot summer day in sunny central Florida.

We round out the tour at the Dead Lizard Brewing Company. Located close to the International Drive area, tucked back in a light industrial area, Dead Lizard is one of Orlando’s newer breweries. Known for their funky flavors like Chameleon Vanilla Cream Ale and Chameleon Key Lime Cream-Sic-Ale, you may also want to try the Gila Monster Stout or maybe the Purple Skink West Coast IPA.

No matter what your tastes in beers are, you can bet that you will find it on this tour. You never truly experience a city until you have had a sampling of their local brew, so this is your chance to really get a chance to get a taste of the real Orlando.

You can sign up or learn more about these amazing PWX Orlando special events on the Florida Chapter website at http://florida.apwa.net or through the PWX website at http://pwx.apwa.net.

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**Your Vote in APWA Does Count**

As an APWA member, you will have the opportunity to vote for members of the APWA Board of Directors between June 28, 2017 and July 28, 2017:

- APWA President-Elect
- At-Large Director in the functional area of Fleet and Facilities
- Regions I, II, V, VI and VIII Regional Directors (by APWA members in those respective regions)

The ballot will be available for online voting between June 28 and July 28, 2017 via a link on the APWA website. If you are unable to vote online, you may request a paper ballot from Teresa Hon at (816) 595-5224. Additional reminders of the voting process will be through the APWA website; via e-mail to every member for whom we have an e-mail address; and in future issues of the APWA Reporter.

If you have questions, please contact Teresa Hon at (816) 595-5224 or thon@apwa.net.
Georgetown County celebrates National Public Works Week

Jackie R. Broach
Public Information Officer
Georgetown County, South Carolina

In Georgetown County, every public works employee learns quickly that National Public Works Week is an occasion to look forward to year after year. That’s because the county’s leadership makes it a priority to turn the event into something special, said Ray Funnye, director of the Georgetown County Public Services Department, which includes the Public Works Division.

The event occurs in late May—specifically May 21-27 this year—but Funnye and his support staff normally start planning activities in January.

“National Public Works Week offers those of us in this field some important opportunities, and here in Georgetown County, we believe in taking full advantage of those opportunities,” he said. “Not only does this occasion give us an excellent platform to reach out to the public and educate them about what we do and just how extensive public works is, but it’s a chance to highlight how important this work is to the quality of citizens’ everyday lives. That makes it also a prime time to highlight our employees who are dedicated to doing this work and to say thank you to them.”

Funnye said he considers himself lucky to have a County Administrator as well as a County Council who share that view and who are supportive of National Public Works Week activities. Georgetown County Council annually passes a resolution in support of National Public Works Week and presents that resolution during an annual luncheon for Public Works staff.

The picnic-style meal is always a lead-in to a day-long celebration featuring activities and awards for Public Works staff, and culminating in one of the highlights of National Public Works Week in Georgetown County: an annual Regional Backhoe Rodeo.

“We’ve been lucky enough to host this event here in Georgetown County for the last 23 years, and that really is something we’re proud of,” Funnye said.

The Backhoe Rodeo allows backhoe operators to showcase their skills by performing precision maneuvers in a series of challenges, which change from year to year.

“It’s a fun day, but it also serves the purpose of allowing us to come together to network and talk about different challenges we face in our jobs,” Funnye said. “We can meet other people in our profession and talk shop, and that’s good in our industry because the issues we face in our home counties are very similar. Someone else in the competition may have already experienced an issue in their home county that we’re facing now, and they may be able to give us some input to help us solve the problem.”
The county also hosts a truck rodeo for its employees and has previously had safety rodeos as well.

Along with honoring and rewarding existing employees, the county creates opportunities during National Public Works Week to recruit future staff by reaching out to the next generation. Funnye and his staff annually extend their celebrations to local elementary schools, where they participate in career talks and bring some of their equipment along for hugely popular “Touch a Truck” events. They usually bring a dump truck or backhoe along and let the kids get an up-close look. It’s usually a big thrill for most of the students.

“The kids really have a field day being able to climb up on these machines and sit in the driver’s seat,” Funnye said. “It’s always a hit. And once we have their attention, we can talk about the kinds of work we do and offer some education on topics such as recycling. We can talk about some of the science and engineering involved in our field, and teach them that public works is an expansive industry.”

Ways to further year-round outreach and education initiatives for adults are also sought. It’s a constant challenge keeping residents convinced of the importance of recycling and why it’s worth a little extra effort. The county also seeks creative ways to expand its recycling efforts. Most recently it turned wood debris resulting from a hurricane into mulch and made that product available to residents at no cost. The county also has a paint recycling program and continues to promote ongoing campaigns on home composting and proper disposal of household hazardous waste.

“Some people still think that public works is just roads and bridges, but it goes so far beyond that and we’re always looking for ways to highlight that,” Funnye said. “National Public Works Week and the resources from APWA help us do that. The theme this year for National Public Works Week is ‘Public Works Connects Us,’ and it really does. It connects us in so many ways.”

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Streets, highways and bridges are certainly a major component, but the field also includes railroads, airports and waterways. Stormwater, fleet maintenance, engineering and the landfill are all functions of public works that people often don’t associate with the field, Funnye said. When he promotes recent work done by his staff during National Public Works Week this year, an inlet dredging project, construction of new airport hangars, and countywide road improvements will all be on the list. The field needs men and women with all types of skills including heavy equipment operators, scientists and engineers, surveyors and administrators.

“The men and women in public works really have such a huge impact on our communities,” Funnye said. “There isn’t a person out there who doesn’t benefit in some way from the work our public works employees do. That’s why I really do think it’s very important for us to take some time at least once a year to recognize and thank the men and women involved in providing these kinds of services in our counties and municipalities.”

Jackie Broach can be reached at (843) 545-3164 or jbroach@gtcounty.org.

Harold West (right), a special projects supervisor with Georgetown County Public Services, is pictured with a trophy for winning the Backhoe Rodeo. West has won and placed in the event many times over the years, having also advanced to and won the state competition.
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MAY 21-27, 2017

#NPWW

WE'RE CELEBRATING PUBLIC WORKS!

This year, National Public Works Week celebrates the vital role public works plays in connecting us all together. As the cornerstone of civilization, public works provides, maintains, and improves the structures and services that assure a higher quality of life for our communities. Streets, roads, bridges, and public transportation keep us linked together from coast to coast, and clean water and sanitation services keep us healthy and allow our communities to grow and prosper. APWA proudly salutes and thanks the tens of thousands of public works professionals who work tirelessly throughout North America every day to strengthen the bond that keeps us all connected.

Visit our website at apwa.net/npww for great ideas on how to celebrate National Public Works Week in your community this year. Share your experiences on social media using the hashtag #NPWW.

If you have any questions contact us at npww@apwa.net.
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#NPWW
National Public Works Week in Benton County

Lili’a Uili Neville
Public Information Officer
Benton County, Oregon

Beginning in 1960, the American Public Works Association has hosted National Public Works Week across North America. The goal of the week is to energize and educate North American communities about the planning, building, managing and operating undertaken by public works departments to improve the everyday quality of life for the public.

The Benton County Public Works Department has participated in the national celebration for the past two years. The two primary focus areas of the celebration in Benton County are youth outreach and staff appreciation.

In the past two years, Public Works staff visited seven elementary schools across Benton County to engage with local kids and teach them about the services that public works departments provide. County staff brings each student a P.W. Paws workbook and pencil, and then shows off large-scale machinery, equipment and answers questions.

“Getting involved with schools in our county has been such a worthwhile experience,” said Josh Wheeler, Public Works Director. “Last year we visited Alsea, Hoover, Lincoln and Franklin Elementary schools. This year we plan to visit four more schools that we’ve never been to before. I think the more we connect and do outreach with these kids, the more understanding future generations of Oregonians will have of the work public works departments do to improve their communities.”
have about the necessity for public works projects to sustain and improve the environments where they live, work and play. Plus, we really have a lot of fun too.”

Benton County also marks the week by hosting an appreciation BBQ and picnic for Public Works staff.

In the future, the county hopes to add to the annual activities and add an interactive event that is co-hosted by Benton County and the City of Corvallis, the county seat.

To learn more about public works in Benton County, visit www.co.benton.or.us/publicworks.

Lili’a Uili Neville can be reached at (541) 766-6082.

Public Works and other county staff at the employee appreciation BBQ and picnic during National Public Works Week.
like many small communities in rural America, as well as across the nation, the City of Sweet Home, Ore., struggles with funding the necessary repairs and maintenance of its public infrastructure. Often our work requires that we concentrate on the water, wastewater, streets and rights-of-way, and public parks and are often in relation to approved plans and/or emergency situations. The missing component is often the planning and care for public facilities themselves, of which our local community is no different.

During the 1980s, the community of Sweet Home experienced a major decline in population and industry as environmental issues forced the closure of multiple sawmills and logging operations within the community. Regardless of these tough times, and sometimes because of them, opportunities present themselves and with forethought and imagination, they can be utilized to improve a current situation and help us provide for the future. Over the past 20 years, the community banded together and rode out the changes, eventually turning the tide of recession into a wave of progression. The community has built a new water treatment plant, perfected longstanding water rights, and is working diligently to come into compliance with wastewater regulations. The current population of 9,090 is the largest it has historically been, and there is available infrastructure and property available for additional growth opportunity and improved economic development.

A primary goal of the current City leadership is to focus attention and resources on community economic development efforts, and a strategy that has presented itself here locally is having the opportunity to move government City Hall operations to a recently procured building that has remained vacant for many years, which is more centralized to the city boundary in preparation for the future development within and throughout the community.

The existing City Hall is a multi-level structure encompassing approximately 6,000 square feet and sits on approximately 0.55 acres. It was originally built in the 1950s to accommodate City officials and public meetings on the main floor and housed the local Police Department (including jail cells) as well as the Public Library in the lower (basement) level.

The Public Library operations were the first to relocate to their own facility in the late 1960s to the east one block with the Police Department moving further east to their new facility around the year 2000. The move of the Police Department was due not only to growth but also due to local flooding in the lower floor in 1996 that required a temporary relocation to a double-wide mobile office placed directly behind the main building until the new Police Department facility could be funded and built.
Around mid-2015, City Council authorized the purchase of a 5.5-acre parcel of property that included a single-level, 12K+ square-foot building built in 1983 that originally housed offices for the U.S. Forest Service. In addition to the building, there is also enough land to create a public park as well.

Although this new facility is about double the usable office space of the current City Hall facility, it provides a great opportunity for service expansion of municipal services on one level, not to mention improved efficiencies amongst departments and work groups; it also will provide about 4K square feet of “lease space” available for economic opportunities as they arise. Given that the inside of the building has been cleared of interior wall and ceiling coverings as a result of past water damage, we are able to work with a virtual “blank canvas.”

The City has solicited the help of professional architects in an effort to design the space for maximum functionality and expects to have final layout and design by end of April 2017. Funds for the remodel are planned to be received soon from anticipated property sale of approximately two acres of residential riverfront property the City has in possession that originally housed the Public Works Maintenance and Water Treatment Plant facility until about 2009.

The possibilities for this new facility and how it is ultimately finished is exciting to employees as well as to citizens of this great community. Although the initial reaction to the property acquisition by the general public was somewhat inquisitive, it has since become a bit of a rallying point for the community in its efforts to entice and encourage additional economic development with the community. We look forward to keeping you updated as this project progresses. The future is bright and in good hands in Sweet Home, Oregon!

Michael J. Adams can be reached at (541) 367-6359 or madams@ci.sweet-home.or.us.

![Current City Hall](image1)

![New City Hall building](image2)
The text at the top left are the first two lines from the poem by Joyce Kilmer. The poem observes the beauty of something that is all too often taken for granted: Trees.

What are the benefits of trees? The City of Jefferson, Ga., found that there are many. We, here in public works, know that trees generate oxygen and do a tremendous job absorbing stormwater. But trees offer more, less recognized, benefits. These include aesthetic improvement by simply planting trees, improved quality of life, increased property values, decreased crime and enhanced environmental health, as well as making a contribution to the financial health of the community in the treating of trees as infrastructure.

Recognizing these many benefits and wishing to promote the planting of trees in Jefferson, a small group of citizens created the Jefferson Heritage Tree Council (JHTC). Their initial goal was to inventory our historic trees and to educate the community in the value of trees. They have met and greatly exceeded their original goals.

The following article outlines the efforts of the tree council and provides a “road map” that can be followed by other communities to enrich their communities and improve the quality of life.

To provide an educational program, the JHTC adopted the well-proven “Four-Pronged” approach used by educators: Awareness, Education, Understanding and Participation.

**Awareness – Citizens and Government**

The JHTC began its work by soliciting locations from our citizens regarding large, historic, and/or unique trees throughout the city. The selected trees were awarded a plaque and were added to a driving tour map that is distributed locally.

As a result of public awareness of, and interest in, these historic trees, the JHTC then pursued certification as a Tree City USA through the Arbor Day
Foundation. The JHTC achieved this goal in 2005 and has been a Tree City USA since that time. With this success the JHTC embarked on its education program as outlined.

**Education – Community Wide**

The JHTC recognized that in order to educate the residents of the city about the value of trees, funding would be required. To achieve their funding needs the council pursued, and was awarded, grants from various forestry-based agencies.

The first grant that JHTC received was for the Georgia Forestry Commission “Making the Shade” program. With this grant trees were planted in various parks with the goal of providing shade to children playing on and around playground equipment. Help was given by the local Boys and Girls Clubs as an educational element to their programs.

Trees were planted in six area playgrounds and were recognized and celebrated at the 2007 national Arbor Day event.

Similar activities were held over the next several years that educated our citizens about trees and their benefits to the community. These included:

- In 2008 a grant from the Georgia Urban Forest Council (GUFC) funded an inventory of all public trees and to identify additional planting opportunities with the city.
- In 2009 a grant was received that funded a complete city tree canopy survey. Volunteers were solicited to count trees on aerial maps which the grant funded. This study revealed that Jefferson had a tree coverage of 55.8%; excellent coverage for a city our size (22 square miles).

JHTC adopted the goal of no net loss of canopy citywide as growth occurs.

Throughout the course of these grant programs, education of citizens and government officials regarding the various research-based benefits to the community continued.

In 2010 the first Foliage Fest was held in March that year intended to promote the planting of trees and other vegetation. The event was open to plant vendors, educational experts, green-related arts and crafts vendors, and music.

The event has proven to be highly successful and recently celebrated its sixth year. It has become a community flagship event that has even drawn visitors from Florida and the Carolinas!

**Understanding – Community Wide**

Understanding is linked closely with the education aspect. It was important to begin having citizens and the government ask, “How does all this apply to me personally?” This question was answered by demonstrating the environmental and financial contributions that trees offer to the community.

For businesses: Research conducted in Los Angeles, Calif., by Tree People Foundation, and replicated in nearby Athens, Ga., indicated that not only do retail areas planted with trees draw more shoppers, but these shoppers spend more time in those areas and spend 9-12% more money than they otherwise would.

For property owners: Similarly the same studies revealed that properties with trees sell more quickly and command approximately 15% more in sale price than similar properties without trees.

Community Safety: Research by the University of Illinois reveals that in treed communities, people tend to spend more time outdoors, get to know each other, and form friendships. The benefit from this is that participating neighborhoods became deterrents to crime and vandalism as these areas are perceived as being “cared for and monitored.”

Community Health: School children pay better attention and may achieve higher grades if they have access to a view of trees during classroom time.

Taxpayer benefits: Increased sales mean more tax revenue for the city, as do higher property values and higher occupancy rates. Decreased crime means less cost for the resources to deal with these issues. Decreased stormwater management, improved water quality, and paving costs mean less money from the taxpayer pocket.

This information was shared with the community through tree-themed educational sessions, Garden Club talks, water bill inserts and handouts at our annual Spring Foliage Festival. This information further generated community interest.

continued on page 26
Participation – Community Wide
Jefferson is the seventh-fastest-growing city in Georgia, and is located in the ninth-fastest-growing county in the country. Ordinances to protect the existing trees and promote their expansion were compiled.

In 2010 an Urban Forestry Master Plan was developed, which included recommended updates to the Land Use Management Code that set minimum tree planting standards for developers.

While Jefferson has planted roughly one hundred trees per year on public property, it was recognized that the community as a whole benefits from trees planted by private individuals on their own properties.

To achieve this goal of promoting private tree planting, the city implemented two programs. First, the tree council holds a tree sale twice per year. Second, utility customers can receive a twice yearly credit on their bill by planting trees. Approximately 300 trees per year are sold for private property installation. Not only do the homeowner and community reap the environmental benefits, but the city and taxpayers save money as the trees do not require staff time, resources, or equipment for maintenance. The response has been tremendous.

Summary
Has the tree program in Jefferson been successful? Absolutely.

As a result of the efforts of the Jefferson Heritage Tree Council the community has an understanding of the benefits of a healthy urban forest. By providing adequate financial incentives and with the support of the city council, the community has been empowered to embrace and continue promoting the planting of trees.

Here is a list of JHTC’s achievements and recognitions:

- Specimen tree recognition
- Memorial tree planting schedule and walking trail
- The establishment of the Tree Bank to ensure the continued maintenance and planting of trees
- Strong tree conservation and replacement ordinances
- Thirteen straight years as a recognized Tree City
- The incredible success of the annual Spring Foliage Fest
- Certification as a Firewise Community, and
- The first community in Georgia to be awarded the Friends of the Community Forest by the Georgia Forestry Commission

Your community can achieve these as well as realizing increased land values, increased business revenues, increased sense of community and DECREASE in crime.

For additional information on the benefits of adopting a tree program please contact Jeff Killip at jkillip@cityofjeffersonga.com or Susan Russell at arborvitals@bellsouth.net.

Tree City Plaques, now in its eleventh year

“Sustainability is a condition of existence which enables the present generation of humans and other species to enjoy social well-being, a vibrant economy, and a healthy environment, and to experience fulfillment, beauty and joy, without compromising the ability of future generations of humans and other species to enjoy the same.”

– Guy Dauncey, author of The Climate Challenge: 101 Solutions to Global Warming
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A successful kickoff leads to accreditation for Shawnee, Kansas

Caitlin Gard
Assistant Public Works Director
City of Shawnee, Kansas
Chair, Kansas City Metro Chapter Publicity Committee

How can you get staff excited about accreditation? One of the best ways is to hold an “Accreditation kick-off” event. While you should include an introduction to the accreditation process, tips on gathering materials and discuss who will be directly vs. indirectly involved, there is much more to it than that.

You should hold a department meeting. Make it fun! This is your opportunity to gain the buy-in for a successful accreditation process. If you are excited about what lies ahead, they will be too. You may want to consider having food and beverage on hand to make it more of a celebration, not just another boring meeting. In addition to food, which is always a morale booster, many organizations provide fun items such as accreditation t-shirts or hats.

In the meeting, it is important to go over the process, but don’t just have your director lecture with a dull PowerPoint presentation. Think about bringing in a panel of local agency representatives who have been through the process before. To make accreditation directly relatable to everyone, think about having a panel representative from each level of the organization – upper management, middle management, crew supervisor, front line staff, admin, etc. That way the questions of “How is this beneficial to me?” or “How do I prioritize this over all my other duties” can be answered and relevant for each of your staff.

Other ideas to think about:

- Is the City Manager’s Office or the Governing Body on board with this process? If so, invite them. I know our front line staff enjoys recognition from “the boss”. They may even give some inspirational comments!
- Where should we hold the event? Sometimes it’s nice to get out of the shop.
- How long should it be? We have a two hour max rule at our shop. Do you really think you have people’s attention after two hours, anyway?

The City of Shawnee held this event in May of 2014 and became the 105th accredited agency 18 months later. If we did it, you can too!

Caitlin Gard can be reached at (913) 742-6230 or cgard@cityofshawnee.org.
Sustainable diversity

AbdulRasak Yahaya
Staff Engineer
City of Gardner, Kansas
Member, APWA Diversity Committee

In nature if a species’ genetic makeup is not diverse enough then that species is vulnerable to disease and extinction. Let’s think about that for a moment, and ask the question, “Why is that?” There is nothing wrong with the species and, in many regards, they are flourishing and thriving. The key issue is that even though they are flourishing and thriving they are at the highest risk of being erased from the planet. Our organizations, companies and government municipalities are subject to the same extinction risks that exist in nature. If our work culture “workplace DNA” follows a similar pattern of being too close in likeness when it comes to ideas, processes, environment, leadership, and people, then it is vulnerable. In this era of what’s your “brand” we must be mindful of building a sustainable brand.

The focus of this month’s APWA Reporter is all about sustainability. Let’s first define sustainable: by Merriam-Webster’s definition, “a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.” When it comes to public works we are often required to make things last at a high level of service with innovative processes. I would like to introduce the concept of “sustainable diversity” which focuses on the process of developing and sustaining a diverse workforce and not on target goals and numbers. So how does one best illustrate sustainable diversity to an audience whose primary focus on a day-to-day basis is infrastructure? It’s simple—you compare it to our existing infrastructure dilemma. I currently facilitate the City’s Pavement Management Program which was not in existence two years ago. I purchased a pavement analysis software to collect pavement condition samples, and over the course of a year determined the overall condition “health” of the city’s streets. I wish I could tell you that the overall streets condition was poor and it was going to be slam dunk to get the city council to invest into street infrastructure. I discovered the opposite and that the overall Pavement Condition Index (PCI) was a 73 or satisfactory condition. However, looking deeper into the analysis I discovered a concerning revelation. Two-thirds of the infrastructure was built in the same 5-10 year span, meaning that the life cycle of the pavement would all need to be repaired at the same time.

I had a frightening task ahead of me, to convince a city that it needed to invest in its street infrastructure now opposed to later. Our pavement management motto that we developed was “Keep the Good Roads Good!” However, a motto does not get citizens to vote in favor of a half-cent sales tax over 10 years. To drive home the concept of sustainable infrastructure, I focused on people’s homes! I painted the picture to our citizens that in your home you have a roof, air conditioner, and furnace. At any given time if one of these items needs to be replaced, it can be managed. However, if all three need to be replaced at the same time it could be a lot to overcome—especially living in Kansas where snow, record heat, and tornados happen in the same week! We came together as a city and invested in our sustainable infrastructure future.

To create sustainable diversity just like sustainable infrastructure you must look deeper than what the initial analysis determines, and sometimes what you find can be startling or modest. Whatever the determination is for your organization you must work to build an environment that fosters this simple concept. With the concept being simple an organization needs to develop a process of implementation that will reach all levels. I wrote a previous APWA Reporter diversity article (May 2015) illustrating a process called “DIVE IN” which utilizes the acronym as action steps. DIVE IN stands for Diversity, Inclusion, Value, Educate, Improve and Now. With this process and countless other very effective ways to truly look deeper at your workplace DNA, any organization can build a brand that has sustainable diversity infused at every level from boots-on-the-ground to management. You don’t have to be a big organization to have a big impact in the way of creating sustainable diversity. All ideas start small, good or bad; the key factor in which idea has lasting and impactful influence depends on which one gets the necessary attention to develop. It has been said, “Bad news travels the world two times over before good news can even form a breath.” However, I encourage everyone to catch your breath and find the good news that your organization needs to build a sustainable brand through sustainable diversity. In the words of Martin Luther King, Jr., “Life’s most persistent and urgent question is, what are you doing for others?”

AbdulRasak Yahaya can be reached at (913) 856-0920 or ayahaya@gardnerkansas.gov.
Recognize Your Leaders

Nominator’s Name: Lindsay Marquez, Olympia Public Works

Candidate’s Name: Ken Witt

Candidate’s Title: Lead Worker, Drinking Water Operations and Maintenance

Candidate’s Agency/Organization: City of Olympia, Public Works – Water Resources

Candidate’s City/State: Olympia, Washington

A simple definition of leadership is that leadership is the art of motivating a group of people to act towards achieving a common goal. Many times we find ourselves thinking of leaders being only at the top of an organization. Not so. Leaders are found at all levels within our public works organizations. Most often, they are anonymous; they are simply doing their jobs and yet, their actions impact many.

Look around your organization and find someone to recognize for a specific project they have done. It could be your manager, first-line supervisor, assistant, or janitor. Submit the name of the individual and a brief summary of the project you would like to recognize them for to Becky Stein at bstein@apwa.net.

All submissions will be reviewed by members of the Leadership & Management Committee. Those individuals selected will be recognized in a future issue of the APWA Reporter.

How long has the candidate been involved in the public works industry?
25 years

How long has the candidate worked in their current position?
Two years

Please describe the reason that the candidate is being considered for recognition.
Ken Witt is worthy of recognition for empowering his crew to take a risk on their idea to design and build a water valve turner that saves money, increases efficiency and reduces injuries. The results were impressive and caught the attention of the Olympia Public Works Director who nominated Ken and his team for the 2016 APWA Washington State Chapter’s award for Achieving Dreams through Empowered Public Works Teams which they received in October 2016.

Crew members Lupe Vazquez and Curt Antill received a lot of accolades but are very humble about their recognition. They say that none of this would have been possible without the leadership and support of their lead, Ken Witt. In December 2016, Ken was awarded with the Olympia
Public Works Department People's Choice Award as recognized by his peers.

**How was the candidate’s leadership ideas/actions brought to the forefront?**

Ken creates a work environment where crews are empowered to innovate. The results are a win/win, with increased productivity that saves the City of Olympia 80 hours per month and has doubled the amount of valves exercised per day.

**Who did the candidate work with to help bring this idea/action forward?**

Ken worked with his supervisor Ernie Klimek to present the idea and gained his support to the fund the project. Ken also worked closely with the crew to ensure the normal day-to-day workload was accomplished.

**Did the candidate experience any challenges when trying to implement this?**

Ken managed workloads and schedules and gave the crew the resources to build and test their idea. But some crew members raised concerns and felt there was favoritism occurring. Ken was able to successfully manage the concerns and create an environment where the whole team is motivated, implementing new ideas, and employees are excited to come to work.

**Are there steps/processes that, when looking back, the candidate could have done differently to make this idea/action even more successful (lessons learned)?**

The only thing Ken would do differently is to communicate with the other crew members the goals of the project to help abate any concerns. He feels that keeping people informed is vital for successful teams.
Public works professionals pay tribute to fallen Longmeadow public works employee Warren Cowles

To recognize fallen public works comrade Warren Cowles of Longmeadow, Mass., who was tragically killed in a snowplow and train accident, many public works professionals from his community and local area public works departments participated in a motorcade of public works vehicles to honor him on March 24, 2017. Crews of public works colleagues followed Cowles’ funeral procession in public works vehicles. The funeral took place on March 24 at Curran Jones Funeral Home, West Springfield, Mass.

The Longmeadow Public Works Department participated in the funeral procession along with members of APWA’s New England Chapter and towns from across New England. The participating jurisdictions sent between 300-400 vehicles and representatives were dressed in their fluorescent yellow safety gear to pay tribute to the public works service of Cowles, who was killed while on duty as an emergency first responder during the recent snow storm.

“We lined the streets with public works employees dressed in their yellow safety jackets and provided a fleet of trucks to follow the funeral procession as a tribute to Warren and his family,” said Needham Public Works Director, Richard Merson, APWA New England Chapter Past President.

“The New England Chapter has a membership of slightly over 1,000, and it has been a goal of the chapter to increase the public awareness of public works as emergency first responders,” Merson said. “During extreme weather events such as major snow storms, it is typically the public works departments that serve as principal first responders and as the incident commanders of the emergency management team. The show of equipment and professionals is a fitting tribute to honor our colleague for his distinguished service in this effort.”

The New England Chapter held a similar tribute in February 2014 for a fallen Natick, Mass., Department of Public Works employee killed in the line of duty. This event attracted over 400 public works employees and 200 pieces of heavy equipment.
Bloomfield Township joins other agencies to pay tribute to fallen road worker

On March 29, the Bloomfield Township, Mich., Public Works Department joined several other communities to pay tribute to David Wolf, a Wayne County Road Commission employee who was killed on March 23.

The Township sent a truck to Wolf’s funeral service which was held the morning of March 29. More than 75 trucks from DPW departments ranging from Bloomfield Township to Ann Arbor, and Romulus to Midland, salute Wolf.

Wolf was killed while working with a road crew patching potholes on Van Born Road in Taylor when a backup truck rolled into the crew from behind. Another worker was seriously injured. Wolf, 47, was from Garden City. He was married with two children.

The APWA Michigan Chapter and branches came together to support their public works family and the Wayne County Road Commission. “We lost a colleague who was in service to improve the community,” said Tom Trice, Director of the Bloomfield Township Public Works Department and APWA Past President. “People don’t realize how potentially hazardous working on roads can be. This loss affects us all.”
In recent years advocacy has been a strategic priority at the national level for APWA. In order to best support the goals for advocacy, the role of the Government Affairs Committee (GAC) is evolving. The GAC, along with the Technical Committees and the Board of Directors, has always had an important role in the organization’s policy process. However, to better focus and enhance advocacy efforts, as of July 1, 2017, when APWA’s new fiscal year begins, members of the GAC will be responsible for identifying, drafting, and promoting the organization’s federal level legislative priorities.

Moving forward, APWA’s legislative priorities will be tied to the U.S. congressional schedule, meaning that APWA policies will be drafted to stand for a two-year period of time. By having two-year policy cycles with priorities relevant to the political discussion, APWA will be targeted, flexible and significant as a resource to policymakers. Moreover, by simplifying APWA’s public policy agenda, a greater focus and more efficient use of resources will be achieved and will prove useful in raising APWA’s profile to the U.S. Congress, federal agencies, partner organizations, and the general public. In addition to strengthening advocacy efforts, the GAC changes will allow for APWA’s Technical Committees to focus their energy on APWA’s education goals.

In February during the most recent APWA Board meeting, a new charter was approved for the GAC and its new role. Within that charter is a mission statement and outlined objectives for the GAC. The mission statement is:

The GAC identifies, drafts, and advocates for APWA’s public policy/legislative priorities to the U.S. Congress and federal agencies.

The principal objectives of the GAC, being of equal weight and in no particular order are:

1. Identify APWA’s top public policy priorities for each U.S. Congress cycle and recommend those priorities to the APWA Board of Directors for approval every two years;
2. Draft public policy statements to advocate on behalf of APWA’s primary issue areas (transportation, water, emergency management/response) and ensure those policy statements are consistent with the state and local government principles of:
   a. Respect for local authority;
   b. Reasonable regulations and protection from unfunded mandates;
   c. Support for streamlining government oversight;
   d. Support for sustainability and environmental stewardship;
3. Lead and seek to increase APWA’s organization-wide member participation in advocacy activities;
4. Lead the effort to enhance APWA’s name recognition and brand before the U.S. Congress and federal agencies;
5. Promote the importance of advocacy within their respective chapters;
6. Willingly serve as spokespersons promoting APWA’s public policy priorities to the organization, the U.S. Congress, federal agencies, and the general public.

Of course, in order to be successful at meeting the above-listed objectives, the GAC will need many partners and supporters. This means that all APWA chapters and individual members need to be ready, willing, and able to speak up on behalf of APWA’s public policy priorities. In order to assist with these efforts, there are many APWA advocacy tools and resources available such as the APWA Reporter, APWA Washington Report, the Legislative Action Center, the APWA website, APWA staff, advocacy trainings for chapters, National Public Works Week events, sharing and publicizing chapter activities and events, and telling public works stories to policymakers and your communities. APWA is 29,500 members strong and growing. Your voices are powerful!

For any questions about the GAC or APWA’s Government Affairs program, please contact me at aeales@apwa.net or (202) 218-6730.
Scott Grayson visits San Diego & Imperial Counties Chapter

On Monday, March 20, APWA Executive Director Scott Grayson attended the San Diego & Imperial Counties Chapter Board Meeting. Standing from left to right are Tedi Jackson, Scott Grayson, Dan Goldberg, Vic BIANES, Gerard Lumabas and Paz Gomez. Sitting from left to right are Greg Humora, Glen Parker and Kevin Gibson.
As an APWA Advocate, it is my duty to promote public works priorities through actively advocating and reaching out to and educating our elected officials and their staff in Congress as well as in my state of South Carolina. My personal goals in advocating for APWA are to create a series of awareness programs in various specific areas, promote outreach and public awareness to build identity, create public awareness/support for public works, broaden global perspective, attract new members and affiliates, and explore a broader awareness and branding campaign for APWA and for public works.

In my advocacy efforts I use outreach and education/grassroots advocacy initiatives to reach my goals and the goals of Georgetown County. In my approach I combine transformative education, sustainable partnerships, and community outreach.

Examples of our education outreach initiatives are “Touch a Truck” days at local schools, National Public Works Week events, ensuring that Public Works staff is present at each local Career Day/Fair at our local schools, etc.

At our most recent “Touch a Truck” event at Carvers Bay Middle School, it was a joy to see the excitement and enthusiasm on the children’s faces when they had the opportunity to get to touch and sit in some of our heavy equipment and trucks. It caused many of them to ask questions about how to go about making a career operating such equipment and working for Georgetown County Public Works.

Making our workforce the most competitive will be the key to ensuring the vitality of the public works industry for the future. This can only be done by preparing our young people for success in this industry from the onset of formal education. Through educational initiatives, I support the work to advance and promote outreach and public awareness of public works for school-aged children in our community.
One major way we create this awareness is through participating in as many of the local schools’ Career Days as we possibly can. I personally manned the Georgetown County Public Services and Public Works booth at the recent Waccamaw High School Career Day event and the level of interest I found was amazing. Students were constantly coming up to me asking for examples of the types of employment we offer and I was able to guide them with our “Public Services” career posters, handouts, examples of job descriptions and more. It brings me such pleasure to see our future workforce so interested in public works.

We also host schools and children’s groups at our county landfill where they can learn about recycling and waste. On location we have also built an Environmental Education Center where we teach them about the environment we are trying to save through our recycling and waste management efforts. This is such an important aspect of public works for Georgetown County that truly affects us all and it’s exciting to share that with the youth of our county.

In addition, we participate in the local Green Business Annual Expo where we are proud to show that Georgetown County is a Green Business. Through hard work and dedication Public Works is doing our part to keep Georgetown County beautiful.

Finally, Georgetown County hosts multiple community outreach household hazardous waste and document shredding events. This aids the residents in these areas and gives them a chance to personally interact with our staff and see what we do.

I am very lucky to have the great privilege to advocate for Georgetown County, South Carolina. It gives me the power to advocate for the other 60,000 citizens of Georgetown County that cannot advocate themselves. It gives me a chance to voice their concerns and speak to those in places of power and authority that can make real changes for our county, state and country, and I plan to continue this advocacy to see positive outcomes for our community.

Ray Funnye can be reached at (843) 545-3325 or rcfunnye@gtcounty.org.
Tiny wind power

Andrew C. Lemer, Ph.D., Senior Program Officer, the National Academies of Sciences, Engineering, and Medicine, Washington, D.C.; Chair, APWA Engineering & Technology Committee

Many of us by now are familiar with the specter of gigantic wind turbines that have sprouted in many parts of the country, on land and off shore. While their place in the landscape and impact on birds and bats continue to make them controversial, their ability to generate sustainably pollution-free energy at commercially viable costs continues to make them attractive as a source of supply for the electric power industry.

The power produced by these big turbines is fed to the grid of cables and shipped from windy plains and coasts to the places where people use it, of course. But we have an increasingly large number of devices—cell phones, cameras, and sensors, for example—that are not linked to this grid or would be more useful if they could be freed from plugging in. Could wind power provide a solution?

Researchers have been investigating microelectromechanical systems (MEMS) that can generate electricity from the movement of air. (Also, mechanical vibrations like those caused when a vehicle drives across a bridge, for example, but that is another story.) Think tiny windmills, pinwheels, and flapping flag-like contraptions. While a recently published survey of portable wind energy harvesters for low-power applications defined “micro-scale” as any device with no single dimension (that is, length or diameter) greater than 75 mm or about 3 inches, some of the working devices that have been developed are very much smaller.

Researchers at one U.S. university, for example, have fabricated a nickel alloy windmill so small that 10 could be mounted on a single grain of rice. The windmill (more technically, a horizontal-axis wind turbine) has a three-bladed rotor 1.8 mm in diameter mounted on a tower about 2 mm tall; the windmill’s thickness is about 100 microns, twice that of a human hair. By one estimate, an array of a thousand of these micro-windmills and a steady stiff breeze could produce enough power to keep a cell phone charged. Sensors monitoring winter roadway
temperatures, for example, would need much less energy.

Researchers envision a range of applications for such small wind-powered devices. Placed in air conditioning ducts and large enclosed spaces, they could enable more efficient control of climatic conditions. In remote locations, they could provide sustainable power to environmental monitoring devices.

A major challenge is the manufacturing of such tiny MEMS. Researchers have used techniques similar to those used in the semiconductor industry, sometimes with a bit of the art of origami thrown in. With further progress, it truly will be an ill wind that blows no good.

Andrew Lemer, Ph.D., is currently a Senior Program Officer with the National Academy of Sciences of the United States of America. In addition to technical papers and occasional articles for the Reporter, he writes on civil infrastructure and human settlement at www.andrewlemere.com.
How bad was your winter?

We are now far enough away from the New Year that we can talk about exercise without creating embarrassment among those of us with failed New Year's Resolutions! Given that, it is fairly obvious that if a colleague comes into work one morning and says, with much satisfaction, “Well, I lifted weights today!” there is some information missing if you wish to know if that was a big deal or not. For example, there is a lot of difference between bench pressing 30 pounds and bench pressing 300 pounds. So too, if a colleague says, “Well, we really handled that winter storm well yesterday,” it is important to know how severe the storm was. And following on from last month, if you want to measure your agency's performance in the area of winter maintenance, you have to have some measure of how tough the winter was that you just faced.

The question thus arises, how should we measure how bad a winter was from a winter maintenance point of view? There are a whole bunch of meteorological measures available to us, which include things like freezing degree days, or inches of snowfall over the winter, but these are designed to be useful to meteorologists, not to winter maintainers. There is nothing wrong with them; they are just not geared to our needs.

So, what sort of measure would be useful for us to measure our winter severity? The measure will have to include a number of things, and putting it together into a single number gets complicated. But the first step is to figure out what matters and what doesn’t. And among the things that really do not matter is the total quantity of snowfall that you get over a winter. It is much more important operationally how that snow arrives. Consider—will it take more work in total for your agency to deal with eight 3-inch snow storms or one 24-inch snow storm? Yes, the 24-inch storm will take a lot of work, but it will be over with in maybe three or four days, while each of those 3-inch storms will take a good day of work to tidy up. More work for the smaller storms in total, then!

A better measure of severity (or at least, part of it) is the number of events that you have in the winter season. Even this is less than perfect, because of course no two events are of equal severity, but it does indicate the number of times a season that you will have to deploy your trucks and your personnel. Now some agencies have different levels of callout—perhaps partial for some circumstances and full for others. While it would appear tempting to use those different levels of callout as indications of severity, they are really more an indication of how your agency responded to perceived severity, so they are not an ideal measure of actual severity. Unless, of course, one sort of callout is for frost conditions only while the other is for winter storms of any sort. Those are distinctions in severity. Confused yet? It gets worse!

However, before we sink into all the details, let’s make two points clear. If you are going to measure your performance in winter maintenance, you need to know how bad each storm was that you had to deal with. And the corollary from that is that you need to track your storm severity for every day of the winter. The obvious way of doing this is by spreadsheet, and we have placed a couple of example spreadsheets on the Winter Maintenance Subcommittee website for you to look at and download if you wish. There is also a paper there that explains how the storm severity index was developed and how it works.

So let’s suppose you have decided that you want to track the severity of the storms that your agency faces on a daily basis. What makes one storm better or worse than another? The answer is that lots of things can make a difference, but four key things are: how the storm starts; what sort of precipitation you get; what the pavement temperature is during the storm; and whether or not the wind is blowing during or shortly after the storm. We will look at each of these.

Storms can begin as snow and stay snowing all the way through, and that is relatively straightforward to deal with, because if you have the capability you can pre-treat the roads with liquids and they will begin to work right away. But, in some parts of North America, storms have a tendency to begin with rain and then change to snow. And pretty much everywhere in North America where it does snow, some
storms will start with rain and then switch to snow. This is quite a big deal operationally, because it means that any liquids you apply before the storm starts will be washed off the road before the snow appears. Not a great situation to find yourself in if you were counting on that pre-treatment to help you manage the storm, to say the least! So a storm that starts with rain will in general be more severe than a storm that begins as snow (and stays as snow all the way through).

The type and quantity of precipitation you have to deal with in a storm has a profound impact on the severity of that storm. When I researched the whole issue of storm severity I was quite surprised (although I suspect you will not be) that most winter maintenance folk considered an ice storm to be worse than a heavy (a foot of snow or more) snow storm. So, in general we might rank storms from ice storms being most severe to heavy snow storms (more than a foot of snow) to medium snow storms (between four inches and one foot) and then to light snow storms (less than four inches).

Pavement temperature has a profound influence on how severe a storm is. The colder the pavement temperature is the more quickly salt will dilute out, and thus the more salt is required to achieve bare pavement after the storm. Indeed, as the pavement temperature drops below about 15° F salt will take so long to go into solution that its use is not recommended. Now, the pavement temperature will not remain constant during any storm, so the idea of using one single temperature to determine storm severity seems a bit strange, but in general your application rates and tactics will be determined by the lowest pavement temperature you expect to see during the storm so using that is a reasonable choice. Most of the storm severity indices use a number of temperature bands, which typically might be warm (above 28° F), normal (between 28° F and 20° F), cold (between 20° F and 15° F), and very cold (below 15° F) for example.

The final major factor to consider in a storm severity index is the impact of wind on the storm. When wind speeds get above 15 mph (approximately) then snow particles will begin to move in sufficient quantities to cause snow drifting. This can have a profound impact on your operations. Drifting snow can cause problems on roads long after (in some cases, days after) the snow has actually stopped falling, so knowing whether you are going to be dealing with snow drifting is rather important to put it mildly!

There are of course a whole bunch of different ways of putting these four factors together and coming up with a number that says “this storm was this severe.” And you may feel that other factors are more important and some of the ones I have mentioned matter less to you and your agency, all of which is fine. But if you are going to measure the performance of your agency, you have to have some way of normalizing the winter weather that you deal with. By using some sort of algorithm to give a severity value to the winter weather that you have to deal with for each day of the winter, you can compare your performance as an agency not only from storm to storm, but also from winter to winter. Figures 1 and 2 show the monthly storm severities collected from a Midwestern agency over two winters. As you can see, one winter was not very severe, and the next was much more severe. Being able to put a value on your answer to the question “how bad was your winter?” can be very useful!

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Public works performs many functions for the public—from maintaining, enhancing and operating infrastructure such as streets, signs, stormwater, utilities, facilities and fleet to responding to various emergencies. The staff of a public works department can often vary in size to meet the public’s needs from as few as a handful to thousands, as is the case in Los Angeles County.

How does a public works director lead these varied and numerous resources? One approach is “Servant Leadership.” Wait a minute, how can one be a servant and a leader too?

Let’s start with defining public works:

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**Public works is the combination of physical assets, management practices, policies, and personnel necessary for government to provide and sustain structures and services essential to the welfare and acceptable quality of life for its citizens.**

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The words “sustain structures and service” are in APWA’s website definition. Who does the sustaining and serving? It is the staff of public works. The director’s goal is to lead and obtain support from his or her resources of people along with direction from elected leaders and the public. The different leadership types are used in directing staff. There are many styles of leadership. In the ever-changing political environment of public works, a leader must first assess the organization to decide which type of leadership would be most effective.

One style of leadership, Servant Leadership, has been proved successful in many Fortune 500 companies, and is taught in universities worldwide. Servant Leadership is a style that emphasizes that leaders should be attentive and develop the needs of their followers; they should empower them and help them develop their full capacities. Roy Jorgensen, a pioneer in public works management, said, “It is all about the people.” In public works, without the employee’s long-term support, the agency will fail.

**Servant Leadership paradox**

This style of leadership is considered a paradox, as it is common to assume that leaders direct and influence, which contrasts with servants who follow. Servant Leadership is an approach that focuses on leadership from the point of view of the leader being attentive to the concerns and empathy of their followers. A Servant Leader puts followers first, empowers them and helps them develop their full personal capacities. A Servant Leader’s motivation is for the greater good of their organization, community or society at large. This is also one of the main tenets of public works, and is why the style of Servant Leadership is so adaptive in agencies.

Robert K. Greenleaf (1977) coined the term Servant Leadership. The style is viewed more as a behavior than as a style of leadership and, through a process, can be learned. Greenleaf further advocated that people have a social responsibility to be concerned about all, including those less privileged. Servant Leadership’s focus uses less institutional power and control while shifting authority to those who are being led. There are generally 10 characteristics of a Servant Leader (Spears, 2002). These characteristics include two categories. First is in dealing with the employees by listening to their ideas and concerns; being empathetic to their issues; helping in the well-being of employees; being aware of impacts/communication to employees; and providing clear communication. Second is that of the ability of leaders to conceptualize the vision and mission of the agency; have the foresight to understand future impacts; provide stewardship in accepting responsibility for the organization; have commitment to the growth of employees; and foster and
build the community to ensure shared values—which includes working on something greater than themselves.

Those in public works know that these practices are "must haves" for our work to be done. In most cases, a director of public works does not patch a pothole, install a sign, approve a permit, design a storm outfall or develop a master plan of streetlighting. Of course, it is done by the staff. When work is being done, is the director always there or aware of the specifics? No, of course not. The employee’s productivity in the long term is dependent on his skill, education, tools and planning along with his motivation and desire.

A potential concern
If a director appears too focused on staff, it may make them appear weak, timid, too trusting and empathic as if the employees are running the operation. This can happen if the director is not also focused on advancing the agency and his own interest while enhancing the employees. The director must set the direction and then engage staff to implement the vision. Remember President Kennedy’s challenge: "This nation should commit...before the decade is out, of landing a man on the moon and returning him safely to the earth." He set a challenge even though the technology did not even exist at the time (JFK, 2017).

A director who is only concerned with his employees’ morale may miss the opportunity for success for the organization. For example, a focus on birthday parties, retirement benefits and “bring your child to work” by itself does not make a successful organization; it just creates lost time. Yet those events of focusing on employees who then feel that leadership cares for them in the umbrella of achieving a goal can produce success for the agency by now having more dedicated and focused employees. A Servant Leader may score high on helping and benefiting others but must still communicate and institute ambitious goals for advancing interests of the organization. A Servant Leader may give more than they receive in the short term, but must keep their agency and their own interests in sight. They must strategically determine as a method of when and where they give servant support for their growth and development. Thus, they are helping others while producing a long-term benefit to the organization. By helping the employees, a Servant Leader can help develop contentment and meaning while achieving agency goals and their own interests at the same time.

Okay, how do we do this?
The ability to be successful at Servant Leadership is a long-term multi-year approach that can be summarized in seven key core behaviors below (Liden, Wayne, Zhao, & Henderson, 2008):

- Conceptualizing through understanding needs and direction of the organization along the complexities of their purpose and mission. This must be communicated to staff. This behavior is key for success.
- Emotional healing where the leader is sensitive to the personal concerns and the well-being of others. This includes recognizing others’ problems and being willing to take the time to address them; being available to their followers.
- Putting followers first and realizing that without them, proceeding in the desired direction for success will not occur. This is a defining characteristic of a Servant Leader.
- Helping followers develop and succeed; making their subordinates career development a priority including mentoring followers and providing them with support to help their followers grow and succeed.
- Behaving ethically and doing the right thing consistently in the right way, even when no one is watching.
- Empowering followers through allowing them to have the freedom to be independent and make decisions on their own, as well as be self-sufficient. This is an example of sharing of power and giving their followers the autonomy to implement ideas that match the agency’s vision and mission. This allows for “buy in” and ownership of the work.
- Creating value for their community by consciously and intentionally giving back to the community. Being involved in local activities and encouraging followers to volunteer for community service is a large part of the process of being a Servant Leader.

Summary
This type of leadership appears to align with APWA’s definition of public works. Servant Leadership can be summarized as setting the overall direction that guides and empowers staff. This is done by communicating, caring, developing, and guiding employees ethically, then empowering by giving responsibility as well as promoting the value they are providing the community.

continued on page 44
The central goal of Servant Leadership is to create a healthy organization that nurtures individual growth, strengthens organizational performance and produces a positive impact. Many companies have adopted Servant Leadership as part of their corporate philosophy. Research conducted has implied that those Servant Leaders are not only more highly regarded among employees but feel better about themselves and are more productive (Grant 2013). In anecdotal data collected, agencies that have applied such an approach to leadership have, in the long term, been successful when public works directors have communicated a clear vision and then applied these principles. In agencies that are without such vision or only have a short implementation time (less than two years), it did not produce the same results. A 2014 AMA study of over 1,000 companies found that the difference between high- and low-performing organizations was clarity and consistency of direction and vision. This is paramount too for Servant Leadership.

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References


From left to right: Government Affairs Committee Chair Lisa Rapp, Executive Director Scott Grayson, Transportation Committee Chair Gary Strack, and Water Resources Management Committee Chair David Mason visit with staff from the House Transportation and Infrastructure Committee on April 11 during the annual Government Affairs spring visit to Congress and federal agencies.

APWA President Ron Calkins attended the Iowa Chapter Spring Conference that took place in West Des Moines on March 30-31. Numerous tracks of seminars were held, and attendees were able to visit exhibitor booths with the latest in equipment, technology, and information. From left to right in the photo are Jon Dienst, Iowa Chapter President and Dubuque City Engineer; Rob Brown, Equipment Operator, Fort Madison; Dan Werts, APWA Iowa Chapter Snow Roadeo/SPOT Chair and Waukee Public Works Streets Superintendent; and President Calkins. Rob Brown was the first place winner in the backhoe competition at the Snow Roadeo.
Online course in asset management attracts great interest

Chris Champion, CPEng
Director International Institute of Public Works Engineering Australasia
Member, APWA International Affairs Committee

A PWA/CPWA, in collaboration with the Institute of Public Works Engineering Australasia (IPWEA), announced in January the introduction into Canada of the Professional Certificate in Asset Management Planning. This joint international program builds on face-to-face workshops that NAMS Canada has been delivering for several years in association with local Communities of Practice, particularly across western Canada.

The first course targeted to a North American audience began March 6, and there has been an excellent response, with 192 participants. This international program is supported by APWA and CPWA to bring international approaches in infrastructure asset management to North America.

The largest response was from Canada with 54 participants where there is strong encouragement and funding from the federal government for asset management planning. Additionally, there were 18 who registered from the U.S., 112 from Australia and several from New Zealand and the United Kingdom.

The APWA/CPWA support has made for a truly international program where peers can interact with each other across the globe.

The participants from Canada are from the provinces of Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Ontario and Saskatchewan. Participants from the U.S. are from Arizona, California, Florida, Idaho, Michigan, Minnesota, New York, Oregon, Texas, North Carolina, Washington State, Wisconsin, and Utah—so quite a spread across Canada and the U.S.!

Registrations came from a range of organization sizes from the very small to large local governments, consultants, municipalities, water
and wastewater utilities, an education college and a tollway operator.

Participants can track their progress through the course with their own personal score as they complete forum challenges, participate in live or recorded events, watch “how to” videos, submit two assignments, and answer multiple choice questions on the way through the course.

Early feedback halfway through the course (at the time of writing this article) is mostly positive from participants with a range of backgrounds including professional engineers, maintenance and operations managers, community services, GIS technicians, asset coordinators/managers, public works directors/managers and finance managers.

The program comprises eight modules delivered over 10 weeks with an additional four weeks at the end for participants to submit their draft asset management plan (one asset class) developed for their organizations—a great output for their employers while they earned their personal qualification.

Many have already commented how they are learning about different methodologies being utilized internationally to develop and implement asset management. At the same time, they are getting an opportunity to connect and interact directly with the presenters and their peers internationally.

Allan Mapstone, one of the main presenters of the online program, has worked extensively in both Australia and Canada implementing improved asset management practices. Mapstone is a keen advocate of the professional certificate, which he says reinforces the importance of sound asset management planning and gives delegates access to the hands-on tools to get started.

“Anyone involved with the provision of infrastructure, whether they be from a technical or non-technical background, really needs to be confident with the discussion and practice of asset management,” Mapstone said. “This course is a strong step towards that position. This qualification is an important step in the whole picture of managing assets on behalf of our communities. It’s a significant responsibility and whilst we find most organizations do a great job at delivering services there are challenges in how we ‘discuss’ the options with our communities. This greatly helps.”

Mapstone has been impressed by the level of engagement of participants, particularly considering the online nature of the course. He admits that he was nervous about the online set-up initially, but has embraced the format which allows him (and students) to interact with each other in group discussions.

“I have been involved with many face-to-face courses, so I was a bit hesitant about this environment,” he said. “It’s so much better than I expected. The most frequent feedback is just how engaging and interactive the course is.”

The online Professional Certificate course is well suited to international participants as it follows ISO 55001 standards and the asset management principles of the International Infrastructure Management Manual (IIMM) which are universal.

The course provides participants with not only an understanding of asset management principles but also their hands-on application. It would be difficult to demonstrate this in the short duration of the course without everyone working on a common platform with access to tools and templates. IPWEA has therefore arranged trial access to IPWEA’s portal and its tools, templates and other resources to undertake and complete the Professional Certificate.

Beyond the course, it is open for participants to use IPWEA’s or their own alternative resources to apply the principles of asset management learnt during the course.

For more information and to register your interest in the next program commencing in August/September 2017, visit www.ipwea.org/certificate, or e-mail chris.champion@ipwea.org.
Raising resiliency in a river town

Jen Winter, P.E.
Public Works Director
City of Cedar Rapids, Iowa
Member, APWA Center for Sustainability

In 2008 the City of Cedar Rapids experienced the most devastating flood in its history, what many have called the “Perfect Storm.” As the Cedar River began to rise above flood stage as a result of substantial rainfall upstream, it was also raining in the city. Over nine inches of rainfall was recorded in some locations. The river eventually crested at 31 feet, 19 feet above flood stage. Over 1,000 blocks flooded, more than 300 public buildings and 900 businesses were damaged, totaling more than $5.4 billion in damages.

Post flood, the City of Cedar Rapids immediately began to rebuild and also began taking steps toward resiliency. An interim flood control plan and concept plan for permanent protection was developed in 2008. From 2009-2014 a voluntary property acquisition program was put in place that removed more than 1,300 properties from the flood inundation area. In 2012, the first piece of permanent protection was constructed: the McGrath Amphitheater/levee, a unique system that blends recreation and protection. In 2014, the City secured state funding to assist with design and construction of the permanent flood control system. In 2016, construction began on levees on both sides of the river, which will protect some of Cedar Rapids’ most vulnerable and newly developed districts.

Though many hoped they would never see another major flood in their lifetime, in September 2016 the plans of the last eight years would be tested—the river was again rising, and initial predictions were a crest of nearly 26 feet—which would be the second largest flood in the city’s history, occurring less than a decade after the devastating flood of 2008. On September 21 the projected river crest was 19.5 feet. By September
23 it had risen to nearly 26 feet. Over the course of the next week the community would respond with determination and commitment to protect the city.

On Thursday, September 22, City staff began reviewing the Flood Response Manual which outlines measures that need to be implemented as flood waters rise. Crews began to implement the flood response measures as the projected river crests were closely monitored. Engineers considered the impact of permanent flood control measures that had been put in place since 2008 and staff soon realized that holding back floodwaters would require the City to design, engineer, and construct new techniques within hours to address changing conditions in the field. The plan was to construct a temporary flood protection system with a combination of earthen berms and sand-filled HESCO barriers that stretched for miles, to utilize thousands of sand bags and hundreds of storm sewer plugs to provide protection on both sides of the river and work to fight off water above ground and below.

With crest predictions reaching record levels the City quickly mobilized and partnered with local engineering firms and contractors to design and construct a temporary flood protection system in a matter of days. Engineers worked around the clock identifying the most effective height, width, and location based on predicted river levels. Contractors worked 24/7 to construct each segment of the system as it was designed. Volunteers were called on to assist with the filling of the HESCOs. To address the risk below ground, crews deployed a system of pumps and plugs to stave off water from getting into the city through the storm sewer system. Redundancy was built into the temporary systems as damage control—the system was designed so if it “failed” it would fail in isolated zones (a breach in one part of the system wouldn’t compromise the entire community).

Once complete, staff and volunteers monitored the system for breeches 24 hours a day, often responding in the middle of the night to mediate risks that had the potential to jeopardize the system. When water began threatening the NewBo District through the storm sewer system early on September 26, field crews and engineers worked tirelessly throughout the night and early-morning hours to identify the most effective way to plug the breeched storm sewers and cut off the rushing water.

The river crested on September 27 at 22 feet, and much to the relief of the entire community the temporary system held until the river returned to normal levels. By the time the river crested, 35,000 feet of HESCO barriers were installed, over 6,200 feet of earthen berms were constructed, and over 300 concrete wells were built for the storm sewer system.

The City of Cedar Rapids Public Works Department led the charge to hold back the floodwaters, but so many played a critical role. City Incident Command was housed at the Central Fire station, where Police and Fire led the behind-the-scenes charge. A team represented by Communications, Finance, Police, Fire, Information Technology, Public Works, and other City departments monitored and mitigated emerging problems 24 hours a day.

As in 2008, there were lessons learned in 2016. For example, in the months since the flood an effort is underway to update the City’s Flood Response Manual. The manual will become a “living” document to be updated annually and each time another piece of the permanent flood control system is completed. The city survived the 2016 flood with minimal damage and gave the community a renewed commitment to continue to build resiliency in this river town.

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Using data to tell your story

In local government, and especially within public works, we often struggle to “toot our own horns.” Whether due to lack of time, resources, or effective communication skills, this is clearly a missed opportunity and could become a liability in the future.

At the same time, we’re in the midst of a global trend where citizens are demanding transparency, accountability, and pathways to participation from government agencies. Our attempts to accommodate these requests are creating more demands on our already overburdened staff and forcing communication without necessarily having a clear strategy for doing so—think of that Facebook page that you make the interns keep updated.

There is a better way to address both of these challenges. While it will require a little upfront effort, it will save significant time and possible headaches in the long run.

So, what is this silver bullet?? DATA! Yes! All the engineers out there will love to hear that the answer to the challenges above is data. Be careful though—in the age of transparency we must ask ourselves, “Is dumping data on a website really transparent and inclusive?” Most people in our communities aren’t data geeks or engineers, nor do they have the time to sift through charts, reports, meeting agendas, and notes. Just because you make data available doesn’t mean it’s actually accessible. You need to turn your data into a story and that story can help you highlight your successes. You may even discover that your community is well on its way to a more sustainable future.

There’s a story in those data points

As local government staff and officials, we collect tremendous amounts of data. From miles of bike lanes and storm drains to tons of recyclables and million gallons of wastewater, public works staff is very familiar with data collection.

Most people in our communities, however, are not immersed in the intricacies of our daily work—they just know they want clean air for their kids to breathe, urban spaces that are safe for families to enjoy, and easy access to transportation options.

Does that mean all the quantitative data—and the effort that goes into collecting it—is for naught? On the contrary, we just need better tools to turn that data into a compelling story.

Here are some simple guidelines that can help you effectively tell your story with data whether it is for a presentation, your website or social media pages, or a brochure or flyer that you are sending out to the community.

1. Provide Simple Explanations and Avoid Technical Jargon

Why is this Important?
• 50% of adults in the U.S. cannot read a book that is written at an 8th grade level.
• Technical jargon will only confuse people, and make them uninterested.

How to Do It
• Focus on WHY your community members should care about this information. Remember, they don’t know all the details that you do, so try to see it from their point of view.
• What benefit or impact will it have on them personally?

Example Text: Why We Care About Recycling

When trash (solid waste) is collected on your street it is brought to a landfill. Solid waste that is left to decompose in landfills generates methane, a very strong greenhouse gas. Greenhouse gas pollution causes the atmosphere to warm, creating disruptions in the climate that result in extreme weather events. Additionally, any item that is disposed of loses the opportunity to be reused in some way, causing more emissions and resources to be expended in the creation of the same item. The community benefits from recycling through reducing pollution from landfill waste and growing the economy through the sale of recycled products.

Kim Lundgren
CEO, Kim Lundgren Associates
Woburn, Massachusetts
Chair, APWA Center for Sustainability
2. Use Images, Icons, and Infographics

Why is this Important?
- As mentioned above, 50% of adults in the U.S. cannot read a book that is written at an 8th grade level and 14% are illiterate.
- For many of our community members, English is not their first language and their engagement and input is important to truly understand the full needs of your community.
- You can connect with these groups and others far easier through the consistent use of logos, icons, and images.

How to Do It
- Images or infographics that can put the data into perspective, i.e., the new water conservation program will save the equivalent of 20 Olympic-size swimming pools each day.
- Icons are a great way to showcase different functions within a community. Above is an example developed for the City of San Antonio’s Sustainability Plan project. This icon is seen throughout the plan and was also incorporated into their online sustainability dashboard to ensure consistency.

Resources
There are lots of online resources available now to help you develop logos, icons, and infographics. Here are a few that I use:

- Logos: www.logotournament.com (hundreds of graphic designers around the globe compete to design a logo for your organization, department, program, etc.)
- Infographics: www.canva.com; www.piktocharts.com

3. Put Data into Context

Why is this Important?
- Data can only tell an effective story when we provide context and comparisons. A single data point on its own tells us very little.

How to Do It
- Make sure you have more than one year of data and where possible data from other communities or the state or national average to compare with.

Resources
- www.StarCommunities.org is a rating system that provides a framework for sustainable communities based on hundreds of data points within eight different goal areas. There are 59 local governments that have completed the STAR assessment process and their data is available on the STAR website.

Example of Applying Context and Comparison to Data

- Okay: Our recycling rate is 42% (provided data, but no context or comparison)
- Good: Our recycling rate this year is 42%; three years ago it was 37% (provided data, and self-comparison, but no context)
- Great: Our recycling rate this year is 42%, three years ago it was 37%. The U.S. national average recycling rate is 34% (provided data, self-comparison, and context)

4. Include Calls to Action

Why is this Important?
- If you are going through the effort of pulling data together to demonstrate progress and be transparent with your community, why not invite them to be part of your success story while you have their attention?

How to Do It
- Identify easy actions for your community members to take that might help improve your outcomes. Sticking with the recycling example, you could ask them to try composting or provide them additional guidance on what can be recycled and challenge them to improve their own recycling rates.

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Resources
- In addition to the local programs that you are probably familiar with, there are many regional and national resources that can help your constituents be part of the action whether through actual program participation—such as volunteering for Keep America Beautiful (www.kab.org/volunteer)—or by offering simple tips like how to successfully compost in the backyard.

The culmination of these steps is the framework for a great story that can promote your successes to the public and your elected officials, track progress on your metrics and goals, and engage your community members. Here is a view of the framework in another way.

- Why We Care
- What it Looks Like
- Our Baseline and Current Data and Others’ Data (this is also a great place to indicate any goals that have been established)
- What You Can Do to be Part of the Solution

Planning. Tracking. Reporting. Engaging. Celebrating. All under one roof. Once you have pulled together your data, you may want to utilize an online dashboard to show it off. Local governments across the U.S. and Canada are using dashboards—either developed in-house or working with a consultant—to track and report progress; conduct planning exercises; collect feedback; and drive the target audience to take desired actions.

That last part is critical when it comes to community sustainability where your job isn’t just to inform people. It’s to get them to be part of the solution. And by “them,” we mean all walks of life not just the usual suspects. To that end the data must be accessible and actionable.

Marrying the storytelling framework outlined above with an online engagement tool can be a win-win for any organization. If you want to learn more about how Nashua, N.H. successfully did this, be sure to check out our session at PWX on Monday, August 28 from 9:45 a.m. to 11:00 a.m.

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The core components of sustainability education

Dennis Wilson, Ph.D., P.E.
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Papillion, Nebraska
Member, APWA Center for Sustainability

Sustainability is not a new concept but it is a difficult one to grasp due to the diverse and often ambiguous set of definitions. However, if we are to better understand the nature of environmental, economic and social issues within the context of sustainability then all these terms require a more definitive structure. Education is an essential and critical component in fulfilling that role.

The responsibility for sustainability education has trended toward universities because of their capability and resources to develop and offer programs of study. It is also generally agreed that changes to our educational practices within these post-secondary institutions are necessary if we are to cope with complex environmental and societal problems associated with sustaining the planet. The main goal behind this transformation in higher education is to support the framework of sustainable development by requiring students to study across a variety of disciplines and to develop more complex learning skills.

Transdisciplinary Knowledge
The elements of sustainability education can easily be taught within a single field of study, but the complexity of the real world’s problems requires a multidisciplinary approach. Furthermore, the dynamic nature of sustainability issues also necessitates critical thinking skills and an understanding of community and place. Traditional instruction is typically conducted in isolation neglecting the overall impact within a system consisting of multiple arenas or domains. These practices produce knowledgeable individuals who are aware of the issues but who have limited capacities to frame the problems.

The logic behind implementing a comprehensive or transdisciplinary program of study is that complex systems are interrelated. The economic, social and environmental domains of sustainability share a common space: changes in one domain, no matter how subtle, may directly affect others. As Gwendolyn Hallsmith (2003) concluded in The Key to Sustainable Cities, complex systems such as the link that connects humankind and our planet’s ecosystem requires holistic knowledge across multiple disciplines. The shortcoming of looking at a problem from only one perspective is that a lack of knowledge in one area can result in unforeseen changes and potentially create a worse situation than that which originally existed. In the case of sustainable development, the resolution to this dilemma is a curriculum that balances the social, environmental and economic educational needs.

The Cognitive Domain
Benjamin Bloom and his team of researchers conducted studies on cognitive levels of thought in 1956. The Taxonomy of Educational Objectives examined the different stages or levels of thought that a person goes through when encountering a problem or learning something new. As noted in Figure 1, the first level is becoming aware of or recalling the facts or the basic concept of something which you were unfamiliar with. The second level is understanding something enough to describe, classify or discuss it. The third stage or level is applying the knowledge and understanding you acquired to apply it to something new or different. These first three levels are considered the lower skill levels of thought. The remaining three stages are considered higher.
levels of the cognitive thought process, and consist of analysis, evaluation and creation.

To be effective in solving complex problems and situations, it is imperative that students be taught at higher order levels to acquire and develop the ability to think critically. This occurs when students are engaged in the subject matter and are given the opportunity to analyze, evaluate, or create something as part of the assignment. Further development of these skills can be gained through the use of assessments that involve higher levels of cognitive processing to complete. Assignments that focus on these processes allow students to retain more information, synthesize the material, and develop critical or deep thinking skills needed to create sustainable solutions.

Instructional Methods

Cooperative learning. Incorporating cooperative learning into classroom exercises and assessments such as group projects or in a cooperative peer-to-peer learning situation encourages the development of critical thinking skills and as a side benefit can create community within a group of students. Transformation to this type of learning requires space and additional time but the reward is a more effective method of education. Cooperative learning can include:

- Community service learning
- Participatory group learning
- Critical thinking/reflective learning
- Student-centered learning/problem-based learning
- Experiential learning (learning through experience)

In some cases, it may be impractical to engage in cooperative learning due to the time commitments, class size, or the ability of facilities. However, there are three types of interactions that can be easily implemented into a classroom environment that also encourages the development of critical thinking skills. These included positive interactions between the student and the faculty member, leadership development exercises, increasing the frequency of student participation in classroom discussions, raising the cognitive level of these discussions, and peer-to-peer interactions among the students in the course.

Assessments. The types of assignments and in-class discussions can also offer students the opportunity to develop higher cognitive skills in a self-motivated environment. These include:

- Critical review of a paper by an instructor
- Conducting independent research
- Giving a class presentation
- Taking essay exams

It is important to note that the assessment method found to be ineffective in measuring a student’s ability to think critically was the multiple-choice exam. It is evident that answering questions by marking choices says little about the student’s ability to comprehend the problem, organize the facts, and develop one or more resolutions. In contrast, an essay format requires respondents to analyze, evaluate, and create solutions, all of which are higher-order thought processes.

Summary

The viability of maintaining the balance of our planet’s ecosystem and the world economy, while managing issues such as societal inequities, global population surges, climate change, and a host of other global challenges, depends on education. Transdisciplinary studies and pedagogical approaches that develop higher-order cognitive thought processes and skills, are the cornerstones for building effective programs in sustainability education. However, transforming traditional educational practices will also require dedicated professors with the knowledge and skills to teach, mentor and create tools for students to connect, analyze and resolve complex environmental problems. The beneficiaries of these new sustainability programs will include the administrators, professors and students but most importantly, it will serve future generations.

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References


1 This work was later revised by Anderson and Krathwohl in 2001, changing the nouns to verbs and revising the order of the top two levels.
The Higher Standard: Triple bottom line decision making for infrastructure

John Parker, Chief Economist & Co-Founder, and Derek Ensing, Economist, Impact Infrastructure, Toronto, Ontario

Too often infrastructure discourse is focused on the financials of a project. Discussion forms around jobs created, capital spent, or payback periods while missing the main objective of infrastructure: providing value to society. This is a reminder to designers and developers of infrastructure that what we the public want is ethical infrastructure for the public good, which improves our communities, our commutes and our civics.

Your morning coffee can be fair trade. Buildings can be LEED rated as sustainable, good for the environment, disadvantaged groups, or neighbouring communities?

Ethical Control of the Purse Strings

The Government Pension Fund of Norway provides a shining example of triple bottom line investing having produced guidelines and formed a council of ethics to guide its investing practices. Listed in the ethical guidelines are criteria for exclusion from the fund. This criteria lists “serious or systematic human rights violations, serious violations of the rights of individuals in situations of war or conflict, severe environmental damage, gross corruption, and other particularly serious violations of fundamental ethical norms”1 as grounds for exclusion.

When governments are proposing and financing infrastructure they are doing so with their citizens in mind, the ones who are paying for infrastructure through their taxes and who will benefit from the infrastructure. It is their duty to provide the public with infrastructure that reflects the values of their citizens.

Thinking broadly about people, planet as well as profit should not be too onerous for most of the investors that contribute to infrastructure investment. Most pension funds have signed on to the UN’s Principles
for Responsible Investment (PRI). There are nearly 1,500 signatories, from over 50 countries, representing US $60 trillion. The purpose of the PRI commitments is to include environmental, social, and corporate governance (ESG) issues into their investment decisions and to better align investors with broader objectives of society.

Engineers Custodians of the Public Good

If investors and governments are starting to act more ethically in making infrastructure investment decisions, are they making sure the infrastructure they are paying for is designed with proper consideration of social and environmental impacts? APWA has a Standards of Professional Conduct that includes “I will put public interest above individual, group or societal interest and consider my chosen occupation as an opportunity to serve society. I will encourage sustainability through wise use of resources; whether they are natural resources, financial resources or human resources.” ASCE’s Code of Ethics says, “Engineers shall hold paramount the safety, health and welfare of the public and shall strive to comply with the principles of sustainable development in the performance of their professional duties” as Canon 1. The Canadian Engineering Qualifications Board code of ethics is to “Hold paramount the safety, health and welfare of the public and the protection of the environment.” Architects have similar ethical obligations to serve not just their clients, but to respect the public, the natural, and cultural environments.

The Triple Bottom Line

Jeffrey D. Sachs (“Sustainable infrastructure after the Automobile Age,” The Boston Globe, September 26, 2016) notes that public infrastructure must be renewed “in line with new needs, especially climate, safety, and new opportunities... We should seek an infrastructure that abides by the triple bottom line of sustainable development.” Triple bottom line (financial, social and environmental) thinking encourages ethical design while updating public infrastructure to the current needs of society. Triple bottom line thinking allows investors, designers, and engineers to incorporate a higher standard by pushing a project beyond what is required.

Incorporating the triple bottom line into infrastructure design is thinking about how transit can increase the health, food, and job opportunities to low income neighbourhoods or help when deciding whether to build larger pipes to handle stormwater or green infrastructure that, like grey infrastructure, reduces flooding but also reduces the urban heat island, cleans the water and the air, and increases community property values. And taking the big picture into account will mean that we recognize the health, productivity, and reduced absenteeism benefit that sustainable design can bring to the buildings we work in.

Optimal infrastructure design must quantify and put a dollar value on the externalities—the positive and negative spillover effects—that are not captured by market prices. We need to know who or what is harmed and who benefits so we can make the right decisions. Taking a broad perspective on costs and benefits in a triple bottom line framework means we are being considerate of others and future generations in our decisions.

Triple Bottom Line Cost Benefit Analysis (TBL-CBA) is a systematic evidence-based economic business case framework that uses best Cost Benefit Analysis (CBA) techniques

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Transit and street trees in San Diego
to quantify and attribute monetary values to the triple bottom line impacts resulting from an investment. These triple bottom line outcomes are typically represented as People, Planet, Profits or Social, Environmental and Financial. The framework quantifies all of these impacts in dollars over the life of the project and discounts them to the present in order to calculate the Net Present Value of an investment from the financial viewpoint of an organization, as well as from society’s perspective.

The U.S. election exposed deep divides between the coastal urban population and the rest of the country. The term “flyover country” is emblematic of this problem. How can we feel connected and have empathy with each other’s challenges if we rarely visit one another and interact? A nation with an increasingly deep geographic and class divide, as knowledge workers concentrate in a handful of metropolitan areas, is not desirable. But improved transportation and communication links between cities, towns and rural areas, and provision of infrastructure currently found only in major cities to smaller towns can do much to bring us closer together again as a people.

We the public, the ones who will live with and use the public infrastructure, long for considerate and adaptive infrastructure decisions, not reactionary bluster. We want to feel included and connected to our communities. We’d like all infrastructure planners, designers and decision makers to adopt a triple bottom line cost benefit analysis approach for infrastructure decisions to ensure that users, the environment and all stakeholders are best served by the limited dollars available.

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1 http://etikkradet.no/en/councils-activities/

City regulators have acknowledged that having a CSM as part of a local government gives a more comprehensive approach with better understanding of what is required by the State/EPA regulators.

It’s your time. Get Certified!
Centralization versus decentralization systems for wastewater treatment

Many cities and public agencies are facing the decision whether to embrace decentralized onsite treatment of wastewater or adhere to the traditional centralized treatment of wastewater. As an APWA member and Principal Environmental Engineer with LA Sanitation in Los Angeles, I had a chance to participate in the first annual U.S. GREENBUILD WaterBuild Summit as part of the planning team brainstorming subjects for the summit. We looked at the philosophy and policy cities should consider when moving forward with onsite decentralization treatment of wastewater versus centralization treatment. We had a stimulating conversation and this article presents various outcomes from this discussion.

Charrette Overview
The WaterBuild Local Issue Charrette, hosted by the U.S. Green Building Council, occurred on October 4, 2016 at the Los Angeles Convention Center. At WaterBuild, invited industry experts brainstormed ways to reduce water consumption in the County and City of Los Angeles and considered options such as water efficiency measures, onsite water sources, and recycled water systems. This also provided an opportunity to illuminate challenges for our water infrastructure and water supply in order to create a new approach towards becoming more water resilient. The City of Los Angeles provided two topics for the charrette and facilitated table discussions with four groups.

The first topic introduced pertained to the centralization versus decentralization of wastewater treatment. Flows at LA Sanitation’s Hyperion Water Reclamation Plant have been reduced by 100 MGD over the past ten years due to several factors including water conservation efforts, shown in Figures 2 and 3. Decreased flow can lead to odors, plugging, lowered pH, detrimental effects on microorganism metabolic processes, and increased concentrations of pollutants impacting treatment quality. With an increased shift toward decentralized water treatment through localized greywater and/or blackwater systems, how do we reconcile the effects on the centralized system?

![Figure 1: Schematic demonstrating difference between centralized and decentralized wastewater treatment](image1)

![Figure 2: Onsite treatment along with conservation policies lead to decrease in flow to water reclamation plant](image2)

![Figure 3: Decrease in flow over the past ten years at Hyperion Water Reclamation Plant](image3)

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Attendees had the opportunity to share their ideas, and the general consensus regarding this topic was that there needs to be a balance between centralization and decentralization, and ideally the two systems (centralized and decentralized) will work together and support each other. A pilot study was also recommended to determine the benefits of recycled water from a centralized system versus onsite (decentralized) water treatment and reuse. The pilot study should take a triple bottom line approach and also serve to determine the ideal situation when it is beneficial to consider onsite treatment options versus taking a centralized approach. Finding the optimum operating range for reclamation plants is also necessary to create a plan to accommodate for flow reduction to the centralized system. Concern regarding onsite water quality, monitoring responsibilities, and best management practices was expressed and needs to be addressed before encouraging or promoting onsite water treatment.

Centralization versus decentralization of wastewater treatment feedback from attendees

Table 1 at right and top of p. 61 provides the commentary regarding centralization versus decentralization of wastewater treatment.

“One Water LA” is a collaborative approach to ensuring the sustainability of the City of Los Angeles water supply by optimizing all water sources to reduce dependency on imported water. The One Water paradigm recognizes that water quantity and quality depend on multi-faced collaborations between systems. The tools and strategies include stormwater management and rainwater harvesting, generating atmospheric water, water conservation, water reclamation and reuse, energy management, nutrient recovery, and source separation. These actions can be centralized or decentralized, well-established or still evolving.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Centralized | • Diversion of dry weather runoff to storm drains  
• Marketing benefits of discharging into the sewer drain to industries and public (recycled water)
• Stand-by sewer connection for redundancy when onsite locations go down for maintenance
• Capturing stormwater in sewer pipes to increase flows to centralized system
• More purple pipe would ensure business discharges into centralized system and water would be recycled back to the business
• Find other recycled water uses for Hyperion
• Find other uses for Hyperion’s infrastructure that are no longer being used for water treatment
• Build on current infrastructure — existing sewage pumping plants
• Look at the trends we are experiencing in other POTW’s
• Hyperion was the focus of discussion
• Are other cities facing similar issues? |
| Community Outreach / Environment Justice | • Is onsite adding waste to already at-risk zones (beware of giving perception of concentrating risk in environmental justice communities)?
• Education programs/ application programs to encourage people to visit green buildings and learn about onsite treatment; similar to Hyperion Environmental Learning Center for centralized treatment
• School collaboration
• Create an application “H2O Go!” that will identify buildings with onsite treatment and be available to learn from
• In terms of social justice, centralization is more favorable as everyone has access to that system and does not add financial burden on individuals. Onsite may not be an option in low-income communities
• Better public education on types of water/fit for purpose to create acceptance of water reuse
• Decentralized education center to demystify the types of water treatment available
• All communities should have access to onsite opportunities (social justice) — it is important that all social classes have access to benefits and a say over their own water management |
| Cost Recovery | • Biochemical Oxygen Demand (BOD) and Suspended Solids (SS) fees will increase at onsite facilities and provide cost recovery
• LA Sanitation could move towards permit issuance, inspection and control, and water quality monitoring of onsite facilities for cost recovery |
| Decentralized | • Creating public/private partnerships for onsite treatment users
• Locking into possibilities of downsizing treatment plant, big picture planning of centralized and decentralized, win-win approach for environment and businesses
• Treatment of brine and solids from onsite facilities would be treated in centralized system. Overflow (2% solids) can aid in capacity issues downstream
• Decentralization makes the cities more sustainable and resilient to external factors
• Onsite is to be considered for large community scale purposes (>15,000 gallons to meet triple bottom line). Not cost effective at single family residence scale.
• Targeting onsite for large water users for non-potable purposes
• Cooling towers, large scale irrigation, large businesses, schools
• Private capital is used for onsite treatment/market driven
• Collaborate with other entities Los Angeles Unified School District (LAUSD)
• Move away from fear-factor approach and mentality of onsite treatment
• New York achieved successfully
• Fit for purpose water
• Less intense treating for non-potable purposes |
Also, to create vibrant livable cities, we must collaborate with planning departments for the use of wastewater treating systems, since many of the decisions governing water are driven by planning actions. See Table 2 at right.

In summary, public works professionals must find ways to balance two wastewater systems especially since so much funding has gone into creating, sustaining and smoothing the operation of centralization systems. Onsite decentralization should be considered only when triple bottom line analysis proves that it makes sense and co-benefits centralized systems.

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| Incentive Zones | • Identify zones that may benefit from discharging to the centralized system and creating incentives (incentive zones), incentivize the use of recycled water to promote usage  
• Should we be incentivizing onsite solutions for environmental benefit or discourage it due to health concerns?  
• New York has incentive programs for onsite treatment and should be further studied |
| Integrated Approach | • Centralization and decentralization pilot project  
• Defining at what point is it healthy and feasible to have onsite treatment? Centralized approach?  
• Ideally, satellite facilities and centralized system will work together and support each other’s processes  
  • Integrated approach to our wastewater treatment plants  
  • Water quality concerns from Hyperion tertiary treated water going to West Basin for further treatment and is still advised to not be used for recycling purposes  
  • Decentralized system ideally will provide support to centralized system  
• Consider natural characteristics of the land when considering if we should plan for centralized connection or decentralized option  
• Programming technology at centralized treatment plant to monitor and control onsite decentralized facilities |
| Policy | • Conservation and water policies will continue to decrease flow to POTW’s and strategic plan should be developed  
• Stormwater rights of infiltrated water – define water rights so downstream customers don’t feel robbed |
| Water Quality | • City must monitor safety of onsite facilities  
• Who will certify onsite technology?  
• Control mechanism of decentralized system  
  • Preventing contamination of groundwater, especially for indirect potable reuse  
  • Concerning if a private entity is pumping back into a public source of water |

### Table 2: Water Management and Planning Agencies

<table>
<thead>
<tr>
<th>Water Management Actions and Relationship to Water and Planning Agencies Water Management Actions</th>
<th>Principal Owner by Water Subsector</th>
<th>Planning Actions (Including Regulatory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation</td>
<td>Water supply</td>
<td>Visioning as a sustainable community with low environmental impact, equitable access to adequate, high-quality drinking water.</td>
</tr>
<tr>
<td>Green infrastructure and low impact development</td>
<td>Stormwater</td>
<td>Planning can enable green infrastructure through policies. Regulation required for implementation.</td>
</tr>
<tr>
<td>Water recycling and reuse</td>
<td>Wastewater (water supply secondary)</td>
<td>Visioning as a sustainable community with resource recovery. Regulation to incentivize acceptance may be required.</td>
</tr>
<tr>
<td>Supply maintenance and augmentation/banking</td>
<td>Water supply</td>
<td>Planning may identify opportunities to apply the programs.</td>
</tr>
<tr>
<td>Protection of water quality and ecosystems</td>
<td>Wastewater (stormwater secondary)</td>
<td>Planning may identify opportunities. Regulation required to incentivize.</td>
</tr>
<tr>
<td>Hazard mitigation</td>
<td>Stormwater (with flood control as auxiliary purpose)</td>
<td>Close connection between floodway protection and land use planning.</td>
</tr>
<tr>
<td>Groundwater protection</td>
<td>Water supply (stormwater secondary)</td>
<td>Planning can coordinate land use controls.</td>
</tr>
<tr>
<td>Resource recovery</td>
<td>Wastewater</td>
<td>Visioning as a sustainable community with total resource recovery and financial stewardship.</td>
</tr>
<tr>
<td>Energy efficiency</td>
<td>Wastewater (water supply secondary)</td>
<td>Visioning as a sustainable community with total resource recovery and financial stewardship.</td>
</tr>
</tbody>
</table>
An increasing challenge for wastewater systems: wipes

You may have noticed that an extensive new market for personal hygiene products has sprung up over the last ten years. Walk down the aisle of your local supermarket or drug store and you might be surprised by the variety and volume of “disposable wipe” products: baby wipes, personal care wipes, feminine hygiene wipes, makeup removal wipes, toilet cleaning wipes, hand sanitizing wipes, shoe polishing wipes, general purpose cleaning wipes—just to name a few.

A brief history of wipes

Wet wipes and moist towelettes have been around for decades—I remember they came with Kentucky Fried Chicken’s bucket meal when I was a kid—and were primarily meant to clean your hands when a sink may not have been convenient. About thirty years ago, another product category, baby wipes, entered the marketplace for use at changing tables and on the go. The explosion of wipes products that we see today began in the mid-2000s, when companies like Kimberly-Clark introduced moist wipes products marketed to parents teaching their kids good bathroom habits. Unlike previous products, these wipes were marketed for use in the bathroom, often as a substitute for toilet paper, and some were advertised as “flushable.”

Since no laws or regulations govern the use of the term flushable, any wipe company can use this term in product labeling and advertising. In 2008, the associations representing the manufacturers of nonwoven disposable products—INDA, Association of the Nonwoven Fabrics Industry, and EDANA, European Disposables and Nonwovens Association (INDA’s European counterpart)—issued guidance to assist manufacturers in evaluating whether wipe products should be flushed. Updated guidance documents were issued in 2009 and 2013 and the industry acknowledged the need for labeling products that were not designed to be flushed.

Unfortunately, none of this guidance considered the input of wastewater utility professionals. And the voluntary nature of INDA/EDANA’s guidance, the lack of any regulation, and the proliferation of products (whether marketed and labeled as flushable or not) has caused consumer confusion, as well as issues for wastewater collection and treatment systems, to flourish.

The effect on wastewater systems

The problems arising from wipes of all kinds being flushed into municipal sewer systems have been well documented in the news and include clogged pumps and blocked screens, overflows and increased power demand caused by clogged pumps, labor to unclog pumps and clear screens, reduced equipment life, and the cost to dispose of products removed from pumps and screens.

A putative class action lawsuit filed in April 2015 by the City of...
Wyoming, Minn., in the U.S. District Court of Minnesota against six manufacturers of wipes states: “Contrary to the Defendants’ representations, these flushable wipes do not degrade after flushing. Rather, the flushable wipes remain intact long enough to pass through private wastewater drain pipes into the municipal sewer line causing clogs and other issues for municipal and county sewer systems and wastewater treatment plants, resulting in thousands, if not millions, of dollars in damages.” The lawsuit further states: “Because the so-called flushable wipes do not degrade like toilet paper, they ultimately get caught in the bar screen and block the passage of wastewater, causing the system to shut down and requiring their manual removal.”

Though it can be challenging for municipalities to quantify the financial impact of dealing with wipes, some have developed estimates of what the issue is costing them. The City of Vancouver, Wash., spent $1.86 million from 2008 to 2013 on de-ragging, pump retrofits, disposal costs, and additional electrical costs. Clean Water Services, Ore., is spending approximately $120,000 annually for de-ragging and disposal costs at just one of their wastewater treatment plants. Orange County Sanitation District, Calif., spent $2.4 million in five years on new equipment, and over $300,000 in one year to unclch pumps. Columbus Water Works, Ga., spent $550,000 in two years on new in-line grinding equipment and $250,000 annually on additional operations and maintenance costs.

Collaborative efforts to update flushability guidelines
In late 2013, APWA, NACWA (National Association of Clean Water Agencies), WEF (Water Environment Federation) and INDA began examining the issue of flushable wipes and agreed to collaborate on a new edition of INDA/EDANA’s flushability guidelines (for manufacturers of disposable nonwoven products), which consist of a definition of “flushable,” seven tests to determine “flushability,” and an associated Code of Practice (COP) that addresses product labeling (to indicate what products are and are not flushable). The Canadian Water & Wastewater Association (CWWA) later joined these efforts, and the wastewater associations received some input from the Water Services Association of Australia (WSAA) and other international utilities.

All parties agreed that previous editions of INDA/EDANA’s guidelines were insufficient to protect wastewater systems and worked to develop an update focused primarily on two tests—one to measure the power draw on pumps that accumulate wipes and the other to measure disintegration of wipes. The wastewater associations conducted independent studies in early 2016 to demonstrate that the disintegration test included in INDA/EDANA’s guidelines did not adequately represent the conditions in a typical sewer system and that even those wipes that passed the test would linger in systems and cause problems. Further, these studies demonstrated that wipes available outside the U.S. could pass a testing protocol proposed by the wastewater associations.

But consensus could not be reached and many manufacturers of wipes have continued to label and market their products as flushable. And as more products are introduced, more manufacturers enter the market, and more consumers are conditioned to believe that wipes can be flushed, the burden on the wastewater sector has increased.

In a 2015 consent agreement with the wipes manufacturer Nice-Pak, Inc. (manufacturer of wipes for retailers including CVS, Target, and Costco), the Federal Trade Commission (FTC) provided some guidance on the meaning of “flushable” by directing Nice-Pak not to make any such claims unless a product “disperses in a sufficiently short amount of time after flushing to avoid clogging, or other operational problems in, household and municipal
sewage lines, septic systems, and other standard wastewater equipment.6

**What’s next for wipes**

In September 2016, international wastewater associations developed an “International Wastewater Position Statement on Wipes,” emphasizing that until a standard agreed to by the wastewater industry is developed, no wipe product should be flushed. The position statement has been endorsed by more than 300 organizations in 23 countries, including APWA.

In December 2016, the Council of the District of Columbia unanimously approved the Nonwoven Disposable Products Act of 2016, the first legislation in the U.S. to define “flushable” and address the labeling of wipes. On January 6, 2017, the act was signed into law by Mayor Muriel Bowser and directs the D.C. Department of Energy & the Environment (DOEE), in consultation with the D.C. Water and Sewer Authority (DC Water), to issue rules in order to implement its provisions.7

Earlier this year, more than three years after work began, the collaborative effort by APWA, NACWA, WEF and INDA to develop new flushability guidelines was dissolved over areas of disagreement between the wastewater associations and the wipes industry regarding the tests to determine what could be flushed.

However, the associations did agree to improvements to the COP, so that INDA/EDANA’s guidance for labeling now includes:

- a clear illustration of the difficult path a wipe product must follow to qualify as flushable;
- clarification that baby wipes never qualify to be marketed as flushable;
- clear examples of the types of wipes that fit into various “Do Not Flush” (DNF) categories; and
- a clear set of rules governing symbol size, graphic appearance and placement.

The revised COP is supported by the wastewater associations, including APWA, contingent on it being fully implemented in the 18-month period after it is adopted and subject to a semi-annual evaluation of its implementation by the wastewater associations for at least two years after its publication. In the meantime, some states will likely follow D.C.’s lead by passing laws to prevent the marketing of wipes as flushable. Already, the State of Maryland has introduced legislation similar to that passed in D.C.8

Until manufacturers are forced to change either their products or their marketing practices, the burden will continue to fall on municipal utilities to both remove these waste products from our wastewater infrastructure and to try to change consumer behavior. Many utilities, such as Central Contra Costa Sanitary District in California, Glenbard Wastewater Authority in Illinois and the Municipal Enforcement Sewer Use Group in Ontario, have undertaken public education campaigns to remind the public that “toilets are not trashcans.” Through mailers, posters, social media and some very clever videos on YouTube, the message is being spread to protect our wastewater infrastructure from products improperly flushed. For more information about the campaign, including educational materials, videos, articles and publications, visit NACWA’s website at http://www.nacwa.org/advocacy-analysis/campaigns/toilets-are-not-trashcans.

Anne Jackson can be reached at (202) 218-6750 or ajackson@apwa.net.


3 http://www.inda.org/issues-advocacy/flushability/


5 http://blog.nacwa.org/the-costs-of-flushable-wipes-clogging-pipes/


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Asphalt Concrete Pavement: Proven ways to save money and reduce greenhouse gases

Matt Rodrigues, P.E., ENV SP
Traffic Engineer
City of Eugene, Oregon
Member, APWA Center for Sustainability

While certainly not new to the lexicon of paving technologies, increasing your use of reclaimed asphalt pavement and use of the warm-mix asphalt process are two ways to realize significant cost savings and reduce the carbon footprint of your agency.

These products have been refined through hundreds of thousands of tons of production and placement and provide quality on-par or exceeding conventional virgin asphalt concrete mixes. In addition their use can typically be implemented fairly easily though partnerships with your asphalt producers, paving contractors and consultation with mix design professionals.

Reclaimed Asphalt Pavement (RAP)
The most common way to reduce the cost of asphalt concrete pavement (ACP) is to use RAP to replace virgin materials in the mix. RAP is most typically ACP removed from existing roads using a cold plane pavement removal machine (roto-mill) or through excavation where the ACP is handled separately from aggregate and soil and kept contaminant free. The RAP is then processed to use as a substitute for a portion of virgin asphalt binder and aggregate.

The use of reclaimed asphalt shingles (RAS) is also becoming more common, but is less practical to implement for most asphalt producers due the challenge of developing a clean supply of shingles, increased handling needs and variability of the asphalt content of the material.

The National Asphalt Pavement Association’s (NAPA) latest survey (2014) showed that RAP consisted of 20.4% of all ACP mixes nationwide. Of the states surveyed 21 used 20% or more RAP and three states used more than 30% RAP.

At the City of Eugene we have been using high RAP content for decades with current standards of 30% RAP for both base lift and top lift paving. We have had no negative impact to quality and have been experimenting with ACP mixes using 35% and 40% reclaimed asphalt binder replacement (often a combination of RAP and RAS). Use of reclaimed asphalt binder in excess of 30% may require using a softer grade of virgin binder to keep your overall mix stiffness on target.

High RAP percentages used in other countries, such as Japan, which averages 47% RAP, shows that use of RAP in the U.S. has yet to reach its practical limit.

Even with the current low price of asphalt binder hovering around $350/ton, using 20% RAP can save more than $4 per ton of ACP compared to virgin mixes. Using 30% RAP can save over $6 per ton. If your organization is doing high-volume paving, the savings can add up quickly.

Cold plane removal of existing pavement
When it comes to cutting greenhouse gas emissions, using RAP is the most effective way to reduce your carbon footprint from asphalt paving. Current greenhouse gas calculators typically assume an emissions reduction of 70% for RAP versus virgin mixes, which means using 30% RAP can cut your emissions per a ton of ACP by approximately 21%.

**Warm Mix Asphalt Concrete (WMAC)**

WMAC is a method by which the production temperature of ACP is lowered by 50 to 100 degrees. Most typically WMAC is produced through a water foaming method but can also be produced with admixtures.

The City of Eugene adopted WMAC as a standard in 2009 and to date has placed over 400,000 tons with a quality meeting or exceeding conventional hot-mix asphalt concrete mixes.

Using WMAC has several advantages:

1. Reduces energy consumption to produce ACP, lowering costs and greenhouse gas emissions.
2. Reduces off-gassing (smoke) of asphalt concrete by keeping temperature under the boiling point of “light oils” in the liquid asphalt, benefiting construction workers and the public.
3. Because the light oils are not boiled off, the liquid asphalt coating the rock particles is slightly thicker, which slows the aging process of the asphalt.
4. Reduces the oxidation caused during high temperature production that causes premature aging of the asphalt, which should provide a longer life product.

While WMAC admixtures can increase costs, in the range of $5 per ton, the water foaming method requires a one-time plant retrofit typically costing $50k to $100k. The plant retrofit costs are rapidly off-set by the energy savings from the reduced production temperature.

The National Cooperative Highway Research Program (NCHRP) estimates that the use of WMAC reduces the energy used in the asphalt batch plant by about 30% compared to hot mix asphalt. In Eugene this has translated into a long-term savings of around $2 per ton of ACP.

The energy savings from the WMAC process is estimated to reduce the greenhouse gas emissions per a ton of ACP by about 4%.

**Conclusion**

While these techniques are highly encouraged, and in use worldwide, the key to successful implementation as always is development of a solid specification and good quality control. Engage your local asphalt producers and paving contractors in a discussion about use of high RAP mixes and WMAC. Most asphalt producers have a pile of RAP which is an investment they are typically itching to leverage and paving contractors appreciate the improved smoke-free work environment that WMAC provides.

Paving on Eugene street with warm mix asphalt pavement

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Your local Asphalt Pavement Association can also be an excellent resource.

Maximizing your use of RAP and WMAC in your paving programs is an excellent way to partner with your local contractors and material producers to provide fiscal and environmental stewardship directly benefitting your community.

Matt Rodrigues can be reached at (541) 682-4959 or Matt.J.Rodrigues@ci.eugene.or.us.

**Resources**

- National Asphalt Pavement Association (NAPA) – Information on statistics and best practices for use of RAP and WMAC.
- FHWA Sustainable Pavements – Research and publications relating to use of RAP and WMAC.
- www.warmmixasphalt.org – Information on implementing WMAC projects.

“Perhaps the most important thing we can undertake toward the reduction of fear is make it easier for people to accept themselves, to like themselves.”

−Bonaro Overstreet (1902-1985), Author, How to Think About Ourselves

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Full-Depth Reclamation: A sustainable pavement reconstruction solution

Tom Herbel, P.E.
City Engineer
City of Huntington Beach, California
Member, APWA Center for Sustainability

So most people ask, how can a paving process be sustainable? First off we need to start off with what sustainability means. Sustainability in public works means pursuing a balanced approach through the efficient delivery of services and maintenance of infrastructure in an environmentally, economically, and socially responsible way. Sustainability is based on the elements of the Triple Bottom Line—people, planet, prosperity—and is a way of looking at the public works mission holistically and systematically so that sound, long-term solutions can be found for community challenges.

What is Full-Depth Reclamation?
In a nutshell, Full-Depth Reclamation ("FDR") is a process that has been around for many years, but the true sustainability of this process is finally being realized. The benefits of using FDR instead of traditional remove-and-replace methods are the savings of time, energy, cost, community impact, and the increased performance of the newly stabilized section.

FDR starts off with the evaluation of the existing pavement utilizing field sampling and laboratory analysis to determine the appropriate amount of cement for stabilization. Then the old pavement is pulverized and then shaped and graded carefully in preparation for cement application. Cement is next applied by spreader and then mixed with the reclaimed old pavement material, and water is applied to facilitate mixing and bonding of the cement to the old material. Then the reclaimed mixture is compacted to the desired density allowed to cure. Curing is done by wetting with a water truck or with the use of a waterproofing agent to keep the material moist to allow for full cement hydration. After the initial 24-hour curing period the subgrade is tested for stiffness; once the stiffness readings are in the range of 50 to 60 (Mn/m), microcracking should be accomplished with the use of a 12-ton vibratory steel drum roller. Once this is complete a final surface layer consisting of asphalt or concrete is applied after curing, which completes the reclaiming process.

Frequently, pavement failure visible on the surface has its origins in the base or subgrade. Stresses in these deeper layers contribute to cracking, rutting, and worse. FDR stabilizes and strengthens the base and deeper layers resulting in a pavement structure that is more load-resistant, weather-resistant, and durable.

What everyone asks is, what are the true benefits of FDR? Those benefits include:

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Economical due to cost savings

Cost savings are realized through breaking with the tradition of the typical removal and replacement of pavement. Traditional removal and replacement of pavement involves pulverizing a significant portion of the old pavement and hauling it offsite, followed by replacement with new materials and asphalt. The cost of trucking and time to haul away the tons of old material, dumping fees to dispose of it, and the cost of obtaining new aggregates and producing new hot-mix asphalt represent major costs. FDR reduces these costs significantly. On average, customers can expect 30-50% cost savings compared with traditional pavement removal and replacement and is constructed in about half the time.

Materials costs are reduced by the use of in-place pavement materials, lessening the need for new materials and reusing the materials you have already paid for.

Increased Strength – FDR stabilization with cement stiffens and strengthens the base structure, strength that actually increases over time! This reduces deflections due to heavy traffic loads, which in turn reduces the strains on the surface structure. This significantly delays onset of surface distress and extends the useful life of the pavement.

Moisture Resistance – Moisture infiltration can quickly degrade pavement bases. Cement stabilization through FDR forms a base that is moisture resistant and maintains its strength even with moisture saturation.

Reduced Stress – Stresses on the subgrade and underlying soil are greatly reduced. A thin, cement-stabilized base can reduce subgrade stress to a greater degree than a thicker unstabilized base, resulting in cost savings and greater failure resistance.

And yes, it is sustainable too

There are so many ways that this paving process is sustainable. These include but are not limited to:

- Overall energy savings by fewer vehicles on the road, therefore reducing the need for gasoline
- Old asphalt and base materials are recycled and not put into landfills
- Reduces project materials by as much as 90% which is a Zero Waste approach to paving
- The need to produce new asphalt emulsion, aggregate and sand conserves our natural resources
- Fewer trucks on the road reducing greenhouse gas emissions
- Project is completed in half of the time reducing greenhouse gas emissions
- Economically responsible with 30-50% cost savings

In addition, the Institute for Sustainable Infrastructure’s Envision Infrastructure Rating System has several credits that are applicable to projects utilizing FDR with cement in the areas of waste diversion, materials reuse, regional material greenhouse gas reduction, and others.

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Optimizing ROI for SCM sizing and selection via nutrient mass balance

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Raleigh, North Carolina

Infiltration-based Stormwater Control Measures (SCMs) have been proven to be effective practices to abate the negative impacts of urbanization. Urban Capital Improvement Projects (CIPs) and municipal stormwater retrofit projects provide unique opportunities to implement SCMs. However, many of these retrofit systems must be over/undersized, compared to local Water Quality Volume sizing requirements, to fit within the retrofit site constraints. These over/undersized systems, which typically have nutrient removal rates that fall outside of standard removal efficiencies, present challenges when evaluating cost and benefit opportunities. Many SCM benefits, including nutrient removal and runoff volume infiltration, are more difficult to quantify for over/undersized SCMs. However, recent water quality models, including mass-balance nutrient accounting tools, help quantify removal efficiencies for over/undersized SCMs and allow optimization in both SCM sizing and selection. Additionally, typical Return On Investment (ROI) indicators, such as payback period, can be applied to these systems to provide a financial metric for optimizing watershed-wide implementation. The following case studies demonstrate how this procedure can be used to optimize both individual SCM sizing and overall placement within an urban retrofit CIP, and provide an ROI index and payback period that can be used as a financial metric for project implementation.

The following examples demonstrate an optimized assessment that utilized over/undersized SCMs, modeled through a mass-balance nutrient accounting tool, allowing optimal nutrient removal at lower overall costs. The first site, located in Selma, N.C., analyzed a potential mitigation site with the opportunity to implement an undersized treatment wetland, which the selected undersized area was dependent on the best ROI index. The mass-balance nutrient accounting tool provided estimated nutrient removal rates for seven different comparison surface area sizes, including 1.0, 0.9, 0.8, 0.7, 0.65, 0.6 and 0.5 times the comparative Water Quality Volume (WQV) surface area. For this study, the comparative WQV surface area is the area, and subsequent volume, required to capture and treat up to the 90th percentile storm event, which is

<table>
<thead>
<tr>
<th>Comparison SA Ratio</th>
<th>1.0</th>
<th>0.9</th>
<th>0.8</th>
<th>0.7</th>
<th>0.65</th>
<th>0.6</th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN (lbs/yr)</td>
<td>324</td>
<td>306</td>
<td>279</td>
<td>238</td>
<td>210</td>
<td>176</td>
<td>78</td>
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<tr>
<td>Estimated Construction Cost</td>
<td>$608,574</td>
<td>$531,310</td>
<td>$447,897</td>
<td>$357,123</td>
<td>$308,956</td>
<td>$257,446</td>
<td>$147,129</td>
</tr>
<tr>
<td>$ per TN (lbs/yr) Removed</td>
<td>$1,880</td>
<td>$1,737</td>
<td>$1,606</td>
<td>$1,500</td>
<td>$1,469</td>
<td>$1,465</td>
<td>$1,890</td>
</tr>
<tr>
<td>TN-ROI-Payback (yrs)</td>
<td>87.9</td>
<td>81.2</td>
<td>75.1</td>
<td>70.2</td>
<td>68.8</td>
<td>68.4</td>
<td>88.3</td>
</tr>
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</table>

Table 1: Wetland Case Study demonstrating a payback period ROI index based upon Total Nitrogen removed for seven different surface area comparison sizes.

<table>
<thead>
<tr>
<th>Comparison SA Ratio</th>
<th>1.0</th>
<th>0.9</th>
<th>0.8</th>
<th>0.7</th>
<th>0.65</th>
<th>0.6</th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP (lbs/yr)</td>
<td>10.76</td>
<td>5.45</td>
<td>17.11</td>
<td>31.68</td>
<td>3.22</td>
<td>6.29</td>
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<tr>
<td>Estimated Construction Cost</td>
<td>$33,600</td>
<td>$49,020</td>
<td>$192,140</td>
<td>$143,100</td>
<td>$38,900</td>
<td>$120,100</td>
<td></td>
</tr>
<tr>
<td>$ per TP (lbs/yr) Removed</td>
<td>$3,123</td>
<td>$8,994</td>
<td>$11,230</td>
<td>$4,517</td>
<td>$12,081</td>
<td>$19,094</td>
<td></td>
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<tr>
<td>TP-ROI-Payback (yrs)</td>
<td>363.1</td>
<td>1045.9</td>
<td>1305.8</td>
<td>525.2</td>
<td>1404.7</td>
<td>2220.2</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: SCM Selection Case Study demonstrating a payback period ROI index based upon both Total Nitrogen and Total Phosphorus treated using a variety of SCM types.

Figure 1: Wetland sizing ROI

continued on page 72
one inch of rainfall. The estimated construction costs also varied significantly per comparison surface area size, mainly due to the required excavation resulting from the existing site constraints. As indicated in Table 1 on p. 71, the 1.0 comparative area size cost approximately four times the 0.5 comparative area but is expected to remove four times the amount of Total Nitrogen. Figure 1 on p. 71 demonstrates that the most optimal wetland size, for this case study, can be found between the 0.6 to 0.7 comparative area size.

Subsequently, it would initially appear that the 1.0 comparative area size would be the most cost-beneficial due to high amount of TN removed. However, when an effective optimization index, the cost to remove one pound of pollutant, was calculated based on this analysis, wetland comparative area size of 0.6 was determined to be the most efficient option. To determine the payback period ROI index, the current mitigation rate for one pound of TN, which at the time of this publication is $21.37 per lbs for this watershed, was used an equivalent benefit cost. Subsequently, the 0.6 wetland comparative area size would have an ROI index, or payback period, of 68.4 years, which represents the optimal time it would take to pay back the estimated construction costs using the current mitigation rate for Total Nitrogen.

This ROI index methodology can be applied to several different nutrient analyses if the mass-balance approach is used to quantify over/undersized SCM performance. The second case study, located in Greenville, N.C., analyzed the optimal selection and ROI index of several over/undersized SCMs, including wetlands, permeable pavement, regenerative stormwater conveyances (RSC) and bioretention areas to reduce the Total Phosphorus (TP) loading into the adjacent Tar River. Similar to the first case study, the mass-balance approach was also used to determine the estimated nutrient removal rates for these SCMs, many of which were undersized for their respective drainage area. As shown in Table 2, a similar optimization index, the cost to remove a pound of pollutant, was used to rank the proposed SCMs and determine which sites would provide the most optimal cost/benefit. For this case study, both Total Nitrogen and Total Phosphorus were analyzed to determine which pollutant type should govern the SCM selection.

Similar to the first case study, an effective optimization index and payback period ROI index was calculated for each pollutant type and SCM. The current mitigation rate for TN and TP, which is $8.60 and $382.41 respectively, was used in the determination of the payback period ROI index as an equivalent benefit cost. The targeted treated nutrient for this case study, as represented by the high mitigation rate, is Total Phosphorus.

As this analysis indicates, the undersized Bioretention B would provide the highest TP ROI index, or payback period, or 28.5 years with respect to treating Total Phosphorus. While RSC A has the second highest TP ROI index and the highest TN ROI index, it would take twice as much time to provide the same benefit as Bioretention B. As this case study demonstrates, it is imperative to identify the nutrient of concern as different SCMs types treat nutrients species at varying rates and will produce different ROI results. This analysis determined that the highest ROI would be obtained with an undersized Bioretention area and a Regenerative Stormwater Conveyance System. Without the use of a nutrient mass balance to evaluate undersized SCM performance and a relative ROI index, the optimization selection and payback period for these undersized systems would be difficult to quantify.

Marc Horstman, a project manager located in WK Dickson & Co.’s Raleigh, N.C. office, has been elected General Secretary of the American Institute of Hydrology. He can be reached at (919) 256-5642 or mhorstman@wkdickson.com.
Tips for drafting legally defensible sustainability policies and thresholds

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Member, APWA Center for Sustainability

Cities, counties, regions, and states throughout the U.S. are increasingly incorporating sustainability principles and thresholds into planning documents such as General Plans and Climate Action Plans. These policies, regulations, and principles can be powerful tools for encouraging sustainability in communities; however, agencies must draft them carefully to limit their legal liability. When drafting language for plans, policies, and municipal codes, a municipality should craft language clearly and thoughtfully to be consistent with state law. After implementation of a sustainable policy or regulation, that policy or regulation must be applied to projects in a consistent manner within a jurisdiction. The tips below, based on recent California case law, illustrate these points.

Tip #1: General Plan policies should be “fundamental, mandatory, and clear.”

In a 2016 California case, Spring Valley Lake Ass’n v. City of Victorville, 248 Cal App 4th 91 (2016), the City of Victorville’s General Plan policy requiring onsite electricity generation was challenged after it was applied to a project. The City’s General Plan required “all new commercial or industrial development to generate electricity onsite to the maximum extent feasible.” The proposed project did not include any onsite electricity generation because the applicant concluded that without credits or incentives, rooftop solar would be economically infeasible. The court found no substantial evidence that onsite energy generation at the project site was infeasible. The court determined that the applicant failed to consider the feasibility of solar power and other alternatives, such as wind power, to show that the project was consistent with the City’s General Plan. A project is not required to perfectly conform to every single General Plan policy; however, a project is inconsistent with a General Plan “if it conflicts with a general plan policy that is fundamental, mandatory, and clear.”

In this case, the General Plan policy to generate onsite electricity to the “maximum extent feasible” was found to be fundamental, mandatory, and clear. As such, the Applicant’s failure to show infeasibility was a fatal error and the City’s General Plan consistency determination was upheld. This case illustrates the importance of drafting clear and concise language in any planning document or code provision.

Tip #2: Make sure there is sufficient evidence in the record of any agency decision regarding General Plan consistency; Courts will defer to reasonable agency consistency determinations.

Naraghi Lakes Neighborhood Preservation Association v. City of Modesto, et al, Cal App 5th (2016) reiterated the well-established rule that a lead agency’s land use decisions are required to be consistent with policies in that lead agency’s General Plan. However, the courts have interpreted the consistency rule to require only that a project does not frustrate a General Plan’s policies and goals. It must be in harmony with the General Plan, but does not need to be “in rigid conformity with every detail thereof.” The court will defer to a lead agency’s determination that a project is consistent with the General Plan because the decision makers of a city are in the best position to weigh the General Plan’s policies and apply them. Thus, courts will defer to decision makers as long as the decision is “reasonably based on the evidence in the record.” A consistency determination will only be overturned if a reasonable person could not have come to the same conclusion the decision makers did.

The lesson here is that when making a General Plan consistency determination, agencies should be sure to come to a reasonable, defensible decision and should be sure there is evidence in the record that supports the rationale behind their decision.

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Tip #3: If your agency is required to adopt a plan to meet regional or statewide GHG reduction targets, make sure you research whether you can take credit for existing mandates that reduce GHG emissions in your plan.

In 2008, California adopted the Sustainable Communities and Climate Protection Act (“Act”), which required implementation of regional plans to meet percentage GHG reduction targets. To comply with the Act, the Bay Area Metropolitan Transportation Commission and the Association of Bay Area Governments (“Agencies”) developed a regional plan with land use and transportation strategies to meet those GHG emissions targets. All of the measures included in the Plan’s GHG emissions reduction calculation were above and beyond state law. For example, emissions reductions from a state mandate requiring low carbon fuel standards were not accounted for in the calculation of the Plan’s total percentage reduction in emissions. Bay Area citizens believed the Agencies’ Plan was overreaching on the basis that it failed to take credit for GHG emissions reductions that would occur as a result of pre-existing statewide GHG mandates. As a result, Bay Area citizens drafted a separate plan that took credit for statewide mandates and thus significantly reduced the measures required to meet the 2008 Act’s percentage reduction targets.

In *Bay Area Citizens v. Association of Bay Area Governments*, 248 Cal App 4th 966 (2016), the court found that the Agencies’ approach was proper under state law. In part based on review of the legislative history of the 2008 Act, the court found that the intent of the law was to require a percentage reduction of GHG emissions in addition to reductions that would result from existing state law. This case is significant, particularly for agencies that have regional or statewide GHG reduction targets, because it illustrates the stringent requirements increasingly imposed on regional and local planning agencies to meet statewide GHG emissions targets.

Morgan Gallagher can be reached at (714) 662-4641 or mgallagher@rutan.com.

Public works professionals should keep these tips in mind when drafting language for planning documents and when reviewing or implementing a project. For legal advice applicable to your jurisdiction, be sure to talk to your City Attorney.
2017 Top Ten Public Works Leaders named

One of the most coveted and prestigious public works awards is sponsored each year by APWA and is presented to ten individual leaders whose excellence in public works earns them the distinction of the Top Ten Public Works Leaders of the Year. The honorees are awarded this recognition for their professionalism, expertise and personal dedication to improving the quality of life in their communities through the advancement of public works services and technology.

This year, the Top Ten Review Committee consists of Committee Chair Howard Lazarus, P.E., PWLF, City Administrator, City of Ann Arbor, Michigan; Tom Collins, PWLF, Deputy Director (retired), Town of Natick, Massachusetts; Paul Smeltzer, P.Eng., Thorold, Ontario; Tom Talsma, Vice President, Engineering Enterprises, Inc., Sugar Grove, Illinois; and Bonnie Teaford, retired, Valencia, California.

For 2017, the selected recipients of the Top Ten Public Works Leaders of the Year Award are:

David Fabiano, P.E., PWLF
Town Engineer
Town of Gilbert,
Arizona

David Fabiano has more than 23 years of experience in the public works field. He has spent the majority of his career working in the consulting engineering arena on both small- and large-scale public works projects for public agencies, with more than 17 years with a single consulting engineering firm.

In September 2016, Fabiano made the transition to the public side and became the Town Engineer for the Town of Gilbert, Ariz., where he oversees the Engineering Services Division of the Public Works Department. As Town Engineer, he manages the Capital Improvement Program, Traffic Engineering and Traffic Operations areas.

Regarding right-of-way access management, current Town permitting practices do not adequately value access to the right-of-way or incentivize quick resolution of work in the right-of-way. Fabiano established an internal committee to review and make recommendations for changes. A stakeholders group is being formed to engage their input and feedback on appropriate measures to incentivize timely and quality work in the Town’s rights-of-way. A policy change recommendation will be made to the Town Council in FY2018 for implementation.

As a consulting engineer, Fabiano was the Project Principal and Project Manager for the Water and Wastewater Master Plan for Desert Mountain, a 5,000-acre master-planned community at the north end of the City of Scottsdale. This included a hydraulic model of the water system with more than 12 pressure zones from 2,400’ to over 3,500’ elevation. Fabiano also served as the Project Principal for the Wastewater Treatment Plant Improvements for the Pinewood Sanitary District, a project that changed the treatment system and improved the quality of effluent produced. This project was awarded the Small Wastewater Treatment Project of the Year by AzWATER upon completion.

Lee Gustafson, P.E.
Senior Project Manager
WSB & Associates,
Inc.
Minneapolis,
Minnesota

Lee Gustafson’s 34-year diverse professional career in serving the public has included experience in the public works/engineering departments of three major cities within the Twin Cities metropolitan area in various roles, including as Director of Public Works and Engineering and City Engineer. He is currently serving as Senior Project Manager at WSB & Associates, one of the Minneapolis Star-Tribune’s Top Workplaces for the last four years. Gustafson’s service to the state of Minnesota has included chairing the Municipal State Aid Screening Board, a statewide committee that oversees the allocation of State

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Aid dollars to Minnesota cities for road construction, as well as leading its Needs Study Task Force charged with updating 60-year-old rules for State Aid allocations.

Gustafson was closely involved in the construction of a regional public boat launch on the largest lake in the Twin Cities area: Lake Minnetonka. The project involved coordinating changes on three separate sites on Gray’s Bay: the closure of a small boat launch in an isolated neighborhood; the acquisition of a large private marina; and its conversion to a regional boat launch. The entire project required gaining approvals from a large lake association task force, city officials, and state, county, and watershed district legislators and all of their associated bureaucracies. Gustafson’s intimate involvement in all of the project details brought the project to a successful completion.

When Gustafson oversaw the City of Minnetonka’s engineering and capital works programs, he developed a unique thin-overlay street improvement program that was formally adopted by the City Council in 1994. The goal of the program was to use the city’s pavement management program and cost-benefit analyses to systematically rehabilitate and renew declining neighborhood streets in a cost-effective manner without the typical hefty assessment package and public uproar that so often accompanies such efforts. The purpose behind the program was not only to create uniformity and consistency with the city’s infrastructure, but to improve safety, access, maintenance, and the lifecycle of the public’s pavement investment.

Hilderbrand has served in numerous capacities with the APWA Kansas City Metro Chapter, including chairing the chapter’s E&T and Awards Committees and serving on planning committees for the Mid-America Conference and the chapter’s hosting of Congress and PWX. She also has significant experience serving at the APWA national level, including committee assignments for Projects of the Year, Diversity, Government Affairs, Leadership and Management, and National Homeland Security Task Force. Her national experience is highlighted by her service on the Board of Directors as the At-Large Director for Engineering and Technology. Hilderbrand was awarded the APWA National Young Leader of the Year Award in 2003.

Richard (Rick) Howard, CFM, P.E., PWLF
Public Works Director
City of Orlando, Florida
As Public Works Director for the City of Orlando, Fla., Richard (Rick) Howard’s responsibilities include the administration and management of the Public Works Department with over 630 professionals and annual operating and capital expenditures of $190 million. The Department includes seven Divisions managing the operation of Capital Improvements, Engineering, Parking, Solid Waste Management, Streets and

Patricia (Patty) Hilderbrand, MPA, P.E., ENV SP
Division Manager, Coordination Services
Public Works Department
City of Kansas City, Missouri
Patricia (Patty) Hilderbrand serves as Division Manager, Coordination Services, for the City of Kansas City, Mo., Public Works Department. In her twenty years with the Public Works Department, her duties have included project management of major flood mitigation projects with the U.S. Corps of Engineers; directing the department’s $500 million, five-year Capital Improvements Program; directing and implementing a city-wide, Internet-based, comprehensive program and project management system; and serving as primary liaison to the local Metropolitan Planning Organization, MoDOT and all local jurisdictions.

In 2006, Hilderbrand was designated as the City’s Transit Manager and is responsible to negotiate and manage the City’s $58M annual service contract with the Kansas City Area Transportation Agency. This contract provides fixed route transit service with 65 routes driving 7.4 million miles and carrying 13.8 million riders per year. Her role requires her to balance the available budget against competing demands for more frequent service on existing routes versus launching routes to new developing areas of the city, and the needs of a transit-dependent population needing all-day service with the needs of commuters requiring service primarily on the morning and evening rush hours.
Stormwater, Transportation Engineering, and Wastewater. The Department focus is centered on providing Orlando citizens a quality, sustainable environment, energy efficiency and intelligent transportation technology.

Howard personally led the Southeast Lakes Basin Stormwater Management Project, one of the first regional approaches to stormwater management. At the start of the project, Howard was leading the Streets & Drainage group. The City of Orlando recognized the need for a comprehensive solution to manage stormwater as an asset in the Southeast Lakes basin. A comprehensive plan was developed and permitted in 2012 that better manages the flow of surface water between lakes during both wet and dry periods as well as reducing flood levels across the basin. To ensure water quality in all the connected lakes, extensive water quality improvements are also proposed using nutrient separating baffle boxes.

The City of Orlando has undergone major projects in the past few years, including Lake Eola Fountain Renovations, Citrus Bowl Stadium (now Camping World Stadium), a new MLS Soccer Stadium, Amway Center, and the Dr. Phillips Performing Arts Center. Howard has been involved at some level in all of these highly visible projects, whether it has involved sitting on the Selection Committee to select the designers and contractors, or having a hand in the direction of the project.

Paul May, P.Eng.
Chief Engineer
York Region Rapid Transit Corporation
Markham, Ontario
Paul May began working at York Region as Manager of Transportation in 1988, eventually progressing to the positions of Director of Transportation Planning Approvals and then Director of Infrastructure Planning. As Director of Infrastructure Planning he planned and implemented the first phase of Viva Rapid Transit, a Bus Rapid Transit system that he has since led in its transformation of York Region’s road and transit infrastructure. In his current role as Chief Engineer with the York Region Rapid Transit Corporation, he is overseeing several complex rapid transit projects on behalf of the region, including a $3 billion subway extension.

For the Toronto-York Spadina Subway Extension project, May contributed extensively to the technical working groups. He worked with the project manager, the Toronto Transit Commission, to coordinate complex construction schedules and management, in the many instances where the subway infrastructure connects to transit and road infrastructure owned by York Region and one of its municipalities, the City of Vaughn. The result was accelerated construction schedules and anticipated opening of a large rapidway project and a nine-bay bus terminal with an underground pathway, within months of the subway opening.

Rapid growth in York Region required a comprehensive 30-year horizon for infrastructure requirements for the Development Charges (DC) Bylaw and annual updates to the 10-year capital program for budgeting and planning purposes. May directed all technical input for establishing the transportation component for five major updates of the DC Bylaw and the water and wastewater component for two major updates. He met frequently with stakeholders (Urban Development Institute and Greater Toronto Homebuilders Association) to resolve major issues. He also directed and coordinated an annual update of roads, transit, water and wastewater 10-year capital programs.

Robert Newman
Director of Public Works
City of Santa Clarita, California
As Director of Public Works for the City of Santa Clarita, Calif., Robert Newman leads, plans, directs and manages the activities of 135 full-time public works employees who provide essential services to the City’s 217,000 residents. His responsibilities include management of Building and Safety, Capital Improvement Projects, Engineering Services, Environmental Services, General Services, and Traffic and Transportation Planning. He manages a $26 million per year operating budget and a capital budget that ranges from $35 to $65 million.

Newman led the City’s extremely complex Cross Valley Connector construction efforts, an 8.5-mile, $245 million
multi-phase roadway project linking the State Route 14 and Interstate 5. Successful management of the project, which included the construction of four major bridge structures over environmentally sensitive areas, involved collaborations with over 100 stakeholders, with multiple funding sources in 10 construction phases, each with unique challenges and constraints. Newman also oversaw the three-year, $47 million reconstruction of the Magic Mountain Parkway/Interstate 5 interchange that included the reconstruction of four freeway ramps, a new auxiliary lane, road realignments and widening, and the relocation of a busy gasoline service station.

Newman has presented over 45 training sessions to professional groups, including APWA's PWX, APWA chapter meetings, APWA Public Works Institute, League of California Cities, Chamber of Commerce, and City trainings on a wide range of topics, including solid waste, project management, partnering with your boss, emotional intelligence, team building, goal setting, conflict management, construction management, fleet maintenance, and leadership.

Jeanne Nyquist
President
Nyquist & Associates, Inc.
Tigard, Oregon
Jeanne Nyquist has more than 30 years of experience managing transportation, water, public works and parks services for municipal, county and state government as well as unique industry insights from her long-time involvement in APWA. As a consultant, she specializes in organizational development, change management, strategic planning, policy development, leadership and team training, and asset management. She is also an accomplished speaker and trainer who draws on her leadership experience to enhance personal and professional development.

Prior to forming her consulting company, Nyquist served as Maintenance Bureau Director for the City of Portland, Ore., from 1999 through December 2004. Her bureau maintained transportation, stormwater and wastewater infrastructure. Nyquist provided leadership to a staff of 450 people and managed a $49 million annual operating budget. She was responsible for overall management of the agency, including strategic planning, asset management, performance management, policy development, public information, and reporting to the City Council. During her tenure in this position, she implemented a computerized infrastructure management system to collect data on transportation infrastructure inventory and condition, and she sponsored development of strategic asset management plans for $6.3 billion in transportation infrastructure.

From 1988 to 1999, Nyquist was Public Works Division Manager for the City of Portland, Office of Transportation, Maintenance Bureau. She was responsible for the traffic control system, pedestrian facilities, street cleaning and roadside maintenance operations and organizational support functions including loss control, human resources, training and administrative support. She conducted long-range planning, organized work and provided leadership to a staff of 75 in five departments. Nyquist was a champion of the use of advanced technology, and served on an agency steering team to plan and implement a transportation infrastructure management system (IMS). The IMS replaced a legacy maintenance management system, providing updated capabilities to capture and analyze infrastructure condition and cost information.

Darren Schulz, P.E.
Director of Public Works
City of Carson City, Nevada
Darren Schulz is the Director of Public Works for the City of Carson City, Nev., which has a population of 58,000 and a Public Works Department consisting of 135 employees. The Department is comprised of five main divisions and manages the City's streets, water utility, wastewater utility, stormwater utility, capital projects, real property, facilities, solid waste, and fleet. Schulz is also a member of the City’s Management Team and is an Incident Commander in the City’s Emergency Operations Center. He is often called upon to make presentations before the City’s Board of Supervisors, interested citizens, committees, management teams, and the media.

Like much of the west, Carson City was experiencing high growth in residential and commercial markets in the early
part of the 2000s, but it suffered major setbacks due to the recession just a few years later. In fact, according to the EMSI, Nevada was the hardest-hit state in terms of states with lost engineering jobs. Schulz was leading during the good times, but more importantly was able to successfully manage through some of the worst public funding years in recent decades. While the ongoing economic battles were being waged, Schulz focused on technology and collaboration with private partners to keep things afloat. It was also during this downturn that he was able to explain the need to the policy makers in Carson City to fund depreciation in their utilities.

Schulz discovered early in his career that the cost of replacing a given piece of infrastructure is typically much higher than its original construction cost many years before due to inflation, construction conditions, and the reduced availability of grants or developer funding. Given the integrated nature of utility infrastructure, it is also possible that multiple assets will need to be replaced concurrently. In order to avoid excessive reliance on debt, Schulz helped convince the elected officials in Carson City that it is prudent to have a policy that commits a certain amount of current rate revenue to the replacement of system assets. This was accomplished in 2012 and a five-year rate structure was adopted to carry out this goal. 

One of Sheppard’s proudest accomplishments is Manchester’s Municipal Complex. For many years, it was recognized that both the Public Works and Police Department’s buildings needed to be replaced. The Public Works building was built in the 1950s; it was becoming unsafe and very inefficient. The Police Department had outgrown their facility and was in dire need of replacement. Accepting this challenge, Sheppard and his team worked with the elected officials to develop the Municipal Complex concept, combining both Public Works and Police on the same 12-acre site incorporating seven buildings. The $43.5 million budget was funded with Build America and Recovery Zone Economic Development Bonds, and $6 million of City funds. The project was completed on time and on budget within two years.

Sheppard is managing the 10-year $30 million Cohas Brook sewer expansion project to serve approximately 1,000 homes in southeast Manchester and protect the Lake Massabesic watershed that provides drinking water to 170,000 area residents. This project consists of $4-$7.5 million construction contracts that consist of 20,000 linear feet of gravity sewer each. Three of the construction contracts have been completed and the final contract is under design. Sheppard leveraged the work from these contracts to expand area infrastructure improvements including reclamation and reconstruction of streets, drainage improvements, and over three miles of new bike lanes to further implement the “complete streets” initiative within the City.

Kevin A. Sheppard, P.E., PWLF
Public Works Director
City of Manchester,
New Hampshire

As the Public Works Director for the City of Manchester, N.H., Kevin A. Sheppard provides leadership and oversight for the management, maintenance and operations of all facets of public works. He oversees a public works staff of four major divisions, a staff of over 286 employees and an operating budget of approximately $45 million. The Department is responsible for over 400 miles of roadway, collection of 35,000 tons of solid waste and 6,000 tons of recyclables, 354 miles of sewer line (100 miles over 100 years old), 151 signalized intersections, 3,000,000 square feet of City buildings, 1,073 acres of City parks, a golf course, ski area, nine cemeteries, and $250M in wastewater infrastructure.

Larry Stevens, P.E., PWLF
Project Director
HR Green, Inc.
Johnston, Iowa

As Project Director for HR Green, Inc., Larry Stevens provides municipal engineering services to some of the firm’s key clients. Working in the Governmental Services Business line he oversees the firm’s city engineering services in Iowa and South Dakota. Prior to his work at HR Green, Stevens was responsible for directing the activities of the Iowa Statewide Urban Design and Specifications (SUDAS) program, providing direction for

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the development of technical and operational standards for urban public improvement design and specifications. Stevens also worked as the City Engineer/Public Works Director for the City of Oskaloosa, Iowa, where he was responsible for managing both the Department of Public Works as well as the Engineering Department.

As Project Director with HR Green, Stevens led the effort to provide infrastructure by the City of Nevada, including new roads, existing roadway improvements, raw and potable water, and sanitary sewer force main for a revolutionary $265M second generation ethanol plant, which uses corn stover (stalks and husks), to be designed and built by DuPont as a large-scale prototype plant. Due to the high water demand by the DuPont plant, it was also necessary to add a new well to the City’s existing well field. Stevens successfully completed negotiations for the public-private partnership to finalize the improvements, wrote and obtained Iowa DOT economic development funding for over 50% of the cost of the roadways, and negotiated a number of voluntary permanent and temporary easements and property acquisitions.

Stevens was elected to the APWA Board of Directors in 2007 as the Director of Region VI. He has chaired the APWA Finance Committee, served as the APWA Board liaison to the Canadian Public Works Association (CPWA) Board of Directors, and is a former APWA Board liaison to the Small Cities/Rural Communities Committee. He served as APWA National President-Elect, President, and Past President during the years 2012-15. Stevens has also served in all of the Iowa Chapter officer positions, including eight years as the Chapter Delegate, and has also been a member of the National Nominating Committee and the Strategic Planning Task Force. He is a past Chapter President of the Iowa Engineering Society and is a member of the National Society of Professional Engineers.

Editor’s Note: For a list of the Top Ten recipients from 1960 to 2017, go to APWA’s National Awards Program web page at www.apwa.net/About/awards.asp?Display=top10list.
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Hardliner: the disposable sanitary hard hat liner

The Hardliner™ is a disposable hard hat liner that will assist in preventing diseases of the hair and scalp. It will also save time and money cleaning and sanitizing the hat. Millions have been sold in work places where more sanitary conditions are a priority, especially to those sharing or borrowing hats. Saves time and money cleaning and sanitizing hard hats. Easy to use, just place over hard hat suspension. When soiled, remove and dispose of. Hardliners has been sold outside the U.S. as well. Hardliner was actually invented by a former Plant Manager who saw the need for a more sanitary way to have clean hard hats. For a free sample and/or information, please contact GKR Industries at 800-826-7879 or kris@gkrindustries.com and refer to code “Liners APWA.”

Miller unveils new EnPak® A28GBW all-in-one work truck power system

Miller Electric Mfg. Co., a leading worldwide manufacturer of arc welding equipment, has introduced the new EnPak A28GBW, an all-in-one work truck power solution that delivers compressed air for jobsite tools, generator power for electrical needs, battery charging and crank assist, plus versatile stick welding capabilities for field repairs. Service technicians can turn their trucks off and use the EnPak A28 to get virtually any job done in the field, saving on costly fuel and maintenance expenses associated with running a Tier 4-compliant truck engine. “The EnPak A28GBW is poised to be the industry-leading work truck power solution, delivering the reliability and performance you expect from Miller,” said Travis Purgett, Product Manager, Power Systems Division, Miller Electric Mfg. Co. For more information, visit MillerWelds.com/EnPakA28.

New Pitbull™ 2300B Screener a high-quality, affordable option for small- to mid-sized contractors

Lake Erie Portable Screeners has introduced a portable box screener as a smaller, economical alternative to the Pitbull™ 2300. The Pitbull 2300B has no conveyors and features a smaller frame, allowing it to boast the durability, portability and screening rate of the 2300 at almost half the cost. The new model is simpler, lighter and more compact than the larger version, yet delivers high outputs with a wide range of materials, including topsoil, mulch, gravel, stone and asphalt. The combination of low price and high performance makes the machine ideal for rental centers and small- to mid-size contractors in industries such as landscaping, construction and excavation. For more information, visit www.pitbullscreeners.com.
Building Wide Systems Integration from Johnson Controls

Building Wide Systems Integration takes an enterprise-wide approach to technology integration, optimizing technology usage and maximizing budgets, ensuring technology installation supports the business objectives for the building and delivering better outcomes for the occupants. With this technology convergence approach, the Building Wide Systems Integration service allows these systems to be managed on a unified, intelligent infrastructure: HVAC, building automation, security, lighting, information technology and communications, specialty systems, and more. In addition, Building Wide Systems Integration enables more control and better automation so the building can operate more efficiently and sustainably, while improving comfort and safety. For more information visit www.johnsoncontrols.com/buildings/services-and-support/systems-integrations.

DRV LED downlight retrofit expanded for CFL & HID replacement

Terralux, a leader in the design and manufacture of commercial LED lighting and building control products, announces the expansion of the DRV LED retrofit product line. The DRV now features three models: DRVL for low output applications, the DRV, and the DRVH for high output applications. The latest model, DRVL, is designed to replace either a single 13 watt CFL bulb or a single 18 watt CFL bulb inside existing commercial downlights. The DRVL features rapid-installation process without requiring connection to an external ballast or driver, and provides up to 800 lumens. These fixtures are most typically found in hotels, medical buildings, educational facilities, multi-family buildings, and offices in high-run commercial common areas like hallways. For more information, please visit terralux.com.

Syracuse University’s number one-ranked Maxwell School opens applications for online Executive Master of Public Administration program

Syracuse University’s ExecutiveMPA@Syracuse Maxwell School of Citizenship and Public Affairs is now accepting applications for ExecutiveMPA@Syracuse, its new online Executive Master of Public Administration (EMPA) degree. The Maxwell School’s Executive Education program, created in 1964, draws directly on the faculty and curriculum of Maxwell’s top-ranked graduate program in public administration and public affairs. Maxwell has enjoyed U.S. News and World Report’s top public affairs ranking every year since those surveys began in 1995. More than 10,000 professionals have completed the School’s executive masters and midcareer training programs. For more information, please visit http://maxwell.syr.edu/.

New $140 million Justice Center designed by RSC Architects opens on historic site in Hackensack, New Jersey

The new $140 million Bergen County Justice Center designed by RSC Architects opened its doors in early March. Sitting on a historic site, the six-floor, 130,000-square-foot facility is the centerpiece of a six-year plan to modernize and upgrade the Bergen County’s justice center complex. “The project presented a unique set of challenges from an architectural and design standpoint, as we needed to balance the 21st century needs of Bergen County with the preservation of the site’s rich cultural history,” said John P. Capazzi, AIA, president of RSC Architects, the project’s architect of record, design architect and interior design firm. For more information about RSC Architects, please visit www.rscarchitects.com. (Photo credit: ©2017 RSC Architects and RobFaulkner.com)
Mobile Defender Model-S can monitor and communicate the safety of workers

Companies that dispatch employees into unknown environments and situations can rely on the Mobile Defender Model-S (MD-S) to relay information about employee locations while providing them with an instant connection to help if an emergency occurs. In addition to state-of-the-art location technologies, the MD-S also offers a built-in Fall Advisory capability. The MD-S can detect horizontal and vertical movement so if an employee falls on the job or is knocked over, he or she does not have to initiate a call for help. The MD-S will trigger one automatically. Leveraging existing SecuraTrac cloud-based location technology, the new MD-S adds the ability for Central Stations to respond to potential accidents. For more information, visit www.securatrac.com.

Safely store drums outdoors and avoid spill containment fines

UltraTech International, Inc., leaders in the environmental compliance industry, have recently added the Ultra-Hard Top P4 Plus to their innovative product line. The product as the “P4” is used to indicate is made from polyethylene and can hold up to four drums. A 75-gallon containment sump captures any leaks, drips or spills from drums and other containers and meets SPCC and EPA Container Storage Regulation 40 CFR 264.175. The weather-proof hard topped enclosure also helps users meet Stormwater Management Regulations – NPDES, 40 CFR 122.26 (1999). The unique, dual closure offers significant ergonomic and convenience benefits—drums are easily accessed from either side. The roll top doors offer quick and convenient access for dispensing, pumping and pouring. For more information, please visit www.ultratechbrands.com.

Sandvik Double TriSpec® tools last longer in abrasive asphalt milling applications

Sandvik Mining and Rock Technology introduces its new Double TriSpec® tool for use in extremely abrasive asphalt milling conditions. The Double TriSpec features two carbide rings, which work to eliminate body wash (the premature wearing of the steel body that surrounds the brazed-carbide insert in each tool on the milling drum). The design extends the life of the tool’s body and allows for maximum utilization of the carbide tip, which is able to wear evenly and in proportion to all tools located across the drum. For more information, visit www.construction.sandvik.com or call 1-800-868-6657.

The MTS™ Multi-Threat Shield is the lightest, most discreet, versatile, and affordable ballistic shield available

In the event of a physical attack, the MTS™ – Multi Threat Shield, a lightweight collapsible three-foot ballistic shield, can be used to protect one or more people. The MTS’s primary design is protection against threats from firearms. However, the MTS is a true multi-threat shield, offering protection from attacks with blunt objects and edged weapons, as well as punches and kicks. The MTS is certified NIJ Level IIIA. The MTS was tested by a National Institute of Justice approved laboratory for ballistic resistance and the results were “No Penetration.” The MTS will not fold or bend when shot. For more information, visit https://forcetraining.com/pages/mts.
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For more information about these programs or to register online, visit www2.apwa.net/Events. Questions? Call the Professional Development Department at 1-800-848-APWA.

UFO or UAV? The Welcome Invasion of Drones in the Public Works World

Thursday, May 18, 2017
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UPCOMING APWA EVENTS

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Always the third full week in May. For more information, contact David Dancy at (800) 848-APWA or send e-mail to ddancy@apwa.net.

North American Snow Conference
2018 May 6-9 Indianapolis, IN
For more information, contact Brenda Shaver at (800) 848-APWA or send e-mail to bshaver@apwa.net.

MAY 2017
1-4 APWA: CSM, CPII and CPFP Certification Exams (computer-based testing), (800) 848-APWA, www.apwa.net
2-3 Missouri Concrete Conference, hosted by Missouri University of Science and Technology, Rolla, MO, http://concrete.mst.edu
18 APWA Click, Listen & Learn: “UFO or UAV? The Welcome Invasion of Drones in the Public Works World,” (800) 848-APWA, www.apwa.net

JUNE 2017
4-7 National Association of Regional Councils, NARC’s 51st Annual Conference & Exhibition, Monterey, CA, www.narc.org

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