Pittsburgh

Spring 2009

ENGINEER

Quarterly Publication of the Engineers' Society of Western Pennsylvania

Environment

Creating Value ...

Sustainability. To a city, it's the perpetuation of its vibrancy—to a city's people, it's the innovative approach to designing, building, and managing critical infrastructure in an environmentally responsible manner. **That's what we do.**

... Delivering Solutions

Planning • Architecture • Engineering • Environmental • Geospatial Technologies
Construction Management • Program Management • Facilities Management

Creating value by delivering innovative and sustainable solutions for infrastructure and the environment.

Baker

To learn more about Baker's comprehensive services, visit www.mbakercorp.com or call 1.800.553.1153.

Spring 2009 - The Environment

Pittsburgh ENGINEER

Official Publication of the Engineers' Society of Western Pennsylvania

IN THIS ISSUE:

LIST OF ADVERTISERS:

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA
Pittsburgh Engineers' Building
337 Fourth Avenue
Pittsburgh, PA 15222
Tel: 412-261-0710 • Fax: 412-261-1606
e-mail: eswp@eswp.com

Pittsburgh ENGINEER is the quarterly publication of the Engineers' Society of Western Pennsylvania (ESWP). The ideas and opinions expressed within *Pittsburgh ENGINEER* are those of the writers and not necessarily the members, officers or directors of ESWP. *Pittsburgh ENGINEER* is provided free to ESWP members and members of our subscribing affiliated technical societies. Regular subscriptions are available for $10 per year.

Guest Editor
The Environment is Big Business

By Charles Toran,

Pittsburgh's economic engine has always been closely affiliated, over its history, with several major industries, such as steel, glass, and health care. The environmental industry today is prominent, vital, and important, and a major driving force in the local economy. Today, thousands of engineers and scientists in Pittsburgh and its surrounding communities work in this industry and impact Southwestern Pennsylvania in important ways. The articles in this issue of Pittsburgh Engineer illustrate that some are involved with cleaning up the environment; some are focused on protecting the environment from further degradation, while others are looking for ways to modify our lifestyles and live in a manner which sustains the environment for future generations.

Quantifying the industry's economic impact precisely isn't feasible, but we can estimate it. The Pittsburgh Business Times reports that the top 25 environmental firms in the area alone spend approximately 500 million dollars locally every year and employ thousands of engineers and scientists. To this we can add the contributions from the remaining hundreds of environmental consulting firms (large and small), the vast research efforts at our universities, and the many local manufacturers of equipment needed for environmental technologies like pollution control and remediation. The local environmental industry is indeed big business, and our economy would be far less vibrant and sustainable without it.

The Role of Brownfields

Brownfield redevelopment has been a priority in the Pittsburgh area for several years. In this issue we hear from three representatives who are at the forefront of the effort to return our area's brownfields to productive use. Rob Stephany, Executive Director of the Urban Redevelopment Authority, notes that this region is blessed with the three critical factors needed for successful Brownfield redevelopment: many sites, an abundance of talent, and that "Pittsburgh Spirit" which has always responded to the challenges the region faces and has led us to reinvent

Charles Toran

ourselves many times in our history. In addition to highlighting some of the significant projects to redevelop the sites of former steel mills and other industrial sites, he points out that our neighborhoods must also be a focus of our brownfield redevelopment efforts.

In Washington County, Susan Morgan of the Redevelopment Authority, County of Washington affirms that there is an abundance of sites and talent. She indicates that the Redevelopment Authority has focused recently on prioritizing sites, allowing for a more focused effort, which in turn has led to increased funding and more interest from developers.

On the shores of the Allegheny and Ohio Rivers, several towns have banded together to pool their resources and obtain grants for developing brownfields. The Riverside Center for Innovation is working with the Allegheny River Towns Enterprise Zone and the Ohio River Towns Enterprise Zone. They have found that community involvement is an important component of a successful brownfield redevelopment project.

All of these efforts illustrate that redevelopment of our Brownfields has and will continue to be an important component of our economic growth.

ALCOSAN Upgrades

ALCOSAN is investing billions of dollars to upgrade its infrastructure to respond to today's regulatory and demographic realities. ALCOSAN has already implemented significant upgrades to its treatment plant and is currently embarking on a comprehensive planning effort that utilizes a watershed approach and will evaluate a wide range of new technologies for wet weather control. Although some would argue that the projects are regulatory driven, I believe that in essence, they are a response to the basic desire of the community for clean water, not unlike the need of the residents of the Tingo Pucara Village in Ecuador, as illustrated in an interesting article provided from the young engineers and scientists of the Engineers Without Borders Organization.

Our Universities are Shaping the Future

The area's major universities are having a big impact on the future of the environmental industry. Pitt's Swanson School of Engineering has, among other things, focused its efforts on developing environmentally conscious building materials and methods and developing new ideas for sustainable lifestyles. Environmental research at CMU is focused on improving our infrastructure, making our cities more sustainable, and developing environmentally friendly energy strategies. 'Innovation', 'sustainability', 'new directions' and 'making every student a steward of the environment' all describe their many programs.

The Many and Growing Roles of Government

The stimulus package signed into law in February will have significant potential to help public and private stakeholders carry out brownfield redevelopment strategies. In his piece, Charlie Bartsch, Senior Fellow, ICF International and a Washington D.C. area environmental consultant, provides an overview on how Brownfield redevelopment efforts will be enhanced by the stimulus package.

County Executive Dan Onorato's article summarizes the leadership position the area has obtained due to its efforts in brownfield redevelopment, complemented by many initiatives in sustainable design practices that have a benign environmental impact.

The Neutral Impacts of the Recession

How has the recession affected our environmental industry? The results are mixed. In a recent ESWP survey, some environmental consulting firms reported higher revenues than in the same period a year ago, others lower, and still others no change. We can only conclude that overall expenditures are steady at this time, and also feel compelled to note that 2008 was a banner year.

The bottom line remains: the economic impact of the local environmental industry, when measured in dollars alone, is hugely important and promises to remain so. The resulting improvements in our communities and our lifestyles will perhaps be even more important.

PE

Charles Toran is Founder and President of Sci-Tek Consultants, Inc. For more, www.scitek answers.com. He can be reached at 412-371-4460 or ctoran@scitekanswers.com.

Global Economics Crisis Effects on our Region's Environmental Firms

The Publications Committee of the Pittsburgh ENGINEER polled ESWP's regional corporate members involved in the business of environmental engineering. We asked four questions to determine the effects the current downturn in the economy is having. Three of our local leaders responded; Dan Gilligan of Lennon Smith Souleret Engineering, Inc. (LSSE), Mark Urbassik, KU Resources (KU), and Joe Duckett of SNC Lavalin (SNC). Here are their responses:

Are you experiencing any slowdown in your business as a result of the crisis?

LSSE: Our 2008 revenues for both private and public sector work were up almost 10% from 2007, and 2009 backlog is also up. We have seen some erosion in certain private (residential and commercial) market sectors, but this has been offset with increased activity in other private sectors.

KU: Our business remains at approximately the same levels of activity experienced over the past few years. Last year we experienced slightly better than modest growth. Our preliminary outlook for 2009 is that it will be at least level to 2008, with perhaps a slight increase.

SNC: Several industrial projects have been cancelled or indefinitely postponed since October 2008.

Do you expect to see any revenue from the government stimulus package?

LSSE: Based on information available to date, and what we're hearing from certain municipal clients who are in the stimulus package information chain, we do expect to realize some increased activity. Like everyone else, we're waiting for the details.

KU: The stimulus package contains $100 million dedicated to brownfield redevelopment, one of our firm's primary market segments. Depending upon the ultimate distribution of this brownfield money to the regional areas we serve, we expect at least some increase in revenues from the stimulus package, and a significant amount of work is not out of the realm of possibility.

SNC: We are not really expecting any help from the government. Our clients are industrial firms. In general, our clients are not direct beneficiaries of the stimulus package.

Have you implemented any new strategies to cope with the changing business environment?

LSSE: We developed and implemented a strategic business plan well before the "crisis" hit. It was proven effective before the crisis and it continues to drive our business management and marketing programs.

KU: We haven't changed our strategy, but we are increasing scrutiny on expenses and being a bit more caution in our routine business decisions.

SNC: We have altered our strategies and are securing some new clients and projects that we would not ordinarily pursue. We have also implemented a temporary hiring freeze until conditions improve.

Do you expect growth or contraction in 2009?

LSSE: We are expanding, have added five new clients in the past 12 months, added staff and are currently recruiting both experienced and entry level engineers.

KU: As stated above, we are looking at level, but possibly slightly increased, business activity in 2009.

SNC: At best, we will stay even with 2008, but realistically we are anticipating some contraction in 2009. PE

ARRA: CAN IT STIMULATE BROWNFIELD CLEANUP AND REDEVELOPMENT?

By: Charlie Bartsch

On February 17, President Obama signed the $789 billion American Recovery and Reinvestment Act (H.R. 1) into law, following final Congressional passage. House and Senate conferees moved with considerable, and unusual, speed to finalize the stimulus bill, despite considerable differences in the two versions. The final total was less than the $819 billion in the House bill, and the $838 billion in the Senate version, and amendments directly related to brownfields–including tax credits for cleanup and expanded Brownfield Economic Development Initiative (BEDI) funding–fell by the wayside. But all in all, the stimulus package has significant potential to help public and private stakeholders carry out brownfield strategies.

State, local, and community-based brownfield strategies are poised to tap into a number of funding provisions for support–if they position their projects in the right way. The key elements of the funding stimulus–directly or indirectly with brownfield efforts–are recapped below. In each case, final funding is identified, and original House and Senate proposals are listed for reference. Any specific criteria or considerations relevant to brownfields are also noted.

The three main programs directly related to brownfields include:

Brownfields:

Additional funding for assessment and cleanup; cost-share requirements waived. Final Conference Amount–$100 million.

At the end of March, The U.S. Environmental Protection Agency (EPA) laid out its plan for distributing its brownfield stimulus funds. The agency intends to:

- Add $45 million to bolster the number of awards in this year's grant competition currently underway; stimulus funding, which includes cost-share waivers and other advantages, would be given to the highest scoring applications in the competition.
- Provide $40 million in additional funding to existing "high performing" cleanup RLFs, which could also use expanded sub-grant authority; applications will be solicited imminently.
- Expand this year's targeted brownfield assessment (TBA) program by $8 million.
- Add a second, $5 million round of job training grants, for which applications are due April 20.

Superfund:

Additional funding for cleanup, limited to Superfund sites. Final Conference Amount–$600 million

EPA intends to use the additional funding to address "shovel ready" Superfund sites currently backlogged, as well as provide additional resources to cleanups currently underway, but without sufficient funding allocated to get to completion.

LUST:

Additional funding for Leaking Underground Storage Tank (LUST) trust fund, for cleanup of petroleum leaks; state matching requirements waived. Final Conference Amount–$200 million

EPA's Office of Underground Storage Tanks is currently finalizing its plans for distributing its additional stimulus funds.

The final version of the American Recovery and Reinvestment Act also includes funding for activities that could be linked to brownfields, or support brownfield projects by providing resources for infrastructure and related investments that will make brownfield properties more attractive to reuse, including:

State Clean Water And Drinking Water Revolving Loan Funds (RLFs):

Additional capital, through the state and tribal assistance grant program, for water quality-related construction and improvement projects. Final Conference Amount–$6 billion; $4 billion for clean water RLFs, and $2 billion for drinking water RLFs.

- *Potential brownfield connection*–communities in some states have used both RLFs creatively to meet brownfield cleanup needs at sites and facilities that affect water quality.

The final agreement also included some key provisions affecting how these funds can be spent:

- Stimulus funding priority must go to projects ready to proceed to construction within 12 months, and RLF funds not under contract or construction within 12 months of enactment (i.e., by February 16, 2010) will be reclaimed and reallocated;
- At least 20 percent of the stimulus RLF funds must go to projects addressing green infrastructure, water and energy efficiency, or innovative water quality/ related improvements (unless states have no such projects in line); and
- Waives the mandatory 20 percent match for these funds.

The final agreement also included $1.38 billion in loan and grant authority for rural water and waste disposal projects. This will support $2.82 billion in loans, and $968 million in grants to small communities to address water and sewer needs, which could potentially be linked to industrial park redevelopment or other brownfield needs.

Neighborhood Stabilization Program (NSP):

Additional funding for HUD's new NSP, authorized as part of the subprime mortgage rescue legislation last summer. Final Conference Amount–$2 billion.

- *Potential brownfield connection*–in addition to some local capacity building, NSP funds can be used for a range of revitalization efforts that could include key brownfield activities -- purchase, management, and/or resale of abandoned properties, demolition of blighted properties, redevelopment of vacant or demolished properties, or establishment of land banks for foreclosed homes and residential properties.

Community Development Block Grants (CDBG):

Additional resources for HUD's CDBG program, for community and economic development projects. Final Conference Amount–$1 billion, distributed by existing CDBG formula

- *Potential brownfield connection*–CDBG is a mainstay in many local brownfield financing strategies, and its effectiveness as a brownfield project financing tool is well documented.

Rural Development:

Additional grant and loan funding to support rural development/ business and industry projects, as well as for facilities such as for healthcare, education, fire and rescue, and community centers. Final Conference Amount–$130 million for facilities, $150 million for business loans and grants

- *Potential brownfield connection*–with appropriate outreach and education, brownfield sites could become prime targets for such facilities; using centrally located, abandoned properties within small town centers would achieve several key goals.

The final stimulus language relies heavily on leveraging; Congress intends the $130 million for community and economic development facilities to support $1.234 billion in loans and grants for those purposes, and the additional $150 million targeted to business loans and grants, to support $3 billion in projects.

Economic Development Assistance (EDA):

Provided through traditional EDA program mechanisms. Final Conference Amount–$150 million

- *Potential brownfield connection*–EDA has a history of participating in local brownfield efforts, and brownfield projects could probably compete well for this new funding.

Stimulus funding is intended to help communities cope with a range of economic issues, including addressing long-term economic distress and dislocation in areas suffering from job losses due to corporate downsizing and other economic dislocations. Congress stipulated that up to $50 million of this amount could be transferred to regional economic commissions, such as the Appalachian Regional Commission, if that could achieve quicker, more targeted results. The final agreement requires EDA to detail its intended allocation of funds within 60 days of enactment – by April 18.

Weatherization Assistance:

Grants for structural weatherization activities, aimed at houses and residential units. Final Conference Amount–$5 billion

- *Potential brownfield connection*–a small portion of which might deal with contaminant issues (i.e., insulation) in older structures as part of weatherization upgrades.

Energy Efficiency And Conservation Block Grants:

Funded for the first time, this program will help states and communities make investments that make them more energy efficient and reduce carbon emissions for a range of system construction or retrofit activities. Final Conference Amount–$3.2 billion

- *Potential brownfield connection*–activities could be undertaken on brownfield

sites, for individual structural upgrades as well as for activities such as installation of solar panel farms on brownfields.

The final agreement stipulates that at least $400 million of the total will be awarded competitively to individual applicants. In fact, in its allocation announcement in early April, stipulating formula amounts for states and local jurisdictions, DOE reserved about $450 million for its competitive program.

Community Development Financial Institutions (CDFI):

Additional resources for this program, administered by the Treasury Department, to assist a range of community-based project financing in distressed areas. Final Conference Amount –$100 million

- *Potential brownfield connection*–CDFI's emphasis on distressed areas can overlap with brownfield locations

Small Business Administration (SBA):

Funding to expand some lending programs, support increased guarantee activity, and reduce fees. Final Conference Amount–$636 million for the "Business Loans Program Account;" $6 million for increased activity under the micro-loan program, and the balance for fee reductions and new guarantee authorities.

- *Potential brownfield connection*–facilitating small business lending could be useful to move brownfield projects along; especially given more stringent due diligence requirements.

Administrative provisions in the final agreement could be beneficial to community-based brownfield efforts. The final bill intends to increase guarantee activity through SBA's flagship Section 7(a) loan guarantee program, as well as the Section 504 program, by reducing or eliminating fees on loans processed through those programs. Generally administered by CDCs, the Section 504 in particular has proven to be a useful tool in community development projects linked to brownfield reuse efforts. The recovery act also authorizes the establishment of an SBA secondary market guarantee authority, to provide a federal guarantee for pools of first lien 504 loans sold to third-part investors–a device which should expedite capital flow and make Section 504 a more attractive financing option;

Tax Code Provisions Of Potential Use To Brownfield Cleanup And Reuse Strategies:

The final legislation included several tax code provisions that private developers could use and local governments and communities could promote to achieve brownfield revitalization objectives:

Increased authorized allocations of New Markets Tax Credits–from the $3.5 billion distributed in 2008, and the $3.5 billion for 2009, as authorized in the Wall Street rescue legislation) to $5 billion for 2008 and $5 billion for 2009 (the additional allocations for 2008 are to go to unsuccessful applicants for that year's round, or applicants who did not receive their full request).

- *Potential brownfield connection*–New Markets Tax Credits, with their focus on stimulating investment in distressed areas, have been used in a growing number of communities to support brownfield-related community development and housing activities, and these new allocations will help more cities further these goals.

Increased the level of new clean renewable energy bonds (authorized last year as part of the Wall Street rescue legislation)–from $800 million to $1.6 billion.

Bonding authority would be allocated in thirds, to governmental bodies, public power providers, and cooperative electric companies, to support renewable energy facilities. The federal subsidy would take the form of federal tax credits to the bond buyers, in lieu of interest, which means that the issuers would enjoy de facto zero percent borrowing.

- *Potential brownfield connection*–Bond proceeds could be used for a range of activities related to renewable energy facilities, presumably including placement of those facilities on brownfield sites, which would need to be appropriately prepared for this type of new use. As more communities explore new energy-related uses on brownfield sites, these bonds could help facilitate financing of these facilities.

Increased the level of new energy conservation bonds, a new category of private activity bonds, from $800 million to $3.2 billion.

Authority to issue these bonds would be allocated to state and local governments for conservation purposes, based on population; states are directed to distribute a portion of their share to their larger cities, with greater than 100,000 people, based on their relative percentage of a state's population.

- *Potential brownfield connection*–The new energy conservation bonds are intended to finance a range of activities related to energy conservation – projects to reduce energy consumption in publicly owned buildings, implement green community programs, promote rural development efforts that include electricity from renewable sources, encourage mass commuting facilities, and support green building technology demonstration projects. Many of these activities could be integrated with brownfield reuse strategies.

Authorizes new categories of government bonds–$10 billion in taxable "recovery zone economic development bonds" and $15 billion in tax-exempt "recovery zone facility bonds"–to promote private development activity and related infrastructure and public facility construction in distressed area "recovery zones" to be designated by state or local issuer.

States will receive an allocation of these bonds, in proportion to their rate of employment decline during 2008, to reallocate according to the same criteria to their counties and large (100,000+ population) municipalities; each state is assured at least 0.9 percent of the total of each bond type. Areas to be designated as recovery zones must have significant poverty, unemployment, general distress, or home foreclosures; they can include areas already federally designated as empowerment zones, renewal communities, or areas in economic decline because of a base closing. Bonds must be issued by January 1, 2011.

- *Potential brownfield connection*–The common overlap of "distressed area" and brownfield location, and the ability to use proceeds of these new bonds for a range of public and private purposes, could make these bonds a useful addition to brownfield financing strategies.

What's Next?

With passage secured, the task now turns to implementation. More details will be provided over the coming weeks and months. As April arrives, agencies will define priorities, lay out rules, and oversee the distribution of funds. From a brownfield standpoint, it will be up to state and local leaders to determine how to fit their brownfield project priorities into broader recovery act requirements.

PE

Charlie Bartsch is a Senior Fellow with ICF International, in Washington, D.C. He may be contacted at cbartsch@icfi.com

ALCOSAN WET WEATHER PLANNING AND CHALLENGES

By: Nancy Barylak

ALCOSAN System And Service Area

The Allegheny County Sanitary Authority (ALCOSAN) was formed in 1946 to design, construct, and operate a regional interceptor system and wastewater treatment plant. At that time, raw sewage and industrial wastes flowed directly into Pittsburgh's waterways. The original ALCOSAN primary plant and interceptor system were designed and constructed in the 1950s. The design of secondary treatment additions began in the late 1960s and the secondary treatment plant was put into operation in 1973.

The ALCOSAN service area is approximately 300 square miles and includes 83 municipalities including the City of Pittsburgh. ALCOSAN owns and operates approximately 90 miles of interceptors that convey sewage from the combined and separate sewered collection systems that are owned by the service municipalities. There are over 300 regulator structures along the ALCOSAN interceptor system that are owned and operated by ALCOSAN. These regulators allow dry weather flow and a portion of wet weather flow to proceed to the wastewater treatment plant. All treatment is provided at the plant located along the Ohio River in the Woods Run section of the North Side in the City of Pittsburgh.

The main pumping station at the plant lifts influent raw sewage from the interceptors to a level from which it can flow through the treatment plant without further pumping. Raw sewage is screened and degritted. The influent sewage is then distributed to the primary sedimentation tanks. Effluent from the primary sedimentation tanks then receives secondary treatment and disinfection before being discharged to the Ohio River. The plant employs a diffused air, activated sludge secondary treatment system. Secondary effluent is disinfected with sodium hypochlorite in a chlorine contact tank. The present wastewater treatment capacity of the plant is 250 mgd.

Wet Weather Planning Background

ALCOSAN began in February 1994 to plan for NPDES permit requirements that addressed CSO Policy Compliance. From 1995 through 1999, ALCOSAN prepared and submitted a System Inventory Report, Hydraulic and Hydrological Characterization Report, Documentation of Implementation of Nine Minimum Controls, and a Regional Long Term Wet Weather Control Concept Plan (RLTWWCCP) to Pennsylvania Department of Environmental Protection (PaDEP) and Environmental Protection Agency (EPA). The RLTWWCCP addressed elimination of sanitary sewer overflows and compliance of combined sewer overflows with federal regulations and the CSO Policy.

During the development of the reports and RLTWWCCP, several concurrent activities also occurred. The customer municipalities within the ALCOSAN service area with combined sewer overflows were approached by the PaDEP to comply with the CSO Policy through the NPDES permit process. Small municipalities were required to apply for general CSO permits and the Pittsburgh Water and Sewer Authority (PWSA) was issued a draft permit in 1998 for CSOs upstream of the ALCOSAN system and was assigned some co-permitting responsibilities for CSOs at the ALCOSAN point of connection. In 1996, customer municipalities with sanitary sewer overflows within the ALCOSAN service area were directed by EPA through Section 308 to take measures necessary to eliminate them.

Legal activities then ensued shortly after the ALCOSAN RLTWWCCP was prepared. The Pennsylvania Environmental Defense Foundation (PEDF), an environmental public interest group, filed a complaint in 1999 alleging that sanitary sewer overflows from ALCOSAN facilities along Chartiers Creek were illegal and sought actions for their immediate abatement. Concurrent with this legal action, the federal and state regulatory agencies initiated drafting a consent decree for ALCOSAN to enter into to satisfy its obligations to comply with the CSO Policy and to eliminate sanitary sewer overflows at several locations along the ALCOSAN Interceptor System. The state and local regulatory agencies subsequently initiated enforcement action against the 83 municipalities served by the ALCOSAN system to address CSO and SSO issues within their collection systems.

In 2004, the state and county agencies (PaDEP and the Allegheny County Health Department) entered into separate municipal Administrative Consent Orders (ACOs) and Consent Order and Agreements (COAs) with the municipalities serviced by ALCOSAN to develop mapping and system evaluations of the respective sewer collection systems. A settlement of the PEDF

matter was also reached between the plaintiff, ALCOSAN, and several municipalities in 2004. Final negotiations of the consent decree (CD), between ALCOSAN and the regulatory agencies/Department of Justice were completed in 2007, and the CD was entered in federal court on January 23, 2008.

ALCOSAN's Consent Decree requires a more comprehensive four year long regional planning effort than that previously required of ALCOSAN. It includes the inventory and sewerage planning of critical portions of the municipal sewer systems including CSOs and SSOs upstream of the ALCOSAN Interceptor System. It also requires reconsideration of the technical alternatives and costs developed in 1999 and an evaluation of technologies that have been implemented and demonstrated over the past eight years. This will also allow for evaluation of new technologies and their capabilities.

Planning Basins

For purposes of completing the comprehensive Wet Weather Plan, the ALCOSAN service area has been divided into seven planning basins: Main Rivers, Chartiers Creek, Lower Ohio River/Girtys Run, Upper Allegheny/Pine Creek, Saw Mill Run, Upper Monongahela River and Turtle Creek and Thompson Run

Schedule

The schedule for the Wet Weather facilities planning work is as follows:

- 2/09–Existing Information & Conditions Report
- 9/09–Hydraulic Modeling and Calibration Report
- 10/09–Screening of Control Technologies and Sites Report
- 3/10–Feasibility Report and Present Worth Analysis
- 6/11–Draft Basin Facilities Plans
- 10/11–Final Basin Facilities Plans
- 1/13–Overall Wet Weather Facilities Plan for Region.

Engineering Challenges

Given the unique characteristics of the region and its institutional setting, ALCOSAN's planning process is addressing several challenges. ALCOSAN has 83 municipal customers. These customers have a wide variety of characteristics including age and condition of the collection system, whether it has combined or separate sewers, demographics and whether growth may occur, and level of income. Given this variability, the planning process is addressing defining an acceptable level of service (LOS). The LOS will be allowed to vary based on these characteristics while still ensuring that the environmental mandates are met. Hence, the seven planning basins have been created, with each basin having a planning committee made up of representative stakeholders in that area. The purpose of the basin planning committees is to facilitate stakeholder input and sharing of data as ALCOSAN and municipal overflow control solutions are developed. These basin planning committees have been formed and are meeting frequently as the planning process proceeds.

As ALCOSAN's planning process proceeds, the municipalities are developing feasibility studies as required by their orders to address CSO and SSO discharges within their systems. Interaction between ALCOSAN and its member municipalities will be crucial to developing a solid plan to optimize use of the region's resources to address wet weather pollution and achieve compliance.

A basin-by-basin watershed approach is being used to facilitate consideration of the different characteristics of the receiving streams and the systems that discharge to them. This involves collection of extensive site-specific data on collection system flows and quality, along with receiving water flows and water quality. Receiving waters range from the large rivers (Ohio, Allegheny and Monongahela) to smaller tributaries such as Chartiers Creek, Saw Mill Run, and Turtle Creek. This data is being incorporated into the planning process.

A wide range of technologies is being considered for use during the planning process. Technologies include source control, conveyance, storage and treatment in various combinations. Also included are modifications or improvements to the existing Woods Run wastewater treatment plant. Because of the site limitations of the current plant, expanding it to handle wet weather flows will be difficult. Thus, the need for remote, intermittently operated storage and/or treatment facilities is likely. Due to sensitivities of existing land use and constraints of siting above-ground facilities, tunnel storage systems are just one example of a technology under consideration. Tunnels are used for such purposes in other cities, and the application and benefits of their use here will be analyzed.

Another approach that will be considered will be green technologies that manage storm water runoff from various land uses to help reduce wet weather flows. Appropriate application of such technologies may reduce the need for and size of grey technologies such as conveyance or tunnel storage. This may contribute to an overall reduction in compliance costs.

Control of wet weather pollution as required by current environmental regulations and consent decrees is as big a challenge as was construction of the original ALCOSAN wastewater treatment plant over 50 years ago. Affordability and equitability of rates for ALCOSAN's customers will be paramount in facing this challenge. Creative technical and institutional thinking will be needed to help the region develop appropriate and implementable solutions. ALCOSAN's wet weather planning approach, along with member municipality compliance efforts, over the next few years will determine how the region will come together to improve its public health, water quality and quality of life for its residents.

PE

Nancy Barylak is the Media Manager for ALCOSAN. She can be reached at 412-766-4810 or by e-mail at nancy.barylak@alcosan.org

Brownfields *on the move* in Allegheny County

By: Dan Onorato

During the past several years, Southwestern Pennsylvania has become a leader in green technology, sustainable development and environmental stewardship. In fact, we are one of the "greenest" regions in the country.

We are a national leader in LEED-certified buildings, and as a result, we are becoming a center for green building materials and design. My administration is working with the business community, non-profit organizations and educational institutions to make Southwestern Pennsylvania a center for green entrepreneurism as well.

Allegheny County has also taken the lead in brownfield reclamation. Using state and local dollars, we are cleaning and developing brownfields and old industrial sites throughout the county. We now have thousands of acres of brownfields ready for redevelopment, which reduces pressure on greenfield development.

The county is developing a number of brownfields in the airport corridor, including sites directly on airport property. These developments are Clinton Commerce Park, Chapman Commerce Center, Route 30 Industrial Site, Findlay Industrial Park, North Field, and Westport Woods. The sites will provide high quality "flex" space and will enable us to compete successfully with other regions in the nation.

At three of these business parks – Chapman, Clinton, and Route 30 – experts are projecting the creation of 21,310 jobs and $48.7 million in annual tax revenue. In fact, Allegheny County worked hard to bring Flabeg, a German-based company that makes mirrors for the solar energy industry, to Clinton Commerce Park. Flabeg will begin operation this fall and employ 300 people by 2010.

In addition to property around the airport, we have identified more than 2,000 acres of additional brownfields. This inventory includes 1,500 acres of sites more than five acres in size and 500 acres of sites five acres or less in size.

The Redevelopment Authority of Allegheny County has acquired 200 acres that have high potential for redevelopment. These sites are: the former U.S. Steel Carrie Furnace site, which encompasses 168 acres in portions of Swissvale, Rankin, Whitaker, Munhall and Pittsburgh; the former Firth Sterling site, which consists of approximately 17 acres in McKeesport; the Cochrandale site, a 19-acre former commercial area in Duquesne; the Talbot Avenue site, which is six acres located immediately adjacent to the U.S. Steel Edgar Thompson Works in Braddock; and the former Pittsburgh & Lake Erie Railroad yard, approximately 23 acres in Stowe Twp.

Additionally, we are exploring the acquisition, remediation and redevelopment of approximately 400 acres of additional brownfield properties in various locations around the county outside of Pittsburgh.

To build on our efforts in brownfield reclamation and environmental steward-

Continued on Page 12

Groundbreaking Ceremony for the new Flabeg facility at Clinton Commerce Park, Pictured L to R, Axel Buchholz, CEO of Flabeg, Gov. Rendell, Dan Onorato, and Charles Johnson, President of Flabeg North American Corporation

Gold Level Corporate Member Firms

AKER KVÆRNER

CDM

HATCH

ASTORINO
Architecture Engineering Interior Design Design Build

DEI
DeSalvo Enterprises, Inc.

Orbital Engineering, Inc.

Baker

GAI CONSULTANTS
1958 2008
CELEBRATING FIFTY YEARS OF SERVICE

BURT, HILL

USS

Silver Level Corporate Member Firms

CEC
Civil & Environmental Consultants, Inc.

KU Resources, Inc.

POINT PARK UNIVERSITY

FLUOR

Lennon, Smith, Souleret Engineering, Inc.

SIEMENS

H.F. LENZ COMPANY

P.J.DICK INCORPORATED · TRUMBULL CORPORATION · LINDY PAVING INCORPORATED

Uhde Corporation

Bronze Level Corporate Member Firms

AECOM

AIST Association for Iron & Steel Technology

ATSI

AVALOTIS

Bayer MaterialScience

BOLT TECH MANNINGS

Buchanan Ingersoll Attorneys

CARDINAL RESOURCES

Carnegie Mellon Engineering, Carnegie Institute of Technology

CHAPMAN Corporation

CHESTER ENGINEERS

CLARK Laboratories, LLC, A Division of Clark Testing Group

Collective Efforts, LLC, Civil and Environmental Engineers

CONVERTEAM, The Power Conversion Company

CSD Engineers LLC

DANIELI CORPORATION

dck Worldwide

DGI-MENARD

DGI-MENARD, Inc., Ground Improvement Specialists

DiGioia, Gray & Associates, LLC, Consulting Engineers and Scientists

DQE Communications LLC

DuaneMorris®

E.V. Bishoff Co., Office Leasing Made Simple

EATON, Powering Business Worldwide

FIGG

Gannett Fleming

GATEWAY

Hatch Mott MacDonald

HDR ONE COMPANY Many Solutions

JNE Consulting

Kimball

LISANTI PAINTING COMPANY, INC.

Maguire Group

mascaro construction

middough

MOC, Inc.

ms consultants, inc., engineers, architects, planners

National City

NAVIGANT CONSULTING

Paul C. Rizzo Associates, Inc. CONSULTANTS

PBS&J

POWER ENGINEERS

RDA, Romualdi Davidson & Associates, Consulting Engineers

RIVER

ROBERT MORRIS UNIVERSITY

RTP, R. T. PATTERSON CO., INC., Engineers & Consultants

SAI Consulting Engineers

Schnader ATTORNEYS AT LAW

SMS DEMAG, SMS group

SNC·LAVALIN America

STV

TeleTracking, Workflow Automation for Healthcare.™

TETRA TECH

TUCKER ARENSBERG Attorneys

Turner Building the Future

UPMC University of Pittsburgh Medical Center

University of Pittsburgh Swanson School of Engineering

URS

VEOLIA WATER

WADE TRIM

WAYNE CROUSE INC., Contractors and Engineers, www.waynecrouse.com

Wheeling Pittsburgh STEEL CORPORATION, a metal products company

WilburSmith Associates, Engineers Planners Economists

WYATT INCORPORATED, Interior Construction

Zell Engineers

ship, I launched "Allegheny Green," a comprehensive initiative to promote sustainable practices within county government and through countywide policies and programs.

I want to share just two examples of our many successes to date. We replaced more than 805 incandescent light fixtures at the county jail with high-efficiency LED lights, which consume 83 percent less energy and will save taxpayers $178,000 this year. The LED fixtures are manufactured by Appalachian Lighting Systems in Ellwood City, and 75 percent of the fixture components are produced in the U.S.

Last summer, we unveiled the largest solar thermal array in Western Pennsylvania at the Ross Hill Senior Residence. This new solar water system replaced a natural gas heating system, and it reduces carbon emissions by 38 tons annually and saves residents $10,000 in energy costs annually.

Another key part of this initiative is the hiring of a county sustainability manager and creation of the Allegheny Green Action Team, a group of experts and stakeholders who will help us to meet our green goals and objectives.

Allegheny County Chief Executive Dan Onorato

The sustainability manager will work with county directors and the Green Action Team to conduct a top-to-bottom analysis of government operations and to identify ways to reduce our ecological footprint, such as adopting environmentally preferable procurement policies, expanding recycling in county-owned facilities, providing sustainability training to employees, and expanding use of hybrid vehicles.

Allegheny County also adopted its first comprehensive plan, which sets recommendations, guidelines and standards for land development, conservation and economic initiatives.

The county's commitment to sustainable practices is evident throughout the plan, and especially in the sections regarding economic development, housing, parks, open space, greenways, transportation, environmental resources and energy conservation.

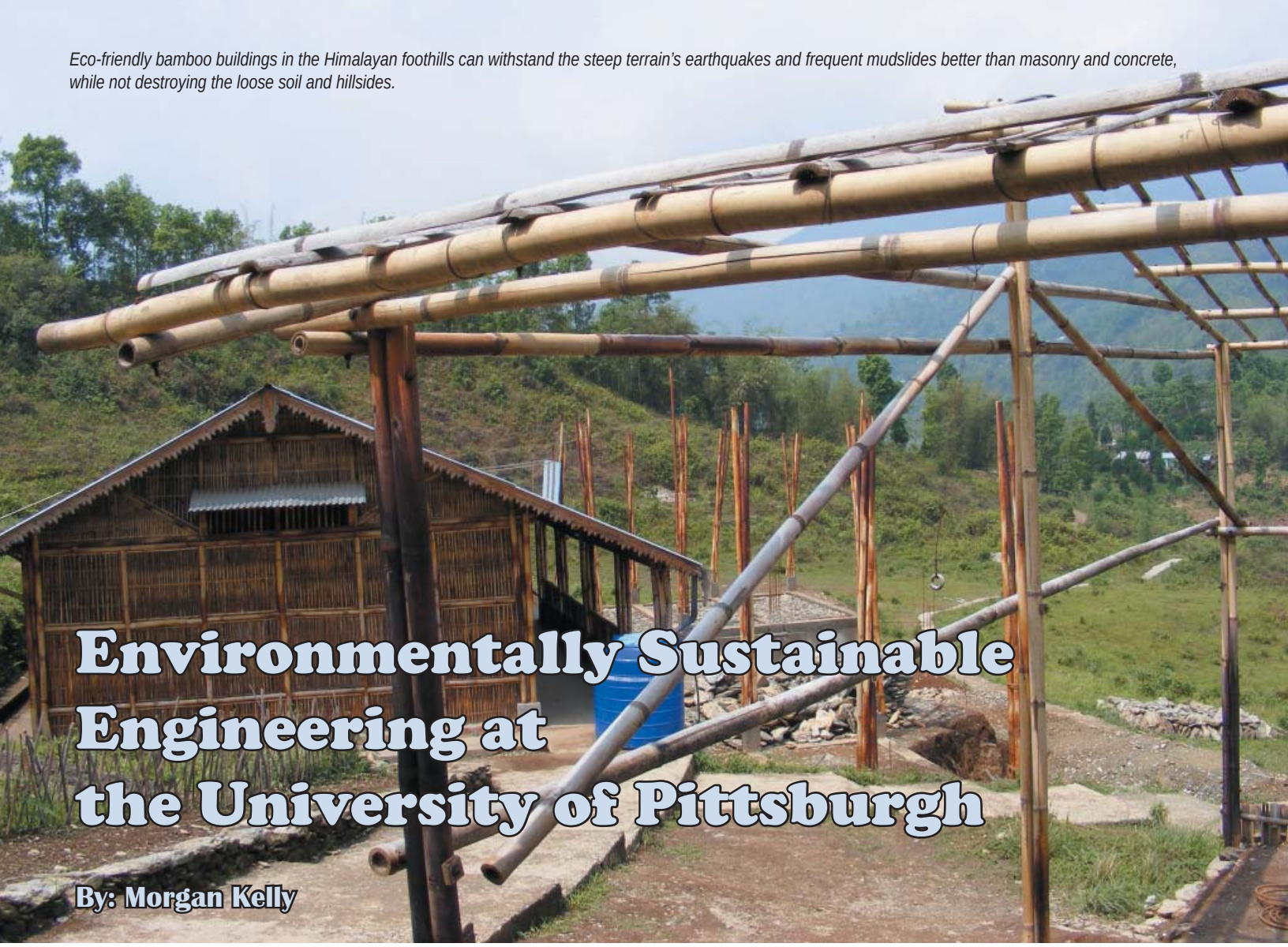
Among the comprehensive plan's recommendations are: expanding parks and trails; promoting energy conservation; improving air quality; promoting transit-oriented development; and advancing green building and infrastructure.

Working with the Green Action Team, we will develop policies, programs and incentives to meet the goals and recommendations of the comprehensive plan by promoting sustainable practices and smart growth, as well as protecting our natural amenities.

This effort will touch all 130 municipalities in Allegheny County and will solidify our standing as one of the greenest regions in the U.S.

PE

Dan Onorato is the Chief Executive Officer of Allegheny County, PA, and was elected in 2004



Eco-friendly bamboo buildings in the Himalayan foothills can withstand the steep terrain's earthquakes and frequent mudslides better than masonry and concrete, while not destroying the loose soil and hillsides.

Environmentally Sustainable Engineering at the University of Pittsburgh

By: Morgan Kelly

Environmental engineering at the University of Pittsburgh's Swanson School of Engineering combines innovation with community collaboration. Pitt engineering faculty members not only develop more environmentally conscious materials and building methods, but also work to spread—and help people adopt—sustainable ideas and lifestyles.

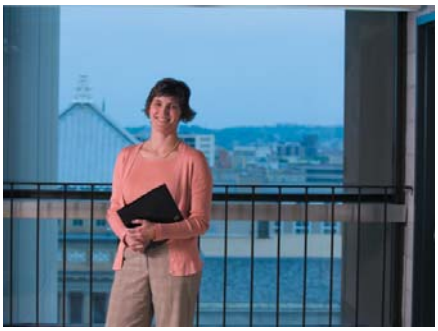
A prominent source of Pitt's 'green' thinking is the Swanson School's Mascaro Center for Sustainable Innovation. Established in 2003, the Mascaro Center supports research and community initiatives that work toward creating and maintaining sustainable communities. Affiliated faculty members work to reduce the material and energy waste of the built environment by creating non-toxic and repurposed building materials, developing self-regulating 'smart' power and air systems for buildings, and exploring organic construction techniques that complement the surrounding environment. To spotlight sustainable research in Pittsburgh and elsewhere, the Center sponsors a biennial Engineering Sustainability conference. The 2009 conference, cosponsored by Carnegie Mellon University's Steinbrenner Institute for Environmental Education and Research (SEER) and slated from April 19-21, includes roughly 120 presenters from various countries reporting on the latest innovations in "green" transportation, development, power, and water utilities.

"the Mascaro Center supports research and community initiatives that work toward creating and maintaining sustainable communities"

The Mascaro Center also promotes sustainability by providing an outlet for the community to independently explore and apply sustainable concepts. To that end, the Mascaro Center launched a student green design contest in August 2008 that challenged undergraduate students from universities in Southwestern Pennsylvania to create a technique for "greening" old buildings that carries a low-price tag and a quick payoff. For a program at Mt. Lebanon High School called Making Our School Environmentally Responsible (MOUSER), Pitt faculty members and Mt. Lebanon High School teachers created a six-week course in energy-efficient construction and power generation.

Many projects combine outreach and experimentation. The Mascaro Center currently sponsors a project to help power the main business district of Vandergrift, Pa., in Westmoreland County, with free, clean-source electricity from the shallow Kiskiminetas River. Pitt mechanical engineering professor Lisa Weiland is developing an electromechanical power harvesting method that would generate power from the Kiskiminetas River's

current. As Weiland works on generation, many citizens and business owners in Vandergrift are looking closely at their energy consumption and, with Pitt's guidance, working to be more efficient.



Pitt Mechanical Engineering Professor Lisa Weiland

To perpetuate the message and methods of eco-responsible building through aspiring engineers, the Swanson School has woven sustainable and environmental engineering into the academic curriculum, largely through the Department of Civil and Environmental Engineering. For instance, the department's graduate program in construction management recently added a green construction component wherein students are prepared to manage the modernizing and "greening" of the built environment. They study LEED certification, life cycle assessment, and effective resource use.

Kent Harries, a Pitt professor of civil and environmental engineering, has taken Pitt engineering students to the Himalayan foothills to help an Indian engineering group create and promote a plan for sustainable construction in an area desperate for new approaches. The students work in the planet's most unstable terrain where untrained contractors and temporary workers cobble together buildings from masonry and concrete that list on the soft-soil hillsides and crumble from frequent mudslides and earthquakes. Harries, his students, and their Indian colleagues tackle issues from water purification to designing and constructing buildings from locally grown bamboo, a renewable source compatible with the terrain. The Pitt team conducts quality control and assurance tests: In one case, Pitt undergraduate student Derek Mitch is writing formal methods for testing the strength of bamboo for building structures because none exists.

In 2007, the department established the Center for Sustainable Transportation Infrastructure (CSTI) as part of a $25 million, five-year research and education collaboration entered with the Pennsylvania Department of Transportation earlier that year. CSTI pursues high-quality transportation that is safe and accessible, environmentally sound, economical, and a boost for regional development. Research areas include green design and construction of bridges and structures, nondestructive evaluation, structural health monitoring, pavement analysis and modeling, and improved repair and retrofit techniques, especially related to bridges and pavement.

The Swanson School also joins University-wide efforts to investigate alternative energy sources. Pitt created the Center for Energy in April 2008 with more than 40 researchers studying energy efficiency, advanced energy technologies, carbon management, and diverse energy sources. Some current projects include developing cleaner coal combustion and converting coal to clean energy sources; carbon dioxide sequestration and conversion; hydrogen storage and transportation; sensors for more efficient fossil-fuel plants; more efficient turbines for power production; technologies for better harnessing solar energy; materials that enhance power system performance in harsh environments; and outlining the properties of methane hydrates to design potential extraction techniques.

The Swanson School's various projects and initiatives in the fields of sustainability and environmental engineering illustrate the school's legacy of adapting to the demands and interests of engineering. The Swanson School, established in 1846, naturally continues its founding commitment to industrial, electrical, and mining engineering, areas the world relies on for its energy and raw materials. But the Swanson School, and engineers in general, have transcended merely developing our surroundings and have committed to preserving them.

PE

Morgan Kelly is the Science & Engineering News Representative for the University of Pittsburgh. He can be reached at 412-624-4356, or by e-mail at mekelly@pitt.edu

Environmental Engineering Education At Carnegie Mellon University

By: Chriss Swaney

Environmental research and education at Carnegie Mellon University is helping to lead the way to an environmentally sustainable society.

Plants, animals and entire habitats are at risk from the ongoing warming of our planet. The stakes remain enormous. Bringing into focus the vast, intricate network that supports life on earth—from dying coral reefs to melting glaciers, from eroding permafrost to vanishing rain forests – no part of nature is an island and the rumble of symptoms in one place can trigger a profound shock in regions thousands of miles away. Big problems demand big answers.

David Dzombak

David A. Dzombak, faculty director of Carnegie Mellon's Steinbrenner Institute for Environmental Education and Research, said the university has made important contributions to solutions for a wide range of industrial and societal environmental challenges. Some of those innovative solutions include development of tools for measurement and modeling of fine particles in air, real-time sensing in drinking water supply networks, treatment of groundwater contaminants with engineered nanoparticles, optimization of environmental controls for clean coal technologies, catalysts for more environmentally benign papermaking and industrial cleaning, and energy –efficient commercial buildings.

"Environmental research at Carnegie Mellon focuses on two principal themes within a general framework of ongoing transitioning to an environmentally sustainable society: urban infrastructure and sustainable cities and energy transition strategies and the environment. Our research is problem- driven, interdisciplinary and conducted collaboratively with government, corporate and foundation partners," according to Dzombak, the Walter J. Blenko professor in civil and environmental engineering at Carnegie Mellon.

"the university is making every graduate a steward of the environment"

Because Carnegie Mellon is uniquely positioned by its industrial heritage and its experience in engaging with regional, national and international organizations, the university's environmental education program is making every graduate a steward of the environment.

Two university-wide curriculum initiatives enable students to develop an appreciation for the environment and prepare for leadership roles in a more sustainable society.

In the university's "Greening of Early Undergraduate Education" programs, environmental themes are incorporated into freshmen and sophomore English and History courses. Undergraduate students wishing to focus more intensely on environmental issues may choose to minor in Environmental Studies, Environmental Science or Environmental Engineering.

"students learn about issues from Pittsburgh's old industrial brownfield sites to green building design and global warming mitigation policies"

For graduate students throughout the seven departments in Carnegie Mellon's College of Engineering, faculty members are encouraged to introduce environmental modules into their existing courses through the new "Environment Across the Curriculum" program. These modules span a wide range of environmental challenges and help the students make important connections between the design of products and the amount of pollution associated with a product in the course of its manufacture, use, and decommissioning or disposal. Nearly 40 environmental courses are offered each semester and allow students to learn about a broad mix of issues from Pittsburgh's old industrial brownfield sites to green building design and global warming mitigation policies.

Deborah Lange

"Because Carnegie Mellon is home to the Western Pennsylvania Brownfields Center, we can work strategically with local communities to enhance the growth of redevelopment in the region," said Deborah Lange, executive director of the Western Pennsylvania Brownfields Center at Carnegie Mellon and first vice president of the Engineers' Society of Western Pennsylvania.

In addition to the Brownfields Center, researchers at Carnegie Mellon's top-ranked college of Engineering are developing sensor networks for early detection of contamination in drinking water, creating new blueprints for reducing dependence on fossil fuels, designing green products and processes and improving the quality of life for future generations by encouraging waste reduction and material reuse.

PE

Chriss Swaney is the Director of Public Relations for CMU's College of Engineering, and a member of the ESWP Publications Committee. She can be reached at 412-268-5776 or by e-mail at cswaney@andrew.cmu.edu

Brownfields Redevelopment: The Saga Continues

By Rob Stephany

When asked to discuss brownfields for this issue of Pittsburgh Engineer, I immediately thought that we in Pittsburgh are triply blessed. We have a plethora of suitable and attractive sites, an abundance of the scientific and engineering talent needed to develop them responsibly, and a mindset that jumps on opportunity and refuses to accept adversity. The talent and mindset thrive within our local governments and private firms. They share a long history of working cooperatively together–think back to Renaissance One–and are continuing to work together as we strive to meet the mutual goal of a more livable and prosperous city.

Our blessings are the direct result of the country's, some would say especially this area's, loss of heavy industry starting in the 1970s and accelerating through the 1980s. When the mills, plants, and warehouses closed, battered by unstoppable and irreversible global economic forces, they left behind sites and the talent that was once needed to support them. Our opportunity at the time, and now, is to utilize those assets in the most productive ways. To breathe new life into an old cliché, we were handed an opportunity to make lemonade out of lemons, and, much to our collective credit, we jumped on it.

I also thought that this city we call home has been able to hold its own economically as well or better than similar cities to a large extent because many of our brownfields have been put to new uses. A few examples. The Pittsburgh Technology Council and Union Switch and Signal headquarters are only a mile up the Mon River from the uptown section of the city. Both are on land that was once a steel mill. The site, now indistinguishable from a suburban office park with its landscaped parks and wide parking lots, is surely a more pleasant and uplifting view than a bare field or a deteriorating steel mill would be. In addition, the site is connected to the South Side Works by a bridge across the Monongahela River, creating a contiguous, vital neighborhood.

Which brings me to the South Side Works itself. Also built on the site of a former steel mill, it is a critical mass of offices, restaurants, and shops that has attracted new residential construction and people who want to live there. As one result, property values in the South Side have risen 250 percent over that past ten years, some 13 times more than the 19 percent average for all city neighborhoods over the same period.

Other examples abound. Washington Landing on the Herr's Island in the Allegheny River, a mixed use development of upscale residences, recreation facilities, and businesses that have taken off; it replaced an unsightly and odoriferous rendering plant. Nine Mile Run, a.k.a. Summerset at Frick Park, is a housing development located just on the west side of the Squirrel Hill Tunnels that was built on a massive slag heap. It has helped to revitalize the Squirrel Hill neighborhood by attracting new residents. And it has become an icon for the imaginative and aesthetic use of land once thought to be worthless, and is visited by developers from around the world who want to know how they can follow our lead.

Shifting the Focus from Rivers to Neighborhoods

The initial focus of brownfields development was on the industrial sites along the rivers. Many such sites have been developed, and many others can be in the future. Nevertheless, the URA is cooperating with local groups to identify and evaluate ways to utilize brownfields to stabilize and improve the livability of neighborhoods, long considered to be one of Pittsburgh's assets.

For example, abandoned property on the Garfield/Livermore boundary could be a recreational park, connecting the two neighborhoods, each with aging and declining populations, into one that could attract new and younger residents. Similar projects are being evaluated on the North Shore and in the Strip District, where inland sites can be connected via a narrow strip of land to the Allegheny River, creating a feasible plot for businesses that need to ship products by barge. And, also on the North Shore, Allegheny Center outlived its usefulness as a shopping and residential center years ago. Its removal will open a direct route from many North shore neighborhoods to downtown, creating another contiguous neighborhood.

Attracting Financing, Evaluating Returns

Tax Increment Financing (TIF) is by far the largest source of funds for brownfields development, and has been a great help to taxing authorities at the township, city, and county levels. The federal Environmental Protection Agency (EPA) and various state agencies can be counted on for a smaller but still significant amount of funding.

The returns have been well worth the costs. The city, for example, currently receives some $13 million per year in taxes from completed projects that are on land that previously was off the tax rolls entirely. In addition, the psychic benefits of an attractive and productive landscape, while they cannot be quantified are surely considerable. Whenever I drive out the Parkway East and see the Tech Center and its attractive surroundings, or out Route 28 North and see the RIDC Park near Fox Chapel and its modern buildings that house bustling businesses, I am even more proud of our area than ever. And I am reminded that my task at the URA transcends the raw numbers on a balance sheet or operating statement.

PE

Rob Stephany is Executive Director of the Urban Redevelopment Authority of Pittsburgh. He can be reached at 200 Ross street, Pittsburgh 15219-2069, 412 255 6419, or rstephany@ura.org.

BROWNFIELDS IN WASHINGTON COUNTY: REVITALIZING COMMUNITIES

By Susan Morgan

A drive through Washington County will reveal the historical imprint that our industrial heritage has left on our communities. Industrial sites, which once employed hundreds of people are now deserted and in a state of disrepair. In Washington County, we see these abandoned industrial properties, brownfields, as opportunities to revitalize our communities. The Redevelopment Authority of the County of Washington (RACW) and the municipal officials of the County's 66 municipalities have worked together to identify and collect information on the 140 brownfield sites located throughout the County. These brownfield sites account for 10,000 acres of redevelopable land or two percent of the total land area in the county. Brownfield redevelopment is a major factor in making the most of our communities.

Washington County's Comprehensive Plan identifies brownfield redevelopment as a "high priority" goal for the County. The redevelopment of brownfields allows for increases in local tax bases, job creation, utilization of existing infrastructure, improvement of blighted properties and lowering of pressure to develop open land. By cleaning-up and reusing brownfield sites, we are preserving greenspace in our communities while still promoting development. RACW developed strategies to accomplish the County's goal. The strategies are basic – 1) Identify all brownfields within the County – 2) Create a brownfield inventory and database – 3) Prioritize brownfield projects by identifying those that can provide a good "Return on Investment@ and contribute to the sustainable development of the County – 4) Communicate regularly with elected officials and other interested entities – 5) Obtain public financing when private funds are not sufficient to redevelop brownfield properties – 6) Complete redevelopment projects and return properties to productive use.

Two EPA Brownfield Assessment grants have enabled us to enter all the collected information into a database and create a Countywide Brownfield Assessment Program. By utilizing a site selection tool that was developed in conjunction with the Western Pennsylvania Brownfield Center, located at Carnegie Mellon University, the 140 brownfields have been prioritized for participation in the Assessment Program. This tool prioritizes brownfields according to criteria established through our collaborative discussions with local elected officials and community-based organizations. Phase 1 and 2 environmental assessments are currently being conducted on the selected properties. The owners of these brownfield properties receive the assessment reports, cleanup cost estimates and strategies to assist them with redeveloping or marketing their properties. We plan to complete 15 to 24 Phase 1 assessments and 10 to 15 Phase 2 assessments by the end of 2009.

The redevelopment of brownfields has always been an integral part of our community development efforts and has proved to be a successful revitalization practice. Shortly after Pennsylvania Act 2 became effective, we completed the Ingersoll-Rand Redevelopment Project in Charleroi and received liability protection as afforded by Act 2. We received a Phoenix Award for this project in 1998, which remediated four and half acres of land and provided an opportunity for Tri-State Hydraulics and Jaycee Foods to locate in an area with ample infrastructure along the Monongahela River. This project has created 62 jobs and increased local tax revenues for this small, low-income municipality.

What's Going on in Washington County Today?

In addition to completing Phase 1and 2 environmental assessments with the EPA grants, we are also working on a number of projects to redevelop our County's brownfields. In the City of Washington, the Detroit Street Redevelopment Project is currently home to Prime Plastics, a company that employs 50 people. This site, formerly the Ball Glass Plant, required funds from the Pennsylvania Industrial Sites Reuse Program and the Infrastructure Development Program for remediation, demolition, and installation of infrastructure. Prime Plastics occupies half of the site. Infrastructure will be installed this spring on the remaining 6 acres to accommodate a new buyer with whom we have an agreement of sale, which will bring an additional 33 jobs to the site.

We have also embarked on numerous projects in the Borough of Canonsburg. The former Fort Pitt Bridge Works site required remediation and demolition, funded through Pennsylvania Business in Our Sites, a program of the Commonwealth Financing Authority that was created to fund development of ready-to-build sites for new and expanding businesses. The 25-acre site, located near the Canonsburg I-79 exit, is expected to attract new businesses to the area. By working with the property owner/developer of the site, we anticipate the project will create 81,000 square feet of office space, 150,000 square feet of flexible manufacturing space, and will eventually employ 550 people.

Also in Canonsburg, two community revitalization projects are underway utilizing Community Development Block Grant Program funds. We have completed remediation and demolition for both projects. The first property is now ready for the construction of the Greater Canonsburg Regional Library, a $6 million dollar project, and the second property, a commercial site of 0.4 acres on Adams Avenue, will be ready for sale to a private developer this spring.

The Future is Clean and Bright

The industrial imprint left when businesses closed their doors and left Washington County reminds us of the successful businesses that used to thrive here. Each brownfield tells its story of the work that was done on the site and the employees that came to work each day. At the RACW, we see the history in the County as one of our greatest assets. We sit in the midst of an area where brownfields provide opportunities for community enhancement and sustainable redevelopment.

PE

Susan Morgan is Brownfields and Municipal Planning Manager of the Redevelopment Authority of the County of Washington. She can be reached at 100 West Beau Street, Suite 603, Washington PA 15301, 724-228-6875, susan.morgan@racw.net. For more information: www.racw.net.

‘Our Job Is To Get These Sites Ready For Private Developers’

By: Emily Buka

I’ve learned over the years that meeting the goals of even the simplest-sounding task is never as easy as it sounds; our current task of readying brownfields for subsequent productive use falls into that bailiwick.

Our agency, Riverside Center for Innovation, was founded as a small-business incubator. We evolved into a major supporter of the State’s Enterprise Zone Program, which targets distressed areas for business development and growth. In this latter role, in 2005 we asked newly elected State Senator Jim Ferlo to support the Allegheny River Enterprise Zone (ARTEZ), seven municipalities along the Allegheny River from Millvale to Blawnox. We were, and remain, convinced that the several brownfields in that area could be transformed from an impediment to a catalyst for economic development.

We applied to EPA for community-wide brownfield assessment funds on behalf of ARTEZ, and were awarded $400,000, one of only twelve awards in EPA’s Region III, which encompasses Delaware, D.C., Maryland, Virginia, West Virginia, and Pennsylvania. The funds were applied to inventory and assess thirteen sites, both Phase I and II. Several are being redeveloped, creating new jobs. In fact, the EPA was so pleased with our progress that they awarded us another $400,000 to continue the initiative.

We liked the successful combination of economic development programs such as the Enterprise Zone with brownfields that, in 2006, we replicated the model along the Ohio River. With the support of State Senator Wayne Fontana and Representative Nick Kotik, we put together the Ohio River Enterprise Zone (ORTEZ), which includes McKees Rocks, Stowe, Neville Island, and Coraopolis. The EPA agreed that ORTEZ represented another opportunity for economic growth and awarded us another $400,000 for brownfield assessments.

EPA plays a major role in the assessment process by approving sampling plans and quality assurance procedures. We also work with the Pennsylvania Department of Environmental Resources to obtain releases of liability under Act II

Funding from Various Sources

All three of our EPA awards were for the maximum amount of $400,000. Other sources of funding include the Heinz Endowments to underwrite the time and effort invested to prepare EPA applications and to market the sites to developers. In addition, we help developers access funds available from various state financing programs such as Enterprise Zone Assistance and Pennsylvania Industrial Development Authority.

Teamwork, Progress, Lessons Learned

Our team includes DJS Ventures for help in gaining access to privately held properties, and Tetra-Tech, environmental consultants. We continue to assess sites in both zones, and are working on development plans for several sites, including one of 90 acres in McKees Rocks that could be developed soon.

We’ve learned, during the past three to four years in this venture of combining economic development with brownfields, that everything we do takes longer and costs more than originally planned, so now we extend our schedules and budgets accordingly. A corollary to that lesson is that we learned to start early in the process to find interested developers. We learned that involving the community is absolutely essential, so now we meet regularly with local residents, businesspersons, and government officials to determine which sites to assess and develop. Finally, we learned that everything we do must be focused on our single goal: get our brownfields back into productive use as quickly as possible.

PE

Emily Buka is Executive Director of, Riverside Center for Innovation. www.riversidecenterforinnovation.com –She can be reached at eb@riversidecenterforinnovation.com or (412-322-3523.

Pittsburgh-Area Engineers Without Borders Designing Global Sustainable Solutions

By: Emma Bailargeon, Brad Byrom, Joshua Jedlicka, Eva Santos-Calzada, Isabella Westlauer

Pittsburgh-area chapters of Engineers Without Borders (EWB) have been very active since last visiting the pages of Pittsburgh Engineer (Fall 2008). The University of Pittsburgh Student Chapter (EWB-Pitt) has set the bar high; they were recently selected as one of the 2008 Premier Chapters of EWB-USA (out of over 300 chapters nationwide), and are preparing for a May 2009 project implementation trip in Mali, having raised over $30,000 through the efforts of dozens of student volunteers. Five Pitt students and three Pittsburgh professionals will travel to Mali for the three week implementation.

In other university news, engineering students at Carnegie-Mellon University are eagerly pursuing a charter to establish their chapter. In the interim, the students are diligently working on ways to add to the projects started by EWB-Pitt and the Pittsburgh Professional Chapter (EWB-PPC) members.

Keeping pace with the university exuberance is EWB-PPC, who is working on the design alternatives of a separate project in Ecuador, and are preparing for a potential site visit in August 2009.

With all three Pittsburgh-area chapters sharing resources and combining efforts, each chapter understands the need to build a sustainable group structure to achieve project success. The initial results of the collective efforts indicate a great outlook for a successful 2009 and beyond.

Undergraduate Engineers Produce Sustainable Solution for Malian Villagers

In May 2008, EWB-Pitt went on a site assessment to evaluate the conditions of the village of Makili, in the Western African nation of Mali. With community input as part of the assessment, the need arose for design and construction of a year-round fish farm for Makili. The primary objective of the farm is to provide the villagers with a protein source that is severely lacking in their diets, with a secondary benefit of creating a future economic opportunity for the indigent community.

A low lying area in the village fills with water every rainy season, and the villagers stock the pond with a few fish every year in the hopes of establishing a year-round farm. Their lack of success in this venture initiated their contact with EWB through the Peace Corps. Commercial fish farms have been built in surrounding countries with similar climates, and the data collected in the site assessment suggested that a fish farm was feasible. The design which followed the site assessment up to project implementation is highlighted below.

Sustainability

Sustainability, both ecological and administrative is absolutely essential to every EWB project. Before leaving the implementation trip, the volunteers' primary focus will be teaching the villagers the essential pond operation and maintenance skills. A community pond management board has been developed to oversee the O&M needs. Education will focus on using local organic matter as fish food, establishing pond vegetation, differentiating between male and female fish, and determining the optimal times for harvesting the fish.

ENGINEERS WITHOUT BORDERS USA

Choice of Fish

Nile Tilapia have been selected for cultivation in Makili, because they are native to Africa and are able to thrive in the anticipated pond conditions. Many of the fish farms in Africa choose to raise Tilapia due to its hardiness.

Community Ownership

Community ownership of the project is imperative for success after EWB and Peace Corps volunteers leave Makili. Villagers will be involved in the final design decisions, and will contribute a percentage of the material costs along with volunteering labor during construction. Continued communication between EWB-Pitt and in-country Peace Corps volunteers will be instrumental to ensure the village has enough knowledge and resources to maintain the pond. Future projects in the community may arise to enhance the capacity of the pond.

Health and Safety

Safety of EWB travelers and the Makili community is of paramount consideration during design and construction. The final design will ensure that the impact of the farm will not cause harm to the local environment. Additionally, the community will be taught how to track their health once the fish are consumed, and this data will be monitored by EWB-Pitt volunteers.

To learn more about EWB-Pitt or to support the Mali project, please e-mail: ewb.usa.pitt@gmail.com or visit www.pitt.edu/~sorc/ewb . No effort is too small: it is never too late to become involved in the project, and you do not have to leave Pittsburgh to make a tremendous impact on the quality of life for the village of Makili.

The Challenges of Bringing Clean Water to a Village in the Andean Mountains

Tingo Pucara is a village of about 150 inhabitants located 12,000 ft above sea level in the Andean Mountains of Ecuador. Water from rainfall and condensation is absorbed into the volcanic soil and resurfaces as natural springs located over 1000 ft below the village. This is where the daily challenges start for the villagers.

In order to gather water from the

groundwater sources, the villagers have to travel an average of six hours a day through treacherous mountain terrain to collect water in 10 L (3 gal) plastic containers. This water often becomes contaminated during return transport and storage, which has been a continued health problem for the village. The mortality rate for children under five years old due to diarrhea and other pathogen-related diseases is over 30%. Children who live beyond this age are among those who collect water for the village, taking time away from their education. These problems are compounded by the lack of a local economy; a family of five survives on less than 2 dollars per day in Tingo Pucara.

Despite the daily struggles of the community, the spirit of the Tingo Pucara village is unwavering as they constantly try to improve their situation by seeking outside assistance. A savior was found in Fernando Ortega, a Sociology Professor and Medical Doctor at the Universidad San Francisco de Quito (USFQ) who has been working on improving the health of some of the poorest communities in Ecuador for years. Dr. Ortega identified the need to improve the water quality and supply, but he knew that in order to do so, he would have to look outside the borders of Ecuador for help.

Bridging the gap between Ecuador and Pittsburgh happened by chance. Sarah Dobra, a Fulbright Scholar who had been working with Dr. Ortega in Quito, met Barbara Hatch, EWB-PPC Treasurer, in an airport while both were travelling. Sarah expressed the need to bring clean water to this community, and Barb brought the message to EWB-PPC, who responded by adopting the project.

The challenge for EWB-PPC has been designing a sustainable solution in a remote community with such limited resources, and overcoming the significant engineering challenge of moving water up the mountain to the village 1,000 feet above.

EWB-PPC is currently looking into two alternatives for their preliminary design. The first is a wind-powered mechanical pumping system that will deliver water up the mountain to a ceramic filter disinfection system. Ceramic filtration can produce potable water without having to be constantly replaced as is the case with the more conventional filtration and chemical disinfection of water seen in developed nations. The main advantage of this alternative is the use of clean, renewable wind energy: winds are relatively strong and constant in this area. The main disadvantage is the elevation of the source, which requires very large pressures to move the water uphill through several pump stations, driving up the overall capital cost of the project, in addition to issues related to operation and maintenance of this wind-powered system.

The second design alternative considered is the construction of a well near the village followed by pumping to a storage tank and ceramic filtration disinfection. The main advantage of this option is the simplicity of operation and lower capital costs, especially if the well can be hand-dug by the locals. A submersible electrical pump would be preferred, as locals are more familiar with the maintenance of these systems. However, electricity is extremely costly in the region, so the higher operational costs would have to be offset by working with the community to integrate ways in which this project can boost their local economy.

EWB Members at work in Mali

With all EWB projects, the most adequate solution has to be selected using the Integrative Project Approach: sustainability, health education, operation and maintenance training, and respect to the local culture and environment. The long-term project sustainability depends largely on the ability of the community to accept, operate and maintain the system.1

For the Tingo Pucara project, sustainability is directly linked to the communication between Professor Ortega and other colleagues at USFQ who keep in regular contact with EWB-PPC volunteers. Tingo Pucara has also been introduced to EWB-PPC members in person at the first assessment trip in September 2008. EWB-PPC is planning a return visit and partial project implementation in late summer 2009.

The long term effects of the implementation project in the community should be measurable: decrease the number of water-borne illness and death, and increase attendance to the local elementary school in hopes of future accessibility to higher level education for the villagers.

For more information on the Tingo Pucara project and EWB-PPC, please e-mail: president@ewb-pitt.org or visit http://ewb-pitt.org/. EWB-PPC is open to all eager participants, and is currently seeking mentors for both the EWB-Pitt and CMU student chapters to aid them in EWB projects.

Villagers of Tingo Pucara and Makili are not the only beneficiaries of these projects. Through involvement with these communities, Pittsburgh-based EWB volunteers have become more well-rounded engineers, gaining an understanding of intercultural relationships and applying basic engineering principles outside of regular job descriptions to implement a sustainable, low cost project. The experience also provides students with the opportunity for networking and interaction with professional engineers in Pittsburgh, as they look to the professional members for support and guidance on projects. Finally, it reinforces a primary purpose for the profession of engineering; to dedicate professional knowledge and skill to the advancement and betterment of human welfare2.

And that is as great an engineering success as one can hope to achieve.

PE

References:
(1) “An Analysis of Constructability Strategies in Project Delivery: Making Infrastructures Construction Sustainable in Copan Ruinas, Honduras”. Kraig Lothe. Final degree project for the MSc in Civil Engineering at the Michigan Technological University. 2006.
(2) Adapted from the National Society of Professional Engineers “Engineers’ Creed”. June 1954.

Emma Bailargeon (President of EWB-Pitt) and Isabella Westlauer are undergraduate students at the University of Pittsburgh’s Swanson School of Bioengineering.

Brad Byrom is a Structural Engineer with LRKimball, Joshua Jedlicka is an Environmental Engineer with CDM, and Eva Santos-Calzada is an Applications Engineer with NA Water Systems.

Your HDPE SPECIALISTS

QUALITY PRODUCTS • QUALITY PEOPLE • QUALITY SERVICE
PEOPLE SUPPLYING SOLUTIONS
SINCE 1954

PROVIDING

- Complete Pipe & Pumping Systems
- Fittings and Valves
- Engineered HDPE Fabrication
- Over 100 pieces of Fusion Equipment *(1"to 48" Diameter Capability)*
- Certified Fusion Technicians

Providing Products For:

- Horizontal Directional Drilling
- Pipe Bursting
- Slip Lining
- Water/River Crossings

LEE SUPPLY CO. INC.

1-800-353-3747

www.leesupply.com

We Supply Solutions