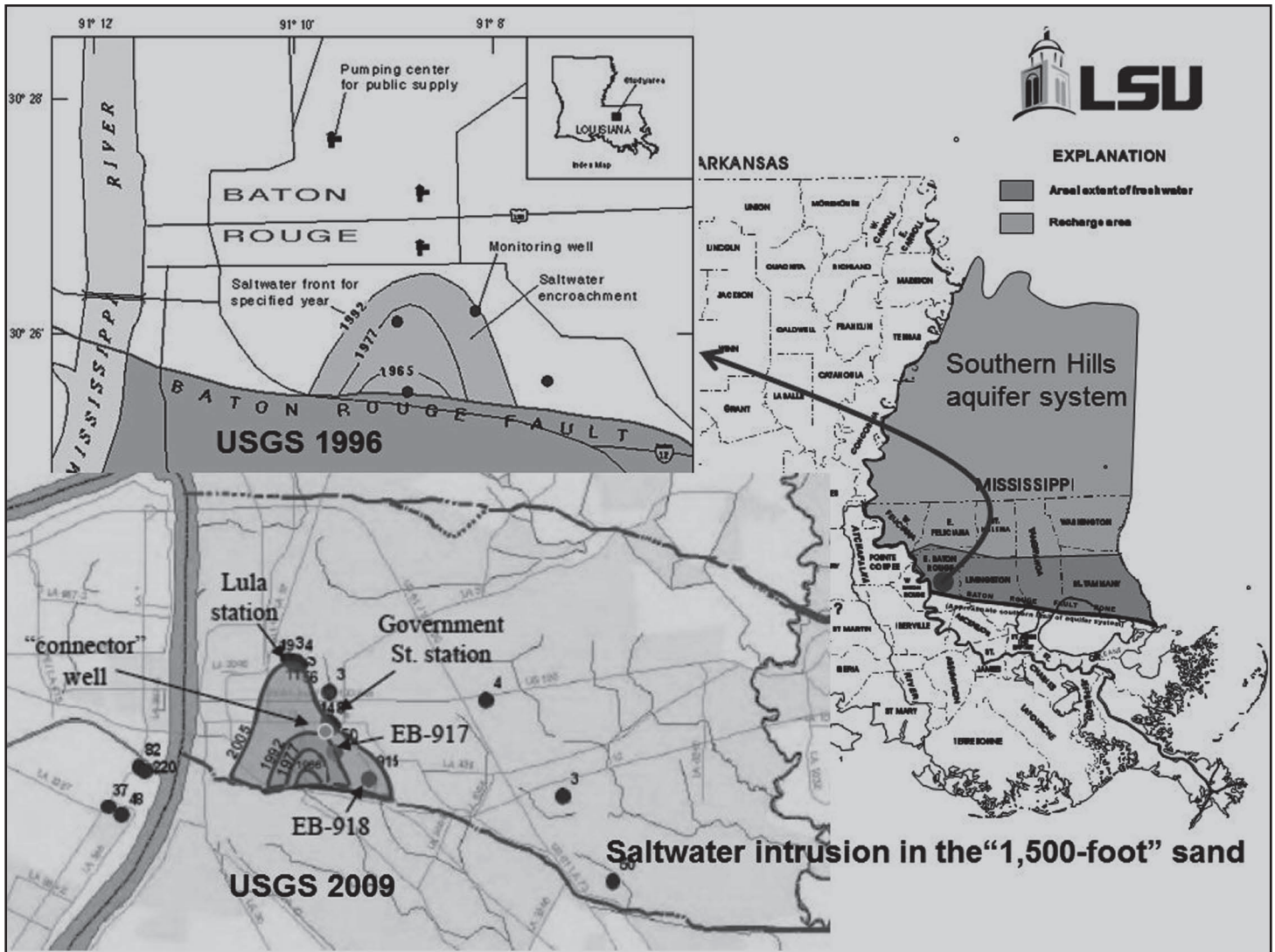


# LOUISIANA CIVIL ENGINEER

Journal of the Louisiana Section

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Saltwater Intrusion in Baton Rouge, Louisiana

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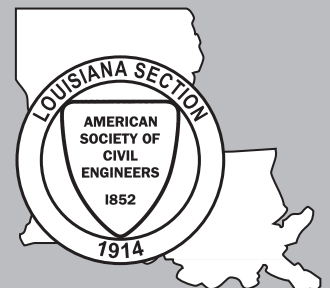
Taking a Logical Approach to Addressing Saltwater Intrusion in Baton Rouge, Louisiana

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Geothermal Energy Piles: Our Hidden Energy Source?

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The Louisiana Section of the American Society of Civil Engineers was founded in 1914 and has since been in continuous operation. The Section consists of the entire state of Louisiana and is divided into four branches that directly serve over 2000 members. They are the Acadiana Branch centered in Lafayette, the Baton Rouge Branch, the New Orleans Branch, and the Shreveport Branch.

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The Louisiana Section is located in ASCE Region 5 that consists of the Louisiana, Mississippi, Alabama, Georgia, and Florida Sections.

## President's Message

By Kurt M. Nixon, PE, PLS

The final President's Message, it is both a blessing and sorrow. *Blessing* because I get to hand off the work of leading over 2000 of my peers to stay engaged and advance our profession. Make no mistake, it is definitely work! I have always admired our Past Presidents. After walking in their shoes for a year, I can definitely say my appreciation has increased tenfold for those who have gone before me. *Sorrow* because during my time on the board and Particularly as President, I have had the opportunity to depend on some amazing people who truly love our profession.

I know I have said this many times in previous messages and at meetings, but it is our **membership**, the commitment and activity of each individual, who make our organization great! I would encourage all to continue to be involved and active. If you are reading this and are not a member, then that is the first place to start. If you are a member but don't regularly attend branch meetings, then your presence, experience, and diversity of ideas are missed. If you are already regularly attending meetings, volunteer for an activity or committee. Finally if you are actively serving, step up and lead. Wherever you are at, let me encourage you to take the next step. As we all do this together we will move our organization from great to amazing.

As you take that next step, there are many exciting things to look forward to and be a part of. First and foremost is the Centennial Celebration of the Louisiana Section of ASCE. Yes we are turning a 100 years old next year! This will be an exciting time to look back and honor the work and accomplishments of our members and leaders for the last 100 years. Please see the box at the bottom-right of this page for more information.

Another activity to be involved in and support is the dedication of the Lake Ponchartrain Bridge as a National ASCE landmark. The recognition of this engineering project is part of the outstanding work by the History & Heritage Committee. The primary goals of this committee are to: encourage engineers to become aware of the history and heritage of the profession; and to increase the awareness of the general public to the contributions of Civil Engineers. This is accomplished primarily through the designation of national landmarks. If you know of a significant engineering project or accomplishment in your area and would like to be part of preparing the application please contact one of your local board members.

Planning is also underway to continue the half-day seminar and luncheon in one of our underserved areas. This was our first year to implement this program and it was a tremendous success in Lake Charles. We would like to continue to build off of that success and possibly expand it. Again, if you would like to be a part of this effort please let one of your board members know.

The Section Awards & Officer Installation will be our next meeting. This year's Awards & Installation Banquet will be in

Baton Rouge on Friday, Sept 20th at Drusilla's. Make plans now to come out and support all of our outstanding award winners. The Section award winners are competitively selected from among the top candidates submitted by each of the four branches. It is never an easy selection for the awards committee, with so many high quality candidates to choose from, but the winners are all stand outs and are worthy to be recognized.



Kurt M. Nixon, PE, PLS

I would be remiss if I did not finally thank those who have helped me enormously. First and foremost a special thank you to my wife, Caroline, who has taken care of our five energetic little kids while I travel or stay late to take care of ASCE business. A big thank you to Bob Jacobson, your incoming President, for always being available and willing to pick up the pieces I missed or could not get to in a timely manner on top of his normal President-elect duties. Along with Bob, I would like to thank my fellow executive board members Ronnie Schumann, Pam Gonzales, and Chris Humphreys for helping me lead and serve our profession. Thanks to Nedra Davis for her tireless and persistent work in gathering the pieces and putting together a top-notch journal, assisting with the government relations committee, and helping plan the Centennial Celebration. Finally I would like to thank the Section membership for the opportunity to serve this last year as your President. It has been both an honor and privilege.

***The Louisiana Section Centennial Committee is currently undertaking the planning of the 100 Year Celebration of the ASCE Louisiana Section, 1914- 2014.***

**Please contact the Centennial Committee if you would like to help with the planning or have a contribution: [l.asce100year@gmail.com](mailto:l.asce100year@gmail.com).**

*We are looking for information for a potential commemorative edition which would feature stories, photographs, including unique and historical images that offer insight into the growth of the Louisiana Section in the last 100 years. The book would spotlight significant achievements in construction and unique engineering projects in Louisiana.*

# ASCE Louisiana Student Chapters

By Eugene Raymond DesOrmeaux

Within Region 5, the ASCE Society reported that all of the Students Chapters in Louisiana are in "Good Standing". Each of the Annual Reports submitted were in accordance with established guidelines, and indicates good practices within each of the Student Chapters. Congratulations to all ASCE Student Members for the good work.

Recently, ASCE published a "Talking Points" bulletin, titled "SPECIALTY CERTIFICATION". Licensed civil engineers are encouraged to consider such a certification. A copy of the Bulletin follows:

## 8/2013 TALKING POINTS: Specialty Certification

### Summary

Specialty Certification is part of ASCE Strategic Initiatives to raise the competency level in professional engineering practice. Specialty Certification is a voluntary, post-licensure credential that provides recognition of advanced expertise in a technical specialty, superior experience, strong ethics, and a commitment to life-long learning and continued professional development.

### Key Points

- ASCE has three Academies that were founded by practicing engineers of ASCE and its Institutes. These include:
  - o The American Academy of Water Resources Engineers
  - o The Academy of Geo-Professionals
  - o The Academy of Coastal, Ocean, Port and Navigation Engineers
- There are 6 different disciplines that allow a qualified civil engineer to become a Board-Certified Engineer:

- o Water Resources Engineering
- o Geo-Professional Engineering
- o Coastal Engineering
- o Ocean Engineering
- o Ports Engineering
- o Navigation Engineering

- The requirements needed for Specialty Certification include:

- o Formal engineering education consisting of a Bachelor degree in engineering
- o Professional Engineering license
- o Master Degree in engineering or 30 additional advanced credit hours
- o 10 to 12 years of additional professional experience in the field they wish to become Board Certified

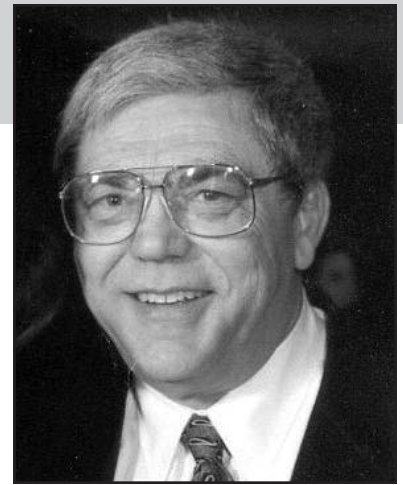
- Importance of Specialty Certification:

- o Help to distinguish your staff's professional record
- o Demonstrates the mastery of a specialty in civil engineering
- o Board Certification will be recognized by clients, employers, peers, and the general public

### Resources

Find more information at the academies websites.

[www.aawre.org](http://www.aawre.org) – [www.acopne.org](http://www.acopne.org) – [www.geoprofessional.org](http://www.geoprofessional.org)



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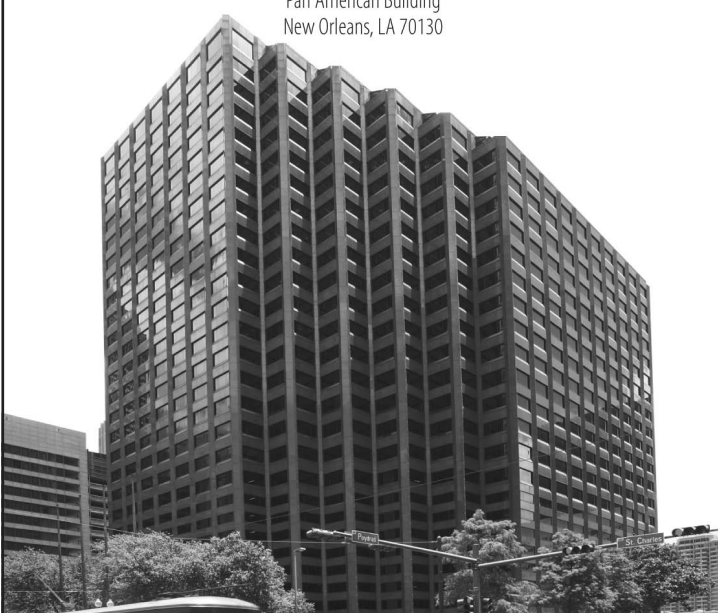
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# Taking a Logical Approach to Addressing Saltwater Intrusion in Baton Rouge, Louisiana

By Anthony J. Duplechin

The greater Baton Rouge metropolitan area is fortunate to have been blessed with an abundance of high-quality groundwater. This resource has been utilized since the time of Spanish and French explorers. Early wells were artesian in nature, free flowing and not requiring pumps. By the beginning of the twentieth century, the area was being industrialized due to its strategic location for the production of petroleum, natural gas, and salt. The quality, quantity and low cost of this resource led to its rapid development throughout the 20th century, providing a stimulus for both economic and population growth.

Groundwater in the Baton Rouge area is found in ten sands named after their depths in the Baton Rouge industrial area north of downtown Baton Rouge along the Mississippi River: the “400-ft”, “600-ft”, “800-ft”, “1,000-ft”, “1,200-ft”, “1,500-ft”, “1,700-ft”, “2,000-ft”, “2,400-ft”, and “2,800-ft” sands.

Increasing groundwater withdrawals in southeastern Louisiana have caused saltwater to encroach into these freshwater sands. Groundwater investigations in the 1960’s delineated a freshwater-saltwater interface located near the Baton Rouge fault (Figure 1). Generally, aquifers in the Baton Rouge area contain freshwater north of the fault and saltwater south of the fault. Chloride concentrations are generally less than 10 milligrams per liter in these aquifers north of the fault. Most saltwater north of the fault, with the exception of the “2,800-ft” sand, has been induced across the fault by withdrawals in the Baton Rouge area. Saltwater encroachment into freshwater areas north of the fault has been monitored in several aquifers using a network of observation wells. Saltwater was initially detected as early as the 1940’s in the “600-

ft” sand; by the 1990’s saltwater had been detected in six aquifers north of the fault including the “600-ft”, “1,000-ft”, “1,200-ft”, “1,500-ft”, “2,000-ft”, “2,400-ft”, and “2,800-ft” sands. In some aquifers, production wells have been impacted.



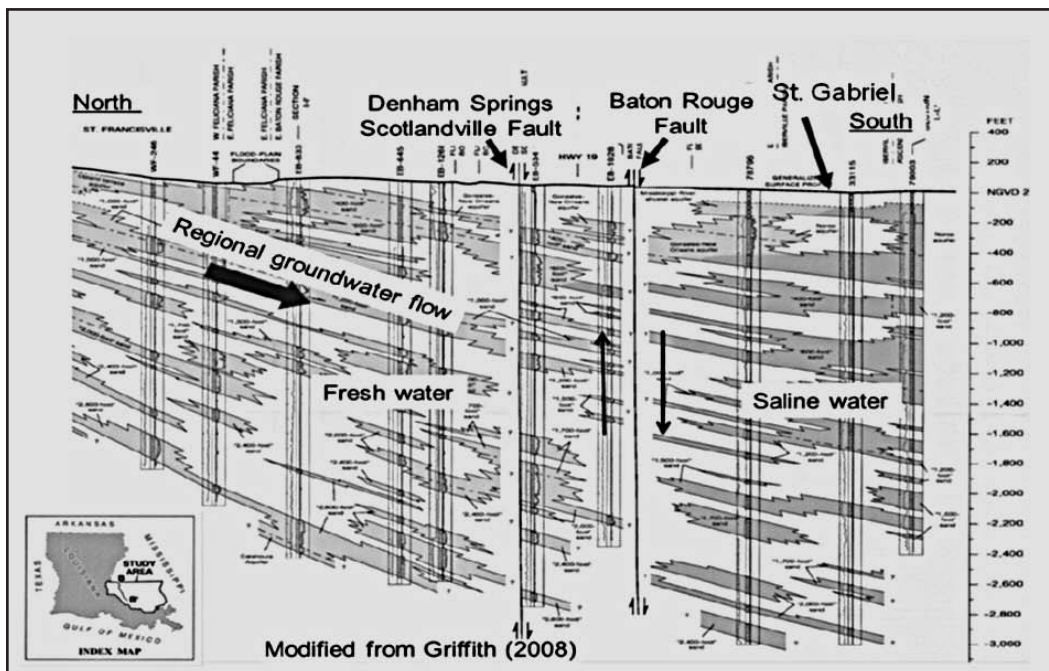
Anthony J. Duplechin

The source of the salt is still being debated, with the two major schools of thought being, 1) that saltwater in the aquifers north of fault has migrated up fault planes from deeper, older halite formations (Stoessell and Prochaska, 2005) and 2) that the brine has migrated upward through fractures associated with salt domes south of the Baton Rouge Fault and migrated along the shallower Miocene sand layers to the fault (Windeborn and Hanor, 2009).

As early as the 1930’s, it was realized that water levels in Baton Rouge’s city supply wells were dropping. The Louisiana Legislature established a Louisiana Water Resources Study Commission around 1936, but they met only a few times and did not take much action.

In 1964, a USGS report titled “Salt Water Encroachment in Aquifers of the Baton Rouge Area” was published, in conjunction with the Louisiana Office of Public Works, recommending a drilling and monitoring program be implemented. Later that year, a water commission was proposed to Mayor Woodrow Dumas by Leo Bankston and others. East Baton Rouge Resolution 53:24 established a special Water Conservation Commission to study groundwater conditions, with particular interest in saltwater encroachment, and to make recommendations for remedial action.

In 1970, a legislative act (No. 682) allowed establishment of the Greater Baton Rouge Water Conservation District (RS 38:3051) and a twenty member Board of Commissioners was appointed to administer District affairs. This Commission gathered enough information to determine the need for control legislation. Proposed legislation was presented to the Louisiana Legislature, but failed to pass.



Groundwater investigations in the 1960’s delineated a freshwater-saltwater interface located near the Baton Rouge fault

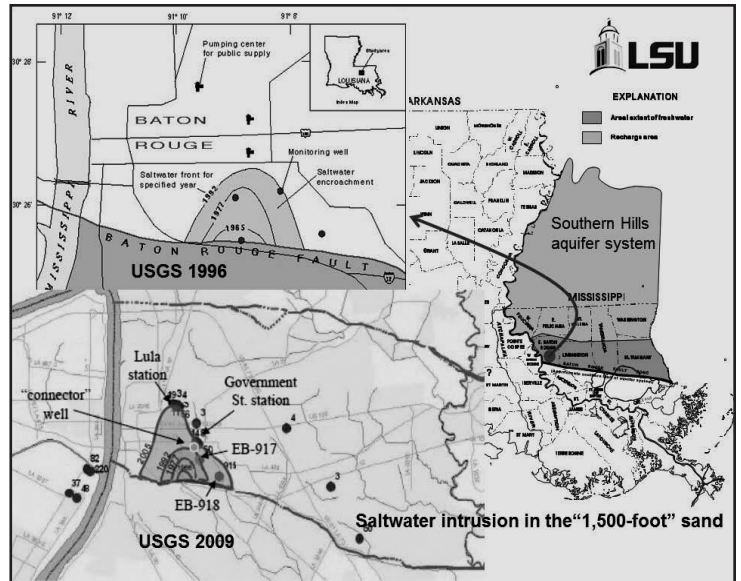
In 1974, a similar bill was introduced that expanded the District to include the five parishes in the capital area (East Baton Rouge, West Baton Rouge, East Feliciana, West Feliciana, and Pointe Coupee). The bill passed (No. 678), creating the Capital Area Groundwater Conservation District (RS 38:3071) and a Board of Commissioners to administer the affairs of the District. An organizational meeting was held on January 14, 1975.

The Commission consists of fifteen members, one member from each of the parishes composing the district, three members representing the industrial users in the district, three members representing private or public water supply for rural, or municipal use in the district with the condition that at least one of said three members shall always be from the nominees of privately owned users furnishing a municipal water supply, one member representing the Louisiana Farm Bureau Federation and the Louisiana Cattlemen's Association, one member representing the Louisiana Department of Environmental Quality, one member representing the office of conservation of the Louisiana Department of Natural Resources, and one member being the nominee of the board. Since its creation, the Capital Area Groundwater Conservation District has been involved in the efficient administration, conservation, orderly development and supplementation of groundwater resources in the five-parish area. The CAGWCC has driven investigative efforts and policy changes and fostered an atmosphere of cooperation to promote the responsible development of the groundwater resources in the Baton Rouge area and to protect the quality of these resources. Numerous actions have been taken by the Commission to study, assess and address the matters of subsidence, salt water encroachment and water level decline in the district.

The "1,500-ft" and "2,000-ft" sand aquifers are important sources of groundwater for residents and businesses in the Baton Rouge area. It is important to realize that almost 96% of the pumpage from the "1,500-ft" sand is for public supply, with 61% of that coming from the "Lula Street Station" (Figure 2). Recent increases in the background chloride concentration observed in the "1,500-ft" sand at the Lula Station are of particular concern. Chloride concentrations in Lula wells have increased from a background concentration of approximately 3 milligrams per liter (mg/L) to as high as 180 mg/L. The Lula Station is an integral source of public supply, pumping an average of 10.9 million gallons per day (mgd) between 2000 and 2009 from five wells screened in the 1,500-ft sand. During this period, an additional 3.6 mgd was pumped from wells screened in the 1,500-ft sand at the Government Station (two wells) and the North 45th Station (one well).

Saltwater intrusion into the "1500-ft" sand, as well as the "2000-ft" sand, has been specifically addressed by the CAGWCC. These actions include studies, models and mitigation. Shortly after the Commission was seated, it passed the first of several resolutions to address the saltwater encroachment issue:

1. Reserves the "1,000-ft", "1,500-ft" and "1,700-ft" sands for public-supply use. Drilling of industrial wells in the "1,500-ft" sand should be restricted to replacement wells in areas where interference with public-supply wells is minimal. (11/75)



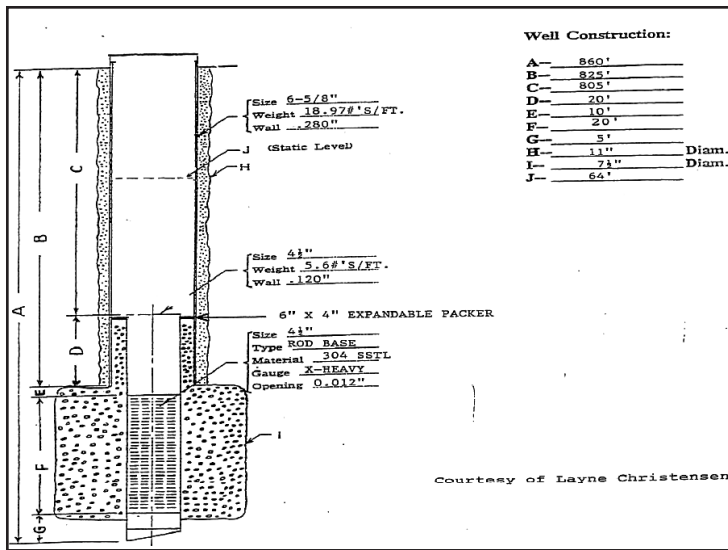
96% of the pumpage from the "1,500-ft" sand is for public supply, with 61% of that coming from the "Lula Street Station"

2. Restricts construction of new wells in the "1,500-ft" sand south of the fault in West Baton Rouge Parish to public-supply usage because only a limited amount of fresh water is available from this aquifer. (7/88)
3. Prohibits multi-aquifer wells in the District, except as approved by the Commission and with variance granted by La. DOTD. (7/91)
4. Limits pumpage and water levels in the "2,000-ft" sand, with a moratorium on wells in "2,000-ft" sand in a designated area. (10/91)

In 1999, the Commission authorized the installation of a "connector-well" (Figure 3) to recharge the "1500-ft" sand and create a pressure barrier, resulting in partial mitigation of saltwater movement toward the Baton Rouge Water Company's (BRWC) "1,500-ft" wells at their Government Street pumping station. This well allows freshwater from the "800-ft" sand to gravity flow into the "1,500-ft" sand. The project was completed with the aid of funds granted to the Capital Area Ground Water Conservation District under Section 319(h), Non-point Source Implementation, of the Clean Water Act administered by the U.S. Environmental Protection Agency (EPA). The project proposal was submitted to EPA through the Louisiana Department of Environmental Quality (DEQ) June 15, 1994, and funding in the amount of \$391,000 (60% EPA, 40% CAGWCC) was approved January 31, 1995. Because of delays related to organizational changes in DEQ, the cooperative project agreement was not signed by the Secretary of DEQ until July 9, 1996, the official starting date of the project. The grant was limited to projects designed to mitigate water problems.

CAGWCC, in cooperation with the USGS, the Louisiana Department of Transportation and Development, the Louisiana Geological Survey and other concerned parties, routinely conducts cooperative water-resource investigations. For example, recent studies in the Baton Rouge area show and assess aquifer potentiometric surfaces





"Connector-well" (Figure 3) to recharge the "1500-ft" sand and create a pressure barrier, resulting in partial mitigation of saltwater movement toward the Baton Rouge Water Company's (BRWC) "1,500-ft" wells at their Government Street pumping station

(Tomaszewski and Accardo, 2004; etc.), the location and structure of various aquifers (Griffith, 2006; etc.), or model groundwater flow in local aquifers (Torak and Whiteman, 1982; etc.).

CAGWCC and the USGS also cooperatively maintain water-level, chloride- concentration, and subsidence well networks. The water-level network includes 77 wells in East and West Baton Rouge, Pointe Coupee, and East and West Feliciana Parishes that are measured quarterly. Water-level data at three of those wells are measured hourly by real-time gauge and can be viewed at a USGS web site. The chloride-concentration network includes 41 wells in East and West Baton Rouge Parishes that are measured annually or semi-annually. The subsidence well network includes three wells at the Baton Rouge ExxonMobil refinery that are used to measure relative compaction of sub-surface strata.

In 2004, CAGWCC and The East Baton Rouge Parish Department of Public Works contracted with URS Corporation to conduct a feasibility study for alternative water supply sources for industrial users in the Baton Rouge area. The study focused on the availability of "reclaimed water", which is defined in LRS 30:2391, (et. seq.) as water, that as a result of treatment of waste is suitable for a direct beneficial use or a controlled use and that is therefore considered a valuable resource. Reclaimed water shall meet all applicable state and federal water quality standards and the following standards at the discharge from the producer's plant site:

**BOD 5 ≤ 5 mg/L**

**TSS ≤ 5 mg/L**

**NH<sup>3</sup>-N ≤ 2 mg/L**

**TN ≤ 10 mg/L**

**Chlorine residual ≥ 2 mg/L**

The study was undertaken to identify the potential for additional use of the largest single reclaimed water source in the Baton Rouge area – treated municipal sewage effluent. The study of the potential use of reclaimed water in the Baton Rouge area demonstrated that appropriate sources are available in large volumes, and that potential users were available. In particular, potential exists for replacing industrial groundwater use in the north Baton Rouge area with reclaimed water derived from City/Parish treated effluent in volumes as great as 61 million gallons per day, but would require economic and financial incentives, or strong political and legislative initiatives.

One piece of legislation was passed that addresses the use of reclaimed water, LRS 30:2391-2399. The "Louisiana Reclaimed Water Law" established a reclaimed water program prohibiting the use of potable water for certain purposes if reclaimed water is available; and provided for the use of revenue collected from the sale of reclaimed water so as to create a drought-proof supply of water for industry. To my knowledge none of this has occurred.

The Baton Rouge Water Company (BRWC) and the Capital Area Groundwater Conservation District jointly funded a study by Dr. Frank Tsai of LSU entitled Scavenger Well Operation Model to Assist BRWC to Identify Cost-Effective Approaches to Stop Saltwater Intrusion toward the BRWC Water Wells in the "1,500-ft" Sand of the Baton Rouge Area. This study was completed in 2011. Scavenger wells are a way to remediate the intrusion of saltwater into an aquifer. This study was designed to determine the feasibility of this remediation method and to select the location for the scavenger wells to prevent/reduce the saltwater impact on the BRWC's Lula pumping station.

BRWC has recently commenced drilling of one such scavenger well, a \$3.2 million project located along North Street and 31st Avenue in Baton Rouge that could provide another 30 to 50 years of life to drinking water wells located near Lula Avenue.

BRWC Chairman Eugene Owen explained in a recent newspaper article (Baton Rouge Advocate, Amy Wold, July 1, 2013) that although the water company had talked about the possibility of doing a scavenger well project for a number of years, a determination had to be made on whether the salty water and fresh water were mixed or if the heavier salty water was in a layer at the bottom of the sand layer.

If the salty water and the fresh water were mixed, the scavenger well would be useless. However, if the heavier salty water was in a wedge at the bottom of the sand layer, then one well could be drilled down to tap that layer and another well would be drilled shorter to draw from the freshwater layer.

Several studies done in 2010 and a test well drilled in 2011 helped prove that the salty water was indeed stratified, and the water company moved forward with plans for the scavenger well, which is actually made up of two wells. One well will go deeper into the ground into the leading toe of this saltwater wedge and another well will be drilled about 20 to 30 feet away to a shallower depth to access the freshwater layer on top.

This first well needs to be finished before drilling on the second well begins. Once both wells are complete, the two wells need to be “tuned” to make sure that water from both layers, salty and fresh, flow directly into the pipes they’re supposed to.

When the well has been “tuned,” the fresh water drawn from the well will go into the public supply system while the salty water will be pumped through a pipeline to the Mississippi River. The salinity of this water is too high for drinking standards, but it’s not seawater.

Owen said the two wells combined will pump about 700 gallons a minute or about a million gallons a day. However, those rates could change based on what they find during the test operation of the wells, likely to occur in the spring, of that water, about 250 to 350 gallons a minute would be the brackish water which will be piped to the Mississippi River at an outlet along River Road just south of the state Capitol. The rest would go into the public supply.

In 2007, CAGWCC, in cooperation with the United States Geological Survey, Louisiana Water Resources Science Center (USGS), the Water Resources section of the Department of Transportation and Development (LaDOTD) and the City of Baton Rouge and Parish of East Baton Rouge Department of Public Works (EBR) began a study to develop a regional ground-water flow and solute-transport model of the Southern Hills Regional Aquifer System in the Baton Rouge area to simulate past, current, and a variety of possible future conditions in the “2,000-ft” sand. Results of this study have recently been published in a report titled “Simulation of Groundwater Flow in the “1,500-ft” Sand and “2,000-ft” Sand and Movement of Saltwater in the “2,000-ft” Sand of the Baton Rouge Area, Louisiana”.

Five hypothetical scenarios simulated the effects of different groundwater withdrawal options on groundwater levels within the “1,500-ft” sand and the “2,000-ft” sand and the transport of saltwater within the “2,000-ft” sand. The 40-year “what-if” scenarios simulate future groundwater levels and salt concentrations that might occur if pumping in the Baton Rouge industrial district continues at current rates, is reduced by about 20 percent, or stops completely. The USGS scientists also simulated the possible use of “scavenger wells” to intercept the saltwater. Scavenger wells located between the fault and the industrial district (Figure 4) could slow northward encroachment of the saltwater.

Scenario 1 is considered a base case for comparison to the other four scenarios and simulates continuation of 2007 reported groundwater withdrawals.

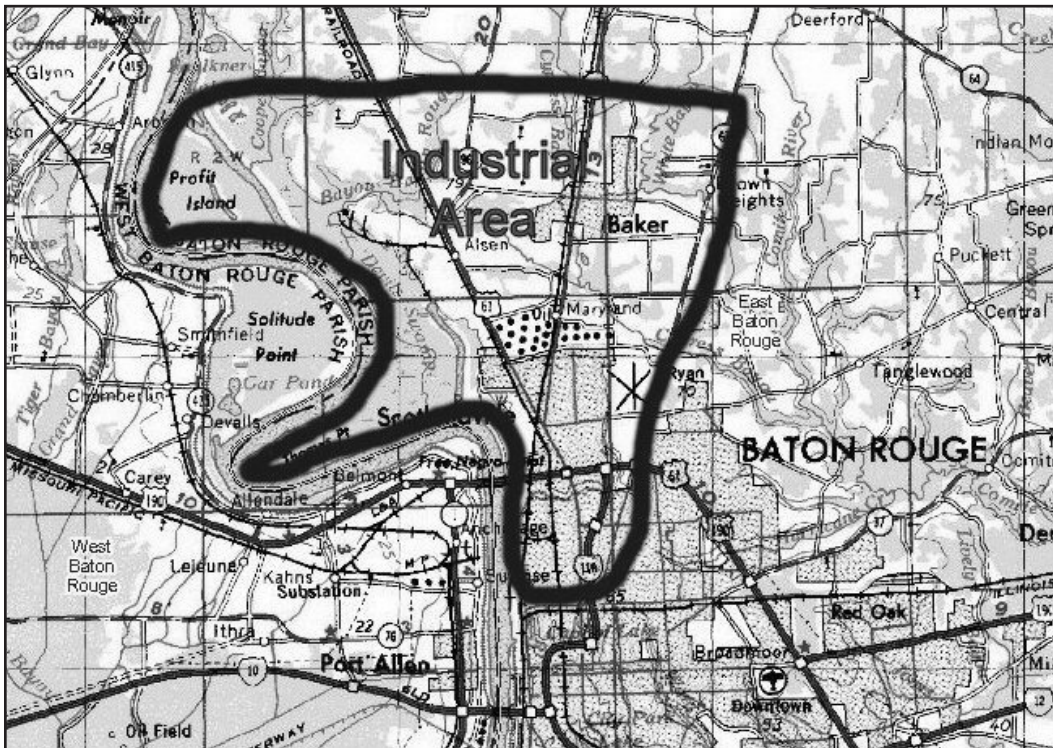
Scenario 2 simulates discontinuation of withdrawals from seven selected industrial wells located in the northwest corner of East Baton Rouge Parish, and water levels within the “1,500-ft” sand were predicted to be about 15 to 20 ft higher under this withdrawal scenario than under scenario 1.

Scenario 3 simulates the effects of a scavenger well, which withdraws water from the base of the “2,000-ft” sand at a rate of 2 Mgal/d, at two possible locations on water levels and concentrations within the “2,000-ft” sand. In comparison to the concentrations simulated in scenario 1, operation of the scavenger well in the locations specified in scenario 3 reduces the chloride concentrations at all existing chloride-observation well locations.

Scenario 4 simulates a 3.6 Mgal/d reduction in total groundwater withdrawals from selected wells screened in the “2,000-ft” sand that are located in the Baton Rouge industrial district. For scenario 4, the median and mean plume concentrations are slightly lower than scenario 1.

Scenario 5 simulates the effect of total cessation of groundwater withdrawals from the “2,000-ft” sand in the industrial district. The simulated chloride-concentration distribution in scenario 5 reflects the change in groundwater flow direction. Some saltwater would continue to cross the Baton Rouge Fault and would actually encroach toward municipal supply wells. However, further encroachment toward the industrial district would be abated.

In summary, “The scenarios indicate that saltwater will eventually reach industrial wells if pumping continues at current rates, and that a 20-percent reduction in industrial pumping will not have a substantial effect on the saltwater movement,” said Charles



Scavenger wells located between the fault and the industrial district could slow northward encroachment of the saltwater

Heywood, a USGS scientist and lead author of the report. According to Heywood, a complete cessation of industrial pumping could cause the saltwater that is currently moving toward industrial wells to move toward public water-supply wells instead. It is obvious that a combination of reduction in pumping in the industrial area and the installation of scavenger wells between the Baton Rouge Fault and the Industrial Area will have the greatest impact on long-term sustainability of the “2,000-ft” sand.

The Capital Area Groundwater Conservation District, USGS, LaDOTD and EBR have entered into a new cooperative agreement to further update, modify, and calibrate the model to accurately simulate groundwater conditions in all 10 Baton Rouge sands. The model would provide a tool for water planners and managers to assess the impacts of pumpage changes on all of the aquifers, evaluate possible management alternatives, and to make decisions about future development of groundwater resources in the area.

The finished model would provide a tool to evaluate:

- 1) The effectiveness of possible management options.
- 2) Impacts of alternative pumping scenarios.
- 3) Possible locations for saltwater monitor wells.
- 4) Possible locations for scavenger or barrier wells.
- 5) Saltwater discharge rates from scavenger wells.

It is important that the public have an appreciation for the fact that there are more than one water-bearing sands in Baton Rouge. Also, groundwater is available to all who will put it to a beneficial use. Beneficial use is defined in RS 38:3073 as “...the use of groundwater for domestic, municipal, industrial, agricultural, recreational, or therapeutic purposes or any other advantageous use.” Groundwater and drinking water are not necessarily the same.

Many observers feel that the solution to the saltwater intrusion problem in Baton Rouge is simple – force industry to wean themselves completely from groundwater and use the Mississippi River as their source of process water and cooling water. But public supply and industry take their water from different sands, and the main sand used for public supply, the “1,500-ft” sand, has effectively been declared “off-limits” to industry by the CAGWCC. Furthermore, as has been shown by the results of the USGS model, if industry ceases production from the “2,000-ft” sand in the industrial district, it will result in the movement of saltwater towards public supply wells screened in that sand. The CAGWCC is currently working toward a middle-ground solution that will help preserve all the freshwater sands in the Baton Rouge area for future generations.

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# Uncertainty and Risk: The Role Of The Engineer

By Deborah Ducote Keller, PE



Deborah Ducote Keller, PE

To the average person, uncertainty and risk may seem to be the same thing. But to the engineer as project manager, and especially as a project team leader, there are distinct differences. My appreciation of the two terms is best shown by the different set of questions associated with each:

## UNCERTAINTY:

- What do I know, that I don't know?
- What do I not know, that I don't know?
- How certain is what I do know?

## RISK:

- What's the worst that could happen?
- How likely is this to happen?
- What will influence costs?
- What will impact schedules?
- How accurate are the data and assumptions I have?

Information changes UNCERTAINTY so that RISK can be assessed. Information, however, is not always accurate. Assumptions may be based on knowledge or pure speculation; and sometimes it's just wishful thinking.

The engineering and construction professional is exposed to many types of uncertainty and risk throughout a career:

Every project has financial risks in the budget, funding sources, and once underway, controlling cost. During the design phase, scope-creep, changes in design criteria, design competency, and the fast pace of technological changes all can present challenges. Proceeding into the construction phase, site conditions, weather, availability of labor and materials, and quality assurance are also uncertainties and risks.

In addition, there are concerns that did not trouble the profession many years ago. Environmental risks, whether real or perceive, can derail a successful project. Likewise, political processes such as obtaining permits, zoning issues, and restraining orders, can loom over a project from jurisdictional government, elected officials, or their constituents. With the connectivity of blogs, websites, and other social media, public opinion and publicity can either support or kill a project, even if the information being disseminated is biased or an untruth.

As engineers, too often we ask ourselves, "Why is it that there is never the time and money to do it right the first time, but when it has to be done over again, the extra time and money are found after all?" Is it a matter of simply not acknowledging that every project has uncertainty and risk? Intuitively we know that the difference between a great project and the project from hell is a

matter of how much uncertainty and the degree of risk exposure.

Be assured, when the non-engineers on the project team run for cover, the engineers are left standing alone to explain that there wasn't sufficient time or money to do it right the first time. Nor were there sufficient resources to identify the uncertainties and analyze the risks inherent in every project.

It's essential that the engineering and construction professionals educate the project stakeholders, i.e. owners, about project uncertainty and risk. This is needed when decision-makers are filtering information using their own set of uncertainties and risk. For example, an owner may weigh dedicating a project before a key date, satisfying an important customer, or constructing a project at a specific location as the over-arching consideration and driving force.

The National Society of Professional Engineer's (NSPE) website states, "Engineers need to be in responsible charge of decision-making on technical matters when public health and safety are at risk. All engineers need sufficient background such that they can identify and assess risk and uncertainty and take the initiative in the decision-making process when necessary."

Both the engineering curriculum and the engineering licensure exams focus the would-be engineer on calculating the "right answer." But I like this quote from Craig Musselman posted on the NSPE website, "The real challenge is in understanding how wrong the right answer is likely to be."

I certainly have had my fair share of successful projects, as well as those "projects from hell." And more than once, a project earned both titles! Successful projects are definitely more rewarding when uncertainty and risk are faced by owners, engineers, and contractors with eyes wide open at the beginning, rather than keeping fingers crossed until completion.

Charles Darwin never said, "It's not the strongest that survives, it is the one most adaptable to change." No one has taken credit for these words of wisdom, but it would be no surprise if it was an engineer who spent their career struggling with the uncertainties and risks designing and constructing projects.

My closing advice is simple: assess uncertainties, determine risks, and plan for contingencies and maybe your next project will be award-winning and heaven-sent.

# Geothermal Energy Piles: Our Hidden Energy Source?

By Malay Ghose Hajra, PhD, PE



Malay Ghose Hajra, PhD, PE

One of the immediate concerns to the human civilization refer to (1) the use of natural resources at a rate that will limit the ability of future generations to obtain/utilize resources such as materials, fuels, water, and air, and (2) the degradation of natural systems to the point that may jeopardize their beneficial balancing functions (Fragaszy et al., 2011). The negative impact of the world's use of fossil fuel will add to this problem. In 2007, the world consumed approximately 504 EJ of energy (exojoules; 1 EJ = 1018 J), equivalent to 12 Gton (gigatons of oil equivalent), 81% of which was derived from fossil fuels (IEA, 2009). Despite large deposits of coal, oil shales, and possible methane hydrates, fossil fuels are ultimately exhaustible. The world's resources of coal (1600 Gt) would provide 2.5 kW/person for the next 100 years, which is less than 25% of the current per capita energy use in the United States (MacKay, 2009). The effect of use of fossil fuel on Global warming through increased CO<sub>2</sub> emission is well recognized by climate modelers (Chu, 2009). The current concentration of CO<sub>2</sub> in the atmosphere is approximately 380 ppm. Research suggests that a CO<sub>2</sub> concentration of 550 ppm could trigger severe climate effects (IPCC, 2000). Researcher has estimated that the 550 ppm mark will be reached by year 2050, unless efforts are taken to curb CO<sub>2</sub> emission into the atmosphere.

worldwide: (1) 17% increase, if consumption and population growth continue at current rates -the business-as-usual option, and (2) 66% increase, if consumption in the underdeveloped world increases to levels required to attain proper quality of life (i.e., 1.5 kW/person-Santamarina, 2006). This situation will exacerbate current issues caused by the dependency on fossil fuels, its environmental consequences, and the international implications due to the mismatch between the geographic distributions of supply and demand of fossil fuels. The main sources of energy worldwide are petroleum (34%), coal (26.5%), natural gas (20.9%), combustible renewables and waste (9.8%), nuclear power (5.9%), and hydroelectric (2.2%) and other, mainly wind and solar (0.7%) (2007 data in International Energy Agency, 2009). Therefore, 81% of all the energy consumed worldwide is obtained from fossil fuels, primarily because of their low cost under present pricing conditions. Fossil fuel burning is accompanied by the emission of carbon dioxide, which gradually accumulates in the atmosphere, leading to anthropogenic-driven climate change.

Based on reported national values, the current global energy consumption rate is ~15 TW (1TW=1012W). There will be a pronounced increase in energy demand in the next 25 years associated with economic development and population growth

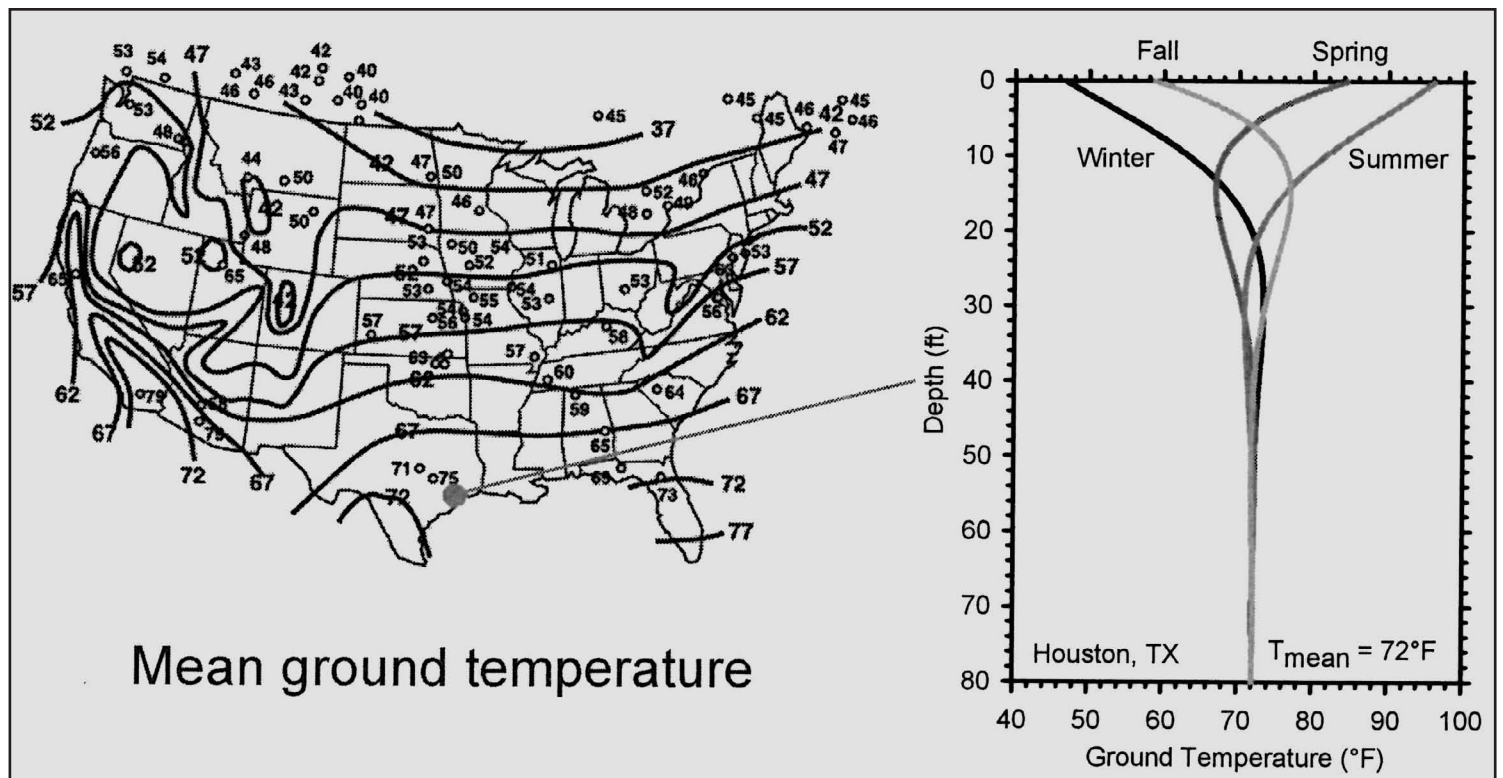


Figure 1: Typical ground temperature profile (Olgun et al., 2012)

Sustainable Development is defined as any *development that meets the needs of the present without compromising the ability of future generations to meet their own needs* (Brutland Commission's Report, 1987). With noticeable global climate change, unprecedented amount of waste generation, increased demand on water, energy, and other natural resources – conservation and use of alternatives in infrastructure design and construction will become standard practice for future projects. A sustainable worldwide energy system will require proper long-term national policies within a global approach, strategic pricing that takes into consideration production costs and life-cycle waste processing, reduced population growth rates, and efficiency and conservation with associated changes in cultural patterns (Fragasz et al., 2011).

Depending upon the geographic location, subsurface ground temperature attains a constant value, certain distance below the earth's surface. Figure 1 shows typical ground temperature profile in the Houston, TX area. Published literature and instrumentation monitoring data indicate that the mean temperature below ground surface in the New Orleans area is about 700F and occurs within the upper 20 feet. Mean ground temperature in other areas of Louisiana range between 66 and 720F. This hidden but constant heat source below ground can be used as an alternate energy source to meet some of the demands of modern civilization.

Ground source heat pump (GSHP) applications to heat and cool buildings have been used successfully for more than 20 years providing lower energy usage and corresponding carbon emissions than conventional systems. There has been a significant increase in the past 10 years in incorporating the building's own deep foundations (typically piles) as all or a portion of the ground source for the heat pumps. Since the added cost to install geothermal pipe loops in the piles is small compared to the cost of the foundations and the overall project, it is obvious that utilizing piles in the system makes good economic and environmental sense (Brettmann and Amis, 2011). The energy usage and associated carbon emissions for a ground source heating and cooling system is about half that of a conventional system (Goldfingle, 2009). This same reference further reports that the payback time of the capital cost of a GSHP system is between 2 and 9 years due to the lower operating costs.

Due to the heavy structural loads or weak subsurface soil conditions encountered in several areas in Louisiana, pile foundations have traditionally been used to support loads transferred from the superstructure to the ground below. The same pile foundations, used to support structural loads, can be used as Geothermal Energy Piles (GEP). Geothermal pipe loops can be installed within the GEPs, which can be used to transfer heat, to and from the ground, for heating or cooling of the buildings.

Figure 2 shows a typical schematic of geothermal energy pile system. In Louisiana, during the summer months, when the outside temperature is well above 900F, the excess heat can be transferred into the ground (where the temperature is constant at 700F) to cool the buildings. Alternatively, during the winter months, when the above-ground temperature falls below 500F, heat can be transferred above to heat the buildings. Effectively and economically, these

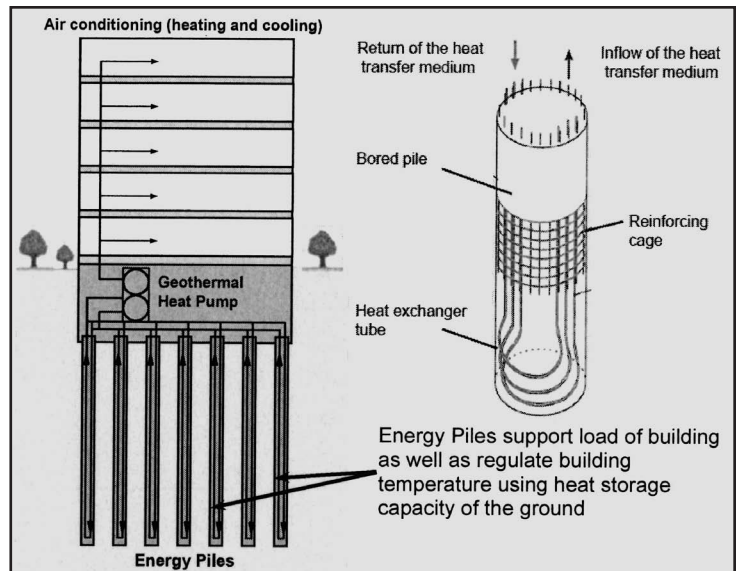


Figure 2: Schematic of Geothermal Energy Pile system (Ennigkeit and Katzenbach, 2001)

geothermal energy piles can reduce the need for traditional sources of heating and cooling and will bring the idea of carbon-neutral buildings closer to reality.

However, the thermal load introduced in the soil-pile system can have additional effect on the pile foundation, which was typically designed to carry the structural load alone. As indicated in Figure 3 (Bourne-Webb et al., 2009), the pile foundation can be subjected to higher loading by introducing cycling heating and cooling into the soil-pile system.

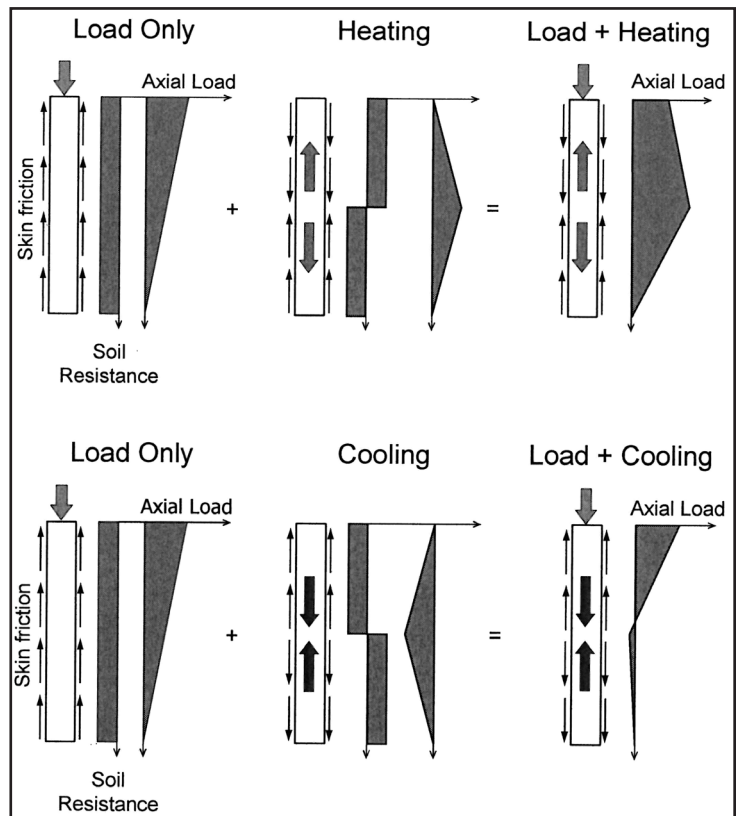


Figure 3: Typical thermo-mechanical load on piles (Bourne-Webb et al, 2009)

The long term behavior of the soil supporting the pile foundation as well as soil-pile interaction due to thermal loading will also have to be evaluated. Following are some questions that need to be answered in connection with the use of conventional pile foundations as Geothermal Energy Piles:

- What happens to the soil properties (consolidation, strength, hydraulic conductivity, microscopic structure etc.) subjected to cyclic heating and cooling?
- What happens to the pile frictional capacity at the interface of pile surface and soil?
- What happens to the pile load carrying capacity if heat is transferred in and out of the pile foundation?
- Does the pile and surrounding soils expand and contract due to heating and cooling?
- What type of piles is most suitable for use as GEPs?
- Does the pile concrete crack due to cyclic heating and cooling?
- What is the amount of heat transfer and heat storage in the pile as well in surrounding soils?
- Does excessive heating and cooling affect the heat balance of ground?
- How much does the Geothermal Energy Pile system cost in comparison to conventional GSHP system?
- What is the energy saving of using GEPs in comparison to conventional HVAC heating and cooling system?

The Civil and Environmental Engineering department at the University of New Orleans (UNO) is currently conducting laboratory and field study to evaluate the feasibility of using conventional pile foundations as GEPs in Louisiana. The research will also look into the thermo-mechanical behavior of subsurface soil and pile foundation subjected to cyclic thermal (heating and cooling) and structural loading.

If the design challenges and unknown loading factors mentioned above are studied and addressed, the conventional pile foundations, used in various infrastructure projects in Louisiana, can be used as a source of heat energy found in abundance below the ground surface. This technology represents an important and cost-effective opportunity for geotechnical researchers and practicing engineers to contribute in a positive way to the global sustainable energy demands.

**Malay Ghose Hajra, PhD, PE** is an Assistant Professor in the civil and Environmental Engineering department at the University of New Orleans (UNO). His research interests include Geotechnical and Foundation Engineering, Coastal Geotechnology, Energy Geotechnology, and Geo-environmental Engineering. Dr. Ghose Hajra can be reached at [mghoseha@uno.edu](mailto:mghoseha@uno.edu)

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# Louisiana Section and Subsidiary Organizations FY 2012 Financial Summary

By Bob Jacobsen, PE President-Elect

The Louisiana Section and its subsidiary organizations currently retain healthy balances according to our latest fiscal year tax return information. As of September 30, 2012 the Section total balance, including all subsidiary organizations, was just under \$295,000. This was down slightly from the previous fiscal year's ending balance of nearly \$321,000. The information is based on the FY2012 (October 1, 2011 to September 30, 2012) federal tax return prepared by the Section with assistance from ASCE Headquarters. The return includes an IRS Form 990, which applies to tax exempt organizations, together with supporting documentation.

Under current ASCE practices each section is a separate tax reporting entity and includes any subsidiary organization using the section federal tax identification number. The Louisiana Section current includes the following subsidiaries:

- Acadiana Branch
- Baton Rouge Branch
- New Orleans Branch
- New Orleans Structural Engineers Institute
- Shreveport Branch
- Louisiana Transportation and Development Institute
- Louisiana Civil Engineer Conference and Show (Fall New Orleans Conference)
- Louisiana COPRI (just recently formed FY2013)

The Louisiana Section also includes six student chapters (LSU, SU, UNO, ULL, Louisiana Tech, and McNeese). However, these student chapters currently operate under separate tax identification numbers and are not included as subsidiary organizations for tax reporting purposes.

In the below box is a breakdown of the FY2012 starting and ending balances for each Louisiana Section subsidiary organization, along with the FY2012 receipts and disbursements:

	Starting Balance	Receipts	Disbursements	Net	Ending Balance
Acadiana Branch	15,802.33	10,491.40	15,179.00	(4,687.60)	11,114.73
Baton Rouge Branch	26,615.84	30,131.89	31,732.16	(1,600.27)	25,015.57
New Orleans Branch	30,239.78	46,081.13	37,933.86	8,147.27	38,387.05
NO SEI	19,789.00	9,857.92	6,026.62	3,831.30	23,620.30
Shreveport Branch	27,342.45	4,427.17	4,529.67	(102.50)	27,239.95
LTDI	8,125.86	1,889.44	2,822.49	(933.05)	7,192.81
LCEC&S	104,791.48	152,255.00	173,294.26	(21,039.26)	83,752.22
Section (only)	88,256.57	59,824.65	69,769.74	(9,945.09)	78,311.48
Louisiana Section (Total)	320,963.31	314,958.60	341,287.80	(26,329.20)	294,634.11

## FEATURING YOUR STATE REPORT CARD ON THE ASCE HOMEPAGE!

"I hope everyone is enjoying their summer! I just wanted to let you know that we are featuring State Report Cards on the main ASCE website homepage, and your <2012 Report Card for Louisiana's Infrastructure> is one of those we're highlighting. Thanks again for all your hard work on these, and please let Aaron or I know if there's anything we can do to assist you with any legislative days or coalitions you're working on..."

**Brittney Kohler**, Manager, Infrastructure Initiatives

<http://www.asce.org/Infrastructure/Report-Card/State-and-Local-Report-Cards/>

The Section and our subsidiaries try to retain reasonable financial reserves to allow continuation of routine annual activities during slow economic conditions. However, as a tax exempt organization, we do not work to accumulate significant balances. The Section and our subsidiaries are committed to spending excess reserves on efforts that serve our members. In FY2012 six of the eight Section organizations lowered their balances, with the total Section balance reduced by over \$26,000, or by about 8.2 percent. Examples of ways in which the Section and our subsidiaries are prudently reducing our balances include the recent preparation and release of the 2012 Report Card for Louisiana's Infrastructure and subsidized branch and section meetings and conferences. The Section also recently instituted a grant program to fund local public affairs activities of our subsidiary organizations.

A copy of the FY2012 Louisiana Section Tax Return and supporting documentation are available to any Section member upon request. To obtain a copy contact Bob Jacobsen at [bobjacobsenpe@gmail.com](mailto:bobjacobsenpe@gmail.com). Please don't hesitate to contact a Section or subsidiary organization representative if you have a suggestion for additional worthy activities.



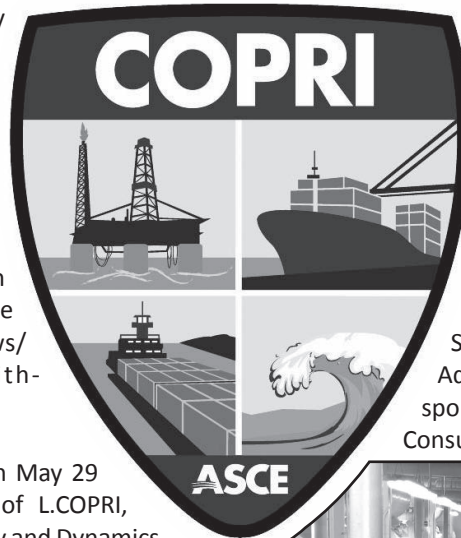
# ASCE-COPRI Louisiana Chapter News

By Dennis G. Lambert, PE, Newsletter Editor



COAST, OCEANS,  
PORTS AND RIVERS  
INSTITUTE  
Louisiana Chapter

The Louisiana Chapter of the American Society of Civil Engineers (ASCE) Coasts, Oceans, Ports, and Rivers Institute (L.COPRI) is continuing to promote membership and visibility throughout the State of Louisiana by conducting joint seminars with local Branches and State Sections of ASCE. Jon D. Risinger, PhD, Chairman of L.COPRI, was recently interviewed by our National Chapter for the efforts made in Louisiana to setup the Chapter which can be found at <http://www.asce.org/copri/News/Headlines/2013/Featured-Interview-with-Louisiana-Chapter-Chair,-Jon-Risinger/>



papers on nearshore processes, wave action, sediment transport and mass movement; and conducted evaluations of the hydrologic impacts of several coastal restoration projects in Louisiana using computer models, including the Barrier Feasibility Study and the River Diversion Feasibility Study for CWPPRA. Following the luncheon L.COPRI Executive Committee and Young Professionals enjoyed a behind the scenes tour of the Aquatic Life Support Mechanics at the Audubon Institutes Aquarium of the Americas. Special thanks to our sponsors Coast & Harbor Engineering, Manchac Consulting Group, and Reefmaker!

ASCE New Orleans Branch held a luncheon on May 29 where Ehab Meselhe, PhD, PE, a Director of L.COPRI, presented a topic entitled "Sediment Availability and Dynamics in the Lower Mississippi River". Dr. Meselhe is also the Director of Natural Systems: Modeling and Monitoring at the Water Institute of the Gulf. The L.COPRI Young Professionals Group (YPG) co-hosted a crawfish boil with the ASCE New Orleans Chapter Younger Members group in May. Despite the rainy weather, the event was well attended with approximately 50 members and guests enjoying the afternoon. With over 200 pounds of crawfish, guests were able to network with their professional counterparts from around the state including Baton Rouge, Lafayette, and New Orleans.



*L.COPRI Executive Committee and Young Professionals enjoyed a behind the scenes tour of the Aquatic Life Support Mechanics at the Audubon Institutes Aquarium of the Americas*



*L.COPRI YPG and ASCE NO YM staying dry at the crawfish boil in New Orleans on May 10, 2013*

L.COPRI Program Committee Chair Luci Silva is continuing to lead efforts to plan L.COPRI's program for the first quarterly meetings through December, 2014 including the first September, 2013 luncheon. More details to come on date, time, location, speaker, and sponsorship opportunities. The State of the Coast 2014 is gearing up for its event to be held at the Ernest N. Morial Convention Center on from March 18-20, 2014. Go to [www.stateofthecoast.org](http://www.stateofthecoast.org) for more information. The event is sponsored by the Coalition to Restore Coastal Louisiana (CRCL), the CPRA and the Water Institute of the Gulf. The CRCL Party for the Coast was held on June 13, 2013 at Generations Hall in New Orleans. On June 14th L.COPRI held a luncheon at Drago's featuring guest speaker Joseph N. Suhayda, PhD. Dr. Suhayda has 30 years of experience in coastal physical processes and coastal engineering. Has published over 60 technical

Governor Jindal recently signed legislation for tax credits to support Louisiana ports. Specifically, tax credits for ship building & repair and support activities for oil & gas operations were added to the definition of "ports or port & harbor activity" under the Louisiana Economic Development program. Since 2008, the DOTD's Port Priority Program has invested \$123M into Louisiana ports. The latest legislation modifies the tax credit program by expanding the types of projects and includes warehousing and storage, port operations, marine cargo handling, ship building & repairs and oil & gas activities. These initiatives should continue to stimulate needed services for Port development in Louisiana. DOTD Port Priority Program Director, Randall D. Withers, confirms these recent developments as Louisiana continues to lead the nation as the gateway for the movement of goods along the Gulf Coast and within the Mississippi River valley. Currently, the Louisiana Marine Transportation System Plan is being updated for 2014.

The activities of L.COPRI will arrange seminars, workshops and other activities to benefit all ASCE and COPRI members. One does not have to be an Engineer to join COPRI. These Institutes are formed for the benefit of ASCE and non-ASCE members to participate and interact with other professionals interested in coastal restoration efforts in the Gulf of Mexico. If you have any questions or to add your name to our mailing list, please contact Tyler Ortetgo, L.COPRI Membership Committee Chair at [tortego@gmail.com](mailto:tortego@gmail.com).

I hope that many of you read the article in the May issue of the Louisiana Civil Engineer regarding the 2013 Legislative Fly-In. That article provided some very good information on ASCE National's recently released 2013 National Report Card. Since then the Louisiana Section's Government Relations Committee has been working diligently on many fronts to expand upon the both the local and national press received on both the National, but more importantly the Louisiana Infrastructure Report Card.

The Government Relations Committee (GRC) was very active during the 2013 Legislative Session. After hearing the governors opening statement of the session, which did not mention our state's infrastructure needs, the GRC issued a press release calling for the legislature to hold a special hearing on the Louisiana Infrastructure Report Card released last year. We contacted the office of Representative Karen St. Germain, Chair of the House Transportation Committee, in order to set up a legislative hearing before her committee to discuss the report card. As the Executive Director of the Louisiana Report Card, Dr. Kam Movassaghi agreed to represent ASCE. So, on Monday, May 13, 2013 Dr. Movassaghi, along with an array of other local engineers representing ASCE, presented to the House Transportation Committee. The GRC was afforded approximately 20 minutes to address the committee. Members of the GRC distributed report cards to the entire legislative body prior to offering testimony. The message was well received and was another step closer to educating our policy makers on the importance of infrastructure funding.



Top portion (left to right): Rudy Simoneaux, Joey Coco, and Dr. Movassaghi, along with (left to right) Bob Jacobsen, Adam Smith, and Nedra Davis representing ASCE, presented to the Louisiana House Transportation Committee

In a similar effort, Deputy Director of the Louisiana Report Card, Joey Coco, volunteered his services by testifying on behalf of Legislation offered to the House Ways and Means Committee by Representative St. Germain to index the gasoline tax with inflation. Joey discussed the effects of time and the reduced purchasing power of the gasoline tax without an index to inflation. The legislation narrowly failed to make it out of committee for further debate on the house floor by 1 vote.

The Government Relations Committee is also trying to broaden our attention to not be exclusively focused on the Report Card. The Committee has been holding bi-monthly meetings to discuss local issues and how the Louisiana Section might build upon the success of the Report Card in order to begin emphasizing other aspects of governmental issues to both the Section membership as well as to our elected officials.

During the June committee meeting we hosted a call with representatives from ASCE National and the Florida Section to discuss lessons learned, best practices, and paths forward. While on our call we learned that the National Government Relations Committee has only been around for about four years and is still growing and developing. Based on discussions, it seems as though the Louisiana GRC is probably one of the most active committees even though we are still a relatively new committee. Plenty of information was shared, and a few good ideas were discussed and developed. It is the intent of the Louisiana GRC to continue to interface with National as well as other Sections to try and share ideas so as not to reinvent the wheel.

If you would like to be involved with the GRC, please contact any of the current active members - Joey Coco, Kirk Lowry, Nedra Davis or myself – and we would be glad to fill you in on what we have been working on. Our focus moving forward is going to be towards educating the Section members by providing interfaces with local governmental leaders and updates on policies that may affect the engineering discipline. We are very open to ideas that you might have, so please feel free to send us your thoughts and feedback. We want this committee to be a service to the membership.



# Louisiana

## CIVIL ENGINEERING

Conference & Show

### SAVE THE DATE!

**Call for Potential Speakers and Exhibitors!**

We are proud to announce the dates for the 23rd Annual Louisiana Civil Engineering Conference and Show. This event, a joint effort from the New Orleans Branch of ASCE and the Louisiana Chapter of ACI, is the premiere gathering for the Civil Engineering community in the Greater New Orleans Area. We are in the process of soliciting sponsors and exhibitors to establish the technical program for the fall conference which will be held on September 25-26, 2013, at the Pontchartrain Center in Kenner, Louisiana.

For additional information on the conference, please visit our web site at [www.LCECS.org](http://www.LCECS.org)

# ASCE-T&DI Louisiana Chapter News

By Michael Paul, PE, Newsletter Editor



TRANSPORTATION  
& DEVELOPMENT  
INSTITUTE  
LOUISIANA CHAPTER

In June, the T&DI Louisiana Chapter presented the *Lessons Learned from the Implementation of the New Orleans Complete Streets Projects* seminar. This event was cosponsored by the UNO Transportation Institute and presented at the UNO Campus. The topic of the seminar presented New Orleans as a case study, looking at complete streets projects implemented that have led to increased safety, traffic calming, walkability and short-term cost benefits, as well as lessons learned. In addition, the various roles the designers, planners, engineers and community members play in implementation were discussed. The speakers were Tara Tolford (UNO Transportation Institute Research Associate), Daniel Jatres (New Orleans Regional Planning Commission) and Jennifer Ruley (Louisiana Public Health Institute Pedestrian and Bicycle Engineer, Advisor to the City of New Orleans).



From Left: T&DI Seminar Coordinator, Jennifer Stenhouse, with speakers Tara Tolford, Dan Jatres and Jennifer Ruley

Miles Bingham announced that he will be leaving T&DI to focus more energy on the History & Heritage Committee of the Louisiana Section. Miles was one of the founding members of the T&DI Louisiana Chapter and has been an integral part of running our organization. Miles served as Treasurer for four years and was involved in the planning and implementation of all 24 seminars T&DI has presented to date. He was instrumental in preparing the nomination and planning the dedication of the Huey P. Long Bridge and the Lake Pontchartrain Causeway Bridge as ASCE National Historical Civil Engineering Landmarks. Our sincere thanks and best wishes to Miles.

If you are interested in co-sponsoring a seminar at your branch, the T&DI Louisiana Chapter has prepared a Seminar Coordinator's Check List to assist you in your preparation. Contact Dan Aucutt, PE, at [djaucutt@gmail.com](mailto:djaucutt@gmail.com) for a copy of the checklist. Our seminars are two hours in length and are typically presented from 5:30-7:30 pm in either the New Orleans or Baton Rouge area. As indicated, we are open to co-hosting seminars in additional Louisiana cities, with proper planning. In keeping with the intent of the Institute to provide training and networking opportunities for all professionals involved in transportation projects, the Chapter is planning the following future seminars:

- Toll Road Feasibility for I-10/LA 1 connector in Baton Rouge
- Pavement Engineering (Part 2) Rigid Pavement Design
- Pavement Engineering (Part 3) Application of Earthwork and Embankment Materials
- I-49 South Corridor

## Branch News

### SHREVEPORT BRANCH

By Dave Rambaran, PE, Branch President

It has been an amazing 2012 and 2013 year and the 2013 and 2014 year looks like it will start off with the theme of giving back to our members again. We have an exciting September planned with 8 hours of PDH's on September 5, 2013 at the Louisiana Tech Transfer Center in Shreveport at no cost to our members.

The annual ASCE Shreveport Branch Classic Golf Tournament at **Olde Oaks Golf Club will be held in October this year.** It will be a great time to cut loose, relax and play a little golf. On behalf of the Branch, I would like to invite Sponsors and Participants in this year's tournament. The funds raised from this tournament helps provide annual scholarships to Louisiana Tech students. Thank you for your continued support in our endeavors.

I would like to extend congratulations to the following award nominees from the ASCE Shreveport Branch: Mr. James D. Mohr, P.E. the Civil Engineering Wall of Fame award, Mr. Ali Mustapha, P.E. the

Lifetime Achievement award, Mr. Jerry Daniel Thompson, P.E. Outstanding Young Civil Engineer award and Mr. C. Eric Hudson, P.E. the Outstanding Civil Engineer.

Our members have supported our meetings and turnout this year and the participation of the engineering companies and the supporting suppliers have been very gracious.

I would like to thank all the officers and past presidents and members that have donated their time and dedication this past year. It has been an honor serving as the ASCE Shreveport Branch president. The Branch officers for the 2013-2014 year are as follows:

- President – Mitch Guy, P.E.
- President Elect – David Smith, P.E.
- Treasurer – Vacant
- Secretary – Vacant

## BATON ROUGE BRANCH

By Rudolph A. Simoneaux, III, PE, Branch President

It has been a very busy Summer for the Baton Rouge Branch. In May, we maintained our tradition of co-hosting a joint meeting with LES. Mayor-President Kip Holden was the guest speaker and gave several updates on City-Parish work including the Green Light Program and the Sewer Program. As he typically does, he made a point to thank all the engineers in Baton Rouge for their efforts. Baton is currently undergoing one of the largest infrastructure improvement efforts in its history. The Mayor acknowledged that a lot these projects would not have been possible without the strong contingent of Civil Engineers in Baton Rouge. As usual, this event was well attended with over 100 LES and ASCE members showing up. The Branch also presented the Louisiana Section's Distinguished Senior Civil Engineering Student award to Jamal Steib, a senior at Southern University. Congratulations Jamal!

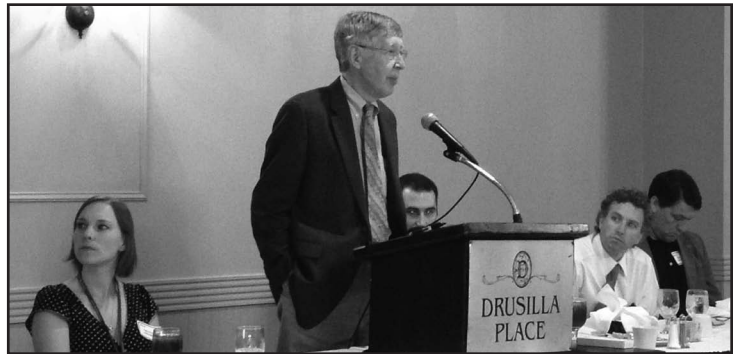


Mayor-President Kip Holden presented the Louisiana Section's Distinguished Senior Civil Engineering Student award to Jamal Steib, a senior at Southern University

In June, we held our annual Past President's Luncheon to honor those who have served as Branch Presidents. Eleven of our Past Presidents attended and were honored by the entire Branch. Our speaker was Dr. Chip Groat, the President and CEO of The Water Institute of the Gulf. Dr. Groat spoke on the scope and function of the Water Institute, explained how the group was formed and has grown, and presented several of the coastal restoration projects that they are currently working on.



Past President's Luncheon, (left to right): Left to right: James Aronstein, Clinton Willson, Jerry Klier, Charles Eustis, Glenn Gautreau, Larry McKee, Adam Smith, Roy Waggenspack, Christopher Knotts, Jeffery Duplantis, Tom Stephens, and Robert Jacobsen



June speaker Dr. Chip Groat, The Water Institute of the Gulf

On August 15th, the Branch will hold its second Joint Luncheon with LES. The guest speaker was DOTD Secretary Sherri LeBas who spoke about the various statewide DOTD projects that are currently underway. Additionally, we presented our annual Branch awards at the August Luncheon. This year's winners are listed below:

- Lifetime Achievement Award: Charles L. Eustis, PE
- Wall of Fame Award: Jerome M. Klier, PE
- Outreach Award: Nedra Davis, MA
- Outstanding Civil Engineer Award: Miles B. Williams, PE
- Outstanding Young Civil Engineer Award: Adam M. Smith, PE
- Outstanding Civil Engineering Educator Award:  
Heather D. Smith, PhD, PE



Award winners pictured (L to R Front): DOTD Secretary Sheri LeBas, Nedra Davis, Jerry Klier, & Charles Eustis. (L to R Back): Adam Smith, Rhaoul Guillaume, and Miles Williams

These recipients are now nominated for the Section Awards which will be handed out in September. The Branch would like to congratulate these individuals for their outstanding performance and contributions to our profession, and wish them the best of luck for the Section Awards.

On Friday, September 20th, the Baton Rouge Branch will be hosting the annual Louisiana Section Officer Installation and Award Ceremony. Our own Mr. Robert "Bob" Jacobsen will be installed at the 2013-2014 Louisiana Section President. Additional details on this event will be distributed in the coming weeks.

## NEW ORLEANS BRANCH

By Jim Martin, PhD, PE, Branch President

The New Orleans Branch has remained very active since our last Branch update.

On April 10, the Branch held an outreach event at the New Orleans Charter Science and Mathematics High School. We spent the morning talking to several groups of students about what engineers do and how they can prepare themselves to consider engineering as a career. In addition we held some fun activities and presentations fit to hold the attention of these bright young minds. On April 17, the event continued as we welcomed the students to UNO for a full day of activities including guided tours of all the lab facilities as well as a tour of the full campus.

On April 24, the Branch hosted Louisiana State Section Member Bob Jacobsen, PE as he presented his work on the Southeast Louisiana Surge Hazard Analysis. We had an excellent turnout for this event and Bob's presentation did not disappoint.

On May 29, the Branch hosted Ehab Meselhe, PhD, PE from the Water Institute of the Gulf. Dr. Meselhe is the Director of Natural Systems: Modeling and Monitoring and presented the topic "Sediment Availability and Dynamics in the Lower Mississippi River." His presentation was quite interesting and drew many questions from the audience.

On June 13, "The Legendary Huey P. Long Bridge Symposium" was held celebrating the history, the widening and the impact of the Huey P. Long Bridge. The event was held at the Old U.S. Mint, 400 Esplanade, in New Orleans on June 13, 2013 and was free to the public.

Speakers included William Conway, PE with Modjeski and Masters who was a principal in charge and the engineer of record for the bridge widening completed on June 16, 2013. Conway was part of a panel discussing the rich history of the "Huey P." Tonja Koob, PhD, PE author of "The Huey P. Long Bridge" and bridge researcher Miles Bingham, PE were also panel members.

The second panel of the day focused on the \$1.2 billion widening of the bridge. Speakers were Bruce Peterson, PE with Modjeski and Masters discussing design; Steve Spohrer, PE with Louisiana TIMED Managers discussing construction; and Louisiana Department of Transportation and Development District Administrator Michael Stack, PE discussing the impact of the widening project.

The final panel of the day featured a discussion of Gov. Huey P. Long's influence on construction of the bridge and the challenges to getting it built in the early 1930s. Leon Miller, Curator of the Huey P. Long Papers at Tulane University discussed documents recently donated to the college that seem to indicate Gov. Long intended for the

bridge to bear his name. Karen Leathem, Historian with the Louisiana State Museum; and Michael Mizell-Nelson, a labor expert with the University of New Orleans also spoke as part of the last panel.

The Legendary Huey P. Long Bridge Symposium was hosted by the Louisiana State Museum in partnership with the Louisiana Department of Transportation and Development and the New Orleans Public Belt Railroad. It was sponsored by the American Society of Civil Engineers New Orleans Branch and Louisiana TIMED Managers.

On June 16, the Huey P. Long Bridge was fully opened and its expansion completed. The festivities featured a 5k race will be run over the bridge (from West Bank to East Bank) as well as a ribbon cutting ceremony.

On July 17, the New Orleans Branch held elections and inductions of the officers for the 2013-2014 calendar year. The new slate of officers are:

Past President: Jim Martin, PhD, PE  
President: Steve Johns, PE  
President-Elect: Lee M. Alexander, PE  
Vice-President: Wes Eustis, PE  
Treasurer: Tonja Koob, PhD, PE  
Secretary: Steve Nelson, PE  
Director-at-Large: Dean Nicoladis, PE  
Director-at-Large: Karishma Desai, PE



2014 Incoming board members from left to right: Jim Martin, Karishma Desai, Lee Alexander, Tonja Koob, Steve Nelson, Wes Eustis, Dean Nicoladis, and Steve Johns



Award Winners: George Kleinpeter, Norma Jean Mattei, Jarret Bauer, Harley Winer, Lee Alexander, and Bill Conway

continued on next page

In addition, at the same Branch meeting, awards were given for the preceding calendar year. The recipients of the New Orleans Branch Awards for 2012 – 2013 are:

Outreach: Harley Winer, PhD, PE  
Outstanding Civil Engineer: Lee M. Alexander, PE  
Outstanding Young Civil Engineer: Jarret E. Bauer, PE  
Educator of the Year: Norma Jean Mattei, Ph.D., PE  
Lifetime Achievement: George C. Kleinpeter, PE  
Wall of Fame: William B. Conway, PE

Finally, the Board voted to give 5 scholarships to students at the University of New Orleans that would be either starting their Junior or Senior year in 2013. Each student receives a certificate as well as a check for \$500 to be used for their continued academic progress. 2013 Student Scholarship Award Recipients include:

Claudio Calderon  
Dan Campos  
Gerardo Hidalgo  
Ana Melara  
Vogan Nguyen



Life Member Recipients: Madan Kamboj, Mike Jackson, Rolland Mura, Frank Fromherz, Ladd, Ehlinger, Ralph Junius, and Bruce Terrell

On a final note, as this will be the last updated that I pen as President of the New Orleans Branch of the American Society of Civil Engineers, I would like to thank all those that have participated during the last year. Most of all I would like to thank all of you that have helped make our many events happen. You know who you are and your work is very much appreciated.

## ASCE-SEI New Orleans Chapter News

By Om Dixit, PE, FASCE, Newsletter Editor



Since our report in May 2013 issue of this magazine, ASCE SEI New Orleans Chapter was busy planning for future seminars but did not host any seminar during this period in New Orleans.

Next seminar was held on July 18, 2013. SEI New Orleans Chapter invited Keith Kesner, PhD, PE, (Chair ACI 562, Senior Associate, WDP & Associates, Inc., So. Norwalk, CT) to present the seminar “The ACI 562 Repair Code – How does it Affect Your Concrete Repair Project?” The development and approval of the ACI 562 Code Requirements for Evaluation, Repair and Rehabilitation of Concrete Buildings represents a milestone in the concrete repair industry. For the first time, a code has been implemented to specifically address and provide standards for the repair of existing structures. The questions for most of engineers are how does the ACI 562 affect their projects and what changes will be needed to comply with the code. The presentation provided an overview of the ACI 562 code, including a review of key provisions for evaluation of existing structures, maintenance requirements and quality assurance. Interaction of the ACI 562 code with International Existing Building Code (IEBC) and ACI 318 will be reviewed. The presentation included specific examples of how the code provisions can be applied to common concrete repair situations. The goal of this presentation was to provide engineers working on concrete repair projects information on how to comply with the ACI 562 code and to understand the process involved in the development of the code.



The other topics for the future seminars are being considered Masonry Design, Non Destructive Testing, Concrete Filled Steel Pile Design, Joplin Missouri Tornado Investigation Study Report and a few more current topics. SEI New Orleans Chapter has also recommended the structural topic, including Annual Herbert Roussel, Jr. Lecture presentations for Louisiana Civil Engineering Conference and Show to be held on September 25-26, 2013 in New Orleans. This year the Annual Herbert Roussel, Jr. Lecture will be presented by Chris Carroll, PhD, EI from University of Louisiana, Lafayette, who will talk about “Structural Design and Construction in the Ancient World”.

The committee is looking for good topics and speakers for future presentations. Members with expertise in the field of structural engineering would be welcome to join the Executive Committee. For any suggestion and information on joining the Executive Committee, contact Chairman Anthony Goodgion, PE, at [agoodgion@lhjunius.com](mailto:agoodgion@lhjunius.com).

All seminars are held at the University of New Orleans. Seminar dates, pertinent information, and registration can be found on the New Orleans Branch website at [www.asceneworleans.org](http://www.asceneworleans.org).

To add your name to our mailing list, e-mail Om P. Dixit, PE at [om@fenstermaker.com](mailto:om@fenstermaker.com).

# Student Chapter News

## UNIVERSITY OF LOUISIANA AT LAFAYETTE

By Callie Coulon, Student Chapter President

The UL Lafayette ASCE Student Chapter ended the spring semester on several high notes. The annual ASCE/Chi Epsilon banquet was enjoyed by students, faculty and guests and celebrated the year's successes. Scholarships were awarded, the nineteen graduating seniors were congratulated, and guest speaker Deborah Keller, PE gave an informative presentation about risk versus reward and how it relates to civil engineering.

Before the banquet begins Chi Epsilon holds an initiation ceremony for new members. This semester, five new student members were initiated as well as a chapter honor member, Russell C. Hibbeler, PhD, PE. Dr. Hibbeler is a distinguished member of UL Lafayette's civil engineering staff who is admired by both the faculty and students. After the initiation ceremony, newly initiated members and their families are invited to the banquet to celebrate their achievement and be recognized.

After the semester concluded, the steel bridge team competed at the National Steel Bridge competition held in Seattle, Washington from May 29th- June 1st. This is the second consecutive year for the team to qualify for the competition, and improvements were made including a reduction in weight and reduction of the number of people required to construct the bridge. These improvements led the team to receive 28th place overall out of 49 total teams. They also placed in the top ten in the stiffness category. The steel bridge team hopes to continue to consistently participate in the national competition each year and continue to improve the design of the bridge by passing along their knowledge and experience to future team members.

## UNIVERSITY OF NEW ORLEANS

By Ryan Gerken, Student Chapter President

The University of New Orleans student chapter closed out the 2012-2013 year with a little bit of local culture. Despite prevailing weather conditions, student members and guests gathered on campus for a crawfish boil to celebrate the many accomplishments the chapter experienced over the year. Amongst the many achievements, the chapter celebrated a successful year at the 2013 Annual Deep South Conference, where UNO competed in every event. In addition to placing 4th overall in the Concrete Canoe Competition, the Concrete Canoe Team placed 1st in the Finished Product category and 2nd in the Design Report category.

Looking forward, the UNO student chapter has a busy year ahead of it. We plan to start off the year strong by focusing on recruitment, fundraising, and getting an early start on our conference preparation. We learned many lessons from last year's conference and we are eager to refine our designs for the 2014 Annual Deep South Conference at Christian Brothers University. We are also planning to begin work with the UNO Engineers Without Borders chapter to aid in their partnership with



UL Lafayette Student Members with steel bridge

During the summer months Chris Carroll, PhD, EI, the chapter's sponsor, hosted a weeklong summer camp for high school students who expressed interest in engineering. This camp, called GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs), involves UL Lafayette ASCE student members as mentors for the high school students who attend. This summer's camp included a campus wide scavenger hunt which required the student participants to work complex math problems to solve for the location of the next clue. ASCE student members also led the student groups in constructing eight-foot long, three-foot tall retaining walls made from sheets of foam core board. The strength of these walls were then tested using limestone. This introduced the engineering concepts of vertical and lateral pressures as well as overturning moments.

If you wish to contact the UL Lafayette Student Chapter, the email address is [ullafayetteasce@gmail.com](mailto:ullafayetteasce@gmail.com)

the LSU Engineers Without Borders chapter for a Sustainable Water Project in Central America.

If you would like to become a member or contact UNO ASCE to work with us on a future project, please contact us at [asceuno@gmail.com](mailto:asceuno@gmail.com). Also, our partner organization Engineers Without Borders may be reached at [engineerswithoutborders.uno@gmail.com](mailto:engineerswithoutborders.uno@gmail.com). We are also looking for professionals willing to come speak to our student chapter about their respective fields and current projects at one of our monthly luncheons.



UNO Concrete Canoe Team

# — CALENDAR OF EVENTS —

## OCTOBER 2013

- October 10-12, 2013** 143rd Annual Conference 2013 – Charlotte, North Carolina
- October 18, 2013** Lake Pontchartrain Causeway will be dedicated as an ASCE National Historic Landmark

## NOVEMBER 2013

- November 1-3, 2013** T&DI Green Street & Highways Conference – Austin, TX
- November 17-20, 2013** T&DI ICUTS – Paris, France

## FEBRUARY 2014











- February 7-8, 2014** 2014 Workshops for Section and Branch Leaders (WSBL) – Regions 1, 2, 4 & 5  
Marriott Indianapolis Downtown – Indianapolis, IN

## OCTOBER 2014

- October, 2014** 144th Annual Conference 2014 – Panama City, Panama

Please check for latest updates online: <http://www.lasce.org/calendar.aspx>

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