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**UTRGV**

The University of Texas-Rio Grande Valley is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 33033-4097: Telephone number 404-679-4501) to award bachelor's, master's and doctoral degrees.



**UTRGV**

# Lower Rio Grande Valley 1<sup>st</sup> Annual Sustainable Civil Infrastructure Management & Planning Conference “Transportation Topics” Program

**November 16 - 17, 2017**

**Weslaco Economic Center**

**275 S. Kansas Ave.**

**Weslaco, Texas 78596**

<http://www.weslacoedc.com/>



November 16, 2017

Greetings,

On behalf of The University of Texas-Rio Grande Valley (UTRGV), along with the Lower Rio Grande Valley Texas Pollutant Discharge Elimination System (TPDES) Storm Water Task Force, RGV Sustain, RATES, Inc. and our partners, welcome to the 1<sup>st</sup> Annual *Sustainable Civil Infrastructure Management & Planning Conference*. UTRGV is pleased to lead the planning and delivery of this inaugural annual event.

UTRGV focuses on research and real-world topics germane to South Texas and the U.S.-Mexico border region. It is our goal to develop team-based and research inspired programs to train and educate our future engineers. Working with our partners, we have brought together representatives from academia, private industries, transportation groups, research communities and state and federal agencies to be a part of a team exchanging ideas concerning sustainable civil infrastructure issues impacting coastal and semi-arid regions and the Rio Grande Valley, and transferring that information to the decision makers and stakeholders who influence the economic, social and physical infrastructure along the border region.

It is our hope that this conference serves as a platform for discussing sustainability issues that are both important and relevant to the Rio Grande Valley. This year the conference includes topics on the transportation, low impact development, construction, geotechnical, water & wastewater, academia research topics, and many other interesting themes. **Our Fall 2017 conference is pleased to announce that event topics will highlight planning, innovation and technical sessions associated with transportation/civil engineering.** We hope you consider participating in this event and hope you have an enjoyable and stimulating time at the conference.

Sincerely,



*AS*  
**Andrew N.S. Ernest, Ph.D., P.E., BCEE, D.WRE**  
Civil Engineering Department  
Professor & Chair  
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Sincerely,

**Javier Guerrero, E.I.T., MS**  
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Sincerely,

**Aaron Greenwood, Ph.D.**  
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## Conference Schedule

<b>Conference begins.</b>	
<b>November 16, 2017 – Plenary – Conference Themes</b> <b>Welcome, Guest Speakers, Key Topics and Keynotes</b>	
<b>7:00 – 8:30 am</b>	<b>FOYER</b> <b>Breakfast</b>
<b>Group Session 0 8:00-10:15</b>	<b>ROYAL</b> <b>MAJESTIC</b>
	<b>Civil Infrastructure 0 – Plenary, Welcome, and Keynotes</b> Chair: Andrew N.S. Ernest, Ph.D., P.E., BCEE, D.WRE Vice-Chair: Jose Hinojosa, Santa Cruz Irrigation District #15, Chairperson Lower Rio Grande Valley TPDES Storm Water Task Force
Plenary Welcome 8:00-8:10	<i>“Welcome”</i> <b>Andrew N.S. Ernest, Ph.D., P.E., BCEE, D.WRE</b> Civil Engineering Department College of Engineering & Computer Science The University of Texas Rio Grande Valley Edinburg, TX/Brownsville, TX
Plenary Welcome 8:10-8:30	<i>“UTRGV Transportation Studies”</i> <b>Aaron Greenwood, Ph.D.</b> Civil Engineering Department College of Engineering & Computer Science The University of Texas Rio Grande Valley Edinburg, TX/Brownsville, TX
Plenary Welcome 8:30-8:40	<i>“Serving the Civil Engineering Community through ASCE”</i> <b>Ethny Fantich, E.I.T.</b> President American Society of Civil Engineers RGV Branch
Plenary Guest Speaker 8:40-9:00	<i>“Topic”</i> <b>Pedro Alvarez, P.E.</b> TxDOT, District Engineer Pharr, TX
Plenary Conference Keynote Speaker 9:00-9:25	<i>“Topic”</i> <b>Armando “Mando” Martinez</b> State Representative, District #39 Austin, TX
Plenary Conference Keynote Speaker	<i>“Topic”</i> <b>Oscar Longoria</b> State Representative, District #35 Austin, TX

<b>Break</b> 10:00-10:15	<b>FOYER</b>
	<b>Networking Coffee Break, Exhibits and Posters</b>
<b>Group Session I</b> 10:15-12:15	<b>Main Room</b>
	<b>Civil Infrastructure I –Innovative Topics</b> Chair: Ernesto Solis, City of Alamo Vice Chair: Juan De La Garza, City of Mission
	<p>"Autonomous Vehicles" <b>Mike Miranda, P.E., PTOE</b> Transportation Engineer, Advanced Project Development Transportation Planning and Development Section Texas Department of Transportation Pharr, TX</p> <p><i>"Life Cycle Project Cost Estimating: An Iterative Approach Toward Project Achievement"</i> <b>Eric Davila, PE, PMP, CFM</b> Project Engineer Hidalgo County Regional Mobility Authority</p> <p><i>"Case Study: Engineering Solutions for the Design and Construction of Grade Separation Structures for Commercial Development in a Suburb of Mexico City"</i> <b>Isidoro Arjona, P.E., PMP, F.ASCE</b> Senior Vice-President Raba Kistner Consultants McAllen, TX</p>
<b>12:15-1:15</b> <b>Lunch</b>	<b>Main Room</b>
	<b>MC: Joe Hinojosa</b> General Manager Santa Cruz Irrigation District #15
	<p><i>"Topic"</i> <b>Juan "Chuy" Hinojosa</b> State Senator, District #20 Austin, TX</p>
<b>Group Session II</b> 1:15-3:00	<b>Main Room</b>
	<b>Civil Infrastructure II – Environmental and Water Topics</b> Chair: Raul Gomez, Cameron County Vice Chair: Robert Escobar, City Planner, City of Donna
	<p><i>"Sustainability on a Regional Level"</i> <b>Sara Eatman, E.I.T.</b> Black &amp; Veatch Water Austin, TX</p>

	<p><i>"Water Topic"</i> <b>Dr. Jongmin Kim, P.E.</b> Civil Engineering The University of Texas Rio Grande Valley Edinburg, TX</p> <p><i>"Environmental Topic"</i> <b>Speaker TBA</b> Austin, TX</p>
	<b>Break</b> 3:00-3:15
<b>Group Session III</b> 3:15-5:00	<b>FOYER</b>
	<b>Networking Coffee Break, Exhibits and Posters</b>
	<b>Main Room</b>
<b>Social</b> 6:00-6:30	<p><b>Civil Infrastructure III – TxDOT Topics</b> Chair: Omar Cano, P.E., City of Edinburg Vice Chair: Fred Bell, City Planner, City of San Benito</p> <p><i>"Data Management Tools: Geospatial Roadway Inventory Database (GRID)"</i> <b>Michael Chamberlain</b> Data Management Section Director Transportation Planning and Programming Division Texas Department of Transportation Austin, TX</p> <p><i>"Right of Way: New Initiatives for Delivering ROW Projects"</i> <b>Kyle J. Madsen, J.D.</b> Deputy Director Right of Way Division Texas Department of Transportation Austin, TX</p> <p><i>"FAST Act Freight Provisions, Texas Freight Mobility Plan Implementation"</i> <b>Tim Juarez</b> Director, Freight and International Trade Section Texas Department of Transportation Austin, Texas</p>
	<b>Dinner</b> 6:30-8:30
	<p><b>ARTURO'S BAR AND GRILL</b> WESLACO, TX</p> <p><b>Networking/Fellowship</b></p> <p><i>"Strategic Direction of the UTRGV College of Engineering and Computer Science"</i> <b>MC: Alexander Domijan, Ph.D.</b> Dean College of Engineering &amp; Computer Science The University of Texas Rio Grande Valley Edinburg, TX/Brownsville, TX</p> <p><i>"Topic"</i> <b>Jeff Austin, III</b> State of Texas Commissioner Texas Department of Transportation Austin, TX</p>

<b>Thursday, November 17, 2017 – Civil Infrastructure Topics</b>	
<b>7:00 - 8:30</b>	<b>FOYER</b>
	<b>Breakfast</b>
<b>Group Session IV 8:00-10:00</b>	<b>Main Room</b>
	<b>Civil Infrastructure IV – General Topics</b> Chair: Xavier Cervantes, AICP, City Planner, City of San Juan Vice Chair: Zenaida Guerrero, Engineer I, City of Weslaco
	<i>"Sustainability in Civil Engineering education: A Case Study in Turkey"</i> <b>Mert Tolon</b> Civil Engineering The University of Texas Rio Grande Valley Edinburg, TX
	<i>"Local Engineering Problems and Solutions in Materials &amp; Pavement"</i> <b>Daniel Garcia, P.E.</b> Director of Construction Construction Section Texas Department of Transportation Pharr, TX
	<i>"Real Time Road Hazard Information System"</i> <b>Carlos A. Pena-Caballero</b> Graduate Assistant Civil Engineering The University of Texas Rio Grande Valley Edinburg, TX
<b>Break 10:00-10:15</b>	<b>FOYER</b>
	<b>Networking Coffee Break, Exhibits and Posters</b>
<b>Group Session V 10:15-12:00</b>	<b>Main Room</b>
	<b>Civil Infrastructure V– General Topics</b> Chair: Eduardo Gonzales, Willacy County Commissioner Vice Chair: Rudy Garza, Public Works Director, City of Alton
	<i>"Load and Resistance Factor Design of Deep Foundations: Service Limit State"</i> <b>Thuy Vu, Ph.D.</b> Civil Engineering University of Texas Rio Grande Valley
	<i>"Queen Isabella Memorial Causeway Condition &amp; Service Life Assessment – TxDOT's Plan Moving Forward."</i> <b>Mr. Rex Costley, P.E.</b> Maintenance Director, Texas Department of Transportation Pharr, TX
	<i>"Salinity Transport Model for Prevention of Highway Bridge Concrete Pier Chemical Erosion"</i> <b>Antonio Reyna</b> Graduate Assistant Civil Engineering The University of Texas Rio Grande Valley Edinburg, TX

<b>Lunch 12:00-1:00</b>	<b>Main Room</b>
	<b>MC: Melisa Gonzales</b> City of Alamo
	<i>"Topic"</i> <b>Speaker</b> Title City, TX
<b>Group Session VI 1:00-3:00</b>	<b>Main Room</b>
	<b>Civil Infrastructure VI– Panel Discussion</b> Chair: Andrew Ernest, P.E., Ph.D., UTRGV Vice Chair: Paula Rodriguez, City Planner, City of La Feria
	<b>-TRANSPORTATION PLANNING -</b>
	<i>"Project Tracker"</i> <b>Shana Thomas</b> Planner, TPP Division Texas Department of Transportation Austin, TX
	<i>"Efficient Project Delivery on Public Dollars via Value Engineering"</i> <b>Pilar Rodriguez, PE</b> Executive Director Hidalgo County Regional Mobility Authority
	<i>"Topic"</i> <b>Pete Sepulveda, Jr.</b> Cameron County Regional Mobility Authority
	<i>"Topic"</i> <b>Pedro Alvarez, P.E.</b> TxDOT, District Engineer Pharr, TX
<b>Break 3:00-3:15</b>	<b>FOYER</b>
	<b>Networking Coffee Break, Exhibits and Posters</b>
<b>Group Session VII 3:15-4:15</b>	<b>Main Room</b>
	<b>Civil Infrastructure VI– Ethics</b> Chair: Paolina Vega, P.E., County Engineer, Cameron County Vice Chair: Mardoqueo Hinojosa, P.E., City Engineer, City of Weslaco
	<i>"Ethics in Engineering"</i> <b>Edmundo Gonzalez (invited)</b> Texas Board of Professional Engineers Austin, TX
	<b>End of Conference</b>

# UTRGV THE LOWER RIO GRANDE VALLEY TPDES STORMWATER TASK FORCE



**The LRGV TPDES Stormwater Task Force.** In 1998, founded by Andrew Ernest and Javier Guerrero, a coalition of thirteen (13) Lower Rio Grande Valley (LRGV) local governments joined to form the LRGV TPDES (Texas Pollutant Discharge Elimination System) Stormwater Task Force (TASK FORCE) in a joint effort to develop a proactive regional approach to comply with the TPDES Phase II Municipal Separate Stormwater Sewer System (MS4) rules. The Task Force developed a regional stormwater management plan (SWMP) adopted by the membership. The SWMP includes Best Management Practices (BMPs) that are required as part of the six (6) Minimum Control Measures (MCMs) of the State's TPDES program. **Today the TASK FORCE is comprised of seventeen (17) local governments sharing one regional SWMP.**

**Organization and Mission of the LRGV TPDES Stormwater Task Force.** The TASK FORCE project idea was born from a 1998 local stormwater brainstorming round table held in La Feria, Texas. Several preliminary meetings continued at various cities until the coalition was formally organized. Local government officials and qualified professionals representing various communities in the LRGV region attended these meetings. The group agreed to develop a way to achieve a regional SWMP to comply with the TPDES regulations. The group formalized the organization by contractually empowering TAMUK to facilitate the group and by developing a system of by-laws that included election of board members and officers.

The TASK FORCE uses a unique, collaborative regional approach to involve various levels of government, including the Texas Commission on Environmental Quality (TCEQ) and the Environmental Protection Agency (EPA), in developing cost-effective solutions that will achieve compliance with the TPDES rules. The TASK FORCE project embodies the spirit of the mutually beneficial relationships between local governments and embellishes this relationship with academia and regulators. After nineteen (19) years, although the impact of this organization has translated into a regional collaboration movement not seen anywhere else in the State, the overall impact of this organization has yet to be fully realized. The primary goal of the TASK FORCE project in 1998 was to develop and implement a regional SWMP to comply with Phase II regulations. In 2002, TASK FORCE participants began entering into local government interlocal agreements with TAMUK, which outlined the desire to address stormwater quality issues on a regional basis and named TAMUK as its facilitator. In executing these interlocal agreements, emphasis was placed on developing programs that study existing successful programs, addressing community goals, providing technical assistance and training, and promoting regional approaches.

In 2006, the TASK FORCE modified its mission to include stormwater quality management approaches to address broader water quality and watershed issues, particularly those associated with the Arroyo Colorado Watershed Partnership (ACWP), a local Total Maximum Daily Load (TMDL)-related organization. The TASK FORCE project has already enjoyed side benefits of increased communication and cooperation, and created a collaborative process for discussing water quality issues in the LRGV's four-county region. In addition, this collaboration and others like it, has enabled the participating communities to successfully secure many grant funding opportunities since the TASK FORCE's inception. Academic researchers and faculty provided facilitation and management assistance for the TASK FORCE project, initiating this effort through a National Science Foundation (NSF) grant, other grants, and from annual membership fees collected from the member-local-governments. The funds provide resources for staff to facilitate the group's efforts in formulating TASK FORCE project goals and developing TASK FORCE programs. Funds, in part, are also used to host workshops, expert panel discussions, conferences, seminars and training sessions.

In 2008, during a TASK FORCE meeting held in Mission, TX, the organization formed several committees: ordinance, grant, scholarship, outreach, training, housekeeping, construction, and others. The TASK FORCE worked closely with the committees in developing the SWMPs by responding to recommendations and suggestions posed by these committees. Recently, these committees have been replaced with work groups which now work with researchers in facilitating the organization and implementing the SWMPs. One key workgroup, responsible for luring millions of dollars worth of grant funding to the Valley, is the Low Impact

Development (LID) workgroup. The LRGV LID Outreach, Education and Demonstration program is a highly regarded project in the region that resulted from collaboration efforts within this workgroup.

**New Paradigm.** The new stormwater paradigm presents many questions to local governments in the LRGV. What is a stormwater management program, what will it cost, who will fund the program, is it needed, and how much will it cost? The TASK FORCE realizes a regional program is a key part of a successful regional storm water program. But, regulators and academia do not have a firm grasp of the costs associated with developing and implementing such a program. Although the average citizen often takes for granted the services municipalities provide, the stormwater services are nonetheless expected. The region now requires that local governments provide a stormwater runoff pollution protection service. This new paradigm requires the development of infrastructure and funding strategies to support providing this service.

**Storm Water Quality is Now a Municipal Responsibility.** This is not the first time local governments have been confronted with environmental water quality regulations that affect the manner that cities allocate funds. TMDL regulations recently started developing new performance measures for local governments, and LRGV communities have become very familiar with the Arroyo Colorado TMDL studies. Based on these studies, the drafters of the Arroyo Colorado Watershed Protection Plan (ACWPP), which included members of the Task Force, concluded that urban stormwater runoff is contributing to the impairment of the Arroyo Colorado. Thus, the timing of the formation of the Task Force could not have been better. Local governments typically tend to procrastinate when it comes to addressing non-mandated environmental issues, usually because of lack of resources and lack of expertise and understanding rather than due to a non-proactive attitude. Still, finding funds to implement a regional SWMP program is a huge responsibility for any local government. Cost effectiveness and revenue potential were major considerations for our local governments when developing this Task Force.

In the LRGV, the communities share similar demographics and similar environmental concerns. Most residents live in low- or fixed-income households and cannot afford to pay fees to support the environmental-related requirements. Thus, there is a strong case for any type of collaboration that would keep costs down. In the LRGV, each community is contiguous to other communities, with some cities bordered by four (4) other cities. Thus, the LRGV appears as one urbanized metropolitan region. Although all these communities experience similar TPDES stormwater problems, none had in place a TPDES stormwater program or related ordinance. Since the creation of the TASK FORCE, stormwater tasks were generally viewed as "add-on" responsibilities for departments and staff that have other primary responsibilities. To varying degrees, with the exception of McAllen and Brownsville, the communities had existing staff (such as sanitary sewer, code enforcement, or road department personnel) handling stormwater operations, maintenance, regulation and enforcement. None of the communities could maintain a person, much less a department, to handle stormwater administration, planning, design, and engineering; water quality planning and monitoring; and capital improvements and expenditures. The regional approach taken by the TASK FORCE allows the LRGV communities to share these responsibilities, which results in a much more cost-effective program for addressing stormwater issues. Also realized in time, the TASK FORCE network provides a vitally important link to these small communities when new employees take on storm water related duties after key employee turnover. **The TASK FORCE project will recognize its twentieth (20<sup>th</sup>) year of existence in 2018, and the organization is determined to continue evolving and to continue strengthening its partnership in the future.**

**Transition from TAMUK to The University of Texas Rio Grande Valley (UTRGV).** In September 2016, the TASK FORCE decided to move its operation from TAMUK to UTRGV, a move that will be complete by July 2017. Moving the operation to a more local venue assures daily availability of resources and support to the TASK FORCE from the College of Engineering & Computer Science, the Civil Engineering Department and the UT System. With locations in Brownsville and Edinburg, UTRGV is poised to assist the TASK FORCE to achieve higher levels of success.