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**Profesor Departamento de Ingeniería Civil**  
**Universidad del Norte, Barranquilla, Colombia**  
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## **Education**

### ***Undergraduate Studies***

- B.S. in Civil Engineering: Universidad del Norte, Barranquilla.

### ***Graduate Studies***

- Specialization on River and Coasts Hydraulics: Universidad del Norte, Barranquilla, 2000.
- M.S. in Civil Engineering: Universidad de los Andes, Bogotá, Colombia, 2003.
- M.S. in Environmental Engineering: University of Alabama, Tuscaloosa, Estados Unidos, 2007.
- M.S. in Applied Statistics: University of Alabama, Tuscaloosa, Estados Unidos, 2008.
- Ph.D. in Civil Engineering: University of Alabama, Tuscaloosa, Estados Unidos, 2008.

## **Academic Experience**

- *Universidad del Norte, 2004, 2010-Present.*
  - *Hydrology*
  - *Hydraulics*
  - *Hydraulic Structures*
  - *Hydrology and Hydraulics Modelling*
  - *Urban Drainage*
  - *River Engineering*
  - *Applied Statistics*
- *The University of Alabama, 2006 – 2008.*
  - *Water Resources Engineering*
  - *Instructor del Laboratorio de Water Resources Engineering*

## **Research Experience**

### ***Publications***

- Villegas, J. M., & Avila, H. (2014). *Quick-scan estimating model of higher heating value of oil palm empty fruit bunches based on ash from proximate analysis data.* Ingeniería e Investigación, 34(2), 33-38.
- Avila, H. Vargas, G. Daza, R (2014). *Susceptibility analysis of river bank erosion based on exposure to shear stress and velocity combined with hydrologic and geomorphologic variables.* World Environmental and Water Resources Congress – EWRI – American Society of Civil Engineering, ASCE. Portland, Oregon, USA.
- Avila, H. Díaz, K. (2014) *Estimating effective permeable areas in consolidated urban watersheds based on satellite image analysis and field survey.* World Environmental and Water Resources Congress – EWRI – American Society of Civil Engineering, ASCE. Portland, Oregon, USA.
- Avila, H. Acuña, G. Daza, R. Diaz K. (2014). *Evaluating natural development of the Meta river for proposing hydraulic works oriented to river training for fluvial navigation.* World Environmental and Water Resources Congress – EWRI – American Society of Civil Engineering, ASCE. Portland, Oregon, USA.
- Avila, H. *Perspectiva del manejo del drenaje pluvial frente al cambio climático - caso de estudio: ciudad de Barranquilla, Colombia.* REVISTA DE INGENIERÍA, ISSN 0121-4993, volumen 36, pág. 54-59. Octubre 2012
- Avila, H., Alvarado, M., De la Hoz, I., Avila, B. Castro R. *Evolución de la hidráulica durante la inundación del 2010 del Canal del Dique – río Magdalena.* XXV Congreso Latinoamericano de Hidráulica, San José, Costa Rica, 9 al 12 de Setiembre de 2012
- Avila, H., Pitt, R. *Hidrodinámica en sumideros de sistemas de alcantarillado pluvial – resultados de pruebas experimentales.* XXV Congreso Latinoamericano de Hidráulica, San José, Costa Rica, 9 al 12 de Setiembre de 2012.
- Avila, H., Alvarado, M., De la Hoz, I., Avila, B. *Perspectivas del riesgo de inundación para el aprovechamiento hídrico en zonas con poblaciones vulnerables.* XXV Congreso Latinoamericano de Hidráulica, San José, Costa Rica, 9 al 12 de Setiembre de 2012.
- Avila, H., Diaz, K. *Reducción del volumen de escorrentía en cuencas urbanas consolidadas de alto porcentaje impermeable con tecnologías LID.* XXV Congreso Latinoamericano de Hidráulica, San José, Costa Rica, 9 al 12 de Setiembre de 2012.
- Avila, H., Pitt, R. *Modelación física de la hidrodinámica en sumideros de sistemas de alcantarillado pluvial.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.

- Avila, H., Alvarado, M., De la Hoz, I., Avila, B. *Perspectivas del riesgo de inundación en poblaciones vulnerables.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Caicedo, J., Diaz K. *Modelación hidrodinámica y morfológica del sector de Puerto Giraldo en el río Magdalena para el análisis del efecto del Fenómeno de la niña.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Caicedo, J., Tjerry S. *Hidrodinámica y erosión de orillas del sector isla Cabica por efecto de caudales máximos sobre en el río Magdalena.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Diaz, K. *Disminución del volumen de escorrentía en cuencas urbanas mediante tecnologías de drenaje sostenibles.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Sisa, A. *Alternativas de manejo sostenible de cuencas urbanas para el control de la escorrentía pluvial en la ciudad de Barranquilla.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Sisa, A., Avila, H. *Caracterización de cuencas y estimación de caudales de escorrentía superficial en la ciudad de Barranquilla.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Alvarado, M., De la Hoz, I., Avila, B. Castro R., Caicedo J. *Análisis hidráulico de la inundación del Canal del Dique – río Magdalena, 2010-2011.* XX Seminario Nacional de Hidráulica e Hidrología Barranquilla, Colombia, 8 al 10 de agosto de 2012.
- Avila, H., Pitt, R., Clark, S. *Development of Effluent Concentration Models for Sediment Scoured from Catchbasin Sumps.* Journal of Irrigation and Drainage Engineering, ASCE. Vol. 137, No. 3, Paper 114, pag114-120. ISSN 0733-9437. March 2011
- A.M. Cepeda, M. Wilson, S.E. Villalba, H. Avila, J. Hahn. *Correlation between Atmospheric Grass Pollen Levels and Three Weather Variables during 2002-2004 in a Tropical Urban Area.* The Journal of Allergy and Clinical Immunology. Volume 127, Issue 2, Supplement , Page AB170, Febrero 2011
- Avila, H.; Pitt R.; (2009). *Scour in Stormwater Catchbasin Devices – Experimental Results from a Full-Scale Physical Model.* Conceptual Modeling of Urban Water Systems, Monograph 17. (edited by W. James, E.A. McBean, R.E. Pitt and S.J. Wright). CHI. Guelph, Ontario. ISBN: 978-0-9808853-2-3
- Avila, H., Pitt, R. (2009). *Physical Experimentation and CFD Modeling to Evaluate Sediment Scour in Catchbasin Sumps.* World Environmental and Water Resources Congress 2009 – Great Rivers – EWRI-ASCE. Kansas City, Missouri, USA

- Avila, H., Pitt R., Clark S. *Simplified Model to Estimate Suspended Sediment Effluent Concentrations Due to Scour from Catchbasin Sumps*. WEF Technical Exhibition and Conference - WEFTEC, Orlando, FL, October 2009
- Avila, H.; Pitt R.; Durrans S.R.; (2008). *Factors affecting scour of previously captured sediment from stormwater catchbasin sumps. Reliable Modeling of Urban Water Systems, Monograph 16.* (edited by W. James, E.A. McBean, R.E. Pitt and S.J. Wright). CHI. Guelph, Ontario. ISBN: 978-0-9808853-0-9
- Avila, H, Pitt, R, Durrans, S. *Analysis of Shear Stress and Potential Scour of Sediments from Stormwater Catchbasin Sumps Using a 2D-CFD Model*. Poster. WEFTEC, San Diego, CA, October 2007
- Avila, H. Pitt, R. *Experimental Design Analysis Applied to Factors Related to Migration of Sediment Out of a Stormwater Catchbasin Sump*. Podium Presentation. 37th Mississippi Water Resources Conference, Jackson, MS, May 2007
- Avila, H. Pitt, R. *Evaluation of Parameters Involved in Sediment Scour Potential in Stormwater Catchbasin Sumps*, Poster. AWEA Technical Conference, Orange Beach, Alabama, April 2007
- Avila, H. Pitt, R. *CFD Modeling and Full-Scale Verification of Sediment Scour Potential from Stormwater Controls*. Poster. Urban Runoff Modeling Conference: Intelligent Modeling to Improve Stormwater Management, Arcata, CA, July 2007
- Avila, H, Saldarriaga, J, *Calibration of Parameters in Longitudinal Leaks*. Engineering and Development Journal, Uninorte, January 2005
- Avila, H. Saldarriaga, J, *Determining of Leaking Parameters in Longitudinal Leaks and Domiciliary Connections Using PVC Pipelines*. Master's Thesis, Universidad de los Andes, March 2003
- Avila, H, Gómez, C, *Determining Parameters in Longitudinal Leaks, Domiciliary Connections and PVC Pipelines Joints*. Presentation and Paper in the 25th Latin American Hydraulic Congress, Sao Paulo, Brazil, October 2004
- Avila, Humberto. *Alternatives to Solve the Flooding Problem in Barranquilla*. El Heraldo Newspaper, Barranquilla. Environmental Editorial, July 11th, 2004
- Avila, H. Saldarriaga, J. *Rehabilitation and Renewal of Drinking Water Distribution Systems and Sewers as Part of the Administration of the Assets of Urban Water Utilities*. Podium Presentation and Paper in the 15th National Seminar of Hydraulics and Hydrology, Medellín, Colombia, August 2002, and 20th Latin American Congress of Hydraulics, La Habana, Cuba, October 2002.
- Avila, H. Saldarriaga, J. *Future aspects of Sewer System Components*. Podium Presentation and Paper in the 15th National Seminar of Hydraulics and Hydrology, Medellín, Colombia, August 2002, and 20th Latin American Congress of Hydraulics, La Habana, Cuba, October 2002.

## **Research Projects and Consultancy**

- *Hidrosedimentologic and morphological modeling of Magdalena River between Bocas de Ceniza and Calamar for flood and navigation evaluation.*
- *Sustainable alternatives to existing urban drainage basins of the city of Barranquilla to control urban flooding*
- *Hydrological consolidated recovery using tanks scattered urban basins.*
- *Watershed Management for flood control by evaluating the effectiveness of sustainable technologies LID in consolidated urban areas.*
- *Assessment of the potential and calorific value of the waste oil palm (spine) and its application in bio-digestion processes for energy purposes.*
- *Scour of captured sediment from a stormwater hydrodynamic device. A Dissertation.*
- *Study of Agro-environmental alternatives for the development of the Southern Region of Magdalena, Colombia.*
- *Trihalomethanes (THM) in networks and tanks of drinking water from underground sources.*
- *Identification of Microalgae and its energy potential Laguas Oxidation of the Colombian Caribbean.*
- *Study for the environmental management and recovery Muña reservoir, Bogota.*
- *Evaluation of hydrodynamic behavior of hydraulic structures Porce III hydroelectric project, Antioquia (physical and mathematical modeling).*
- *Researches for Chair PAVCO S.A.*
- *Study navigability of the Magdalena River, Sector La Gloria - Barranquilla*
- *Hydrodynamic, morphological and sedimentological 1D and 2D modeling of the Meta River in Cabuyaro sector, Puerto Carreno.*
- *Hydrodynamic, morphological and sedimentological 1D and 2D modeling of the Cauca River in the La Coquera, Tres Cruces assessment of conditions for navigation and flood.*
- *Hydrodynamic and morphological 2D modeling of marginal erosion of the Magdalena River in the area of Isla Cabica to assess the threat to the sub-step fluvial Promigas pipeline.*
- *Hydrodynamic and morphological 2D modeling of Puerto Giraldo area of the Magdalena River to assess the potential for erosion on the field of Bocatoma.*
- *Hidromorfodynamic evaluation with 2D modeling of Isla Rondón sector in the Magdalena River to assess the erosion of the island and approach alternative solutions.*
- *Technical Supervision - Hydraulic project drainage and sub-drainage in sectors 6, 7, 8 and 9 of Campo Alegre, Barranquilla.*

- *Hydrological Analysis and Design Hydraulic Protection Runoff Effects of Arroyo Zapata on the Laguna Treatment Sewerage System.*
- *Monitoring and support regional hydraulic engineering in river flooding in the South Atlantic Department for the breaking of the Canal del Dique.*
- *Hydrological Study of the Caribbean Basin.*
- *Hydraulic and Environmental Diagnosis of the current conditions of Embalse El Guájaro, Atlántico Department, Colombia.*
- *Studies and Designs for the recovery of beaches in the southeast sector of San Andres Island between Blow Hole and San Luis, Colombia.*
- *Study and Design of flood protection as a result of the 91 Creek on the south-west of facilities Termoflores S.A.*
- *Hydraulic Design of Protection Works along the Rio Cañas.*
- *Technical-Environmental Supervision, designs and production of tender for the project to replace fuel storage tanks at service stations Texaco Barranquilla, Colombia.*
- *Hidrosedimentológica Canal del Dique and the Magdalena River Campaign.*
- *Construction and assembly of headlights on Western Shore Tajamar Bocas de Ceniza.*
- *Planning and Construction of Leading line headlights for the access channel to the Port of Barranquilla.*