Pedro M. Avellaneda

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Date of birth: May 21, 1978.

EDUCATION

09/2008 — Ph.D. in Engineering: Civil Engineering.
Hydrology and water resources engineering.
University of New Hampshire, Durham, NH, USA.

09/2003 — M.Sc. Water resources engineering.
National University of Colombia, Bogotá, Colombia.

05/2000 — B.S. Civil Engineering.
National University of Colombia, Bogotá, Colombia.

REGISTRATION

Professional License (25202083920CND), Colombia.
Engineer-in-Training (4870), NH, USA.

PROFESSIONAL AND RESEARCH EXPERIENCE

02/2010-present — Research assistant professor.
Department of Civil and Agricultural Engineering.
National University of Colombia, Bogotá, Colombia.

- Designed a surface water monitoring network at the La Linea Tunnel (a mayor engineering project across the Colombian Andes).
- Implemented an unsaturated flow model (using a 2D Richards equation) to address environmental impacts at the La Linea Tunnel.
- Evaluated a green roof system as a stormwater management strategy.
- Taught the following courses: fluid mechanics, applied hydraulics, hydrosystems modelling, urban hydrology, and water sypply systems.
- Coordinated the MSc program in Water Resources Engineering.

10/2008-07/2009 — Research associate.
Department of Civil, Architectural & Environmental Engineering.
University of Miami, Coral Gables, FL, USA.

· Developed a multidisciplinary relative risk assessment of disposal alternatives for biosolids generated by cruise ships. The environmental risk was addressed by analyzing water quality data from the biosolids and considering the expert opinion of several experts from the University of Miami and the University of California, who provided expertise in areas such as: marine biology, wastewater engineering, risk analysis, coral reef and algal ecology, water quality modeling, microbial fate and transport in marine waters, and air quality engineering.

· Assisted in the development of a bayesian model of sunken oil mass location and transport.

01/2004-09/2008 Graduate research assistant.
The UNH Stormwater Center. www.unh.edu/unhsc/.
Department of Civil Engineering.
University of New Hampshire, Durham, NH, USA.

· Collected and analized water quality data to evaluate the performance of various stormwater treatment systems such as: a bioretention, a gravel wetland, a swale, a sand filter, a retention pond, a porous asphalt facility, and manufactured treatment devices. To execute the monitoring program, water quality probes and pressure transducers were installed at the inlet and outlet of the treatment devices. Water quality data (pH, DO, TSS, Zn, TPH-D, DIN) were collected on a storm-by-storm basis for about five years.

· Developed a stormwater quality model using a Bayesian statistical approach.

· Teaching assistant for the following courses: fluid mechanics and senior project.

SOFTWARE

Operating systems: Linux, Windows. Programming languages and software: C/C++, Fortran, IDL, R, Matlab, gnuplot, PEST, HEC-RAS, HEC-GeoRAS, HEC-HMS, SWMM, SWMS, HYDRUS 2D/3D, EPANET, FLO-2D, River-2D, ArcView, Autocad.

LANGUAGES

English and Spanish (native speaker).

PUBLICATIONS

1. **Avellaneda, P.**, Leon, E., Donado, L., Rodriguez, E., and Ballestero, T. (in preparation). Hydrological performance of sustainable green roofs . Expected to be submitted to the Journal of Hydrologic Engineering.

2. **Avellaneda, P.**, Englehardt., Babcock, E., Brand, L., Lirman, D., Olascoaga, J., Rogge, W., Solo-Gabriele, H., and Tchobanoglous, G. (2011). Relative risk assessment of cruise ships biosolids

disposal alternatives. *Marine Pollution Bulletin*. Vol. 62, No. 10, 2157-2169. http://dx.doi.org/10.1016/j.marpolbul.2011.07.006

3. **Avellaneda, P.**, Ballestero, T., Roseen, R., and Houle, J. (2011). Bayesian storm-water quality model and its application to water quality monitoring. *Journal of Environmental Engineering*. Vol. 137, No. 7, 541-550. http://dx.doi.org/10.1061/(ASCE)EE.1943-7870.0000360

4. **Avellaneda, P.**, Ballestero, T., Roseen, R., and Houle, J. (2010). Modeling urban stormwater quality treatment: Model development and application to a surface sand filter. *Journal of Environmental Engineering*. Vol. 136, No. 1, 68-77. http://dx.doi.org/10.1061/(ASCE)EE.1943-7870.0000124

5. **Avellaneda, P.**, Ballestero, T., Roseen, R., and Houle, J. (2009). On parameter estimation of urban stormwater runoff model. *Journal of Environmental Engineering*. Vol. 135, No. 8, 595-608. http://dx.doi.org/10.1061/(ASCE)EE.1943-7870.0000028

6. Roseen, R., Ballestero, T., Houle, J., **Avellaneda, P.**, Briggs, J., Fowler, G., and Wildey, R. (2009). Seasonal performance variations for stormwater management systems in cold climate conditions. *Journal of Environmental Engineering*. Vol. 135, No. 3, 128-137. http://dx.doi.org/10.1061/(ASCE)0733-9372(2009)135:3(128)

7. Roseen, R., Ballestero, T., Houle, J., **Avellaneda, P.**, Wildey, R., and Briggs, J. (2006). Stormwater low-impact development, conventional structural, and manufactured treatment strategies for parking lot runoff: Performance evaluation under varied mass loading conditions. Transportation Research Record: *Journal of the Transportation Research Board*, No. 1984, Transportation Research Board of the National Academies, Washington, D.C, pp 135-147. http://dx.doi.org/10.3141/1984-15

CONFERENCES

1. **Avellaneda, P.**, Leon, E., Donado, L., Rodriguez, E., and Ballestero, T. (2014). Evaluation of an unsaturated flow model for flow attenuation in green roofs. World Environmental and Water Resources Congress 2014. Portland, Oregon, USA. http://dx.doi.org/10.1061/9780784413548.215

2. **Avellaneda, P.**, Ballestero, T., Roseen, R., Houle, J., and Linder, E. (2011). A water quality model for stormwater filtering systems. Proceedings of the 2011 World Environmental and Water Resources Congress 2011: Bearing knowledge for sustainability. Palm Springs, CA, USA. http://dx.doi.org/10.1061/41173(414)376

3. Houle, J., **Avellaneda, P.**, Roseen, R., Ballestero, T. (2008). Total suspended solids: Is it for real?. Conference Proceedings. Water Environmental and Water Resources Congress. Honolulu, HI, USA. http://dx.doi.org/10.1061/40976(316)47

4. **Avellaneda, P.**, Ballestero, T., Roseen, R., and Houle, J. (2007). A Bayesian stormwater quality model and its application to water quality monitoring. Poster presentation. Conference Title: Urban runoff modeling: Intelligent modeling to improve stormwater management. Arcata, CA, USA.

5. **Avellaneda, P.**, Ballestero, T., Roseen, R., and Houle, J. (2007). Modeling pollutant removal of various stormwater treatment strategies. Poster presentation. Conference Title: Urban runoff modeling: Intelligent modeling to improve stormwater management. Arcata, CA, USA.

6. Roseen, R., Ballestero, T., Houle, J., **Avellaneda, P.**, Wildey, R., and Briggs, J. (2006). An examination of cold climate performance of Low Impact Development Stormwater BMPs in a northern climate. Conference Proceedings. 13th International Conference on Cold Regions Engineering. Orono, ME, USA. http://dx.doi.org/10.1061/40836(210)20

7. **Avellaneda, P.**, Houle, J., Roseen, R., and Ballestero, T. (2005). A Comparative Study of Mass Removal Loads for a Range of Stormwater Treatment Strategies. Poster presentation. American Geophysical Union Conference. New Orleans, LA, USA. http://www.agu.org/meetings/sm05/sm05-sessions/sm05_H21D.html

8. **Avellaneda, P.**, Houle, J., Roseen, R., and Ballestero, T. (2005). A parallel assessment of treatment efficiency for conventional BMPs, LID designs, and manufactured devices. Conference Proceedings. Storm Conference. The North American Surface Water Quality Conference. Orlando, FL, USA.

PROFESSIONAL MEMBERSHIPS

· American Society of Civil Engineers (ASCE).

· American Geophysical Union (AGU).

JOURNAL REVIEWER

· Urban water journal, Marine pollution bulletin, Journal of water resource and protection.