KELLY C. DOYLE, E.I.T.

WATER RESOURCES ENGINEER

Montgomery Associates
Resource Solutions, LLC

EXPERIENCE SUMMARY

Kelly has nearly 4 years of experience in several areas of water resources and environmental engineering including, field sample collection, long-term environmental monitoring, floodplain modeling, hydrologic and hydraulic analysis, stormwater management and design, erosion control monitoring, bacteriological sampling, and rainwater harvesting.

EXPERTISE

Stormwater Management Analysis & Design
H&H Modeling
Field Data Collection
Environmental Monitoring

REGISTRATION

Engineer in Training (E.I.T.)
Pennsylvania #199-35-1095

EDUCATION

MS in Environmental Engineering, 2008
Massachusetts Institute of Technology
Cambridge, MA

BS in Civil Engineering, Cum Laude, 2006
Villanova University
Villanova, PA

PROFESSIONAL HISTORY

Montgomery Associates: Resource Solutions, LLC,
Madison, WI
Water Resources Engineer, 2008 – Present

Hatch Mott MacDonald, Freehold, NJ
Intern, summer 2006

U.S.G.S. at Woods Hole Oceanographic Institution,
Cape Cod, MA
Summer Fellow, summer 2005

Langan Engineering and Environmental Services, Inc.,
Trenton, NJ
Intern, summer 2004

East Coast Engineering Inc., Toms River, NJ
Intern, summer 2003

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers-Environmental and
Water Resources Institute
Tau Beta Pi Engineering Honor Society
Chi Epsilon Civil Engineering Honor Society
Engineers Without Borders, Madison Area Professional
Chapter

SOFTWARE AND EQUIPMENT USED

XP-SWMM, ArcGIS, AutoCAD Civil 3D, P8, Win-TR 55, HEC-RAS (steady and unsteady state), HEC-GeoRAS, Microsoft Office, MatLab (limited), Visual Basic for Applications (limited), HEC-HMS (limited)
Trimble GPS, Microsoft Office

FIELD EXPERIENCE

Soil classification and sampling
Bacteriological sampling
High-precision GPS point collection
Orienteering
Long term environmental monitoring
Construction-time monitoring
Water quality testing

PUBLICATIONS AND AWARDS

Doyle, K. and Shanahan, P. (in press) *Effect of First Flush on the Storage-Reliability-Yield Behavior of Rainwater Harvesting*. Journal of Water, Sanitation and Hygiene for Development, IWA Publishing, London, UK.

Doyle, K. and Shanahan, P. (2010) *The Impact of First Flush Removal on Rainwater Quality and Rainwater Harvesting Systems' Reliability in Rural Rwanda*. World Environmental and Water Resources Congress 2010 Proceedings, ASCE, Providence, RI.

Doyle, Kelly C. (2008) *Sizing the First Flush and its Effect on the Storage-Reliability-Yield Behavior of Rainwater Harvesting in Rwanda*. Masters thesis, MIT, Cambridge, MA.

Villanova Young Alum Environmental Leadership Award 2011.

National Science Foundation (NSF) Graduate Student Fellow, 2006-2008.

Morris K. Udall Scholar, 2005.

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SELECTED PROJECT EXPERIENCE

Trout Stream Restoration, Cross Plains, WI, 2011

- Designed trout stream re-meander for downtown redevelopment project
- Utilized AutoCAD Civil 3D tools to design meanders, pools, and riffles, also included habitat areas, pedestrian access
- Sized and designed stormwater facilities and incorporated ADA access
- Participated in public and planning-level meetings

North Dakota Browse Transect Study, Medora, ND, 2011

- Completed project to spatially locate >500 posts in the ND badlands to record landscape change over time
- Wrote proposal, coordinated scheduling, selected and purchased appropriate fieldgear, executed 5 weeks of backcounty field work, coordinated with state officials, analyzed and processed data, completed final report
- Developed proficiency with orienteering and GPS data collection

St Marys River Monitoring Project for TMDL Development, Sault Ste. Marie, MI, 2010

- Performed data management and analysis for 18 weeks of *E. coli* testing involving ~3,000 samples.
- Produced weekly and overview results maps in ArcGIS to be sent to USEPA and MDNRE.
- Completed two field trips to collaborate on project items, provide quality control for field sampling efforts and laboratory activities, assess watershed characteristics at sampling sites, and identify potential sources of contamination.
- In the process of developing a TMDL for *E. coli* for the study area

Arboretum Stormwater Management, UW Arboretum, Madison, WI, 2010

- Analyzed peak flow for a variety of design storms in XP-SWMM for sizing a stormwater management facility in the University of Wisconsin Arboretum
- Designed facilities to treat runoff entering Curtis Prairie.

X-52 Shoreline Stabilization, Portage, WI, 2009-2010

- Collaborated on stabilization options for the shoreline around 2 electrical transmission line poles crossing the Wisconsin River.
- Compared historical aerial photographs to assess rates of erosion using GIS software.
- Oversaw construction in-field during adverse weather conditions, coordinated with various team members, completely daily inspection reports, and made field engineering decisions.

Lake Koshkonong Restoration Plan, Rock, Jefferson, and Dane Counties, WI, 2010

- Modified and ran unsteady-state, calibrated HEC-RAS model of Lake Kosh, the Rock River, and Indianford Dam.
- Conducted small-scale bathymetric survey, installed water level data loggers, developed stage-duration curves
- Evaluated dam-management options for future lake restoration.
- Participated in fieldwork to evaluate restoration options, measure sediment depths, and monitor water level.

Smith's Crossing Floodplain Analysis, Sun Prairie, WI, 2009-2010

- Completed floodplain analysis for FEMA CLOMR submittal.
- Modified and ran unsteady state HEC-RAS model.
- Used HEC-GeoRAS to create a Certified Topographic Map with floodplain boundaries.
- Collaborated with other consultants and FEMA to address floodplain impacts.

Tenney and Babcock Dam Breach Analysis, Madison, WI, 2009

- Completed HEC-RAS model of Lakes Mendota, Monona and the Yahara River to model dam breach scenarios in unsteady state in the City of Madison using an existing HEC-HMS model for hydrologic inputs.

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- Used HEC-GeoRAS in conjunction with ArcMap to generate flooding maps to be used in an Emergency Action Plan for the City.
- Using existing plans, developed Emergency Action Plans, and Operation, Maintenance and Inspection Plans for the two Madison dams.

McGaw Park Planning Project, Fitchburg, WI, 2008

- Created >50 node XP-SWMM model using to size stormwater management features for a proposed new neighborhood.
- Model incorporated wide variety of stormwater pipes and connections through the existing neighborhood.
- Used road and topographic maps to locate, mark, record, and photograph 22 existing storm sewers in a 3 square mile area.

Soil Boring Collection and Analysis, 2008-2011

- Collected, characterized, and recorded soil samples for use in infiltration basin design.

Environmental Monitoring at Electrical Substations, South-Central WI, 2008-2011

- Carried out weekly inspections and photo documentation of substation construction for stormwater/erosion control compliance.
- Interacted with contractors, site coordinators, and other engineers.

Forestry Data Collection Volunteer, Northern WI, 2008-2010

- Volunteered to collect forestry data in remote sites in northern Wisconsin to be used for academic research.
- Used orienteering techniques to navigate to pre-selected sites in backwoods terrain.
- Operated Trimble GPS to collect location of sample plot.
- Collected and organized photo log of each sample plot from the plot center and along each sampling transect.

Masters of Science Thesis Work, MIT, 2007-2008

- Considered the impact of the "first flush" on the storage-reliability-yield (SRY) behavior of rainwater harvesting (RWH) tanks in rural Rwanda.
- Performed 7 weeks of in-country fieldwork on water-quality, including microbiological testing.
- Sized the "first flush" diversion amount for treatment of rainwater systems using empirical water quality data.
- Used synthetic rainfall generation and a SRY simulation model to understand impact of first flush removal on RWH system performance.
- Used GPS to map local water sources while navigating through difficult wilderness mountain terrain.

Ceramic Water Filter Studies in Northern Ghana, MIT, 2007

- Performed water quality tests on drinking water in Ghana for 4 weeks working with a local NGO marketing ceramic water filters for household drinking water treatment.
- Carried out community surveys and collected GPS coordinates in rural villages to be used for future work with the NGO.

Water Resources Laboratory Research, Villanova University, 2005-2006

- Researched thermal enrichment from campus stormwater wetlands to understand stream impact of wetlands. Prepared oral presentation and report.
- Completed laboratory research on nutrient removal by the wetlands to be used in future research

Environmental Engineering Design Project, Villanova University, 2006

- Completed a comprehensive group project on soil and groundwater remediation techniques.
- Final solution incorporated multiphase extraction, carbon adsorption, and air stripping of volatile organics.