

WinSLAMM Reference List

The Source Loading and Management Model (WinSLAMM) was originally developed to better understand the relationships between sources of urban runoff and water-quality pollutants. WinSLAMM produces runoff volumes are through series of source-area-runoff curve numbers. WinSLAMM produces pollutant loads by partitions source areas within landuses for both particulate solid and pollutants concentrations. WinSLAMM includes several stormwater control practices to reduce volumes and loads. This reference list provides Wisconsin users with a comprehensive list of studies that were used to calibrate and validate WinSLAMM in Wisconsin.

Source Area and Pollutant Studies

Source area and pollutant studies were used to calibrate and validate the following parameter files in the WinSLAMM: Particulate Solids Concentration, Pollutant Probability Distribution, Particle Size Distribution, and Runoff Coefficient.

Bannerman, R.T., Baun, K., Bohn, M., Hughes, P.E., and Graczyk, D.J., 1983, Evaluation of urban nonpoint source pollution management in Milwaukee County, Wisconsin—Volume 1 for U.S. Environmental Protection Agency, Region V: Wisconsin Department of Natural Resources Publication PB 84-114164 [variously paged].W

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Bannerman, R.T., Owens, D.W., Dodds, R.B., and Hornewer, N.J., 1993, Sources of pollutants in Wisconsin stormwater: *Water Science Technology*, v. 28, no. 3-5, p. 241-259.

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Baldwin, Austin K., Steven R. Corsi, Laura A. De Cicco, Peter L. Lenaker, Michelle A. Lutz, Daniel J. Sullivan, and Kevin D. Richards. "Organic Contaminants in Great Lakes Tributaries:

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- Corsi, S.R., Graczyk, D.J., Owens, D.W., and Bannerman, R.T., 1997, Unit-area loads of suspended sediment, suspended solids, and total phosphorus from small watersheds in Wisconsin: U.S. Geological Survey Fact Sheet 195–97, 4 p.
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- Graczyk, D.G., Hunt, R.J., Greb, S.R., Buchwald, C.A. and Krohelski, J.T., 2003, Hydrology, nutrient concentrations, and nutrient yields in nearshore areas of four lakes in northern Wisconsin, 1999-2001: U.S. Geological Survey Water-Resources Investigations Report 03–4144, 64 p.
- Legg, A.D., Bannerman, R.T., and Panuska, J., 1996, Variation in the relation of rainfall to runoff from residential lawns in Madison, Wisconsin, July and August 1995: U.S. Geological Survey Scientific Investigations Report 96–4196, 11 p.
- Roa-Espinaosa, A., and R.T. Bannerman, Monitoring BMP effectiveness at industrial sites. pp 467-486, In *Stormwater NPDES Related Monitoring Needs*, Proceedings of an Engineering Foundation Conference ed. By H.C.Torno. Mount Crested Butte, CO., American Society of Civil Engineers, New York, NY. 1994.

- Owens, D.O., Jopke, P., Hall, D.W., Balousek, J., and Roa, A., 2000, Soil erosion from two small construction sites, Dane County, Wisconsin: U.S. Geological Survey Fact Sheet FS-109-00, 4 p.
- Pitt, R.E., R. Bannerman, S. Clark and D. Williamson. 2005. "Sources of Pollutants in Urban Areas (Part 2) – Recent Sheetflow Monitoring." *Journal of Water Management Modeling* R223-24. doi: 10.14796/JWMM.R223-24.© CHI 2005 www.chijournal.org ISSN: 2292-6062.
- Selbig, W.R., Jopke, P.L., Marshall, D.W., and Sorge, M.J., 2004, Hydrologic, ecologic, and geomorphic responses of Brewery Creek to construction of a residential subdivision, Dane County, Wisconsin, 1999–2002: U.S. Geological Survey Scientific Investigations Report 2004-5156, 33 p.
- Selbig, W.R., Bannerman, R., and Bowman, G., 2007, Improving the Accuracy of Sediment-Associated Constituent Concentrations in Whole Storm Water Samples by Wet Sieving, *Journal of Environmental Quality*, vol. 36, no. 1, 7 p.
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- Selbig, W.R., and Bannerman, R.T., 2011, Characterizing the size distribution of particles in urban stormwater by use of fixed-point sample-collection methods, U.S Geological Survey Open-File Report 2011-1052, 14p.
- Selbig, W.R., 2009, Concentrations of polycyclic aromatic hydrocarbons (PAHs) in urban stormwater, Madison, Wisconsin, 2005-08: U.S Geological Survey Open-File Report 2009-1077, 46 p.

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- Selbig, W.R., and Bannerman, R.T., 2011, Ratios of Total Suspended Solids to Suspended Sediment Concentrations by Particle Size, *Journal of Environmental Engineering*, 137(11), pp. 1075 – 1081.
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Walker, J.F., Graczyk, D.J., Corsi, S.R., Owens, D.W., and Wierl, J.A., 1995, Evaluation of nonpoint-source contamination, Wisconsin; land-use and best-management-practices inventory, selected streamwater-quality data, urban-watershed quality assurance and quality control, constituent loads in rural streams, and snowmelt-runoff analysis, water year 1994: U.S. Geological Survey Open-File Report 95-320, 21 p.

Waschbusch, R.J., 1995, Stormwater-runoff data in Madison, Wisconsin, 1993-94: U.S. Geological Survey Open-File Report 95-733, 33 p.

Waschbusch, R.J., Bannerman, R.T., Greb, S.R., 1997, Yields of selected constituents in street runoff in Madison Wisconsin, 1994-95: Manuscript in preparation.

Waschbusch, R.J., Selbig, W.R., and Bannerman, R.T., 1999, Sources of phosphorus in stormwater and street dirt from two urban residential basins in Madison, Wisconsin, 1994-95: U.S. Geological Survey Water-Resources Investigations Report 99-4021, 47 p.

Stormwater Control Practices Studies

Studies used to enhance and validate the following stormwater control practice in WinSLAMM: Wet Detention Ponds, Street Cleaning, Hydrodynamic Devices, Stormwater Filter Devices, Grass Swales, and Biofiltration. These studies may also include sources areas applied to the model.

- Bachhuber, J.A., Horwathich, J.A., Corsi, S.R., Bannerman, R., 2002. Environmental Technology Verification Program: Development of a Protocol for Testing Commercial Stormwater Treatment Devices and Two Case Examples in Wisconsin, Conference proceedings paper for StormCon 2002, Marco Island, FL, August, 2002
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- Horwathich, J.A., and Bannerman, R.T., 2012, Parking lot runoff quality and treatment efficiencies of a hydrodynamic-settling device in Madison, Wisconsin, 2005–6: U.S. Geological Survey Scientific Investigations Report 2011–5145, 35 p. plus 11 app.
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House, L.B., Waschbusch, R.J., Hughes, P.E., 1993, Water quality of an urban wet detention pond in Madison Wisconsin, 1987-88: U.S. Geological Survey Open-File Report 93-172, 57 p.

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Selbig, W.R. and Balster, N., 2009, Evaluation of turf grass and prairie vegetated rain gardens in a sand and clay soil: Madison, Wisconsin, water years 2004 – 2008, U.S. Geological Survey Scientific Investigations Report 2010-5077, 75 p.

Sorenson, J.R., 2012, Potential reductions of street solids and phosphorus in urban watersheds from street-cleaning, Cambridge, Massachusetts, 2009-11 U.S. Geological Survey Scientific Investigations Report 2012-5292, 83 p.

U.S. Environmental Protection Agency, 1982, Results of the Nationwide Urban Runoff Program—Volume II, Appendices: U.S. Environmental Protection Agency [variously paginated]. [Available from National Technical Information Service, Springfield, VA 22161 (<http://www.ntis.gov>), item PB84-185560.]

U.S. Environmental Protection Agency, 1983, Results of the Nationwide Urban Runoff Program, Volume 1—final report, Water Planning Division: Washington, D.C., National Technical Information Service PB84-185552 [variously paged].

U.S. Environmental Protection Agency, 2004a, Environmental Technology Verification Report—Stormwater source area treatment device—Arkal Pressurized Stormwater Filtration System: U.S. Environmental Protection Agency EPA/600/R-04/084 [variously paged].

U.S. Environmental Protection Agency, July 2004b, Environmental Technology Verification Report—Stormwater source area treatment device—The stormwater management StormFilter using ZPG filter media: 04/17/WQPC-WWF, EPA/600/R-04/125, 65 p., accessed on [give a date] at http://www.nsf.org/business/water_quality_protection_center/pdf/SMI_Riverwalk_Verification_Report_Final.pdf

U.S. Environmental Protection Agency, 2005a, Environmental Technology Verification Report— Stormwater management StormFilter using perlite filter media: 05/23/WQPC-WWF, EPA 600/R-05/137, 56 p., accessed on [give a date] at http://www.nsf.org/business/water_quality_protection_center/pdf/StormFilter_Griffin_Report.pdf

U.S. Environmental Protection Agency, 2005b, Environmental Technology Verification Report—Stormwater source area treatment device—Vortech, Inc., Vortechs system, model 1000: 05/24/WQPC-WWF, EPA 600/R-05/140, 66 p., accessed on [give a date] at http://www.nsf.org/business/water_quality_protection_center/pdf/Vortechs_Verification_Report.pdf

Waschbusch, R.J., 1999, Evaluation of the effectiveness of urban stormwater treatment unit in Madison, Wisconsin, 1996–97: U.S. Geological Survey Water-Resources Investigations Report 99–4195, 49 p.

Waschbusch, R.J., 2003, Data and Methods of a 1999-2000 street sweeping study on an urban freeway in Milwaukee County, Wisconsin: U.S. Geological Survey Open-File Report 03-93, 41 p.

WinSLAMM Calibrations and Application

Studies that demonstrated calibrations of WinSLAMM or application WinSLAMM to reduce pollutants or size stormwater control practices.

Garn, H.S.; Robertson, D.M.; Rose, W.J.; Goddard, G.L.; and Horwath J.A., 2006, Water Quality, Hydrology, and Response to Changes in Phosphorus Loading of Nagawicka Lake, a Calcareous Lake in Waukesha County, Wisconsin: U.S. Geological Survey Scientific Investigations Report 2006-5273, 53 p.

Montgomery, R.J. and Voorhees J.G. 1991, SLAMM model calibration and example applications project: 6 for U.S. Environmental Protection Agency Region V: Wisconsin Department of Natural Resources Grant number C9995007-01 [variously paged].

Selbig, W.R., Fienen, M.F., Horwath, J.A., and Bannerman, R.T., 2016, The effect of particle size distribution on the design of stormwater control measures, *Water* (8) 17, 17 p.

Steuer, J.J., Selbig, W.R., Hornewer, N.J., and Prey, J., 1997, Sources of contamination in an urban basin in Marquette, Michigan, and an analysis of concentrations, loads, and data quality: U.S. Geological Survey Water-Resources Investigations Report 97-4242, 25 p.

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