Rippled Waters Engineering, LLC

Mary L. Paist-Goldman, P.E.
Principal, Owner

Education:

- B.S. 2000. Civil Engineering, University of Maryland, College Park, MD

Professional Certifications:

- Professional Engineer:
  Connecticut, Maryland, New Jersey, North Carolina, New York, Pennsylvania, and Virginia
- Rosgen Level I – Applied Fluvial Geomorphology Certification

Professional Affiliations:

- Mid-Atlantic Coastal Habitats and Aquatic Resources Research and Monitoring (CHARRM) workgroup member
- Musconetcong Watershed Association, Vice President
- Musconetcong River Management Council Member Representative
- New Jersey American Water Resource Association Member
- New Jersey Coastal Resilience Collaborative Member and Ecological Restoration and Science Workgroup Member
- North Jersey RC&D Technical Advisory Committee member

Areas of Expertise:

- Expert witness and testimony
- Wetland restoration and mitigation
- Tree identification, health evaluation, protection, and planting design
- Stream restoration and stabilization
- Living shoreline design and implementation
- Floodplain management and design
- Stormwater management design
- Teaching – continuing education courses from introductory to advanced levels
- Permitting and regulatory compliance
- Hydrologic and hydraulic modeling
- Dam removals, dam inspections and inundation/breach analyses
- Onsite wastewater disposal system design – including alternative systems
- Wastewater and watershed management planning and design

Summary of Qualifications:

Ms. Paist-Goldman has nearly 25 years of experience in the fields of wetland and stream restoration, stormwater management, regulatory compliance, hydrology and hydraulics, dam safety, and wastewater management. She routinely provides expert witness testimony and review for projects throughout New Jersey and Pennsylvania for various projects including stormwater management, hydrologic and hydraulic modeling, environmental compliance including monitoring and invasive species, freshwater wetlands, and vegetation inventories.

Ms. Paist-Goldman has extensive knowledge of native vegetation in New Jersey including native shrubs and trees. She routinely completes designs for riparian restoration and wetland restoration projects as well as living shoreline projects. Ms. Paist-Goldman has worked closely with arborists, wetland scientists, and arborists to develop designs that consider invasive species management and pest management into the design. Ms. Paist-Goldman also works regularly with landscape architects and in 2022 attended the National Conference of Landscape Architects taking continuing education courses in planting plan development and vegetation identification. She has also taken courses in native plants from the New Jersey Native Plant Society and the New Jersey Forestry Association.

Throughout her career, Ms. Paist-Goldman has designed dozens of projects with low impact development techniques, green infrastructure, and with a focus on water quality – particularly in regard to TMDL compliance. She has designed rain gardens, cistern systems for water re-use in the form of landscape irrigation, bioretention islands, manufactured LID devices, and constructed wetlands. She has developed projects with goals of zero discharge upon completion, groundwater recharge to address aquifer deficits, and retrofits to reduce water quality impacts on Category One waters and EV streams.

Ms. Paist-Goldman has designed living shorelines throughout the mid-Atlantic region encompassing portions of the Jamaica Bay shoreline, Harlem and Bronx River shorelines, and Barnegat Bay as well as along the Atlantic Ocean in New Jersey. Living shoreline work has focused on innovative technologies including thin layer dredge placement, removal of bulkheads and restoration of salt marshes, as well as bioengineering techniques including oyster bag breakwaters and

fascines.

Additionally, Ms. Paist-Goldman has served as Project Manager and Lead Designer for a multitude of wetland restoration and mitigation projects. Frequently, these projects are planned for use as mitigation banks or serve as mitigation for development onsite. Working closely with wetland ecologists and landscape architects, she has designed a variety of wetlands including subtidal channels, marsh, and upland habitats for estuarine and marine systems. She also has experience in design development of living shorelines and edge treatments for coastal resiliency and climate change.

Ms. Paist-Goldman has been actively involved in regulatory compliance since the beginning of her career. She is an expert at navigating the New Jersey Department of Environmental Protection's (NJDEP) Division of Land Use Regulation's Flood Hazard Area Rules and demonstrating compliance with the Flood Hazard Area Control Act. Ms. Paist-Goldman has extensive experience in dealing with the NJDEP Bureau of Nonpoint Pollution Control and the Dam Safety programs. She served on the Hunterdon County Stormwater Ordinance Review Committee, was an active participant in the preparation of the Hunterdon County model ordinance, and has given presentations to municipalities and colleges and universities throughout the State of New Jersey on the impacts and requirements of the Stormwater Management Rules (N.J.A.C. 7:8). She prepared Stormwater Management Plans for various municipalities and Stormwater Pollution Prevention Plans for various colleges and municipalities.

Ms. Paist-Goldman's modeling experience includes hydrologic, hydraulic, and pollutant loading modeling for a variety of projects types, from developing floodplain limits, designing culvert openings for new and replacement bridge and culvert crossings, water quality impact analyses, dam inundation analyses, and stormwater facility design and analysis. She is skilled in the use of a wide range of software, including ESRI ArcMap Geographic Information Systems (GIS); United States Army Corps of Engineers' (USACE) HEC-HMS, HEC-RAS; WinSLAMM; XP-SWMM, and HydroCAD.

Ms. Paist-Goldman is experienced in dam breach analyses and dam removal design. She has also prepared inundation mapping, Emergency Action Plans, Operation and Maintenance Manuals and Dam inspection reports for both low and high hazard dams. She has completed dozens of dam safety inspections throughout New Jersey and Pennsylvania and has experience with dam owners to address deficiencies on dams from low to high hazard.

Prior to founding Rippled Waters Engineering in 2018, Ms. Paist-Goldman served as Principal Engineer and Director of Engineering Services at Princeton Hydro and was a key member of leadership team from 2006 to 2018.

Select Project Experience

Headquarters Road Bridge Expert Witness, Tinicum Township, Bucks County, PA. Delaware Riverkeeper Network. (2018-present) – Serve as an expert witness in hydrologic and hydraulic modeling and engineering related to stream and bridge replacement work along a High Quality Exceptional Value stream in a historic district. Provide direct testimony, review of submitted materials, and conducted modeling for bridge replacement project.

Remediation of Memorial Park Pond Dam and Mine Brook, Bernardsville Boro, Somerset County, NJ (2021-present) – Completed detailed hydrologic and hydraulic modeling to support the removal of the Memorial Park Pond Dam and restore the Mine Brook through the Borough park. The work involved conceptual design, final engineering design, and permitting for the removal of the dam and restoration of the Mine Brook using natural channel design elements and bioengineering techniques.

Stream Restoration Project along the Pequest River, Warren County, New Jersey (2021-present) – Serves as project manager and lead design engineer for design and permitting for stream restoration involving large woody debris, bioengineered bank stabilization, and fish habitat creation. Stream restoration is currently pending receipt of permits.

Stream Restoration along the Piney Run, Loudoun County, Virginia (2019-present) – Serves as project manager, lead design engineer, regulatory consultant and monitoring lead for the design, permitting, construction and monitoring of more than two miles of stream restoration and wetland mitigation. Project design includes large woody debris, wood turtle habitat creation, fishery improvement for trout stocked watercourse, and bioengineered methods to enhance the natural channel features.

Bayswater Point State Park Living Shoreline, Brooklyn, New York (2022-present) – Serves as lead design engineer for design of living shoreline and edge treatment in Bayswater Point State Park along Jamaica Bay. Project serves to reduce erosion of the shoreline and increase resiliency of the streams to climate change. In-stream habitat will also be enhanced while at the same time preserving passability for recreational boaters.

Boonton Reservoir Trail, Parsippany-Troy Hills, Morris County, NJ (2019-present) – Serves as project manager and lead design engineer for the design and permitting of a loop trail around Boonton reservoir. The reservoir trail includes numerous crossings of wetlands and headwater streams as well as stabilization of existing outfalls from Interstate 287 offsite. Work includes coordination with a variety of professionals related to geotechnical, structural, environmental, and archaeological elements.

Dam Safety Services for Wargo Pond, Hopewell Township, Mercer County, NJ (2020-2024) – Currently serve as hydrologic and hydraulic technical lead for the repair and restoration of Wargo Pond. The work involved included detailed hydrologic and hydraulic calculations for the dam to comply with the NJ Dam Safety Standards including dam breach analyses, hazard classification assessment, and spillway capacity.

West Pond Living Shoreline along Jamaica Bay, Brooklyn and Queens, New York (2019-2022) – Served as lead engineer and designer of a 2,200 linear foot living shoreline project within the Jamaica Bay Wildlife Refuge. The living shoreline includes oyster shell breakwaters, fascines, coir log bank stabilization measures as well as placement of sand to restore low marsh, high, marsh and upland plant communities along the edge of West Pond.

Stream and Wetland Mitigation Bank, Charles County, MD (2015-2018) – Served as project manager and lead design engineer for design and permitting of approximately 85 acres of wetland and approximately 1,500 feet of stream restoration associated with mitigation impacts for work at a military base in the same watershed. The wetland hydrology incorporated both groundwater and surface water inputs and the design incorporated floodplain reconnection through Protocol 3 of the Chesapeake Bay Expert Panel Report.

Stream Restoration for MS4 Compliance, Prince Georges County, MD (2017-2019) – Served as project manager and lead design engineer for the preliminary design of approximately 6,900 linear feet of stream restoration in accordance with the Chesapeake Bay Expert Panel Report. Restoration activities were designed for first order, second order, and third order tributaries in a holistic approach addressing stream bed and bank erosion together with stream geomorphology using a combination of rock and large woody debris.

Dam Removal and stream restoration, Hunterdon County, NJ (2011-2017) – Project manager for the completion of a feasibility study, final design, and permitting for the removal of a run of the river dam on a river in New Jersey, which was the first blockage from the confluence with the Delaware. Removal of the dam increased the total unobstructed river miles within the Wild and Scenic designation region.

Urban stream restoration and floodplain connectivity project, Trenton, NJ (2008-2011) – Project manager for the completion of engineering design, permitting, and construction management services associated with the restoration of approximately 900 feet of urban stream including daylighting a portion of the stream that had been piped within the City of Trenton.

Invited Seminars

Half Moon Education, Inc. *Advanced HEC-RAS*. Webinar. 26 October 2023.

Half Moon Education, Inc. *Introduction to HEC-HMS Modeling.* Webinar. 20 August 2020.

Half Moon Education, Inc. *Introduction to HEC-RAS Modeling.* Albany, New York. 22 August 2019.
Half Moon Education, Inc. *How to Approach Stream Restoration.* Webinar. 25 August 2020.

Half Moon Education, Inc. *Wetlands Preservation, Creation, Restoration, and Enhancement*. New Jersey Freshwater Wetlands Law and Compliance 10 July 2024

Montclair State University Continuing and Professional Education. *Alternative Approaches to Stormwater Management: Wetlands, Floodplain Connectivity, and Stream Restoration.* Green Infrastructure Stormwater Techniques. 19 October 2022.

New Jersey American Water Resources Association. *West Pond's Living Shoreline*. 30 May 2024.

New Jersey State Bar Association. *Why Do Areas Flood? The View from An Engineer.* NJ Flood Summit 26 January 2022.

New Jersey Statewide Dam Removal Partnership. *Introduction to H&H Analysis for Dam Removals.* 30 April 2024.

Rutgers University Office of Continuing Professional Education. *Alternatives Approaches to Stormwater Management.* 16 May 2024.

Publications and Presentations

M. Paist-Goldman and S. Comandini. Thinking Green to Reduce Nuisance Flooding. 8 May 2023. Atlantic City, NJ.

M. Paist-Goldman, B. Zuckerman, A. Zablocki. West Pond's Living Shoreline: A Constellation of Natural Strategies to Combat Climate Change. 11 November 2022. San Francisco, CA.

M. Paist-Goldman. Navigating the Permitting Process to Implement a Mitigation Project in New Jersey. Society for Wetland Scientists Annual Meeting. 30 May 2019, Baltimore, MD.

M. Paist-Goldman and Beth Styler-Barry. 2018. Recognizing the Power of Dam Removal to Reconnect & Restore our Ecosystem. NJ Land Conservation Rally, 2 March 2018, New Brunswick, NJ.

I. Herzig. *Landscape: Dirtworks Restores a New York Wildlife Refuge Nearly a Decade after Hurricane Sandy*. Architectural Record. November 2022.

G. Messinger, C. Hall, L. Peterson, P.E. and M. Paist-Goldman, P.E.. 2011. "Walnut Brook Riparian Restoration Project," Land and Water Magazine, January/February 2011.