

Michael R. Chelminski, P.E.

Senior Associate
Restoration Engineer



Capabilities

Hydrology and Geomorphology:

- Water resource inventories and classifications
- Hydrologic and hydraulic analyses and modeling
- Water quality and quantity monitoring and assessment
- Watershed restoration analyses and planning
- Aquatic species surveys and habitat mapping
- Essential Fish Habitat evaluations
- Fish passage design

Stream, River, and Wetland Restoration:

- Dam removal evaluations
- Revegetation, bioengineering, and hard structure design
- Aquatic habitat enhancements
- Erosion control mitigation
- Long-term monitoring and evaluations
- Permitting and regulatory advising
- Construction oversight
- Construction specifications and cost estimates

Permitting Expertise:

- Clean Water Act Secs. 401 / 404 and 404(b)(1) Analyses
- River and Harbors Act, Sec. 10
- Avoidance and Minimization Support
- Support for CERCLA/Superfund Projects
- NEPA Compliance and Documentation
- Support for EIS and EA preparation
- Clean Water Act Sec. 316 Analyses

Modeling Software Expertise:

- Hydraulics – HEC-RAS, FLDWAV, River2D
- Hydrology – HEC-HMS, TR-20, TR-55, HMR-52
- Computational Fluid Dynamics – *Flow-3d*®, SSIIM
- Regulatory Models – CORMIX, DREDGE

Training

- Engineering Innovative Fish Passage: Design of Fish Passage at Road Crossings
- Engineering Innovative Fish Passage: The Design of Nature-Like Fishways
- OSHA 40-hour Hazardous Waste Operations Training
- Flow-3D Computational Fluid Dynamics Solver
- FHWA Bridge Scour Evaluation

Education

MS, Civil Engineering, Utah State University, 1999
BS, Civil Engineering, University of Connecticut, 1994

Mr. Chelminski is a Senior Associate at Stantec, responsible for technical aspects of ecological evaluation, mitigation, and restoration analyses and designs. Michael's work includes the development of hydrologic and hydraulic studies for integration with Stantec's core skills in the ecological and biological sciences. A licensed engineer, his project experience includes ecological restoration design and monitoring, fish passage assessments, effluent mixing analyses, and dam safety evaluations. He has worked on watersheds throughout the US, including the Connecticut, Deerfield, Delaware, Housatonic, Hudson, and Penobscot rivers east of the Mississippi to the Kuskokwim in western Alaska.

Prior to joining Stantec, Michael worked for Earth Tech, Inc. and for the US Army Corps of Engineers.

Experience

Stantec Consulting. 2007-present. Senior Associate and Division Director, Ecological Restoration Services; Restoration Engineer

Woodlot Alternatives, Inc. 2002-2007. Division Director, Ecological Restoration Services; Restoration Engineer

Earth Tech, 1999-2002. Water Resources Engineer

US Army Corps of Engineers, Fairbanks, Alaska 1995-1997. Construction Management Engineer

Professional Licenses

- Licensed Professional Engineer, New Hampshire, (#10677); Maine (#10320); Massachusetts (#47167); Connecticut (pending)

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Selected Project Experience

Spruce Creek Tidal Restoration Study, Attar Engineering, Kittery, ME. Performed tidal data acquisition and 1-dimensional, unsteady-state hydraulic analyses to size new culverts at two sites within the tidal reach of Spruce Creek.

Larkin Mills Dam Preliminary Dam Removal Assessment, Massachusetts Riverways Program, Newbury, MA. Performed a preliminary assessment of dam removal for the second dam on the Parker River.

Connecticut River Hydraulic Modeling Study, Field Geology, Inc., MA, NH and VT. Developed a two-dimensional depth-averaged hydraulic model for a 20-mile long reach of the Connecticut River. Work was performed in support of a fluvial geomorphic study evaluating potential impacts of hydroelectric facility operations. Hydraulic modeling was performed using the two-dimensional (depth-average) finite element numerical modeling software. The model domain was comprised of 5 subreach domains to increase model resolution while maintaining a high-level of computational resolution. A HEC-RAS model developed using the HEC-GeoRAS GIS environment was used to develop boundary conditions for the River2D subreaches.

Mohawk River Alluvial Fan Reconnection, Field Geology, Inc., Colebrook, NH. Performed two-dimensional, depth-average hydraulic analyses using to evaluate benefits and impacts of reconnecting channels in an alluvial fan previously bypassed as part of a flood control project.

Mill River Dam Removal Study, Massachusetts Riverways Program, Taunton, MA. Developed hydraulic model of river reach including three dams being evaluated for removal. Work included project hydrology for both high flow events and fish passage flow-duration statistics and development of project HEC-RAS model.

Somes Brook Fishpassage Design, Somes-Meynell Wildlife Sanctuary, Somesville, ME. Evaluated and designed fish passage facilities at three dams. Design work included HEC-RAS and Flow-3D analyses (Flow-3D by others) of fish passage and dam hydraulics.

Hemlock Brook Streambank Failure Analysis, Williamstown, MA. Evaluated apparent causes of streambank failure and developed preliminary concepts for alternative streambank stabilization.

Confidential Peer Reviews, Multiple Projects and Locations. Provided confidential peer reviews for public and private clients. Reviewed and commented on scoping of hydraulic studies and subsequent reporting.

Dredge Plume Analysis, Penobscot River, ME (Confidential Client). Performed analysis of dredge re-suspension and fate using DREDGE software.

Tidal Restriction Evaluation at USFWS National Wildlife Refuges. Evaluated causes and potential impacts associated with tidal restrictions in the Rachel Carson and Plum Island National Wildlife Refuges. Work included site visits, development of restoration approaches, and cost estimates.

ConnDOT Bridge Scour Analyses, CT. Conducted multiple bridge scour analyses in accordance with FHWA HEC-18 and comparative bridge scour analysis methods promulgated by ConnDOT. Tasks included field visits, coordination with ConnDOT staff, and project management. Approximately 50 individual site studies were performed and managed.

Saco Island Flood Studies, Private Client, Saco, ME. Coordinated preparation and submittal of LOMR and CLOMR-F for revisions to FEMA floodway and floodplain adjacent to proposed site redevelopment. Work included scoping of two-dimensional hydraulic studies with FEMA, subcontracting and oversight of unsteady-state RMA-2 model development and implementation, and compiling and submittal of all materials to FEMA. Proposed floodway and floodplain revisions were approved.

Ox Pasture Brook, Massachusetts Riverways Program, Rowley, MA. Dam removal feasibility study including development and analysis of proposed conditions using unsteady-state HEC-RAS model. Work included scoping and execution of all components of study.

Penobscot River Restoration Trust, ME. Performed infrastructure assessment for potential removal of two dams on the Penobscot River and implementation of alternative fish passage scenarios at a third dam on a tributary entering the Penobscot River.

New Meadows Lake Restoration Feasibility Study, Casco Bay Estuary Partnership. Developed and evaluated conceptual restoration alternatives for a tidal embayment with restricted flows. Work included instrumentation of project site to determine magnitude of tidal restriction and development of numerical hydrodynamic models. Modeling work included preliminary assessment using unsteady-flow routines in HEC-RAS and a refined assessment using a three-dimensional computational fluid dynamics model to evaluate benefits resulting from increased tidal exchange.

Great Dam Water Quality Assessments, Exeter, NH. Evaluated means to improve water quality and fish passage in an impounded reach of the Exeter River. Work included hydraulic modeling to determine potential operational regimes of the Great Dam that could achieve desired water quality benefits and improvements in diadromous fish passage. Modeling work included development and implementation of a HEC-RAS model for the evaluation of alternative dam alignments and appurtenances, including a labyrinth weir as a means to increase regulatory spillway capacity.

Vinal Cove Restoration Review, ME. Reviewed a restoration project developed by the NRCS that resulted in flooding of roads and private property following implementation. Work included the review of technical and regulatory aspects work, development of conceptual remedial alternatives, and attendance at public meetings on behalf of the Town.

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Selected Project Experience (continued)

Echo Lake Flood Study, National Park Service, ME. Performed flood study to determine base flood elevations for the development of new facilities at the Echo Lake Campground in Acadia National Park. Work included the development and implementation of an unsteady-flow hydraulic model using HEC-RAS to evaluate lacustrine flood elevations.

Housatonic River, EPA/Corps of Engineers, Pittsfield, MA. Performed three-dimensional computational fluid dynamics code to evaluate bank stability and countermeasures design at a sharp bend where a one-dimensional model would not provide sufficient information. Also provided HEC-RAS training to primary Corps of Engineers contractor.

Winnicut Dam Removal and Fish Passage Study, NH. Coordinated multi-phase evaluation of fish passage enhancement and habitat restoration resulting from the potential removal of a head-of-tide dam on a high-value estuary. Tasks included a full range of biological and engineering evaluations, public participation, impact assessments, restoration options, fish pass studies, hydraulic modeling, and permit planning.

Housatonic River Restoration, MA. Project manager coordinating stream and riparian restoration design and construction monitoring for major CERCLA site. Tasks included aquatic habitat assessments, hydraulic modeling for fish passage and habitat enhancement, riverbed and instream structure designs, bioengineering and revegetation design, cost estimation, and development of restoration options and NEPA documentation for \$7 million Trustees restoration program.

Cow Yard Wetlands Restoration, MA. Hydraulic engineer for site investigations and hydrologic studies of 20-acre tidally restricted salt marsh restoration site. Performed initial studies to determine relative degree of tidal restriction, developed instrumentation program for monitoring flow through tidal marsh, and developed and calibrated hydrodynamic model used in selection of a replacement culvert to increase tidal flushing while minimizing incremental flooding during peak events.

Trinity Creek Fish Habitat/Wetland Restoration and Flood Control, WI. Developed three-dimensional numerical hydrodynamic model within the framework of Flow-3D computational fluid dynamics package for a proposed fish habitat enhancement project to assess flow distribution within the proposed environment.

Fish Screen Assessment, PA. Performed numerical modeling of peak velocities through a fish-exclusion screen adjacent to a water withdrawal using Flow-3D computational fluid dynamics software. Analysis was used to determine regulatory requirements for maintenance related to potential impingement and drowning of fish on exclusion screens.

Portland Water District Tracer Study and Hydraulic Analysis, ME. Performed hydraulic analyses of chlorine contact tanks using the Flow-3D computational fluid dynamics package software. To calibrate and verify the model, a tracer study using rhodamine dye was performed as part of this work.

Sediment Capping and Dam Removal Design, MA. Developed and evaluated riverine sediment cap design and conceptual dam removal scenario for a contaminated site restoration. Performed hydraulic analysis to determine riprap sizing, channel morphology, and dam breach size using Flow-3D.

Stony Brook Dam Analysis, MA. Project hydraulic engineer for hydrologic, hydraulic and dambreak analyses of a stone and earth dam. Developed 18-subbasin HEC-HMS rainfall-runoff model to determine return-interval peak flows for dambreak analysis using NWS FLDWAV. Meteorological information determined using TP-40 and HMR-52. HEC-RAS and HY-8 used for modeling hydraulic structures within the drainage basin and development of simplified bridge geometries for inclusion in FLDWAV model. Evaluated spillway capacity using Flow-3D.

City of Olympia Reservoir Seismic Analysis, WA. Evaluated dynamic pressure field in water storage tank resulting from potential earthquake. Developed a three-dimensional numerical model of the tank using Flow-3D. Applied a 60-second lateral sinusoidal acceleration, resulting in sloshing of the tank contents. Pressure data and animations were subsequently exported from the numerical simulation.

Navy Landfill Cover System Performance Design, MCAS El Toro, CA. Developed 3D hydrodynamic analysis of hydraulic conditions and design of riprap using Flow-3D. Developed input geometries for hydrodynamic model from topographic survey data using AutoCAD LDD2. Developed computer programs for post-processing of 3D data into a 2D, depth-averaged format for scour analysis. Mapped riprap sizing onto computational domain using post-processed data.