APPENDIX J

Wetland Delineations

J.1 | SIGNATURE EAST

J.2 | SIGNATURE SOUTH

APPENDIX J.2

Signature South

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WETLAND DELINEATION REPORT

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RESUMES OF AUTHORS

PRINCETON HYDRO



ERIC ZAWATSKI

ENVIRONMENTAL SCIENTIST

2 YEARS WITH PRINCETON HYDRO

5 YEARS OF EXPERIENCE

EDUCATION

M.S. Ecology
Pennsylvania State University
2021

B.S. Wildlife and Fisheries Science
Pennsylvania State University
2017

PROFESSIONAL ORGANIZATIONS

Member, **American Ornithological Society**

Member, **The Wildlife Society**

Member, **Wilson Ornithological Society**

PROFESSIONAL TRAININGS

Wetland Delineation Series, Rutgers University

Vegetation Identification for Wetland Delineations, Rutgers University

Methodology for Delineating Wetlands, Rutgers University

EXPERIENCE

Mr. Zawatski joined Princeton Hydro in 2022 after graduate school completion and works in the Natural Resources department. He is an experienced wildlife and environmental scientist with a strong background and education in wildlife surveys; taxonomy; endangered and threatened species; plant identification, wildlife habitat assessment and management, and wetland delineations.

Eric received a B.S. and M.S. from Penn State University in Wildlife Science and Ecology. During his time at Penn State, Eric studied the habitats and breeding ecology of multiple state endangered or threatened bird species. His graduate research was multi-faceted and involved extensive field data collection, ArcGIS Pro landscape analysis, statistical analysis, and written publishing of results. He worked in close cooperation with Pennsylvania Game Commission biologists on the applications of the results of his research on the management and conservation efforts for these endangered study species and is working to further publish this work in academic journals.

Prior to graduate school, Eric worked in various environmental, avian, and wildlife related positions around the country, working closely with graduate students and wildlife biologists on a myriad of wildlife, forest, and conservation projects in a variety of different ecosystems.

At Princeton Hydro, Eric works on a diverse array of projects related to wetland and stream delineations, wetland mitigation, ecological and habitat restoration, permitting wildlife relocation, threatened and endangered species surveys, and general and targeted wildlife surveys. Additionally he conducts the majority of wildlife related projects at Princeton Hydro and applies his wildlife-related expertise to these tasks, ensuring they are comprehensive and technically sound. Eric contributes to these projects through conducting field work and data collection, geospatial analysis other GIS related tasks, and writing final written reports and summaries.

- Wildlife Survey Techniques
- Endangered and Threatened Species
- Wildlife Management
- Mid-Atlantic Tree and Shrub Identification
- Geospatial Analysis
  - ArcGIS Pro
  - Map Creation
  - Landscape Ecology
- Bird, mammal, and herp identification
- Wildlife Habitat Suitability Surveys
- Wetland Mitigation
- Regulatory compliance
  - NJDEP
  - USACE
- Technical Writing
- Forest Ecosystem Management
- Technical Writing
- Wildlife Relocation
- Wildlife Habitat Creation
- Avian Population Monitoring
- Wetland Delineations
  - Delineation Methodology
  - Wetland Vegetation Identification
  - Hydric Soils

REPRESENTATIVE PROJECTS

United States Army Corps of Engineers (USACE) & NYC Parks | Spring Creek Park North Ecosystem Restoration Project Diamondback Terrapin Relocation
Brooklyn and Queens, New York City, New York (2022-Present)

Mr. Zawatski led and developed the comprehensive capture and relocation plan of diamondback terrapins to avoid unwanted mortality related to the construction need for the Spring Creek Park North Ecosystem Restoration Project. This plan entailed multiple steps and considerations, including but not limited to: 1) Pre-construction visual survey protocols to identify and count diamondback terrapins, as well as evaluate suitable nesting habitat within the vicinity of the site; (2) Site recommended construction timing restrictions to avoid the nesting season; (3) Methodologies for presence/absence monitoring, capture and removal, and holding, transport and release activities; and (5) Identifying suitable areas for relocation during construction, and (6) Development of post-construction monitoring protocols to evaluate use of the restored marsh by diamondback terrapins. Diamondback terrapins are in long-term population decline and are a species of concern in New York state.

Gloucester County Solid Waste Complex| Grassland Bird Habitat Creation Project
Gloucester County, New Jersey (2022-Present)

The Gloucester County Solid Waste Complex sought to transition over 70 acres of current farmland into quality grassland breeding bird habitat, along with monitoring the use of the created grassland by grassland specialist bird species. Mr. Zawatski led grassland bird habitat creation project, which entailed an existing habitat conditions survey and ecological communities report, technical assistance on grassland bird habitat design and target species, and the development of an avian monitoring plan on the newly created grassland. Target species and likely beneficiaries of this project include Eastern Meadowlark, Grasshopper Sparrow, Bobolink, and Blue Grosbeak, among others.

North Point Development| Port Mobil Redevelopment Project
Staten Island, New York (2022)

As was required by the New York State Department of Environmental Conservation, Mr. Zawatski conducted presence/absence surveys for two state endangered/threatened species, eastern fence lizard and chuck-will's-widow, at a property located in the oak barrens of Staten Island. Mr. Zawatski developed protocol that would satisfy the requirements put forth by NYSDEP, conducted the field work at the site in appropriate habitat, curated maps of survey locations, and completed a written report of the findings and results of the field investigations. Surveys for chuck-will's-widow entailed targeted nocturnal surveys within suitable nesting habitat in the vicinity of a previously documented sighting.

Echo Lake Country Club | Drainage Improvement Project
Union County, New Jersey (2022-2023)

Echo Lake Country Club sought a NJ DEP Freshwater Wetlands General Permit 6 to address recurring flooding that is impacting the golf course as well as adjacent residential properties. Mr. Zawatski completed the on-site wetland delineation, as well as developed the complete and eventually issued General Permit 6 package and Somerset Union Soil Conservation District Certification Application.

Greenvest LLC | Threatened and Endangered Species Surveys
Middlesex, Union, and Hudson Counties, New Jersey (2022)

Greenvest LLC has planned ecological restoration and mitigation at multiple sites located in Central and Northern New Jersey, and Princeton Hydro provided threatened & endangered habitat suitability surveys and habitat evaluations. Mr. Zawatski completed the on-site habitat suitability surveys based upon species results from NJDEP Natural Heritage Program endangered species results. Information collected during the site visits was used to formulate a written report that guided the enhancement project, identified suitable plant species present, ways to avoid impacts to wildlife, and recommendations of ways the project can benefit any listed wildlife species.

Rockaway Township | Wetland Mitigation Monitoring
Essex County, New Jersey (2022-Present)

This project involved the breaching of the Lake Hudsonia dam along with the restoration of the former lakebed and Hibernia Brook. Mr. Zawatski is the primary scientist responsible for the monitoring of the restoration of the 7-acre former lakebed, as well as for the reporting of the results to New Jersey Department of Environmental Protection.

Pennsylvania Fish and Boat Commission | Wetland Delineation and Environmental Assessment
Lycoming County, Pennsylvania (2022-Present)

For this project, the Pennsylvania Fish and Boat Commission sought to install a boat access ramp along the West Branch Susquehanna River. To support this project, Mr. Zawatski led the wetland delineation effort and conducted a site assessment. This included a written wetland delineation report and developing an Environmental Assessment submitted to the Pennsylvania Department of Environmental Protection.

Projects Prior to Joining Princeton Hydro:

Wood Thrush Nest Survival and Breeding Productivity
Penn State University, (2019-2021)

Coordinated, hired, and managed five-person field crew for multiple field seasons. Developed thesis project modelling factors influencing Wood Thrush nest survival and reproductive productivity. Led and coordinated overall project with biologists, land managers, and researchers from multiple organizations/universities. Analyzed landscape raster and vector geospatial data from field collecting in ArcGIS Pro for inclusion in statistical modeling. Other tasks include avian point counts, data collection, nest searching and monitoring, forest vegetation measurement, statistical modeling, manuscript and thesis preparation and writing, and oral defense.

Blackpoll Warbler Breeding Habitat Assessment
Penn State University/Pennsylvania Game Commission, (2016-2017)

Monitored breeding status and behavior of multiple rare and endangered Pennsylvania bird species. Performed searches for nests and observed territories for breeding activity in cooperation with PGC Biologist. Analyzed nest location and landscape GIS data post hoc in ArcMap 10.4, and published findings in Northeastern Naturalist, a peer-reviewed scientific journal.

Piping Plover Habitat and Breeding Productivity Study
Virginia Tech University, (2018)

Located and monitored Piping Plover nests, and marked their location using a Trimble GPS unit. Captured and banded both adults and chicks for band resighting and survival data. Worked with a large crew of coworkers and regularly interacted with the public to educate them on our research and plover conservation.

Rocky Mountain Breeding Bird Surveys
Bird Conservancy of the Rockies, (2017)

Conducted avian point counts and forest vegetation surveys throughout the state of Wyoming according to a specific protocol. Backpacked both on and off trail over rugged wilderness terrain to conduct backcountry surveys. Interacted and coordinated with landowners regarding land access and results.

PRESENTATIONS AND PUBLICATIONS

Zawatski, E. J., D. A. Gross, and M. C. Brittingham. 2019. Habitat of Breeding Blackpoll Warblers at a Persistent Extralimital Breeding Site in Pennsylvania. Northeastern Naturalist 26:31-42.

Zawatski, E.J., 2021. Effects of Local and Landscape and Landscape Attributes on Wood Thrush Nest Success in Contiguous Forests. Master's Thesis, Pennsylvania State University, University Park, USA.

PRINCETON HYDRO



EMILY BJORHUS, PWS

PROJECT MANAGER / ENVIRONMENTAL SCIENTIST

5 YEARS WITH PRINCETON HYDRO

8 YEARS OF EXPERIENCE

EDUCATION

M.S. Sustainable Engineering
Villanova University
2017

B.S. Environmental Science
University of Colorado, Boulder
2011

PROFESSIONAL ORGANIZATIONS

Member, **Society of Wetland Scientists**

PROFESSIONAL TRAININGS

Methodology for Delineating Wetlands, Rutgers University

Vegetation Identification for Wetland Delineations, Rutgers University

New Jersey Freshwater Wetlands Protection Act Rules, Rutgers University

FERC Section 106 and Tribal Consultation Workshop

FERC Environmental Review and Compliance for Natural Gas Facilities Seminar

PROFESSIONAL CERTIFICATIONS

Professional Wetland Scientist

EXPERIENCE

Mrs. Bjorhus has over eight years of experience in regulatory compliance and ecological services. She has supported business development efforts and management of several large-scale projects across various industries. In these roles she leads federal, state, and local environmental permitting processes; National Environmental Policy Act (NEPA) compliance and documentation, Endangered Species Act Section 7 consultations, and Clean Water Act Section 404(b)1 analyses.

Mrs. Bjorhus' extensive permitting knowledge is complemented by her field experience. She is a certified Professional Wetland Scientist accredited by the Society of Wetland Scientists who regularly conducts biological and ecological investigations involving complex land and water resource development actions. She serves as the lead ecologist for the evaluation, planning, implementation, and monitoring of wetland restoration and mitigation projects; wetland and stream delineations; habitat assessments; threatened and endangered species investigations; and flora and fauna inventories.

As a Project Manager, she oversees a diverse portfolio of ecological restoration, wetland mitigation, and watershed protection projects. These projects provide a diverse suite of ecosystem services that improve water quality, strengthen storm resiliency, and enhance habitat functions and values. Through her permitting and ecological field experience, Mrs. Bjorhus is able to manage projects from a whole systems perspective and effectively intermediate between engineers, regulators, and clients.

- Regulatory Compliance
  - NEPA
  - USACE
  - PADEP
  - NJDEP
  - NYSDEC
  - FERC
  - County/Municipal
- Wetland Delineations
- Wetland Mitigation and Monitoring
- Stream Assessments
- Threatened/Endangered Species
- Avian Surveys
- Flora/Fauna Inventories
- Design and Implementation
- Environmental Technical Reviews

REPRESENTATIVE PROJECTS

South Jersey Resource Conservation & Development Council | Manalapan Brook Watershed Implementation Plan
Thompson Park, Monroe Township, New Jersey (Present)

Mrs. Bjorhus is responsible for implementing the *Watershed Protection and Restoration Plan for the Manalapan Brook Watershed* in coordination with state, county, municipal and non-governmental organization (NGO) project partners. She leads the design, permitting, construction and monitoring of a diverse suite of restoration projects aimed at reducing pollutant loads in accordance with TMDL objectives including stream stabilization, wetland creation, riparian buffer enhancement and vegetated filter strip projects. In addition, she prepares complex grant applications to fund updates to the watershed-based plan and continue its implementation.

Various Clients | Environmental Technical Reviews
Various Locations (Present)

Mrs. Bjorhus supports various clients by conducting environmental reviews of commercial and residential development applications proposed within the vicinity of environmentally sensitive areas. She reviews developers' permit applications, environmental reports, engineering reports, and plan sets for compliance with relevant federal, state and local regulations including potential impacts to rare, threatened, and endangered species, downstream water quality, and flood risks. She authors compelling technical reports submitted during public comment periods to inform regulators of the issues her team has identified. Mrs. Bjorhus presents at stakeholder meetings to inform the public of issues she has identified during her review.

US Army Corps of Engineers, New York District | Green Brook Flood Risk Management Project
Middlesex County, New Jersey (Present)

The NJDEP and USACE are constructing the Green Brook Flood Risk Management Project to reduce flood hazards and associated urban flood damages along Bound Brook and Green Brook. Mrs. Bjorhus is the lead regulatory specialist for Segments C-3, C-4 and C-5 of this project. She is responsible for navigating and obtaining federal, state and county permit approvals, coordinating with regulatory agencies to achieve consistency with other segment designs, and threatened and endangered species consultations.

Client | Port Mobil Redevelopment
Staten Island, New York (Present)

A brownfield site along the western shore of Staten Island is proposed to be redeveloped into a warehouse complex. Mrs. Bjorhus is leading a team of ecologists and GIS specialists to prepare the Natural Resources Chapter of a targeted Environmental Impact Statement in accordance with the 2014 City Environmental Quality Review Technical Manual process. This technical analysis assesses the No-Action, Future No-Action and Future With-Action Conditions of the project on natural resources. Mrs. Bjorhus coordinates and conducts field surveys to gather the requisite baseline data to assess potential impacts to surface water, groundwater, vegetative community; built, significant, sensitive, and designated resources; and wildlife including rare, threatened, and endangered species. Mrs. Bjorhus is responsible for identifying measures to minimize, reduce and/or mitigate potential significant adverse impact on natural resources.

Warrington Township | Lion's Pride Park Ecological Uplift
Warrington Township, Pennsylvania (2021)

Warrington Township proposes to convert an existing stagnant pond dominated by nuisance vegetation into a diverse wetland and open water complex that provides native wildlife habitat, passive recreational opportunities, and improved water quality. Mrs. Bjorhus led the regulatory program by developing a comprehensive permitting approach, obtaining concurrence with the PADEP, USACE, and Bucks County Conservation District during pre-application meetings, and quickly securing the necessary permits. Mrs. Bjorhus authored an Environmental Assessment and Wetland Delineation Report in support of the Joint Permit for a Water Obstruction and Encroachment Permit and Section 404 Permit application.

US Army Corps of Engineers, New York District | Hot Cargo Loading Area and Munitions Storage Area
Joint Base McGuire-Dix-Lakehurst, New Jersey (2021)

The U.S. Air Force has identified a need to construct a new hot cargo loading area and munitions storage area facilities at the McGuire area of Joint Base McGuire-Dix-Lakehurst. Mrs. Bjorhus was responsible for delineating streams and wetlands on-site, technical reporting, NEPA compliance, Section 106 of the National Historic Preservation Act and Section 7 of Endangered Species Act consultations, stakeholder engagement, subconsultant coordination, and client management.

Client | Crestron Compensatory Wetland and Riparian Zone Mitigation Project
Bergen County, New Jersey (2021)

Mrs. Bjorhus' management of this wetland and riparian zone mitigation project resulted in the site successfully satisfying NJDEP's mitigation requirements within the required five-year timeframe. Mrs. Bjorhus monitored the site annually to assess overall health and vigor, recommended adaptive management measures such as invasive species control, oversaw implementation of such actions, and prepared annual reports documenting the site's progress. After five years, she successfully coordinated with the NJDEP to certify the mitigation project complete, and subsequently prepared a Grant of Conservation Restriction to protect the restored wetland and riparian zone areas in perpetuity.

US Army Corps of Engineers, New York District | Spring Creek North Ecological Restoration
Brooklyn and Queens, New York (2020)

The USACE is planning to restore degraded low marsh, high marsh, maritime uplands, and upland habitats within 47-acres of Spring Creek Park. Mrs. Bjorhus was responsible for the delineation and characterization of estuarine wetland, tidal creek, and upland ecological communities within this site and associated reporting. Additionally, she developed a comprehensive federal, state and local permitting approach necessary to implement the project.

Client | New Entry Control Point for Commercial Vehicle Security
Joint Base McGuire-Dix-Lakehurst, New Jersey (2020)

The U.S. Air Force has identified a need to construct and operate a new entry control point for commercial vehicles at the Lakehurst area of Joint Base McGuire-Dix-Lakehurst. Mrs. Bjorhus was responsible for NEPA compliance, Section 106 of the National Historic Preservation Act and Section 7 of Endangered Species Act consultations, stakeholder engagement, subconsultant coordination, and client management.

Carversville Farm Foundation | Carversville Farm Foundation Stream and Floodplain Restoration
Bucks County, Pennsylvania (2020)

This project aims to reduce sediment inputs and associated nonpoint source pollutants that facilitate eutrophication within Paunnacussing Creek in support of the stream's High-Quality, Cold water Fishery water use designation. Mrs. Bjorhus was the led wetland scientist and regulatory specialist responsible for attaining federal and state permit waivers, and county and local permits. In these roles, she authored an environmental assessment, wetland determination report, and stream mitigation and monitoring plan, and navigated Section 106 cultural resource consultations to reach a no potential affect determination.

Client | Aquetong Creek Stream Restoration
Bucks County, Pennsylvania (2019)

This project involved restoring a former dam impoundment to a stable stream system that supports cold water aquatic species and provides an ecological uplift to wetland, floodplain and upland areas within a sustainable park setting. Mrs. Bjorhus served as the lead regulatory specialist for this project and successfully attained applicable federal and state permit waivers, and county permits. In this role, she prepared wetland and stream mitigation and monitoring plans in compliance with federal and state guidelines. The plan was approved by regulators without comment.

Client | Linden Blue Acres Green Infrastructure and Floodplain Restoration
Union County, New Jersey (2019)

This is one of the first projects in New Jersey to increase storm resiliency and reduce flood risk through ecological and floodplain restoration on former residential properties acquired by the NJDEP Blues Acres Floodplain Program. Mrs. Bjorhus

served as the lead regulatory specialist and wetland scientist on this restoration project. Her effective communication with state and county regulatory agencies resulted in quick permit approvals to accommodate a tight construction window.

Client | Mercer County Dam 21 Master Plan
Mercer County, New Jersey (2019)

Mercer County proposes to create a unique passive recreational park at the Dam 21 site. In support of planning and permitting efforts, Mrs. Bjorhus delineated freshwater wetlands and State open waters within this 279-acre property. Additionally, Mrs. Bjorhus authored an Ecological Communities Report which characterized and mapped the mosaic of vegetative communities that exist on site. Information from these efforts will be incorporated into the vision of the Master Plan and will guide the placement of proposed amenities and trails.

Dunes at Shoal Harbor, LLC | Dunes at Shoal Harbor Shoreline Protection Project
Monmouth County, New Jersey (2018)

This project involved the restoration of a highly eroded shoreline by installing structural and non-structural shoreline protection measures within a coastal high hazard area. In support of this project, Mrs. Bjorhus developed a NJDEP Individual CAFRA and Waterfront Development Permit application; an Individual USACE Permit application; a Freehold Soil Conservation District application for a Soil Erosion and Sediment Control Certification; and Middletown Township Grading, Development and Floodplain Permit applications. She coordinated with adjacent landowners to resolve site access issues and engaged with local stakeholders to address viewshed concerns.

Select Project Experience Prior to Princeton Hydro, LLC:

Client | Marcus Hook Pipeline Replacement
Delaware County, Pennsylvania and Gloucester County, New Jersey (2017)

Coordinated consultations and communications will Federal, state and local agencies. Prepared a PADEP Section 401 Water Quality Certification application for discharges into the Delaware River. Authored FERC Environmental Resource Report 2 – Water Use and Quality, and Resource Report 3 - Fish, Wildlife and Vegetation to analyze existing resources and anticipated impacts of replacing a pipeline across the Delaware River, including use of horizontal directional drilling.

Client | Southern Reliability Link
Monmouth, Ocean, and Burlington Counties, New Jersey (2016-2017)

Acted as liaison between the United States Air Force and New Jersey Natural Gas. Prepared an environmental assessment and finding of no significant impact under the provisions of NEPA. Coordinated stakeholder engagement, and updated the environmental assessment based upon hundreds of public comments, as well as internal comments received from various branches of the United States Air Force.

Client | Bedford North-Central City West 115 kV Transmission Line
Somerset and Bedford Counties, Pennsylvania (2016-2017)

Prepared a Joint Permit Application for a PADEP Water Obstruction and Encroachment Permit Application and a USACE Section 404 Permit Application through a Pennsylvania State Programmatic General Permit-5.

Client | Living Wall
Philadelphia, Pennsylvania (2016-2017)

Performed inspections and maintenance on the Philadelphia Water Department and National Park Services' Living Wall planter to illustrate use of green stormwater infrastructure tools in the community. Supported preparation of annual planting plans and vertical watering design modifications.

Client | RainCheck
Philadelphia, Pennsylvania (2015-2017)

Regularly inspected green stormwater infrastructure tools including rain barrels, rain gardens, downspout planters and pervious pavement driveways for the Philadelphia Water Department. Tracked and reported associated qualitative and quantitative data. Assisted in restoration of damaged rain gardens.

Client | Chemours, Wetland Inspection and Monitoring
Newport, Delaware (2015-2017)

Monitored two wetland mitigation sites biannually to document general wetland conditions, evaluate the extent and density of invasive species, and assess the impact of Galerucella spp. beetles on purple loosestrife (Lythrum salicaria) cover.

Client | Freeport-McMoran Oil & Gas Offshore Program
Santa Barbara County, California (2014-2015)

Served as the assistant project manager of Freeport-McMoRan Oil & Gas's (FM O&G) Offshore Oil Program to support environmental permitting, planning, and compliance for the operations and maintenance of the Point Pedernales Pipelines and the Lompoc Oil Field. Supported the entire life cycle of projects starting from initial proposal preparation, to environmental constraints analyses, to preparation of permit application packages, to submittal of applications to the permitting agencies, until supporting regulatory compliance during the construction phase of projects following permit authorization. Further supported the development of the FM O&G Offshore Program by interfacing with the client on a regular basis, producing timely and high-quality deliverables, and working with the Program team to manage complex budgets.

Client | Point Pedernales Pipeline Anomaly Repairs, 2012 Dig Sites 1–15
Santa Barbara County, California (2014-2015)

Served as FM O&G agent/proponent of approval for requested actions. Coordinated and prepared Vandenberg Air Force Base permit applications, an Oak Tree Mitigation Plan, and a Biological Resource Assessment Report. Managed and oversaw field biologists and subcontractors.

Client | Seacliff Buckwheat Enhancement Implementation, 2011 Dig Site 5
Santa Barbara County, California (2014-2015)

Coordinated with FM O&G and Vandenberg Air Force Base to restore Federally protected seacliff buckwheat (Erigonum parvifolium) habitat through the herbicide removal of invasive species. Procured and managed subcontractors for invasive species removal. Conducted on-site biological monitoring.

PRESENTATIONS AND PUBLICATIONS

Bjorhus, Emily and Michael Hartshorne. "Carversville Farm: Stream, Floodplain and Multi-Functional Riparian Buffer Restoration". March 1, 2021. Presentation at the 2021 Delaware Estuary Science and Environmental Summit. Virtual.

Bjorhus, Emily, Hartshorne, Michael and Cory Speroff. "Carversville Farm: Stream, Floodplain and Multi-Functional Riparian Buffer Restoration". September 23, 2020. Presentation at the 2020 Watershed Congress along the Schuylkill River. Delaware Riverkeeper Network, Bristol, Pennsylvania.

PRINCETON HYDRO



MARK GALLAGHER

VICE PRESIDENT / A FOUNDING PRINCIPAL

24 YEARS WITH PRINCETON HYDRO

38 YEARS OF EXPERIENCE

EDUCATION

M.S. Botany and Plant Physiology
Rutgers University
1984

B.S. Biology
Moravian College
1977

PROFESSIONAL ORGANIZATIONS

Member, **Association of State Wetland Managers**

Member, **Society of Wetland Scientists**

Member, **Society for Ecological Restoration**

Technical Advisory Board Member, **Hunterdon Land Trust**

Board of Trustees, **Bowman's Hill Wildflower Preserve**

TEACHING EXPERIENCE

Co-adjunct Professor, Temple University, Ambler Campus, School of Environmental Design (Spring 2015-2018)

Co-adjunct Professor, Rutgers University, Edward J. Bloustein School of Planning and Public Policy (2011-Spring 2013)

Instructor, Rutgers University Continuing Education Program, Pond Management Course, 2004-present, Lake Course 2004-present and Public Health Officer Course 2013-present

EXPERIENCE

Mr. Gallagher is the Vice President of Princeton Hydro and oversees all wetland and terrestrial ecological projects. He is responsible for the supervision of a broad variety of environmental assessment activities, primarily those involving wetlands and wildlife habitat elements. His area of expertise includes the preparation of state and federal permit applications, the preparation of environmental impact statements, and the design and implementation of wetland mitigation plans, as well as comprehensive familiarity with and understanding of pertinent administrative and policy directives of regulatory agencies such as the U.S. Army Corps of Engineers (USACE), NJDEP, PADEP, and the U.S. Fish & Wildlife Service. His expertise has led to his providing expert testimony before numerous local and regional planning authorities.

Prior to forming Princeton Hydro, Mr. Gallagher served as a director, group manager, and scientist at several environmental consulting firms in New Jersey and Pennsylvania. His experience in these positions emphasized wetland delineations and evaluations, wetland and Coastal Zone permitting, vegetation and wildlife surveys, endangered species habitat suitability assessments, and the preparation of wetland mitigation plans.

Mr. Gallagher's specific project experience has included the delineation of wetlands and the preparation of permit applications for numerous projects through New Jersey and eastern Pennsylvania. These permits included complex Coastal Zone Permits which required the approval of both the USACE as well as the NJDEP. The permittees for these projects included residential developers, commercial developers, industrial facility operators, and remediation contractors.

He also designed numerous wetland and habitat restoration plans throughout New Jersey and Pennsylvania for USACE 404 and Department of Environmental Protection Permits. These projects include floodplain enhancement, hydrologic enhancement of forested wetlands, estuarine wetland creation, and vernal habitat creation and enhancement. He was also recently involved with several demonstration projects with New Jersey Division of Fish and Wildlife involving the thin layer placement of dredged material to restore subsiding salt marsh.

He has also designed the restoration of floodplain and riparian areas in association with dam removal projects. His natural design experiences have been applied toward the integration of natural design elements into stormwater management facilities. He has performed numerous regulatory compliance reviews for municipalities and third parties including a review of Princeton Township's section of Transco's proposed Leidy Southeast Expansion Project.

- Habitat Restoration, Creation, and Enhancement
- Wetland Investigation
- Regulatory Compliance/Permitting
- Municipal EIS/Review
- Ecological Surveys, including Swamp Pink Surveys
- Natural Stormwater Facilities
- Impact Assessments
- Environmental Impact Studies
- Watershed Studies
- Expert Testimony

REPRESENTATIVE PROJECTS

Mercer County | John A. Roebling Memorial Park Freshwater Tidal Wetland Restoration
Hamilton Township, New Jersey (2018-2021)

Mr. Gallagher served as the Principal Ecologist for the plan to reduce and control Phragmites at the Memorial Park, with the goal of increasing biodiversity, improving water quality, broadening recreational opportunities, and enhancing the visitor experience at the park. The project resulted in the emergence and establishment of native flora, enhanced tidal function, and more incredible viewscapes.

Township of Bloomfield | Bloomfield Third River Floodplain Enhancement
Bloomfield, New Jersey (2014-2020)

Mr. Gallagher served as the Principal-in-Charge for the transformation of this disturbed, flood-prone former industrial site into a thriving public park allowing for both passive and active recrectional activities. A 4.2 acre functioning floodplain wetland was converted from upland historic fill. As a result, ecological functions were restored, wetland and riparian zone habitat was enhanced, and flood storage capacity was increased.

Massachusetts DER | Century Bog Ecological Risk Assessment and Restoration
Plymouth County, Massachusetts (2011-2015)

Mr. Gallagher served as the Principal Ecologist for the design and implementation of a feasibility study for the restoration of a Century Bog, a 100+ year-old, 60 acre operating cranberry farm that spanned the headwaters reach of Red Brook. Following completion of the assessment, Princeton Hydro was subsequently retained for engineering design of the restoration project.

Liberty State Park | Ecosystem Restoration Project
Jersey City, New Jersey (Ongoing)

Mr. Gallagher acts as the QA/QC Lead for all ecosystem restoration tasks for this project, involving the restoration of Liberty State Park. This project will be one of the largest habitat restoration projects in New Jersey upon implementation. The project creates a resilient coastal ecosystem within a highly urbanized setting that provides both ecological and social benefits.

Rutgers | Linden Blue Acres Floodplain Restoration
Linden, New Jersey (2020)

Principal Ecologist for the first ecological restoration completed on NJDEP Blue Acres-acquired property. This project focused on increasing storm resiliency by reducing flooding and stormwater runoff through the enhancement of ecological and floodplain function within the former residential properties acquired by NJDEP's Blue Acres Program. Mr. Gallagher oversaw the implementation of the green infrastructure design, which restored native coastal floodplain forest, meadow, and wetlands.

Prince George's County | Tinkers Creek Stream Restoration
Prince George's County, MD (2017-2021)

Friends of John Heinz Refuge | Ecological Restoration of the Turkey Foot Area
Philadelphia, PA (2021-Present)

Green Trust Alliance | Pin Oak Forest, Stream, Wetland, and Upland Enhancement Project
Woodbridge, Middlesex County, NJ (2014-2017)

USACE| Spring Creek South Flood Risk Management
Queens, New York (2016)

Mr. Gallagher acted as the QA/QC Lead for the ecological design of a 243-acre maritime habitat at Spring Creek South, a component of the Gateway National Recreational Area. Site restoration designs provide ecological uplift through tidal marsh restoration, freshwater wetlands, and maritime upland communities. This project increases coastal resiliency using Natural and Nature-Based Features.

City of Trenton | Trenton Stream Daylighting project
Trenton, New Jersey (2011)

As part of a larger urban revitalization and brownfield re-development project, Princeton Hydro was retained by the City of Trenton to restore a and its adjacent floodplain. Mr. Gallagher oversaw the wetland and floodplain restoration elements of the project. ***The project won a 2011 Phoenix Award for Brownfield Redevelopment and a 2013 Bowman's Hill Land Ethics Award.***

Habitat Restoration Through Thin-Layer Application of Dredged Material
Borough of Avalon & Downe Township, NJ (2018)

Mr. Gallagher was the Principal-in-Charge of the complex project involving multiple partners. Mr. Gallagher provided environmental support with regard to engineering design and regulatory compliance for various aspects of these marsh restoration projects. The projects were undertaken at the direction of the New Jersey Division of Fish and Wildlife as pilot demonstrations to determine the feasibility of beneficial reuse of thin layer dredged material placement to restore degraded wetlands. The design elements included containment design, soil erosion and sediment control, planting, drainage patterns, bio-bench marking, soil testing and avian and nekton species monitoring. He also provided guidance on the regulatory compliance efforts with NJDEP, USACOE, and NJDOT. For the Fortescue project, there were three project elements that Mr. Gallagher was integrally involved in, including beach restoration, dune reconstruction, and marsh restoration.

Westtown School Dam and Lake Dredging
Westtown, Chester County, PA (Ongoing)

Mr. Gallagher was responsible for the wetland permitting and the development of a compensatory mitigation plan. The mitigation for wetland impacts was done on site in an area focused on the removal of historic fill that was placed there filled earlier in the century. The site is currently in its third year of monitoring.

Mattawoman Creek Mitigation Site: Wetland and Stream Mitigation
Pomfret, MD

Mr. Gallagher was the Principal-in-Charge for the wetland and stream restoration design of a mitigation bank site for future improvements associated with Joint Base Andrews. Project features included stream restoration (grade controls, floodplain reconnection, and habitat enhancement) and wetland mitigation (enhancement, rehabilitation, creation, and preservation). In-stream grade control features and bank stabilization techniques were employed to ensure channel stability, to reduce sediment load downstream from active bed and bank erosion, and to foster out of bank flooding. Mark provided design support as well as attended key meetings with the IRT.

Waterfront Development Permitting and Design of Tidal Wetland Mitigation Bank
Port Reading, NJ (2015)

Project Manager for all wetland and permitting elements of this project for ProLogis. The specific services provided included; wetland delineation, preparation of federal and state wetland permit applications and a waterfront development permit application. The project also included the design of a 1-acre compensatory wetland mitigation site, as well as an 11 + acre wetland mitigation bank. The wetland constructed as part of the bank is mostly intertidal wetland bordered by high marsh and maritime upland communities. The project also included the establishment of 3 acres of upland woodland proximate to the wetland.