RESPONSE TO REQUEST FOR PROPOSALS: *No. P25-08-02, Natural Resources Inventory*

NATURAL RESOURCES INVENTORY UPDATE

FOR THE CITY OF LACONIA, NEW HAMPSHIRE

FB Environmental Associates

97A Exchange Street, Suite 305 Portland, ME 04101
383 Central Avenue, Suite 267 Dover, NH 03820
www.fbenvironmental.com

FB Environmental
where science meets civics

Gina Mastine
45 Beacon Street East
Laconia, NH 03246

September 5, 2025

Dear Ms. Mastine,

FB Environmental Associates (FBE) is pleased to submit this proposal in response to the City of Laconia's request for a natural resource inventory (NRI) and to help identify and prioritize areas of high environmental and ecological value that should remain undeveloped. This effort will build on our proven experience across New England communities, work in the Lakes Region, and prior work with the City.

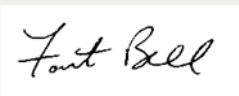
FBE is an environmental consulting firm with offices in Portland, ME, and Dover, NH, staffed by 19 experienced natural resource scientists and planners. Since 2001, we have focused on evaluating natural areas and helping communities mitigate human impacts on aquatic, terrestrial, and wetland ecosystems. Our work spans across New England, from individual property assessments to town-wide evaluations.

- **We are deeply familiar with the natural resources of New Hampshire's Lakes Region, the challenges they face, and the strategies needed for their protection.** Our experience includes completing NRIs for Moultonborough (2016, updated 2025), Rye (2021), Hampton (2024), Dover (2024), Lee (2024), and Hampton Falls (2025).
- **We understand the opportunities and pressures on natural resources in Laconia.** We are currently working with the City on a NHDES Drinking Water Grant project for Paugus Bay and completed a hydrologic assessment of Langley Brook in collaboration with the Lake Winnipesaukee Association (2023). Additional projects include watershed management planning in the Lakes Region and natural resources site assessments and permitting for proposed solar development project in Laconia.

With our extensive experience and strong local connections, FBE is well-positioned to provide Laconia with a strong understanding of high ecological value areas for protection. If awarded the contract, I will serve as Principal-in-Charge, ensuring project success. Sarah Sullivan will serve as Senior Project Manager and lead Ecologist and will be responsible for timely and quality project deliverables. Sarah will work closely with a team of GIS specialists and ecologists. Together, they will execute technical project tasks and prepare maps and report.

We look forward to the opportunity to work with the City of Laconia to complete an NRI that enhances the City's understanding of natural resources. If you have any questions, please feel free to call me at (207) 221-6699 or email me at info@fbenvironmental.com.

Sincerely,



Forrest Bell
FBE Owner & CEO

2. Firm/Team Background

Our Mission

FB Environmental is dedicated to practical stewardship of our natural world. We work to restore and protect ecosystems through science and community collaboration. We focus on clean water and biodiversity conservation, serving both public and private clients. We strive for sustainable solutions, resilience, and environmental justice in every project.

FB Environmental (FBE) is a leading consulting firm specializing in ecosystem services, natural resource planning, and conservation strategies. With offices in Dover, NH and Portland, ME, FBE works at the intersection of science, policy, and community engagement to support sustainable land and water management throughout New England. Forrest Bell is the founder and CEO.

Our expertise includes watershed and habitat assessments, ecological restoration, and climate resilience planning. We assist municipalities, conservation commissions, and state agencies in identifying and protecting critical ecological resources through conducting natural resource inventories, rare and endangered species surveys, and wetland delineations to guide responsible land-use planning and conservation efforts.

With over two hundred years of combined staff experience, FBE integrates GIS mapping, technical site assessment, and ecosystem function evaluation to develop data-driven strategies that enhance biodiversity and ecosystem resilience. In addition, our work includes urban watershed restoration, regulatory compliance support, and green infrastructure implementation, ensuring that conservation initiatives align with both local environmental goals and broader climate adaptation efforts.

Recent projects include municipal natural resource inventory updates, statewide wetland delineations, and habitat conservation strategies that support sustainable development. An independent U.S. Government evaluation awarded FBE 95 out of 100 performance score, including a perfect 100 for staff professionalism and expertise. Our commitment to ecosystem services ensures that communities can make informed decisions that balance economic development with long-term environmental sustainability.

Project Team

Forrest Bell ***Principal-in-Charge***

Over the past 24 years, Forrest has become a regional leader in watershed assessment, planning, and restoration. He has directed over 1,000 environmental projects, ranging from small (<$5,000) to large (>$1,000,000), for federal and state agencies, municipalities, and nonprofits. Since founding FBE in 2001, he has grown it into a respected consulting firm with 19 expert staff. Forrest specializes in helping communities assess natural resources and make science-based policy decisions. A skilled presenter and facilitator, he excels at communicating complex land and water resource issues. **Forrest will serve as Principal-In-Charge and will ultimately be responsible for ensuring project success.**

Sarah Sullivan ***Senior Project Manager & Wetland Scientist***

Sarah's expertise includes project management, wetland delineations, natural resources inventories, natural community identification, stream habitat assessments, as well as technical and permit writing. Sarah joined FBE in July of 2021 with five years of experience at the NH DOT's Bureau of Environment, as the Wetlands Program Analyst where she conducted wetland delineations, permitting, as well as desktop and in-field natural resources inventories of state-owned properties. She holds a bachelor's degree in Environmental Studies with a focus on Ecology from Colby College, where she double majored in Physics. At FBE she serves as the firm's Permitting Lead and is a Senior Wetland Scientist. **Sarah will serve as the project manager for this project.**

Christine Bunyon ***GIS Specialist***

Christine is FBE's lead GIS specialist, managing projects requiring geospatial analyses, data organization, land-use modeling, fieldwork, and technical writing. Christine began working at FBE in 2018 and rejoined in 2023 following completion of her graduate degree specializing in remote sensing from UNH. She is a Certified Remote Pilot of (FAA Part 107)-drones. Christine has an M.S. in Natural Resources and the Environment,. Her research focused on using remote sensing technology capturing imagery from an unmanned aerial system (UAS) to study and monitor cyanobacteria blooms in New Hampshire waterbodies. **Christine will provide technical support for GIS analysis and will perform the co-occurrence analysis for the Laconia Conservation Commission.**

Johanna Szillery ***Senior Soil Scientist, CPSSS***

Johanna has 15 years of experience in the soil science and natural resources field. She is a wetland scientist and a Maine Certified Soil Scientist (ME LSS 494). Johanna specializes in wetland and natural resource delineation, planning, and permitting, soil surveys and soil suitability assessments. Johanna has worked with a variety of clients and with State and Federal regulators to meet the goals of each through the permitting process. As a soil scientist, Johanna has performed soil surveys throughout Maine, from general planning level soil surveys to high-intensity soil surveys specific to the proposed development. **Johanna will serve as a Senior Ecologist and Soil Scientist for this project.**

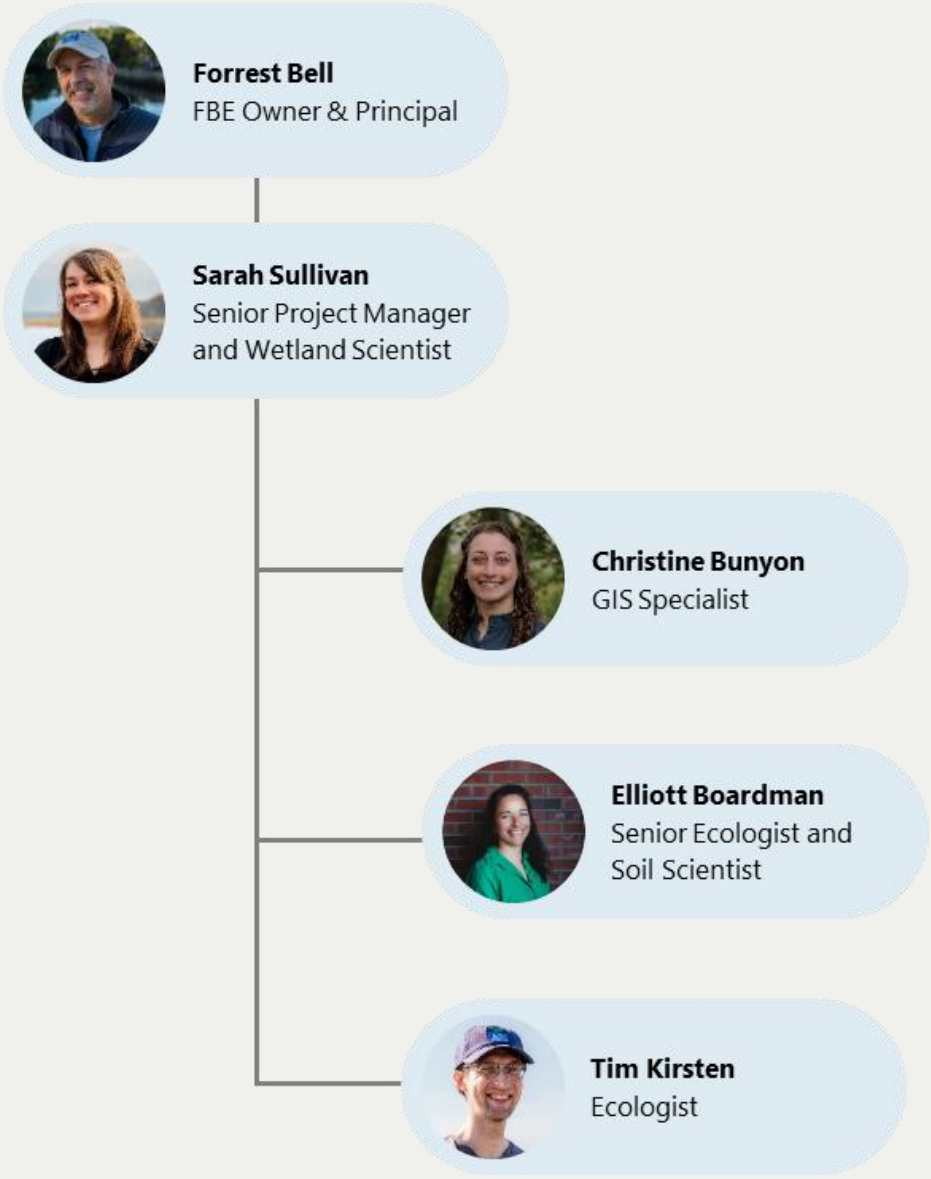
Tim Kirsten ***Ecologist***

Tim joined FBE in 2024 and specializes in ecological services, including wetland delineations, natural resource inventories, vegetation monitoring, and vernal pool surveys. He also assists with watershed-based management plans, water quality monitoring, and MS4 permitting. Originally from South Africa, Tim has developed a deep passion for botany and the natural world, which he continues to apply in his role at FBE after relocating to the U.S. Tim completed an M.S. at the University of Cape Town where he mapped the spatial extend of land degradation for a large agricultural region in South Africa, applying machine learning statistical analyses to satellite imagery and habitat assessment data he collected. He has experience conducting biodiversity, vegetation and soil assessments in a variety of ecosystems, and has previously consulted on climate change adaptation projects throughout Africa. Tim additionally volunteered in the Buzzards Bay region of southern Massachusetts during the summer of 2023, assisting with trail maintenance and invasive plant control. **Tim will provide ecological expertise and support for the Laconia Conservation Commission.**

Please see Appendix A for Staff Resumes

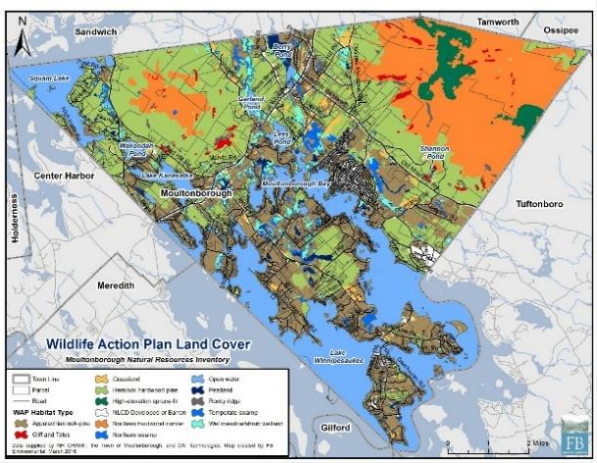
Organizational Chart

FBE is owned and founded by Forrest Bell. Forrest is supported by a leadership team, comprised of five additional senior staff members. The leadership team members and bios can be found at our website, available here. The following organizational chart outlines the project team that will support the City of Laconia with the NRI, if selected.



3. Professional and Technical Qualifications

The projects listed below highlight our experience in environmental planning, natural resource inventories, GIS analyses, and management plan development for local municipalities and conservation commissions.

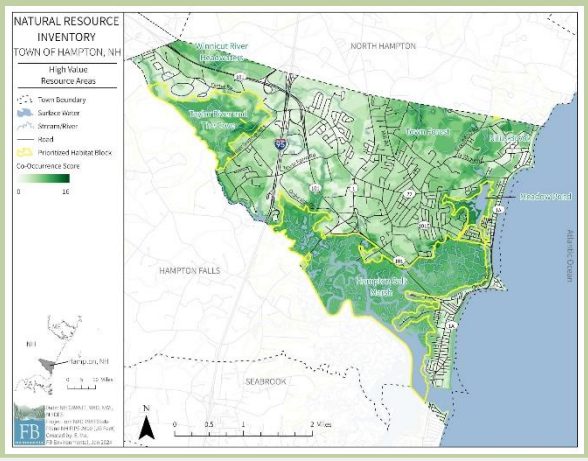


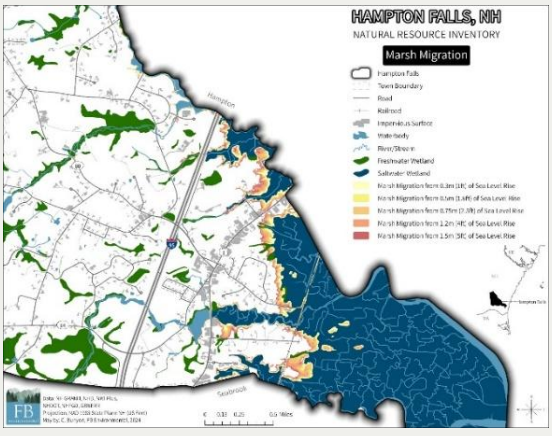
Moultonborough NRI Update

FBE completed a town-wide NRI (2016, 2025 update in progress) for Moultonborough, NH, a 75-square-mile town in the Lakes Region of NH. The Town contains several large waterbodies, mountains, and other natural resources that attract many visitors and seasonal residents. FBE identified rare plants, animals, and exemplary natural communities using the Natural Heritage Bureau database. FBE created maps of terrestrial and wetland communities throughout the Town, identified and described soil types and locations, and developed recommendations for both a management plan and public outreach.

Hampton NRI Update

FBE collaborated with the Town of Hampton Conservation Commission to develop an NRI (2024) for the Town of Hampton, NH. This 14.6-square-mile town in the Seacoast Region of New Hampshire has over 2,439-acres of conserved land which includes many of the Town's marshes and wetlands. As part of the NRI, FBE created twenty maps depicting terrestrial and wetland resources, flood prone areas, sea level rise and marsh migration zones, beach migration, and a co-occurrence analysis of high value resource areas throughout the town.





Hampton Falls NRI Update

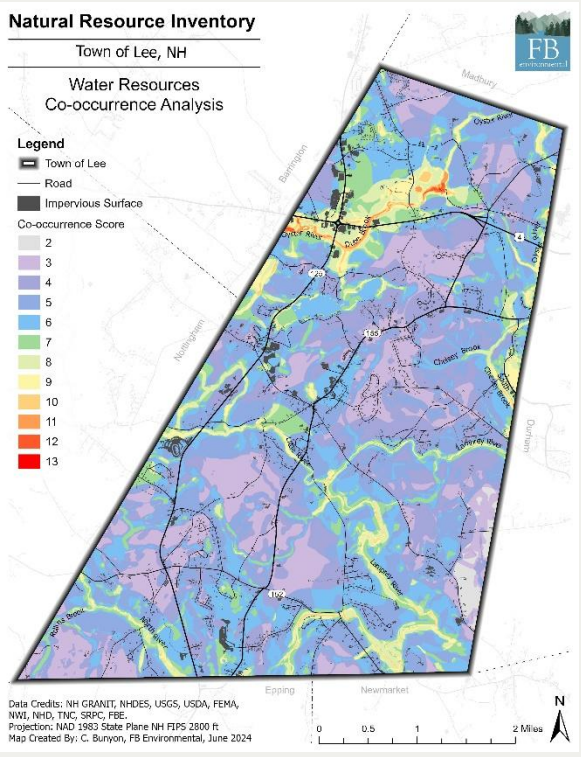
FBE recently developed an NRI and Story Map (2025) for the Town of Hampton Falls, a 12.4-square-mile community in New Hampshire's Seacoast Region. This project includes creating comprehensive GIS maps and a detailed report to enhance understanding of the town's natural resources. Key deliverables focused on identifying resource-rich areas, co-occurrence analyses, and addressing climate change vulnerabilities.

Peaks Island Natural Resource Management Plans

FBE developed comprehensive natural resources management plans (2023/2024) for seventeen properties owned or under conservation easement by the Peaks Island Land Preserve (PILP). The management plans incorporated hands-on fieldwork and GIS mapping techniques to assess and document the diversity of natural resources present across these sites.

FBE expertly identified and mapped various features, including wetlands, geology/soils, land use/land cover, as well as significant plant and animal habitats. Furthermore, we conducted thorough field assessments to identify and map natural resource elements such as wetlands, watercourses, natural community types, and wildlife habitats. The resulting reports are of significant utility to PILP, offering detailed insights into the properties' natural attributes and presenting targeted recommendations for natural resource-focused management.

Through these management plans, PILP and FBE made significant strides towards the conservation and sustainable management of these exceptional properties. By gaining a comprehensive understanding of the properties' natural resources, PILP can work to ensure their long-term preservation, protecting their scenic landscapes, providing important wildlife habitats, and securing low-impact recreational opportunities for future generations to enjoy.



Lee NRI & Water Resources Analysis

As part of the townwide Natural Resource Inventory developed by the Strafford Regional Planning Commission (2024), FBE conducted a GIS-based co-occurrence analysis of water resources in the Town of Lee. This analysis identified areas within a high density of water sources – such as streams, rivers, wetlands, aquifers, and flood zones – to guide conservation efforts focused on drinking water protection. FBE mapped overlapping resource areas using 19 spatial data layers form state and federal sources. The maps serve as a tool to prioritize conservation areas, enhance municipal zoning and ordinances, and guide planning efforts to protect high-priority water resources.

4. References

Marie Samaha
Chair, Moultonborough Conservation Commission
Town of Moultonborough, NH
(603) 476-2347; marietsamaha@yahoo.com

Brianna Hagan
Conservation Coordinator
Town of Hampton, NH
(603) 929-5808; bhagan@hamptonnh.gov

Dawn Genes
Chair, Lee Conservation Commission
Town of Lee, NH
(603 659-5414; dawn.genes@comcast.net

Sara McNamara-Gagnon
Coastal Conservation Coordinator
Seabrook-Hampton Estuary Alliance
sgagnon@shea4nh.org

"It is with great pleasure that I recommend FBE for ecological services. The services offered by FBE bring a unique blend of professionalism and high level of coordination and expertise. Their demonstrated ability to problem solve when posed with challenging situations makes them above the rest."

Todd Janeski, Senior Planner Formerly with the Maine State Planning Office/Maine Coastal Program

5. Client Support

FBE has assembled a highly qualified team that will remain readily available throughout the duration of the project.

- **Forrest Bell, Principal-in-Charge**, will communicate frequently with Sarah to ensure project deliverables are completed in a timely and quality manner for the City. Forrest will complete monthly project tracking and administrative duties with FBE's Business Manager. Forrest is available on an as-needed basis for support to the City.
- **Sarah Sullivan, Senior Project Manager & Wetland Scientist**, will serve as the primary point of contact and will be available for all project meetings, including up to three Conservation Commission meetings, as well as site visits as requested by the City. Sarah's project management oversight ensures consistent communication, timely deliverables, and responsiveness to the Commission's needs. Based in Dover, NH, Sarah is readily available for in-person meetings.
- **Christine Bunyon, GIS Specialist**, will be available for technical meetings, presentations, and coordination regarding GIS analyses. Based in Dover, NH, Christine is available for in-person meetings.
- **Johanna Szillery, Senior Ecologist**, will be available to provide support virtually at project meetings and is well-positioned to participate in site visits where additional senior ecological expertise is required.
- **Tim Kirsten, Ecologist**, will be available to support targeted field investigations and attend site visits, particularly those involving vegetation monitoring, vernal pool surveys, or broader ecological assessments. Based in Dover, NH, Tim is available for in-person meetings.

Collectively, the FBE team maintains a flexible schedule and is committed to aligning with the City of Laconia's project timeline. Our staff are based in New England, which allows for efficient coordination, in-person presence when requested, and timely completion of fieldwork during appropriate seasonal windows.

6. Additional Information

Scope of Work

The following outlines FBE's approach to achieving the City's goal of identifying and prioritizing areas of high environmental and ecological value to remain undeveloped. FBE understands that the City intends to use and reference this information when making decisions on development projects and reviews of land use applications and site plans to ensure that areas of high value are protected from disturbance and development. FBE provided the following scope of work and approach to the City in the Spring of 2025 for their consideration.

The following scope of work is intended to provide the City of Laconia's Conservation Commission with a follow-up study to augment the information provided in the 2009 City-wide NRI and 2022 NRI update. The goal of this analysis would be to use GIS spatial mapping techniques to identify existing areas of high environmental and ecological value. The City can then refer to this information when making decisions on development projects, to ensure that areas of high value are protected from disturbance and development. FBE is flexible and able to adjust this Scope of Work upon project initiation, if selected.

Project Management and Administration

FBE will work closely with the City of Laconia's Conservation Commission to complete the tasks listed in this scope of work. Project management and administration includes invoicing and internal administration, project scheduling, project coordination, and project tracking. Additionally, FBE anticipates a project kick-off meeting with the Conservation Commission.

Review of Existing NRI Documents

FBE will review the existing City of Laconia Natural Resources Inventory (2009) report and NRI update (2022) for pertinent information and previously identified areas prioritized as having high environmental and ecological value (i.e., priority areas) to fold into FBE's study and analysis.

Co-Occurrence Analysis and Mapping

Utilizing available desktop natural resources GIS data and conducting a co-occurrence analysis in GIS, FBE will create a PDF map identifying areas of high environmental and ecological value. In addition, FBE will identify and create a spatial data layer for areas of unfragmented land throughout the city, a contributing factor in identifying areas of high environmental and ecological value. FBE will provide the City with GIS shapefiles to integrate into Axis GIS, or an equivalent platform, for ease of use and overlay with other City features.

The purpose of this analysis is to identify areas in the city where natural resources are concentrated, and the co-occurrence map will depict these high density natural resource areas. These maps will serve as a valuable tool and guide for the Commission for project review, and planning efforts, and prioritizing the protection of and/or limiting development of land in the city.

Deliverables: Required GIS Data and Shapefiles

Summary Report

FBE will prepare a report summarizing our methods and findings of the co-occurrence analysis and highlighting key resources and features within each area of high environmental and ecological value. Areas will be coded so they can easily be matched to locations on the map. FBE will provide the report to the commission for review and a round of edits prior to presenting the findings.

Deliverables: Draft and Final Natural Resources Inventory and Executive Summary (print and digital versions)

Conservation Commission Meetings

FBE anticipates up to three (3) meetings with the Conservation Commission to brainstorm and gather anecdotal knowledge of priority areas, discuss the co-occurrence methodology, and gain input on the analysis approach. Additionally, FBE will present the findings of the co-occurrence analysis and areas identified as high environmental and ecological value**.** For budgetary purposes, FBE anticipated virtual meetings and did not include travel time or mileage in this scope. FBE would be happy to meet in person and adjust the scope and cost estimate to include in-person meetings.

Deliverables: 3 meetings with Conservation Commission

Field Investigations

FBE can conduct targeted field investigations at sites identified as having high environmental and ecological value. These investigations would serve to strengthen the NRI and clearly document the reasons why each site should remain undeveloped and/or conserved. Depending on the site, investigations could include classification and description of natural resources; mapping of natural communities and cover types; evaluation of suitable wildlife habitat; vernal pool surveys; and surveys for rare, threatened, and endangered wildlife and plant species.

It is important to note that field investigations will be undertaken if requested, funding is available, at municipally owned parcels, or if individual property owners provide written consent granting access to their land for this purpose.

7. Cost Proposal

Estimated Budget

It is expected that Tasks 1 through 5 will cost up to **$17,955** to complete as shown in Table 1. Field investigations can be completed at a **$2,730/day plus $2,200 for data post proccing and summarizing** (time, materials, and expenses included) and the number of days depends on the number of properties and size of the properties. FBE's estimated overhead is approximately 16%.

Table 1. Project tasks and budget table.

Project Task	Budget
2.2 Project Management and Administration	$2,023
2.3 Review of Existing NRI Documents	$1,848
2.4 Co-Occurrence Analysis and Mapping	$5,265
2.5 Summary Report	$5,072
2.6 Conservation Commission Meetings (3 virtual)	$3,747
Total	**$17,955***
OPTIONAL 2.7 *Field Investigations*	**$2,730/day + $2,200*

**The total does not include field investigations.*

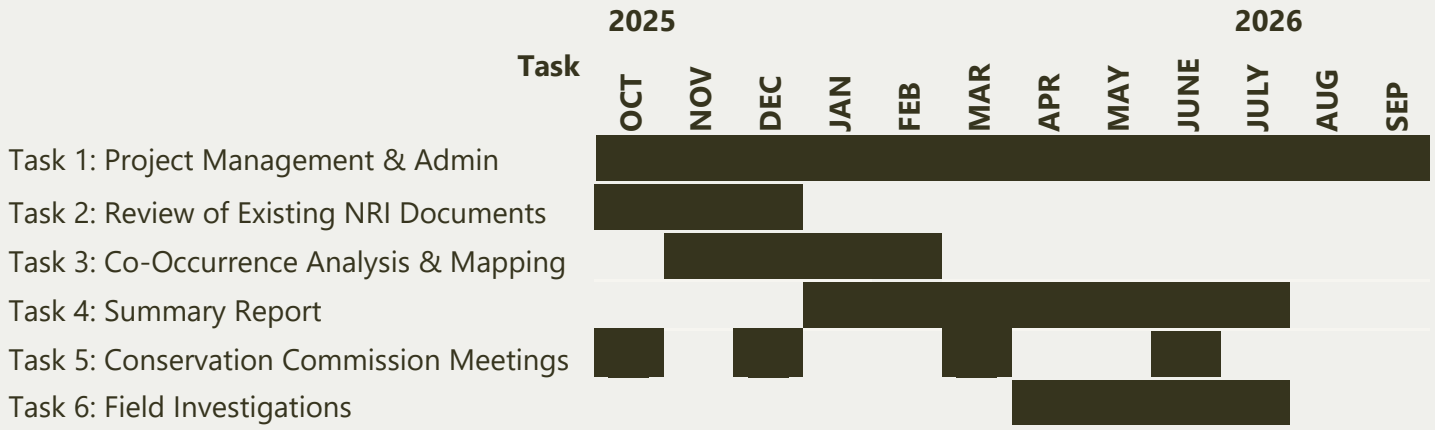
Table 2. Individual staff labor rates.

Staff Member	2025 Rate	2026 Rate
Forrest Bell, Principal-in-Charge	$182	$189
Sarah Sullivan, Senior Project Manager & Wetland Scientist, CWS	$125	$130
Christine Bunyon, GIS Specialist	$116	$121
Johanna Szillery, Senior Soil Scientist, CPSSS	$155	$161
Tim Kirsten, Ecologist	$93	$96

Timeline

FBE developed a timeline (Table 3, below) with an anticipated start date of October 2025 and a completion date in September 2026 based on the 12-month project timeline provided in the RFP. This schedule is designed to meet project milestones efficiently, but we are flexible and can adjust the timeline to align with the Commission's needs or expedite specific tasks if feasible. Final adjustments will depend on the timing of the project award and any additional requirements from the City.

Table 3. Estimated project timeline for completion based on the 12-month timeline provided in the RFP.



Appendix A: Staff Resumes

The following pages contain resumes of the FBE staff who will work on this project.

FORREST BELL

Owner & CEO

As the founder and owner of FBE, Forrest is a regional leader in environmental assessment and restoration projects. With over 33 years of experience, he has led more than 950 successful projects for a diverse range of clients, including federal and state resource agencies, municipalities, and non-profits. A skilled presenter and facilitator, Forrest excels at conveying the complexities of land and water resources to New England's communities.

EXPERTISE

- BMP Design & Implementation
- Community Development
- Conservation & Land Use Planning
- Lake, River, & Stream Assessment
- River & Stream Geomorphology
- Natural Resource Evaluations
- Watershed Management
- Water Quality Monitoring & Modeling

EDUCATION

M.S. coursework completed, Natural Resource Administration & Management
University of New Hampshire (2002)

B.A. Geography & Land Use Planning
University of Southern Maine (1991)

VOLUNTEER BOARDS

Executive Board Member, Piscataqua Regional Estuaries Partnership (2011-2016)

Executive Board Member, Saco Headwaters Alliance (2019 – 2021)

MEMBERSHIPS

North American Lake Management Society

American Planning Association

PROFESSIONAL HIGHLIGHTS

- Proven success with clients including the US Environmental Protection Agency, US Army Corps of Engineers, Maine Department of Marine Resources, New Hampshire Department of Environmental Services, Rhode Island Department of Environmental Management, Piscataqua Regional Estuaries Partnership, Casco Bay Estuary Partnership, numerous private companies, and **over 50 municipalities** in ME and NH.
- Technical expertise in geomorphic processes, river and stream restoration, water quality monitoring, BMP design, and pollutant load modeling.
- Engaged face-to-face with over **5,000 landowners and industry employees** in fishing and agriculture to develop conservation strategies.
- Advises nonprofits, government agencies, municipalities, and professional associations on compliance with environmental programs and laws.
- Delivered **100+ formal presentations** at national, state, regional, and local conferences on water resources, watershed management, and land management.
- Secured **over $20 million** in environmental project funding from 1995 to 2024 to support water resource protection and improvement initiatives.

SELECT PROJECTS

Watershed Planning & Restoration

Megunticook River Watershed Project (2022-Present)
Camden, ME | Role: Senior Project Manager | Website
Multi-year, $1.6M National Fish and Wildlife Foundation-funded project supporting Megunticook River restoration. Tasks include collaboration with the Town of Camden and Inter-Fluve to oversee the grant, coordination with landowners, public outreach, and management of a Town advisory committee.

Saco River Watershed Projects (2018-Present)
Conway, Bartlett, Jackson, Albany, Hart's Location, NH | Role: Senior Project Manager
Helped establish the Saco Headwaters Alliance to oversee long-term water assessment and restoration, collaborating with conservation organizations, agencies, and municipalities. Currently managing multiple projects in the Saco River watershed focused on water quality, groundwater protection, floodplain mapping, and climate resiliency.

Watershed Management Plans (1991-Present)
Principal-in-Charge over fifty watershed management plans across New England, with specific expertise in EPA nine-element plans for lakes, rivers, streams, and estuaries. Provides senior oversight to FBE staff on plan writing, data collection and analysis, stakeholder outreach, and pollutant load modeling.

Select plans:
Lake Winnipesaukee (multiple) | NH | 2014-Present | Plans
Lake Kanasatka | Moultonborough, ME | 2022 | Plan
Long Creek | Portland, ME | 2009 | Plan ★ *U.S. EPA Merit Award Winner*

info@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820

FORREST BELL

FBE Owner & CEO

SELECT PROJECTS CONTINUED

Water Quality Assessment and Reporting

U.S. EPA Region 1 Blanket Purchase Agreement (2008-2013; 2019-Present)

New England | Role: Principal Scientist & Senior Project Manager

Two five-year, multi-million-dollar contracts focused on detailed assessments of impaired waterbodies across all six New England states. Responsibilities included directing staff, technical writing, river and stream mapping, impervious cover analysis, pollutant load modeling, and water quality monitoring for multiple parameters. Forrest successfully led eleven large-scale projects under these contracts.

MA DEP Total Maximum Daily Load & Nonpoint Source (2017-Present)

Massachusetts | Role: Senior Project Manager

Assist MA DEP with multiple projects under two blanket contract agreements to deliver TMDL and NPS services for Massachusetts watersheds. Tasks include developing TMDLs for bacteria- and nutrient-impaired waters, creating watershed management plans, and conducting water quality data analysis.

Natural Resources Conservation Planning & Management

Peaks Island Land Preserve (2022) ★ *Northern New England American Planning Association 2024 Plan of the Year*

Peaks Island, ME | Role: Principal-in-Charge | Report

Developed large-scale natural resources inventory and conservation management plans for eighteen properties on Peaks Island. Tasks included cover type mapping, invasive plant management, and plan development, in collaboration with Mohr & Seredin Landscape Architecture of Portland, ME.

Multiple Maine and New Hampshire Land Trusts (2012-Present)

ME & NH | Role: Principal-in-Charge

Collaborate on multiple projects with Maine and New Hampshire land trusts, including development of Natural Resources Inventories, conservation planning, easement monitoring, buildout studies, invasive species management, GIS mapping, and wildlife surveys.

Upper Saco Valley Land Trust Conservation Planning (2013-2015)

Saco Valley, NH | Role: Project Manager & Lead Scientist

Project tasks included interpreting regional co-occurrence modeling, leading presentations to eleven municipalities, modeling future development patterns, hosting a community forum, and engaging communities in land protection efforts.

PRESENTATIONS, ETC.

Bell, F. (2022). NH Lakes Congress, Meredith, NH. Empowering Lake Associations to Develop Watershed Management Plans.

Bell, F. (2022). Town of Moultonborough, ME. Lake Kanasatka Watershed Management Plan Final Community Presentation.

Bell, F. (2019). Maine Stormwater Conference, Portland, ME. Innovative Restoration Efforts on Dole Brook & Riverside Golf Course.

Bell, F. (2019). Town of Alton, NH. Implementing the Merrymeeting River & Merrymeeting Lake Watershed Management Plan.

Bell, F. (2018). Green Mountain Conservation Group: Multiple Public Presentations for the Ossipee Lake Watershed Plan.

Bell, F. (2017). Lake Winnipesaukee Association. Multiple Public Presentations for Lake Winnipesaukee Watershed Plan Development.

Bell, F. (2016). New Hampshire Lakes Conference, Meredith, NH. Watershed Plan Development.

Bell, F. (2016). Penobscot River Watershed Conference, Northport, ME. Culvert Assessment for Climate Change Adaptation

SARAH SULLIVAN CWS

Wetland Scientist & Permitting Lead

Sarah brings over ten years of expertise in wetland delineations, natural resource permitting, agency consultation, and technical writing. At FBE, Sarah is a lead wetland scientist and permitting specialist. Prior to FBE, Sarah served as Wetlands Program Analyst at the NH Department of Transportation, managing over 100 state and federally funded wetland and stream-related projects. She has a proven track record of working with federal, state, municipal, and private clients, delivering high-quality environmental solutions tailored to diverse project needs.

EXPERTISE

- Wetland Delineation & Functional Assessments
- Geomorphic & Stream Habitat Assessments
- Natural Resources Inventories
- Vernal Pool Surveys
- Rare, Threatened, & Endangered Plant Surveys
- Natural Resource Permitting
- Agency Consultation
- GIS Mapping & Spatial Analyses
- Scientific & Technical Report Writing
- Water Quality Monitoring
- Data Synthesis & Analysis

EDUCATION

B.A. Environmental Science, Ecology, & Physics
Colby College (2014)

CERTIFICATIONS

NH Certified Wetland Scientist
License No. 00334

MEMBERSHIPS

New Hampshire Association of Natural Resource Scientists
Board of Directors (2022-Present)
Member (2016-Present)

SELECT PROJECTS

Wetland Delineation, Vernal Pool Survey & Stream Crossing Assessments

Performs wetland and watercourse delineations for solar power and transportation projects in ME and NH using U.S. Army Corps of Engineers methodology. Identifies Wetlands of Special Significance, Priority Resource Areas, and vernal pools, and conducts functional assessments. Complete NH stream crossing assessments under NHDES Env-Wt 900 rules, evaluating geomorphic and habitat features, sediment, bank conditions, and riparian vegetation to support state and federal permitting.

Wetland Delineations

Livermore Falls, ME | 2025 | 20-acres | Role Technical Staff
Oxford, ME | 2025 | 29-acres | Role: Technical Staff
Ossipee, NH | 2024 | 17.5-acres | Role: Project Manager & Technical Staff
Bristol, NH | 2024 | 45-acres | Role: Project Manager
Troy, NH | 2023 | Three sites ranging 25 to 85-acres | Role: Project Manager
Lamoine, ME | 2023 | 84-acres | Role: Project Manager
Pembroke, NH | 2023 | 129-acres | Role: Project Manager

Vernal Pool Surveys

Bristol, NH | 2024 | 45-acres | Role: Project Manager
Troy, NH | 2023 | Three sites ranging 25 to 85-acres | Role: Project Manager
Richmond, ME | 2022 | 104-acres | Role: Project Manager

Stream Crossing Assessments

Bristol, NH | 2024 | 45-acres | Role: Project Manager
Troy, NH | 2023 | Three sites ranging 25 to 85-acres | Role: Project Manager
Chester, NH | 2022 | 18-acres | Role: Project Manager & Technical Staff

NH DOT Statewide on Call Wetland Services Contract

Warner, NH | 2024 | Role: Project Manager & Technical Staff
Loudon, NH | 2023 | 150-acres / 3-miles | Role: Project Manager
Albany, NH | 2022 | 110-acres / 4.4 miles | Role: Project Manager
Enfield, NH | 2022 | 77-acres / 1.5-miles | Role: Project Manager & Technical Staff
Warner & Sutton, NH | 2022 | 2-miles | Role: Project Manager & Technical Staff

Natural Resources Permitting

Since 2016 prepared and filed over 100 NH Standard Dredge and Fill Wetlands, Shoreland, and Permit-By-Notification applications for transportation, stream crossing, shoreline water quality improvement, and solar development projects. Submitted multiple Maine Natural Resources Protection Act (NRPA) Permits-By-Rule and is knowledgeable about NRPA regulations. Ensured compliance with federal and state environmental regulations and developed strong working relationships with state and federal natural resource agency staff.

Solar Development Wetlands Permitting

Troy, Bristol, & Laconia, NH | Role: Project Manager | 2024-2025 | Wetlands Permits

Eastman Community Association Shoreland Permitting

Grantham, NH | Role: Project Manager | 2021-2022 | Shoreland Permit & Shoreland PBN

sarahs@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820

SARAH SULLIVAN CWS

Wetland Scientist & Permitting Lead

SELECT PROJECTS CONTINUED

Rare, Threatened, & Endangered Botanical Surveys

Assisted in rare, threatened, and endangered (RTE) plant species surveys for development projects such as large-scale solar power projects across ME and NH. Conducted habitat assessments using meander path methodology, compiled comprehensive plant inventories, and mapped natural community cover types. Prepared protocols, field reports, and coordinated with state agencies to present findings and develop conservation measures.

RTE Surveys

Standish, ME | 2025 | small whorled pogonia (Isotria medeoloides) | Role: Project Manager & Technical Staff
Raymond, NH | 2024 & 2025 | small whorled pogonia (Isotria medeoloides) & chestnut oak forest/woodland exemplary natural community | Role: Project Manager & Technical Staff
Pelham, NH | 2023 | meadow garlic (Allium canadense), river birch (Betula nigra), & Swamp White Oak Floodplain Forest exemplary natural community | Role: Project Manager & Technical Staff
Nottingham, NH | 2023 | climbing hempvine (Mikania scandens) | Role: Project Manager
Roxbury, ME | 2021 & 2022 | eleven state listed rare, threatened, & endangered plant species | Role: Project Manager

Mitigation Monitoring

Develop monitoring plans and protocols, and conduct on-site surveys of compensatory mitigation sites for projects with wetland permit obligations requiring mitigation and monitoring due to unavoidable impacts to wetlands, vernal pools, floodplains, and associated upland buffers. Work includes evaluation of impacts to wetland resources, establishment of created wetlands and floodplain storage, the success of native vegetation establishment, invasive species management, and overall stability and ecological function, value, and lift of the project.

NHDOT Keene Year 1 & 2 Monitoring

Keene, NH | 2024 & 2025 | Floodplain & Wetland Creation | Role: Project Manager & Technical Staff

NHDOT Walpole-Charlestown Year 1 & 2 Monitoring

Walpole, NH | 2023 & 2024 | Wetland & Riverbank | Role: Project Manager & Technical Staff

Natural Resources Inventories

Developed and led natural resources inventories for municipalities and conservation organizations, integrating desktop analysis, GIS mapping, and field assessments to document wetlands, streams, soils, habitats, and land use. Produced detailed maps, identified priority conservation areas, and provided actionable recommendations for master plans and management strategies.

Dover NRI Rapid Ecological Assessment

Dover, NH | Role: Project Manager and Ecologist | 2024 | Report

Lee NRI Water Resources Analysis

Lee, NH | Role: Project Manager | 2024 | Report

Hampton Natural Resources Inventory

Hampton, NH | Role: Project Manager | 2023-2024 | Report

Peaks Island Natural Resources Inventory & Management Plans

Peaks Island, ME | Role: Project Support | 2022-2023 | Report

Rye Natural Resources Inventory

Rye, NH | Role: Project Manager | 2021 | Report

Grant Writing

NH Department of Environmental Service's Aquatic Resource Mitigation Fund Grants (2016-2021)

Managed three projects for NH DOT seeking ARM grant funding. Completed required field work and data collection, collaborated with project engineers, state natural resource agencies and organizations including the NH Department of Fish and Game and The Nature Conservancy. Wrote pre-proposal reports and final grant applications submitted to NH DES for review and selection.

sarahs@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820

CHRISTINE BUNYON

Project Manager, GIS Specialist, & Water Resource Scientist

Christine leads a breadth of watershed planning and management projects at FBE, coordinating support staff for field data collection and analysis, watershed modeling, and plan development. With expertise in geospatial analyses, she transforms spatial data into actionable visualizations for clients, including high-quality maps and geodatabases for watershed management plans, natural resource inventories, buildout analyses, and more.

EXPERTISE

- Geographic Information Systems
- ArcMap, ArcGIS Pro, geodatabases, Arc Online, Collector, FieldMaps
- Data analysis: Excel, R, Python, eCognition, Agisoft Metashape
- Buildout Analyses
- Hydrologic and Watershed Modeling

EDUCATION

M.S. Natural Resources & the Environment, Remote Sensing
University of New Hampshire

B.S. Environmental Conservation & Sustainability
University of New Hampshire

CERTIFICATIONS

Graduate Certificate in Geospatial Sciences
University of New Hampshire

Certified Remote Pilot in Charge
FAA Part 107

PUBLICATIONS

Bunyon et al. (2023). Using Imagery Collected by an Unmanned Aerial System to Monitor Cyanobacteria in New Hampshire, USA, Lakes. *Remote Sensing*, 15(11), 2839. Fraser et al. (2022).

Analysis of Unmanned Aerial System (UAS) Sensor Data for Natural Resource Applications: A Review. *Geographies*, 2(2), 303–340.

PRESENTATIONS

Using Imagery from an Unmanned Aerial System to Study Cyanobacteria in New Hampshire Waterbodies.
ASPRS Conference, Denver, CO; February 2023

Using GIS technology to improve watershed management planning and implementation tracking of surface waters.
New Hampshire Water & Watershed Conference, Plymouth, NH; March 2019

SELECT PROJECTS

Geospatial Analyses

Extensive experience conducting spatial analyses and creating mapping products to support environmental planning, watershed management, and community resilience initiatives across New England. Proficient in ArcGIS Pro, remote sensing, and UAS-collected imagery for water quality monitoring. Regularly create mapping products and conduct spatial modeling for municipal master plans, natural resource inventories, and regulatory TMDLs. Experienced in teaching GIS applications and leading GIS-focused workshops and labs.

Watershed Planning & Modeling

Supports watershed planning and water quality monitoring efforts through spatial data creation, GIS analysis, and mapping. Projects include creating community resilience data layers for climate adaptation, building spatial data repositories, compiling regional water quality datasets, modeling pollutant loads, and developing a high-resolution, multi-state database of hydrologic response units to assess stormwater nutrient runoff potential by town and watershed. Exemplary projects include Spatial Analyst Consultant for The Nature Conservancy's Merrimack River Watershed Planning (Present), US EPA Southeast New England Program Hydrologic Response Unit Analysis (2025), Saco Headwater Alliance Water Resource Monitoring (2021), and Palmer River Watershed Water Quality Analysis (2019).

Municipal Planning

Performs geospatial analyses and mapping for municipal planning projects such as Master Plans and Build-out Analyses. Responsibilities include assessing existing conditions, evaluating zoning and natural resource protections, and developing maps for master plan updates related to transportation, infrastructure, and coastal resiliency. Exemplary projects include Tamworth, NH Build-out Analysis (2024) and Rye, NH Master Plan Update and Build-out Analysis (2025).

Total Maximum Daily Load Development

Conducted GIS-based analyses to support statewide TMDL development for nutrient- and pathogen-impaired waterbodies in Connecticut and Massachusetts. Responsibilities included watershed characterization, land use and impervious cover analysis, DCIA calculation, and spatial data visualization across hundreds of lakes and stream segments.

Natural Resource Planning

Develops mapping products including sea level rise, marsh migration, floodwater storage, flood risk mitigation and pollutant attenuation, scenic resources, prioritized areas for conservation and more for Natural Resource Inventories. One exemplary project includes the Rye, NH Natural Resource Inventory (2021).

Academic Experience

Completed a graduate thesis on Using Imagery Collected by an Unmanned Aerial System to Monitor Cyanobacteria in New Hampshire, USA, Lakes (2023), which involved linking drone imagery with water quality data, collected through rigorous field work and laboratory analyses, to quantify cyanobacteria concentrations. Also served as a Lead Teaching Assistant for Intro to GIS and Remote Sensing class, and held open workshops for students to learn about the use and application of GIS (2023).

christineb@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820

JOHANNA SZILLERY

Senior Soil Scientist

Johanna has over 20 years of experience in natural resource assessment, permitting, and environmental project management across New England. She specializes in wetland delineation, soil science, botany, and water chemistry, with extensive expertise in habitat evaluation, site suitability analysis, and compliance with state and federal regulations. As a leader and technical expert in her field, Johanna has directed projects from proposal development through fieldwork, permitting, reporting, and agency coordination, including conservation initiatives, alternative energy development, and commercial, residential and industrial development.

EXPERTISE

- Wetland Delineation & Protected Habitat Assessment
- Soil Science, Mapping, & Chemistry
- Botany & Plant Ecology
- Water Chemistry & Watershed Analysis
- Natural Resource Permitting & Compliance
- Environmental Site Assessment & Monitoring
- Risk Assessment
- Field Sampling & Laboratory Analysis (soils, water, vegetation)
- GPS Data Collection

EDUCATION

M.S. Plant, Soil, & Environmental Sciences
University of Maine, Orono

B.A. Biology
Minor in Environmental Sciences
Drew University

CERTIFICATIONS

State of Maine Soil Scientist (CSS #494)

MEMBERSHIPS

State of Maine Board of Licensure for Soil Scientists & Geologists
Member (2014-Present)
Chairperson (2022-Present)

Maine Association of Professional Soils Scientists
Member (2008-Present)
President (2011- 2013)

Maine Association of Wetland Scientists
Member (2008-Present)

PROFESSIONAL EXPERIENCE

Senior Project Scientist & Project Manager

New England | 2013-2025 | Affiliation: Haley Ward, Inc.
Supervised a team of two to six environmental scientists, providing mentoring and technical guidance to support professional growth. Served as technical lead for natural resource identification, assessment, planning, and permitting, managing all phases of projects from proposals and budgeting through fieldwork, reporting, and quality assurance. Directed natural resource planning, permitting, and compliance for conservation, wetland and habitat alteration, and alternative energy projects, while coordinating with regulatory agencies and reviewing environmental risk assessments and due diligence for real estate transactions.

Soil & Wetland Scientist

Maine | 2006-2013 | Affiliation: S. W. Cole Engineering, Inc.
Performed wetland delineations, natural resource and protected habitat assessments, and soil mapping and suitability evaluations on properties ranging from 5 to 45,000 acres across Maine. Managed projects from proposal development and budgeting through coordination, fieldwork, and technical reporting. Conducted permit research, prepared documentation, and coordinated with regulatory agencies on wetland, habitat alteration, and alternative energy projects. Supported company-wide initiatives through geotechnical borings, soils laboratory work, environmental site assessments, and long-term environmental monitoring.

Forest Soils Research Technician

Maine | 2003-2006 | Affiliation: Department of Plant, Soil, & Environmental Sciences, University of Maine
Coordinated field sampling and laboratory analyses for a multi-site forest soils research project, working with project leaders, faculty, and student workers. Designed and implemented data collection, analysis, and quality control procedures for a new research discipline, and performed preliminary analyses to inform future studies. Established protocols for data management and equipment maintenance, while overseeing student workers and coordinating project activities across the research team.

Early Professional Experience

Gained foundational experience in natural resource monitoring, vegetation assessment, and soil science through roles with the USDA Natural Resources Conservation Service and Shenandoah National Park. Responsibilities included soil compilation and mapping, vegetation monitoring, and development of protocols for a new non-native vegetation monitoring program. Supported long-term ecological monitoring efforts by collecting and analyzing vegetation data, and assisted with avian and fisheries monitoring programs. Recognized by NRCS with a Certificate of Appreciation for outstanding work.

johannas@fbenvironmental.com | +1 207-221-6699 | 97A Exchange St, Suite 305, Portland, ME 04101

TIM KIRSTEN

Project Scientist II

Tim specializes in ecological services, contributing to fieldwork, technical writing, GIS, and data analysis across various projects, including wetland delineations, natural resource inventories, vegetation monitoring, and vernal pool surveys. He also assists with watershed-based management plans, water quality monitoring, and MS4 permitting. Originally from South Africa, Tim has developed a deep passion for botany and the natural world, which he continues to apply in his role at FBE after relocating to the U.S.

EXPERTISE

- Scientific & Technical Writing
- Natural Resource Inventory
- Plant Identification
- Water Quality Sampling
- GIS Analysis & Mapping
- Data & Statistical Analysis
- Ecological Restoration
- Climate Change Adaptation

EDUCATION

M.S. Biological Science
University of Cape Town (2023)

B.S. Applied Biology & Environmental & Geographic Science
University of Cape Town (2018)

PUBLICATIONS

Kirsten et al. (2023). A regional, remote sensing-based approach to mapping land degradation in the Little Karoo. *Journal of Arid Environments*. 219: 105066. Report

Bell et al. (2023). Modelling land degradation to augment Land Degradation Neutrality assessments: the Succulent Karoo biome of South Africa as a case study. *Journal of Arid Environments*. 219: 105066. Report

Bell et al. (2022) An evaluation of different approaches which use Google Street View imagery to ground truth land degradation assessments. *Environmental Monitoring & Assessment*. 194: 1–12. Report

SELECT PROJECTS

Ecological Services

Provides support to wetland delineations, vernal pool surveys, natural resource inventories, vegetation monitoring, stream crossing assessments, and rare, threatened and endangered species surveys. Assists in fieldwork, GIS analysis and report writing.

Solar Energy Permitting (2024)
Troy, Bristol, and Laconia, NH

Wetland Delineations (2024)
Ossipee and Troy, NH

Natural Resource Inventories (2024)
Rapid Ecological Assessment | Dover, NH
Natural Community Type Mapping | Biddeford, ME
Perkinstown Wildlife Commons Land Management Plan | Wells, ME

Vegetation Monitoring (2024)
Floodplain Mitigation Monitoring | Keene, NH

Rare and Threatened Species Surveys (2024)
Small Whorled Pogonia Survey | Laconia, NH
Roaring Brook Mayfly & Spring Salamander Surveys | Saddleback Mountain, ME

Watershed Planning

Assists in development of watershed management plans in NH and ME. Tasks include GIS analysis, data analysis, nonpoint source pollution surveys and report writing.

Lake Winnipesaukee Watershed Management Plans (Present)
Alton Bay, Center Harbor & the Broads, NH

Shaws Pond Watershed Management Plan (Present)
New Durham, NH

Capisic Brook Watershed Management Plan (Present)
Portland, ME

Water Quality Monitoring

Conducts water quality sampling in various weather conditions for bacteria and pollutant analysis.

Parsons Creek Monitoring (2024)
Rye, NH

Ogunquit River Monitoring (2024)
Ogunquit, ME

International Paper Wastewater Sampling (2024)
Auburn, ME

timk@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820

TIM KIRSTEN

Project Scientist II

SELECT PROJECTS CONTINUED

MS4 Permitting Support

Provides assistance to Towns in meeting their MS4 permitting requirements, including mapping stormwater infrastructure, writing stormwater pollution prevention plans, and reviewing ordinances relating to stormwater management.

Stratham Year 6 MS4 Permitting Support (2024)
Stratham, NH | *Outfall Map*

PREVIOUS RESEARCH & PROFESSIONAL EXPERIENCE

Climate Change Adaptation

Worked at a climate change consulting firm in Cape Town, South Africa, assisting UNEP and UNDP in the design of large-scale climate change adaptation projects in Africa. Provided support in the research of climate change impacts and the designing ecosystem-based adaptation interventions.

Building the capacity of Rwanda's government to advance the National Adaptation Planning process (2020-21)
Rwanda | *Report*

Enhancing the Resilience of Vulnerable Coastal Communities, Sinoe County (2020-21)
Liberia | *Report*

Jordan Integrated Landscape Management Initiative (2020)
Jordan | *Report*

PRESENTATIONS

Kirsten T. 10/2024. A regional, remote sensing-based approach to mapping land degradation in the Little Karoo. Arid Zone Ecology Forum, Vredendal, South Africa.

Kirsten T. 10/2021. A regional, remote sensing-based approach to mapping land degradation in the Little Karoo: preliminary analysis. Arid Zone Ecology Forum, Worcester, South Africa.

Kirsten T. 10/2019. Topographic complexity drives high floral diversity in the Greater Cape Floristic Region, South Africa. Biological Sciences Department, University of Cape Town, South Africa.

Dai S, Kirsten T, Rehmann J & Rehmann E. 5/2019. Rhino Middens and Biodiversity. Skukuza, Kruger National Park [presentation given to South African National Parks on research conducted with Organization for Tropical Studies].

timk@fbenvironmental.com +1 207-221-6699 383 Central Ave, Suite 267, Dover, NH 03820