

## User Stories for Vermont's Functioning Floodplains Initiative

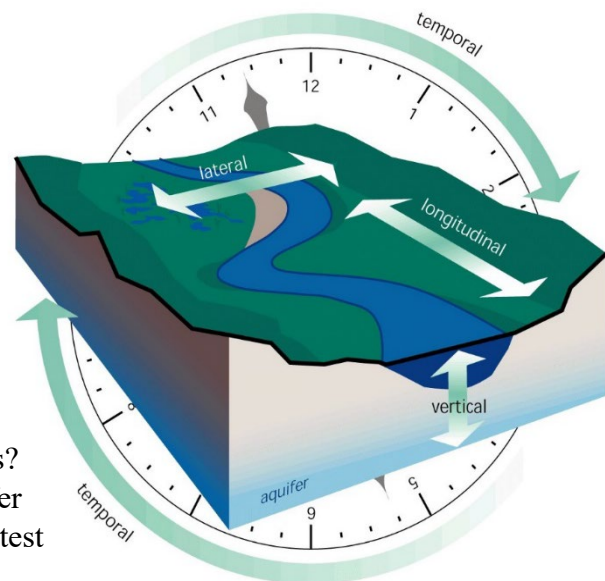
**Background:** The Vermont ANR has begun a Functioning Floodplains Initiative to help meet its water quality, flood resiliency, and natural resource conservation mandates. The Initiative builds upon the many years and success of ANR-sponsored river corridor planning to support the restoration and protection of streams, riparian wetlands, and floodplains.

When EPA issued the Lake Champlain TMDL in 2016, it was the first TMDL nationwide to require load reductions from unstable stream sources by managing streams toward their natural rates of streambank erosion. To meet the TMDL, Vermont needed a crediting and tracking system for practices that would reduce loading, including those that address unstable streams. For unstable streams, the exercise started with a clear understanding that accepted practices for achieving sediment and nutrient storage along streams all share the objective of restoring and/or protecting stream and floodplain connectivity. As an advancement of the River Corridor Planning Program, the DEC began using selected stream geomorphic data, new high-resolution LiDAR elevation and land use/land cover data to create connectivity metrics that could support a map-based project crediting and tracking system.

Developing stream and floodplain connectivity assessments is also an opportunity to create communication tools that may invigorate new state and local partnerships for restoring rivers and floodplains into the headwaters of Lake Champlain. Assessment and mapping tools that explain the function and value of local waters become new outreach tools that may strengthen local advocacy. It's the local program, or neighbor reaching out to neighbor, that often brings about land use changes and agreements to restore and conserve natural resources.

The first Phase of the Functioning Floodplains Initiative (FFI) is mapping and assessing:

- Which rivers/streams and what percentage of river corridors/floodplains are (dis)connected in a given watershed due to existing constraints or stressors?
- What is the opportunity to readily achieve connectivity? How should connectivity be scored, credited and tracked at a reach and watershed scale to support a strategic restoration and protection plan?
- What are the highest priority reconnection projects? (which floodplain restorations, dam removals, buffer plantings, corridor easements, etc. provide the greatest benefit?)



When Phase 1 was started, some very pertinent research efforts were getting underway. UVM faculty, post-docs, and graduate students are collecting field data, mapping floodplains and studying the sediment and nutrient transport and storage-related processes in streams, floodplains, and wetlands with funding support from UVM Sea Grant, EPSCoR, the Lake Champlain Basin Program, the VT Water Center, and The Nature Conservancy. This research offers the capability to ascertain, not only where connectivity practices will be most cost effective, but where and how to maximize the ecosystem services provided by naturally functioning streams, wetlands, and floodplains.

EPA is now assisting ANR with funding to implement a second phase of the Functioning Floodplains Initiative that will support this layering of process-based research findings onto the Phase 1 connectivity assessment to fine-tune the degree of water quality and flood resilience that can be achieved with natural resource projects. Rules under development to stand up Clean Water Service Providers in the Basin (as per Act 76) are putting an even finer point on the need for crediting, basin allocations, and tracking tools for natural resource projects. DEC has infused additional state dollars into the Initiative to generate spatially explicit estimates of the societal values that may help garner municipal support for implementing natural resource projects.

A goal of the Functioning Floodplain Initiative is to create tools for generating and tracking the value of floodplain functions, at local and basin-wide scales, to enhance the societal interest in making natural resource investments. More Information about the FFI is at: <https://dec.vermont.gov/rivers/ffi>.

One of these tools is a map-based web application that will provide users with the ability to view floodplain connectivity data, support decision-making on floodplain and wetland restoration prioritization, and track project implementation. The application will ultimately serve as the interface for the State and watershed community to support 1) resilience planning for flooding and erosion; 2) water quality improvements achieved through projects that promote sediment storage and nutrient attenuation; and 3) habitat enhancement accomplished by restored connectivity and physical complexity.

**User Stories:** One of the first steps in designing this application, is to gather and refine information about user requirements. If you envision accessing the FFI web application, either for viewing data (e.g. to understand the connectivity status of streams and floodplains in your watershed), for planning purposes (e.g. to prioritize restoration projects based on phosphorus reduction potential and project feasibility), or for contributing information related to new restoration projects, please consider submitting your own User Stories.

A User Story should explain a desired feature of the FFI web application, told from your perspective. These are helpful in capturing specific functionalities (e.g. searching for a project type or filtering projects by feasibility). We are also interested in what you would like to see when using the web application (e.g. a view of the watershed that shows stream segments using a color ramp that indicates connectivity score).

Please submit user stories in the following format:

**“As a ...”** (e.g. “As a DEC basin planner”)

**“I want to ...”** (e.g. “I want to develop a set of priority stream, wetland, and floodplain projects that have high feasibility and cumulatively represent an estimated phosphorus load reduction target”)

**“So that ...”** (e.g. “So that the DEC is able to allocate that load reduction in a contract with a CWSP in accordance with Act 76”)

Write as many user stories as you want and be as specific as possible. Identify what kinds of outputs you would like, criteria by which to locate data, what scale you are most interested in. Or feel free to draw us a picture or share what you would like *see* as a user of the web application. Please submit user stories to Jody at [jstryker@stone-env.com](mailto:jstryker@stone-env.com)