

# National Coastal Resilience Fund Monitoring

## National Coastal Resilience Fund: Project Monitoring Plan Template

Use the following tables to provide more detailed information on the monitoring requested by NFWF for the type of restoration work for which you have been funded, even if the monitoring will be funded by other sources than your NFWF grant. You **MUST** use the associated appendix table to help you fill out the tables for your project.

**Goal of project:** Remove an existing problem culvert in a state road and replace it with infrastructure designed to be resilient and have a 80-100 year lifetime, have minimal to no impact on the water levels upstream, be capable of passing vehicle traffic safely, re-open aquatic passage to a sub-watershed, and withstand anticipated climate changes and weather events.

### Monitoring approaches for Floodplain restoration

[You must use Appendix C to complete this table]

Floodplain Restoration					
Metric (include units)	Difference to Recommended Methods and Protocols (if any)	Spatial extent of metric monitoring	Baseline yr	Frequency/Timing	Data Limitations/Considerations
Percent Cover of biomass by species or cover type (% ranging from 0-100)	Propose to fly with a drone equipped with LiDAR sensor and integrated 24 megapixel camera to allow for estimation of Biomass & Percent cover for the whole site. We can break out Biomass & Cover by plant classes based on RGB spectral analysis.	Entire floodplain that could be affected by the project. We would assess ~ 2000 linear feet along the streambank and capture the entire lateral extent of the floodplain along both banks. We will have a 3D elevation surface model of the entire restoration site.	2021	Annually in July/August pre- and post construction	This method would give much better accuracy for biomass volume and % cover but won't give quadrants with species level data - we would classify by general cover type break out the metrics across a vegetation classification index. Additionally, combined with the longitudinal profile we are conducting for the elevation metric, this method would track the subsequent changes in channel morphology after we replace the crossing and provide useful data on the magnitude and impact that a project like this has on the stream and floodplain ecosystems.

Elevation (cm)	The engineers will measure pre and post construction for the structure and the stream longitudinal profile elevations using Total Survey station. Floodplain elevations will be mapped using Drone LiDAR and a digital elevation model will be created.		2020		This method would significantly increase the resolution of and coverage of the elevation data.
Water level	Will compare on-site results from data loggers with river flows from a river gauge in order to assess hydrologic connectivity		2019	Annually From May to September	USFWS has installed water loggers at this site to log water level. This project is designed to not change water levels in the system, or impact them minimally.