

Post-Construction Channel Monitoring
 NCI Workshop - November 1, 2017

Category	Parameter	Years										Notes	
		0	1	2	3	4	5	6	7	8	9		10
Vegetation (Spring and Summer)	Photo Record and Site Walk	1		2	2		2		(1)			(1)	-Photos to be taken from fixed vantage points. -Year 0 site walk to focus on specified species vs as-recorded. Document all differences and why the changes were required. -Sweep for invasive species. Immediate notification and discussions regarding next steps (e.g., source, eradication). -Identification of Species at Risk. -Percent survival to be completed at end of warrantee period (assumed to be Year 2). -Determine species diversity. Diversity should be based on design, functional communities. In later years, monitoring should focus on function and not how close it is to original planting plan. Don't remove vegetation if it serves the desired function. -Consider completing the vegetation site walk in conjunction with channel and fisheries team members.
	Plots	1		2			2		(1)			(1)	-Fixed plots. Plots to cover 2% of site area. Plots should be at least 5m x 5m -Plots focused at important features (habitat for terrestrial and aquatic species, and at in-stream structures). -Water plots with a focus on aquatic vegetation. -Diversity in plot locations.
	Cross-sections	1		2			2		(1)			(1)	-At least 1 m on either side of cross-section. -Consider using OSAP. -Collaboration with channel survey for cross-section locations.
	Percent cover						1		(1)			(1)	-Could be achieved with aerial photos (where available) or drones.
	ELC						1					(1)	-Does not need to be the same as design. Used to show vegetation succession and as a comparison to pre-construction or surrounding communities.
Channel (Spring and Early Fall)	Photo Record and Site Walk	1	2	2	2		1		(1)			(1)	-Photos to be taken from fixed vantage points. -Identification of any unexpected channel instabilities (e.g., bank erosion, failing structures, knick points) or changes in the channel (e.g., new outfalls, culverts, upstream/downstream works). -Inspection of in-channel and bank structures. Consider a survey of structures (e.g., vane arms) as required. -Year 0 site walk to focus on design vs as-recorded. Document all differences and why the changes were required.
	Longitudinal profile	1	2	2	2		2		(1)			(1)	-Thalweg used as rate of change for larger planimetric scale measurements. Points to be collected at significant grade inflections and minimum every channel width. Bedrock outcroppings should be noted. -Gradient (water surface), floodplain connectivity (bankfull stage and Physical top of bank) Bedform identification and channel structures and infrastructure -Considering using aerial photos (where available) or drones to help with planform analysis.
	Cross-Sections at Pools and Riffles	1	2	2	2		1		(1)			(1)	-50-50 or proportional representation -To get 3D view of pool - top and toe of bank and thalweg / centreline, inside of bend points, or 3 transects per pool. Survey should also note depth of sediment. -Monumented cross-sections to be completed a minimum every 20 bankfull widths (design riffle width). Cross-section should extend to include floodplain / valley (perpendicular to both valley and channel), top of bank, bankfull indicators and edge of water. -Note undercut banks, stratigraphy, rooting depths, and tension cracks. -Base cross-sections around points of interest (e.g., stormwater inputs, confluences, structures).
	Substrate Analysis Pebble Counts	1	2	2	2		1		(1)			(1)	-Pebble counts may need to incorporate shape factor (ABC axis) -Completed at monumented cross-sections, at sites with special design substrate -pavement / sub-pavement sampling Or scour chains Or bedload sampling (special conditions)
	Flow instrumentation (Level, flow and velocity)	1	C	C	C	C	C	(C)	(C)	(C)	(C)	(C)	(C)
Fisheries (Spring and Early Fall)	Photo Record and Site Walk	1	1	2	2		2		(1)			(1)	-Photos to be taken from fixed vantage points. -Physical characteristics such as substrate, vegetation, cover, morphology and barriers -Functional characteristics such as Migration, Spawning, Nursery, Productivity (based on species) -Consider completing the fisheries site walk in conjunction with vegetation and channel team members.
	Species diversity/relative abundance			2	2		2		(1)			(2)	
	Benthics			2	2		2		(1)			(1)	Focus on diversity, density, EPT indices and sensitivity species based indices
	Physical Water Quality			2	2		2		(1)			(2)	DO, turbidity and conductivity
	Temperature		C	C	C	C	C	(C)	(C)	(C)	(C)	(C)	(C)

General Notes:

- This program is built around a warrantee period of 2 years. This puts an emphasis on upfront monitoring.
- The photo record and site inspection should be completed concurrently with all three monitoring categories considered.
- Year 0 signifies the baseline survey immediately following construction.
- 2 - The number in the columns signifies the number of visits per year (e.g., 2 indicates a spring and fall visit).
- (2) - Numbers in brackets are recommended for a long term monitoring program