



Guidance for Green Infrastructure Monitoring

As new designs for green infrastructure are developed, there is a growing demand for good data and information on these technologies. This guidance was established to assist grant recipients with developing a pre- and post-construction monitoring program. This guidance is based on the EPA's Technology Acceptance Reciprocity Partnership (TARP) Protocol for Stormwater Best Management Practice Demonstrations. To provide a uniform method for demonstrating stormwater technologies, TARP has developed two [Internet-based training modules](#) which cover aspects of stormwater technology evaluation: Module I, Planning for a Stormwater BMP Demonstration, and Module II, Collecting and Analyzing Stormwater BMP Data.

Location(s) for monitoring should be selected based on the overall scope or objective of the monitoring program, as well as on the practice. There are three general location types for all monitoring programs. These include: i) at the inlet to the practice, ii) within the practice, and iii) at the effluent of the practice. When determining appropriate monitoring location(s), care should be taken to ensure that monitoring will be effective in capturing representative data.

It is important to note that not all practices are suitable for all types of monitoring. For example, when measuring volume reduction achieved by a practice the practice should have a defined and accessible inlet and outlet. If runoff enters the practice by sheetflow, monitoring for volume reduction may not be effective. If discharge flowrate is the metric to be monitored, the practice needs to have an outlet structure that is suitable for a flow device such as a weir or in-pipe flow rate monitor.

The minimum recommendations for green infrastructure monitoring include:

1. Permeable Pavers
 - a. Outlet flows
 - b. Contaminant concentrations
2. Bioretention
 - a. Inlet flows
 - b. Outlet flows
 - c. Contaminant concentrations
3. Green Roof & Green Walls
 - a. Outlet flows
 - b. Contaminant concentrations
4. Stormwater Street Trees/Urban Forestry
 - a. Inlet flows
 - b. Outlet flows
 - c. Contaminant concentrations
5. Wetlands, Floodplain and Riparian Buffers
 - a. Water quality contaminant concentrations
 - b. Outlet flow
6. Stream Daylighting



- a. Water quality contaminant concentrations
- 7. Downspout Disconnect
 - a. Outlet flow
- 8. Stormwater Harvest & Reuse
 - a. Outlet flow

The parameter(s) selected to be studied for the monitoring program should be based on the primary or major impact(s) addressed by the practice. These include:

- 1. Dissolved oxygen (mg/L)
- 2. Biochemical Oxygen Demand (mg/L)
- 3. Total suspended Solids (mg/L)
- 4. Total Phosphorous (mg/L)
- 5. Fecal Coliform (MPN/100ml)
- 6. Runoff Volume Reduced or Retained (gal, L, ft³)
- 7. Discharge flowrate (cfs, gpm)