

Pond Run Geomorphic Assessment

Pond Run Watershed Association

Hamilton Township, NJ

Streams respond to watershed-wide changes and in-channel manipulations by adjusting channel dimension, pattern, slope and bed sediments; the science of geomorphology seeks to understand these changes. A geomorphic assessment is conducted to inventory and interpret stream channel transformations and is an important early step to assess the need for targeting in-channel impacts or upland stressors in restoration projects.

The Pond Run Watershed Association, concerned about the condition of the stream, tasked Princeton Hydro to complete a geomorphic assessment of an upper reach of Pond Run. Initially, our staff conducted a desktop Geographic Information System (GIS) review of aerial photos, topographic maps and digital data layers to characterize the watershed, valley, stream corridor and underlying geology. Historic and current aerial photos were reviewed to track land use and land cover changes that may have affected the project reach.

Through a field investigation of the subject reach and upstream and downstream points, a staff geomorphologist qualitatively assessed a range of parameters including geomorphic processes (e.g. incision, widening, and aggradation), reach sensitivity, substrate size and type, bedforms, habitat condition, effects of structures, riparian condition, and floodplain connection. Geomorphic parameters such as slope, width to depth ratio, entrenchment, incision, sinuosity, bank materials, buffer width, and bed substrate, were measured or estimated in the field to document existing conditions. All data were compiled and interpreted to distinguish historic from currently active processes and to form preliminary predictions of future channel changes. The client was provided with a report summarizing findings that included photos, maps and conclusions.

Princeton Hydro is capable of providing extensive and long-term geomorphic assessments that entail surveying channel cross-section, slope or planform pattern; measuring velocity and discharge; evaluating sediment transport; monitoring bank erosion; and assessing bank stability.

