

**Cedar River Gravel Study, Seattle District, U.S. Army Corps of Engineers.
Michael Wolanek
Jones & Stokes**

The team of Jones & Stokes, Perkins Geosciences, and Harper, Houf, & Righellis is evaluating the current conditions of spawning gravel in the Cedar River from upstream of the Landsburg diversion dam to Lake Washington. Cooperating agencies include Seattle Public Utilities, the City of Renton, and King County Department of Natural Resources. The study will assess the quality and distribution of spawning gravel with respect to the hydraulic characteristics of the River. These sediment-hydraulic relationships will then be used to determine whether lack of gravel in certain reaches is caused by naturally occurring factors or human changes to channel morphology.

The Project is being implemented in two phases, with an optional third phase dependent on Phase 2 recommendations. Phase 1 activities included data collection and a literature review of current and historic research on the Cedar River. Data collection included surveys of additional cross sections and surface/subsurface bed material distributions; assessments of fine sediment influences on spawning success; and observations of redd distributions by gradient and confinement. Today's presentation will provide a summary of these intermediate results.

Phase 2 analyses are now underway to evaluate these data and determine whether and where a "gravel problem" presently exists along the Cedar River. Phase 1 cross sections will be combined with existing cross sections from the King County and City of Renton HEC-RAS flood models to calculate the scour potential of various discharges at select cross sections which reflect a range of gradient, confinement and management scenarios. Incipient motion particle size analyses at these cross sections will determine the flows necessary to initiate the downstream movement of gravel. Phase 2 will also include a quantitative evaluation of the current gravel supply and the impact of the Landsburg diversion on the size and quantity of sediments transported along the river. The study will determine whether spawning gravel supplies are limited as a result of channel modifications (levees, riparian management, flow regulation) and will identify potential restoration opportunities.

Phase 3 will be scoped and initiated only if HEC-6 sediment modeling is required to fully implement Phase 2 recommendations.