

Urban Planning With Integrated Natural Systems (UPWINS)

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Nature Based Solution (NBS) Design offers a process for incorporating multiple components (hydrology, geology, ecology, human systems) in the development of environmental restoration projects. The incorporation of each component over the course of a project necessitates iteration, or the reexamination of the project as a whole, to determine if the project definition and formal design concept are still capable of delivering maximum benefit in balance. Iteration allows a project to be scrutinized at multiple levels, from the site extent project definition to the specific form/function of the project.

Facilitating a process of NBS design for clients necessitates a clearly laid out process and key tools that can facilitate iterative design. The process definition can help clients ask important questions about the extent and function of a site as well as the process for incorporating data and design decisions along a timeline. With every site being unique but with common core characteristics to the process, we can help avoid a single design fits all strategy. While process definition can inform an approach, we have identified key areas of technical methods which necessitate the development of tools to enable the process to achieve design excellence.

Planning Questions: 1) H&H – What scales and/or locations control H&H? What are approximate costs for earthwork and infrastructure? What are O&M costs?; 2) Geomorphology – Which forms are present in the system? How dynamic or these forms?; 3) Water Quality – Which factors and processes influence WQ? To what degree? Which processes can be influenced?; and 4) Biology/Ecology – What is the current state and direction of the ecosystem? In what way do we want to influence the ecosystem? How significant is the feedback from biology and ecology to the other tiers (i.e. H&H, Geomorphology, and WQ)?

This presentation will focus on the design process, tool development, and example projects.

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