

## Executive Summary



The Natural Areas Study for the four Pittsburgh Regional Parks (Frick, Schenley, Riverview and Highland) is part of a multi-phased Natural Areas Program for the long-term study and ecological management of the four main parks in Pittsburgh, originally recommended in the 2001 Regional Parks Master Plan. The basic purpose of this first phase study is to provide an ecological assessment and analysis of the parks' natural resources and to identify needs and opportunities. This analysis then acts as a baseline assessment to guide the development of a management plan framework that can inform the future phases of the Natural Areas Program. The Vision of the Natural Areas Program is:

*'To evolve Frick, Highland, Riverview and Schenley parks into healthy, diverse, sustainable ecosystems that are representative of native plant communities of the natural Southwestern Pennsylvania environment.'*

This study report is an assessment and action plan focused on the areas in need of ecological restoration and enhancement in order to strengthen the existing systems in the parks, not a full comprehensive natural areas management plan. However the maps and pilot projects comprise an action plan for the city to address its natural areas within the Pittsburgh Regional Parks. Following these recommendations will assure that the natural areas within the four regional parks are protected and enhanced in order to provide Pittsburgh residents and visitors the opportunity to experience typical southwestern Pennsylvania ecosystems.

Completion of the NAS included data collection and assessment of geologic and soil conditions, stream and wetlands assessment, habitat assessment, and an assessment of the interface between cultural and natural resources across the four parks. Data analysis of all field assessment work done from 2005 to the present was performed in order to provide the City with a list of ranked and prioritized potential ecological restoration management projects and action items for future program phases.

The analysis of existing conditions and the subsequent prioritization of locations for restoration and management actions provide both a strong foundation and a management framework that can inform future phases of the Natural Areas Program with regard to ecological health and regeneration across the parks.

### **SPONSORS, PROJECT TEAM, AND ADVISORY GROUP**

The lead agency for the Natural Areas Study is the City of Pittsburgh Department of City Planning along with the support of the Department of Public Works. The Pittsburgh Parks Conservancy is an important partner to the City of Pittsburgh in park stewardship efforts in the NAS. In 1998, the Parks Conservancy signed an official public-private partnership agreement with the City of Pittsburgh to work together for the restoration of the city's four regional parks - Frick, Highland, Riverview, and Schenley. Initial support for the project was originally provided by the Heinz Endowments & City of Pittsburgh funding. Additional funding support was obtained from the Pennsylvania Department of Conservation and Natural Resources and in 2009 the project received authorization to proceed with project completion.



A peer advisory group has been assembled to assist with the development and implementation of this project. This group includes experts or other local stakeholders with experience in various ecological assessment and restoration, land planning and park maintenance backgrounds to assist with diverse natural and cultural elements of this project. Advisory Committee Members include representatives from Pittsburgh City Planning, Pittsburgh Parks Conservancy, Pittsburgh Department of Public Works, Frick Park Maintenance, Heinz Endowments, the Mellon Foundation, the U. S. Army Corps of Engineers, Pennsylvania DEP, Allegheny Land Trust, University of Pittsburgh Department of Biological Sciences, Western PA Conservancy, Carnegie Museum of Natural History, and Chatham University.

The project team consists of Biohabitats, Inc. as project lead consultant, and sub-consultant team members including Civil & Environmental Consultants Inc., the landscape architecture firm LaQuatra Bonci Associates, and the cultural landscape architecture firm, Heritage Landscapes.

#### **STUDY COMPONENTS**

This Natural Areas Study report includes documentation of the methods used for data collection and assessment, as well as summaries of the results for each of the seven natural resource assessment categories covered in field assessment and data analysis: Vegetation Communities, Invasive Plant Species, Stream Systems, Wetland Systems, Soils & Geology, Historical & Cultural Landscapes, and Wildlife Habitat. The results of these assessments then form an existing conditions baseline. The background mapping data, field investigation mapping, and results analyses overlays have all been included in a relational geodatabase which has been developed specifically for this project. An action plan is derived from the results of the information collected in the site assessment and the rubric analysis performed with the GIS data sets created from the natural resource field data assessment. From this analysis a list of pilot project concepts, spanning all four parks has been created in order to begin to pursue ecological and natural resource management goals. This work also informs future monitoring, assessment and tracking of restoration projects, as well as management measures and necessary changes in approach for a true adaptive management approach for the Parks' natural resources.

#### **Analysis and Natural Resource Management Needs**

Natural Areas restoration and management needs have been assessed using the methods and results interpretation described in this report. One goal of this NAS is to identify and recommend a list of pilot projects that are more comprehensive in nature, with multiple benefits. This approach identifies pilot projects that holistically and simultaneously address multiple resource needs and opportunities. For example, a park project may be identified which has a range of needs such as stream erosion, soil reclamation, historical feature rehabilitation, and invasive plant species management. By focusing on projects that exhibit a range of needs the restoration efforts can result in stacked benefits.

The following natural resource restoration and management actions are recommended based on the Regional Parks' site conditions assessment and applicable progressive



techniques. These resource management techniques are integrated into the initial pilot project recommendations to demonstrate and later expand their use.

- Reforestation & Supplemental Forest Plantings
- Stream Restoration
- Wetland Restoration
- Meadow Restoration
- Invasive Species Management
- Soil Rehabilitation
- Stormwater Management Integration

#### **Ranking and Prioritization**

The suitability analysis identified locations in the four parks where there are overlapping needs and opportunities from a majority of the resource categories that were analyzed. The number of complimentary resource opportunities in a given location lead to ranking and prioritization of restoration sites. The results provide the location, rating and degree of synergy for opportunities based on the underlying resource conditions assessed (mapped and observed) in this study. This leads to the formulation of a list of pilot project opportunities that will provide multiple benefits across many, if not all, of the resource categories. The ranking and prioritization of the highest opportunity areas provides the basis for pilot project location identification and then a further review of individual resource elements and their conditions provides the basis for the specific pilot project components.

#### **Broader Context and Future Efforts**

The Natural Areas Study can be used to inform other City planning efforts including the Comprehensive Recreation, Parks and Open Space Plan process. The proposed update to Pittsburgh's Regional Parks Master Plan can also incorporate the lessons learned from the Natural Areas Study in future enhancement and rehabilitation projects, in order to continue the Master Plan's original theme of balancing history, use and ecology. The Natural Areas Study is also a living document. The field work, data collection and recommendations represent but a single a point in time on the continuum that is the ecological enhancement and care of the four Regional Parks. Ecological restoration is never truly complete; rather it is a collection of on-going activities that aim to return health and self-sustainability to the parks natural systems. However, the Natural Areas Study represents the first and most-important step towards understanding not only the ecological value of the Regional Parks but also establishing a blueprint, or roadmap, for their ecological restoration, management and long-term care.

#### **Pilot Project Identification**

The pilot demonstration projects are intended to efficiently use available resources, attain multiple objectives, deliver ecological and societal benefits, and instill stewardship and gain stakeholder support. These projects can also be used to demonstrate leading edge sustainability, ecological restoration, regenerative design, and adaptive management techniques and approaches. Furthermore, these types of projects also have comprehensive benefits to the watershed in which they are situated, improving connections (habitat and movement), delivering ecosystem services, and providing neighborhood amenities for the local communities.

The following pilot projects are recommended:

- 1. Making Connections** This pilot project looks to show how ecological connections are made for riparian habitat wildlife movement, stream flows and public access.
- 2. Meadow View** This pilot project is envisioned to highlight pastoral landscape views, reduce mowing maintenance, and provide habitat for birds, pollinators and small mammals.
- 3. Down a Slippery Slope** This pilot project intends to address stormwater run-off and stabilize eroding slopes, establish native vegetation & habitat, and improve aesthetics.
- 4. Glimpse at a Past Legacy** This pilot project looks to peek into the past in terms of enhancing an area of degraded park landscape and show how bygone ecological reference systems can be used to inform native landscapes.
- 5. Functional Land Processes** This pilot project intends to address degraded or impacted soil conditions through augmentation and management techniques. The project could also depict stabilization techniques and provide an educational learning opportunity about soil health and parks.
- 6. Woodland Botanical Garden** This pilot project is directed at highlighting the species richness, beauty, functionality and native landscape uses and benefits of the woodland garden in terms of ecological function, harvest, and environmental education & stewardship.
- 7. Gateway Passage** This pilot project intends to highlight and demonstrate connections, access, and circulation processes for human, wildlife and flows (e.g., hydrology).
- 8. Big Woods Expansion** This pilot project intends to address the protection, expansion and improvement of habitat conditions, particularly for forest wildlife, in a critical large-scale habitat type that doesn't have a large number of occurrences in metropolitan Pittsburgh.
- 9. Trunks, Chips & Fungus** This pilot project intends to demonstrate and explain the processes of vegetation matter to a healthy ecosystem and how park landscapes can be rehabilitated, enhanced and maintained as productive landscapes re-using organic materials.
- 10. Water Goes Where?** This pilot project intends to make more apparent the critical role of hydrology and the components of the hydrologic cycle which are very important but not often seen or understood. It will also include educational elements depicting how hydrology in urban areas are altered and impacted.
- 11. Eco-art Expressions** This pilot project intends to use public art, through environmental interpretive artists to depict and interpret natural processes and functions in their artwork. It will also highlight how art can be integrated and expressive in regenerative and inspiring landscape design.
- 12. Something Concrete** This pilot project intends to show the relationship of impervious paving to stormwater run-off, urban pollution & stream degradation, and how measures can be taken to retrofit highly urban areas and improve localized conditions.