Appalachian Transportation Institute (ATI) Research Project Description

Project Number: ATI TRP 99-09
Project Title: Pre-construction Assessment of Wetlands to be built along the Tolsia Highway

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Project Objective: The objective of this proposal is to establish pre-construction baseline data for the US 52 (Tolsia Highway) wetland mitigation site in Wayne County.

Abstract: Post-construction baseline studies are considered critical for evaluating and understanding of the long-term success (or failure) of a constructed wetland. A post-construction baseline study will provide valuable hydrologic, biotic, water quality and soil data for evaluating the development and long-term ecological functionality of the constructed wetland. However, post-construction studies do not provide a data on the pre-construction characteristics of the mitigation site. This project will provide pre-construction baseline data that will be critical to evaluate and understand the long-term success or, more importantly, failure of a constructed wetland.

Task Descriptions: Tasks include: a topographic survey of the proposed wetland cells, a hydrologic survey measuring precipitation and stream flow of Mill Creek; a watershed computer model to estimate volume of available water for wetland establishment and a soil survey, a preliminary water quality analysis of Mill Creek and an analysis of existing vegetation within and surrounding the proposed wetland cells.

Milestones, Dates, Schedule: Start Date January 1, 2001, End Date August 31, 2001
Hydrogeology and Soils fieldwork: Project start - Week 8
Watershed Model Development: Week 8 - Week 16
Water quality sampling site evaluation: Project Start - Week 2
Water quality sampling: Week 2 - Week 4 (monthly sampling till Project End)

Wetland Vegetation Study: Week 2 - Week 10 (based on project start date)

Budget: $ 104,000.00

Student Involvement: Four graduates students will be employed as research assistants. The research performed by the students will provide data for their Master's thesis.

Relationship to Other Research Projects: Not at this time.

Technology Transfer Activities: The data and analysis will be provided to the WV Department of Transportation and will provide guidance on the selection of future wetland mitigation sites. Final reports will be available on the ATI website. All, ATI Principal Investigators will present findings through the ATI Transportation Seminar Series to invited guests from WVDOT, USDOT, other ATI Principal Investigators, students and other invited guests. Other opportunities to present the project results will be explored including conferences and peer reviewed journals, etc.

Potential Benefits of this Project: Investigation of constructed wetland sites at the pre-construction and construction stages of their development will lead to an improved site selection process and an improved site monitoring process. These improvements will benefit the Division of Highways through reduced construction costs of mitigated wetland sites through an improved selection process for potential wetland mitigation sites. An improved selection process will result in the selection of mitigation sites that may have reduced construction costs and improved long-term success rates. The data is necessary to understand how the pre-construction hydrologic, soil, water quality and biotic conditions influenced the development of the wetland. This
relationship is important when mitigated wetland sites are being constructed in physiogeographic regions of the state where there is limited data and experience with wetland construction. The data collected for this project will provide valuable baseline conditions to support post-construction monitoring of the US 52
(Tolsia Highway) wetland mitigation site.

TRB Keywords: wetland, water quality, and mitigation