

Overview

As our culture continually strives to prosper, efficient transportation infrastructure and services are key components that support the realization of a sustainable future. However, as a nation we have begun to recognize that healthy and well-functioning ecosystems are also vital contributors to attaining our desired economic and societal goals.

Environmental Planning GIS Tools (EPGT) provide a scalable project development enhancement that uses spatial technology merged with ecological science to analyze environmental assets. This “ecosystem approach” recognizes the interrelationship between healthy ecosystems and sustainable communities and economies that rely on efficient transportation and investments. Incorporating multi-resource ecological information with transportation assets and plans can help DOTs develop optimal paths for transportation improvements while addressing environmental and community mitigation and stewardship needs.

AASHTO



Successful Implementation

U.S. 301 and Maryland's Green Infrastructure Approach: Beyond Compensatory Mitigation

The Maryland State Highway Administration (MD SHA), in cooperation with The Conservation Fund, U.S. Fish and Wildlife Service (USFWS), and Maryland Department of Natural Resources (MD DNR), followed a Green Infrastructure (GI) Approach to identify and prioritize natural resources and incorporate those considerations into the transportation project-development process for the U.S. 301 Waldorf Area Transportation Improvements Project.



One of the main reasons for using a GI Approach was to identify and evaluate stewardship opportunities within four watersheds that would go beyond compensatory mitigation to provide a net benefit to the environment. To accomplish this, MD SHA and its partners set out to develop a comprehensive ecological inventory of the U.S. 301 study area. By combining existing GIS layers and newly acquired study area information, MD SHA created a new data layer using a GI assessment tool. This GIS-based tool was used to target and assess ecological areas within the U.S. 301 study area that were in need of conservation and/or restoration including reforestation, wetland creation, and stream rehabilitation.

While the implementation of the GI Approach was useful for the U.S. 301 project, the benefits of the GI Approach extend beyond specific transportation projects to other planning activities, including municipal and county land-use planning efforts.

I-69 Trans-Texas Corridor and GISST: Beyond Mapping



A GIS Screening Tool (GISST) was applied to the National Environmental Policy Act (NEPA) process on the Texas portion of the I-69 Trans-Texas Corridor Study, a congressionally mandated 1,600 mile corridor stretching from Mexico

to Canada. A partnership between the Texas Department of Transportation (TX DOT) and the Environmental Protection Agency (EPA) Region 6 initiated the application of GISST on the I-69 Trans-Texas Corridor Study. GISST was largely used as an environmental resource screening tool for the NEPA Tier 1 “corridor level” decision.

GISST goes beyond simply mapping environmental resources; the tool’s analytical capabilities enabled TX DOT to use the scores imposed by GISST to evaluate and prioritize important environmental features. By identifying “red flags” early in the NEPA Tier 1 process, TX DOT and other decision makers were able to screen project alternatives to focus on those that would avoid highly ranked environmental resources. This process also enabled TX DOT to make decisions on where to concentrate efforts for further studies at the NEPA Tier 2 stage.

By gaining consensus on the data and criteria used by GISST, TX DOT was able not only to recognize timesavings, but also increase trust and cooperation between traditionally disparate agencies.

Benefits:

- Relationships: Opportunity to engage partner agencies in advancing collaborative goals
- Efficiency: Technological advancements provide more efficient and better-informed decision making
- Regulatory: Assist in avoiding and minimizing regulated impacts and in identifying multi-value mitigation strategies
- Credibility: Improve credibility with the public and special interest groups through increased consideration of environmental stewardship and sustainability
- Quality of Life: Communities benefit from an improved transportation network and capture economic savings from retention/enhancement of ecosystem services and human health benefits
- Mitigation: By expanding the scope of mitigation to a multi-resource focus, DOTs can achieve more effective/higher value mitigation and potentially leverage additional agency funding

Resources:

AASHTO TIG:

<http://tig.transportation.org/Pages/EnvironmentalPlanningGISToolsforTransportationPlanning.aspx>

EcoLogical:

<http://environment.fhwa.dot.gov/ecological/ecological.pdf>

FHWA Resource Center Planning Team – Transportation GIS

<http://www.fhwa.dot.gov/resourcecenter/teams/planning/gis.cfm>