

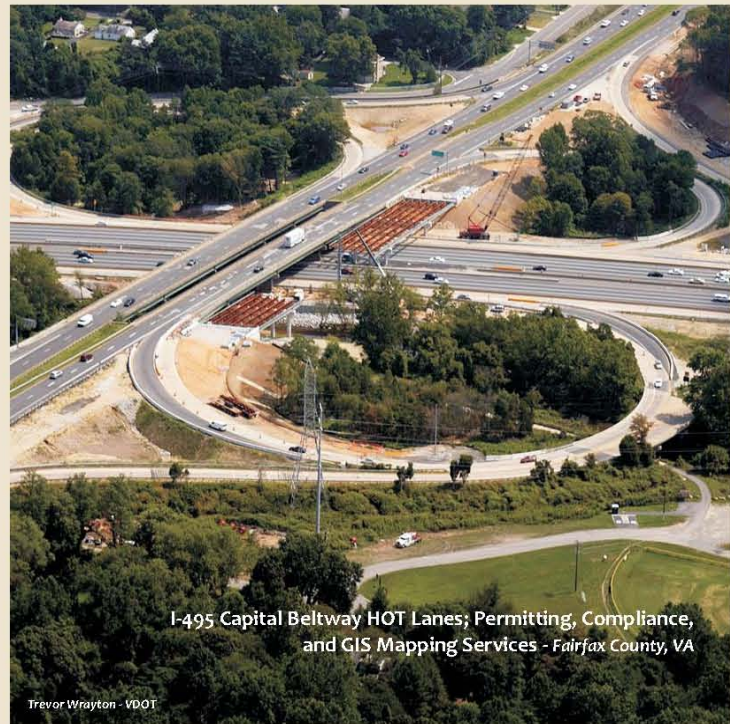


Natural & Cultural Resource
Consultants

National Harbor; Wetland Delineation, SAV Surveys and Permitting Services
Prince George's County, MD



TPC



I-495 Capital Beltway HOT Lanes; Permitting, Compliance,
and GIS Mapping Services - Fairfax County, VA

Trevor Wrayton - VDOT



4th Runway Construction; Wetland and Stream Mitigation Services
Washington Dulles International Airport, VA

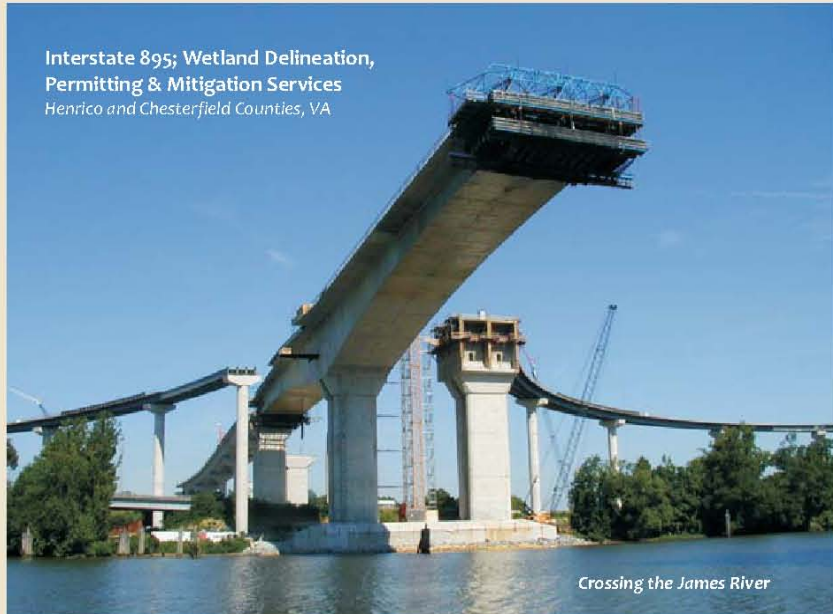
There's No One Better In The Field



Fort Belvoir Engineer Proving Grounds (EPG); Wetland Delineation,
Survey, Chesapeake Bay, Environmental Quality Corridor, Endangered
and Threatened Species, and Permitting Services
- Fairfax County, VA

Aerials Express - 12/20/08

Interstate 895; Wetland Delineation,
Permitting & Mitigation Services
Henrico and Chesterfield Counties, VA



Crossing the James River

Cover Photo: BSA Camp Snyder - Haymarket, VA

Wetland Studies and Solutions, Inc.

Providing Innovative Solutions That Balance Environmental Protection and Land Use Goals

Established in 1991, Wetland Studies and Solutions, Inc (WSSI) is the leading natural and cultural resources consultant in Northern Virginia. Our scientists, regulatory specialists, engineers, surveyors, permit compliance specialists, archeologists, ecosystem managers, and geographic information specialists provide expertise and experience for public and private sector builders to obtain the environmental approvals needed to create the built environment.



RWS Photography

Dominion Valley (formerly Disney's America); Delineation, Archeology, Permitting, Chesapeake Bay & Mitigation Services
- Prince William County, VA

For nearly two decades, WSSI has consulted on over 2,100 sites (comprising 140,000 acres). These sites include some of the largest and most complex projects in Virginia, and the Metro DC Area.

When natural or cultural resources are part of your land use process, WSSI is ready to respond.

Consulting Services

- Wetlands and Stream Delineations
- Clean Water Act Permitting
- Chesapeake Bay Preservation Ordinance Approvals
- Stream and Wetlands Restoration
- Civil and Water Resources Engineering
- Archeological Investigations
- Geographic Information Systems Mapping
- Land and Bathymetric Surveying
- Ecosystem and Restoration Management
- Low Impact Development Consultation
- Environmental Permit Compliance



We pride ourselves on the high quality of our work and our quick responses to client needs.

RC Kreider Studios

The Green-Roof at The WSSI Office Building - Gainesville, VA

Regulatory Services



Dulles Station; Wetland Delineation, Permitting, Chesapeake Bay, Mitigation, and Construction Monitoring - Herndon, VA

We Help You Wade Through the Swamps of Environmental Regulations

Our mission is to obtain the natural and cultural resource approvals that land developers, builders, and public works agencies need to create the built environment.



Fairfax Corner; Stormwater Wetlands, Permitting and Wetland Delineation - Fairfax, VA

Regulatory Services

- Clean Water Act (i.e. Wetlands) Permits
- Section 401 Certifications (i.e. State Wetlands Permits)
- Local Wetlands Board Permits
- Subaqueous Land Encroachment Permits
- Chesapeake Bay Preservation Ordinance Approvals
- Local Zoning Approval Support

WSSI's principals are continuously at the forefront of the evolution of wetlands and water quality regulations and compliance requirements by our active participation and leadership roles in legislative and regulatory development at all government levels.

WSSI provides every service needed to support our regulatory specialists as they guide your project through local, state and federal agency reviews.



Beaumeade Corporate Park; Wetland Delineation, Survey, and Permitting - Ashburn, VA



We believe that a healthy environment and a healthy economy are integrally related. Balanced economic development and resource protection are not mutually exclusive.

Village Place; Wetland Delineation, Survey, Permitting and GIS Services
Tyler Elementary School; Wetland Delineation, Survey, Permitting, Endangered and Threatened Species, and Archeology Services - Haymarket, VA

Environmental Studies

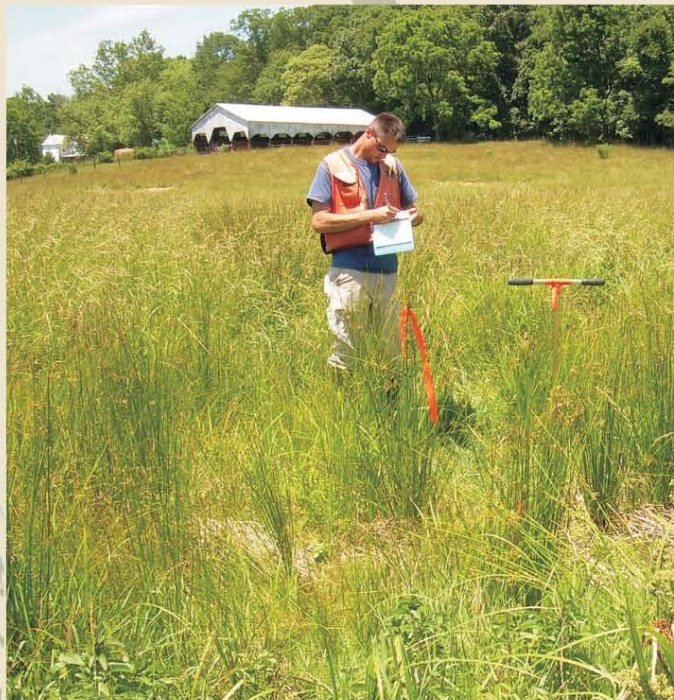


Stream Assessment

Wetland Delineations and More

WSSI provides a variety of services to assist our clients in eco-friendly decision making and ensure compliance with Clean Water Act Regulations.

The scientists at WSSI expand their knowledge base through continual research and training so we are ready to assist on even the most environmentally challenging sites.



Wetland Delineation

Environmental Services

- Wetland Reconnaissance Surveys
- Wetland Boundary Delineations
- Wetland and Stream Mitigation Monitoring
- Resource Protection Area Evaluations
- Wetland Functions and Values Assessments
- Stream Assessments
- Aquatic Habitat Assessments
- Endangered and Threatened Species Habitat Surveys
- Tree Stand Evaluations and Forest Management Plans
- Submerged Aquatic Vegetation Surveys
- Biological Water Quality Assessments
- Benthic Macro-invertebrate Surveys
- Rare Plant Community Assessments
- Local Green Infrastructure Corridors

WSSI has earned a positive and well known reputation for their experience and knowledge of Virginia's flora and fauna, including these endangered and threatened species.



Small Whorled Pogonia



Wood Turtle



Swamp Pink



American Bald Eagle



Harperella

WSSI Scientists Are Highly Qualified

- Professional Wetland Scientists
- Virginia Certified Professional Wetland Delineators
- Certified Ecologists
- U.S. Fish and Wildlife Certified Surveyors
- U.S. Army Corps of Engineers Wetland Delineator Certification
- LEED Accredited Professionals
- North American Benthological Society Certification
- Certified Arborists



Wood Turtle Survey

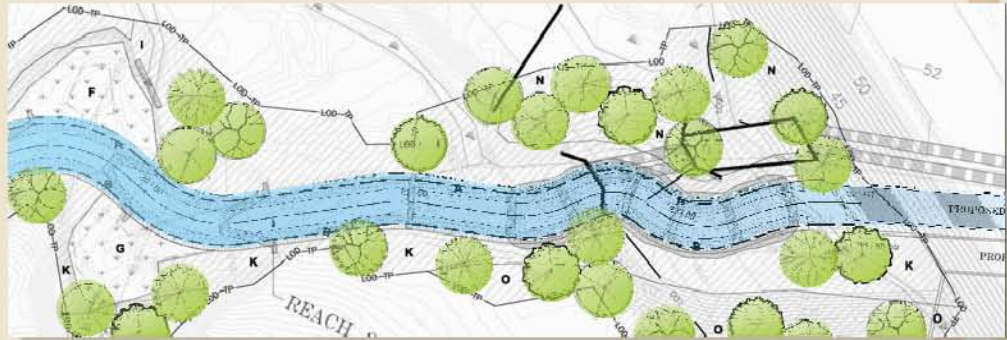
Engineering



Rain Garden at the WSSI Office - Gainesville, VA

Design with Sustainability in Mind

WSSI provides a wide spectrum of engineering services - from stormwater management to designing wetland creation/restoration plans and stream stabilization/restoration and obtaining associated approvals.



Natural Stream Design Plan - Reston, VA

Engineering Services

- Wetland Mitigation Design
- Stream Assessments
- Stream Restoration and Stabilization Design
- Watershed/Floodplain Studies
- Stormwater Wetland Systems Design
- Low Impact Development (LID) Design
- LEED Consultation
- Stream and Wetland Construction Management
- Resource Protection Area (RPA) Plans
- Chesapeake Bay Exception Requests
- Water Quality Impact Assessments
- Bio-Retention Design
- FEMA Letters of Map Revision/Amendment



Stormwater Wetlands - Fairfax Corner, VA



Stream Bed Sampling - Reston, VA

The Engineering Department is a diverse team of traditional civil, biological systems, and water resource engineers, environmental scientists, and landscape architects. Over 60% are Professional Engineers and are certified LEED Accredited Professionals.

WSSI develops the best possible solutions for our clients when natural and cultural resources affect their development plans.

Surveying



As-Built Survey of a Stream Restoration

We Keep Land Planning on Target

Accurate information is the foundation for decision making. Capturing land information precisely ensures that development schedules are maintained and projects stay within budget.

WSSI's surveyors work in concert with our wetland scientists and archeologists to locate and map delineated wetlands and other sensitive natural and cultural resource areas.



High-Quality Leica Survey Equipment

Surveying Services

- Wetland Delineation Surveys
- Bathymetric Surveys
- Stream Restoration Stake-Out and Monitoring
- Stream Profiles and Cross-Sections
- Mitigation As-Built Surveys
- Tree ID and Location Surveys
- Rare Species Surveys
- Archeological Surveys
- Topographic Surveys
- Boundary Surveys

WSSI uses state of the art Global Positioning Systems (GPS) equipment and subscribes to a high accuracy Real-Time reference network.



Bathymetric Survey using the EchoTrac System

All WSSI Survey staff are cross-trained in wetlands delineation and stream restoration to maximize field productivity.

Surveying practice and the supporting technology are changing and evolving at a fast pace - WSSI takes pride in staying abreast of these technological advances in gathering and applying spatial data.

GIS and Mapping

Geographic Information Systems Specialists

The Geographic Information Systems (GIS) department at WSSI assembles and analyzes spatial data to support the science, permitting, archeology, and engineering departments. They also provide custom mapping products directly to external clients.

WSSI's GIS professionals specialize in environmental modeling, site feasibility studies, aerial photograph interpretation, and cultural resource analysis.

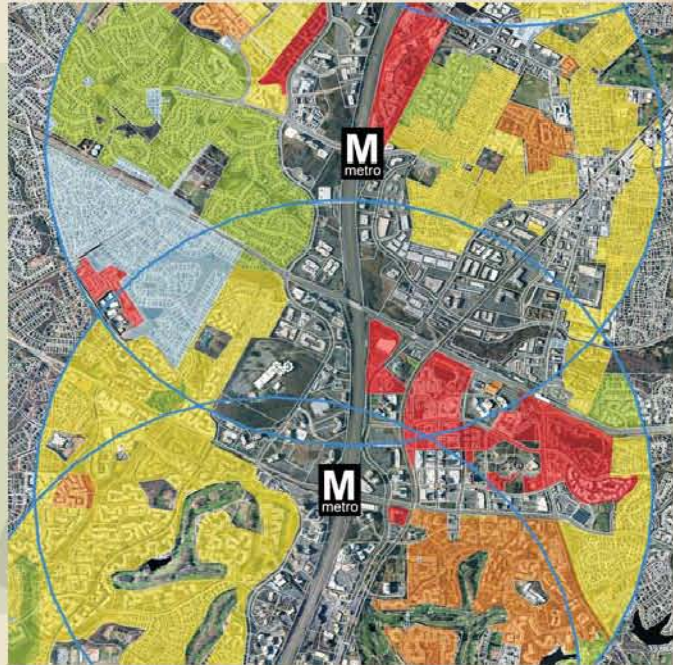


Digital GIS Data (parcels, contours, buildings, forest, water) - Sterling, VA

GIS Mapping and Aerial Services

- Site Suitability Analysis and Maps
- Aerial and Spatial Land Data Base Maps
- Desktop Reconnaissance Maps
- Land Cover Mapping
- Line of Sight and View-Shed Profile Maps
- Aerial Photograph Interpretation
- Watershed Delineations
- Current Land Use and Future Zoning Maps
- Project Location and Direction Maps
- Presentation Graphics and Maps
- Environmental Quality Corridor (EQC) Analysis
- Historic Deed and Plat Overlay Maps

The GIS Department at WSSI provides a wide variety of custom mapping products with rapid turn-around.



Residential Density and Proximity To Metrorail Analysis

WSSI's experienced mapping staff have digitally integrated color infrared (CIR) photo-interpreted wetlands and streams with WSSI surveyed wetland delineations as an illustrative tool to make general assessments before visiting the site.



1945 USGS Quadrangle Map

WSSI continuously acquires the most current digital land data and aerial photographs available for Virginia, Maryland, the District of Columbia and West Virginia, and manages an extensive collection of digital aerial photographs dating back to 1937 and hundreds of scanned maps from 1624 to present.



CIR Imagery with Surveyed and Photo-Interpreted Wetlands

Archeology



Phase II Archeological Investigation

Our Archeologists Dig Into the Past... So Our Clients Can Create the Future

Our clients benefit from our in-house expertise and integrated approach, which allows us to streamline the permit and land development approval processes.

Archeological Services

- Archeological Assessments
- Phase I Investigations
- Phase II Evaluations
- Phase III Excavations
- Cemetery Delineations
- Historical Studies
- Section 106 Consultation
- Agency Coordination

Federal, state, and local regulations often require archeological investigations to determine if cultural resources will be affected by a development or redevelopment project.



1808 Liberty
Head One Cent

Thunderbird Archeology, a division of WSSI, has over 25 years of experience performing all levels of archeological investigations on over 1,500 projects in the region.



Pre-Historic
Spear Point

WSSI has an extensive database containing hundreds of digitized historic maps



1624 John Smith Map



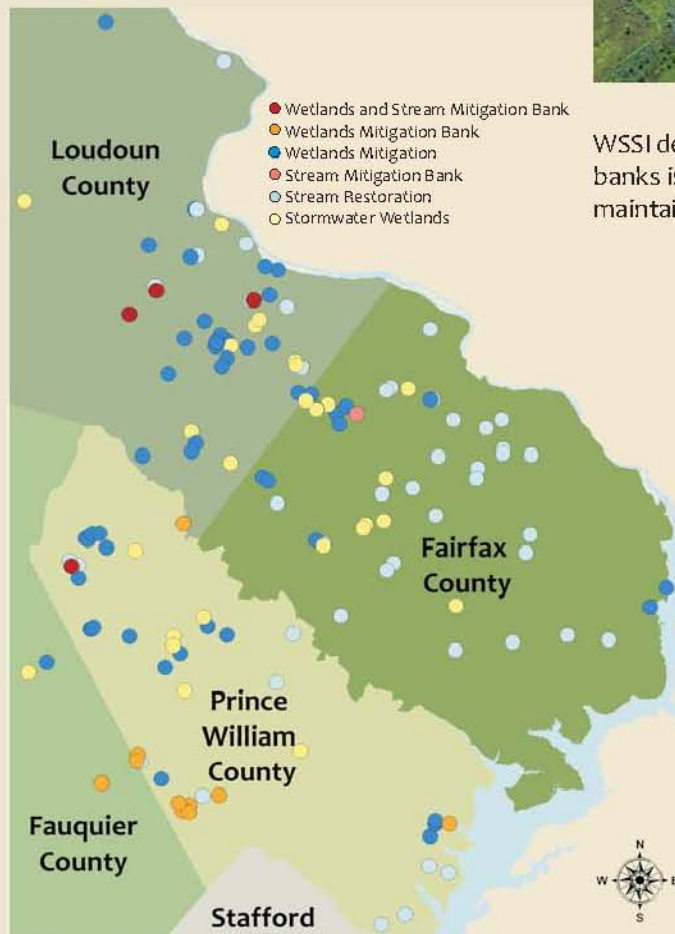
Phase III Archeological Investigation

WSSI is pro-active in the consultation process for all cultural resource services, initiating early coordination with federal agencies or the State Historic Preservation Office (SHPO) as needed.

Wetland Mitigation



You Can Bank on WSSI's Success



Map of WSSI Mitigation Sites in Northern Virginia

WSSI designed and constructed the first three privately developed mitigation banks in the region. No other firm has successfully designed, constructed, maintained, and monitored more wetland acreage in Northern Virginia.



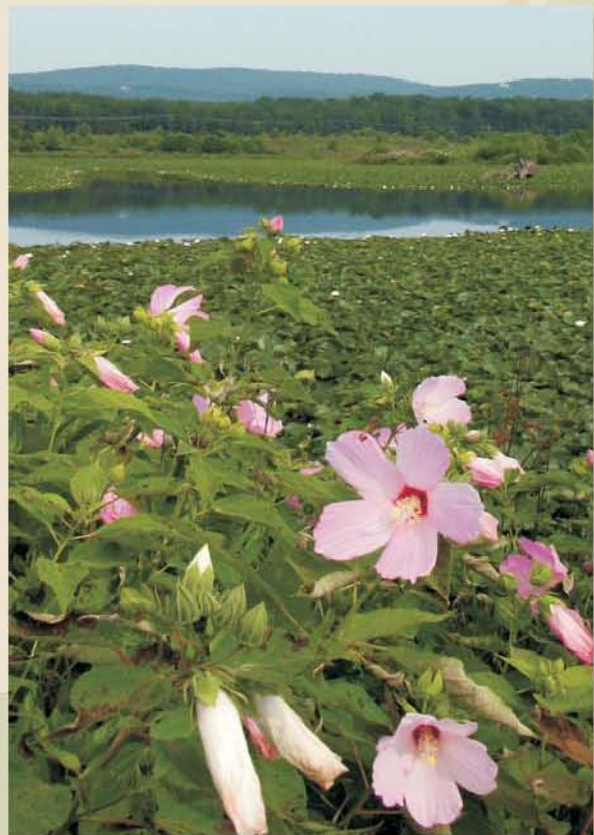
Cedar Run Wetlands Bank Phase 2A - Aden, VA

Cedar Run Wetlands Bank represents the largest mitigation bank in the D.C. Metropolitan area. This wetlands bank consists of nine tracts of land totaling 715 acres. Cedar Run Wetlands Bank has become home to numerous wetland-dependent bird species such as herons, egrets, waterfowl, gulls, hawks, and shorebirds. During annual wetland monitoring studies, more than 125 bird species have been recorded.

WSSI creates functional and viable wetlands that attract wildlife and maintain the biodiversity of natural wetlands while providing a living classroom for the community.



Julie J. Metz Wetlands Bank - Dumfries, VA
First Approved Wetland Mitigation Bank in Virginia (1994).



North Fork Wetlands and Stream Bank - Haymarket, VA

North Fork Wetlands and Stream Bank is an ecologically diverse 125 acres of wetlands, water, and upland habitat created by WSSI in 2000. North Fork was donated to the Boy Scouts of America and incorporated into Camp Snyder and is used in their environmental education programs and activities.

Stream Restoration



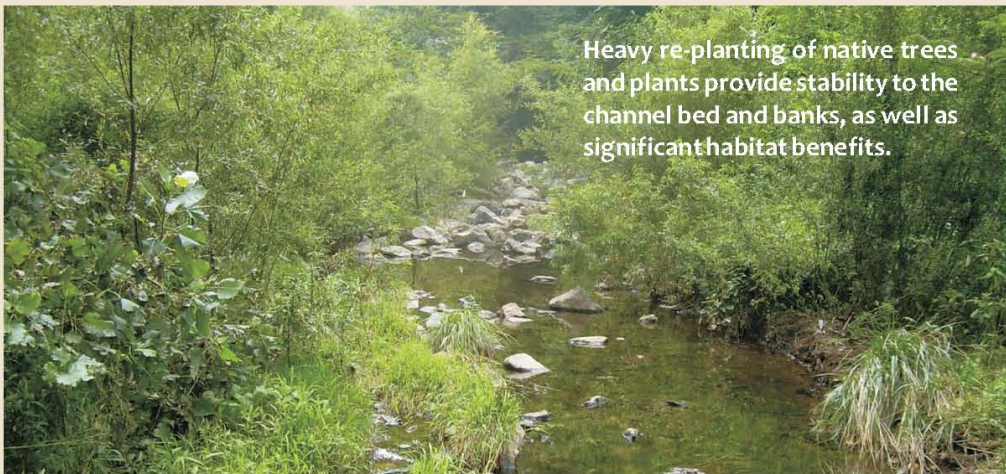
The First Urban Stream Bank in the Mid-Atlantic Region

Northern Virginia Stream Restoration Bank - Reston, VA

Providing Long-Term Urban Stream Stability Through Natural Channel Design

WSSI uses the Natural Channel Design method for all our stream restoration projects. This concept has proven results in developing stream systems that are both hydrologically and ecologically viable at project completion and remain successful well into the future.

WSSI designed and constructed the first mitigation bank approved to sell stream credits in Virginia (2002) - North Fork Stream and Wetlands Bank.



Heavy re-planting of native trees and plants provide stability to the channel bed and banks, as well as significant habitat benefits.

McLean Place Stream Restoration - Vienna, VA



Snakeden Branch - Reston, VA

Stream restoration projects can help streams achieve a stable condition even under the pressures of urban development.

Before Restoration



Reach 12 of Snakeden Branch - Reston, VA

Erosion of this urban stream's bed and banks exposed buried utility lines, damaged adjacent walking trails and exposed tree roots, causing healthy trees to topple.

4 Months After Restoration Construction



Reach 12 of Snakeden Branch - Reston, VA

During restoration construction, the stream bed is raised to reconnect with the floodplain. Placement of rock structures directs flow away from channel banks and creates riffle pools.

Ecosystem Management



Our Passion for the Environment Translates Into Successful Stream and Wetland Mitigation Sites

Their environmental background and construction knowledge make our Ecosystem Staff essential assets when overseeing the construction and maintenance phase of environmentally sensitive projects.



Equipment for Restoration Projects

Ecosystem Management Services

- Wildlife Habitat Enhancement
- Tree Preservation Plans
- Invasive Species Control
- Groundwater Monitoring
- Construction Oversight
- Erosion Control
- Native Plant Propagation
- Equipment Operation
- Trail, Boardwalk, and Weir Maintenance
- Wetland/Stream Planting Oversight

WSSI provides soil stabilization measures at project sites using a combination of bio-engineering techniques that include geo-textile fabric, rock, and native plants.

WSSI's ecosystem staff are Certified Arborists, as well as Certified Pesticide Applicators for the control of invasive species such as purple loosestrife.



Target Spraying Purple Loosestrife - a Non-Native Invasive Species

WSSI uses an Integrated Pest Management approach incorporating physical, chemical, and biological means to control a target species.



Native Trees Grown in Our Nursery are Used for Restoration Planting

Permit Compliance

Helping Clients Avoid Environmental Permit Violations

The WSSI Environmental Compliance Department works with clients and their contractors to insure that on-going development projects remain in compliance with permit conditions throughout the life of the project.



VSMP Site Inspection - Tysons Corner, VA



Wetlands Permit Photo Documentation

Permit Compliance Services

- Wetlands Permit Compliance
- Virginia Stormwater Management Programs Permits and Inspections
- Stormwater Pollution Prevention Plan Preparation and Audits
- Construction Monitoring for Clean Water Act Permit Compliance
- Erosion and Sedimentation Plan Review
- Environmental Compliance Training
- Remediation of Unauthorized Impacts

Our staff are Department of Conservation and Recreation (DCR) Certified Erosion and Sediment Control Inspectors and Plan Reviewers.



On-Site Sediment Control Inspections



Erosion and Sediment Control Plan Review

Our technical expertise and knowledge of Best Management Practices and Erosion and Sediment Control products save our clients time and money while reducing impacts to the environment.

LEED and LID



Environmental Sustainability by Example

WSSI encourages building in an environmentally-conscious manner. As a natural progression of our business practices, we wanted to develop a “green” building and a site design that was economically feasible.

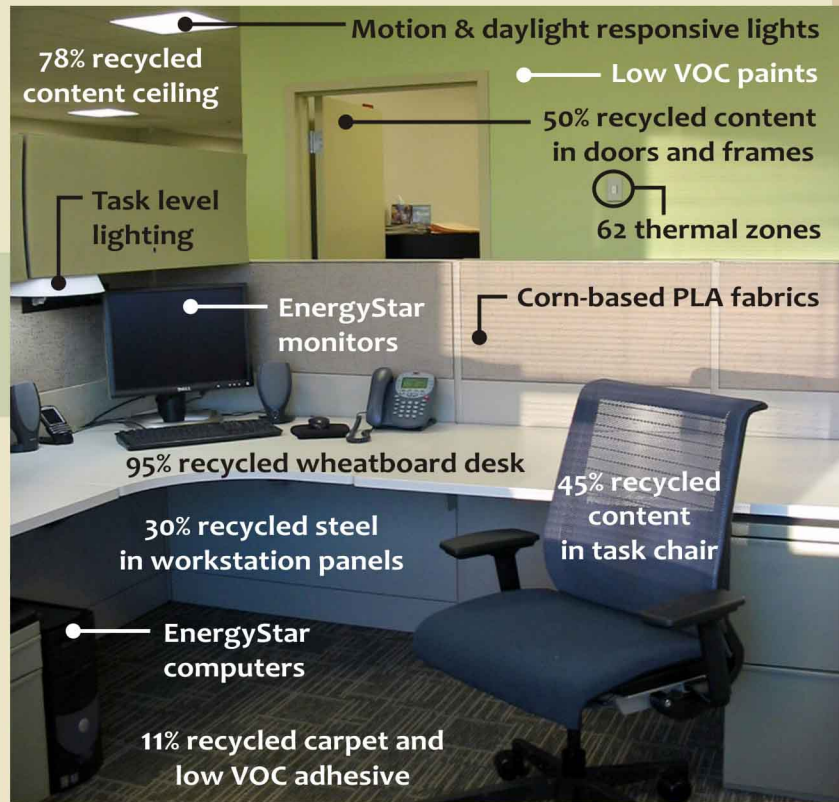
The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is a consensus-based, national standard for developing high-performance, environmentally sustainable buildings.

WSSI's office is the first LEED Gold certified facility in Virginia.



Adhering to these standards enables the WSSI building to not only reduce potable water consumption by 50% and energy consumption by 35% but also mimic the hydrology of an undisturbed forest to reduce downstream degradation.

Recycled and renewable materials and high-tech solutions all contribute to create a vibrant workspace for WSSI employees.



A Typical Workstation at WSSI

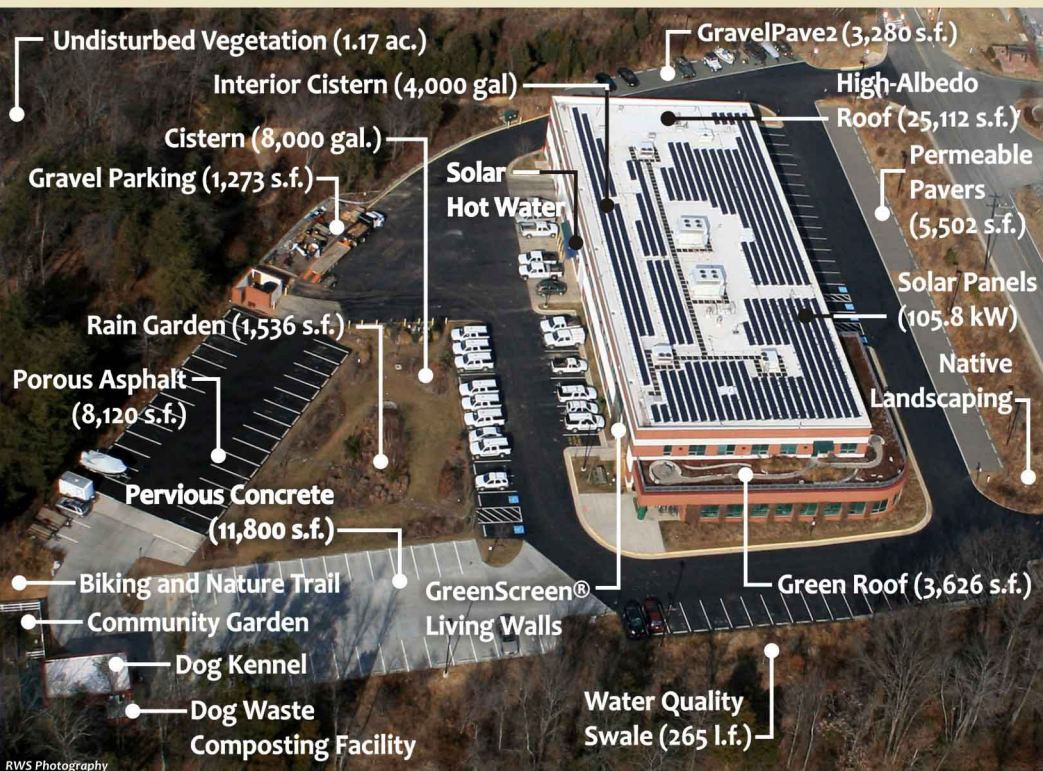
Low Impact Development (LID) is a stormwater strategy that mimics pre-development hydrology.

The main goals of LID are to:

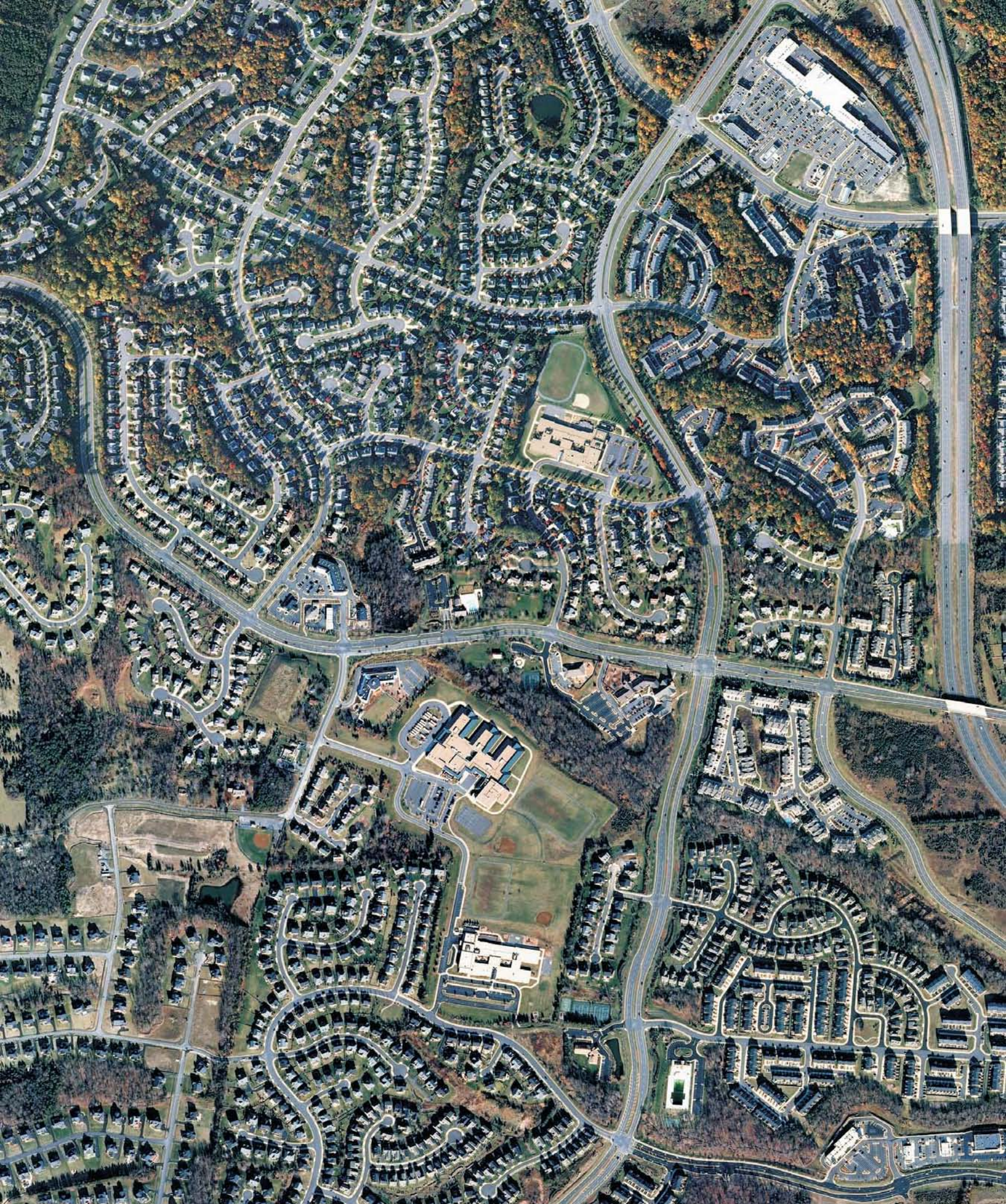
- Conserve existing hydrology
- Minimize impervious surface
- Maintain natural water flow
- Prevent pollution
- Provide public education.

WSSI continues to retrofit and upgrade the building and grounds with additional green features.

We have learned that proper design, construction and maintenance are the keys to successfully implementing LEED and LID design on a site.



The WSSI Building and Site - Gainesville, VA



Broadlands; Wetland Delineation, Permitting, Mitigation, Compliance and Archeology Services - Loudoun County, VA

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