



ecotone
ecological restoration

HELLO

On behalf of the Ecotone team, we're excited for the opportunity to collaborate with you to solve ecological problems and create a healthier environment.

This book is intended to explain our message and motivations as well as facilitate a partnership. We also hope it reinforces the analysis and explanations you've heard from our team. The last section offers a collection of photos from our projects that should help you visualize restoration techniques we mentioned and see how restoration can transform landscapes and habitat.

As we move forward, I hope you'll notice that we make every effort to keep you informed, treat you with respect, and offer our professional opinions about what makes sense as a next step. If you determine Ecotone is not providing that level of customer service, please contact me directly at smcgill@ecotoneinc.com so I can help improve the process.

We've established our brand and delivered the services summarized in this book for over 20 years. Whether you're seeking our services for your own property or looking to work together as partners, I know we can achieve great ecological outcomes.

Kindest regards,
Scott G. McGill, Sr.
Chief Executive Officer and Owner



"That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics."

-Aldo Leopold, Author, philosopher, ecologist, conservationist, professor





WHO WE ARE

Ecotone has delivered quality outcomes and pioneered innovative approaches to ecological restoration since 1998, establishing ourselves over those years as trustworthy experts and thought-leaders in our industry.

The underlying philosophy we embrace, which we call *Think Like a Mountain™*, grounds our efforts and priorities in a land ethic that values the natural world – notably the interconnectedness of wildlife, aquatic life, and human life in an ecosystem – and aims to build transitions that allow these co-habitants to thrive together.

The same philosophy also is reflected by our name – the definition of “ecotone” is the space where two distinct natural areas come together. For two decades, our company has embodied that name, acting as the bridge between striving for pristine ecological communities

and respecting the human-dictated land uses that we depend on for our economy and communities. Our restoration principles support this philosophy by harnessing natural processes to assist in transformation and conservation. We label our approach *Less is More*; it emphasizes the re-use of stone, grass, vegetation, and other natural material available at a project site to minimize disruption, reduce costs, and promote sustainability.

Ecotone is proud to be a small business in Maryland, and much of our work serves localities in the State. We’ve also delivered many successful projects throughout the Mid-Atlantic and as far west as Colorado. Wherever we go we attempt to establish community-based relationships meant both to facilitate community impact and connect populations to nature.

Cease being intimidated by the argument that a right action is impossible because it does not yield maximum profits, or that a wrong action is to be condoned because it pays.

-Aldo Leopold, Author, philosopher, ecologist, conservationist, professor





All of Ecotone's projects – streams, wetlands, and reforestation – include a planting plan. These plans include exclusively native vegetation and are tailored to the needs of the project. Species and their placement on finished restoration sites can be customized to fit aesthetic, environmental, or functional goals.



Healthy streams have an abundance of food and habitat types to support invertebrates, amphibians, reptiles, birds, and mammals. Some species prefer living in rapid riffles while others choose calm pools, stream bed sediment, or vegetation and plant debris in and around the stream. Ecotone restores this habitat diversity to degraded, homogenous stream systems. Wildlife typically re-populates Ecotone's restoration sites quickly after work is completed, which is one affirmation of the ecosystem benefits we deliver.

BRIEF HISTORY

Like many small businesses (and some big ones), Ecotone started in a basement. After gaining experience working for a few other companies Scott McGill started his own company with himself as the sole employee (plus a dog).

He eventually formed Ecotone in partnership with another sole proprietor in 1998. First, they graduated from their basements to a single room in an old, converted school house. After a few years the company evolved to a handful of employees in a small farm house. There were no job titles – each Ecotonian did a little bit of everything. The services delivered by Ecotone in the early years involved delineations, permits, and stream design. The company didn't buy its first piece of construction equipment until 2005 – a skid loader.

The idea that motivated Scott in the beginning involved merging engineering, ecology, and construction so that a client could create a relationship with one trusted agent. This was –

and still is – an uncommon business model in the restoration industry. The typical framework in place often involves environmental, construction, and design firms working separately on different phases of a restoration project. As a single, full-delivery firm, Ecotone is able to provide clients and partners efficiency, flexibility, and maximum control – we can change on the fly to meet changing conditions.

Ecotone is in Phase Four of its life-cycle now. Scott is the sole owner. Nearly ninety Ecotonians occupy roughly 15,000 square feet between a corporate office and warehouse space. We operate a nursery to grow plants for our projects, and the company has more than 30 pieces of heavy equipment. Although Ecotone has experienced significant growth over two decades, our fundamental goal is the same – we strive to provide clients with innovative, cost-effective solutions that deliver the greatest measure of ecological uplift we can create.

“On time and on target, Ecotone delivered exactly what they promised.”

- Kevin Anderson, Project Coordinator - Trout Unlimited



Our CEO, Scott McGill, usually is accompanied by a canine companion (here he is pictured with Goose). Scott's love for dogs has infiltrated Ecotone's culture - our offices are dog-friendly, and you are likely to be greeted by a variety of canines any time you stop by.



A symbol of Ecotone's embrace of a land ethic is its beaver management service. Beaver often are deemed a nuisance or worse, but they are nature's original ecological restorers, building dams that slow water, trap sediment, and create habitat. Where appropriate, Ecotone uses design techniques and planting plans that encourage beaver to colonize. But, if beaver behavior is destructive to the other existing land uses, Ecotone will install a device that mitigates beaver activity yet allows them to live unthreatened.

SERVICES

Ecotone's expertise and capabilities include stream restoration, wetland creation and enhancement, stormwater management solutions, reforestation, mitigation banking, and other complementary efforts. Moreover, we can be a design/build partner – that profile usually means more control of the process, greater ability to adapt to change, increased efficiency, and less cost.

FULL-DELIVERY ECOLOGICAL RESTORATION

The restoration process often begins with a search for funds to sustain the work. Whether applying for funding ourselves or assisting partners with proposal writing, Ecotone's grant administration team has a proven track record in obtaining awards for restoration projects.

Ecotone's multidisciplinary staff also includes environmental scientists who expertly design, engineer, and permit our restoration projects once funding is obtained. Our experienced construction team implements these designs in the field, minimizing the risk of miscommunication between cooperating firms and maximizing the project's potential for success.

"The Ecotone team does high quality work that demonstrates a commitment to client service and environmental sensitivity."

- Ronald M. Shapiro, Co-Founder and Chairman - Shapiro Negotiations Institute

MITIGATION BANKING

Ecotone develops mitigation banking sites and brokers ecosystem credit sales. We utilize our ecological design-build knowledge to implement restoration or protection on streams, wetlands, and forests to earn credits that we sell to individuals or businesses that are mandated by a county or the State to off-set development and human impacts.

OTHER SERVICES

Additional services we offer include wetland delineations, site assessments, and invasive species management as well as permitting, and consulting. Our team also has developed a national following for our non-lethal beaver management efforts.

Finally, Ecotone operates its own nursery, and we grow many of the native species we plant for our clients. We can supply a variety of vegetation options to our own projects as well as offer contracted sales to partners in the communities we serve.



Although we enjoy showcasing our completed projects in the field, Ecotone has much to be proud of behind the scenes. The hard work and collaboration of our grant management team, land acquisition specialists, ecologists, engineers, permitting specialists, and project managers make our projects both possible and successful.



Whether implementing Ecotone's or another engineering firm's designs, our crews are knowledgeable in the field of restoration and conscientious about their environmental impact during construction. They take all necessary steps to minimize disturbance and recycle on-site materials. Here, we're unloading large woody debris created by removing a tree from a project site - we incorporated it into the stream design to create habitat and introduce carbon to the ecosystem.

OUR CLIENTS

Whether your motivation is reducing pollution to improve water quality, achieving TMDL goals, obtaining mitigation credits, retrofitting an ineffective stormwater pond, or simply repairing a degraded reach of stream, Ecotone has the tools and expertise to achieve meaningful change.

LANDOWNERS

If you have land management issues on your property, including frequent flooding, severe erosion, and dangerous gullies, let us help you find a solution. Our staff is astute with site assessment, skilled at identifying and securing funding for a project, and highly regarded as designers and builders of restoration outcomes. We will work with you hand-in-hand and simplify the process for you by bearing most of the administrative burden ourselves. Ecotone also can develop mitigation bank sites on eligible properties – this results in compensation for the landowner in exchange for protecting and/or restoring areas of forest, stream, or wetland on your property through conservation easements.

LOCAL GOVERNMENTS

Ecotone has provided services for many county and city governments to help fulfill federal or state mandated environmental goals. We often act as a government entity's partner – providing consulting, finding projects, assisting with proposal development to secure project funding, and completing the restoration itself.

NON-PROFIT AND FOR-PROFIT COMPANIES

Ecotone collaborates with many companies that seek our expertise in ecological restoration. Generally, for private-sector partners we provide individual services such as wetland delineations, site assessments, restoration designs, permitting support, or construction services. When we become partners with non-profit entities, we're frequently helping to identify and obtain funds that allow Ecotone to provide restoration in ways that enable the non-profit to accomplish its mission or achieve program goals.

“Quite simply, they provide a great product for a reasonable cost. Plus, they are easy to work with ... very accommodating and reasonable.”

- Kevin Smith, Chief of Habitat Restoration and Conservation, MD DNR



Pictured is one of Ecotone's design-build projects in Washington County, Maryland. Ecotone worked with the Washington County Soil Conservation District to obtain funding for the project and also designed, permitted, and implemented the restoration plans. Completed in 2017, this project restored 500 feet of Grove Creek and 1,200 feet of Little Antietam Creek, allowing the streams to sustain high flow events. This project reduced sediment and nutrient loading, created improved habitat for wildlife, and enhanced environmental conditions for recreational fishing.



Our construction team has implemented designs from several engineering firms as well as those created by Ecotone itself. Because Ecotone is a design-build firm, our construction crews routinely engage directly with engineers and designers and have learned both the processes the industry requires as well as the science behind why a technique is effective. As a result, we regularly diagnose trouble in the field not anticipated in the plan set, and we create options based on our extensive, practical knowledge. Here, an Ecotone operator uses an excavator to install a log vane, a common structure found in stream restoration designs.



WHY ECOTONE?

The demand for ecological restoration is growing, bringing more companies into the industry. We know it may be hard to tell who can deliver what you want. Ecotone is unique in the industry because...

1. Foremost, we pursue an approach we call *Less is More*. Our design and construction process emphasizes the re-use of stone, vegetation, and other natural material available on the site to minimize disturbance, reduce costs, and promote sustainability. Our end product is an improved water resource along with a thriving habitat.
2. In addition, our team thinks and acts with a long-term mindset. We know we can meet a short-term construction and monitoring requirement; however, we want to be proud of our product for generations to come. That is our test of science, practicality, energy, and innovation.
3. Ecotone encourages its staff to be creative in the restoration process, and our openness to new ideas has led to many
4. Our philosophy of *Think Like a Mountain™* signals our embrace of the interconnectedness of an ecosystem. As a restoration tactic it means we often look for ways to allow nature to restore nature. We harness the planet's own tools to help a project site reclaim its natural condition. This includes using fungal networks to encourage vegetation establishment, attracting beaver to slow water and create habitat, and allowing streams to carve their own paths instead of forcing the water into an unstable, predetermined channel.

innovative techniques. For example, we're using restoration practices adapted from pioneering research on Rocky Mountain streams; we're creating customized seed blends for post-construction planting; we incorporate legacy sediment into our projects; and we devised a technique to disrupt the floodplain that invites faster seed-to-soil contact for riparian buffers. We always are striving to improve our methods, challenge the status quo, and enhance the functionality of the sites entrusted to us.

We have always found Ecotone to be practical and ethical in their approach and reliable in their delivery.

- Steve Smith, President - Gaylord Brooks Realty Company



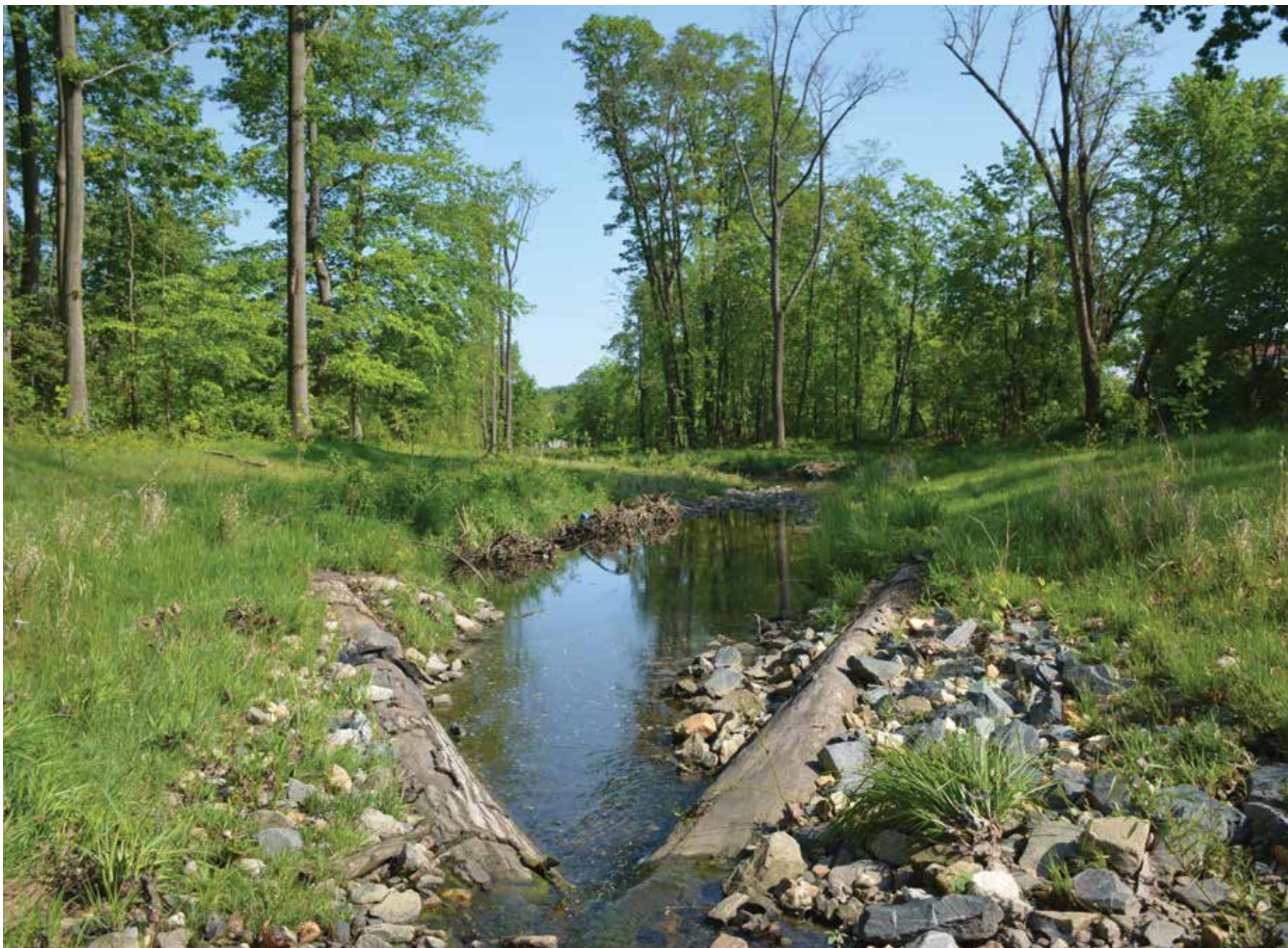


This forested wetland restored by Ecotone is an exercise in long-term thinking. These types of ecosystems can take years to develop as trees mature and wildlife colonizes. Ecotone's projects are monitored for years after their completion to ensure that vegetation is successful and no damage has occurred - wetlands such as these often are monitored for up to 10 years.



Ecotone recognizes the importance of using strong stock when planting on a restoration site, so we use materials grown in our own nursery. Ecotone's nursery is dedicated to producing high-quality plant material with a focus on resilience and ecological integration. Using our own nursery-grown trees, shrubs, and grasses ensures the necessary quality for successful restoration and allows us to reduce overall project cost.

SUSTAINABLE DESIGN



Ecotone's restoration sites are designed to maximize environmental benefits. We focus on water quality enhancement, habitat creation, carbon sequestration, flood prevention, and other ecological improvements. In other words, we restore with the entire ecosystem in mind. Pictured here is a log vane – these structures and others are made from woody debris salvaged from the project site. Using recycled trees reduces our carbon footprint by minimizing hauling, and the wood is a source of food for insects living in the stream.



Toewood is another structure frequently used in Ecotone's designs. It typically includes salvaged large, woody debris such as root wads and tree trunks. Most often, toewood is placed around meander bends where shear stress on stream banks is strongest. These structures prevent fast-moving water from degrading the banks and disrupting the stream's natural function. Similar to log vane structures, the woody features used in toewood provide food and habitat for aquatic life.



CULTURE

The secret strategy we've used to achieve the notable results we deliver is simple: we hire talented, passionate people and then make every effort to offer a work environment conducive to results.

We promote and follow six Core Values:

1. Knowledge
2. Going the extra mile
3. Collaboration
4. Creativity
5. Practicality
6. Trustworthiness

To motivate and reward our team we offer robust benefits to complement fair pay. We share profits. We award generous paid leave. And, we offer flexible work schedules and a

relaxed work environment, including dogs in the office.

Additionally, Ecotone offers financial support to numerous non-profit organizations in the communities we serve. Our team devotes volunteer hours for trail building and mentoring among other contributions of talent and time, to help our neighbors and partners improve the quality of life for those we serve.

Ecotone knows the business inside and out, and knows how to get a project approved as quickly as possible. They provide a high level of professional services, and are flexible enough to meet most any constraints. Most of all, they have developed strong relationships with all of the MDE and Corps staff, and have earned their respect through years of providing high quality professional services.

- Chuck Irish, Principal - Vika, Inc





The Ecotone family is passionate about what they do. Here, one Ecotonian is excited to participate in an electro-shock fish surveying effort to characterize fish species in a soon-to-be restored stream. This data will influence Ecotone's approach to the restoration.



Our associates believe in ecological restoration and its importance in our communities. We work in a team-oriented environment and frequently overlap in roles. The company fosters an organizational culture that is beneficial to innovation in a fun and relaxed work environment.

BEFORE & AFTER

Ecotone's unique status as an ecological design-build firm yields benefits to our clients in the form of broader and deeper pools of applied knowledge as well as adaptive management strategies responsive to evolving needs or changing ecological conditions.

Because we design as well as build, our ability to engineer efficient and practical solutions is enhanced. In addition, our staff frequently revisit past project sites to note successes *and* failures so that we continuously gain practical knowledge and improve designs and techniques for future projects as well as determine where cost-efficiencies can be enhanced.

Our passion is to restore a landscape to a condition as close to natural as we can create while fostering a thriving habitat for fish, birds, and wildlife. The underlying philosophy we follow recognizes the interconnectedness of

the ecological world. All our restoration efforts emphasize total functional uplift, reuse of natural materials, and sustainability.

Finally, we demonstrate our confidence in our team with every bid and proposal we submit, because we offer a firm price to clients and hold ourselves to it.

"Ethical behavior is doing the right thing when no one else is watching – even when doing the wrong thing is legal."

-Aldo Leopold, Author, philosopher, ecologist, conservationist, professor

STREAM-WETLAND COMPLEX



BEFORE

First Mine Run, a headwater stream, exhibited severe erosion before restoration, including dangerous, 10 to 12-foot deep gullies in many places. These steep, unstable banks frequently lost sediment to the stream during storms – with no vegetation to stabilize it, pieces would easily fall into the channel. The lack of vegetation surrounding the stream also led to degraded water quality, because runoff from surrounding fields flowed into the stream without any kind of filtration.



AFTER

Ecotone reconnected this stretch of First Mine Run to its floodplain and incorporated woody debris to encourage multiple channels to form. This approach mimics what streams likely looked like before human development and agriculture, and it creates many diverse habitat types for wildlife. The resulting low-flow channels allow pollutants to be removed from the system and stored rather than transported downstream.

SINGLE-CHANNEL STREAM



BEFORE

The banks along this portion of Deadman Run were steep and continuously eroding, creating a deep channel that would become more incised over time. In addition, the stream had no existing riparian buffer – a strip of trees, shrubs, and/or grasses that slow and filter the runoff that flows into the stream. The resulting high-velocity flow rates were a leading factor in the severe bank erosion.



AFTER

Ecotone realigned this stretch of Deadman Run to remove the overly-sharp bends, which allow water to cut away at the banks, and replaced them with gentle meanders that help slow the flow of water. Our crew built structures throughout the stream, such as woody riffles, log-vanes, and toewood – all of which assist in bank and channel stabilization. The structures added directly into the stream channel as well as the vegetation along the banks provide habitat for many species that help an ecosystem thrive.

STREAM & RIPARIAN BUFFER



BEFORE

Portions of Little Antietam Creek and Grove Creek near Smithsburg, MD became extremely eroded, with both channels migrating as well as creating large, sharp meanders. The changes over time also resulted in loss of floodplain connection, and the lack of a vegetated buffer along the stream banks caused runoff to flow into the stream unfiltered, carrying pollutants. Water quality deteriorated in these stream reaches, impacting biodiversity on the property and contributing to poor water quality in downstream bodies of water, too. These degraded conditions were unsuitable for supporting the natural trout populations documented in the area.



AFTER

Ecotone realigned and reconstructed the banks and channel of this stream reach and planted a robust riparian buffer. The restoration approach reflected preferences and interests of the property owner - he enjoyed recreational fishing and hoped to do so in his newly restored stream. Therefore, Ecotone used restoration techniques intended to maximize the habitat quality and food availability for fish, specifically trout. The vegetation surrounding the stream helps improve water quality by filtering runoff and provides habitat for insects whose aquatic eggs and larvae are valuable food for fish.

VALLEY-WIDE STREAM



BEFORE

Due to sheet runoff from surrounding agriculture, historic straightening, and lack of riparian buffers, the stream running across this property – a tributary to Long Green Creek – became extremely degraded. The banks and channel eroded severely and the stream's natural meanders were minimized. Adjacent fields consistently flooded because their elevation was lower than that of the stream.



AFTER

To address the existing erosion and combat further degradation of the stream, Ecotone re-graded the area to reconnect the floodplain, which allows the adjacent fields to drain toward the channel and created a valley-wide system. The restoration of the majority of the reach included features like riffle-pool sequences and stabilization structures built from woody debris salvaged from the project site.

CATTLE CROSSING & LIVESTOCK EXCLUSION FENCING



BEFORE

North Stirrup Run (traversing an active cattle farm) had incised banks that reached five feet high in some instances as well as large amounts of sediment in the stream. Stream banks also exhibited a lack of vegetation, which facilitated additional erosion. The steep banks made it difficult for cattle to access water without damaging the banks further or getting injured.



AFTER

In addition to stream realignment to reduce sediment and erosion, Ecotone also installed a concrete cattle stream crossing plus livestock exclusion fencing. This resulted in a reduction in cattle fatalities and hoof impact to the stream bank.

EMERGENT WETLAND



BEFORE

Low-lying areas of this farm retained water and remained wet long after rainfall occurred. While preparing a stream restoration design for a portion of Yellow Branch, which transects the property, Ecotone saw the potential for this area to be converted to a wetland. The wetland would contribute to the water quality enhancement provided by the stream restoration.



AFTER

The wetlands Ecotone created supported the property owner's goal of enhanced water quality by catching fast-moving runoff flowing toward the stream. Wetlands temporarily hold onto water and filter out pollutants before the water drains. Without the wetlands, flowing water would rush downhill, eroding away sediment and transporting it as well as excessive nutrients into low-lying rivers and streams.

SHALLOW-WATER WETLAND



BEFORE

A landowner in Harford County, MD decided to convert about 13 acres of fields on the farm into wetlands. Over the years our client tried numerous farming practices on these acres that all proved unsuccessful due to the persistent saturation of the soil. While these areas consistently were wet or flooded, they lacked proper vegetation and topography to function as a natural wetland.



AFTER

To transform these fields, Ecotone created a shallow-water wetland. Our crew graded the area to retain more water and planted the inundated field with native wetland vegetation. Shallow-water wetlands are unique – a control-box is installed with the wetland that allows the property owner to control the water level. Shallow-water wetlands provide ideal habitat for migrating waterfowl and are great additions to properties for avid hunters.

FIRST MINE RUN



First Mine Run Restoration
Rendering by our Director
of Design



Ecotone completed its restoration at First Mine Run in 2017. We fully realigned the extremely incised and historically straightened stream to exhibit a more sinuous channel and reconnect it to its floodplain. Additionally, Ecotone created pocket and oxbow wetlands throughout the stream's floodplain to further enhance water quality, add habitat, and increase flood attenuation. In designing and constructing this project, we strived to use materials salvaged on-site for all restoration techniques.



WHAT NEXT?

There are several ways to collaborate with us to enhance your property and community. We encourage anyone with an environmental need or concern to contact us.

THOSE LOOKING FOR A CONSULTATION

How to contact: Call us at 410-420-2600 or submit an inquiry on our website www.ecotoneinc.com.

Who to ask for: Business Development, regarding potential work on your property.

What happens next? After speaking with you to determine if our services can help you, Ecotone will perform a complimentary site visit to discuss possible restoration options.

THOSE SEEKING ECOSYSTEM CREDITS

How to contact: Call us at 410-420-2600 or submit an inquiry on our website www.ecotoneinc.com.

“My experience is Ecotone has no B team. No matter who is leading an effort we consistently get great service.”

- Joseph Rutter, Principal – Land Design and Development

Who to ask for: Ecotone’s ecosystem credit specialist.

What happens next? Our ecosystem credit specialist will provide credit availability and pricing.

THOSE WISHING TO PARTNER

How to contact: Call us at 410-420-2600 or submit an inquiry on our website www.ecotoneinc.com.

Who to ask for: Business Development, regarding partnering on a project.

What happens next? Ecotone will gather more information while speaking with you to determine if we can provide the services you are requesting.



THINK LIKE A MOUNTAIN™



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