Nativescape™ LLC

Natural Solutions & Qualifications
Shoreline Restoration & Slope Stabilization

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6/16/2008
Welcome to Nativescape™

At Nativescape we take a scientific approach to all our projects and base practical strategies on extensive experience with ecological restoration, native landscape design, natural storm water management, soil bioengineering and rigorous review of each project’s goals. Our objective is to create state-of-the-art best management practices (BMP’s) with a common sense approach. We use the ecological sciences along with strategies like low impact development (LID) and innovative environmental education to create premier projects for our clients. We offer concept development, budgeting and grant application services to ensure your projects funding goals can be met.

Traditional and natural landscaping will blend to provide inviting open spaces for the community. Native wetlands and buffer strips will beautify park space with colorful flowers and plants that improve water quality by filtering storm water runoff before it enters contiguous waterways. Uplands will mimic the native plant community types that once thrived in the region increasing infiltration and preventing erosion. Nativescape’s professional team offers a full ecological restoration package from complete design and construction services through all stages of project development: Site Analysis, Preliminary Design Alternatives, Final Design, Regulatory Permitting, Construction Administration, Establishment, Management and Monitoring.

Our nativescaping is based on the original Michigan Natural Community Types or presettlement habitats that have been determined by the Michigan Natural Features Inventory. These are composed of the local native species present before European settlement. Our goal is to harmonize your landscape with the larger indigenous biotic community and ecosystem in the immediate and surrounding eco-region. Simply, it is landscaping to work with, rather than against nature. A diverse color pallet with an assortment of species is used with every project, which will increases sustainability, function and beauty. For more information on these subjects, previous projects and seed specifications already developed for remediation; please visit our website at www.nativescape.net.

Thank you,

Chris Lehr
RESTORATION BIOLOGIST & PRESIDENT
Nativescape’s
Natural Solutions

- **Natural Shoreline Restoration.** Using native soil bioengineering, ecological remediation and natural landscape design BMP’s (best management practices) we can restore shorelines and stream banks to a more natural state. With the use of soft armoring and other short-term soil stabilization techniques to reinforce the soil, we can jump-start the establishment of a native plant community for a sustainable alternative to hard armoring of Great Lakes shorelines.

- **Low Impact Development (LID) Planning.** There is a new environmentally conscious site design strategy that uses natural landscaping, natural and engineered drainage and infiltration design to control storm water on site. LID systems store storm water runoff in a natural, aesthetic and cost effective manner by mimicking natural systems. We can develop a storm water strategy using Rain Gardens and Bioswales to help treat runoff and protect water quality.

- **Natural Landscape Design** is the use of native plant communities in landscape design as an alternative to turf. These designs focus on the use of local native plants arranged in an aesthetically pleasing manner for reduced maintenance costs and long-term sustainability. Our landscapes for learning plans are an environmental education approach to natural landscape design.

- **Native Species Specifications.** Site specific native seed and plant specifications are developed for a naturally successful project. The key is the right plant community for the right place, which will insure a sustainable design. Have a Native Establishment Plan developed for your native planting project to insure a successful establishment. See the website for Nativescape mix specifications already to use in your next project.

- **Grant Applications.** Nativescape can assist with applications or administer the entire grant process for your ecological restoration project. We can help develop local partnering, create educational aspects and complete all reporting needed for project completion. We have a successful track record of accepted applications and completed projects.

- **Wetland Mitigation & Remediation.** Nativescape specializes in a natural approach to permitting, monitoring, wetland mapping, wetland determination/delineation, conservation easement, & mitigation banking.

- **Land Evaluation Surveys.** Natural features inventory with floristic quality assessment of plant communities, environmental impact statements, environmental risk assessments, heritage tree surveys, bird & mammal surveys, and endangered & threatened species analysis are used to determine the existing condition of a site and the BMP's to develop a LID strategy.

- **Open Space Evaluation** is a geographical information system or GIS used to identify privately owned, undeveloped parcels that exhibit sufficient natural features to rank the parcels for preservation priority. Green infrastructure or open spaces and natural areas need to be considered when developing your Community Master Plan and making long-term land use planning decisions. This study allows municipalities to strategically integrate the remaining natural areas into future development planning.

- **Native Landscape Installation.** Nativescape can install your entire natural landscape design or be the construction manager. We can supervise contractors and volunteers in ecological restoration of native habitats.
Over 4000 linear feet of native shoreline was installed at Tannery Bay just west of Sault St. Marie using soft engineering techniques. The shoreline was dredged removing the contaminated soil, and then the edge was capped using the Filtrexx soil socks Doetsch Industrial Services. The cutting-edge technology utilized the latest soil bioengineering BMP’s or (best management practices) in shoreline restoration and native ecosystem research. The design used all Michigan native plants that were found in the St. Maries River watershed according to presettlement and historical vegetation research.

This project reestablished a natural buffer made up of native plant communities found in four hydrologic zones or water depths. The project was completed in the fall of 2007. Establishment and monitoring is on going.

Reference
Joe Schotthoefer IV, Doetsch (586) 755-2090
With funding from a Five-star grant and a Great Lakes Coastal Program grant from the Friends of the Detroit River, Metropolitan Affairs Coalition, Michigan Department of Environmental Quality, United State Fish & Wildlife Service, Sea Grant, and The City of River Rouge. Nativescape reconstructed 200 linear feet of native shoreline at DTE Energy’s River Rouge Power Plant using soft engineering techniques in a natural landscape design. The shoreline consisted of poured concrete and other debris. Nativescape, LLC, designed the new shoreline incorporating design elements that provide an aesthetically pleasing landscape that is multifunctional along the Detroit River. The design used all Michigan native plants that were found in the Detroit River watershed according to presettlement vegetation research. All the native plant stock used on the project was Michigan native species. Local seed was harvested and plants were grown specifically for this project.

This project reestablished a natural riparian buffer made up of four Michigan native plant communities. This shoreline restoration used soil bioengineering, natural landscape design and a natural storm water management approach to provide a buffer from storm water run off, create an infiltration zone, and restore a more natural shoreline along a very industrialized river corridor. The project was completed in the fall of 2005. Establishment and monitoring is on going through 2006.

Reference
Jason Cousino, DTE Energy, (313) 554-8730
This project was done in cooperation with the International Wildlife Refuge Alliance (IWRA), the United States Fish and Wildlife Service (USFWS), Michigan State University Extension and Wayne County Division of Parks (hereinafter referred to as “Wayne County”). The project is being funded with a grant from the USFWS.

Nativescape has designed, permitted and implemented a native shoreline restoration project, approximately 600 linear feet, around a proposed kayak and canoe launch site. The goals of the design were to create a stable, naturally landscaped native shoreline that is an aesthetically pleasing, low maintenance project that is in compliance with regulations of USFWS, Wayne County, Michigan Department of Environmental Quality (MDEQ) and Army Corps of Engineers (ACOE).

This project will provide examples of cutting edge bioengineering techniques and ecological restoration in a natural landscape design developed by Nativescape LLC. These habitats were based on a number of natural community types (NCT) as determined by Michigan Natural Features Inventory. This project reestablished a natural riparian buffer made up of four Michigan native plant communities. This shoreline restoration used soil bioengineering, natural landscape design and a LID low impact development approach to provide a buffer from storm water run off, create an infiltration zone, and restore a more natural shoreline along a park setting. The project is still under way and will be completed the spring of 2008.

Reference: Lisa Apple, IWRA Director, (734) 692-7671
This was a pilot project restoring 280 lineal feet of Detroit River coastal wetlands in Gibraltar Bay. This effort took a scientific approach to restoration and involved all the stakeholders in the Lower Detroit River. The project was done by the Grosse Ile Nature and Land Conservancy funded by a grant from the Downriver Community Conference with the support of the U.S. Environmental Protection Agency, the U.S. Fish & Wildlife Service through the Detroit River International Wildlife Refuge, the Detroit River American Heritage River Initiative, Friends of the Detroit River, and other local groups.

Nativescape developed the engineering and landscape plans, applied for the necessary permits with MDEQ and USACE, coordinated construction, and developed establishment and long-term monitoring using local school groups and university students. Invasive species eradication involved researching and trying new techniques; we were successful in eliminating Phragmites from the site. Local seed from native Michigan plant community types were harvested and plants were grown specifically for this project. Volunteers were used along with contractors to provide educational opportunities and to offset costs. The project was completed in 2003. Above AFTER photo is from 2006.

Reference Bruce Jones, Past President Grosse Ile Nature and Land Conservancy (734) 676-6657
These partners were involved with both phases of the project site.
Grosse Ile Nature and Land Conservancy

Gibraltar Bay Shoreline Reconstruction Project

This was the second phase of the shoreline restoration along the Detroit River in Gibraltar Bay. This innovative project recreated 907 feet of natural shoreline; meaning the Conservancy has restored approximately a quarter mile of Detroit River shoreline. Nativescape used state of the art soft engineering techniques and local natural community types to cost-effectively reduce erosion, stabilize shoreline, enhance wildlife habitat, and improve aesthetics. Grant funding and support sources included the Metropolitan Affairs Coalition, Greater Detroit American Heritage River Initiative, U.S. Fish and Wildlife Service, Great Lakes Commission, Grosse Ile Nature Conservancy, Detroit/Wayne County Port Authority, Sea Grant, Friends of the Detroit River and Grosse Ile Schools.

Nativescape helped write the grant, developed the engineering and landscape plans, applied for the permits, coordinated construction, and developed establishment plans. Local seed from native Michigan plant community types were harvested and plants were grown specifically for this project. Volunteers were used along with contractors to provide educational opportunities.

Commenting on the project, Congressman John Dingell noted, “It is through partnerships like this that we are building the only International Wildlife Refuge in North America. This soft engineering project at the Grosse Ile Nature Area demonstrates how innovative collaboration can recreate a natural shoreline in the Refuge, protect wildlife habitats and native populations, and enhance quality of life and community pride in our region. The Conservancy, MAC, and its funding partners are to be congratulated”.

Both projects won an Environmental Achievement Award in 2004 from the Environmental Management Association in the Detroit area. The project was completed in 2005, above AFTER photo is from 2007.

Reference
Doug Thiel, President, Grosse Ile Nature and Land Conservancy, (734) 324-6208
Nativescape LLC with sponsorship from the United State Fish & Wildlife Service reconstructed 1200 linear feet of native shoreline at United States Steel’s Great Lakes Works using soft engineering techniques in a natural landscape design. The shoreline consisted of fill material and other debris. Exotic plant species such as Phragmites and Cottonwood sprouts had colonized this area in between the large (five feet plus) pieces of concrete and foundry slag riprap that had a slope greater than 2:1.

Nativescape, LLC, designed the new shoreline incorporating design elements that provide an aesthetically pleasing landscape that is multifunctional along the Detroit River. The design used all Michigan native plants that were found in the Detroit River watershed according to presettlement vegetation research. All the native plant stock used on the project was of local origin. Local seed was harvested and plants were grown specifically for this project. The cutting-edge technology utilized the latest soil bioengineering BMP’s or (best management practices) in shoreline restoration and native ecosystem research. Two BMP’s were used on this site in order to restore the shoreline to a more natural state, natural rip rap blanket and a fascine rip rap blanket. Both incorporated decreasing the steepness of the shoreline slope by removing or pulling back the soil from the top of the slope down to the water line. This created a more natural and safer shoreline as well as a more stable area to establish the native plant community.

This project reestablished a natural riparian buffer made up of Michigan native plant communities. This shoreline restoration used soil bioengineering, natural landscape design and a natural storm water management approach to provide a buffer from storm water run off, create an infiltration zone, and restore a more natural shoreline along a very industrialized river corridor. The project was completed in the fall of 2005.

**Reference**
Environmental Department
United States Steel Corporation, Great Lakes Works
(313) 749-2649
Nativescape redesigned and installed a native riparian buffer along the mill raceway off of the River Rouge in Hines Drive Parkway. This was part of the Wayne County Parks Division initiative to restore the riparian ecosystems of the Rouge River Riparian Corridor in Wayne County. Native trees, shrubs, and herbaceous plants were installed along the raceway in a natural landscape design in order to improve wildlife habitat, control stream bank erosion, and enhance the degraded raceway. Nativescape developed site specific seed mixes, coordinated construction and offered monitoring. Local native Michigan plant community types were used for this project.

Nankin Mills is a historical site used as the Park Divisions headquarters and for interpretive programs for the school systems in Wayne County. The site is used as an example to Wayne County developers and citizens as to the possible results of a more natural approach to stream bank stabilization. This project was highlighted in an Oakland County Water Authority local television program stressing the importance of improving water quality. The project was completed in 2003.

Reference
Steven A. Alman, Engineer IV – Landscape Architect
Wayne County Division of Parks
(734) 261-4312
City of Portage

Storm Water Enhancement Project

This was a high profile project to demonstrate the potential of natural storm water treatment in a landscaped setting. Working with the engineering firm Fishbeck, Thompson, Carr and Huber and the landscape firm of O’Boyle, Cowell, Blalock & Assoc. on the project our goal was to design an effective and efficient storm water treatment system that was integrated into a beautiful park. Traditional and native landscaping blended to provide an inviting gateway to Portage City Hall by foot, bike, or car. Native storm water treatment areas in the form of flowing streams, wetlands, and buffers beautify the park space with colorful plants and flowers that improve water quality. Bioengineering BMP’s restored and stabilized the Portage Creek stream banks to a more natural state. Traditional upland landscaping harmonizes with the City Centre area.

Site surveys and historical research laid the ground work for determining the plant community types for the site. Nativescape provided landscape design support with native plant determination and layout in all of the natural areas on the site. The BMP soil bioengineering techniques were determined and developed for the streambank restoration. The project construction support was done and completed in 2004. Follow up site monitoring of BMP performance and native planting establishment is on going.

Reference
Christopher Barnes, City Engineer
City of Portage
(616) 324-9256
Erickson Retirement Community - Fox Run Village

Native Wetland Mitigation Plantings

In the City of Novi three (3) wetland mitigation basins were planted. Working under J. M. Olsen Nativescape supervised and installed all the wetland vegetation in Erickson Retirement Community - Fox Run Village.

The natural landscape design was developed with goals to provide wetland habitat, reduce maintenance and beautify the area. A one year establishment plan was developed to ensure the success of the project; this was completed in 2007.

Reference
Joe Orlis, J. M. Olson
(586) 771-9330
This is a Clean Michigan Initiative (CMI) grant funded project promoting the concept that native plants can be used to repair and create ecosystems, reduce stream bank erosion, beautify, reduce maintenance, provide recreation, and attract wildlife. Working with the engineering firm Fishbeck, Thompson, Carr and Huber on the project our goal was to design an effective and efficient storm water treatment system that was integrated into a beautiful parkland. Erosion was restricted by grade control using rock riffles, selective tree cutting, stabilizing channel cross sections, and soil bioengineering techniques. The hydrologic flow was stabilized by constructing both a stormwater diversion channel and infiltration basin/wetland.

Native Michigan plant community types were developed based on a natural features inventory of the spectacular wildflower display that already exists in the park. These plant communities were used to rehabilitate, beautify, and populate the diversion channel and infiltration basin/wetland along Hager Creek. Adjacent uplands were planted with a dry prairie community type that was historically found in the area. Volunteers were used along with contractors to provide educational opportunities and to offset costs. Stormwater management is sustained using plant species that are native and indigenous to the site along with bioengineering techniques to properly manage Hager Creek’s flooding and erosion problems. The project was completed in 2003. Establishment and monitoring is on going.

Reference
Mr. John Scholtz, Parks and Recreation Manager
Ottawa County Parks and Recreation Commission
(616) 738-4810
The Jackson County Road Commission wanted to vegetate a new section of Broad Road right-of-way and borrow area with native plants to reduce their long term maintenance. Nativescape developed a planting plan that accomplished the above for less and beautified the area at the same time.

Native Michigan prairie plants were used in place of topsoil and traditional grass mixes to beautify and help reduce maintenance for the new road. This proved to be less expensive than placing topsoil and planting with non-native grass species. Completed in 2003 the above picture shows the project site in 2005 after many of the native plants are now mature and blooming.

Reference
John Sanders, Construction Supervisor
Board of Jackson County Road Commissioners
(517) 788-4675
Beck & Company Real Estate Broker
Manchester Naturalized Development Project

For this Low Impact Development (LID) project a natural features inventory, a wetland survey, and topographic surveys were done to determine the best land use, building sites, and road locations. Native Michigan prairie and savanna habitats were created to enhance the development. This involved establishment of conservation easements and association rules to develop the concept of Naturalized Development. A number of community plantings were done to show examples for the potential landowners. The concept that an open space, ecosystem restoration and management approach can be incorporated into housing developments.

Reference
Charles Beck, Real Estate Broker
Beck & Co.
(734) 216-7735
Nativescape assisted The Nature Conservancy Shiawassee River Program Manager and Shiawassee Conservation District create a River Protection Program. This program involved a natural landscape demonstration site mimicking a floodplain planting and other program promotions. Nativescape developed the landscape plans, coordinated construction, and developed establishment and long-term monitoring using groups. Local seed from native Michigan plant community types were harvested and plants were grown specifically for this project. Volunteers were used along with contractors to create the demo site, provide educational opportunities and to off set costs. A PowerPoint presentation was given and a visit to the demo site.

Reference
Ken Algozin, Shiawassee River Program Manager
The Nature Conservancy
(989) 723-9062
Nativescape in cooperation with the Wildlife Habitat Council will restore the native terrestrial habitat on Fordson Island on the Rouge River using natural landscaping and soft engineering techniques. Nativescape developed the “Fordson Island Ecological Restoration Design” plan in 2005. The Plan highlights and expands on USACE recommendations for ecological restoration on selected sites along the River Rouge. The restoration of the terrestrial portions of the island will consist of mesic (moist) upland savanna and a forested buffer along the east side of the site to buffer a neighboring salvage yard. The savanna habitat will be composed of Michigan native grass and forb species. The forested buffer will be dominated by Michigan native tree and shrub species but will also have an herbaceous understory planted. The savanna will be surrounded by a forested wetland habitat to enhance and expand the existing habitat that is not Marathon property. In each of these habitat areas a combination of native seed and plants will be used to establish the corresponding plant community types. Marathon is scheduled to implement the plan in 2006.

Reference
Jeff Bruestle, Senior
Environmental Engineer
Marathon Petroleum LLC
(313) 297-6356
A site survey was conducted on said property, requested by Fishbeck, Thomas, Carr & Huber, Inc. for the City of Grand Rapids. This investigation consisted of a preliminary natural feature inventory to determine the ecosystem types and any rare plants. A soil bioengineering assessment was done to determine the BMP’s or Best Management Practices that may be needed for the stabilization and a natural rehabilitation of Alger/Golfridge SE Ravine in the City of Grand Rapids.

Nativescape developed an evaluation of the area by analyzing soil, topographic, vegetative, hydrology conditions and the history of the site. Based on these findings, a report was generated giving an ecological description, general impressions, endangered and threatened species recommendations, potential for management, and specific management suggestions of the BMP’s (Best Management Practices) for erosion control and stream bank stabilization.

Reference
Clair Schwartz, Senior Engineer, FTCH
Representing the City of Grand Rapids
(616) 575-3824
Michigan Native Vegetation Specifications

Nativescape has developed seeding recommendations and specifications for stormwater runoff basins, drain right-of-ways, stream bank stabilizations, riparian buffer strips, uplands, woodlands and wetlands. The areas are researched and inventoried to determine the best site specific native plant community. Specific planting instructions, establishment recommendations, and management plans are offered to insure a successful planting. As part of many of these projects Nativescape has done native plant layout and seeding design to stabilize land, prevent erosion, and increase infiltration.

The following is a list of some of the larger projects that we have developed native seed specifications for.

- Alma Basins Project, TPI Petroleum.
- Love Creek Park Prairie, Van Berrien County.
- Carrier Creek Riparian Corridor Restoration, Eaton County Drain Commissioner.
- Detention Basin and Living Barrier, Barry County Drain Commissioner.
- Detention Basin Wildflower Mix, Lockmoor Golf Club.
- Rain Garden Mix, City of Grayling.
- Rain Garden Mix, Red Oaks Golf Course, Oakland County.
- MDOT M-10 Median, City of Farmington Hills.
- Manistee National Forest Campground Restoration, Lake Baptist Church.
- Saline River Project, Aries, Lewis, Norris & May, Inc.
- West County Park Prairie & Floodplain Restoration Project, Monroe County.
- Mesic Prairie, Matthaei Botanical Gardens, University of Michigan.
**Principal: Chris Lehr**  
*Restoration Biologist / Nativescape President*

**EDUCATION**

Bachelor of Science in Biology, Eastern Michigan University  
Natural Resource Management and Use, Joint Curriculum, University of Michigan  
Soil Bioengineering, Natural Resource Conservation Service  
Conservation Plan Writer Certification Course, NRCS  
Stewardship Team Building & Diversity Training, Michigan State University Extension  
Biodiversity Management, Michigan Department of Natural Resources  
Forest Stewardship Management Plan Writing Course, MDNR and MSUE

**SUMMARY OF EXPERIENCE**

Mr. Lehr has accumulated experience in many areas of ecological and wetland restoration and research, natural resource management, program coordination, and environmental regulation at the local, state and federal levels. He has over two decades of experience in the research and practice of ecological restoration, biology, botany, ornithology, mammalogy and zoology.

Mr. Lehr has focused on:
- Natural stormwater management for natural protection and restoration of surface water systems.
- Native ecological restoration, creation and management of natural community types.
- Natural landscape design to reduce maintenance and enhance sites.
- Wetland creation, delineation, GIS mapping, mitigation, and monitoring.
- Natural features inventories, floristic quality assessment, threatened & endangered species, presettlement, and mapping.

Mr. Lehr has developed and designed:
- Soil Bioengineering BMPs for shoreline restoration, stream bank stabilization and slope erosion control.
- Landscapes for Learning for environmental education and landscapes with a function.
- Open Space Evaluation to identify and score existing natural features.
- Many educational Power Point presentations.
- He has been responsible for the coordination of ecological education programs with schools, municipalities, Michigan Dept. Natural Resources, Michigan Dept. of Agriculture and Conservation Districts.

Mr. Lehr has worked directly with drain commissioners, municipalities, county and state officials and private clients during all phases of a project. As part of his professional experience, Mr. Lehr has completed numerous grant applications and administered grants regarding a number of funding programs. He has extensive experience in the preparation of permit applications for regulated activities under federal, state, and local jurisdictions.
PUBLICATIONS

Mr. Lehr has written educational, technical articles and materials for magazines, MSU Extension, NRCS, SCDs, local newspapers, and others, 1994-Present. Artwork and photography was done for many of the publications.

Articles:
Native Plants for Agricultural Drain Management- A Restoration Approach: The Icing on the Cake!
Naturalized Agricultural Drains: We can have Our Cake and eat it, too
Linking Michigan History with Greenways. front cover Pipeline
Greening of the Riprap. front cover Pipeline
What are Rain Gardens?
Natural Stormwater Management. front cover Pipeline
The Most Endangered Ecosystem – Lakeplain Prairie
Go Native for Erosion Control! front cover Pipeline
Native Plants Beautify Stormwater Retention Basins & Increase Function
The Best Wildlife Habitat
Oak Regeneration and Habitat Restoration
Why should we use Michigan Genotype Native Plants?
What is the Best Wildlife Habitat? (Native Ecosystems)
Michigan in the Prairie Peninsula
Using Native Plants, Saving Costs and Ecosystems
Getting to the Roots of Native Grasses
Solving Your Landscape Maintenance Problems

Education Materials:
Rain Garden
Great Lakes Shoreline Restoration
Ten Reasons to Use Native Plants
Michigan Genotype Native Plants
Woodland, Wetland, Prairie Native Plants

PROFESSIONAL MEMBERSHIPS & CERTIFICATIONS

- Society of Wetland Scientists
- Society of Ecological Restoration
- Michigan Association of County Drain Commissioners
- Michigan Natural Areas Council
- Michigan Wildlife Society
- Wildflower Association of Michigan
- Licensed Michigan Nursery
- National Native Plant Producer
- Certified State of Michigan Vendor – MDOT approved
- Certified State of Michigan Forester
- Wayne County Certificate of Awardability