



Rutland, VT

Green Stormwater Infrastructure Bicycle Tour



View the online map! for additional details about Rutland's stormwater infrastructure: <https://goo.gl/NqQBQf>

This map of Green Stormwater Infrastructure (GSI) Installations in Rutland, Vermont is brought to you by the Vermont Green Infrastructure Collaborative and our many partners.

DEC.VERMONT.GOV/WATERSHED/CWI/GREEN-INFRASTRUCTURE








A great deal of credit is owed to the City of Portland, Oregon and its Stormwater Cycling Tour Map, which served as the inspiration for this Rutland, Vermont version.

Green Stormwater Infrastructure

When it rains in the city, water hits impervious surfaces like roofs, roads, driveways, and sidewalks and runs off carrying with it pollutants that ultimately end up in our waterways. This runoff is called stormwater. Before cities were built, most of the rain that fell filtered into the ground to be used by trees and vegetation or to recharge the groundwater supply. Green Stormwater Infrastructure (GSI) works by mimicking natural conditions, employing vegetation, soils, or porous substrates to soak up stormwater in highly impervious urban settings. Using GSI to manage stormwater not only helps to improve river, lake, and pond water quality, but has the added benefit of beautifying our cities.

Practices you will see on this tour:

-  **STORM-FRIENDLY PAVEMENT** allows rainwater to filter through it rather than running off and picking up pollutants along the way. Permeable Pavers, Porous Concrete, and Stormcrete® are all examples of storm-friendly pavement.
-  **STORMWATER TREES AND URBAN CANOPY** are large trees in urban settings that intercept and absorb rainfall, allowing less of it to flow over dirty surfaces and into waterways.
-  **RAIN GARDENS AND BIORETENTION** are depressed vegetated garden areas designed to accept stormwater runoff from driving surfaces and roofs. The water that exits these systems is much cleaner than the stormwater that enters it.
-  **GRAVEL OR CONSTRUCTED WETLANDS** are engineered systems designed to capture and filter stormwater through gravel, sand, soil, and plant roots. Water exiting these systems is much cleaner than the water coming in.
-  *This icon indicates on-site educational signage*



Park Street Rain Garden



East Creek Tree Planting



Whites Playground



Permeable Rubber Tree Boxes



Rotary Park Infiltration Trench



Silver Maple (State Champion)



Northwest Primary School Level Spreader



Northwest Primary School Rain Garden



Sandfilter on Moon Brook



Main Street Park Arboretum

Along this tour you will see a variety of green infrastructure, including permeable pavements, rain gardens and bioretention, gravel wetlands, green streets, urban canopy, and notable mature trees. All provide valuable stormwater management function as well as multiple co-benefits such as carbon sequestration, wildlife habitat, urban heat island mitigation, traffic calming, and honey bee forage.

All sites on this map are either on publicly owned land or visible from the public right of way. We encourage you to respect all safety and traffic rules while enjoying this tour of Rutland's green stormwater infrastructure.

Green Stormwater Infrastructure (GSI) simulates the natural hydrology of the area. Maintaining the hydrology of the land, even as we develop, is good for water quality.

Highlights of Rutland's Stormwater Infrastructure

- 1 COL CYCLING**
32 Merchants Row
Part of the Local Motion Network (Vermont's statewide non-profit bike and walk advocacy organization), this local bike shop has everything you need to get started on two wheels including: bike rentals, electric bikes, parts, and repairs as well as seminars on road safety and maintenance. Stop in for some friendly, local biking knowledge to get ready for your ride.
- 2 PERMEABLE RUBBER TREE WELLS**
Center Street between Merchants Row and Wales Street
The recycled rubber surface surrounding the street trees at this site are permeable, allowing stormwater to infiltrate into the soil and root system below. The trees can grow and expand without cracking the sidewalk because of the material's flexibility. This installation was a retrofit test and some wells have been damaged by winter plowing, indicating necessary changes for the next installation.
- 3 AMERICAN ELM**
1 Strong's Avenue
Native to Vermont and the Eastern half the U.S., *Ulmus Americana* was the most common street tree until the 1950's when the pathogen Dutch Elm disease caused major die-offs. The disease can be transferred via root systems and beetles. Today, American Elms are hybridized to provide resistance to the disease and are planted among a wide variety of species to avoid the collapse of an entire stand.
- 4 PERMEABLE PARKING LOT**
61 Prospect Street
In 2010, the Enman-Kesserling Engineering consultants installed a permeable asphalt parking lot to treat stormwater at the source by infiltrating the water before it runs off. Unfortunately, the pavement clogged and no longer infiltrates. Improvements to the technology since 2010 have addressed performance concerns in cold climates. The firm is hoping to replace the lot with the newest technology for longer life and better performance.
- 5 STRONGS AVENUE RAIN GARDEN**
117 Strong's Avenue
In 2012, students from the Stafford Technical Center helped the Rutland Natural Resources Conservation District install this rain garden to slow, infiltrate, and filter stormwater runoff from the former American Red Cross parking lot and roof. The funding for the garden came from a grant from the Vermont Department of Environmental Conservation (DEC).
- 6 PARK STREET RAIN GARDEN**
45 Park Street
This residential rain garden was made possible with help from the Rutland Natural Resources Conservation District and captures runoff from the home's driveway and lawn before running into the street. The property owner maintains the rain garden with regular weeding, cleaning out sediment, and general plant care.
- 7 VERMONT ACHIEVEMENT CENTER RAIN GARDEN**
88 Park Street
Installed in 2006 by the VT Youth Conservation Corps (VYCC) with grant funds provided by the VT DEC, this rain garden infiltrates and filters stormwater from the roof and parking lot of the VT Achievement Center and is maintained by a group of volunteers from General Electric.

- 8 SAFELITE AUTOGLASS® RAIN GARDEN**
134 Strong's Avenue
Installed in 2010, this rain garden removes pollutants in the stormwater from Strong's Avenue and the Safelite AutoGlass® parking lot before it enters Moon Brook. The rain garden is maintained by volunteers.
- 9 WHITES PLAYGROUND RAIN GARDEN**
21 Avenue B
Rutland Parks and Recreation and students from the Community College of VT worked together to install this rain garden to capture runoff from the tennis courts before it enters Moon Brook.
- 10 SAND FILTER ON MOON BROOK**
4 Southern Boulevard
What might look like a meadow during summer, is in fact an engineered sand filter just under the surface. This filter, installed in 2014, cleans stormwater runoff from 1.2 acres of residential land before it reaches Moon Brook.
- 11 BLACK WALNUT TREE**
90 Killington Ave
Juglans nigra is well known for its hearty wood and tasty fruit, which contains a familiar seed - a walnut. Black Walnut trees have a secret weapon to out-compete other trees for sun: they produce a toxin called "Juglone" that inhibits the growth of surrounding plant species, leaving more uninterrupted light for the walnut.
- 12 SYCAMORE TREE**
36 South Main Street
Known for its inflexible bark that peels off in patches as the tree grows eventually revealing a smooth white trunk, the native Sycamore (*Platanus occidentalis*) are known for their sturdiness in high winds due to their extensive root system. The longevity of the Sycamore makes it a reliable partner in soaking up stormwater.
- 13 MAIN STREET PARK ARBORETUM**
5 South Main Street
Main Street Park is host to over 40 different tree species, with some unusual varieties that include Ruby Red Horse Chestnut, Purple Leaf Plum, Weeping Cherry, and Crimson Cloud Hawthorn. This arboretum, along with parks and urban trees, are important for stormwater management in Rutland because tree roots create pathways for infiltration, their canopies capture and slow rain as it falls, and they move water back to the atmosphere through a cycle called "evapotranspiration." A walking tour of the tree varieties in this park can be found online at: <https://goo.gl/pyikUn>
- 14 HORSE CHESTNUT TREE**
49 North Main Street
Aesculus hippocastanum is known for its beautiful white flowers that bloom in late spring to early summer and for their dark brown seeds called conkers. The seed has been used for decades in the United Kingdom in a school yard game aptly named "Conkers".
- 15 KENTUCKY COFFEE TREE**
64 North Main Street
Bearing resemblance to coffee beans, the seeds from this tree can in fact be roasted and used as a substitute for coffee. However, the uncooked seeds (and every other part of the tree) are poisonous to humans and animals. *Gymnocladus dioica* is drought-resistant and pollution tolerant - making it a good choice for urban environments.

- 16 ROTARY PARK INFILTRATION TRENCH**
187 North Main Street
An infiltration trench lies at the back of the parking lot and intercepts stormwater runoff before it enters Tenney Brook. The trench traps runoff and gives it time to soak into the ground, capturing pollutants and keeping Tenney Brook clean.
- 17 RED OAK TREE**
33 Crescent Street
Quercus rubra is ideal for urban environments: it looks good, grows large, and is tolerant of compacted soil, high salt concentrations, and air pollution.
- 18 PINE HILL PARK BIORETENTION**
2 Oak Street Extension
Watershed Consulting Associates designed this bioretention to store and infiltrate stormwater runoff from the parking lot and skate park roof. While you're here, check out the extensive mountain bike trail network at Pine Hill, and the soon-to-be "green street" on Preville Avenue - featuring bioretention cells on one side of the road to capture runoff from the street and driveways before entering the creek.
- 19 NORTHWEST SCHOOL INFILTRATION**
80 Pierpoint Avenue
A level spreader at the back of the parking lot evenly conveys stormwater into a rain garden below and to the right of the school yard before it discharges to East Creek.
- 20 EAST CREEK TREE PLANTING**
80 Pierpoint Avenue
In 20014 Forestry and Natural Resources Students at Stafford Technical Center planted Red Maple, Swamp White Oak and Cottonwood trees, as well as Winterberry, and Elderberry shrubs along the Rutland Creek Bike Path below the Northwest School to help intercept stormwater runoff before entering East Creek.
- 21 SILVER MAPLE (STATE CHAMPION)**
119 Maple Street
Acer saccharinum, with its silvery bottomed leaves and bark, is a fast growing tree with an extensive root system creating pathways for water to penetrate into the ground. This individual is the largest of its kind in Vermont - making it the state champion.
- 22 THE BAKERY**
122 West Street
Way to go! Treat yourself to some refreshing iced beverages and fresh made pastries at this local bakery icon. While enjoying your snack, take this opportunity to stroll through historic downtown Rutland. Maybe you'll find more green infrastructure or have ideas for new project locations.



Total Distance: 8 miles
Duration: 1-1 ½ hours

KEY

- Suggested bike route
- 1 Stormwater Sites

- BONUS STOPS**
- 23 BALM OF GILEAD POPLAR TREE (STATE CHAMPION)**
144 Barret Hill Road
If you are up for a few more miles, bike on down to another of Vermont's State Champions: Balm of Gilead Poplar. Part of the Populus genus that contains Poplar, Aspen and Cottonwood trees, this particular variety is known for the medicinal antibacterial, antifungal, and slightly analgesic resin produced from its buds, which can be turned into a salve and used on the skin.
 - 24 RUTLAND TOWN SCHOOL GREEN INFRASTRUCTURE**
1612 Post Road
Four separate green infrastructure practices were constructed by the Town of Rutland and the Vermont Youth Conservation Corps. Each practice (a rain garden at the front of the school, an infiltration trench at the back of the lower parking lot, a vegetated swale under the flagpole, and tree plantings in the center island at the bus drop off) helps decrease the amount of runoff produced by impervious surfaces.