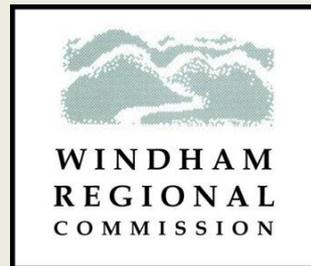


How to Make a Great Trail Map

Jeff Nugent

Windham Regional Commission
Brattleboro, Vt



Vermont Geospatial Forum - May 5, 2016

Overview

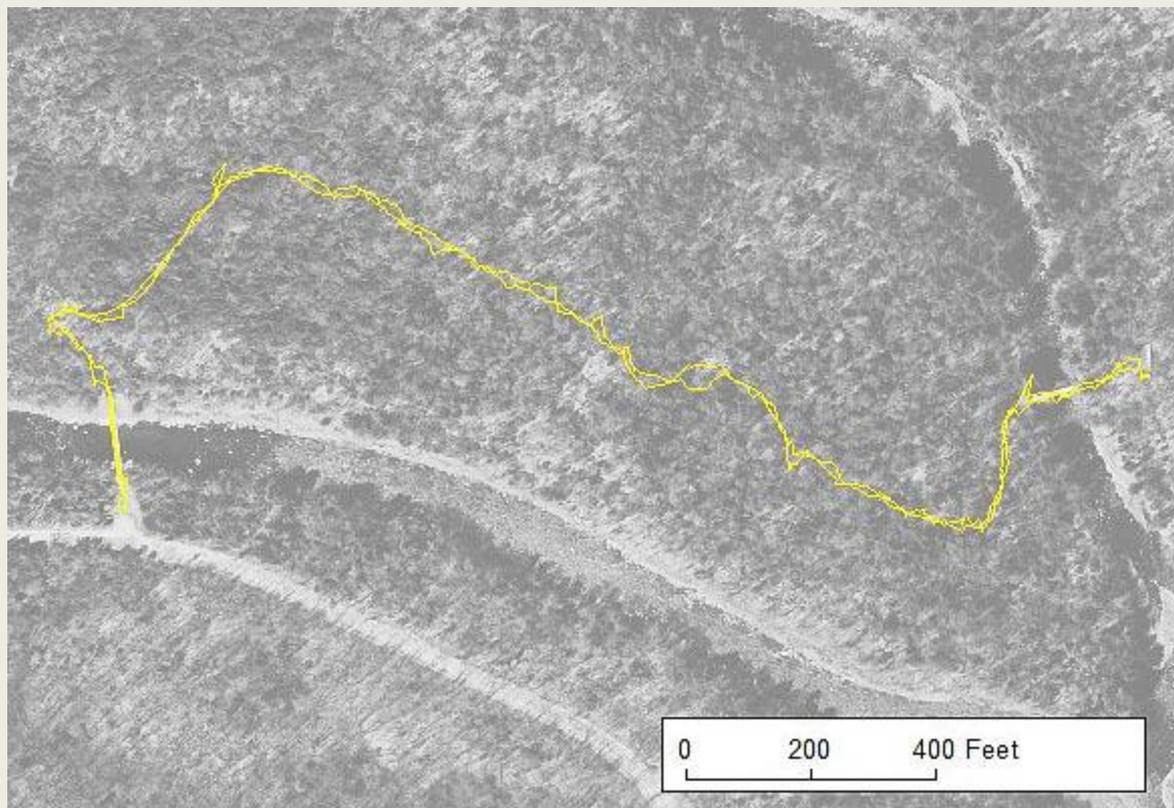
- Data collection
- Creating GIS data
- Map Format
- Displaying the trail on the map
- Map Design

Data collection:

- GPS data is one input for creating GIS data of the trail
 - *Orthophotos and on-the-ground knowledge also useful.*

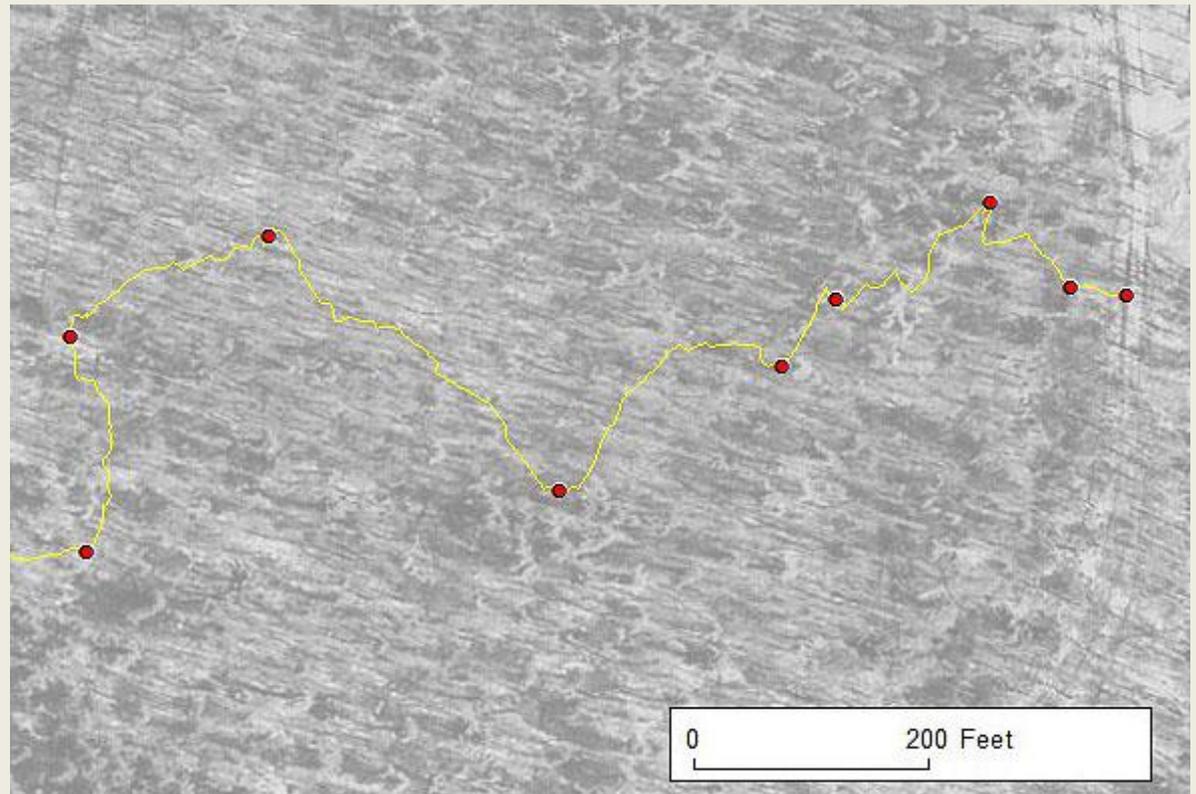
Data collection; my workflow:

- Use GPS project planning software to determine best time of day
- Collect GPS line feature of the trail, out and back if possible



Data collection; my workflow:

- Collect GPS points at important locations on the trail: trail junctions, turns/bends, streams...



Data collection; my workflow:

- Other point features along trail: note which side of trail feature is located

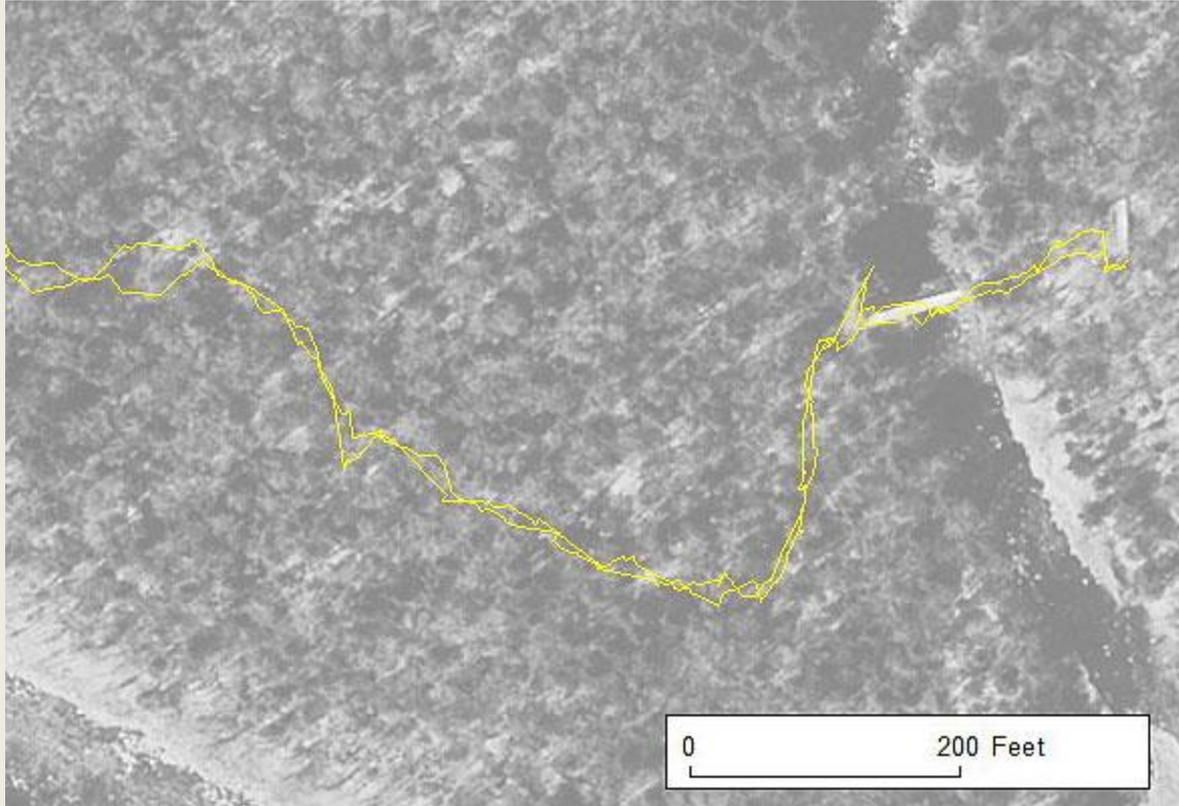


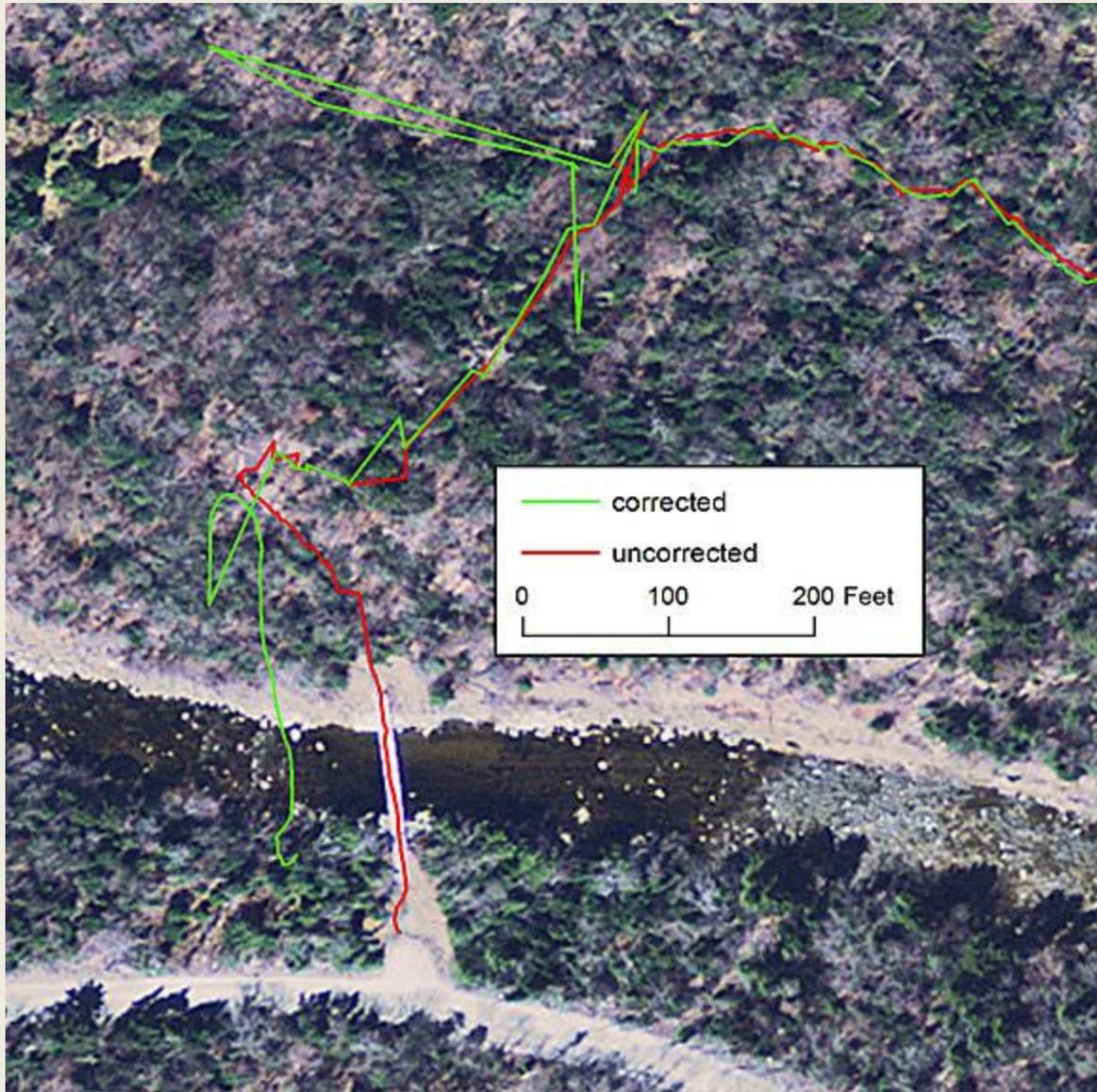
Data collection; my workflow:

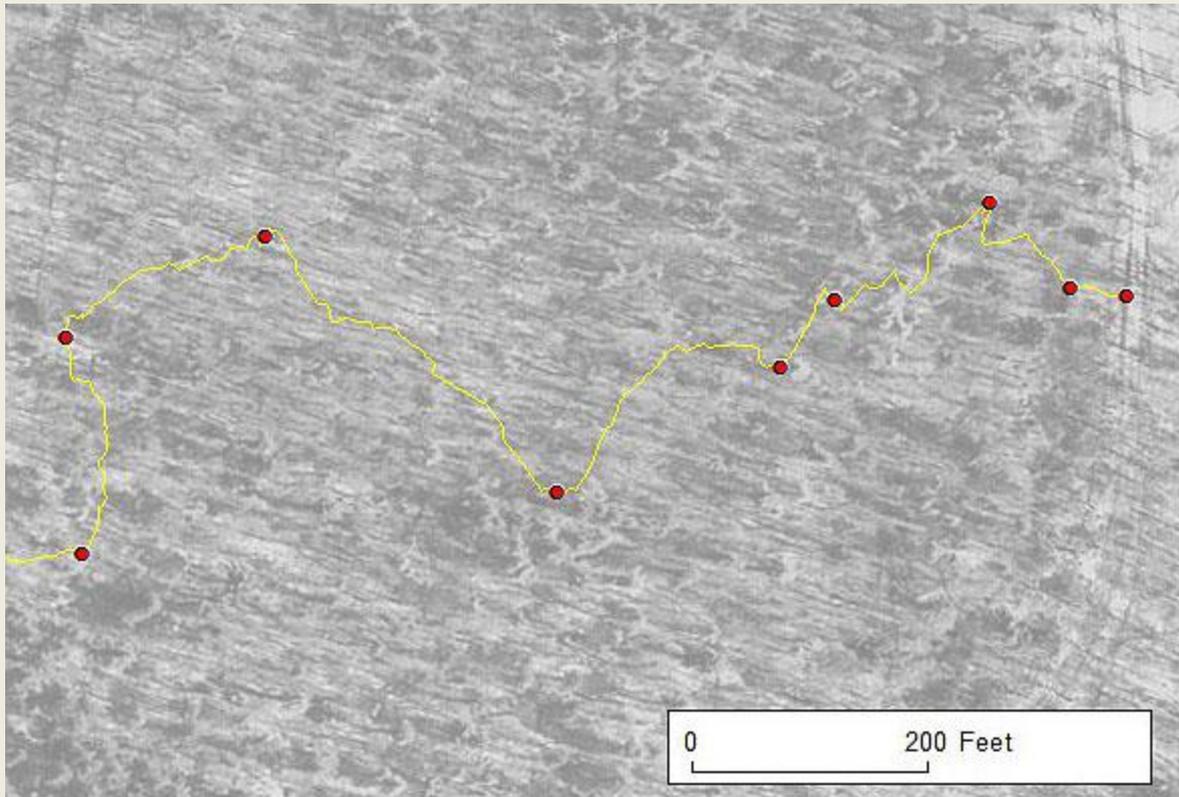
- Look up! Pay attention to the shape of the trail!
 - *Don't rely on your GPS to capture all the details!*
 - *Collect "data" mentally*
 - *Create a hand-drawn map as another source of information*

Creating GIS data of the trail:

- Display GPS data over an orthophoto
- Then I draw the trail:
 - *Use GPS lines and orthophoto as a guide*
 - *Use GPS points and my mental notes to add in detail*
 - *The GPS data do not directly become my trail data! It's only a guide*
- Raw line data is jagged: GPS receiver accuracy, poor signals, multi-path error from forest cover





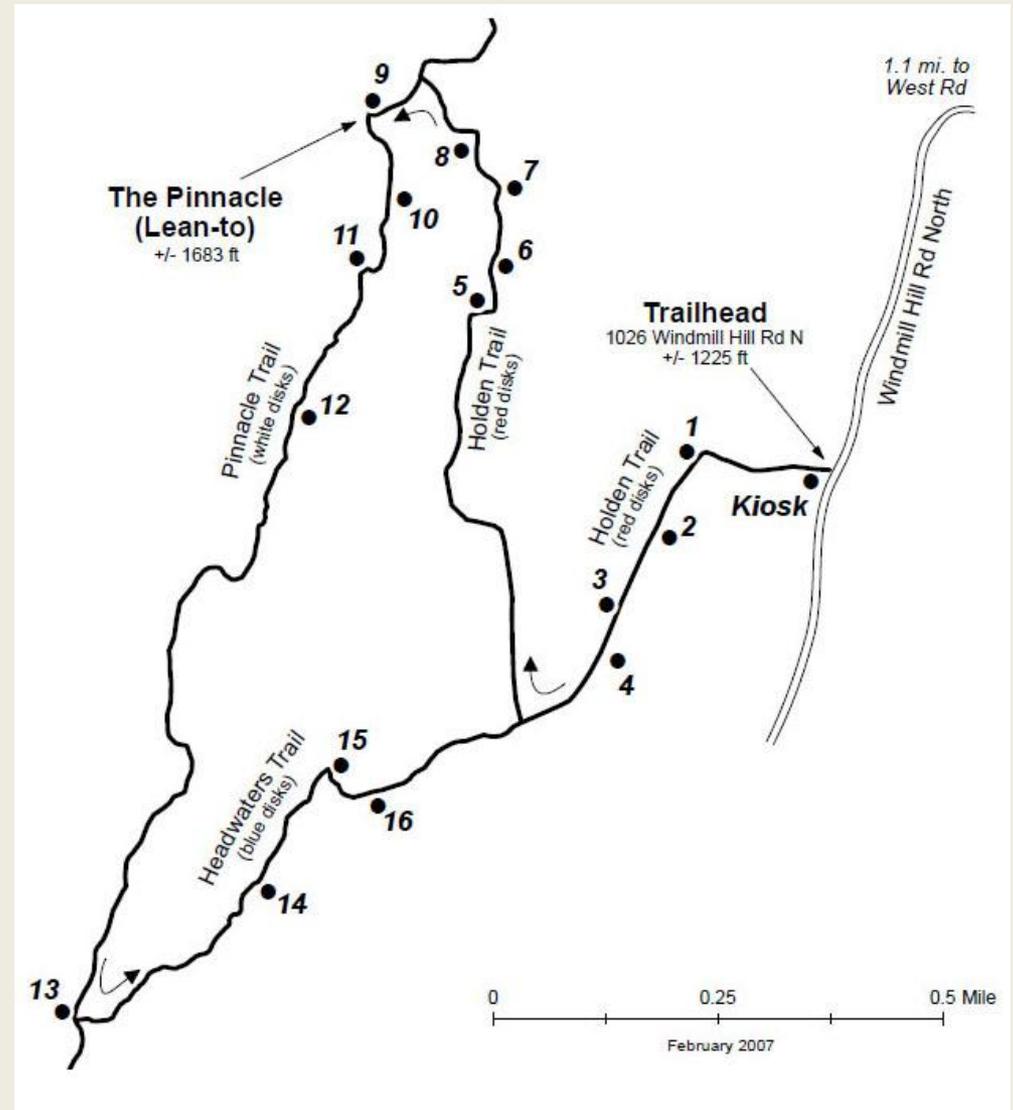


Creating GIS data of the trail:

- Results in a GIS file of the trail location
 - *and other features such as bridges, interpretive signs, views, etc.*
- Good for trail managers, but
- May not be suitable for representing the trail/features on a map
 - *more on that later...*

Map format:

- Distribute for free?
 - *black and white*
much cheaper



Map format:

- Color maps
 - *mounted at trailhead*
 - *downlaod from website*
 - *borrowed and returned at the trailhead*

Map format:

- Size: 8.5x11 or 11x17 easy to reproduce
 - *Can be put on waterproof paper*
 - *Larger size requires professional printing and large quantities*

Map format:

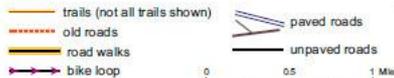
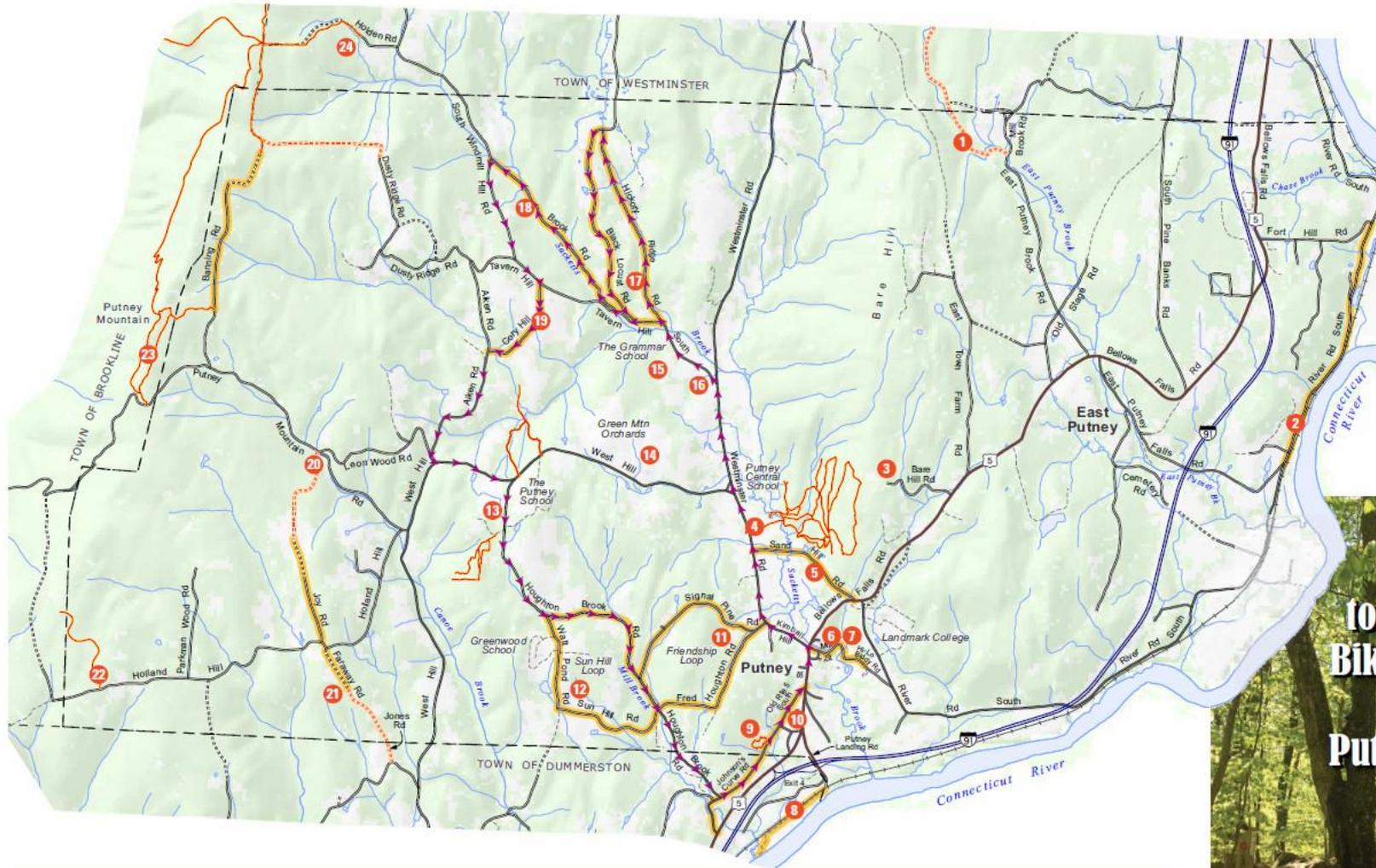
- Large maps mounted outdoors:
 - *From a plotter, colors will fade*
 - *Other commercial options: fade less, waterproof*
 - *Protect from the weather*
- 8.5x11 or 11x17 maps mounted outdoors
 - *Will fade less than from a plotter*
 - *Protect from the weather (laminated, waterproof paper)*

Map format:

- Maps at the trailhead:
 - *Simply enlarge 8.5x11 or 11x17 map*
 - *Results in everything being larger, and easier to see in a group*

Map format:

- A map is more than just a “map”
 - *A “brochure” that contains a map*
 - *Other information about the trail, organization, etc.*
 - *Common look and feel: color scheme, font, logo, etc.*



Map by Windham Regional Commission, Brattleboro, Vermont
2nd Edition: August 2014

Maps and more information:

Putney Mountain Association trail maps:
www.putneymountain.org/web/trails-maps/

Windmill Hill Pinnacle Association trail maps:
www.windmillhillpinnacle.org/pages/trailmaps/trailmaps.html

Putney Town website maps:

Find a copy of this map, as well as detailed maps of Putney Central School Forest, Bare Hill, Beatrice Aiken and more.
www.putneyvt.org/map.php

Find us on Facebook:
facebook.com/putneytrailsproject

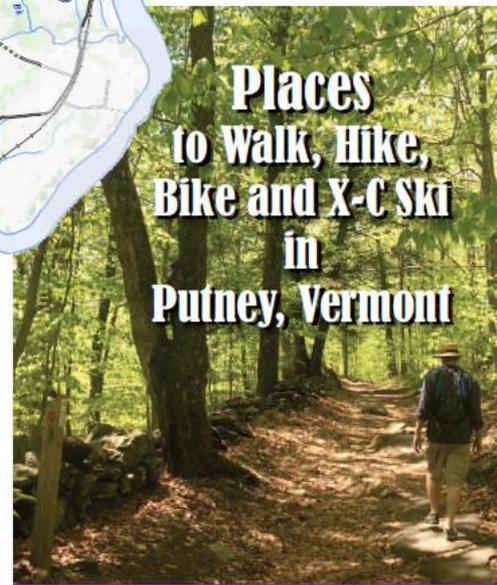


Credits: The Putney Trails Project was conducted by Hannah Pick in collaboration with the Brattleboro Area Prevention Coalition, and with the support of a grant from the Vermont Department of Health. The intention of this map is to inspire healthy physical activity within the community.

Cartographer: Jeff Nugent
Graphic Designer: Susan Kochinska
Cover photo: Hannah Pick
Printed by: Lotus Graphics, Brattleboro, VT

Thank you to the many residents of Putney who offered their support, knowledge and feedback to this project. Special thanks to Windham Regional Commission, Putney Conservation Commission, Lies Pasterkamp and The Putney School, Herve Pelletier and Putney Central School, Mary Heller Osgood and The Grammar School, Putney Mountain Association, Green Mountain Orchards, Jim and Diny Sweitzer of West Hill Shop, Kathleen White, Gino Palmeri, Pat Shields and Ann Kerry. It is hoped the project continues to grow in the coming years!

Places to Walk, Hike, Bike and X-C Ski in Putney, Vermont



Putney Trails Project

Places to Walk, Hike, Bike and X-C Ski in Putney, Vermont

1 East Putney Brook Trail

Moderate old road. Closely following East Putney Brook, this unique woodland trail is wide and fairly flat. If followed to the end, it reaches South Valley Road in Westminster West in less than 2 miles. Good for walking, mountain biking, ungrooved x-c skiing and snowshoeing. The footbridge at the end of East Putney Brook Road marks the start of the old road. Park at the intersection of Brook Road and Mill Brook Road.

2 River Road [From East Putney Falls Road to Fort Hill Road]

Easy, wide dirt road. Running along the train tracks, with views of the Connecticut River, this beautiful route is good for walking, running, biking and birding. River Road was the first road in Putney, originally an Abenaki foot trail. Pass by the historically significant Great Meadows and a stone marker for an old fort. Informal parking on the side of the road.

3 Bare Hill Conservation Site

Moderate woodland hike. Bare Hill Conservation Site is 27 acres that was acquired by the town in 1986 to preserve a Black Gum Swamp and deer wintering area. Open to the public for hiking and hunting. Easy parking at the end of Bare Hill Road.

4 Putney Central School Forest

Easy and moderate options, with well marked trails. The PCS Forest is 164 acres of diverse hilly woodlands and floodplain, with a criss-crossing trail system that was developed by students and the broader community. Located behind the elementary school, find parking at the town swimming pool, where there is a kiosk with trail maps and information.

5 Sand Hill Road

Easy walking on a flat dirt road. This beautiful road running through the wetlands is surrounded by wildlife. Watch for turtles, frogs, dragonflies, ducks, and great blue heron. Visit at dusk to look for the beaver. About a half mile one way. Easy parking across from the pond.

6 Mill Street to Hi Lo Biddy Road [Sacketts Brook Lower Falls]

Easy to moderate, short but hilly village road. From the center of the village this little walk takes you over the Sacketts Brook on a footbridge to Hi Lo Biddy Road. On Mill Street, look on the left for the historic site of the Owl Paper Mill with interpretive sign, and overlook the Sacketts Brook lower falls. Park in the center of town.

To extend this walk...**Village Loop**

7 Village Loop

Cross Sacketts Brook twice when you make this loop: From Hi Lo Biddy Road turn left on River Road, past Landmark College. Cross Route 5 and follow Sandhill Road through the Wilson Wetland, then loop back to town on the Westminster Road sidewalk. This loop is about 2½ miles.

8 Connecticut River Boat Landings [Putney to Dummerston]

Easy, short walk on a flat dirt road with river destinations at either end. This walk is a rewarding place to stretch your legs and a nice place to enjoy the river. Park at either boat landing and walk along the dirt road that skirts the corn field.

To extend this walk...park at the West Hill Shop and go from there.

9 Beatrice Aiken

Moderate, short woodland trail with two steep sections. This is an 11 acre conservation site with a ½ mile trail that leads to a mossy cliff with wildflowers. The trail is laid out to highlight the "Putney Volcanics," a bedrock formation formed from ash spewed by an ancient volcano. The bedrock contains calcium carbonate (limestone), allowing ferns and wildflowers to thrive. Trail guides in the green mailbox. Parking near the kiosk on Old Route 5 South.

10 Old Route 5 South

Easy, flat paved road walk. Many people walk this road on the edge of the village. This is one of the most easy and accessible routes on the map. It takes you past an old orchard and the Beatrice Aiken Conservation Site. Parking on Carol Brown Way.

11 Friendship Loop

Easy to moderate dirt road loop. A place where many friends meet to walk and talk, this is a satisfying 2 mile loop that's accessible from downtown. It is mostly shady and takes you by a brook and a field. There's one steep sunny hill on Signal Pine Road that you can choose to climb up by walking the loop clockwise, or down if you walk counterclockwise. Informal parking on the side of the road.

To extend this loop...**Sun Hill Loop**

12 Sun Hill Loop

Easy to moderate dirt road loop. This route takes you above the village and offers beautiful views of the horizon. This can be enjoyed as an extension of Friendship Loop (4 miles), or on its own (about 2 miles). Informal parking on the side of the road.

Respectful use of trails: Some of these trails are on private properties. Please be respectful so they can remain open for all to enjoy.

13 The Putney School Trail System

Easy, moderate and challenging routes through fields and forest. One of the treasures of Putney, this well marked trail system has 40 kilometers of groomed x-c ski trails in the winter and is open for walking and running other times of the year. Park in the main parking lot near the kiosk, where you will find a detailed trail map.

Note: No walking, snowshoeing or dogs on groomed ski trails. No motorized vehicles.

14 Green Mountain Orchards

Easy, gently rolling farm roads. Located in the hills above Putney village, this is one of Vermont's largest apple orchards. It has stunning views and over 125 acres of working orchard, including pick-your-own apples and blueberries. The land borders The Putney School trail system and connects to The Grammar School trails, providing a link for extended exercise. Follow the roads through the orchard, and make your own loop. Park in the main parking lot. September to April the orchard is open to the public for walking, ungrooved x-c skiing, and snowshoeing. During other months it's important to check before coming. Phone: 802-387-5851.

Note: No climbing in trees. Keep watch for the annual Putney Community Ski Day — groomed trails and free ski rentals courtesy of West Hill Shop.

15 The Grammar School Trails

Moderate woodland trails. Trails start behind The Grammar School and connect to the Green Mountain Orchards, which connects to The Putney School trails. The trail system includes x-c skiing, hiking, and twisty single track mountain bike routes. They are currently unmarked. Parking is available at the school. Coming soon: a kiosk and map at the trailhead.



16 Bike Ride – West Hill Shop's "Tamer Tour"

Moderate bike ride on dirt and paved roads. This is a well paced ride that tours some of the most beautiful dirt roads of Putney, offering scenic views, some moderate hills, and nice spots to rest along the way. Take a swim at the culvert, wade in the stream on Brook Road, pause and look out at the orchard views. About 12.7 miles round trip. To get started, park in the center of town and head out Westminster Road towards Hickory Ridge Road.

Note: Hickory Ridge Road, Black Locust Road, Brook Road and Cory Hill Road are all part of the Tamer Tour, and are also enjoyable on their own.

17 Hickory Ridge–Black Locust Loop

Easy to moderate dirt road loop, about 2½ miles. These scenic dirt roads are ideal for walking and biking, creating a nice loop. Take a refreshing dip in the Sacketts Brook when you park at the Culvert (on the right shortly after The Grammar School).

18 Brook Road

Easy, gently rolling dirt road. Running along the Sacketts Brook, it is shady in the summer and a good place to walk or bike on a hot day. A nice starting route for beginners. There are a couple of access points to wade in the brook. About 1½ miles one way. Informal parking on the side of the road.

19 Cory Hill Road

Short dirt road walk with a steep hill. This tree-lined road has impressive views of the Green Mountain Orchards.

To extend this route...Make a loop by adding Aiken Road and Tavern Hill Road.

20 Joy Road

Moderate old road hike in the woods. This old town road is now a wide unmarked path. It crosses a brook and passes a cemetery, then climbs up through the woods to the drivable end of Joy Road. Keep to the left when the road forks in the woods. The old road is just over ½ mile one way. Parking pull off on Putney Mountain Road, near Leon Wood Road.

To extend this walk...continue on the driveable section of Joy Road.

21 Faraway Road to Jones Road

Easy to moderate old road walk. No longer maintained for vehicles, this old road has become a wide woodland walk. It is edged with stone walls and can be accessed from both Jones Road and Faraway Road. About ¾ mile one way. Limited, informal parking available on either side.

22 Dine Trail

Easy to moderate woodland walk. 1½ mile out and back, this rolling woodland trail is part of the Putney Mountain Association trail system. At this point it is a dead-end but is soon to be part of an expanded trail network in the area. Trail marked by white disks, which you'll find on the right about 2½ miles up Holland Hill Road.

23 Putney Mountain Association Main Trail

Easy to moderate woodland hike to the summit. A great family hike with a beautiful, well-marked ½ mile trail to gorgeous summit views. Probably Putney's most well known trail, it is a destination for hawk-watching in the fall. From the summit you can return on the West Cliff Trail to create a loop that is a little over a mile, or head north on the West Cliff Trail for a more advanced 6 mile loop. Lots of parking at the base of the main trail, where you will find a kiosk and map.

24 Ed Dodd Trail to Five Corners

Easy to moderate woodland trail. This ¾ mile hike takes you to the "Five Corners" where you can turn north to the Pinnacle or south to the Putney Mountain Association trails. It is a nice starting point to access the ridgeline. Can also access the old road that heads towards Dusty Ridge Road. Park at the end of Holden Road and follow signs to kiosk and map.

Displaying the trail on the map:

- Map generalization:
 - Adjusting the content of the map to make it a useful and recognizable representation of the world.
 - *“Little white lies”*

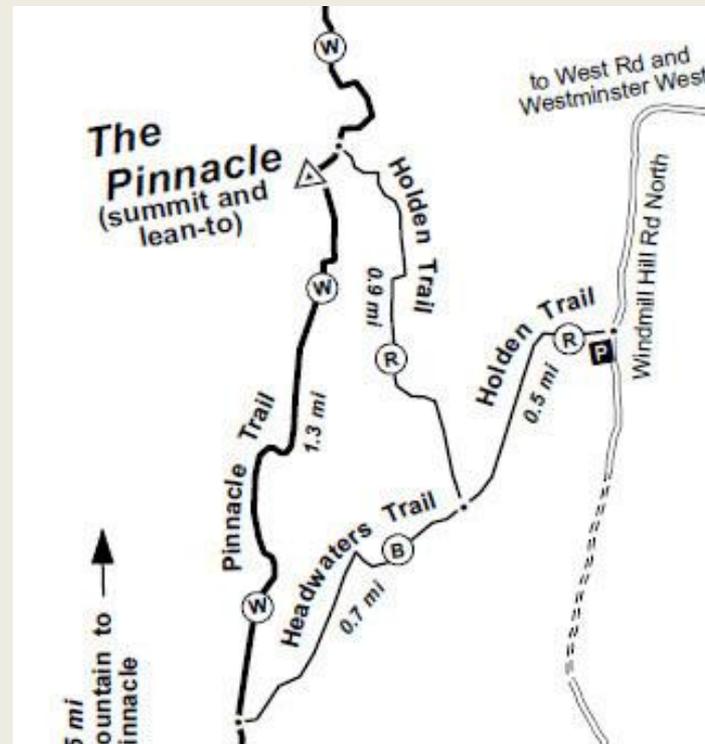
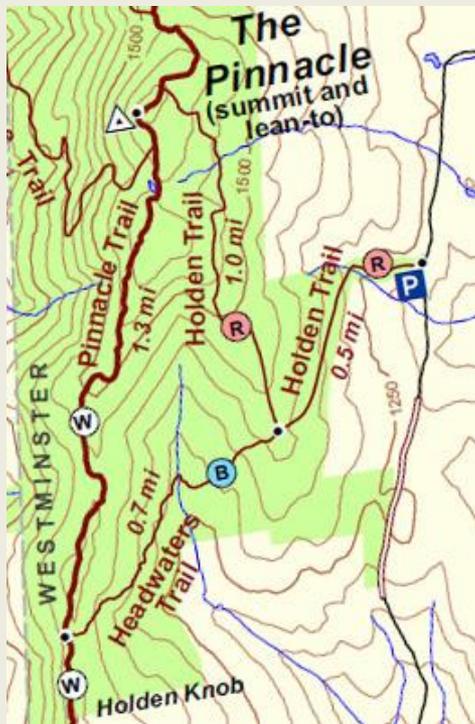


Displaying the trail on the map:

- That “accurate” GIS file of the trail...
 - *may not be good for showing the trail on the map*
- Create a “cartographic” file
 - *Adjust the trail location so it looks better on the map.*

Displaying the trail on the map:

- Simplification; “smoothing”
 - *Getting rid of unnecessary details (curves)*



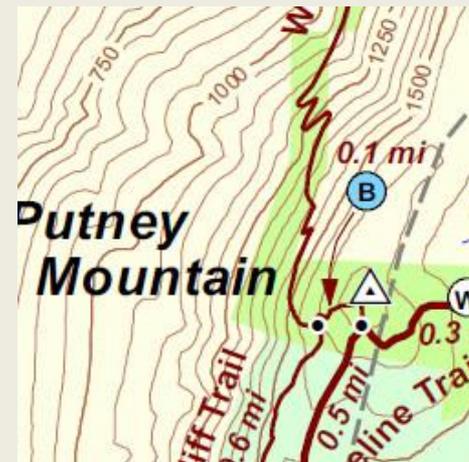
Displaying the trail on the map:

- Exaggeration or shift; enhancing details

– *Offset trail junctions*

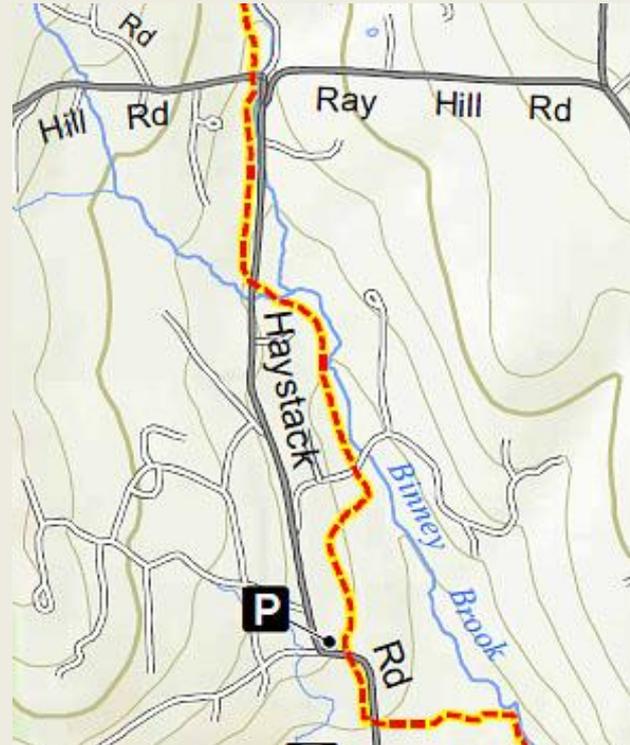


- *Make switchbacks larger, spread out*
- *Expand sharp turns/jogs in the trail*



Displaying the trail on the map:

- Exaggeration or shift; enhancing details
 - *Separate trails from parallel features (roads, streams)*



Displaying the trail on the map:

- Exaggeration or shift; enhancing details
 - *Move other trail side features (e.g. interp signs) farther away from the trail*



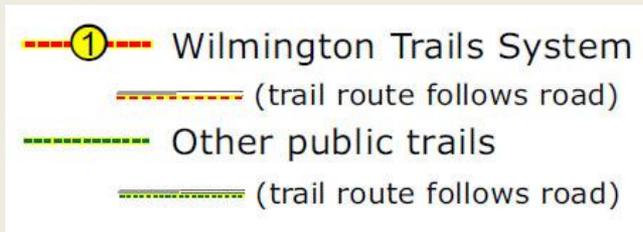
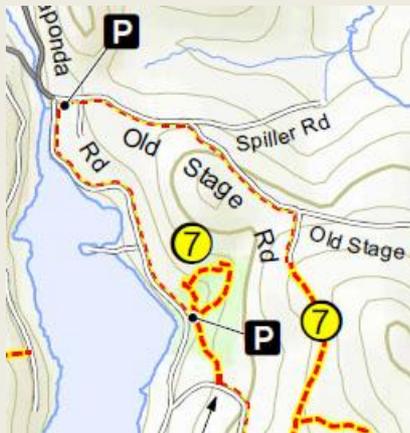
Displaying the trail on the map:

- The “Trail” might not be a trail (footpath)



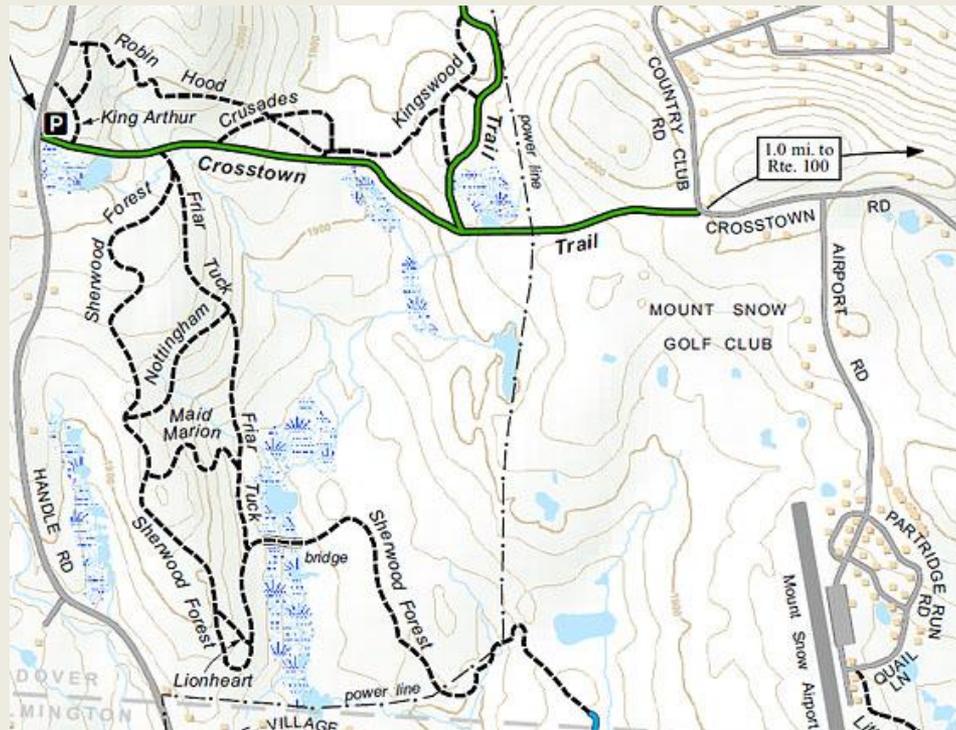
Displaying the trail on the map:

- Trail follows a road:
 - *Don't put trail symbol on top of road*
 - *Offset trail symbol from road, use a different symbol, or don't show*



Displaying the trail on the map:

- Differentiate narrow footpaths from wide trails/woods roads
 - *Single track vs. double track/two track*



Map design:

- How do you get to the trailhead?
- If trailhead is not on a main road:
 - *Expand map extent to include major road/reference feature*
 - *Include written directions*
 - *Include a separate location map*

P Directions to the trailhead

From Rte 9, or Western Ave, in West Brattleboro, turn onto Greenleaf St at the 7-11 gas station (1.3 miles W of Exit 2). Greenleaf St becomes Hinesburg Rd. Continue straight onto unpaved Ames Hill Road. Pass the Lilac Ridge Farmstand, and 2.1 miles from Rte 9, turn sharply right onto Abbott Rd. In 100 yards, turn right into a drive at a group of barns.

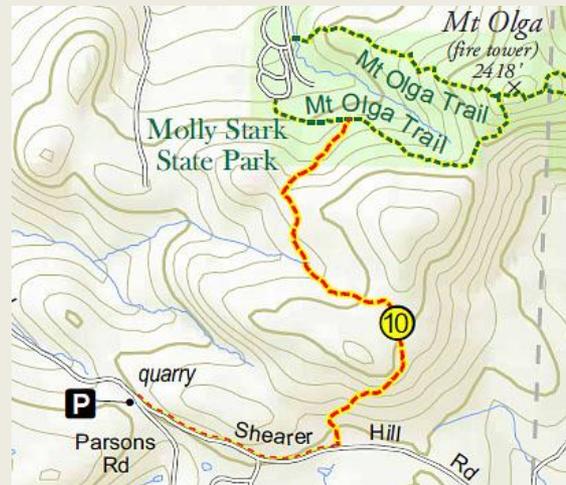
RC
1xd

Map design:

- Base features, roads and streams
 - *Show only what's necessary.*
 - *Small streams may be in the wrong location.*
 - *Road classification: paved vs. unpaved*
 - *Road classification: Class 4 town highways and legal trails; some are drivable and some aren't*

Map design:

- Base features, others
 - *Contours might not be necessary*
 - *Hillshade: might not be necessary; might be distracting; be subtle!*
 - *Air photo: may be useful, e.g. fields and forest.*



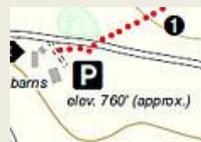
Map design:

- Icons
 - *Can be used poorly*
 - *Use standard icons, e.g. NPS map icons*

| | |
|---|---------------------|
|  | Picnic Shelter |
|  | Restrooms |
|  | Bandshell |
|  | Gazebo |
|  | Boat Ramp |
|  | Geologic Features |
|  | Horseshoe Pits |
|  | Park Headquarters |
|  | Chamber of Commerce |
|  | Historic Cemetery |

Map design:

- Icons
 - *If only one or two incidents of a feature, consider labeling a point instead*



Picnic Shelter



Restrooms



Bandshell



Gazebo



Boat Ramp



Geologic Features



Horseshoe Pits



Park Headquarters



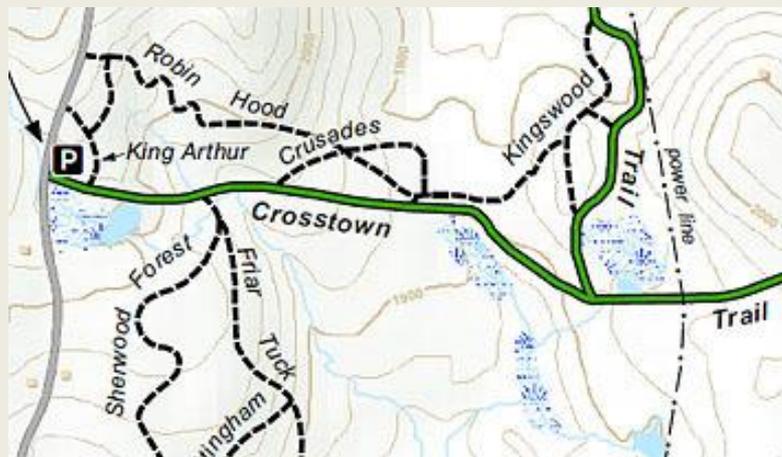
Chamber of Commerce



Historic Cemetery

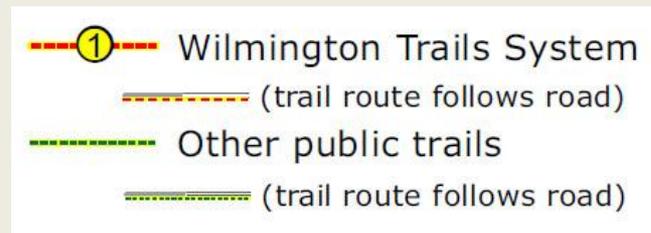
Map design:

- Symbol for the trail:
 - *Unique symbols for each trail can be distracting*
 - *Symbols for trails should be similar to each other, and distinct from other features on the map*



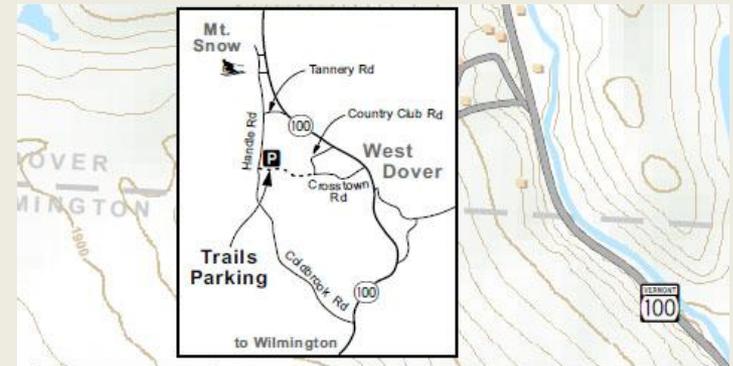
Map design:

- Other non-trail features:
 - *Does it really need to be on the map?*
- Things that are important to trail managers might not be important to map users



Map design:

- Other items to add to the map:
 - *Trail distances*



Some trail distances:

Crosstown Trail: 1.05 mi.
Valley Trail: 0.6 mi.
Sherwood Forest: 2.1 mi.
Little John Trail: 1.5 mi.

Do the loop:

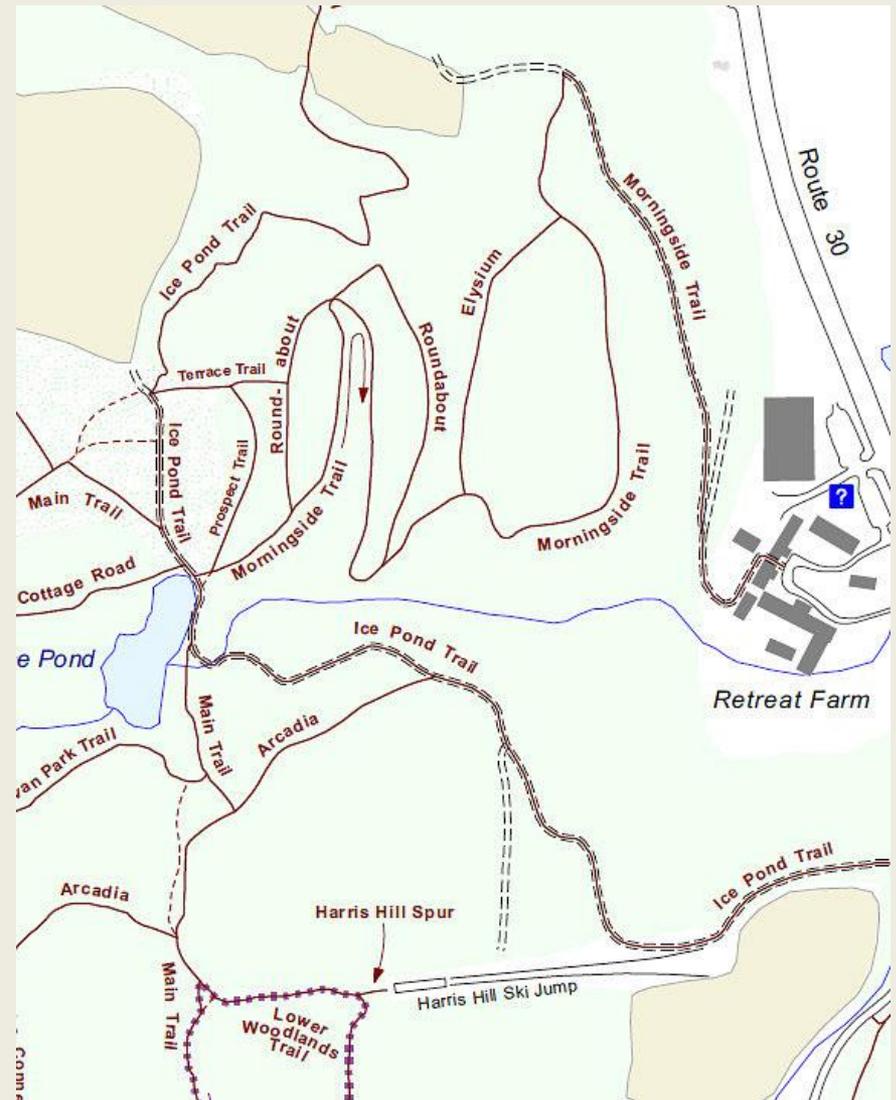
From parking lot to Friar Tuck, Sherwood Forest, Little John, Airport Rd, and back on Cross-town Trail: 5.35 mi.

Some trail distances:

Ice Pond from Cedar St. - 0.5 mi.
Ice Pond from Solar Hill (via Lower Woodlands) - 0.8 mi.
Ice Pond from Upper Dummerston Rd. - 0.95 mi.
Ice Pond from Retreat Farm (via Morningside) - 1.15 mi.
Main Trail loop - 1.15
Retreat Tower from Cedar St. via Tower Rd. - 0.25 mi.
perimeter of Tower Hill trails from Cedar St. - 0.8 mi.
(Cemetery Trail, Tower Climb, Ledge Trail, Tower Road)
Cedar Connector - 0.3 mi
Hogel Trail - 0.45 mi

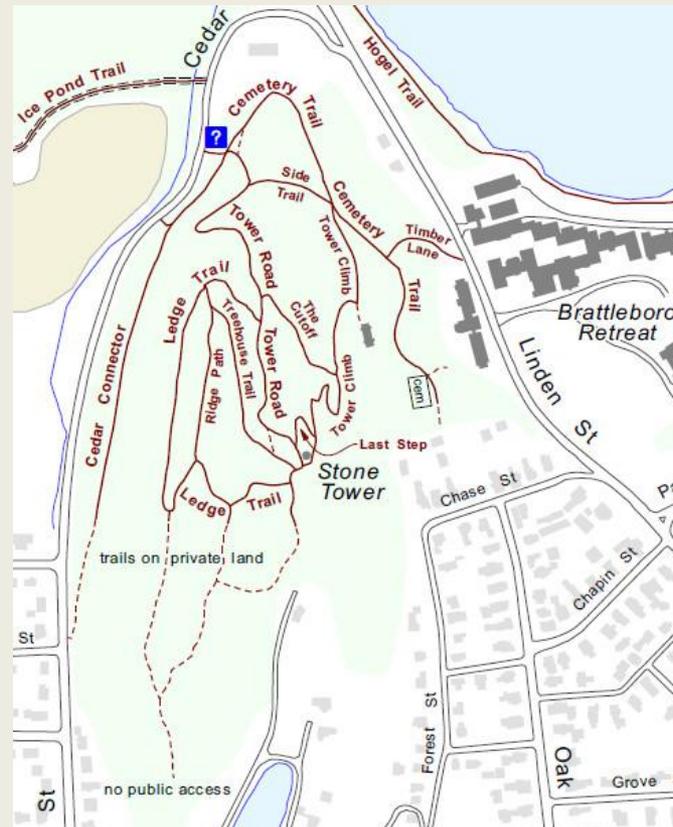
Map design:

- Other items to add to the map:
 - *Non-system trails, for orientation*



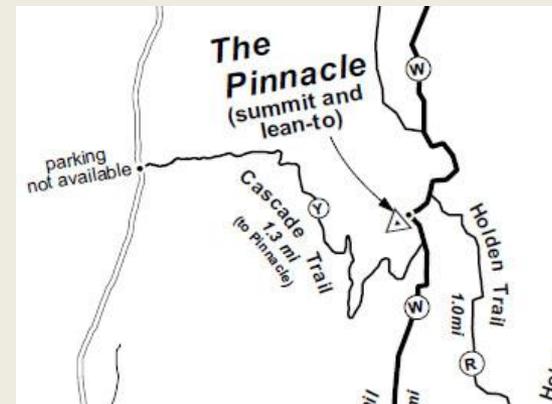
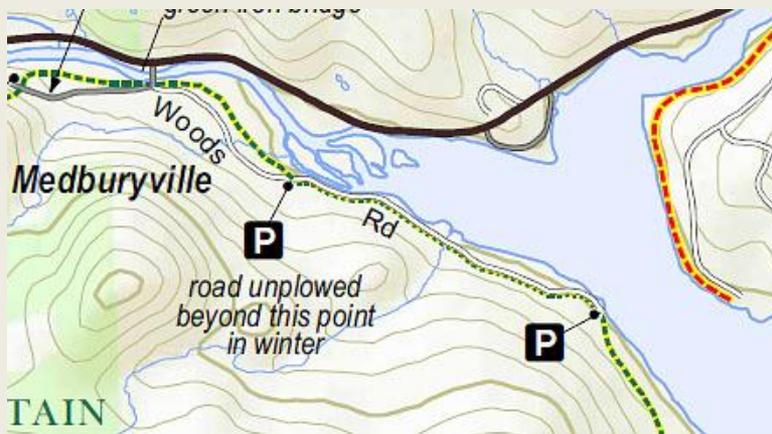
Map design:

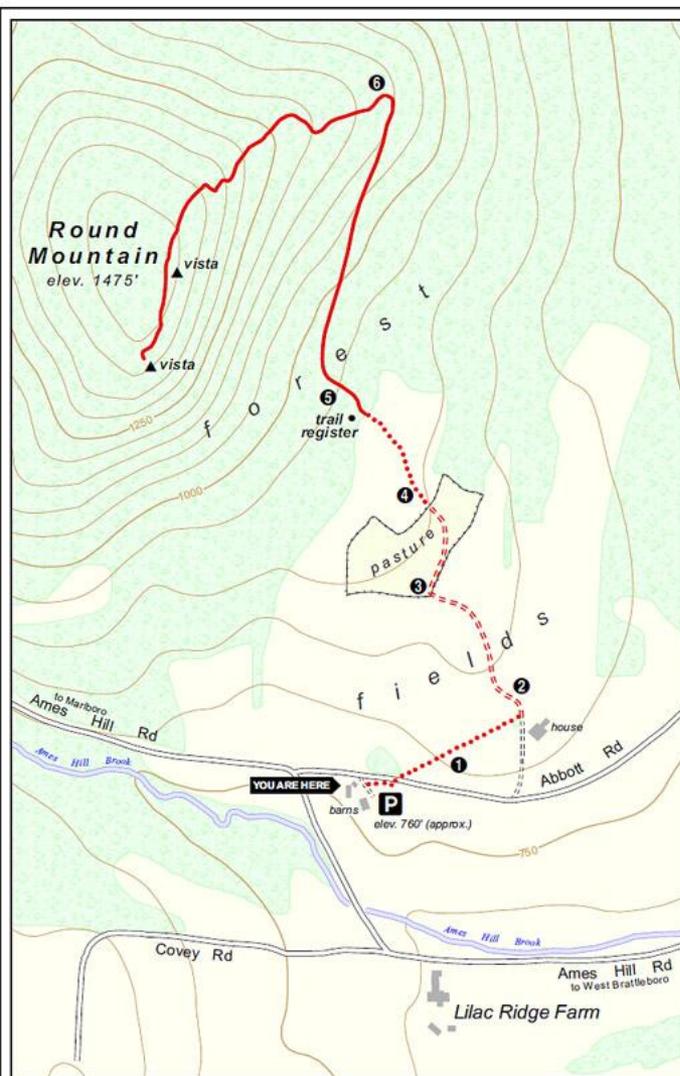
- Other items to add to the map:
 - *Notes on private land/private trails*



Map design:

- Other items to add to the map:
 - *Other important info:*





- 6** Turn sharply left and, following a trail, begin climbing steeply to the summit of Round Mountain and two vistas, 1.2 miles from Abbott Road.
- 5** Please sign the trail register! You are now 0.6 miles from Abbott Road. The route to the summit now follows an old woods road along the base of Round Mountain.
- 4** Cross the field, keeping slightly to the left, to an opening at the edge of the woods, where there is a trail register.
- 3** Follow the farm lane into a pasture. Use the yellow pastic handle on the electric fence to gain access. Turn right, cross the pasture, and exit through the fence on the other side.
- 2** Turn left onto the farm lane near the house.
- 1** From the parking area, cross Abbott Road and walk uphill, diagonally to the right, across the field. Walk toward, but keeping slightly to the left of, the house and a clump of birch trees, to a farm lane.

Hiking Round Mountain

The route to the summit of Round Mountain is on the lands of a working farm. The first half does not follow an obvious trail; it is a walking route crossing open fields and pastures. When farm operations allow, wooden posts with blue arrows mark the way.

- hiking route across field
- hiking route along farm lane
- hiking route on woods road or trail



Round Mountain

West Brattleboro, Vt.

a part of the Brattleboro Area Trails System

A 1.2 mile hike through fields and forest to two summit vistas.

The trail to Round Mountain is a cooperative venture between the Thurber Family of Lilac Ridge Farm, the Trails Committee of the Town of Brattleboro Conservation Commission, and the Windham Regional Career Center.

August 2010

map by Jeff Nugent, WRC
c:\Projects\Trail\RoundMtn\map_color.mxd

Directions to the trailhead

From Rte 9, or Western Ave, in West Brattleboro, turn onto Greenleaf St at the 7-11 gas station (1.3 miles W of Exit 2). Greenleaf St becomes Hinesburg Rd. Continue straight onto unpaved Ames Hill Road. Pass the Lilac Ridge Farmstand, and 2.1 miles from Rte 9, turn sharply right onto Abbott Rd. In 100 yards, turn right into a drive at a group of barns.

