

# Geospatial Data for Recreational Trails of West Virginia; Guide to Maintenance and Creation

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## Purpose

The purpose of this document is to provide a foundation of guidance and information for anyone wishing to create or contribute spatial data to the Recreational Trails of West Virginia dataset, a geospatial product maintained and published by a partnership of West Virginia geospatial agencies. More information about that dataset can be found here:

<http://wvgis.wvu.edu/data/dataset.php?ID=413>

The document is broken into three primary sections. First we describe the data model utilized to store the data. We then discuss best practices and standards for collection of new data. Finally, we briefly describe the process we utilize to integrate new data into the master dataset.

## Data Model

The data model utilized in the Recreational Trails of West Virginia dataset is largely based on the Federal Trail Data Standard, a tabular data standard used within Federal agencies. Our data standard largely reflects the content of the source standard, but several ancillary attributes have been removed. We also added other attributes designed to provide feature level metadata for each trail in the dataset. These attributes allow users to ask (and answer) questions such as: “When was the line for this trail updated? What agency updated this trail line?”

The following table lists and defines the attributes within the data model. Appendix 1 contains a detailed technical (data type, length, etc.) of the data model.

| LONG NAME                        | GIS NAME      | DESCRIPTION   |
|----------------------------------|---------------|---|
| Data Source Agency               | dataAgency    | Agency or entity that created the dataset where the original line was sourced from. |
| Date of Last Data Used to Update | sourceDate    | Publication date of source dataset, if available.                                   |
| Date of Last Update              | updated       | Date line was added to the compiled dataset.  |
| Dataset Link                     | dataLink      | Weblink to source dataset, if available.  |
| Source Dataset Title             | sourceDataset | The name of the source dataset where the line originated from.                      |
| TRAIL NAME                       | trailName     | Name of the trail.  |
| TRAIL NUMBER                     | trailNumber   | Trail number.   |
| TRAIL STATUS                     | trailStatus   | Open/closed.  |
| TRAIL LENGTH                     | trailLength   | Trail length, in miles.   |
| SHARED SYSTEM                    | sharedSystem  | Alternative name or system a trail may be a part of. Example: Allegheny Trail       |
| TRAIL SURFACE                    | trailSurface  | Primary surface of the trail. Examples include: grass, dirt, gravel.                |
| ADMINISTRATIVE                   | adminOrg      | Organization with primary administrative responsibility.                            |

| LONG NAME                         | GIS NAME      | DESCRIPTION   |
|-----------------------------------|---------------|---|
| ORGANIZATION                      |               |   |
| MANAGING ORG                      | manageOrg     | Organization with primary management responsibility.  |
| CONGRESSIONAL DISTRICT            | congress      | Congressional district the trail falls within.  |
| COUNTY                            | county        | County the trail falls within.  |
| JURISDICTION                      | jurisdic      | Other jurisdiction the trail falls within.  |
| MUNICIPALITY                      | municip       | Town/City trail falls within.   |
| STATE                             | state         | State trail falls within.   |
| TRAIL SYSTEM                      | trailSystem   | The trail network to which the segment belongs (if applicable).   |
| ROAD SYSTEM                       | roadSystem    | The road network to which the trail belongs, in the case of trails that utilize roads.  |
| LAND USE PLAN                     | landUsePlan   | Planning document regulating development of the trail.  |
| PRIMARY TRAIL MAINTAINER          | maintainer    | Agency or entity with responsibility for trail maintenance.   |
| TRAIL CLASS                       | trailClass    | The prescribed scale of trail development, representing the intended design and management standards of the trail.  |
| hiking allowed                    | hike          | (yes/no) Hiking is a recommended/allowed use for this trail.  |
| bicycles allowed                  | bike          | (yes/no) Biking is a recommended/allowed use for this trail.  |
| horses allowed                    | horse         | (yes/no) Horseback riding is a recommended/allowed use for this trail.  |
| xc ski allowed                    | xcski         | (yes/no) Cross Country skiing is a recommended/allowed use for this trail.  |
| backpacking allowed               | backpack      | (yes/no) Backpacking is a recommended/allowed use for this trail.   |
| Interpretive Trail                | interp        | (yes/no) This is an interpretative trail (ie, nature or educational trail).   |
| fitness trail                     | fitness       | (yes/no) Fitness stations are available on this trail.  |
| AMERICAN DISABILITY ACT COMPLIANT | ada           | (yes/no) Trail is compliant with the Americans with Disabilities Act.   |
| water trail                       | water         | (yes/no) Trail is a water trail - ie, a river or canal.   |
| MOTORIZED                         | motorized     | (yes/no) Motorized vehicles are allowed on the trail.   |
| suitable for atvs                 | atv           | (yes/no) Trail is motorized and is suitable for ATVs.   |
| suitable for OHVs                 | ohv           | (yes/no) Trail is motorized and is suitable for OHVs.   |
| suitable for dirt bikes           | dirtbike      | (yes/no) Trail is motorized and is suitable for dirt bikes/motorcycles.   |
| PROHIBITED USE                    | prohibUse     | Mode(s) of travel officially prohibited.  |
| ACCESSIBILITY STATUS              | accessStatus  | Access guideline compliance status for hiking trails.   |
| HISTORIC SIGNIFICANCE             | historic      | (yes/no) Historically significant trail.  |
| NATIONAL TRAIL DESIGNATION        | nationalTrail | National designation of a trail, which can include: National Historic Trails (NHT), National Scenic Trails (NST), Connecting or Side Trails (C-S), and National Recreation Trails (NRT); and also includes National Millennium Trails (NMT) and Millennium Legacy Trails (NLT). |
| RIGHTS-OF-WAY                     | rightsOfWay   | Rights of way or permits required for trail travel.   |
| Management Area                   | mgmtArea      | Special management area that a trail falls within, such as a park or wilderness area.   |
| TRAIL CONDITION                   | condition     | Physical condition of the trail.  |

Table 1. "Recreational Trails of West Virginia" data model.

The first five attributes listed in Table 1 store feature level metadata. Each trail line is traceable back to a source dataset which has, in turn, several attributes, such as collection date, source agency and a title. There are two date attributes and they should not be confused with one another. “SourceDate” is the publication date of the dataset from which the line originated (or, alternatively, when the line was collected via GPS or some other manner). “Updated” is the date that the line was integrated into the master dataset. “SourceDate” should always be either the same as or earlier than “Updated.”

The remaining attributes refer to information about the trail itself, including allowable uses, what (if any) management area it falls within, if it’s part of a secondary trail system, what agency maintains the trail, etc.

### Minimum Required Attributes

All trails within the statewide trails data file should include, without exception, the following attributes: Data Source Agency, Date of Last Data Used to Update, Date of Last Update, Dataset Link, Source Dataset Title, Trail Name (or “Unnamed Trail”), Trail Length, Administrative Organization, Congressional District, County, State, and Management Area (if applicable). Many of these attributes (such as county, state and congressional district) can be calculated by the data integration agency at the time of inclusion of new data into the dataset. See the section “Best Practices for Field Collection” for a discussion on minimum attributes a user should collect in the field.

### **Best Practices for Field Collection**

When collecting data intended for inclusion in the Recreational Trails of West Virginia dataset, a few basic guidelines should be followed.

- Prior to beginning collection, all available published information about the trail should be collected and reviewed. Much of the information stored in the database can be gleaned from pre-published maps, brochures or web pages.
- Know the capability of your GPS unit. A GPS unit should be able to collect lines that are accurate to within 10 feet. Any steps that can be taken to ensure that the GPS meets this accuracy standard (GPS settings, adjusting your walking speed while collecting, etc.) should be researched and undertaken.
- If possible, load the data model to the GPS prior to collection to allow for calculation of attributes while in the field. A blank version of the geodatabase/shapefile can be downloaded from the dataset’s webpage: <http://wvgis.wvu.edu/data/dataset.php?ID=413>. If the GPS unit in question is not capable of this, keep an organized field notebook with notes that can be easily related back to each line segment you collect.
- Collectors should not leave the field without the following information recorded in some way, if it is available: trail name, trail number, trail surface, and allowable uses.
- All data collected should be checked and cleaned of obvious errors prior to submission to the integrating agency.

Documentation describing an example data deployment to a Magellan Mobile Mapper 6 and subsequent data collection is available from the West Virginia GIS Technical Center. The Magellan Mobile Mapper 6 is a Windows Mobile Device running Arc Pad 10.

## **Data Integration**

Once data has been collected and checked by the collector, it can be submitted to the integrating agency for integration into the statewide dataset. Upon receipt, the integrator undertakes the following steps. For a more complete description of this process, please see this report:

<http://wvgis.wvu.edu/data/otherdocs/trails/finalReport12July2010.pdf>

1. First, we check to see if the data is new or if it will replace/update existing data. In the case of the former (new data), we skip to step 3.
2. We then compare the two datasets in an Arc Map session. Once we verify that the new data will replace a line in the current dataset, that line is deleted. All areas where new data will intersect existing data are examined and minor edits are made to ensure that topological enforcement works smoothly.
3. The attributes of the new data are checked for errors and consistency and empty fields are filled in where possible. Most importantly, the feature level metadata attributes (dataAgency, sourceDate, dataLink, updated and sourceDataset) are assigned the proper values. This allows us to quickly identify only those features that we are currently editing during the integration process. This is especially useful if the new data is the same area as older, but still current, data.
4. Once preliminary alignment between datasets is achieved and all repetitive lines have been removed from the original dataset, the new data is copied and pasted into the original dataset.
5. New data is topologically enforced with existing data (and with itself) in areas where intersections occur.
6. A new version of the geodatabase is created which contains only the new data and is published the WVGISTC's website.

## **Conclusions**

The ultimate vision for the Recreational Trails of West Virginia dataset is to draw upon all of West Virginia's trail managers, stakeholders and users to maintain a complete and current dataset of these assets. This document is intended to serve as an overview for all parties that wish to contribute to data to the dataset now and in the future. Following these basic guidelines will ensure that new and improved information will be published as part of the integrated dataset in a timely fashion.