



## **WELCOME TO THE ARIZONA TRAIL TOPO MAPBOOK**

### **from the Arizona Trail Association (2021 edition)**

The Arizona Trail Association (ATA) has published the 2021 version of the Arizona Trail Topo Mapbook February 1, 2021.

This digital mapbook contains all of the detailed topographic maps you'll need to navigate the Arizona National Scenic Trail. Here you'll find a total of 129 high-resolution maps showing the trail, terrain features, mileages, and official ATA databook points of interest, resupply locations for long-distance trail users, and more. This mapbook also features a collection of overview maps, each of which shows a portion of the trail between popular resupply locations. Arizona Trail metadata is also included, providing detailed information on the terrain, trail and landscape features, climate data and more, all along the way. These resources are easily cross-referenced in the field and together serve as an indispensable aid to planning and realizing an enjoyable outing along the Arizona Trail, whether for the day, a weekend, or a multi-week trek all the way from Mexico to Utah.

#### **Understanding the map collection**

Each detailed topographic map covers a portion of the Arizona Trail between the Mexican border and Utah border. Together, these maps seamlessly link the 800 mile trail and its 43 passages into a unified map. Each file is named, and each map is labeled, to show which passage(s) it covers as well as its chronological order from south to north along the trail. For example, map "1-1" covers the first portion of Arizona Trail Passage 1 at the Mexican border, and each subsequent map picks up where the previous map leaves off. Map "1-2" is the 2nd map in series for Passage 1. Map "2-1/1-4" is the final map for Passage 1 and the first map for Passage 2 (meaning, in other words, that the ending & starting point, respectively, for these two passages is located on the map). And so forth for each of the trail's passages, all the way to map "43-3" at the Arizona-Utah border.

Most passages require two or more maps to cover in their entirety. You'll find all of these maps in the file named "Topo ATA Topo Map Book Letter.pdf," including the three maps that cover alternate Passage 11a (Pusch Ridge Wilderness Bypass) and three for alternate Passage 33 (Flagstaff resupply route).

#### ***Please note:***

This mapbook uses the new digital USGS 7.5-minute "quad" maps data layers from the National Map (<https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map>). The National Map is a collaborative effort among the USGS and other Federal, State, and local partners to improve and deliver topographic information for the Nation.

This trail-targeted mapbook is much more convenient for both for viewing and printing purposes (not to mention the weight and cost savings over carrying full-coverage quad maps), without significantly sacrificing field-worthiness. As long as you remain on or near the Arizona Trail, you should find that the maps cover a sufficient area to facilitate navigation. If, however, you'll be exploring well off the beaten track, then you should consider purchasing or downloading appropriate full-coverage topographic maps for the area(s) in question. That said, traveling away from the trail along roads is common when heading out for a resupply, in the event of an emergency, or if a section of the trail proves impassable, and so it's a good idea for ALL trail users to carry broad-area overview maps of the entire route in addition to this mapbook.

# Legend

 Resupply Locations	 Forest Service
 Water Sources	 Fish and Wildlife Service
 Water Sources turn off from trail	 BLM
 ATA Waypoints	 Indian Reservation
 Landmarks	 State Trust
 Complex	 Local or State Parks
 State Capitol	 Overhead Powerlines
 School	 Arizona Trail Passages
 Fire Station	 Arizona Trail Alternate Passages
 Hospital	 Connector Trails
 Law Enforcement	 Arizona Trail Temporary Detours
 Prison	 Other Trails
 Cemetery	 Interstates
 Post Office	 Highways
 Campground	 Paved Roads
 Lookout	 Improved Road
 Ranger Station	 Unimproved Road
 Trailhead	 4x4 Road
 Point of Interest	 Railroad
 Ski Area	 USFS Camping & Campfire Restricted
 Reservoir	
 Spring	<b>Landcover</b>
 Waterfall	 Barren Land
 Well	 Cultivated Crops
<b>Boundaries</b>	 Deciduous Forest
 State or Territory	 Emergent Herbaceous Wetlands
 County or Equivalent	 Evergreen Forest
 Wilderness	 Hay/Pasture
 NPS	 Herbaceous
 Department of Defense	 Mixed Forest
	 Open Water
	 Shrub/Scrub
	 Woody Wetlands

## Using the maps

### Overview of map features:

- 129 digitized color topographic maps with enhanced 3D hill shading
- Major/minor contour lines are 200/40 feet respectively.
- Detailed elevation chart on each map showing trail profile, ascent and descent feet plus maximum and minimum elevations. There are added bars representing slope, vegetation type coverage and percent coloring
- 8.5" x 11" (21.6cm x 27.9cm) format. *Important to print to fit your paper size*
- Accumulated trail mileage every half mile heading south to north
- Resupply locations within 60 miles of map center
- 1:28,000 scale with WGS84 degrees/minutes/second in latitude/longitude and UTM tick marks
- Trail line is the official Arizona National Scenic Trail data and designated connector trails
- Official ATA Databook information printed at each locale on the maps (Water source status now at: <https://aztwaterreport.org>)
- Actual water source locations in addition to the point to leave the Arizona Trail to reach the water source
- Well over 1,100 databook points shown, including water sources and resupply locations as of 11/7/2018

The map scale is a uniform 1:28,000 (1 mile = ~2.3 inches) across the entire mapbook. Each map includes a scale bar to readily determine straight-line distances, your actual viewing and printing scale may differ slightly from stated numbers.

The maps edges feature coordinate grid tick marks for use when navigating by GPS, and are presented in both decimal degrees and UTM formats (WGS84 standard).

Official ATA databook information (significant turns and points of interest, or "POI"s) also appears along the trail line in red lettering. These labels include the "Waypoint #" and "Landmark" listed in the databook (available for download from [www.aztrail.org](http://www.aztrail.org)). The Facilities codes at the end of certain labels correspond to the databook's "Facilities" column, indicating water, camping, or town services available as well as distance and direction to off-trail facilities. Each label corresponds to an adjacent small black dot along the trail line, pinpointing the exact location of the feature, except for those which reference water or a resupply location, which feature large blue and red dots, respectively.

Specific fractional mileages for all of the mapped databook points are presented in the ATA databook. In addition, use the databook and official GPS data, available from [www.aztrail.org](http://www.aztrail.org), to determine the precise GPS coordinates of each mapped data point, its elevation, and any further information/comments associated with the location.

The summary area at the bottom of each map includes a variety of information pertaining to that map. Each map has its own highly detailed elevation chart. The horizontal grid is elevation in feet, while the vertical grid is trail half mile, making it easy to associate the elevation on the chart with the location on the map. On the left side is overall trail mileage on the map, accumulated ascent, accumulated descent, minimum elevation and maximum elevation. Below the North Arrow symbol is the magnetic declination for that map center; all are in degrees to the east from map north. Use this to calibrate a handheld compass, or the compass in a GPS unit aligned to magnetic north, prior to taking a bearing.

Resupply information is also shown alongside the elevation chart. These are resupply locations within 60 miles of map center, both south and north along the trail. "DFT" stands for "distance from trail."

## **Printing maps (for download version of mapbook)**

All of the maps are sized for printing on 8.5" x 11" (21.6cm x 27.9cm) paper. Printer requirements are minimal - any late model inkjet or LaserJet home printer with color printing capability should work fine. Use the "Print to Fit" printer setting.

For the most robust printed maps, you may want to consider using waterproof paper. However, waterproof paper can be both expensive and heavy in quantity, and may not be necessary on a dry-climate trek like the Arizona Trail, at least when storing maps as a general precaution inside a gallon-size zip lock bag or equivalent. Non-waterproof paper can readily allow some types of printer ink to smudge upon contact with water, but otherwise its advantages are noteworthy: relatively cheap, lightweight, and low-bulk. Of the non-waterproof varieties, high-resolution printer using the more generic "bright white" printer paper often produces perfectly acceptable results. Whichever route you go, select a paper that prints equally well on both sides without bleeding through, and consider using the "High Quality" or "Best" print setting on your printer.

Besides printing the maps yourself, another option is to purchase the printed set of the Arizona Trail Topo Mapbook for \$45. Just visit the Arizona Trail Association's Topo Mapbook Store page at <https://aztrail.org/product/topo-map/> and weighs about 15.6 ounces.

## **Viewing and interacting with the Topo Mapbook PDFs on your mobile device**

The Arizona Trail Topo Mapbook is also available to use with the Avenza Map app. This app allows you to locate yourself and interact with maps on a mobile device without the internet. You can download single maps at a time or the entire 129-page bundle of maps for offline use on your iOS and Android smartphone or tablet. You use your device's built-in GPS to track your location on any map. Go to the Avenza Map app store to purchase and download a page for \$0.99 or \$129.99 for the entire map bundle. Visit <https://aztrail.org/explore/maps/topo-maps/> for more information.

## **About this mapbook**

Following is an overview of how these maps were developed using ESRI's ArcGIS software and what makes them unique.

### *Digital Topo Base Maps*

The Digital Topo Base Maps now come from the National Map that also serves as the source of base mapping information for national derived cartographic products, including 1:24,000 scale US Topo maps and georeferenced digital files of scanned historic topographic maps. More details about the National Map is found at <https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map>

### *Land Cover - National Land Cover Data (NLCD), U.S. Geological Survey, published February 16, 2011, [www.mrlc.gov](http://www.mrlc.gov)*

National Land Cover Data (NLCD) is the source for various land covers. This data was collected in 2006 and reprocessed in February 2011. It is the finest land cover data available today for the U.S. The resolution is a phenomenal 30 meters! This is an exceptionally superior replacement for the 50 year old 'woodland polygons' still seen on most topographic maps currently available. The maps in this collection display 6 types of ground covers: evergreen, deciduous, mixed, shrub and bare ground in varying shades of green from darker to lighter.

*Elevation Data - National Elevation Dataset (NED), U.S. Geological Survey, <https://catalog.data.gov/dataset/usgs-national-elevation-dataset-ned>*

National Elevation Data (NED) is the source for data such as contours, 3D hill shading and point elevations. (The elevation charts use 1 meter elevation data from the USGS.) The resolution is 1 arc second.

*Water/Drainage - National Hydrology Dataset (NHD), U.S. Geological Survey, U.S. Environmental Protection Agency, USDA Forest Service, et al, <https://www.usgs.gov/core-science-systems/ngp/national-hydrography>*

National Hydrology Data (NHD) is the source for all water and drainage related map features. This data is constantly being updated with most of it being less than 5 years old.

*Road/Features/Survey/Labels - Feature data, U.S. Forest Service, U.S. Geological Survey, [www.fs.fed.us](http://www.fs.fed.us), [usgs.gov](http://usgs.gov) Tiger Line data, U.S. Census Bureau, published 2013, [www.census.gov](http://www.census.gov)*

This data originates primarily from the USFS data sets. GNIS is used to supplement labels and TigerLine data is used to supplement roads. All feature data other than land cover, hydrology and elevation are from these sources.

*AZ Trail Line/Data Points – Arizona Trail Association, for Databook, this Mapbook, Water information and other resources specifically about the Arizona National Scenic Trail, [www.aztrail.org](http://www.aztrail.org)*

The trail line and data points are plotted from high-resolution data furnished by the Arizona Trail Association. This is the official data for each of the trail's 43 passages. Current water details from trail users at <https://aztwaterreport.org>

*GIS Technology and Automated Mapbook Creation - ESRI's ArcGIS software, [www.esri.com](http://www.esri.com)*

Geographic Information Systems (GIS) is the body of software, data, and training people that have provided the ability to create a mapbook such as this. GIS is used to manage the ATA's trail line and data points used in this map and all the base layers from the National Map. A number of tools exist for creating map tiles for a given geographic area and scale. As far as we know, none create a set of maps given a trail trace. This unique process 'follows' the trail trace generating a map tile each time the specified resolution and page format bounds are exceeded. This means automating map creation easily as data changes.

## *Results*

Using the most recent data and technology available, this Arizona Trail mapbook captures the essence of the topography you'll be living in, whether for the afternoon, the week, or an 800-mile adventure of a lifetime. We hope you enjoy using it to explore Arizona's most outstanding recreational resource.

## **Happy trails!**

This Arizona Trail topographic mapbook has been many, many, many hours in the making, and it is our hope and endeavor that the end result will allow experienced backcountry travelers to avoid most navigational problems and to have a rewarding adventure along the trail. Such adventures come with inherent risks, of course, so be sure to use these maps as part of an overall approach to maintaining safety and self-reliance in the backcountry. In short, use the maps and benefit from them, but use your skills and your awareness too. And always keep your options open when determining the safest and most practical direction of travel. Note: The Arizona Trail Association use of this mapbook is solely at your own risk.

*Arizona Trail Topo Mapbook ©2021 Aaron Seifert ATA GIS Director, and the Arizona Trail Association. All rights reserved. Process, design, non-topographic images, text and map edits are original works of the authors.*