

CHAPTER 3

METHODOLOGY



Hiking the Lexington & Eastern in Clark County



Rails on the ground near Princeton



Flying above the Chesapeake & Ohio RR east of Lexington

When we began our project we naively assumed that we would hike every mile of abandoned right of way and do a complete field survey of the state. About five hours in to our first day in the woods, after we lost the logging rail bed somewhere in a tangle of briars, we discovered that we would not be hiking all 1,500 miles of rail bed in two years! We spent several months of trial and error as we re-evaluated our methods before we settled into an effective combination of archival research, selective field checking, and GIS database building.

Archival research

Half of the work of this project has been the archival research – figuring out where the lines once ran before we went out into the field to try to see what shape they are in today. Our primary source for lines abandoned before 1967 was Elmer Sulzer’s book *Ghost Railroads of Kentucky* (1967). He had information on some lines which we found mention of nowhere else, so we relied heavily on his research. His maps are more schematic than accurate, so we had to rely on topographic and other maps to determine the exact route of lines, but once we had the endpoints and some points along the way from Sulzer we were able to map the routes quite accurately. Some of his historic information was not accurate, but unless we could find another source to correct it, we used what he wrote.

For more recently abandoned lines, Steam Powered Video’s *Comprehensive Railroad Atlas for Appalachia and Piedmont* (1997) was a valuable source. These maps were even more schematic, but provided endpoints and company names for most lines abandoned before the mid 1990s.

For very recently abandoned lines (since 1996) the Surface Transportation Board's website archives the decisions and notices from the abandonment proceedings. These are updated daily so it is very easy to keep up with current abandonment activity. Interstate Commerce Commission decision and notice records of lines abandoned from 1990 to 1995 are available in various places online, posted there by railfans and amateur historians.

The rest of our information was drawn from a plethora of sources, historical and geographic, academic and amateur. The annual reports and maps of the Kentucky Railroad Commission provided useful information about routes and railroad company names. Geological survey maps and reports provided much of our historic route information. The Kentucky Geological Survey made the first topographic maps of Kentucky in the 1920s. These were 15 minute maps (the equivalent of four standard quadrangle maps put together), and while they do not show great detail, they do show rail lines. Unfortunately there is coverage for only about half of the state, mostly the coal areas and urban areas. The first series of 7.5 minute topographic maps were produced in the 1950s. Some have been updated over the years -- the newest maps were produced in 1997 -- but many have not been updated in fifty years. These maps show great detail and are invaluable for showing routes of recently and long abandoned lines. Topographic evidence often remains on maps even if the line is long gone -- the cuts, fills, and rights of way are clearly seen in many places and it's helpful that some lines are marked as "abandoned railroad grade".

Other maps, such as those produced by railroad companies and commercial atlases, have been useful, though many do not show enough detail to pinpoint the routes

beyond endpoints. *The Official Guide to Railways* was produced several times a year since the late 1800s and was a catalog with timetables and schematic route maps of every railroad company in business in the nation. Newer maps such as state highway maps and a recent topographic gazetteer were useful in comparing old and new route maps to pinpoint routes, but they almost never had accurate information about recent abandonments. There is about a 3-5 year lag, sometimes much more, between actual abandonments and their appearance on maps like these.

We attempted to use Digital Ortho Quarter Quad photos (aerial photos) to determine alignments but soon learned that they were not well suited to the type of information we needed. It was difficult to determine from the photos if rights of way were in fact abandoned railroads or if they were auto roads. Because some lines had been abandoned since the photos were taken and because it is quite hard to determine from photos the difference between an in-service line and a newly abandoned line, we were unable to use DOQQs.

Other historical archival sources also provided some information for us. These included local history books, newspaper articles, company records, and geologic reports. Unfortunately we did not have the time to do a complete search of these sources, so there are some holes in our data regarding dates of construction or abandonment and company name.

A few local experts (and there were many more we did not have time to speak with) provided some valuable information through their own research. These included Ed Vasser, an amateur historian who has extensively researched logging railroads in Northeastern Kentucky; Cecil Ison, the Daniel Boone National Forest Archeologist; and

Robert Vaughn, an amateur railroad and coal mining historian who has written detailed essays about rail lines and mining-related rail facilities in Southeastern and South Central Kentucky. Other local experts and amateur historians also shared information on internet websites, bulletin boards, and list serves that helped us to fill in some important missing links.

We were able to obtain alignment information for logging railroads in the Red River Gorge area from Ed Vasser, but for most areas we were only able to learn names of logging companies and not the routes of their railways. Because of this the maps are incomplete. One can imagine a pattern of logging rail lines in most areas of Southeastern Kentucky that would have been similar to the Red River Gorge area. The routes of interurban railways were also omitted from our database. Interurbans were electric commuter railways that connected urban areas. There were extensive networks centered on Lexington and Louisville and radiated to area towns such as Georgetown, Versailles, Paris, Nicholasville, and Shelbyville. Most of the routes of these interurbans shared a right of way with an auto road so they are not represented on our maps. One notable exception is the line that ran from Pewee Valley to LaGrange. This interurban shared a right of way with the Louisville and Nashville Railroad (this line is still active) and it is slated for development as a rail trail.

Most of the archival information was found in the University of Kentucky Library, Special Collections, and Map Library. Some was found in the Kentucky Historical Society Special Collections and some was accessed online.

Records from the Interstate Commerce Commission, the federal agency responsible for regulating abandonments from 1920 to 1995 (its duties were taken over

by the Surface Transportation Board in 1996), are in the National Archives in Maryland. All of the decisions and notices from every abandonment proceeding are available there – these would show the exact mile points for the sections abandoned, names of the abandoning railroad companies, and dates of abandonment. Unfortunately, because of time and staff limitations, we were not able to access these records.

Field Work

We had to limit our field work to those lines that had not clearly been remade into roads, had significant intact stretches (that were not built over in urban areas or by new

How to tell if a railroad is abandoned



road construction), that seemed to have trail potential, and were in places where it was relatively safe and easy to hike. This excluded lines that were on guarded coal company property or were over a fence that held back big dogs, for example. We

considered lines that connected places (as opposed to dead ended spurs), had significant contiguous stretches, had intact infrastructure or buildings, or had interesting natural features to have more trail potential. These attributes were determined from maps and text sources and also from over-flights. While we are unable to fly every line (and many hilly, treed lines are invisible from the air), flying was a very good way to narrow down the search, determine the condition on longer stretches of line, and find interesting point features that we could go back and check out on the ground.

GPS, handheld computer, and topographic maps



Alignment information, as we found it in the archives and verified it in the field, was digitized into a GIS on top of digital versions of topographic quadrangles. We used these digitized maps in turn when we did aerial surveys

by downloading them to a hand held computer which was connected to a global positioning device. This allowed us to follow our digitized route lines exactly. We occasionally used this combination of hardware on the ground, but since it required two hands and good sight lines for satellite readings, it was usually not as effective or as easy to use as paper maps while we were hiking.

One of our objectives, as outlined in the project scope, was to generate alignments that are no more than 500 feet from the true alignment. Based on subsequent field checking with GPS devices we have determined that virtually all of the rail lines that have been digitized are significantly more accurate than 500 feet. Because of the availability of recent and historic topographic maps to use as reference maps we were able to digitize with great accuracy. This accuracy is also a result of the way that we digitized the lines using 7.5 minute topographic maps as our base layer. This allowed us to follow exactly the route lines or topographic features that defined the abandoned corridor. In fewer than ten instances we were forced to guess on alignments based only on endpoint information. These cases involved short lived logging lines from before 1920 and in one case a coal company line that was abandoned more than 100 years ago.

Building the GIS Database

The information we collected in the field and the archival information were entered into a GIS database that helped us make the trail suitability assessment of each line. The challenge was to develop sensible rating criteria that would express each line's condition, current use, and potential for redevelopment. We had to design descriptive ratings that would be useful to trail planners and local rails to trails advocates. Each line is rated through accessibility, proximity, and connectivity criteria.

The accessibility code refers to a line's ease of access to public amenities like schools, residential areas, recreation, parks, historic sites, and commercial areas. Through a combination of maps and field observation we noted what was adjacent or very close to each segment of abandoned line. It is important to remember though that some intangible qualities like pleasant vistas are not captured in this code.

Proximity means its nearness to population centers. We divided this into three ratings. One is for segments that pass through or are adjacent to urban areas of 10,000 or more people (using 1998 US Census population estimates). The next is for segments that pass through or are adjacent to towns or villages of less than 10,000 people. The last rating refers to segments that are in rural areas.

Connectivity refers to the line's intersection with other existing trails. We divided this code into those lines that do not intersect with other trails, those that intersect with the Sheltopee Trace in the Daniel Boone National Forest, and those that intersect with other developed trails.

These criteria were developed based on input from rails to trails project planners and advocates. Especially important to trail advocates were the accessibility of lines for

school children and others in urban areas to be used for safe transportation routes and the connectivity with other recreational and historical amenities.

We were commissioned to determine basic property ownership information for the abandoned lines. This is expressed in an ownership field. The process of determining the ownership of a line can be very time-consuming and difficult. We were limited to noting whether the line passed through public property (such as National Forest or State Park land) or not. This in itself is quite difficult to determine because within the boundaries of the National Forest there is a patchwork of Federal and privately-owned land. Where it was known for sure that a segment passes through a section of private land within the forest it was coded as private, but if this was not known and the segment was within the general boundaries of the National Forest it was coded as public.

A community trail advocacy group wishing to determine the legal ownership of a segment of abandoned rail line will need to do an extensive deed search through county land and tax records. Sources of information on railroad property holdings include track maps (available directly from railroad companies), tax maps, property surveys, and copies of deeds (Allen and Iurino 1996).

Railroad ownership is notoriously confusing as some sections were held in fee simple while other sections were held as easements. Fee simple means the right of way property is owned outright by the railroad company. An easement means that the railroad bought the right to use the land for railroad purposes, but the property would revert to the original owner or his or her heirs when railroad was abandoned. A third type of railroad corridor ownership was through land grants, usually by the federal government. This type

was common west of the Mississippi and there are no known railroad parcels in Kentucky that were acquired through land grants.

Determining ownership is rather straightforward if a trail is proposed at the time of abandonment. The railroad line can be railbanked, which prevents the line from being sold piecemeal or reverting to adjacent property owners. Long-abandoned lines become more complicated as sections are sold off and broken up into pieces and as adjacent land owners come to use the railroad rights of way as their own property even though they may not have legal claims to ownership. In many trail projects, it is not uncommon to need the services of a lawyer to unravel the complex ownership issues (Allen and Iurino 1996).

Other categories in our database include gauge: standard, narrow, other, or changed over time; common carrier or private railroad company: some were coal or lumber company lines; and whether or not we had verified it on the ground or from the air.

We designed four condition grades and five current use categories that are combined to form the status ratings for each section of abandoned line. The condition grades are: A, a clear pathway that may be paved, gravel, dirt, grass, or some combination. It is clear enough to be drivable for nearly the whole length with a four wheel drive vehicle. B is a recognizable and intact railbed. It is somewhat overgrown in trees, shrubs, or anything taller/thicker than grass, to varying degrees, but is still hikeable. C is a detectable railbed that is extremely overgrown or obstructed and is nearly impassable or a railbed that is only periodically detectable. D is a right of way that has been obliterated. The use categories are numbered 1 – 5. Category 1 is an auto road,

paved, gravel, or dirt. Category 2 is a pathway that is clear, but used for non-car traffic. This can include ATV, foot, bike, or equestrian use. Category 3 is a right of way that is unused, either formally or informally (this type is often overgrown). Category 4 is a right of way that has been obliterated and 5 is one where the rails and ties are still in place.

Map 2.5 on page 21 combines and summarizes, on a statewide scale, the basic use and condition information contained in the database categories outlined above. Additional information on all abandoned lines is presented in tabular form in Chapter 4. Selected “high value” lines are described in further detail in Chapter 5. Subject to the availability of funds, plans are for the complete GIS database from which this information is drawn to be kept current and made available to the public through the Department for Local Government’s website.



Example of 1A: reuse as auto road



Example of 2A: clear path, non car use



Example of 2B: overgrown path



Example of 3C: detectable road bed but extremely obstructed