Transportation Asset Mapping & Data Compilation

Northeast Region Map, Northeast Region Long Range Transportation Plan, 2013

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Contents

Report notes

This report was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center, in Cambridge, Massachusetts. The project team was led by Heather Richardson, of the Transportation Planning Division, and included Danielle Kittredge and Alyssa Ryan, of the Transportation Planning Division, and Robert Hallett and Sara Secunda, of the Environmental Science & Engineering Division.

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Acronyms

The following terms are used in this report:

FMSS	Facilities Management System Software/Specialist
GIS	Geographic Information System
LRTP	Long Range Transportation Plan
NER	Northeast Region
NPS	National Park Service

Introduction

Project Purpose

This project evaluated and identified missing locations of transportation assets throughout the Northeast Region (NER) of the National Park Service (NPS). Prior to this effort, many parks in the Northeast Region did not have documented transportation asset location data. While individual parks throughout the region may have had disaggregated information on their transportation assets and their locations, such information was not available in full as a single GIS shapefile for NPS employees to access. The complete geocoded dataset resulting from this project will help ensure the Long Range Transportation Plan (LRTP) update for the NER to be accurate and up-to-date, allowing for the measurement and monitoring of all transportation assets in the region. This report provides details on the data collection process of these missing transportation assets and manipulating this data to be mapped in GIS format.

Goals

The goal of this project is to support the NER LRTP update by providing the NER with locational data for all transportation assets within the region.

Background

Groundwork for this project was laid during a 2013 project by Volpe to ascertain the vulnerability of transportation assets to flooding by mapping NER transportation assets over GIS layers capturing flooding vulnerabilities from severe weather events and sea level rise. Volpe staff geolocated hundreds of transportation assets throughout the NER as part of this previous effort. These points were located through individual online research of the asset, GIS databases of the National Park Service's assets available online, and through a few connections with individual parks themselves. The result of the initial project was a GIS dataset with 2,241 transportation assets. The remaining 1,024 assets without locational data were those more challenging to verify and unable to be documented due to schedule and budget constraints.

The NER LRTP was initially completed in 2013 and is due to be updated in 2018. The complete locational dataset for the region's transportation assets are supportive of the NER LRTP goals and objectives for managing assets wisely; ensuring access, safety and mobility; enhancing visitor experience; protecting resources; and ensuring sustainable operations.

Methodology

Volpe began the current mapping effort by reviewing the transportation asset data collected in the 2013 task.

Each of the 1,024 assets that were not previously located were analyzed to determine whether or not they were able to be located. Mobile transportation assets, such as buses, are not able to be associated with a specific location. In some cases, if a transportation asset only moved a portion of the time, such as a tour boat, it would be able to be mapped at the dock where it was typically moored. Transportation assets that were not able to be associated with a specific location were not included in the final spatial dataset.

Due to time and budget constraints on the project, a single point was used to map all assets including linear features. For trails, the point located was the trailhead. For roads, walkways, and bulkheads, an approximate mid-point of the linear feature was used as the identifying location. This methodology was agreed upon by NPS staff as acceptable. It is important to note that the standard treatment of linear features developed after identification of the 1,024 assets had begun, so there may be some differences with locations of previously recorded points in regard to the described point location methodology.

Missing assets were organized by park in a spreadsheet that included a columns for the latitude and longitude of each asset. The latitude and longitude were collected in decimal degrees, out to approximately six decimal places (+00.000000/ -00.000000), based on the NAD 83 datum as established in the NPS Federal Real Property Information Application Manual (2015).

Following this data organization and an initial attempt to locate missing assets through NPS websites and online maps, the appropriate individual parks were contacted to assist with providing the latitude and longitude of the assets still needing locations identified. Bethanne Wilson, Asset Management Systems Program Coordinator from the NPS Northeast Region, assisted in coordinating and connecting Volpe staff to the Facilities Management Systems Specialist (FMSS) contact for each park to gather this information. Working with the FMSS contact for each park was important to ensure that data being provided for this mapping project was also being carried through and updated in the Facilities Management System Software (FMSS). Each park contacted was responsible for updating the FMSS systems with the new latitude and longitude data. In the instances where asset locations were identified without FMSS contact involvement, the NER Asset Management Systems Program Coordinator has agreed to have her team input the collected latitude and longitude into the FMSS system for those assets.

Each park contacted received an individual email outlining the purpose for the data collection, the task for the park, and any relevant questions. A spreadsheet of missing assets for each park was attached to the individual emails during this outreach. Throughout this process, the NPS Asset Management Systems Program Coordinator was updated and included on emails to assist communication between Volpe and the NPS staff in an appropriate manner. Example emails can be found in the Appendix.

After collecting all missing asset data, the latitude and longitude from the spreadsheets were input into ArcGIS software and converted to points. The accuracy of the points were reviewed, making sure the points were located within park boundaries and appeared to be in a logical location based on the type of asset and surrounding environment. After the accuracy check, the points were exported as a shapefile and merged with transportation asset points previously identified in the 2013 Volpe data collection efforts. A separate line shapefile was also generated from the 2013 Volpe data collection efforts. The existing attribute tables of both shapefiles were cleaned-up. The final point and line shapefiles were exported as feature classes into a geodatabase. The point feature class includes 1,473 transportation assets and the line feature class includes 1,886 transportation assets. Both of these datasets will be provided to appropriate NPS regional and park unit employees as electronic files.

Summary and Next Steps

In summary, all transportation assets with identifiable location data in the NER were geolocated in ArcMap. With this dataset in an accessible format, it is able to be updated as transportation assets are added or removed. This full dataset allows for all of the transportation assets to be measured and monitored in future NER LRTP updates. When mapped, these transportation assets provide a full picture of where transportation assets are located throughout the various National Park units in the region.

The next steps of this project could include creating a plan outlining how this dataset will be updated in the future, including who will be in charge of the process, how often the update should happen, and where the new data will be stored and/or distributed. While the data mapped as a part of this effort includes some transportation assets from the Alternative Transportation Management System (ATMS), the data are largely tied to FMSS location numbers and, therefore, can easily be updated with the most current FMSS data or expanded to include additional attributes available in FMSS.

Appendix

Sample email letters, adjusted based on individual park circumstances, asking parks for assistance in identifying locations of assets without location information:

Sample Email Version 1:

Hello [name],

The Volpe Center has a project with the Northeast Region to finish mapping transportation assets at National Parks. We've found there are a number of assets that need to be geocoded for Valley Forge National Historic Park. Is there a facility manager or other staff member who could be of assistance providing the latitude and longitude for these assets? Attached to this email is an Excel file with __ transportation assets missing location data. We would appreciate your assistance in filling out this missing information for these assets and verifying those with a location by _____.

Thank you for your assistance! Let me know if you have any questions.

Regards,

Sample Email Version 2:

Hello [name],

The Volpe Center has a project with the Northeast Region to finish mapping transportation assets at the parks. We've found there are a number of assets that need to be geocoded for [name of park]. We are looking for your assistance providing the latitude and longitude for these assets. Attached to this email is an Excel file with [no. of transportation assets missing locations] transportation assets missing location data. These assets originate from the FMSS system. The "location" column is the FMSS number.

While collecting the latitude/longitude for this regional project, we are trying to maximize the benefits of the mapping effort by simultaneously having the FMSS system updated with this important information. We would appreciate your assistance in BOTH filling out this missing information within the attached Excel file and separately updating the FMSS system with the latitude/longitude for each of these assets. Below is guidance on the commonly asked latitude/longitude format questions. Please provide this information by [date].

Latitude/Longitude Guidance:

The format of the data is important to ensure it functions within FMSS correctly.

- Provide in decimal degrees based on NAD 83 datum (*+00.000000/-000.000000)*
- Provide a single point location representative of the asset
- Points for linear features:
    - For trails the point should be at the trailhead
    - For other linear features such as roads and walkways/sidewalks, please use the mid-point along the linear feature

Thank you for your assistance! Let me know if you have any questions.

Kind Regards,

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14. ABSTRACT

This summary report describes a project that evaluated and identified missing locations of transportation assets throughout the Northeast Region (NER) of the National Park Service (NPS). Prior to this effort, many parks in the Northeast Region did not have documented transportation asset location data. While individual parks throughout the region may have had disaggregated information on their transportation assets and their locations, such information was not available in full as a single GIS shapefile for NPS employees to access. The complete geocoded dataset resulting from this project will help ensure the Long Range Transportation Plan (LRTP) update for the NER to be accurate and up-to-date, allowing for the measurement and monitoring of all transportation assets in the region. This report provides details on the data collection process of these missing transportation assets and manipulating this data to be mapped in GIS format.

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