The National Trails Intermountain Region’s Sign Plan Program

National Trails System GIS Network

May 15, 2018
Overview...

- Office background
- Introduction to the Sign Plan Program
- Step-by-step workflow
- ArcGIS Online and Sign Plan Report Tool
- Final product
- Future of the Sign Plan Report Tool
We have 3 office locations
Numerous Partners
25,000+ Miles
4 NPS Regions
24 States
466 Counties
113 Congressional Districts
Visitor Use, Experience & Engagement
Resource Information Management

Landscape Architects  GIS
Purpose of Sign Plan Program

- Follows the National Trail System Act (as amended) and follows trail marking guidelines of the CMPs
- Signing the trails raises public awareness
- Opportunity for partners to collaborate and receive technical assistance from trail administration
Goals

- Implement a standardized approach
- Use the capabilities of GIS to create, manage and share sign data
- Create a user-friendly process for partners to create sign plans
Step by step workflow

1. Partners initiate the process by identifying area and purpose to NTIR
2. Partners use AGOL to input signs
3. NTIR collaborates with partners for revisions on the AGOL viewer
4. NTIR runs the report tool
5. Partners use sign plan PDFs to take to local road jurisdictions along with an agreement form
6. Signs are ordered and installed
Types of signs

- NHT Historic Route
  - Historic Route
  - Historic Route Next X Miles
  - Historic Route Left
  - Historic Route Right
  - Historic Route Both Directions

- NHT Auto Tour Route
  - Auto Tour Route
  - Auto Tour Route Arrow Left And Right
  - Auto Tour Route Left Arrow
  - Auto Tour Route Right Arrow
  - Auto Tour Route Straight Arrow

El Camino Real
- Historic Route
- National Historic Trails

California Trail
- Auto Tour Route

Types of signs

- NHT Site
  - Site_Identification_Entrance
  - Site_Name
  - Site_Name_Left_Arrow
  - Site_Name_Right_Arrow
  - Site_Name_Straight_Arrow

- NHT Crossing
  - Crossing

- NHT Custom
  - Custom

Site Identification
- Entrance Sign
- Oregon National Historic Trail

Santa Fe Trail
- Crossing
The Sign Plan Report Tool

- Input Plan Name
- Input Report Title
- Select Trails in AOI
- Sign ID Number Sort
- Map Scale (Resolution)
- Partner Preparers
- NPS Preparers
- Contact Info

This tool will generate a road sign plan report based on the user's selection. This report includes a title page, table of contents, a map sheet index, a sign plan map series, a report of the signs, summaries, and sign plan specification sheets depending on the trails chosen.
The Sign Plan Report Tool

Set the index page extent to the minimum bounding box created previously and create a new temp mxd
mxd = arcpy.mapping.MapDocument(tempWorkspace + "\Signs_MapSeriesOverview3.mxd")
def = arcpy.mapping.ListDataFrames(mxd)[0]
layer = arcpy.mapping.Layer(workspace + "\Temp_MBG.shp")
newextent = layer.getExtent()
if extent == newextent
mxd.saveACopy(tempWorkspace + "\Signs_MapSeriesOverviewCopy.mxd")
else

Replace filepath used for script creation to the filepath that user selected as workspace
mxd = arcpy.mapping.MapDocument(spFiles + "\RoadSignsTemplates\Signs_MapSeriesPages.mxd")
adjustVersionLabel(mxd)
xm.findAndReplaceWorkspacePaths(spFiles + "\RoadSignsTemplates\SignPlanTemplates", workspace, False)

Make the appropriate trails visible, so that only the trails of interest are shown in the legend
for lyr in arcpy.mapping.ListLayers(mxd):
    if lyr.name == trail1:
        lyr.visible = True
    if lyr.name == trail2:
        lyr.visible = True
    if lyr.name == trail3:
        lyr.visible = True
    if lyr.name == trail4:
        lyr.visible = True
    if lyr.name == trail5:
        lyr.visible = True

Assign User Generated Plan name onto Map Index Page
ptext = arcpy.mapping.ListLayoutElements(mxd, "TEXT_ELEMENT", "txtUGSignPlanName")[0]
ptext.text = planName
mxd.saveACopy(tempWorkspace + "\Signs_MapSeriesPages2.mxd")

Create a copy of the Estimates excel file, and then perform a spatial joins to assign the sign cost from the excel sheet to the associated table = "Estimates"
copy.ExcelToTable_conversion(spFiles + "\CostEstimates\tbl_RoadSignCostEstimates.xlsx", workspace + '\\' + outFile, "Cost_Estimates"
copy.AddField_management(workspace + 'Temp_Signs.shp', 'Cost_Join', 'TEXT', '##', '#', '##', '#', 'NULLABLE', 'NON_REQUIRED', #'')
copy.AddField_management(workspace + 'Estimates', 'Cost_Join', 'TEXT', '##', '#', '##', '#', 'NULLABLE', 'NON_REQUIRED', '##')
copy.JoinField_management(workspace + 'Estimates', 'Cost_Join', '\Sign_Type! + \Reflective!', 'PYTHON_9.3', '#')
copy.AddField_management(workspace + 'Estimates', 'Cost_Join', 'TEXT', '##', '#', '##', '#', 'NULLABLE', 'NON_REQUIRED', '##')

Over 1000 lines of code!
The Sign Plan Report Tool

1. Sign layers downloaded from AGOL
2. Sign layers are queried according to sign plan
3. Sign layers merge
4. Templates are filled in according to sign plan and parameters
5. Templates are exported into organized PDF
The Sign Plan Report Tool
Works off pre-made templates

<table>
<thead>
<tr>
<th>SIGN_TYPE</th>
<th>REFLECTIVITY</th>
<th>COST_ESTIMATE</th>
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<td>Engineer Grade</td>
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<tr>
<td>Auto_Tour_Route_Right_Arrow</td>
<td>Engineer Grade</td>
<td>113.00</td>
</tr>
<tr>
<td>Auto_Tour_Route_Straight_Arrow</td>
<td>Engineer Grade</td>
<td>113.00</td>
</tr>
<tr>
<td>Auto_Tour_Route_Arrow_Left_And_Right</td>
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<td>113.00</td>
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</table>
The Sign Plan Report Tool
Works off pre-made templates
The Sign Plan Report

Sign Plan Report
- Title Page
- Table of Contents
- Overview Map
- Map Sheet Reference Index
- Map series
- Reports
  - Sign Summary
  - County/State Sign Summary
  - Road Jurisdiction Sign Summary
  - Cost Estimate Summary
  - County/State Cost Summary
  - Road Jurisdiction Cost Summary
  - Sign Status Cost Summary
- Sign Plan Specification Sheets
The Sign Plan Report
The Sign Plan Report

White Pine County Sign Plan
Map: 1

<table>
<thead>
<tr>
<th>Sign ID</th>
<th>Sign Type</th>
<th>Trail</th>
<th>Site Name</th>
<th>Location</th>
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<td>Hiking_Route</td>
<td>POEX</td>
<td></td>
<td></td>
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<tr>
<td>11</td>
<td>Hiking_Route</td>
<td>POEX</td>
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</table>

Cost Estimate Sorted by Sign Status

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<th>Cost per Sign Type</th>
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</tbody>
</table>

Proposed Total: $345
The Sign Plan Report

Pony Express National Historic Trail sign standards

General sign specifications
- Anodized aluminum backing, with engineering or high intensity grade reflective sheeting per road jurisdiction standards.
- White text and border on a brown background.
- Minimum 4" text height on all signs, font MP Rawson (serif) and Sans E 2000 (sans serif).
- Holes pre-drilled per installer instructions or drilled on site by installer.
- All signs typically manufactured by Utah Correctional Industries Sign Shop, although a local vendor may be selected under certain circumstances.

Individual sign types

Historic Site Name standard directional signs
- 36" width x a 48" height main panel.
- 1" white border on main panel.
- 21" height x a 10" height MUTCD arrows.
- 4" text height.
- 1.5" NH logo.
- 3 post mount typical.
- Site name may include 1, 2 or 3 lines of text.

Pony Express Historic Trail standard signs based on this model:
Sign Installation

Patee House Museum
Pony Express Headquarters
Pony Express National Historic Trail

Eagle Mountain
Equestrian Trailhead
Pony Express National Historic Trail

California Trail
Nevadat Park Historic Park

Point of Rocks
10 Miles
The Future of the Sign Plan

- Test compatibility w/ ArcGIS Pro
  - No report functionality on Pro

- Possibly find new python package
  - “Arcrest” is no longer being serviced
  - Move to ArcGIS API for python?

- Create an 11x17 inches parameter on tool window
Thank You...

Contact Information:
Sarah Rivera
GIS Specialist
Sarah_Rivera@nps.gov

Partner resource:
https://www.nps.gov/orgs/1453/how-to-create-your-sign-plan.htm