

A topographic map of a mountainous region, likely Glacier National Park, showing a red trail line with elevation markers. The map features contour lines, peaks, and water bodies. The text "2017 CDT Strip Maps" is prominently displayed in the center, with "from Map Series to Bookmark-Driven" below it. The trail line starts at the top left, goes down along a creek, then turns right and follows a ridge line with several peaks and valleys. The trail ends at the bottom right. The map includes labels for "Split Mountain", "Amphitheater Mountain", "Norris Mountain", "Triple Divide Peak", "Medicine Owl Lake", "Medicine Grizzly Lake", "Atlantic Creek", "North Fork Cut Bank Creek", and "GLACIER NATIONAL PARK". Elevation markers are placed along the trail line at various points: 910.5, 910, 909.5, 908.5, 908, 907.5, 907, 906.5, 906, 905.5, 905, 904.5, 904, 903.5, and 903. The map also shows contour lines at 200-foot intervals, with labels such as 6000, 6400, 6800, 7200, 7600, 8000, and 8400. The trail line is marked with yellow dots at each elevation point.

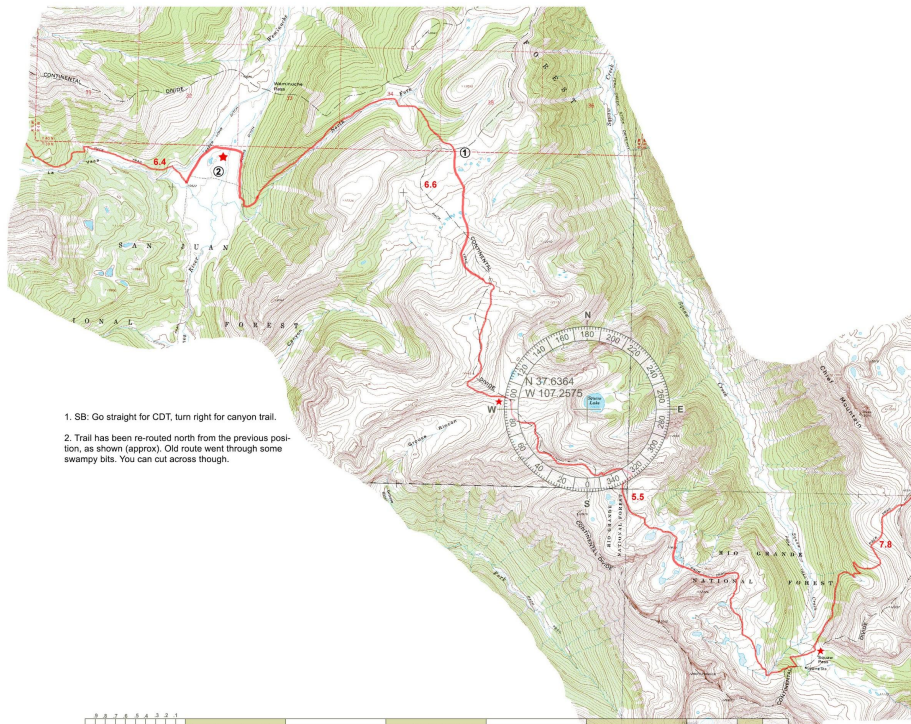
2017 CDT Strip Maps

from Map Series to Bookmark-Driven

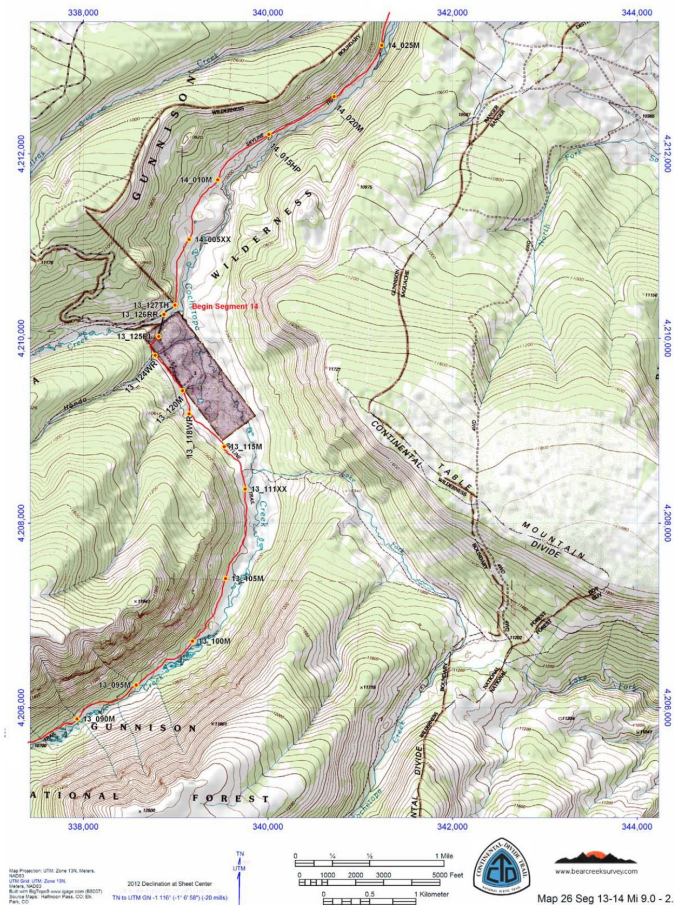
A topographic map of a section of Glacier National Park. The map features brown contour lines indicating elevation, with labels such as 6000, 6400, 6800, 7200, 7600, 8000, and 8400. A red line represents a trail, with several points marked by yellow dots and labeled with elevations: 910.5, 910, 909.5, 909, 908.5, 908, 907.5, 907, 906.5, 906, 905.5, 905, 904.5, 904, 903.5, and 903. The trail starts near the top left, descends, then runs horizontally across the middle, and finally descends again towards the bottom right. Key geographical features include Split Mountain, Amphitheater Mountain, Norris Mountain, Triple Divide Peak, Medicine Owl Lake, Medicine Grizzly Lake, Atlantic Creek, Pacific Creek, and North Fork Cut Bank Creek. The text "GLACIER NATIONAL PARK" is visible in the center-right. The title "Why Create a Map Set at all?" is overlaid in large black font across the center of the map.

Why Create a Map Set at all?

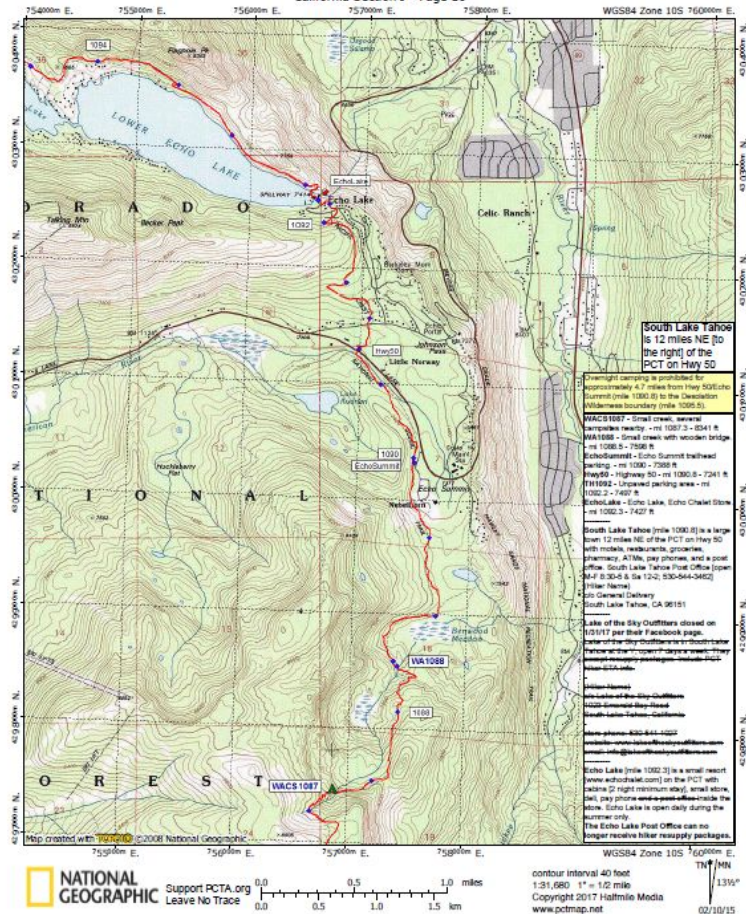
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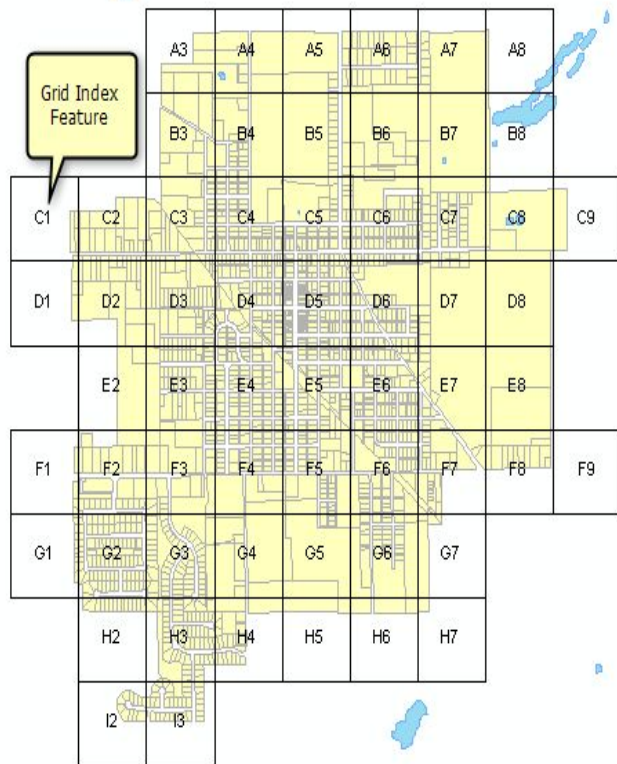
Jonathan Ley Maps - 2001 - Free
<http://www.phlumf.com/travels/cdt/>



Bear Creek Survey Maps - 2011 - Paid
<http://www.bearcreeksurvey.com/>



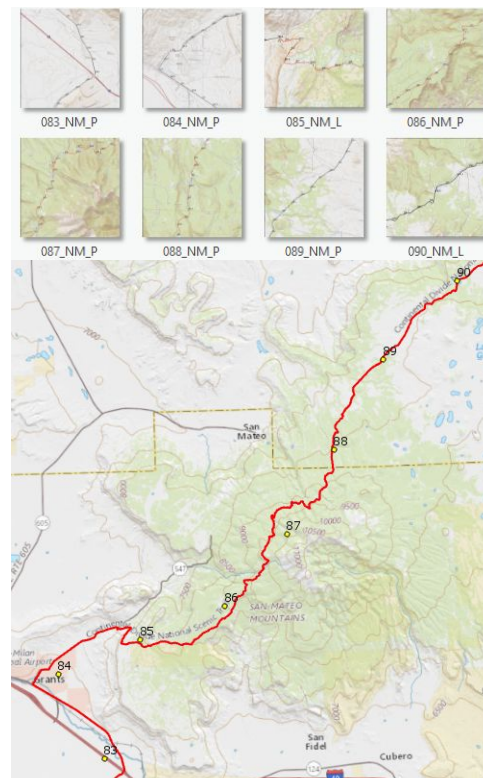
Map Series



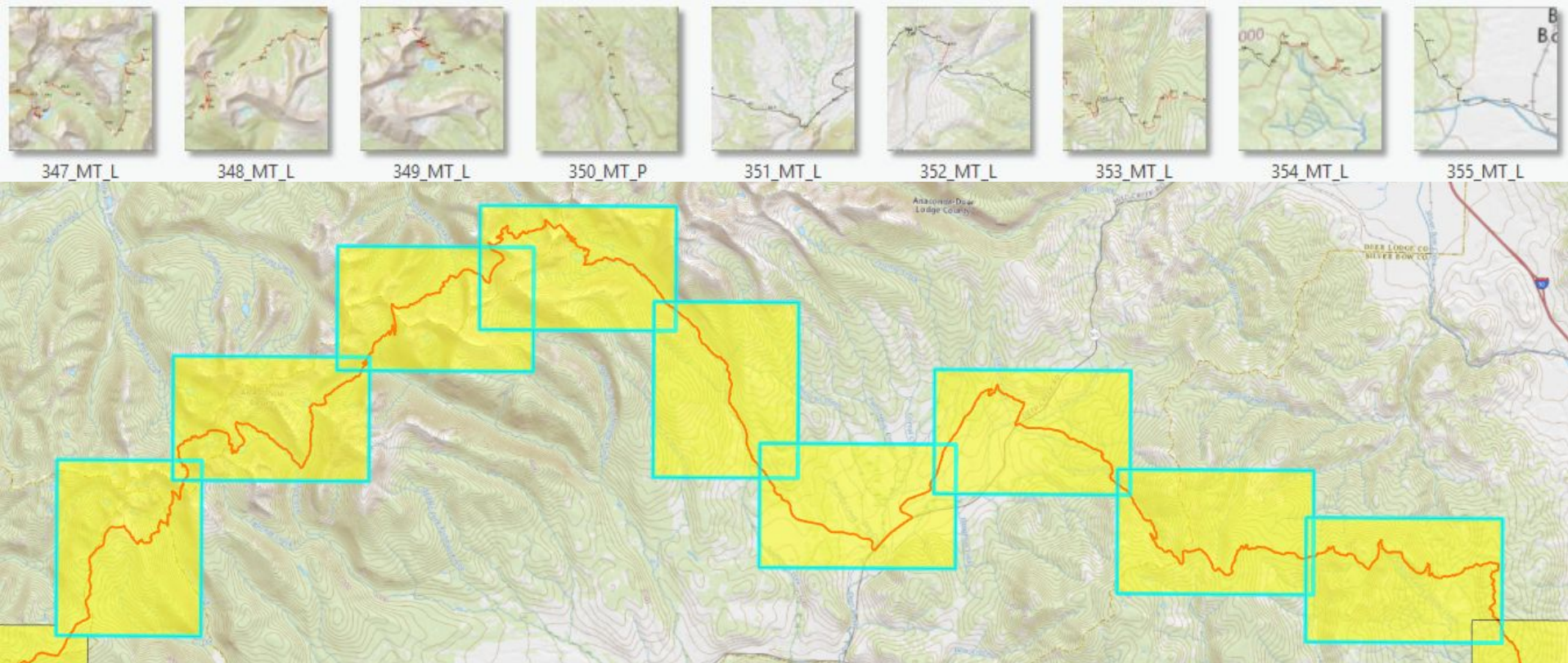
Index features generated spatially

vs.

Bookmark Driven



Index features generated from bookmarks



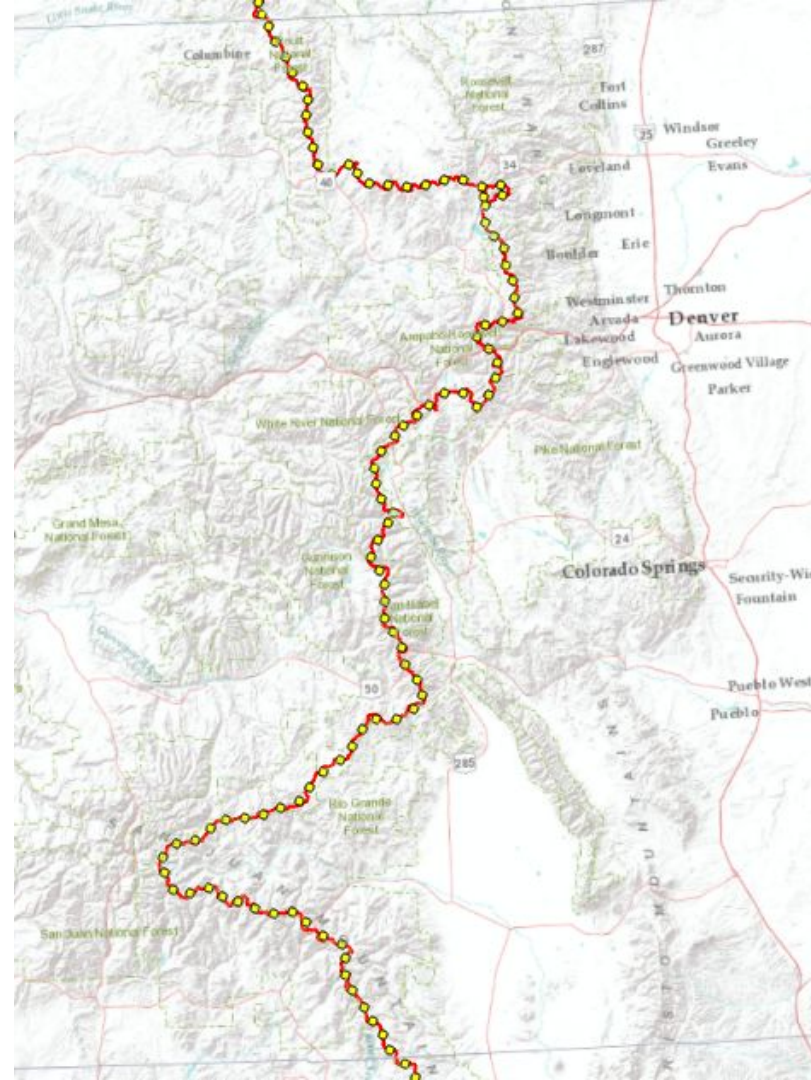
- Detailed control over map frame extents and overlap.
- Ability to export landscape and portrait layouts while preserving scale.
- Ability to easily update frames and index shapes for trail reroutes.

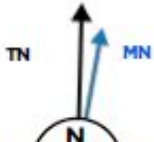
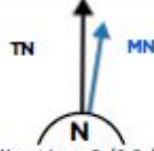
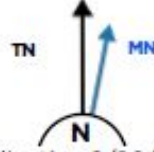
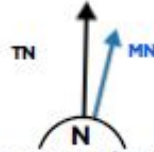
Centroids from Bookmarks

Point layer from spatial center of each bookmarked layout.

Used to store information for dynamic layout changes, can be employed as index layer in ArcGIS Pro Map Series.

```
bkmks = mf.map.listBookmarks()
for bkmk in bkmks:
    mf.zoomToBookmark(bkmk)
    ext = mf.camera.getExtent()
    cnt = ext.polygon.centroid
    cntpt = arcpy.PointGeometry(cnt)
    arcpy.Append_management(cntpt, shp, 'NO TEST')
```



 <p>Declination 9/20/2017 TN to MN: 8.877° Annual Drift: -0.097°</p>	NEW MEXICO	
 <p>Declination 9/20/2017 TN to MN: 8.723° Annual Drift: -0.104°</p>	COLORADO	
 <p>Declination 9/20/2017 TN to MN: 11.541° Annual Drift: -0.114°</p>	WYOMING	
 <p>Declination 9/20/2017 TN to MN: 12.742° Annual Drift: -0.121°</p>	MONTANA-IDAHO	
	Section 16	449.0-458.0

Magnetic declination and customized page information

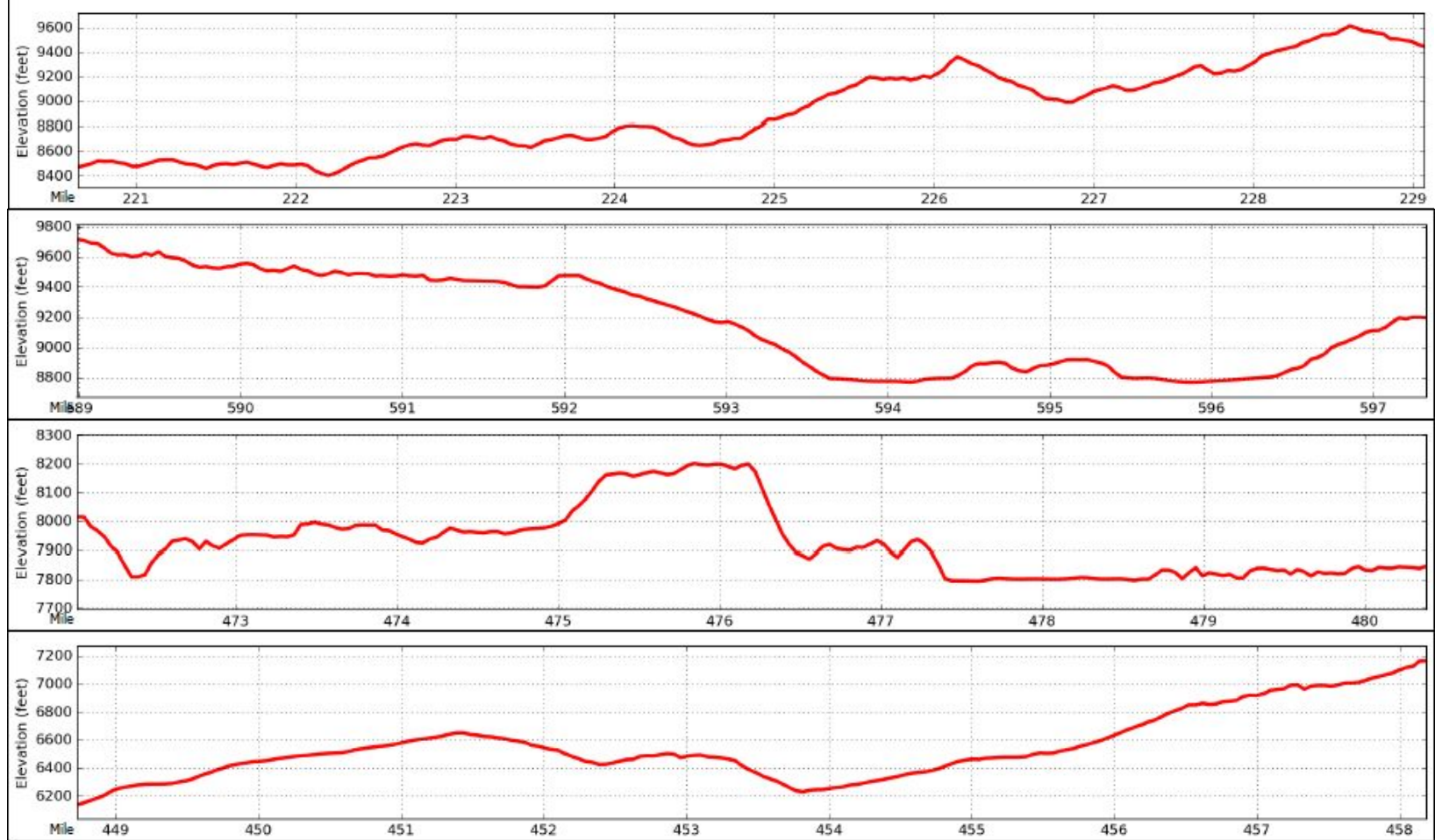
Extents from Bookmarks

Polygon layer with spatial extent for each bookmarked layout.

Used to clip trail line for elevation profile charts, can be used as a reference layer for exporting maps in an interactive web interface.

```
bkmarks = mf.map.listBookmarks()
for bkmark in bkmarks:
    mf.zoomToBookmark(bkmark)
    ext = mf.camera.getExtent()
    poly = ext.polygon
    arcpy.Append_management(poly, shp, 'NO TEST')
```





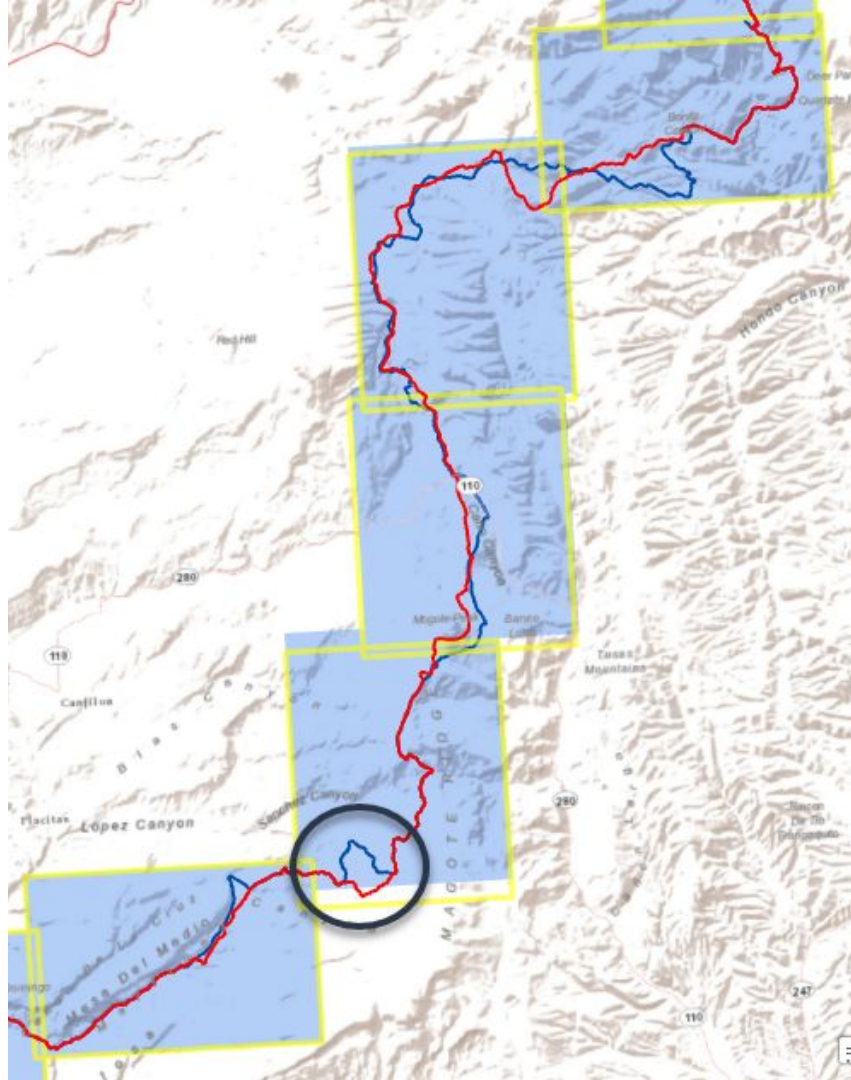
Elevation Profile Charts - clipped to map frame extents

Bookmark Frame Updates

Updates geometry information of centroid and extent shapefiles using SHAPE@ token.

Bookmarks can be themselves updated to represent extent changes.

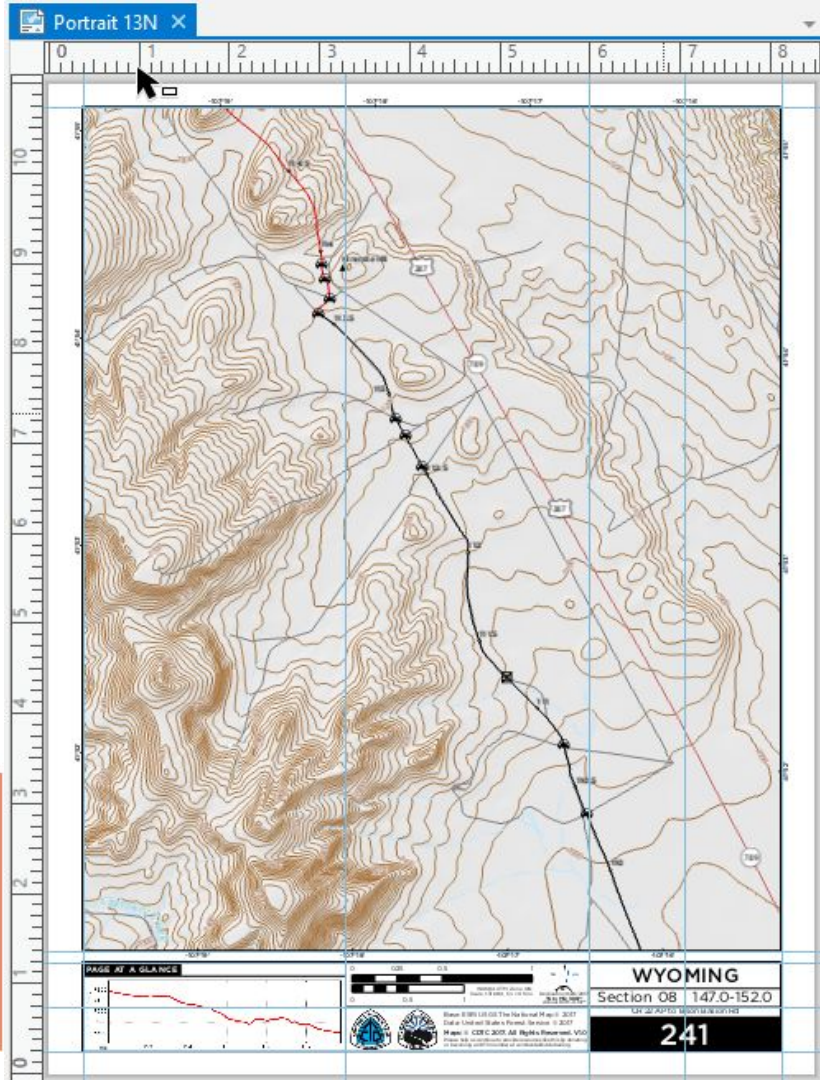
```
bkmks = mf.map.listBookmarks()
for bkmk in bkmks:
    if bkmk.name[7:] == 'Pn':
        mf.zoomToBookmark(bkmk)
        ext = mf.camera.getExtent()
        poly = ext.polygon
        cent = ext.polygon.centroid
        centpt = arcpy.PointGeometry(cent)
        print(bkmk.name)
        with arcpy.da.UpdateCursor(polyOut, ["PLATEID_c", "SHAPE@"]) as cursor:
            for row in cursor:
                if row[0] == bkmk.name[0:3]:
                    row[1] = poly
                    cursor.updateRow(row)
        with arcpy.da.UpdateCursor(centOut, ["PLATEID_c", "SHAPE@"]) as cursor:
            for row in cursor:
                if row[0] == bkmk.name[0:3]:
                    row[1] = centpt
                    cursor.updateRow(row)
```



Dynamic Export

Exports 4 map layouts - Landscape and Portrait at 2 UTM projections - to georeferenced PDFs.

```
# coding: utf-8
import arcpy, os
aprx = arcpy.mp.ArcGISProject("CURRENT")
path = r'C:\Users\Lenovo\Dropbox\CDT_SOTT\GIS\Maps\CDT Strip Maps\PDF_Exports\Test'
lyt = aprx.listLayouts("Landscape 12N")[0]
mf = lyt.listElements('MAPFRAME_ELEMENT')[0]
plate = lyt.listElements('TEXT_ELEMENT', "Map Number")[0]
state = lyt.listElements('TEXT_ELEMENT', "State")[0]
secNum = lyt.listElements('TEXT_ELEMENT', "Section Number")[0]
secDesc = lyt.listElements('TEXT_ELEMENT', "Section Description")[0]
mile = lyt.listElements('TEXT_ELEMENT', "Miles")[0]
map12N = aprx.listMaps("Strip Maps 12N")[0]
indexLyr = map12N.listLayers("ExtentCentroids_12N")[0]
rows = arcpy.SearchCursor(indexLyr.dataSource)
row = rows.next()
bkmks = mf.map.listBookmarks()
for bkmk in bkmks:
    mf.zoomToBookmark(bkmk)
    if bkmk.name[7] == "L":
        plate.text = row.getValue("PLATEID_c")
        state.text = row.getValue("State")
        secNum.text = "Section " + row.getValue("Section")
        secDesc.text = row.getValue("DESC")
        mile.text = str(row.getValue("Min_Mile")) + "-" + str(row.getValue("Max_Mile"))
        lyt.exportToPDF(os.path.join(path, bkmk.name + ".pdf"))
        row = rows.next()
    else:
        row = rows.next()
```



CDT-specific point data

Automated lat-long grid

Crowd-sourced
water information

½ Mile Markers

Wilderness/
National Park
special status
warning

2014 USGS
Topo vectorized
base layer

State, section
number and miles
covered
Map number

Elevation profile chart

Credits

Magnetic declination

