Danish User Conference 2017

Introduction to Spatial Functions in ProjectWise Design Integration

Graham Hirst – ProjectWise Specialist
Bentley Systems

Bentley Advancing Infrastructure

ProjectWise Spatial Options

- Standard functionality in ProjectWise and gives spatial context to documents, folders and projects stored in ProjectWise
- ProjectWise Geospatial brings more advanced geospatial options to ProjectWise
- For your data to be consistent, it is essential that you know the coordinate system of the DGN file you'll be using as map background. This is not something that can be "guessed" or determined through trial and error – it is information that needs to be known precisely. People dealing with spatial data must know the coordinate system used in their projects, files, data, etc.

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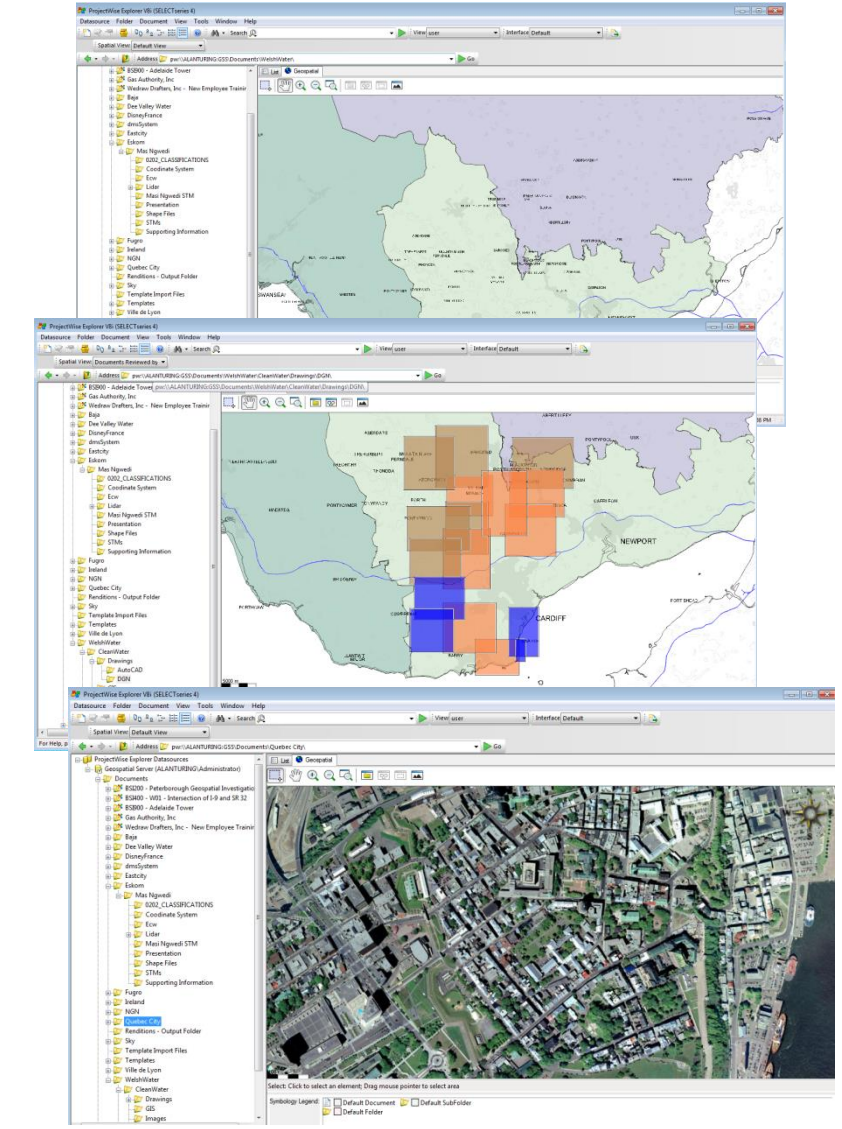
What is ProjectWise Spatial?

- A technology that adds spatial context to a managed environment
  - Spatial indexing
  - Query and locate
  - Spatial display
  - Maps created from one or more CAD files and are static and have a fixed resolution
  - Included with PW Design Integration
  - Supported on premise or hosted
- Originally derived from ProjectWise Geospatial Extension XM Edition
- Requires no extra servers or services.



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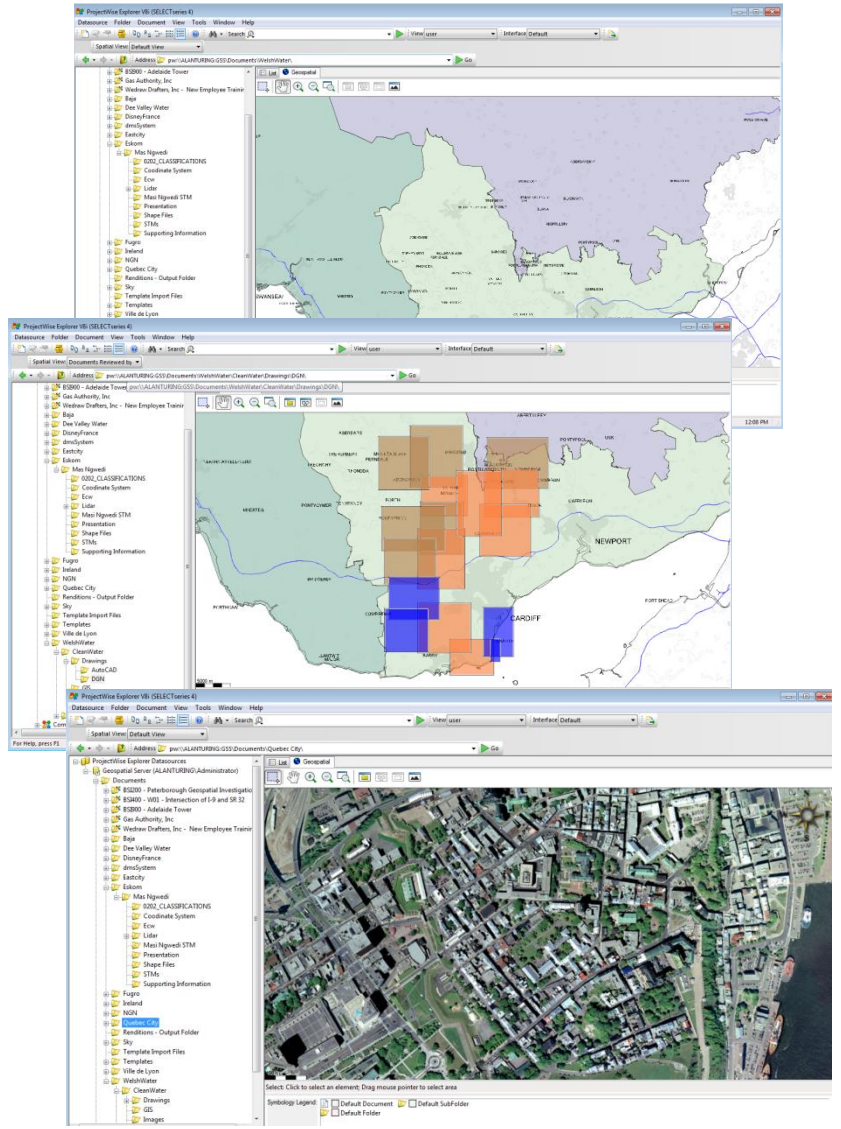
What is PW GeoSpatial?

- A technology that adds spatial context to a managed environment …
  - Spatial indexing
  - Query and locate
  - Spatial display
  - ESRI ArcMAP integration
  - Spatial location by attributes
  - Map can include
  - CAD files
  - Oracle Spatial Layers
  - Raster Imagery
  - ArcGIS data
  - WMS layers
  - Maps are generally dynamic (i.e. automatically update when the source is changed)
- PWCE requires GWP Ss5 (full version as no GWP Light no longer included)
  - Not available in hosted environment, on premise only



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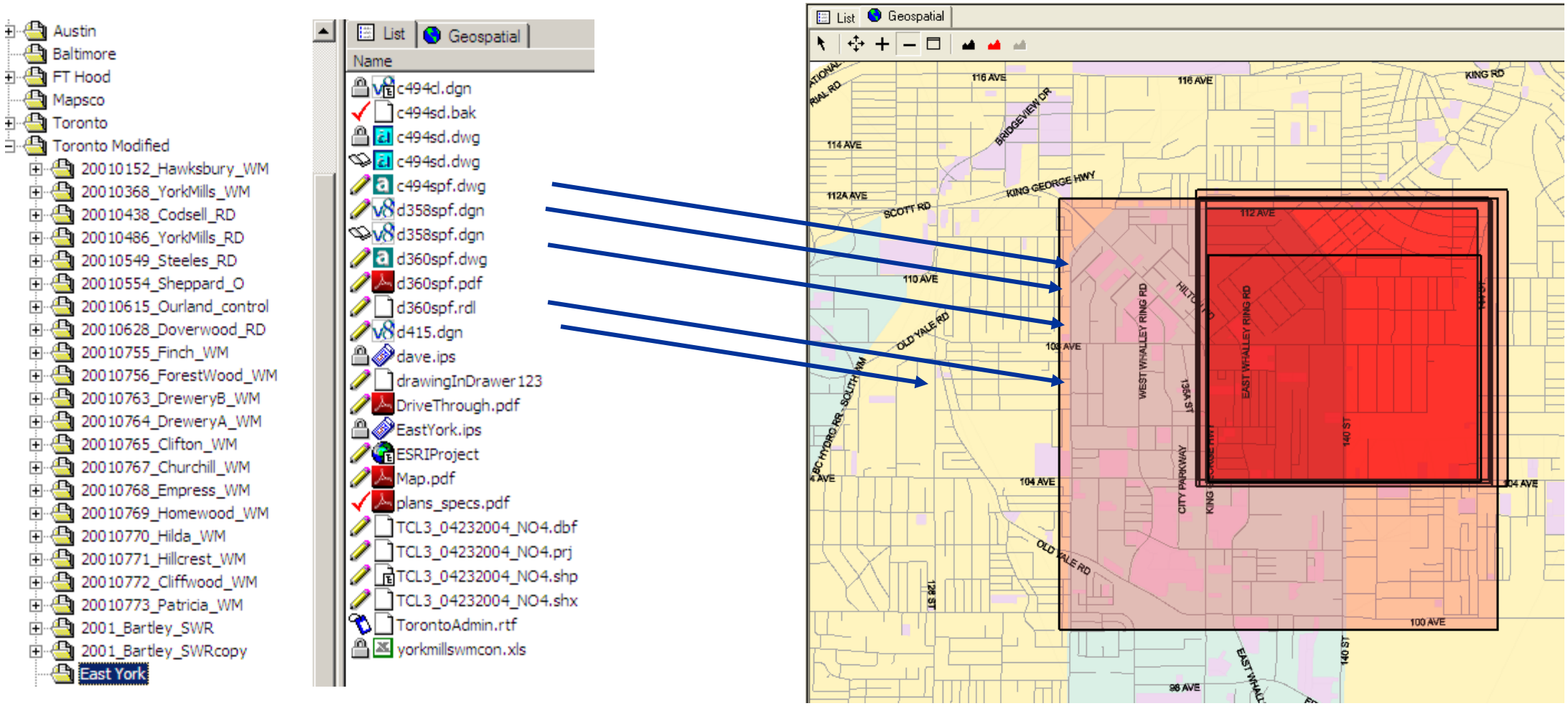
A geospatial extension to managing data



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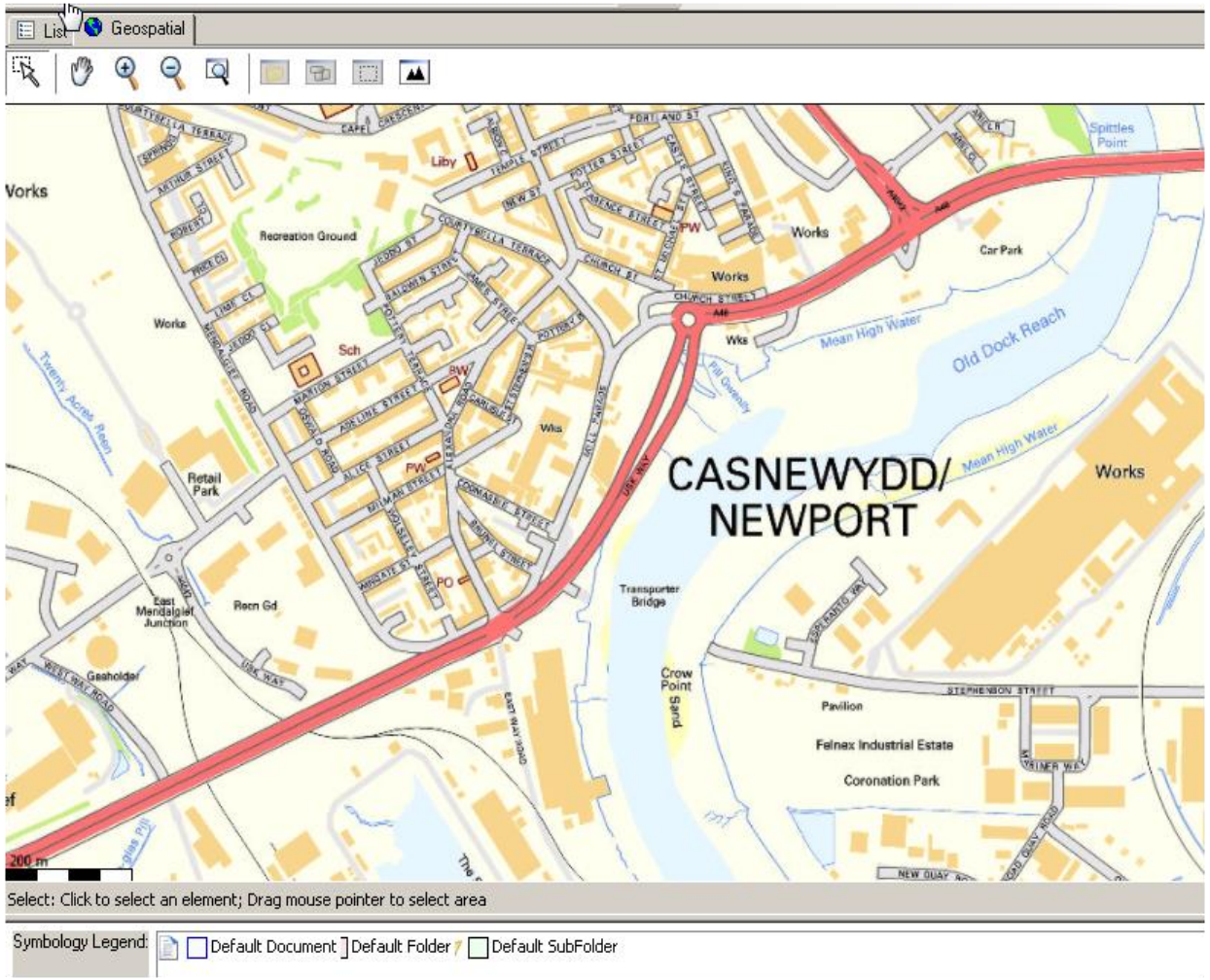
Scaleable Background Maps



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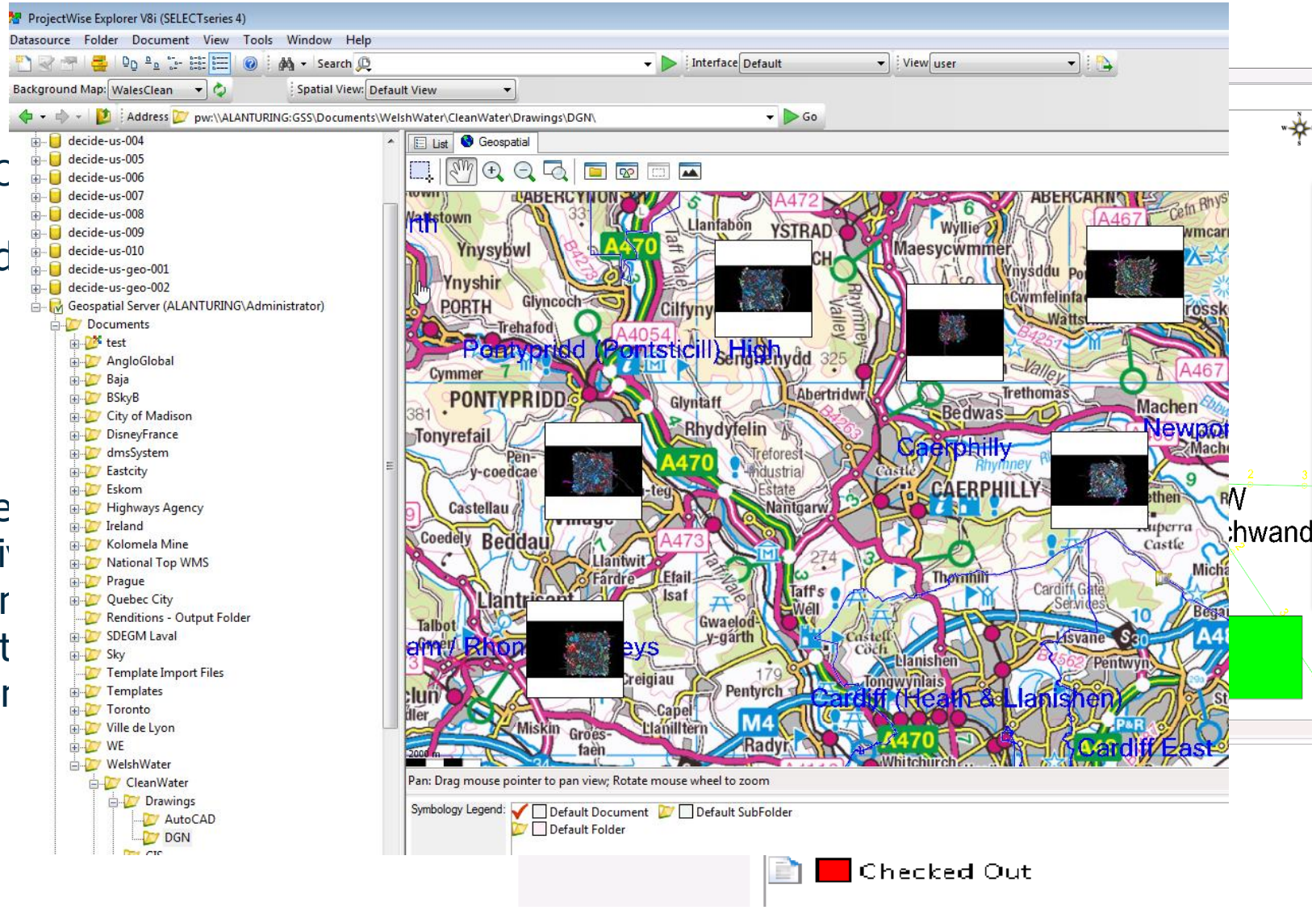
Spatial Display Options

Thumbnails:

Shaded
Regions C
Interest
Centroid

Me
dri
syr
wit
cor



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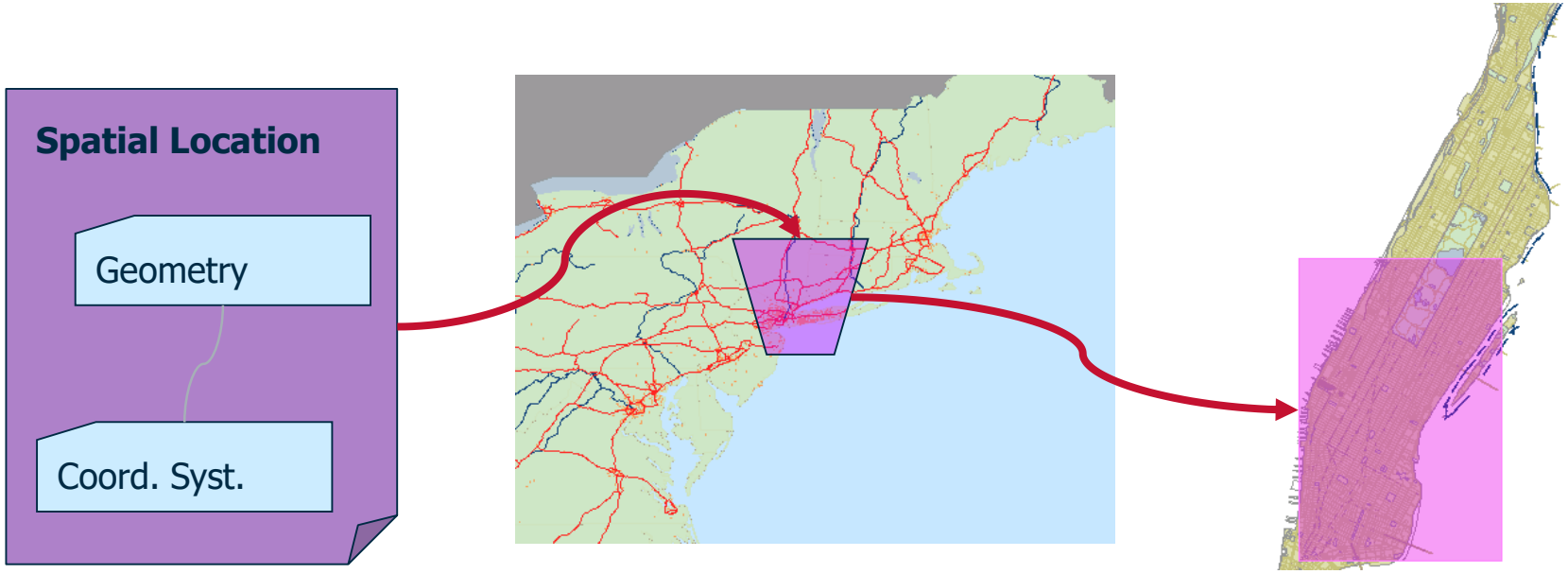
Spatial Location

- A location is a combination of a geometry and a coordinate system
- Spatial locations can be displayed over multiple backdrops



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Document/Project Extent Indexing

- A spatial location may be:
  - manually defined
  - inherited from the parent folder
  - scanned from the files (auto extract and batch)
  - imported from an external file
  - calculated (for a folder and files)
  - inferred from an attribute value*
- It can be a gradual process (as with any other meta data)

*denotes PW GeoSpatial functionality

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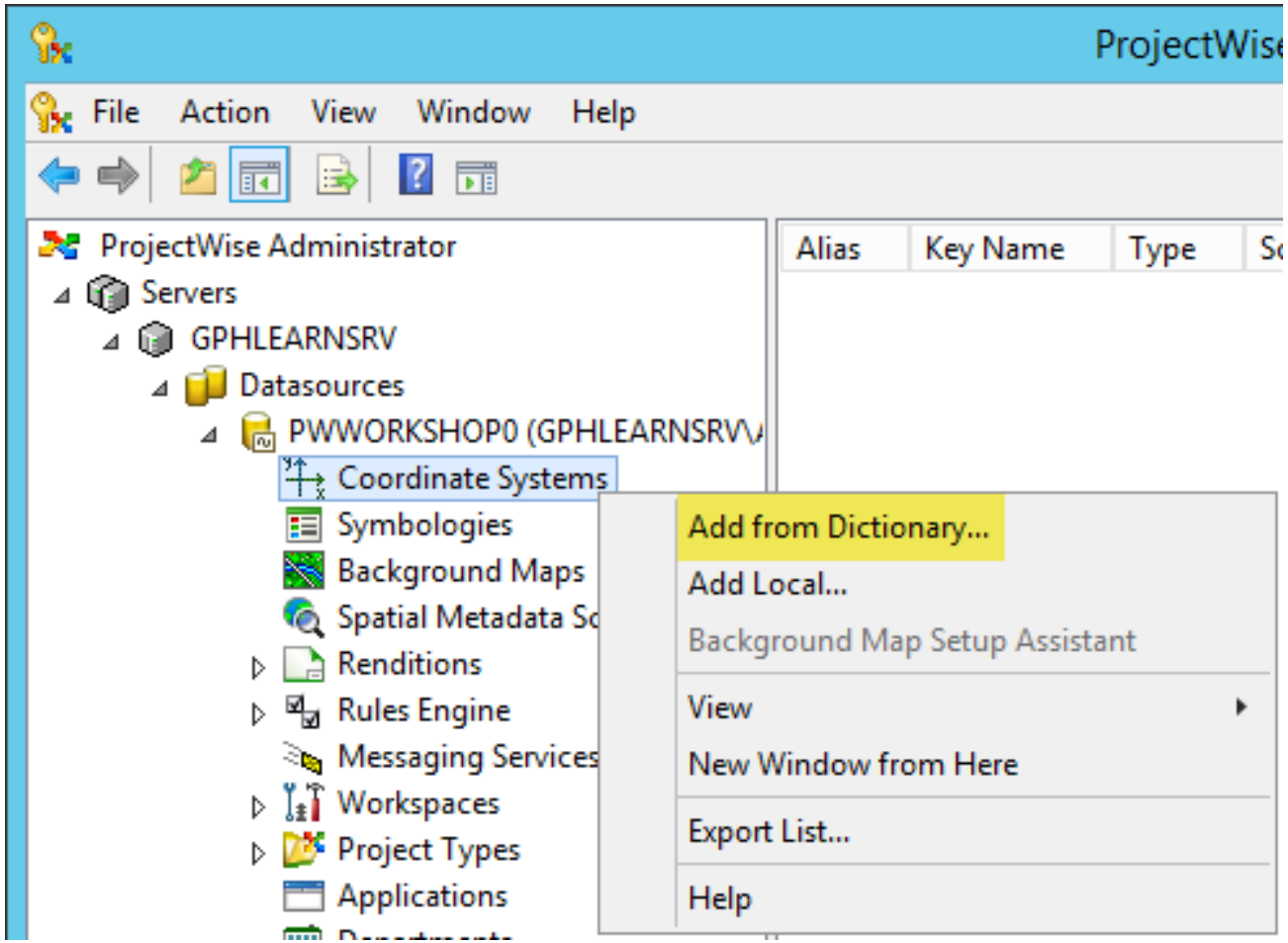
Setting up ProjectWise Spatial - Overview

- Adding Coordinate System
  - Add Background Maps or DPRs to ProjectWise
  - Add Coordinate System from Dictionary
- Creating Background Maps
  - Static CAD Layers
  - Multiple CAD Layers
- Assign Spatial Location
  - Drawing a Spatial Location manually
  - Using “Auto-scan for CAD files” feature
  - Using Spatial Location Scan tool
  - Using “Extraction” function
  - Using “Calculate” function

Setting up ProjectWise Spatial – Add Coordinate System



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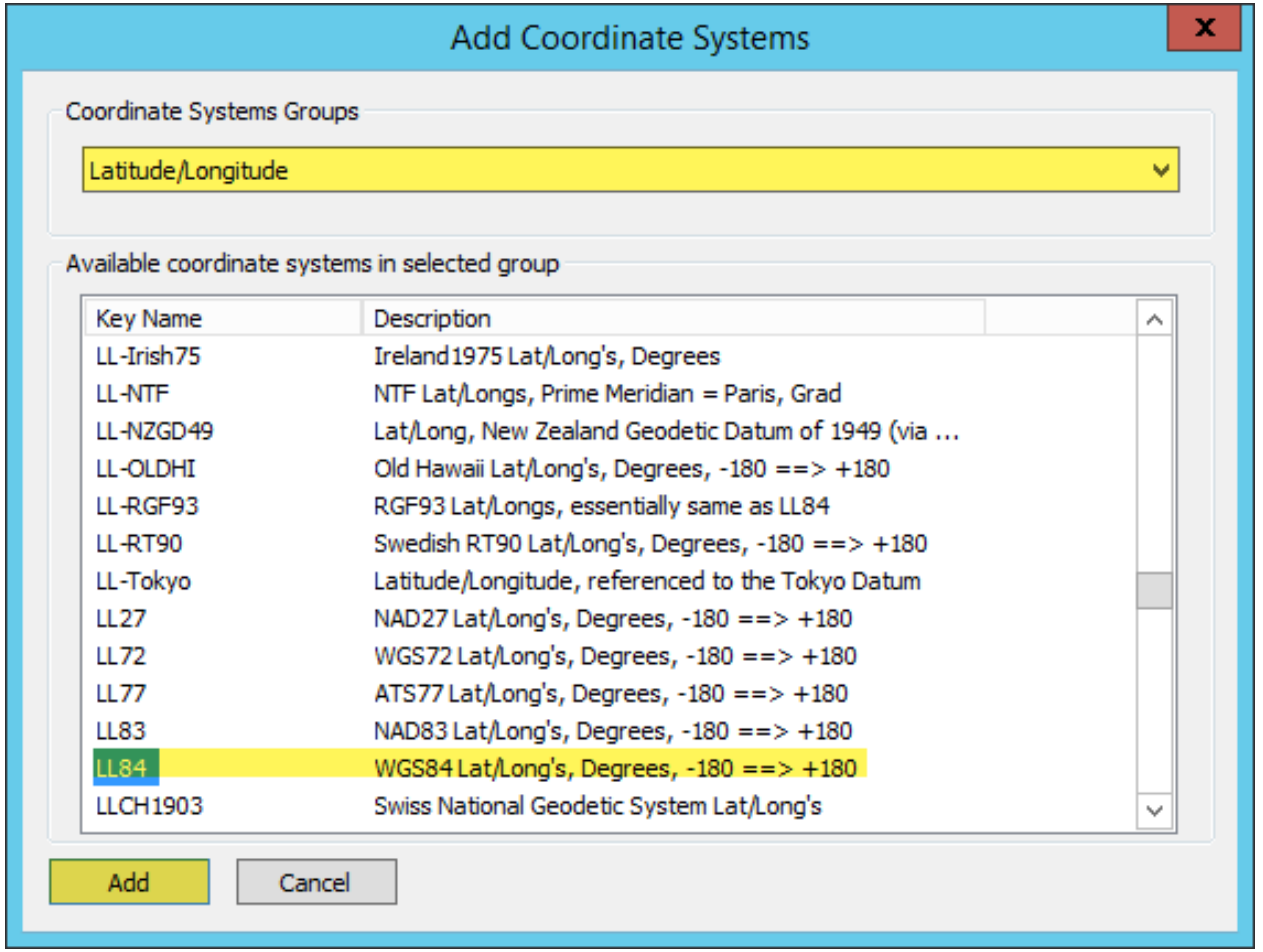
Setting up ProjectWise Spatial – Add Coordinate System



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Setting up ProjectWise Spatial – Add Coordinate System

Alias	Key Name	Type	Scan Action	Replace By	Status
LL84	LL84	From Dictionary	Ask		OK
UTM83-17	UTM83-17	From Dictionary	Ask		OK
UTM83-18	UTM83-18	From Dictionary	Ask		OK

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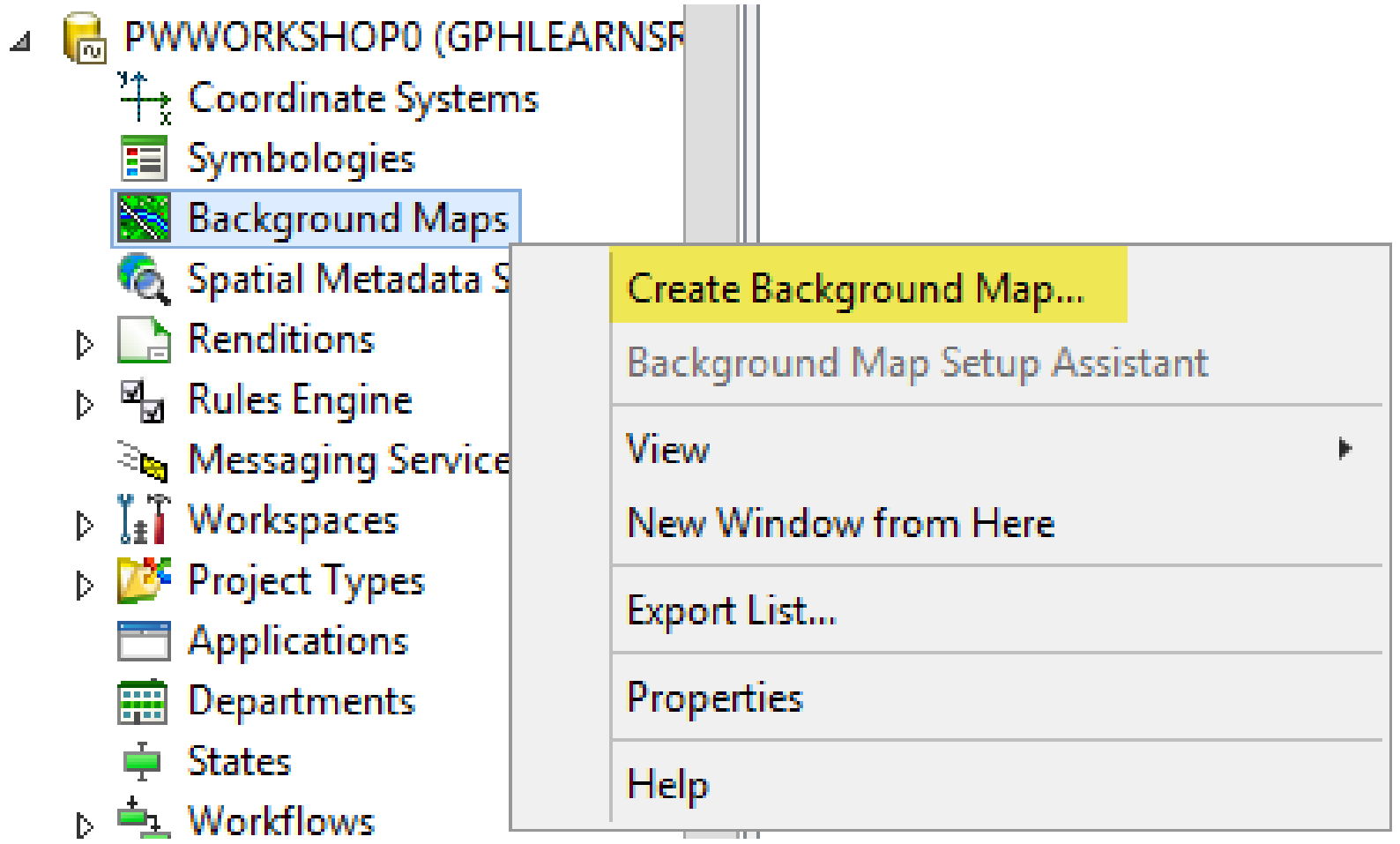
Setting up ProjectWise Spatial – Create Background Maps



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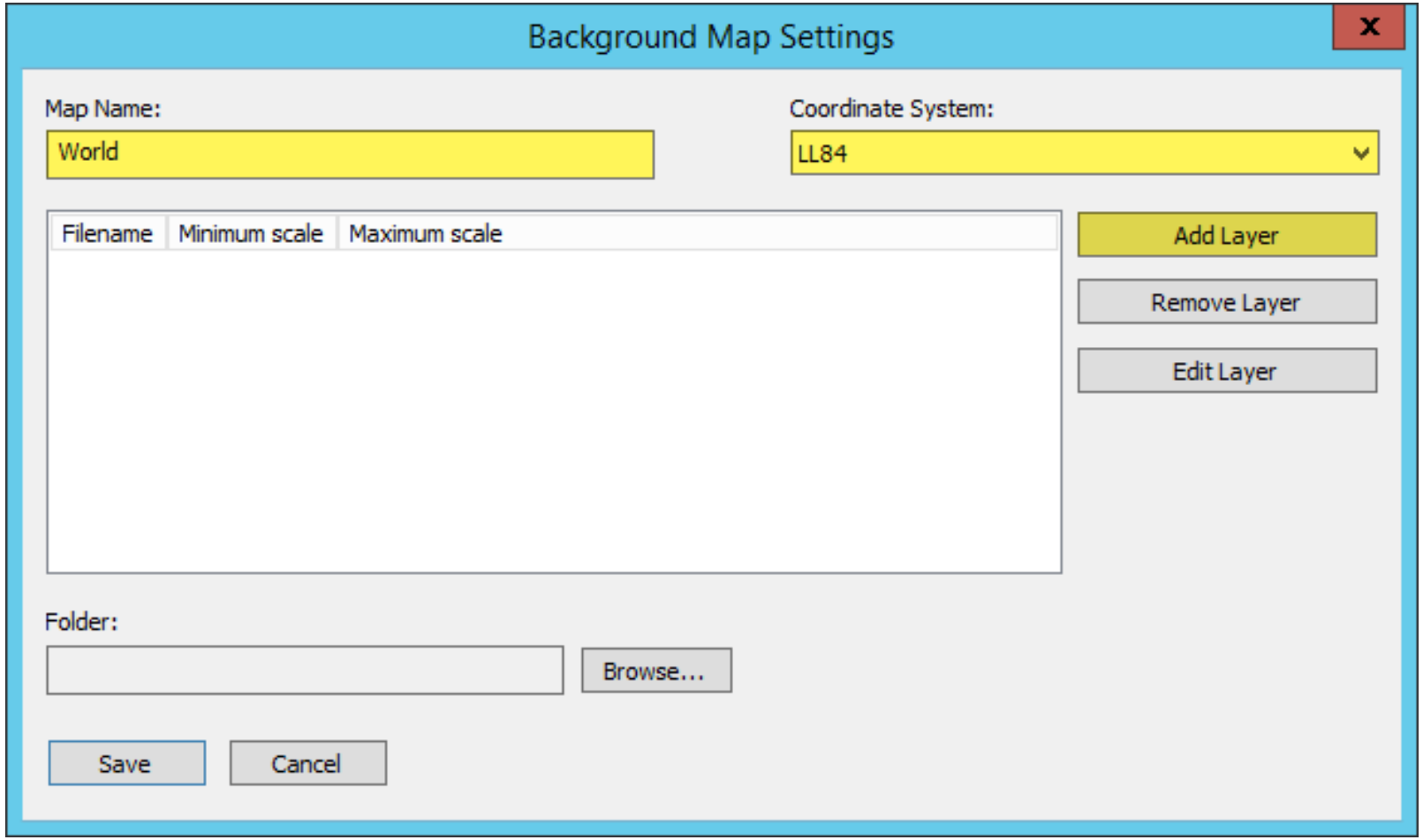
Setting up ProjectWise Spatial – Create Background Maps



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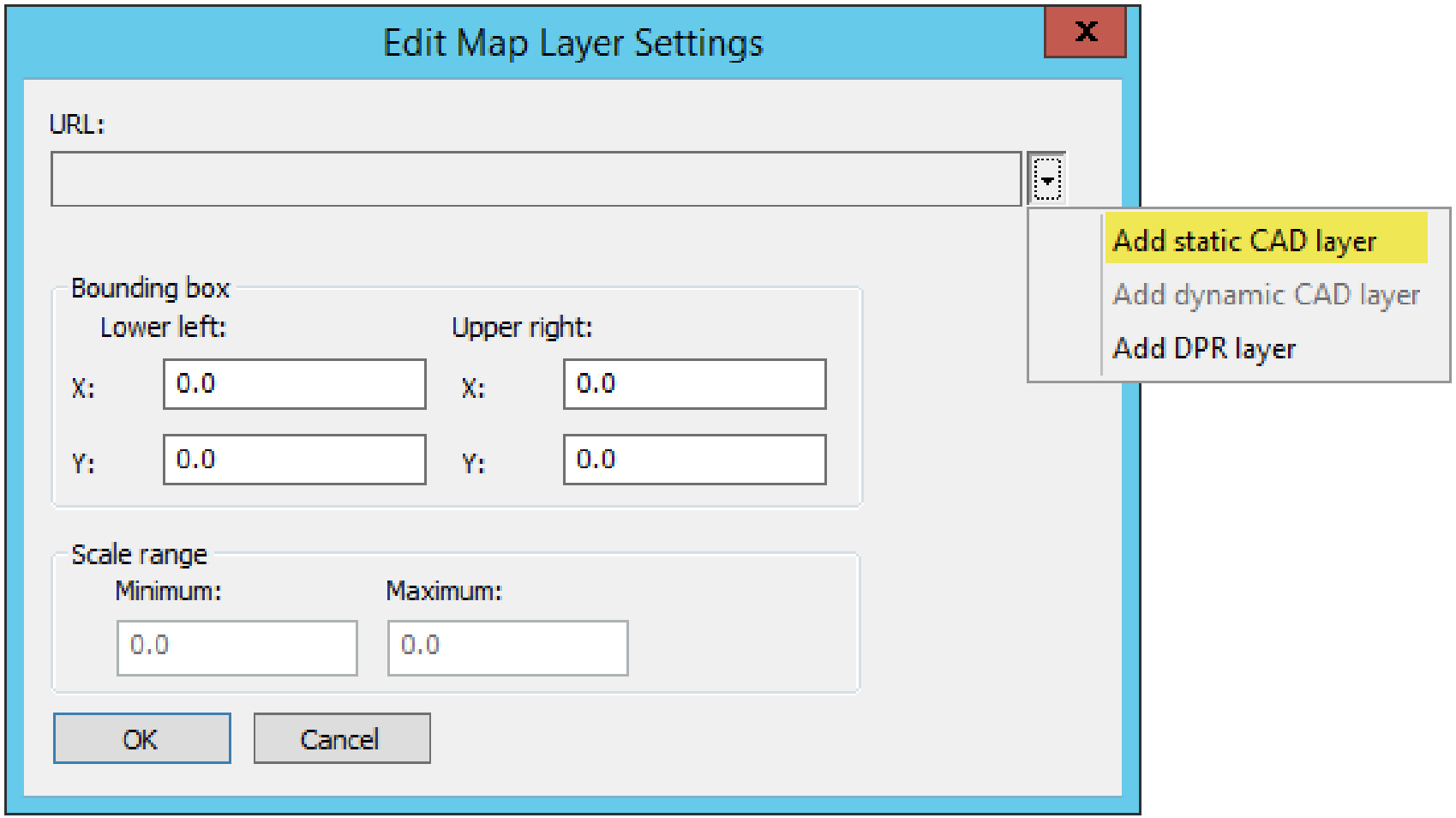

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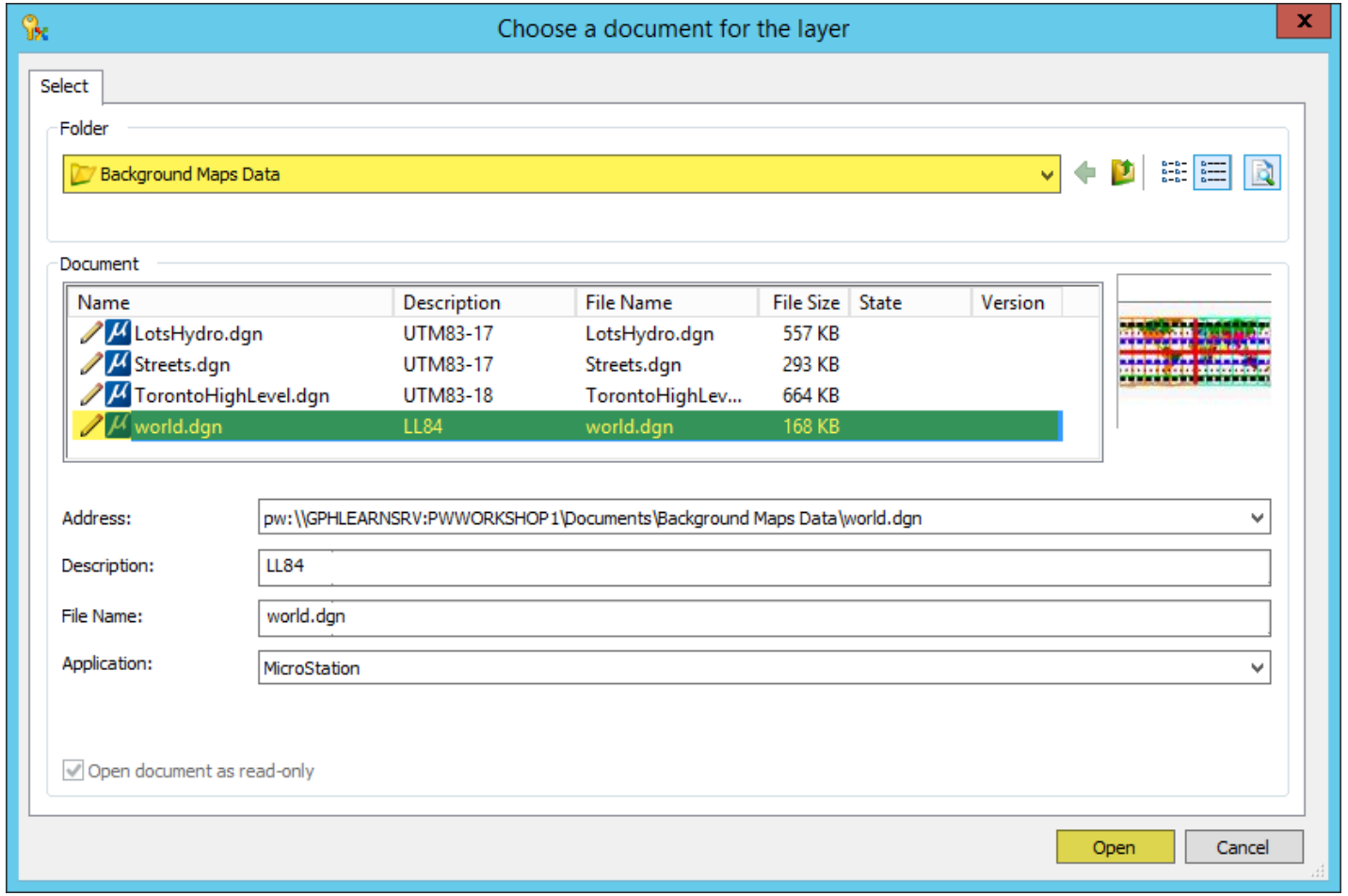
Setting up ProjectWise Spatial – Create Background Maps



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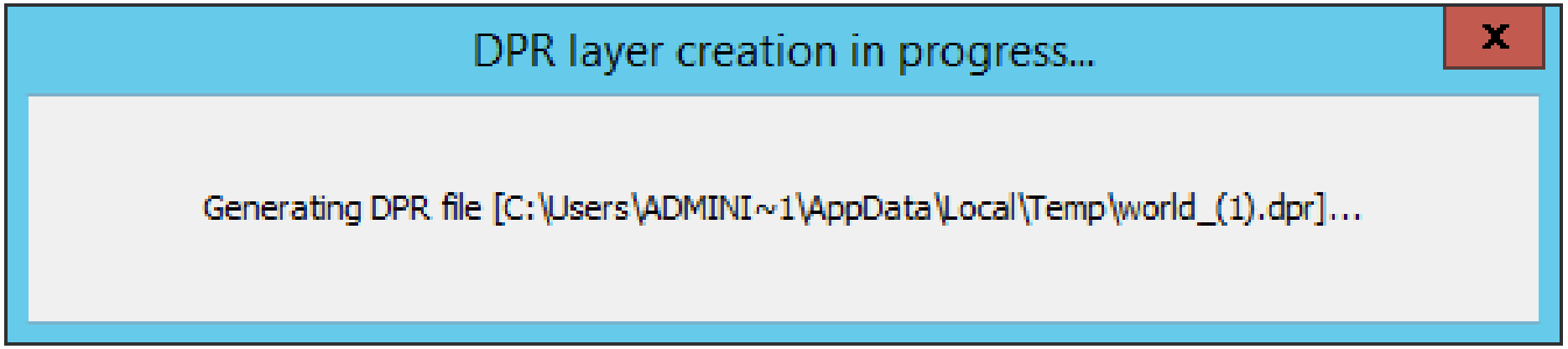
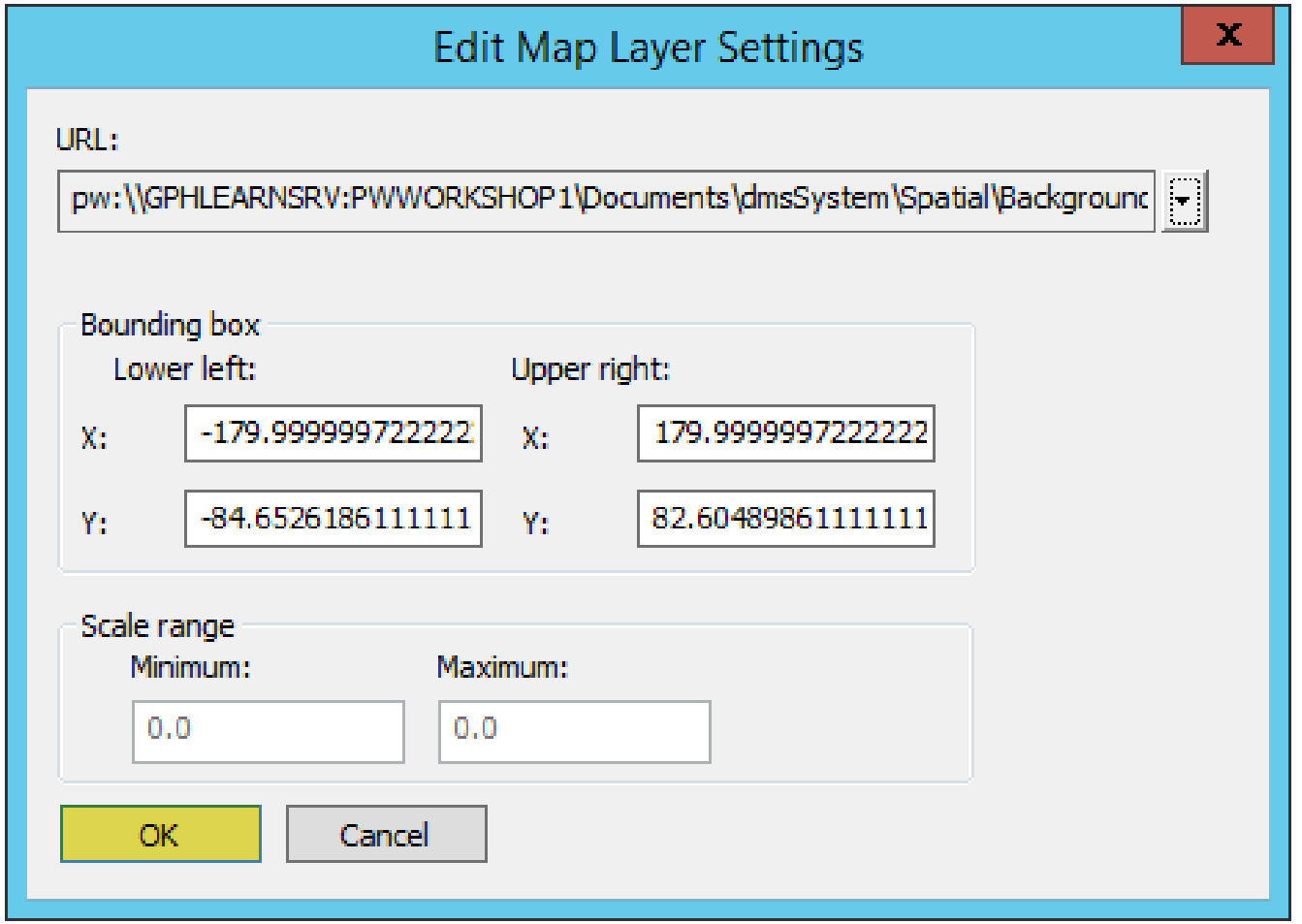


Setting up ProjectWise Spatial – Create Background Maps



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Setting up ProjectWise Spatial – Create Background Maps

- Settings File

```
<?xml version="1.0"?>
- <MapDefinition version="08.11">
  - <Maps>
    - <Map DGNGUID="968f9ea3-9b13-4fcc-82c1-d9d3ebe079c2" DPRGUID="14810f6c-7fbd-41c9-8f6d-c3cadfe9f34d">
        <BoundingBox YMax="82.6048986111111" XMax="179.999999722222" YMin="-84.6526186111111" XMin="-179.999999722222"/>
      </Map>
    </Maps>
    <CoordSys GUID="72c61791-dd3a-4765-8623-b1ec90586ca6"/>
</MapDefinition>
```


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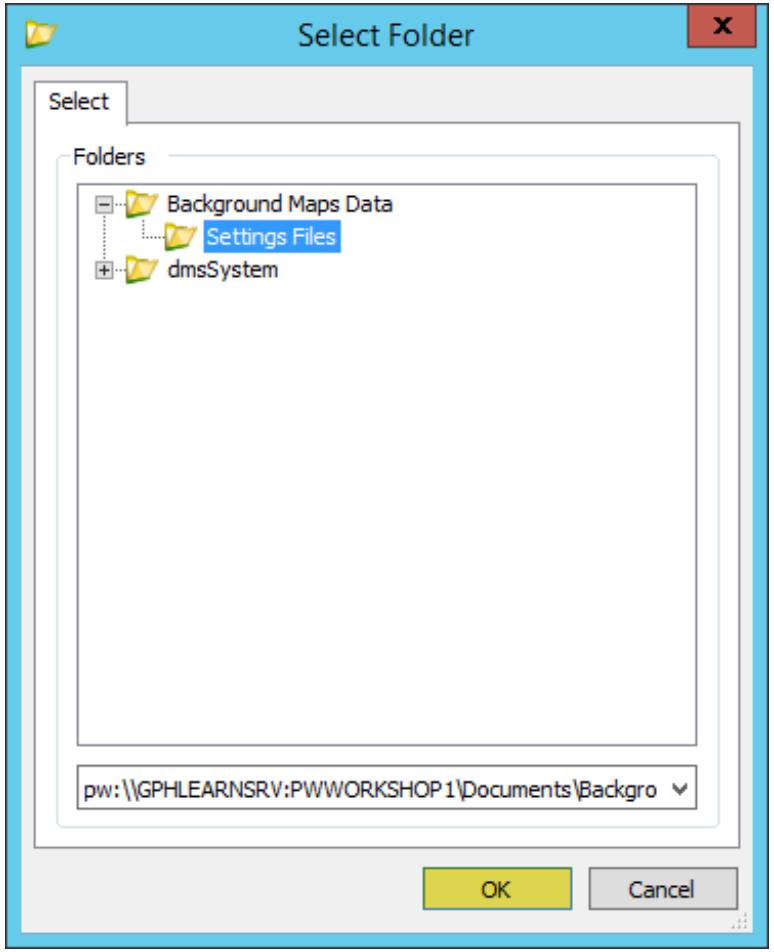
Setting up ProjectWise Spatial – Create Background Maps



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Setting up ProjectWise Spatial – Create Background Maps

Map name	Map Settings file
World	pw:\\GPHLEARNSRV:PWWORKSHOP1\Documents\Background Maps Data\Settings Files\World
Toronto	pw:\\GPHLEARNSRV:PWWORKSHOP1\Documents\Background Maps Data\Settings Files\Toronto

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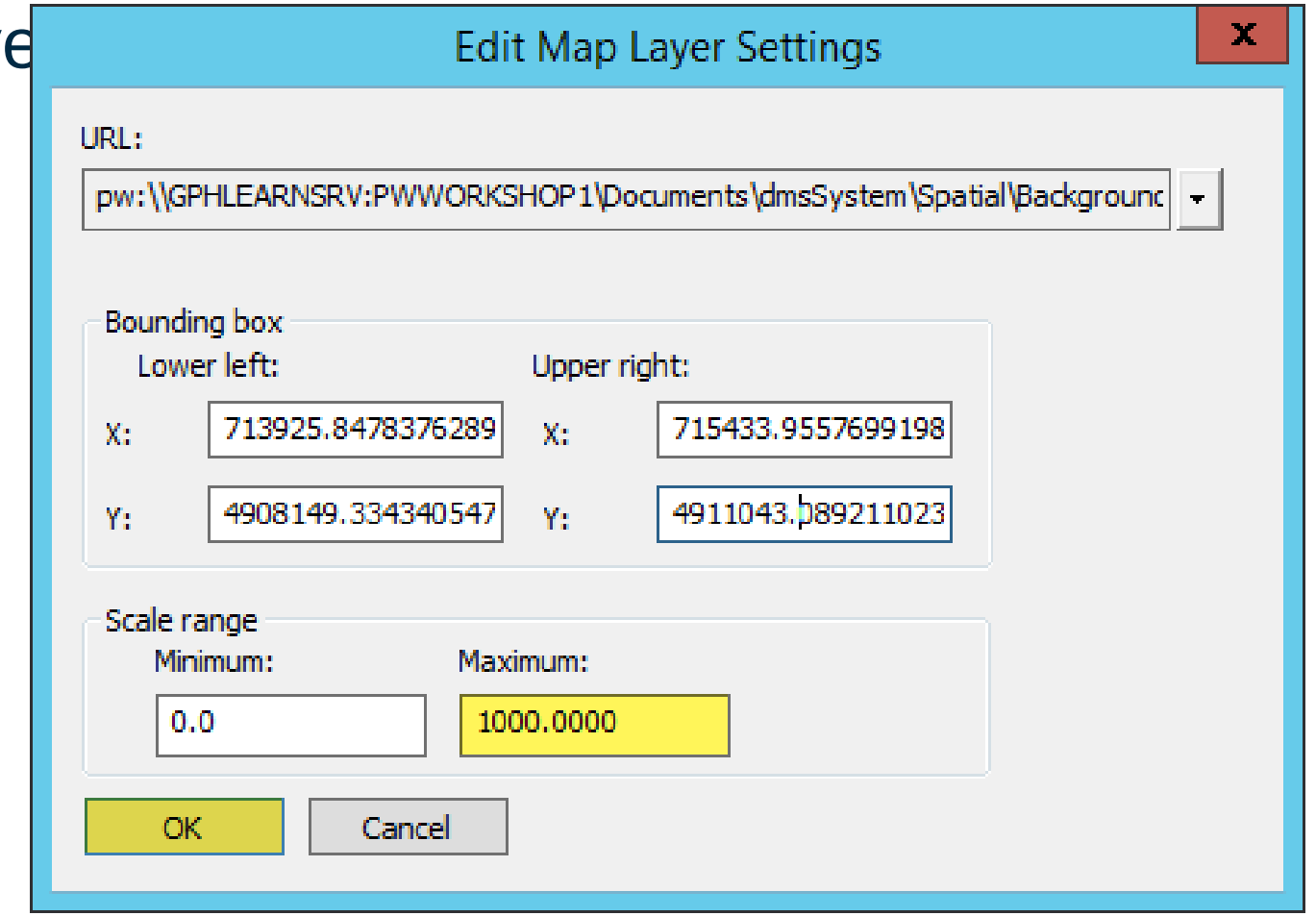
Setting up ProjectWise Spatial – Create Background Maps

- Adding a laye



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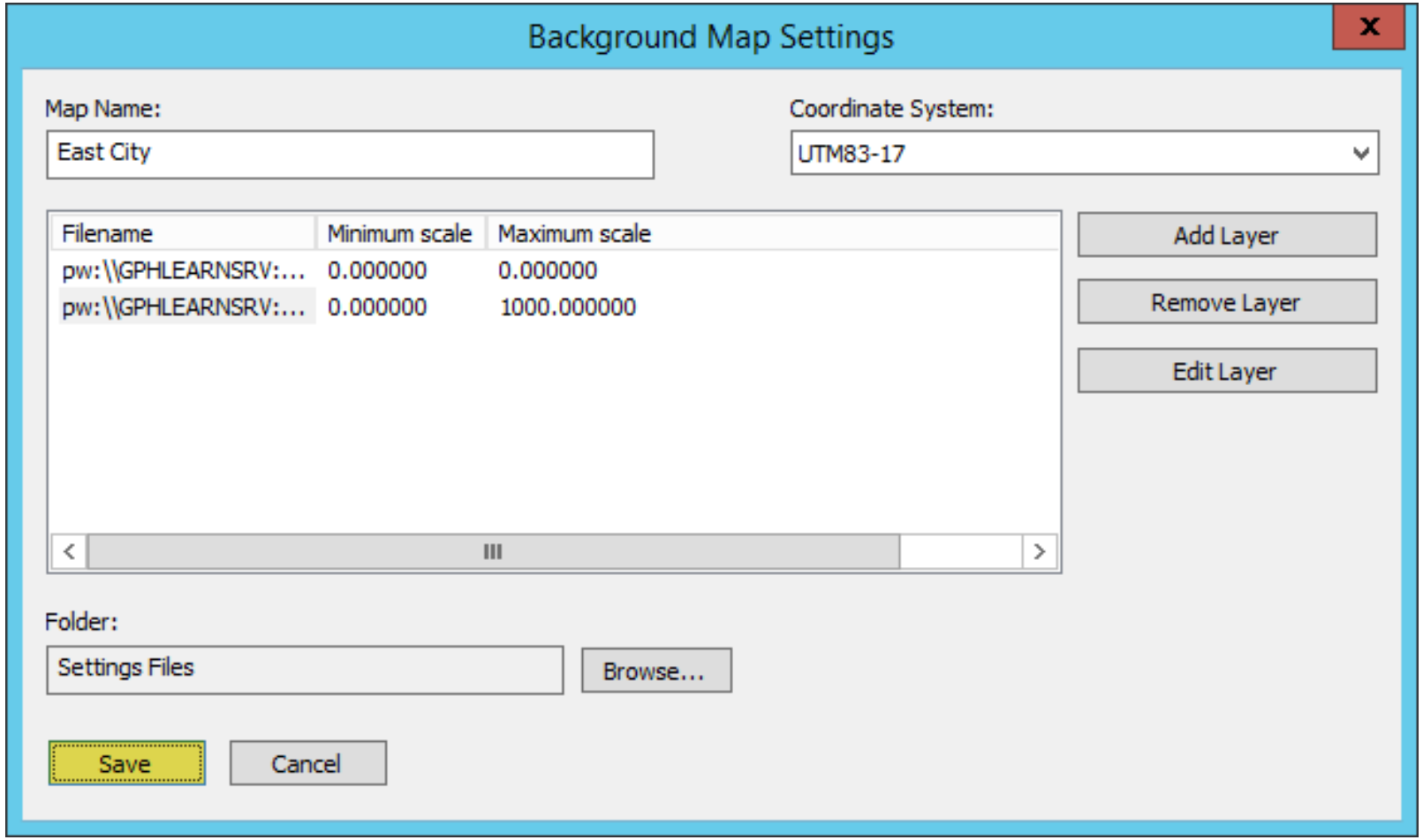

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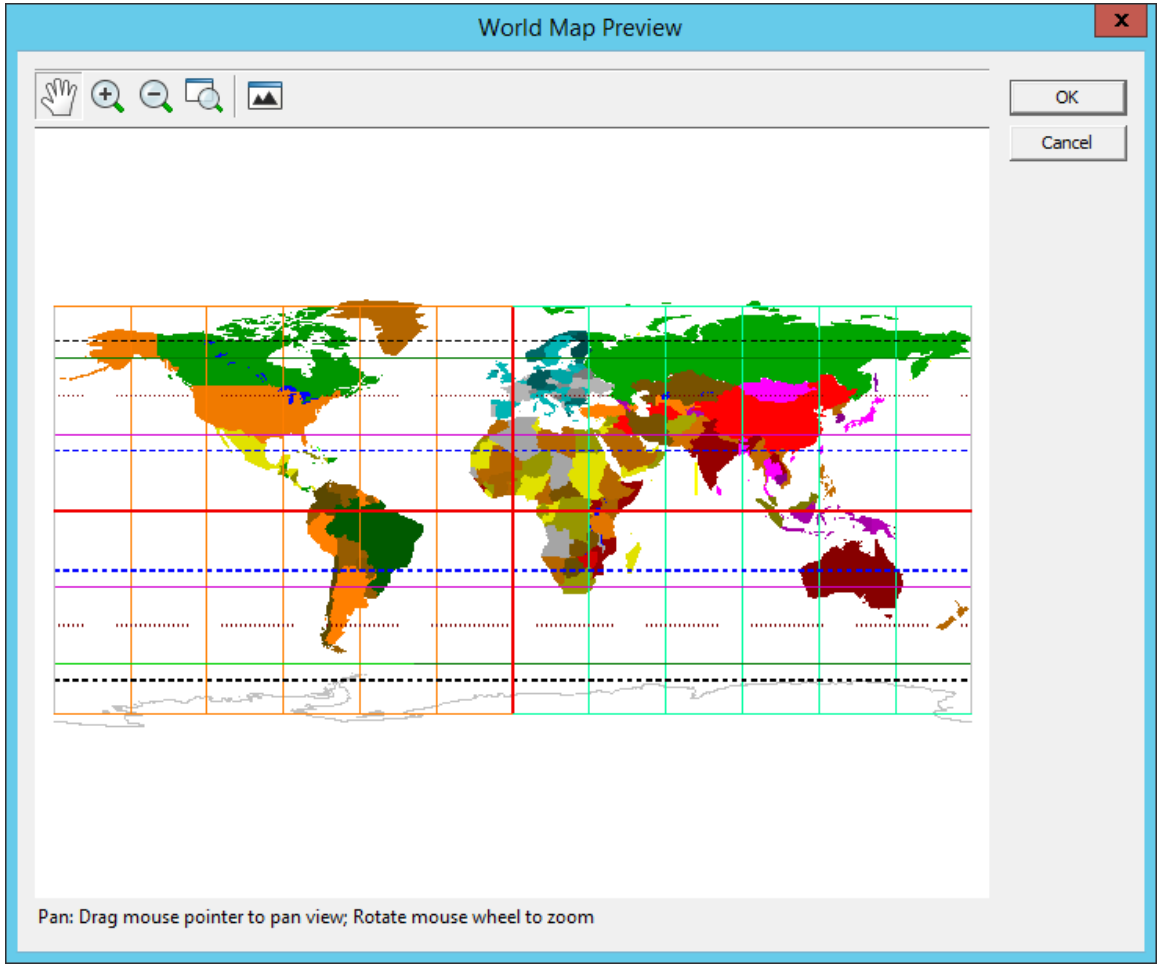
Map Previews



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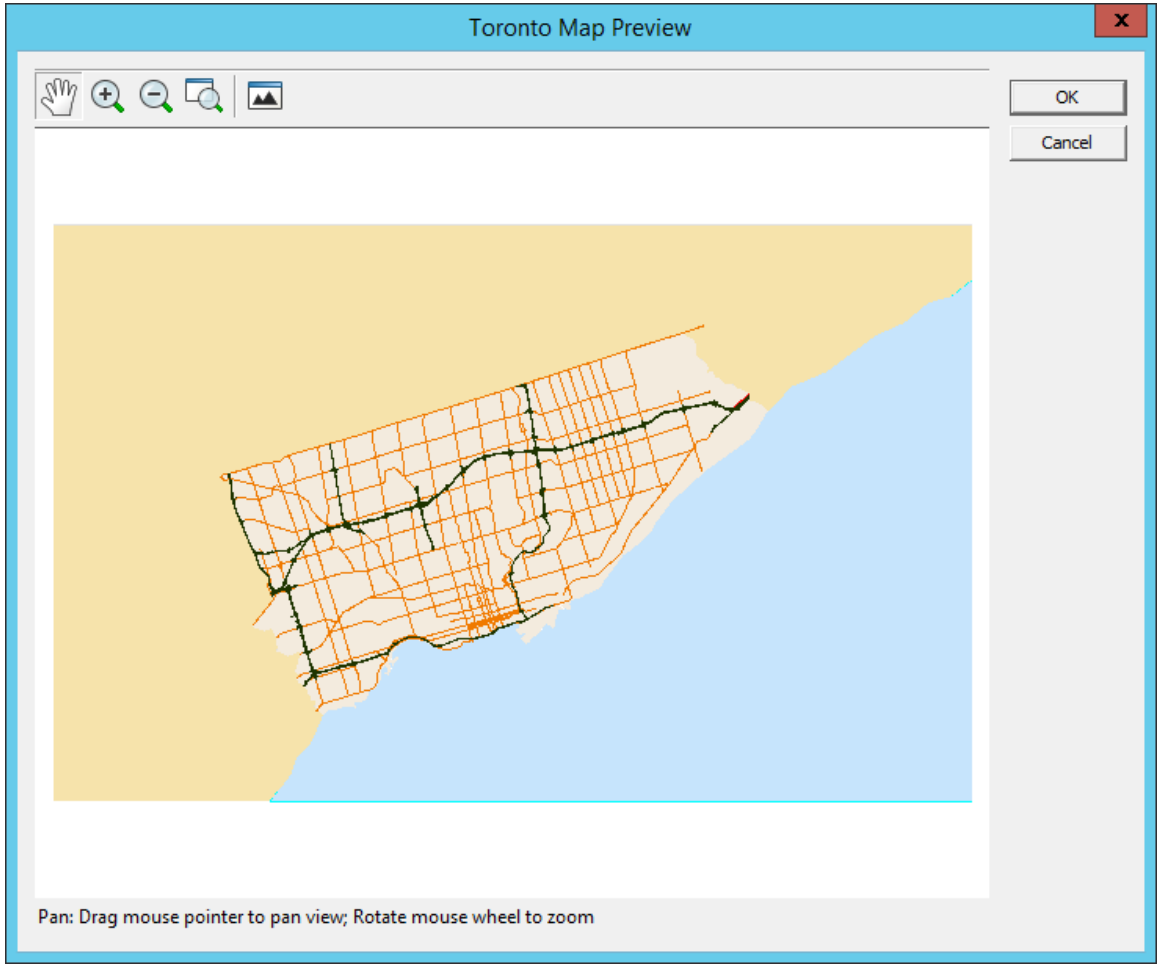
Map Previews



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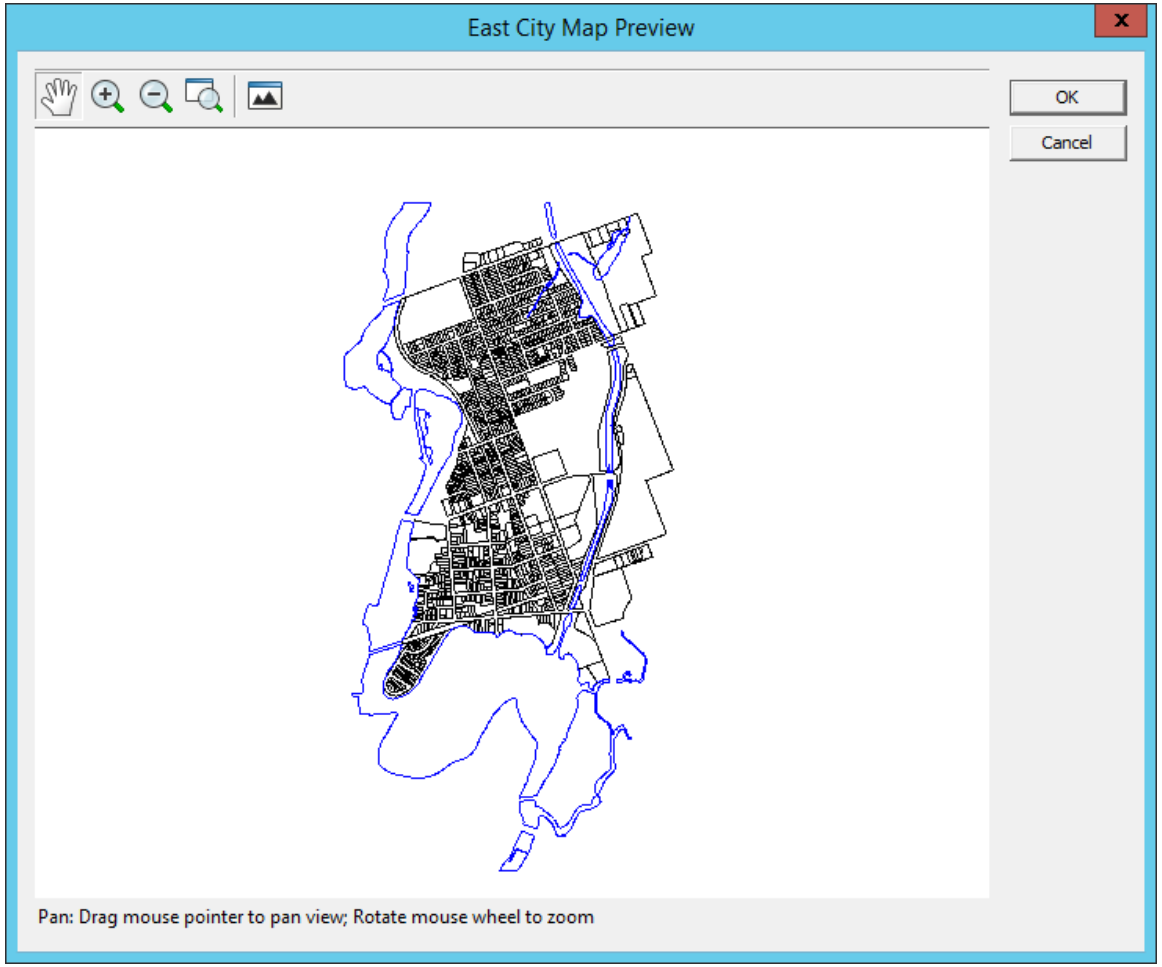

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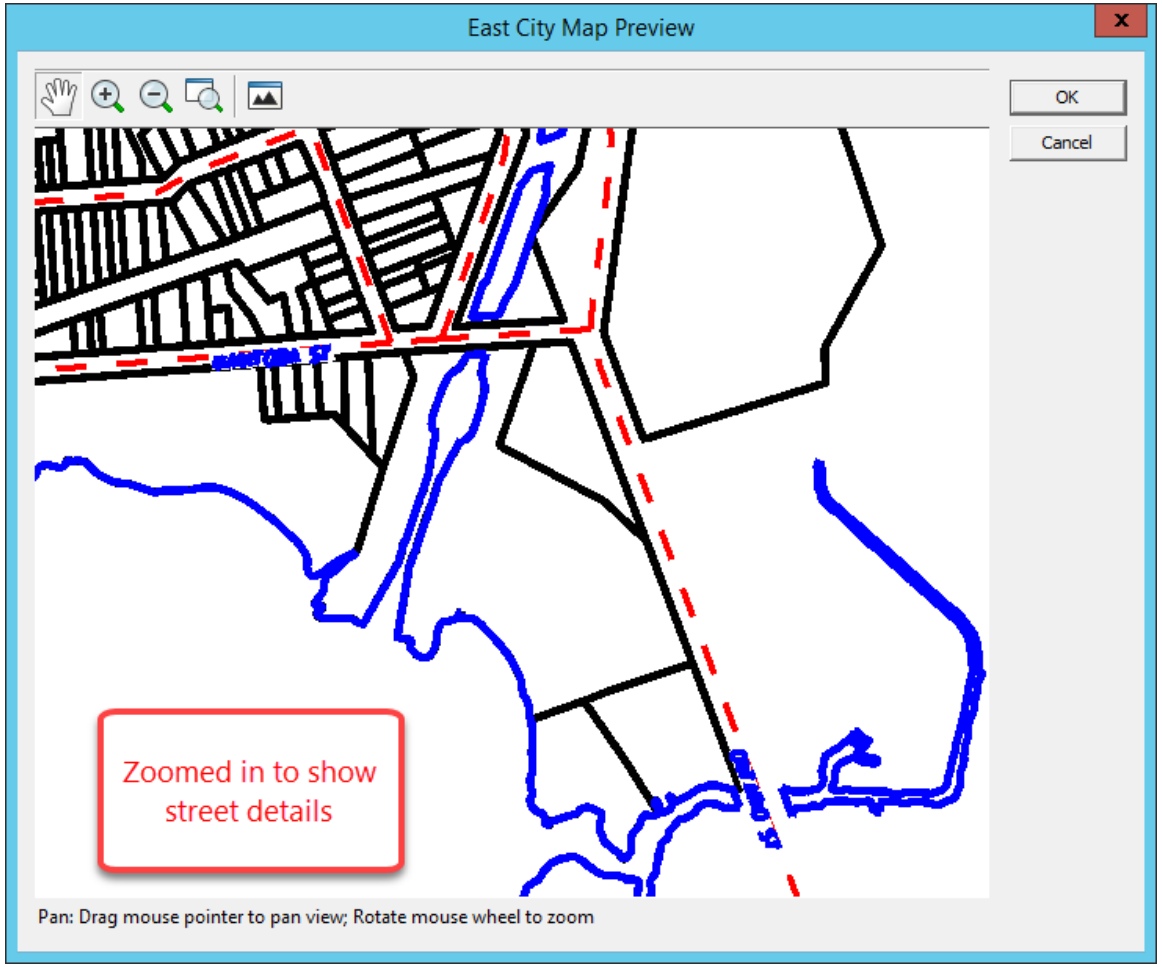

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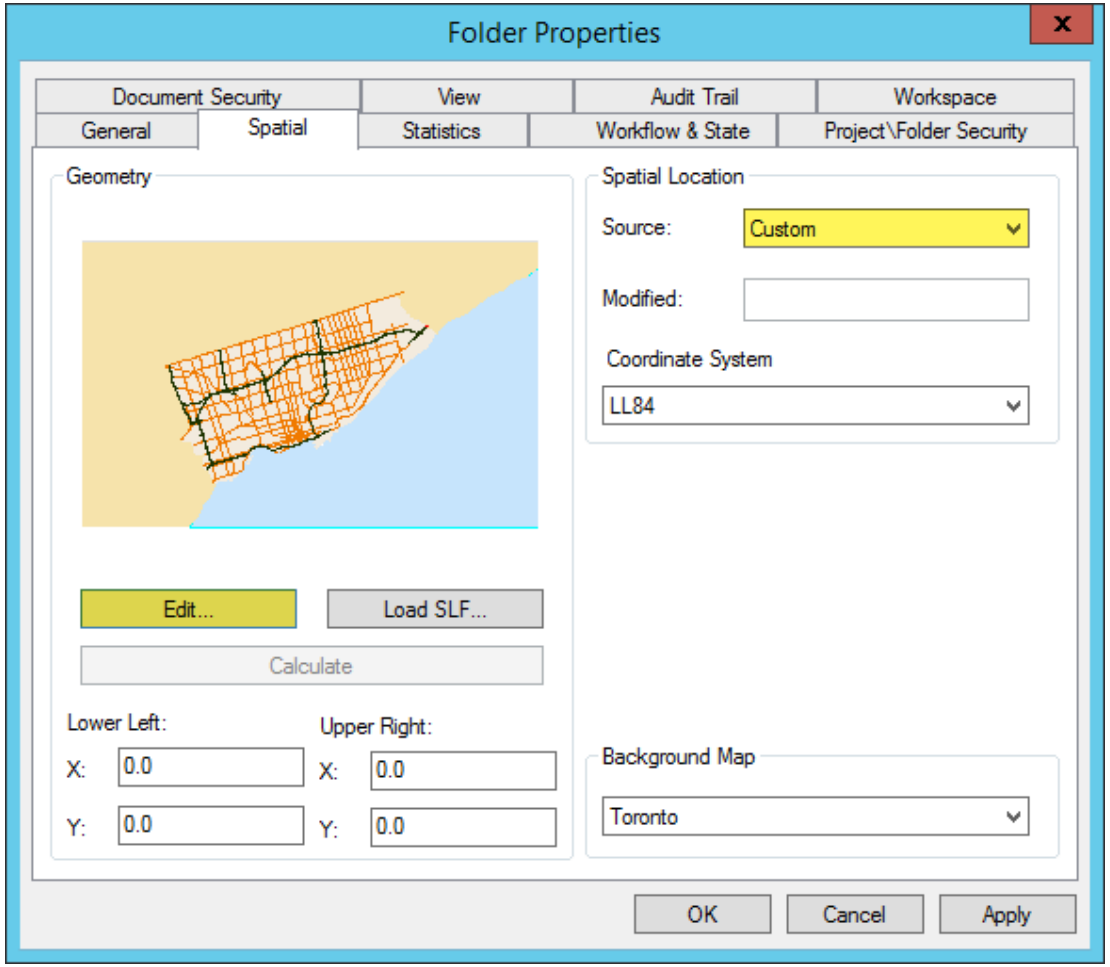
Assign Spatial Location - Manual



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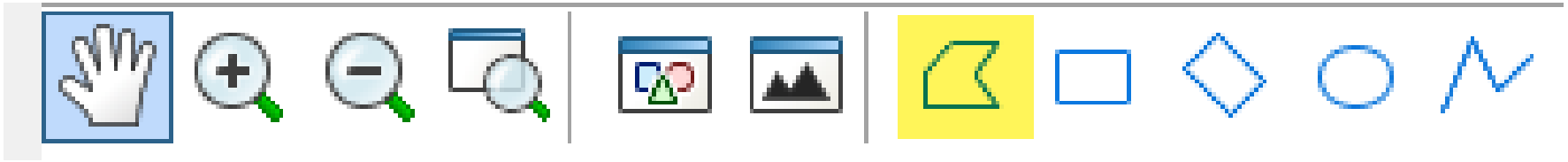

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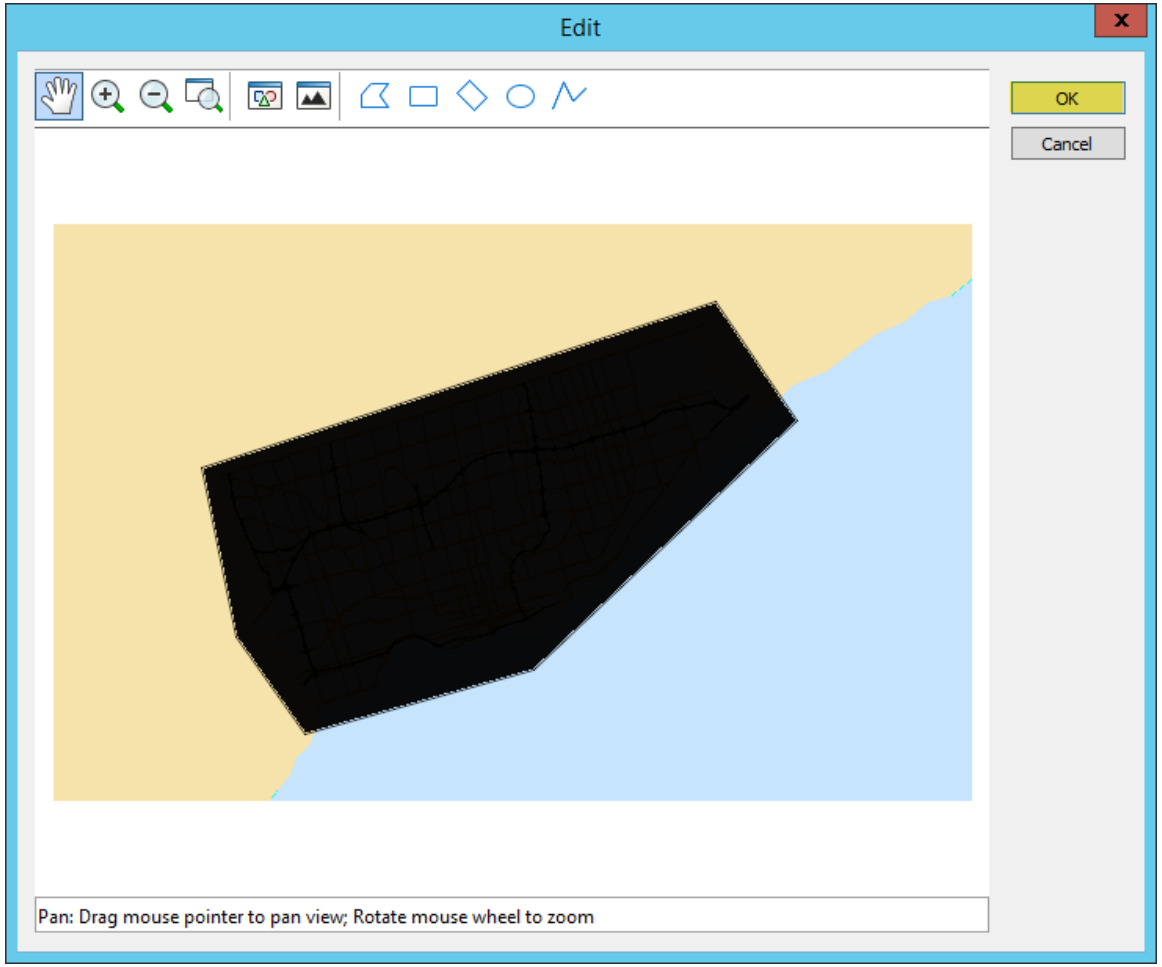

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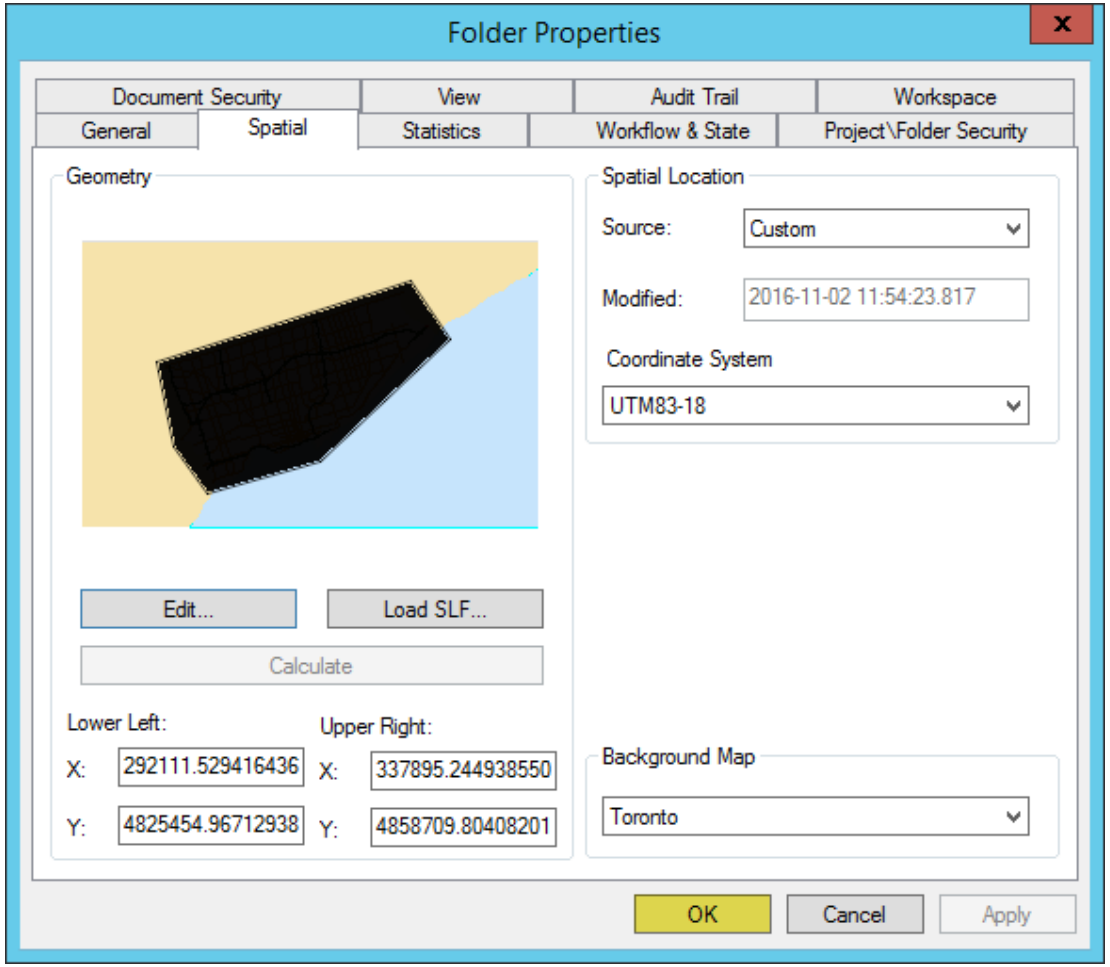

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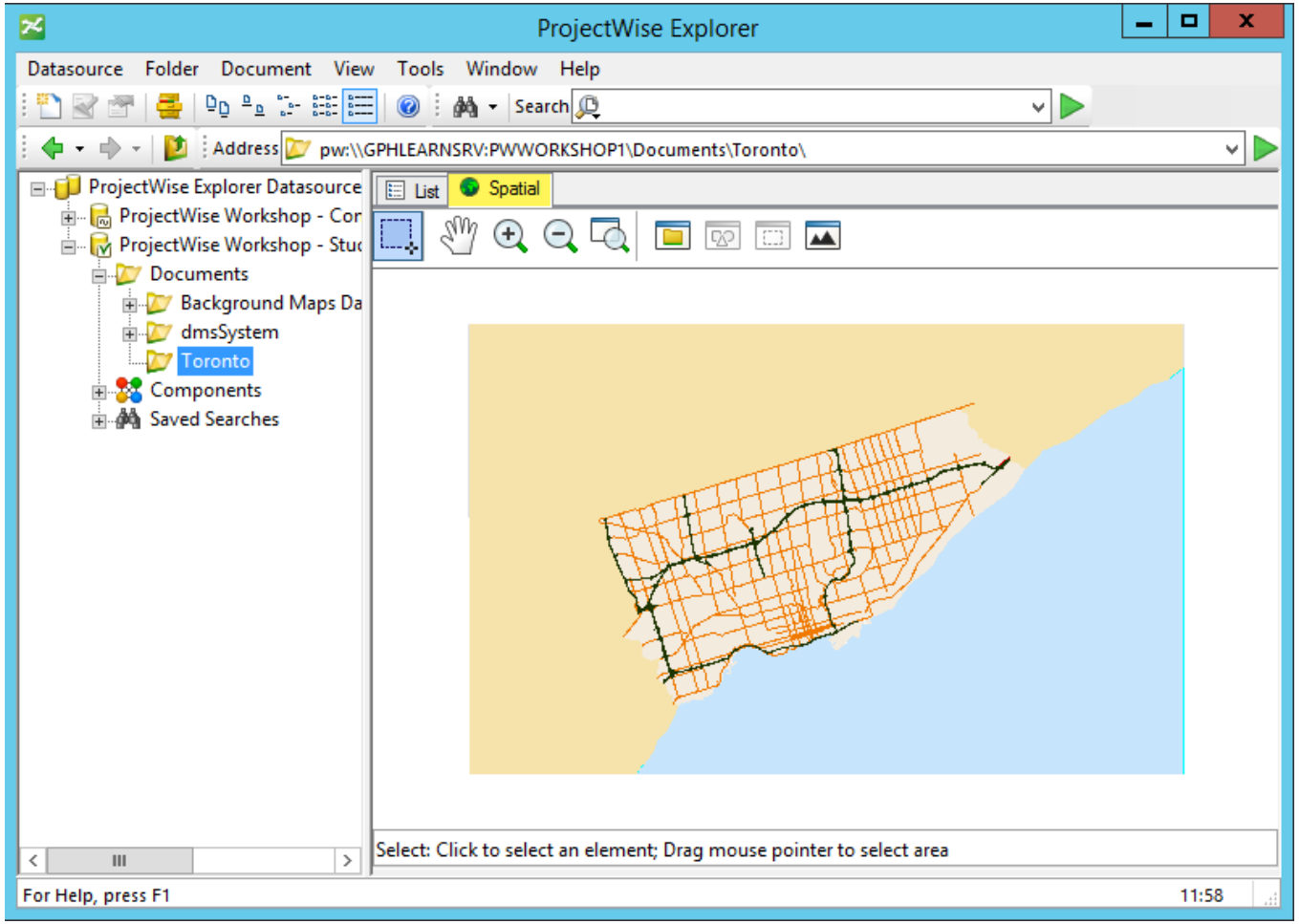

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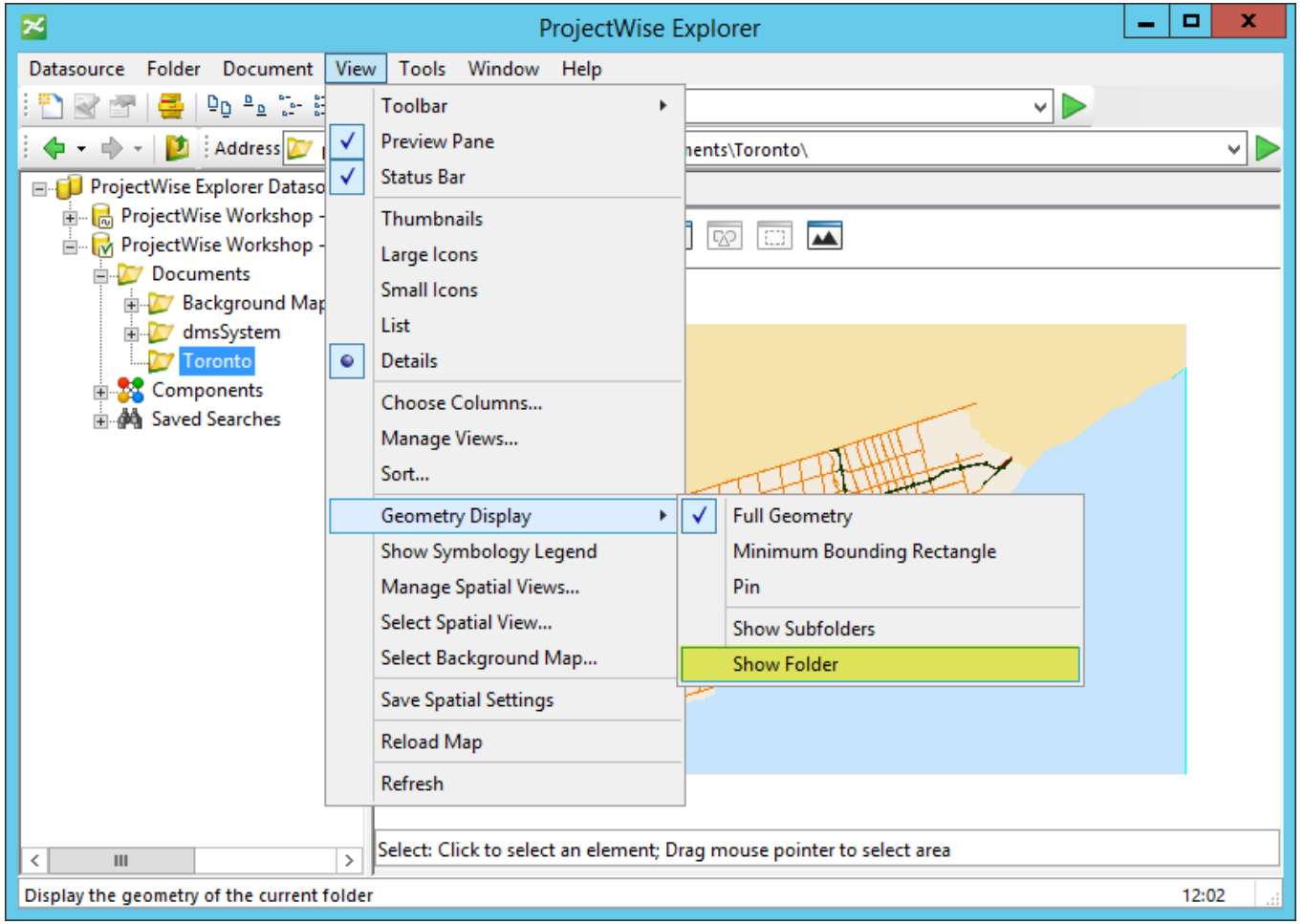

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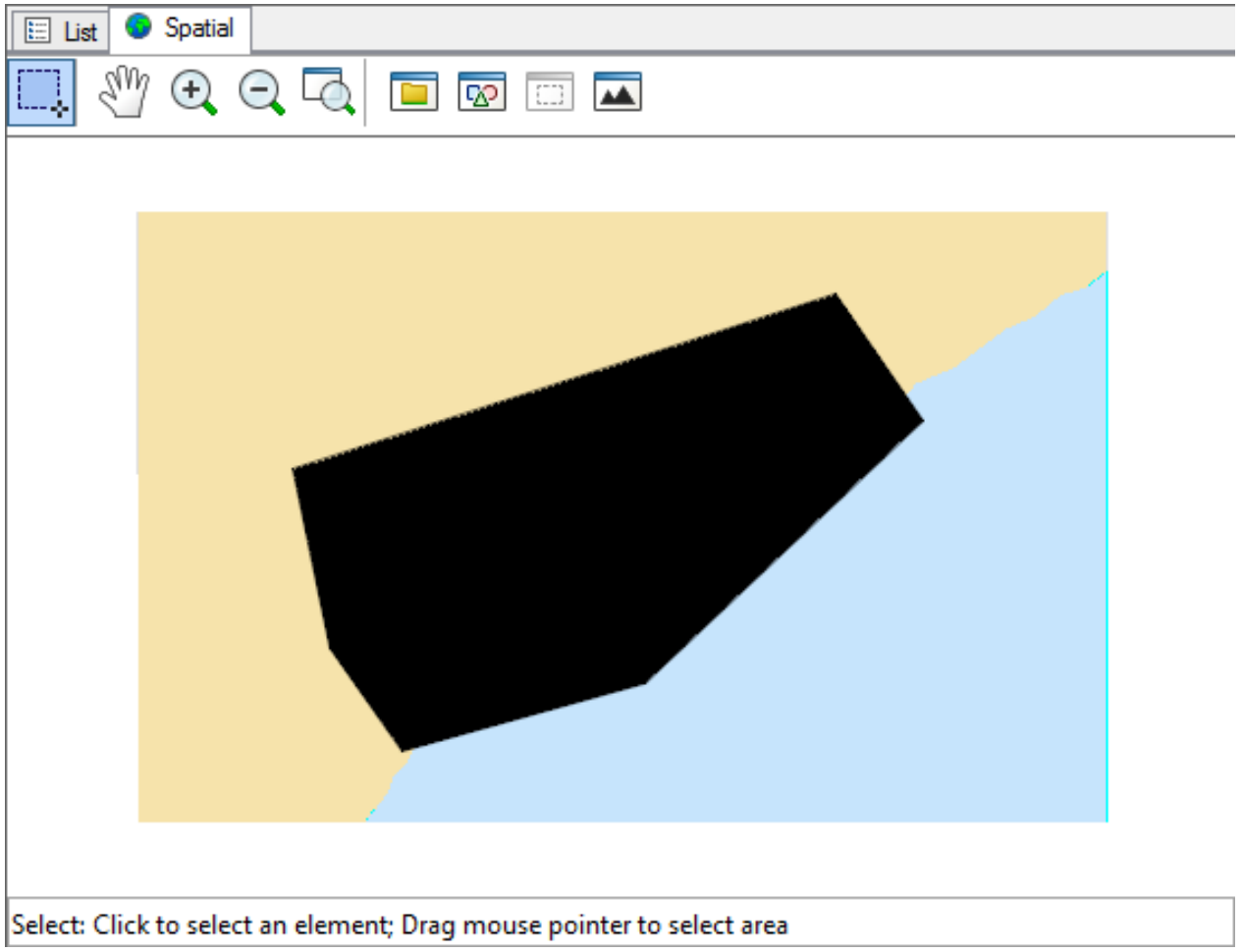

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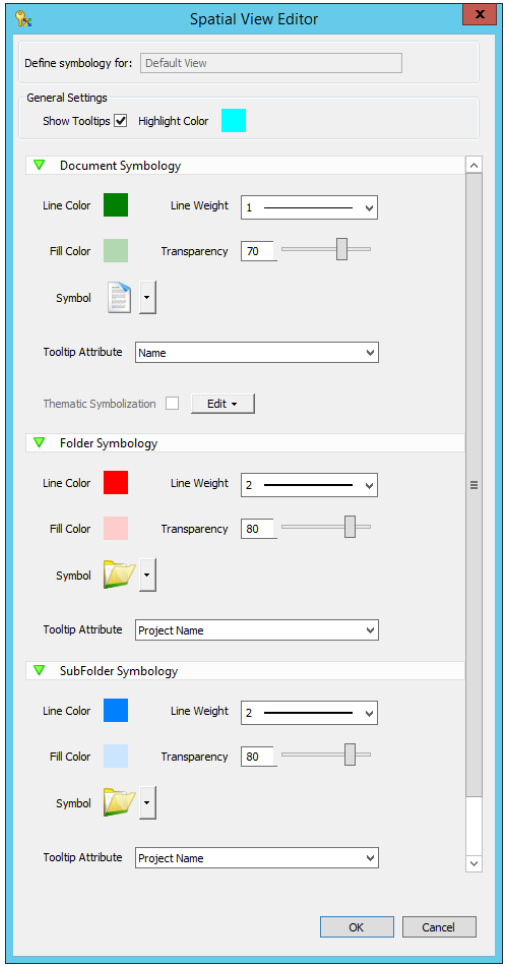
Default Display Symbology



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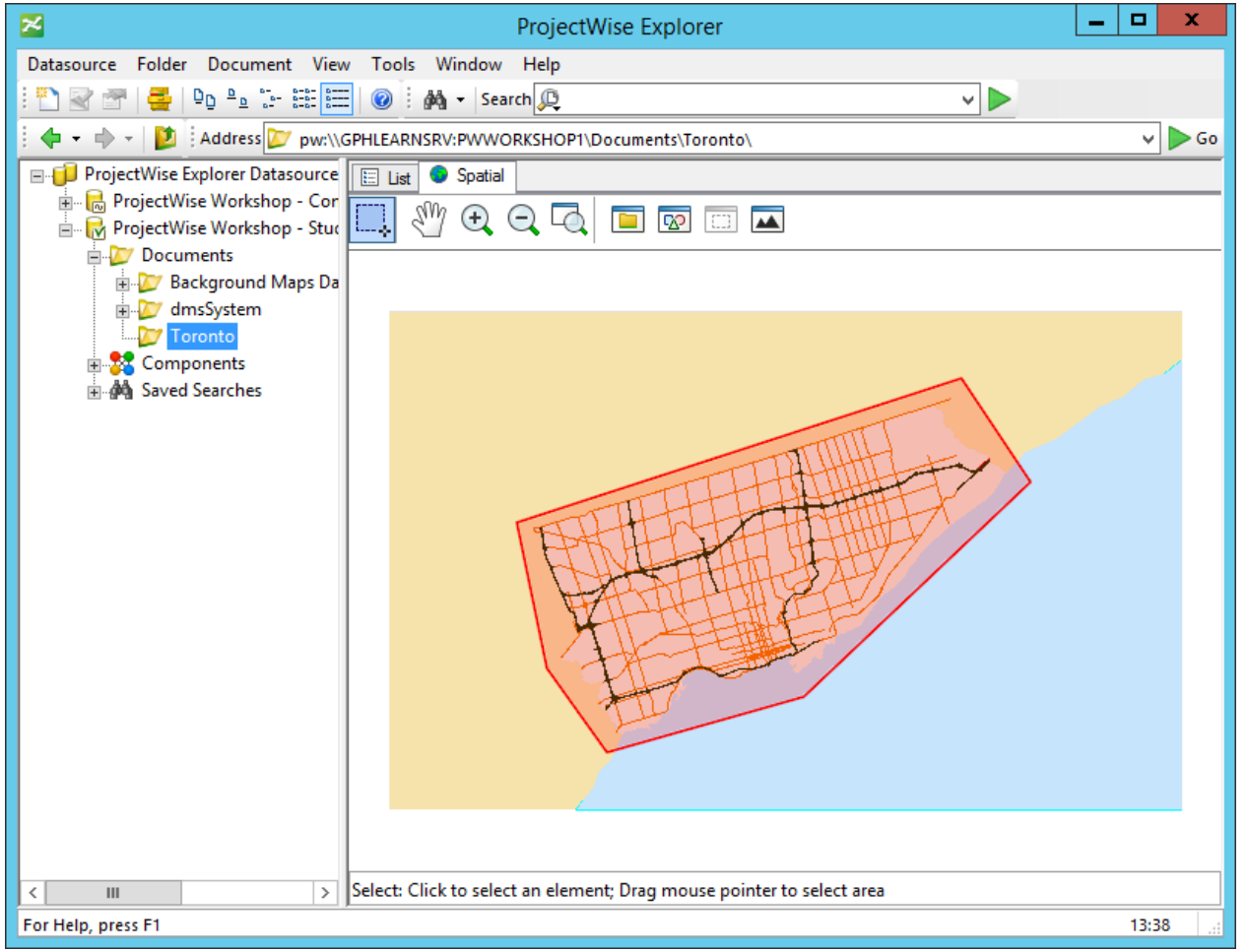

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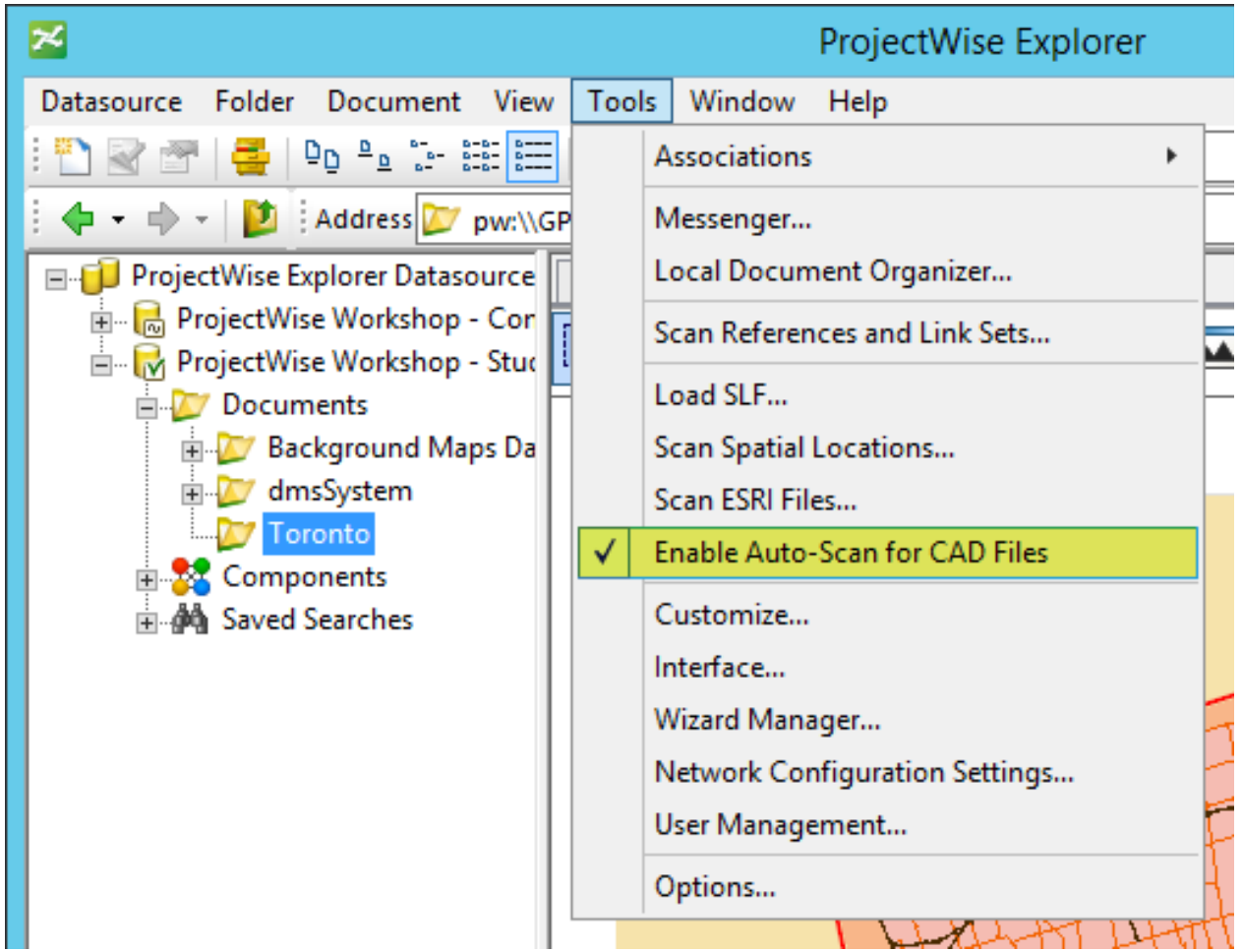
Assign Spatial Location - Autoscan



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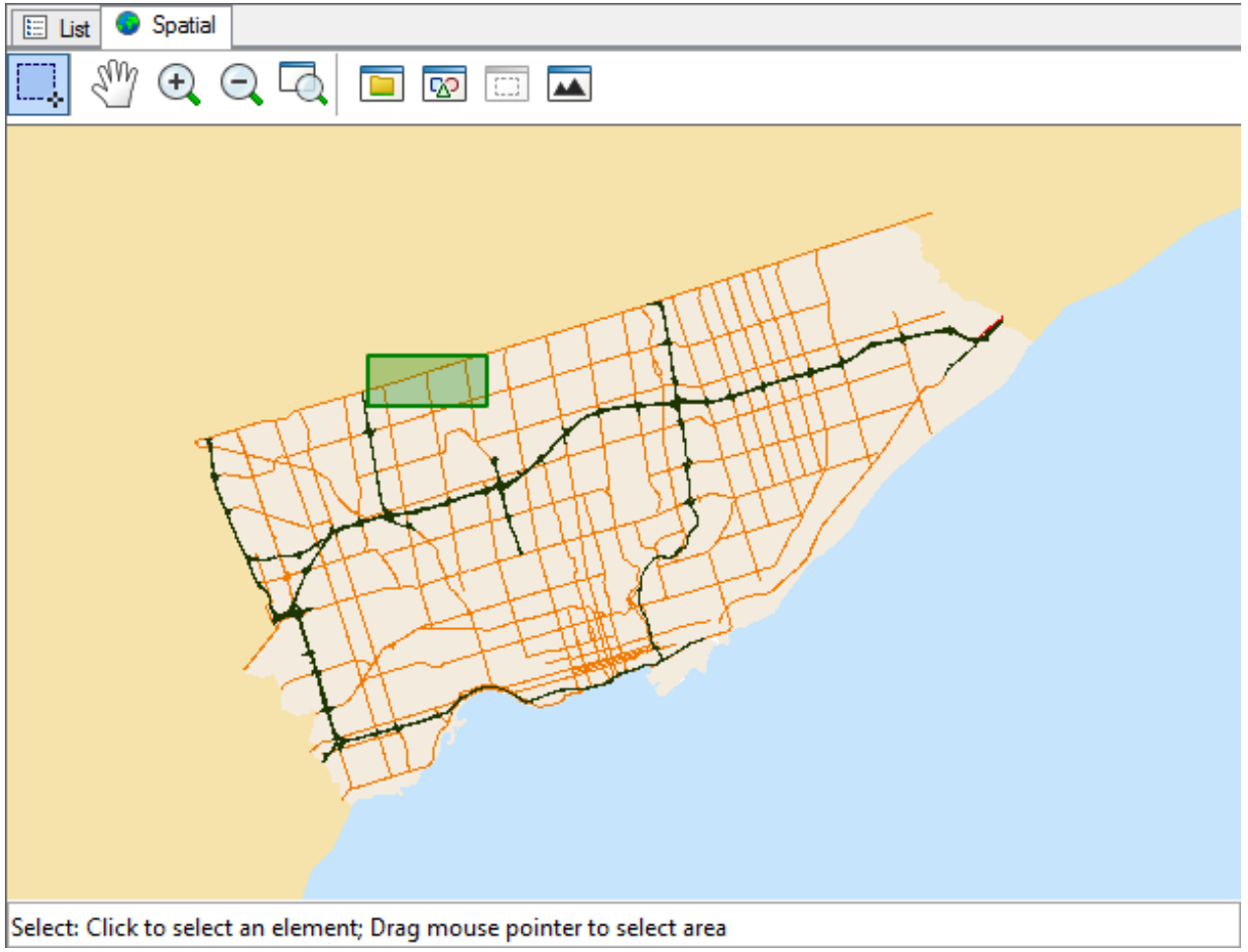

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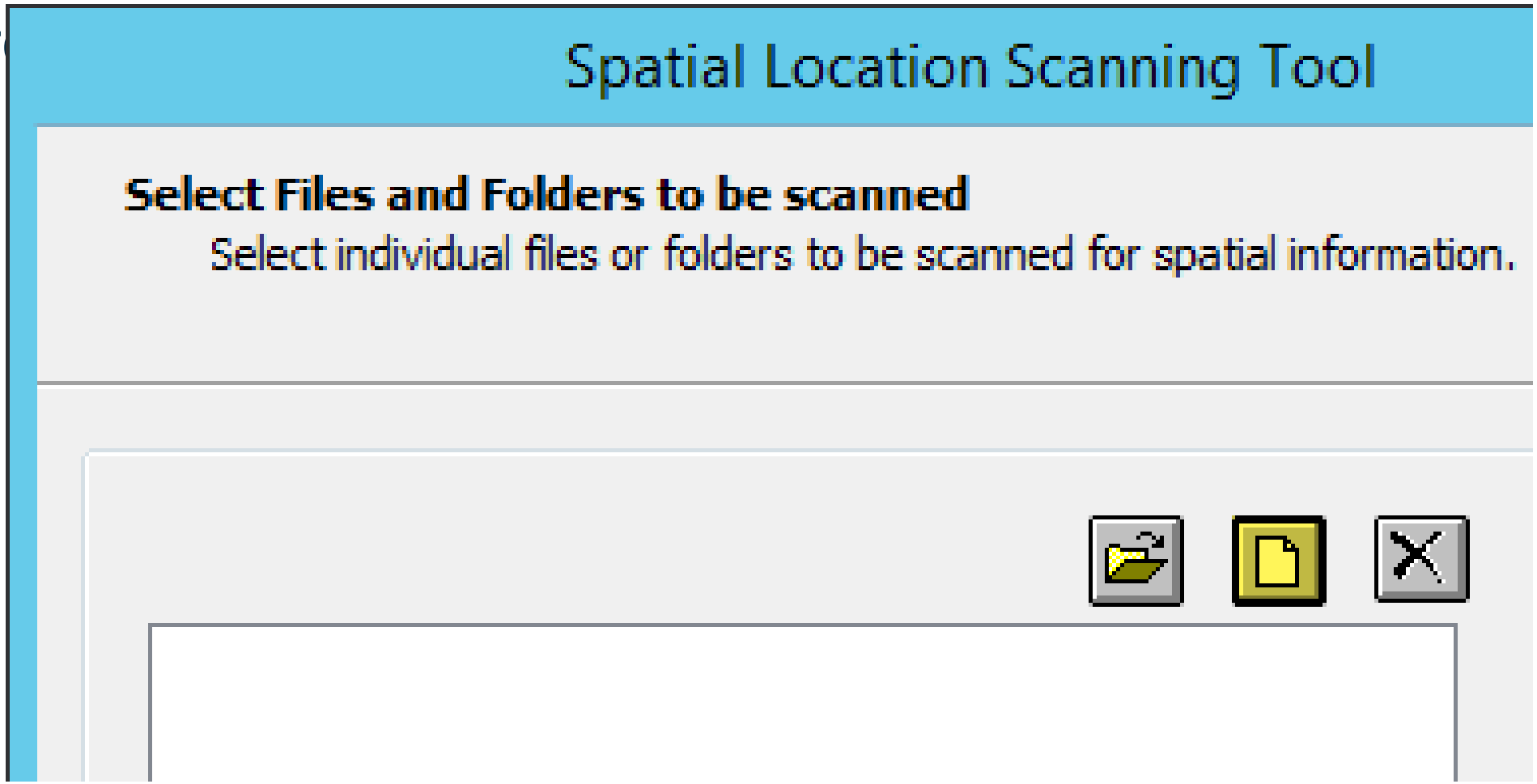
Assign Spatial Location – Spatial Location Scan Tool

- In Pr



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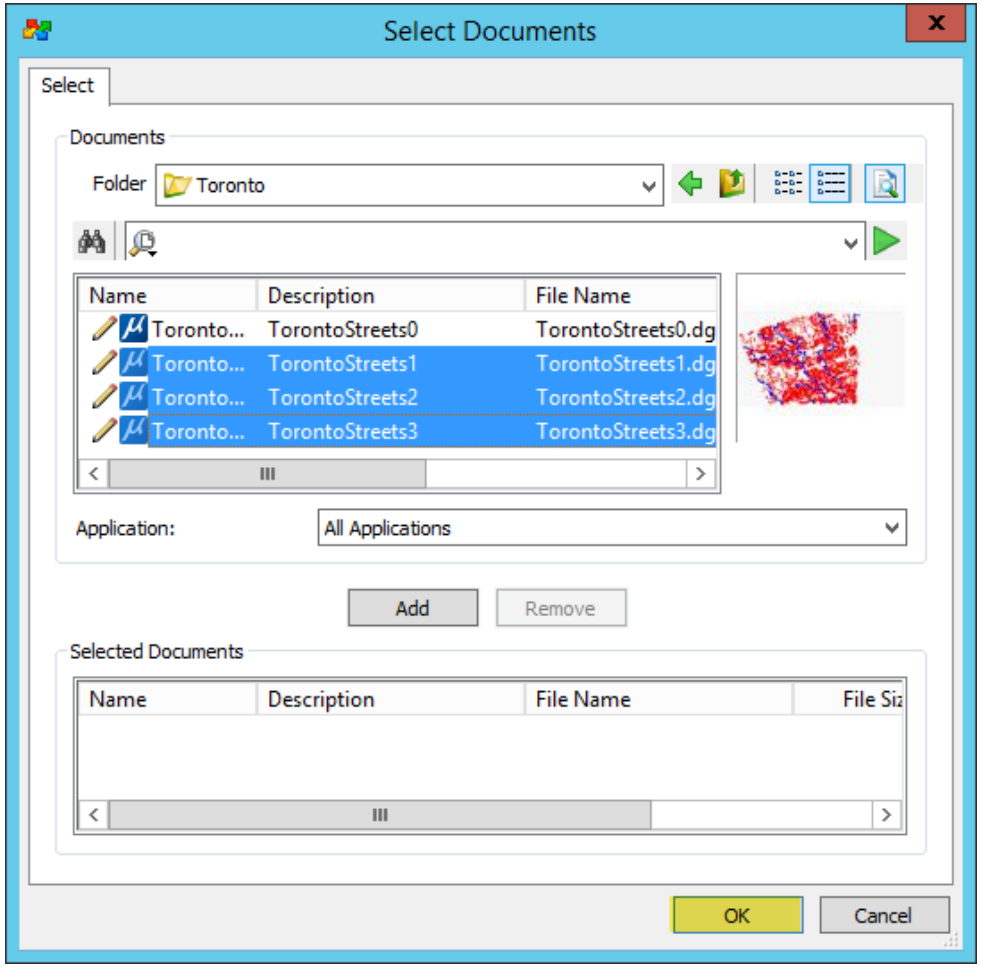

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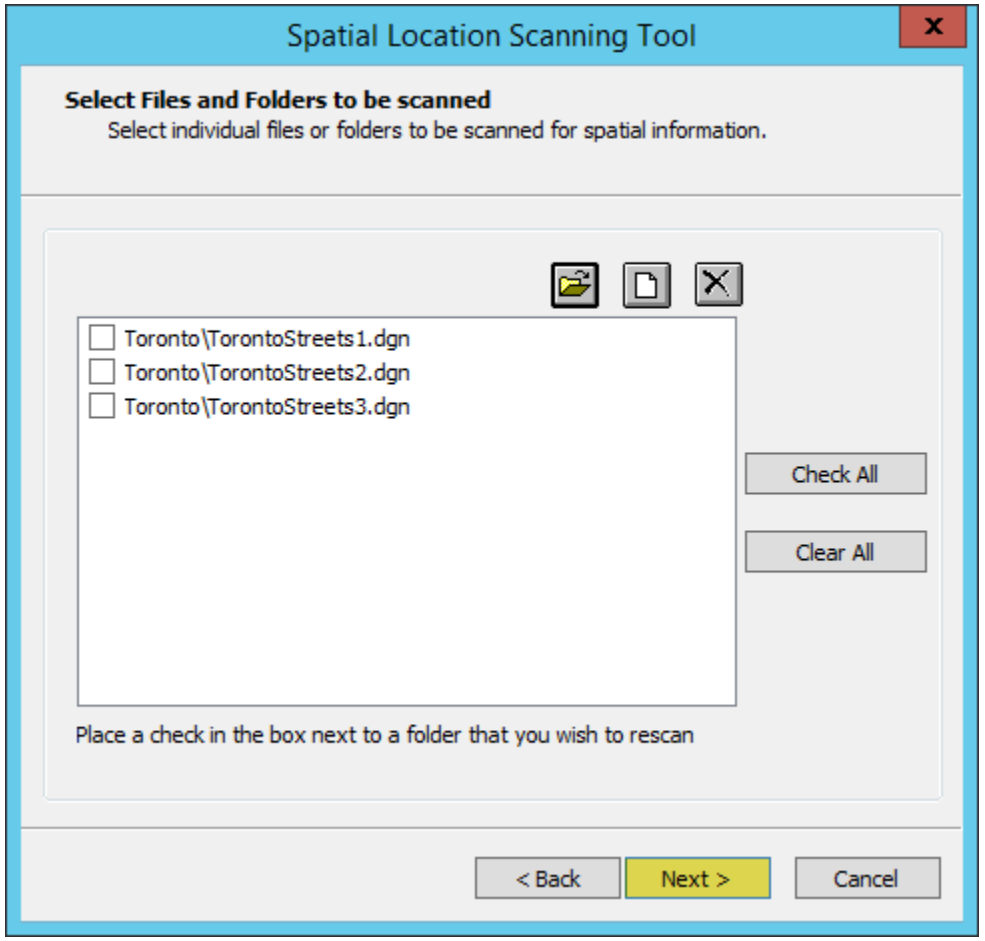

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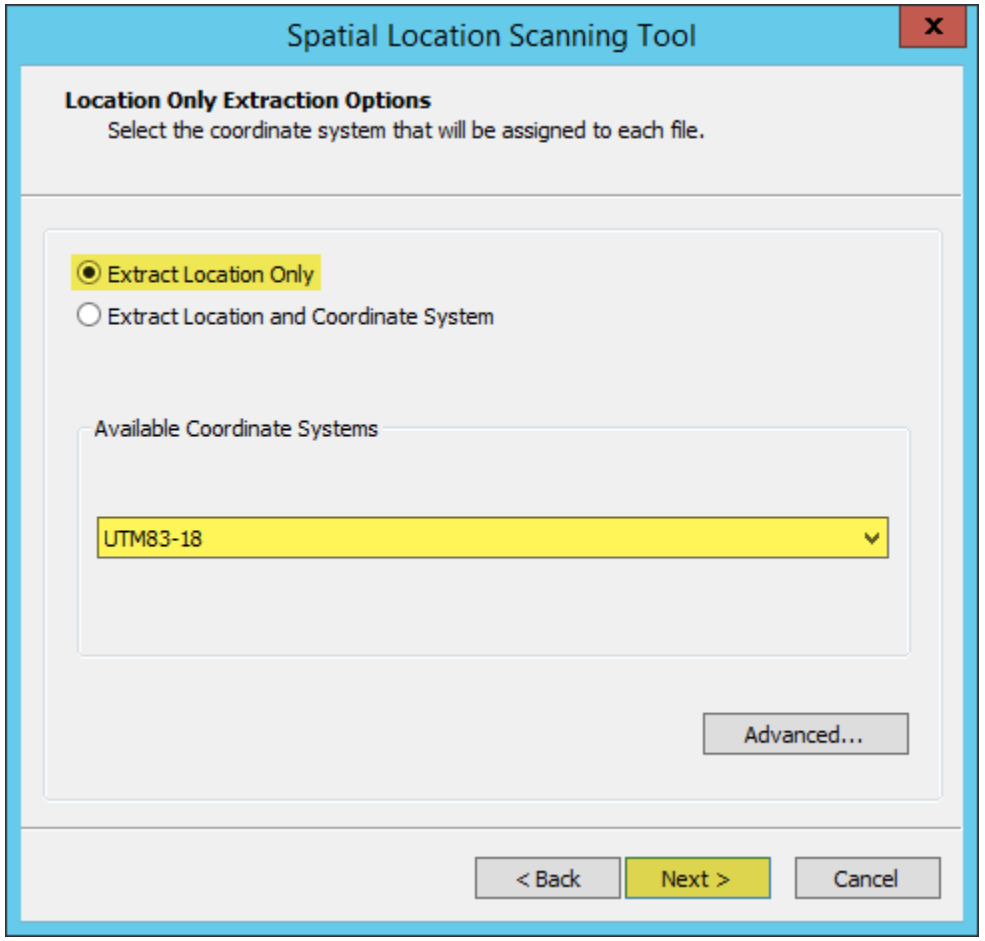

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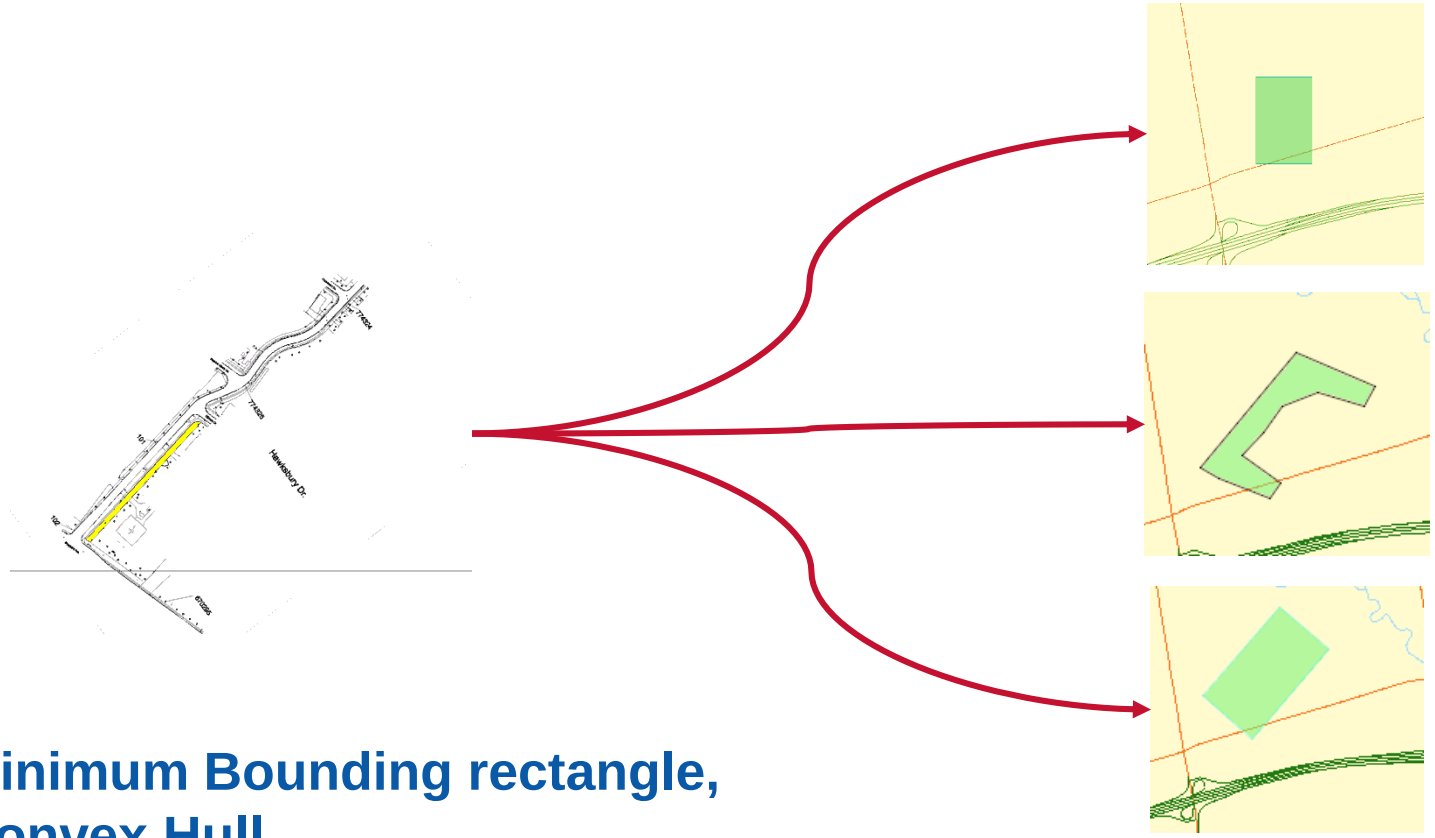
Advanced Options

- Use case:
  - DGN or DWG files for which the location is automatically extracted.
- Feature:
  - Convex Hull, oriented rectangles can be extracted in addition of the MBR (bounding box)
  - References can be taken into account for the calculation

Advanced Options Examples



Minimum Bounding rectangle,
Convex Hull,
Oriented Rectangle

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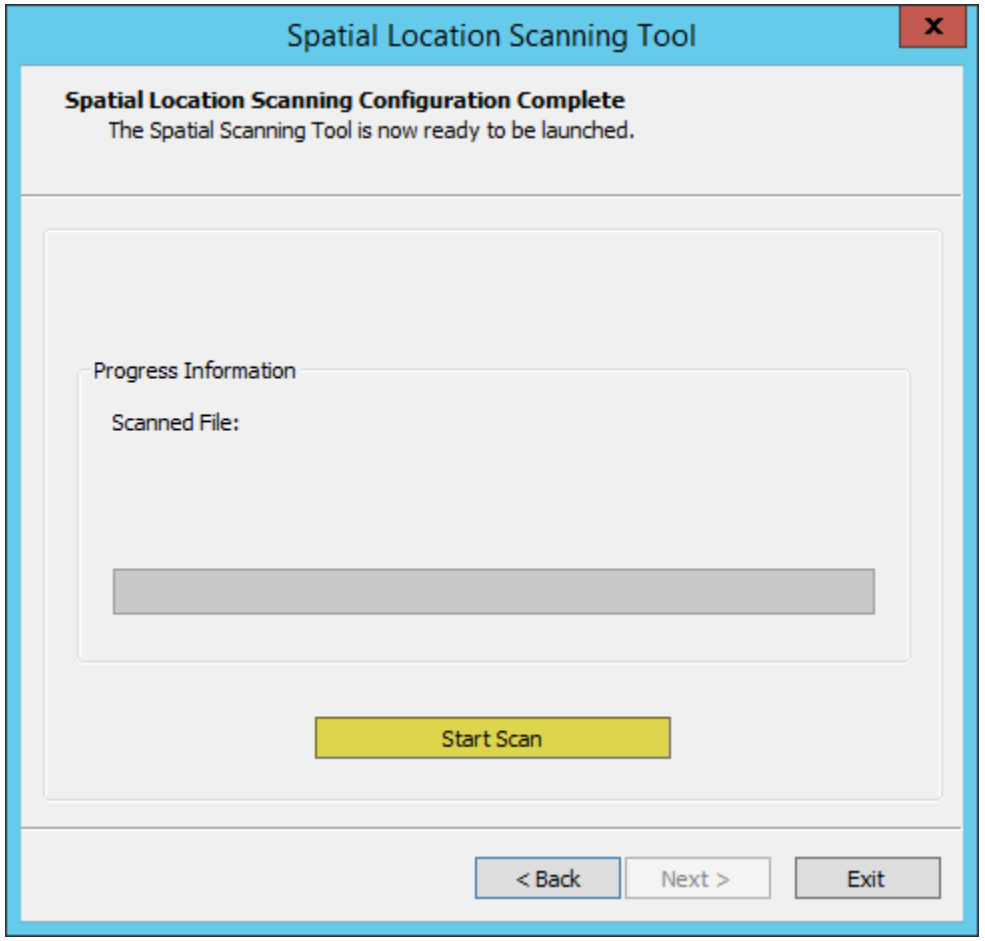
Assign Spatial Location – Spatial Location Scan Tool



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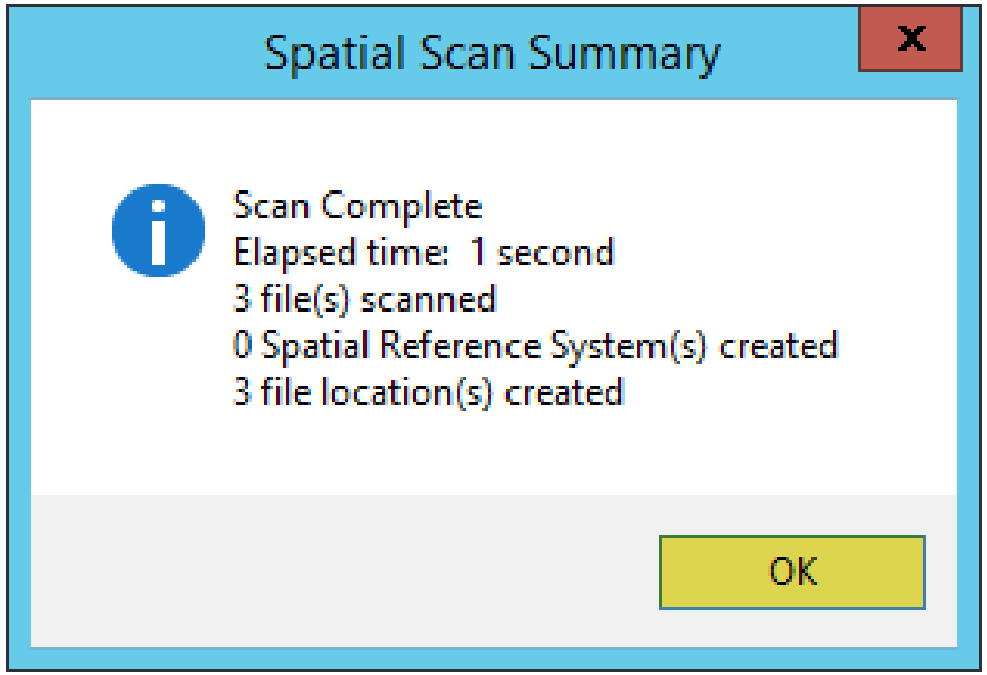

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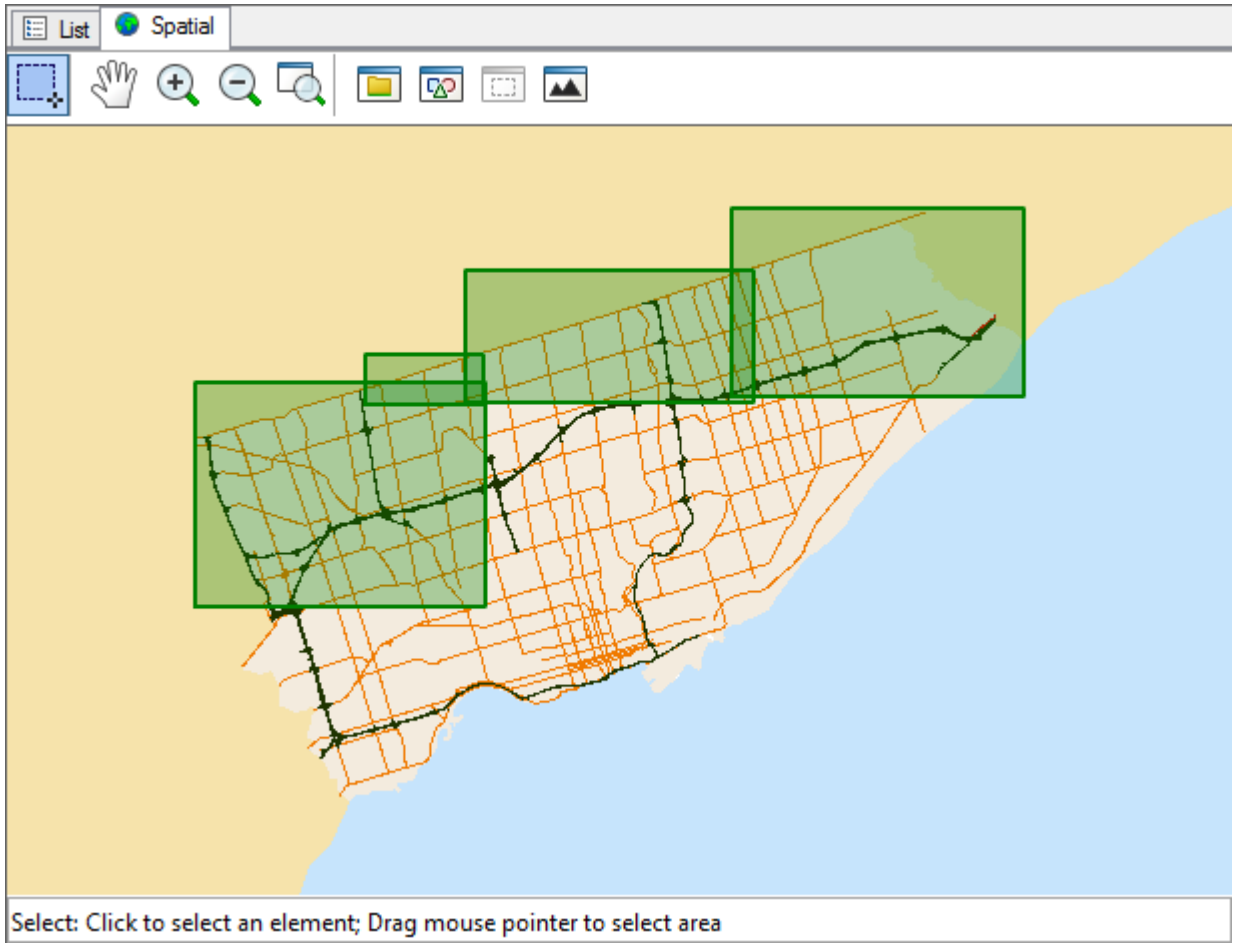
Assign Spatial Location – Spatial Location Scan Tool



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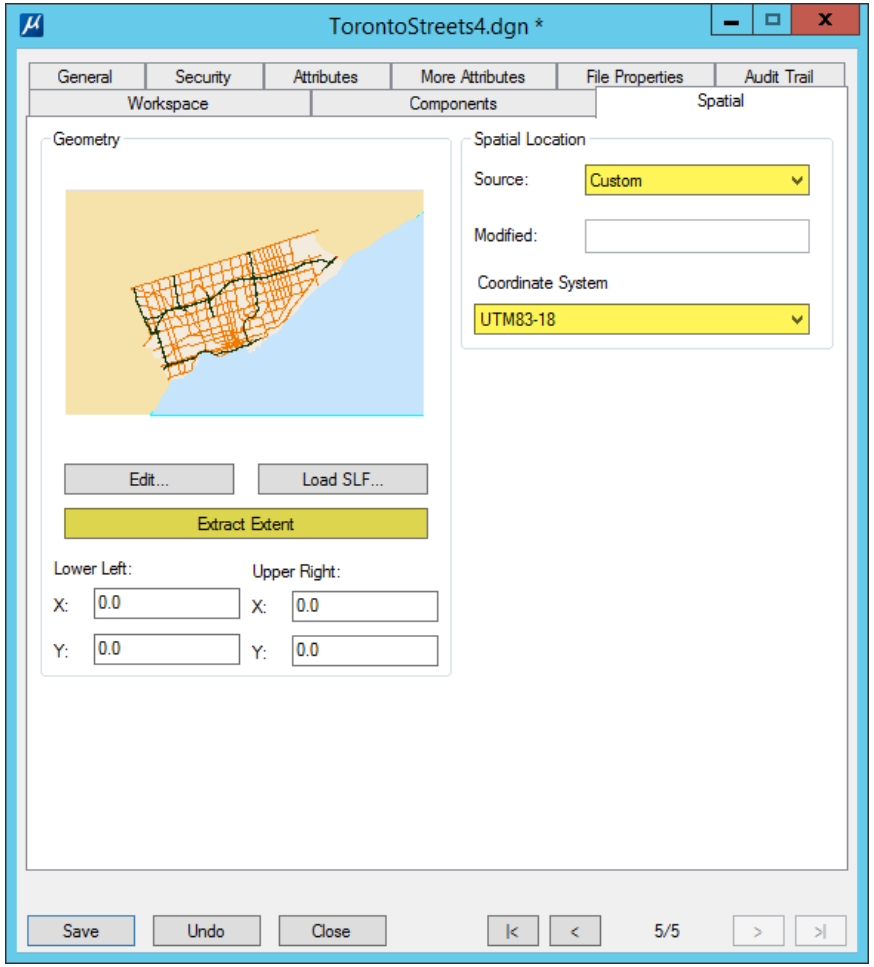
Assign Spatial Location – Extract Extent



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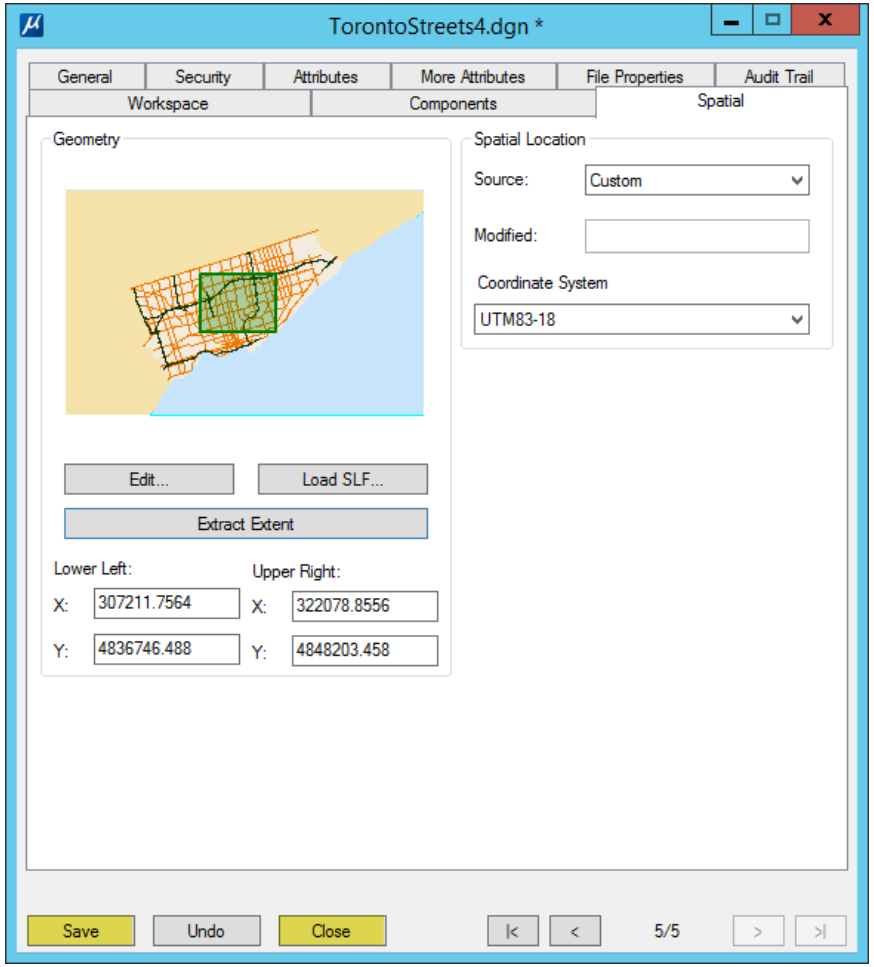

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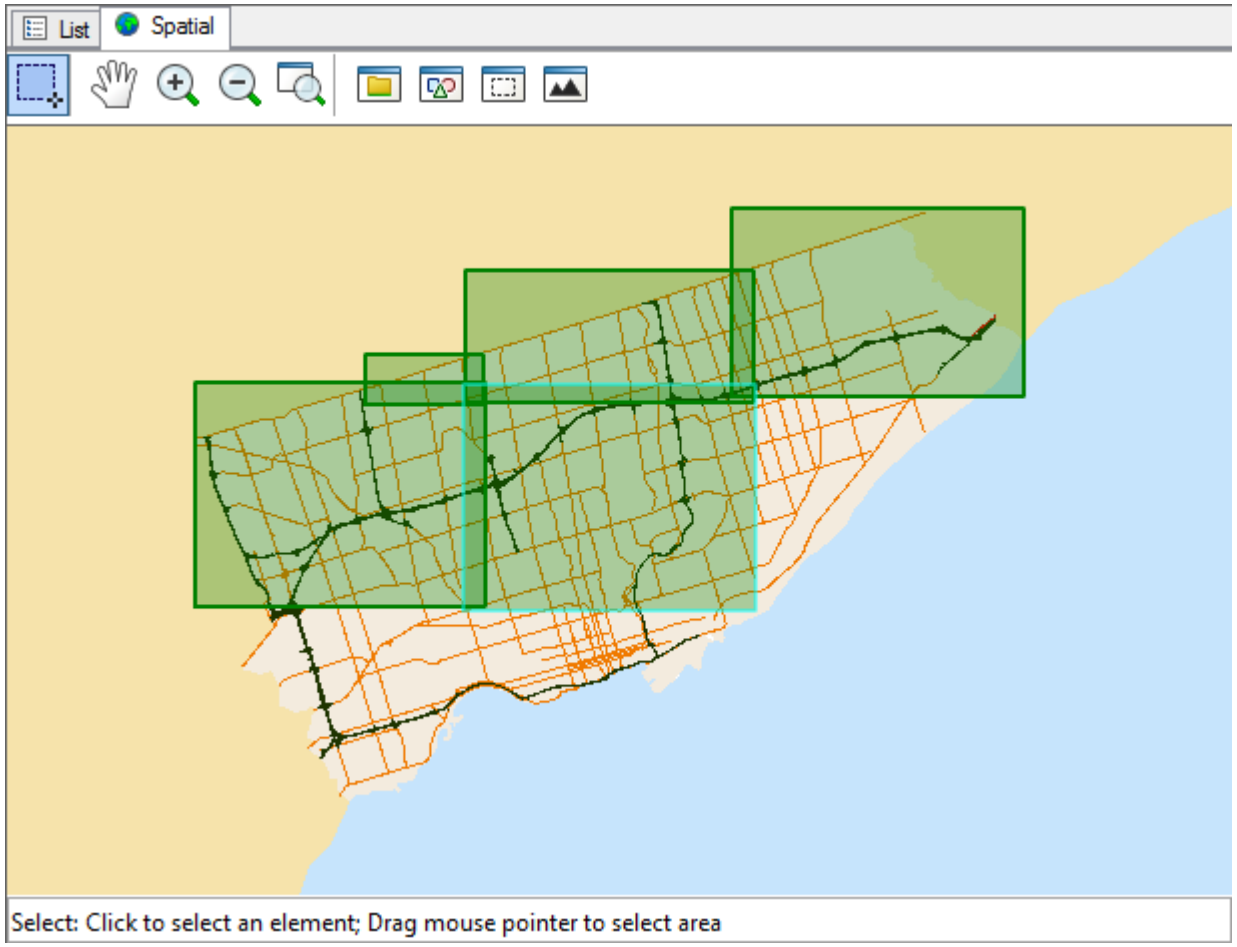
Assign Spatial Location – Extract Extent



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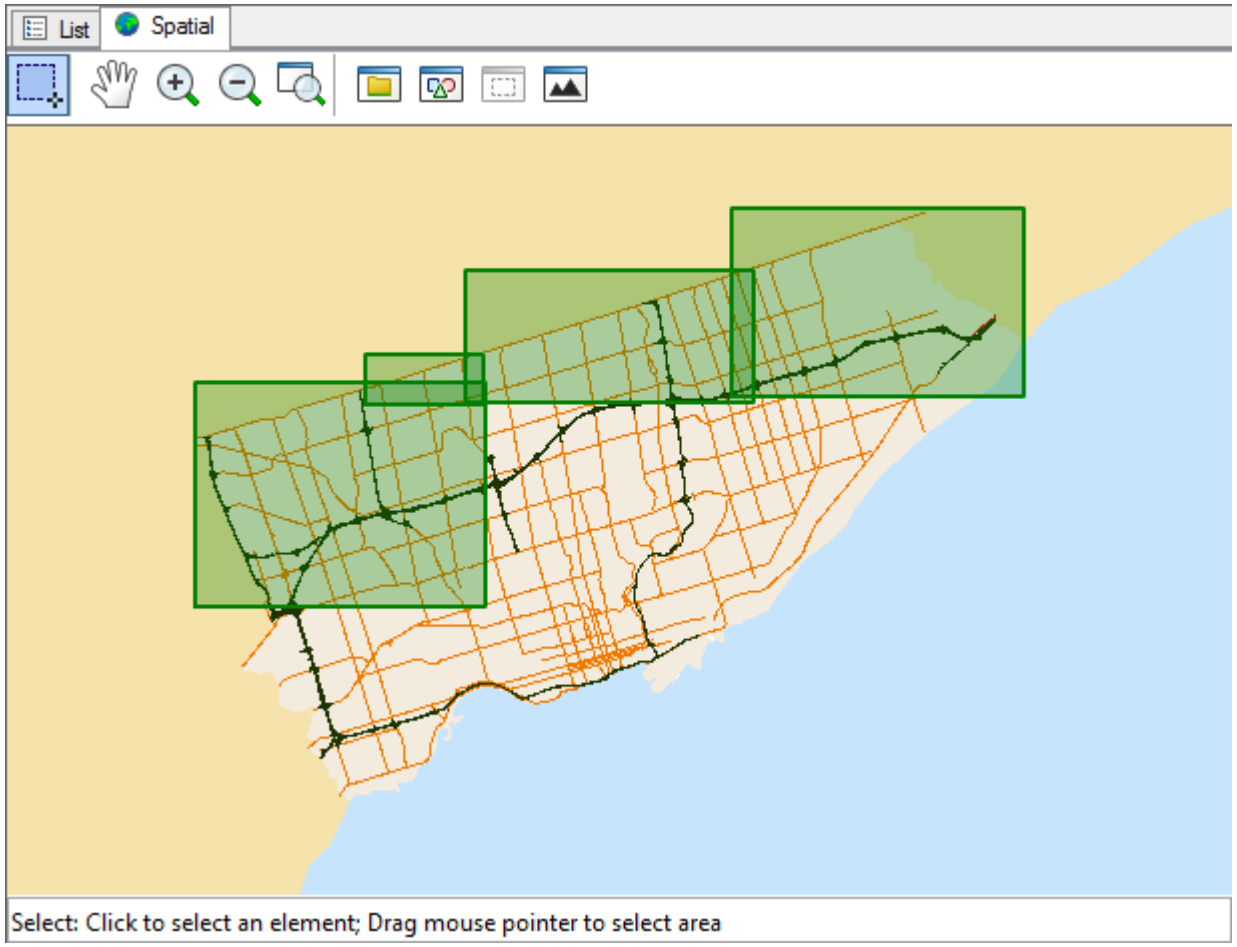
Assign Spatial Location – Calculate Folder Spatial Location



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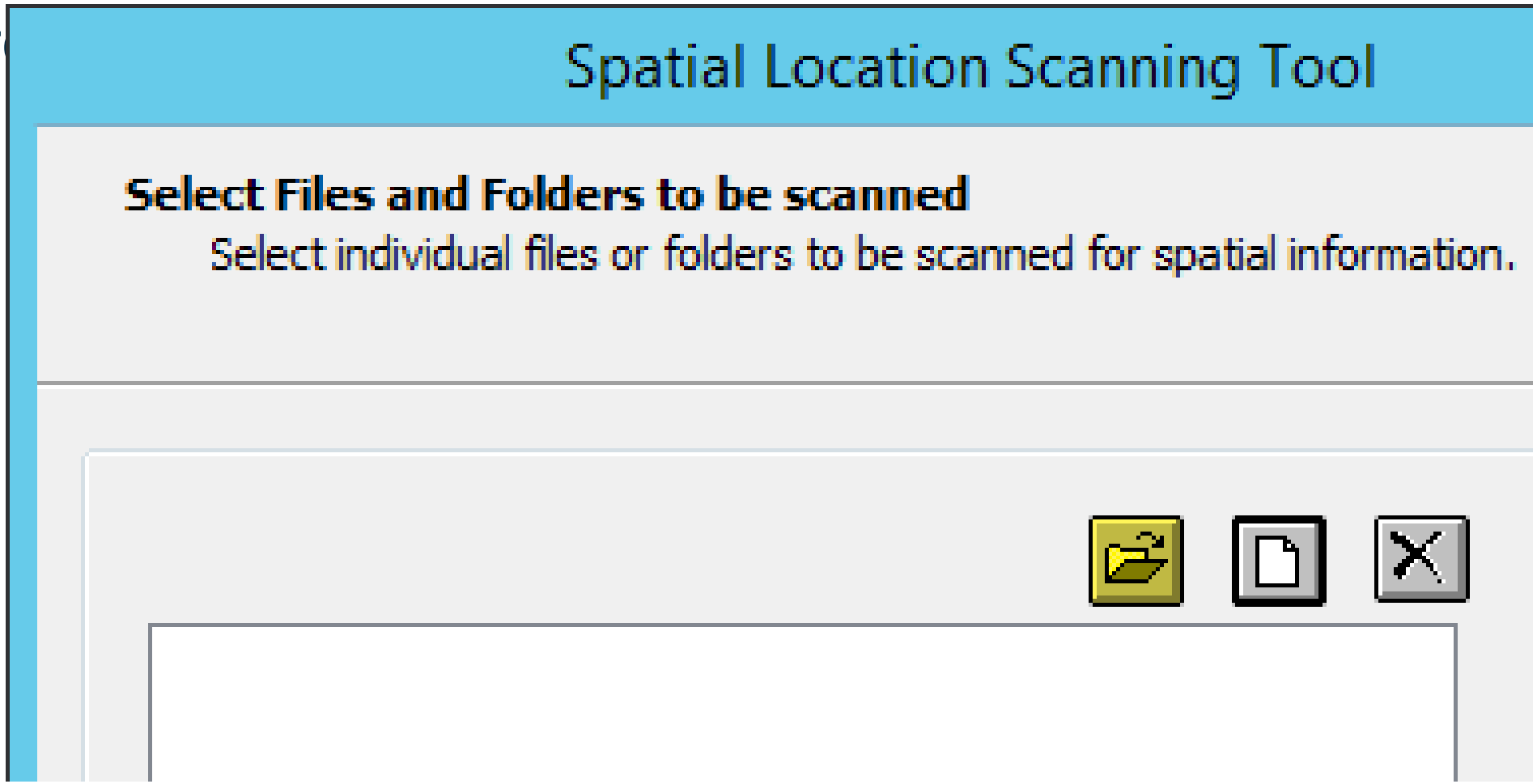
Assign Spatial Location – Calculate Folder Spatial Location

- In Pr



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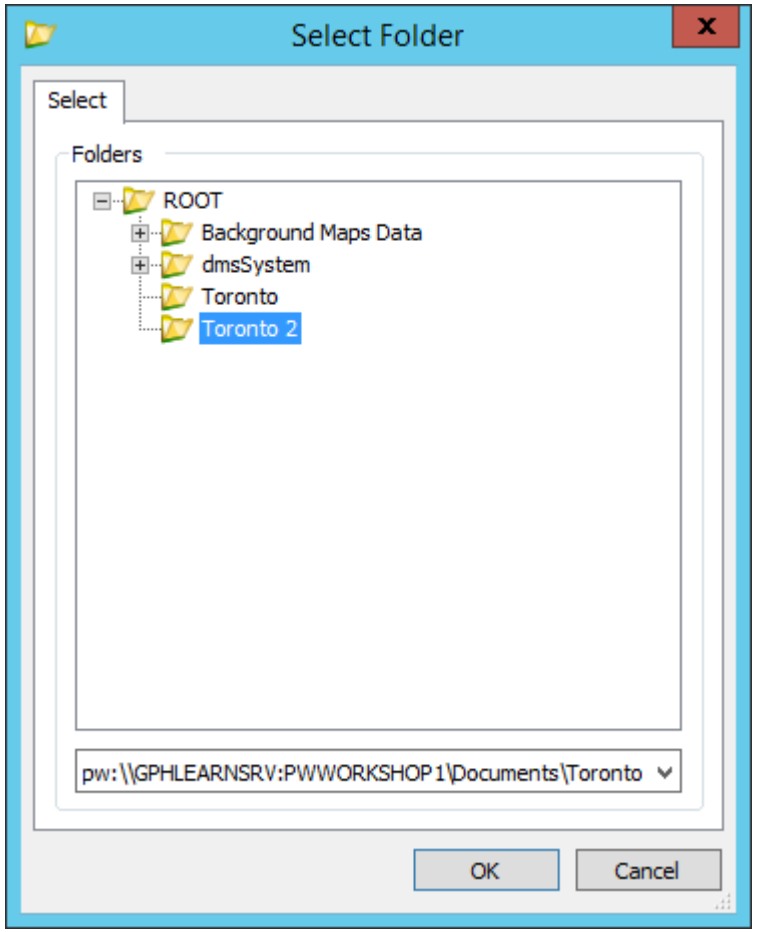

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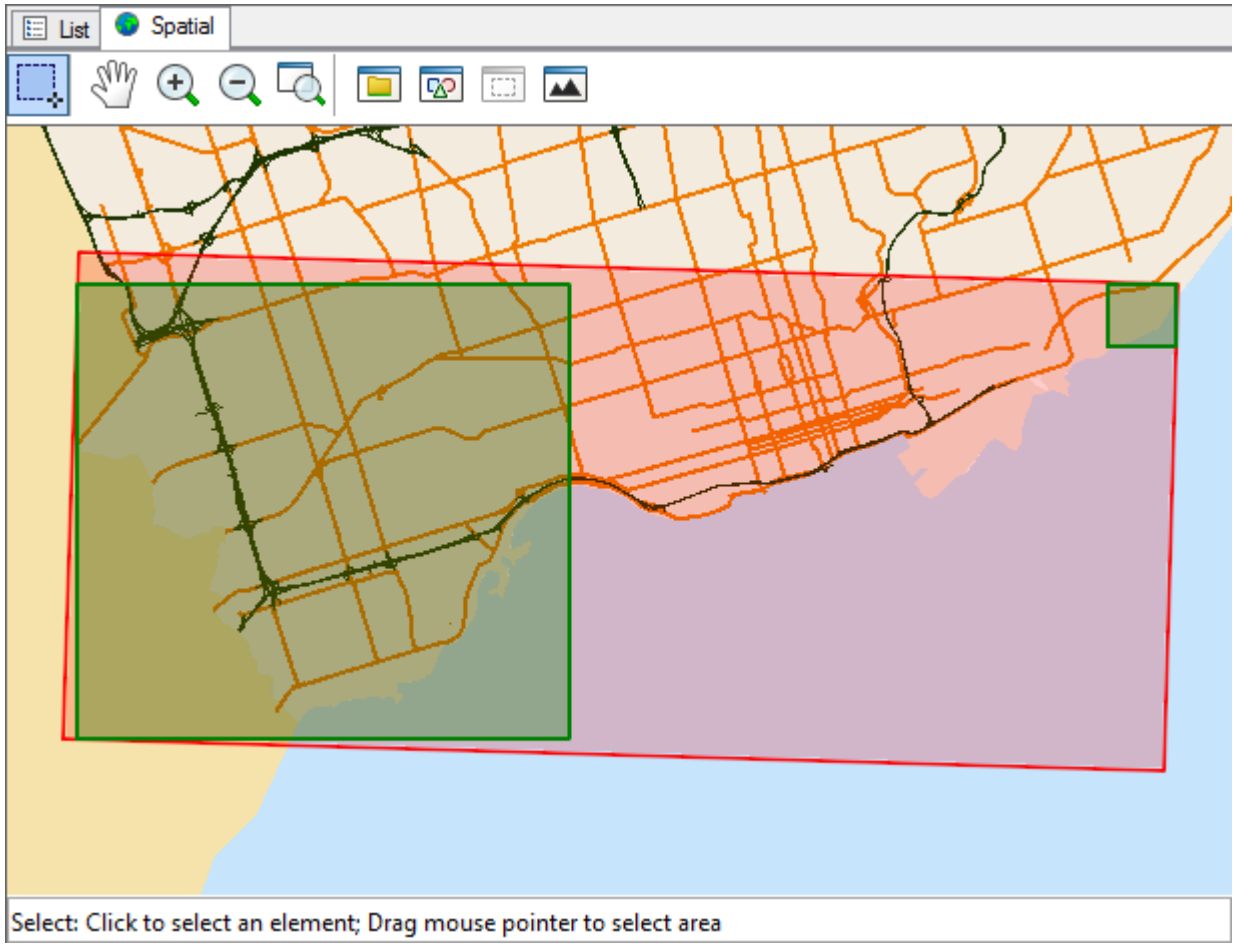
Assign Spatial Location – Calculate Folder Spatial Location



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Assign Spatial Location – Spatial Location Files

- A Spatial Location File is an XML document which stores geometries that have been extracted from MicroStation.
- The geometries represent the geographic location of specific documents or folders within a project.

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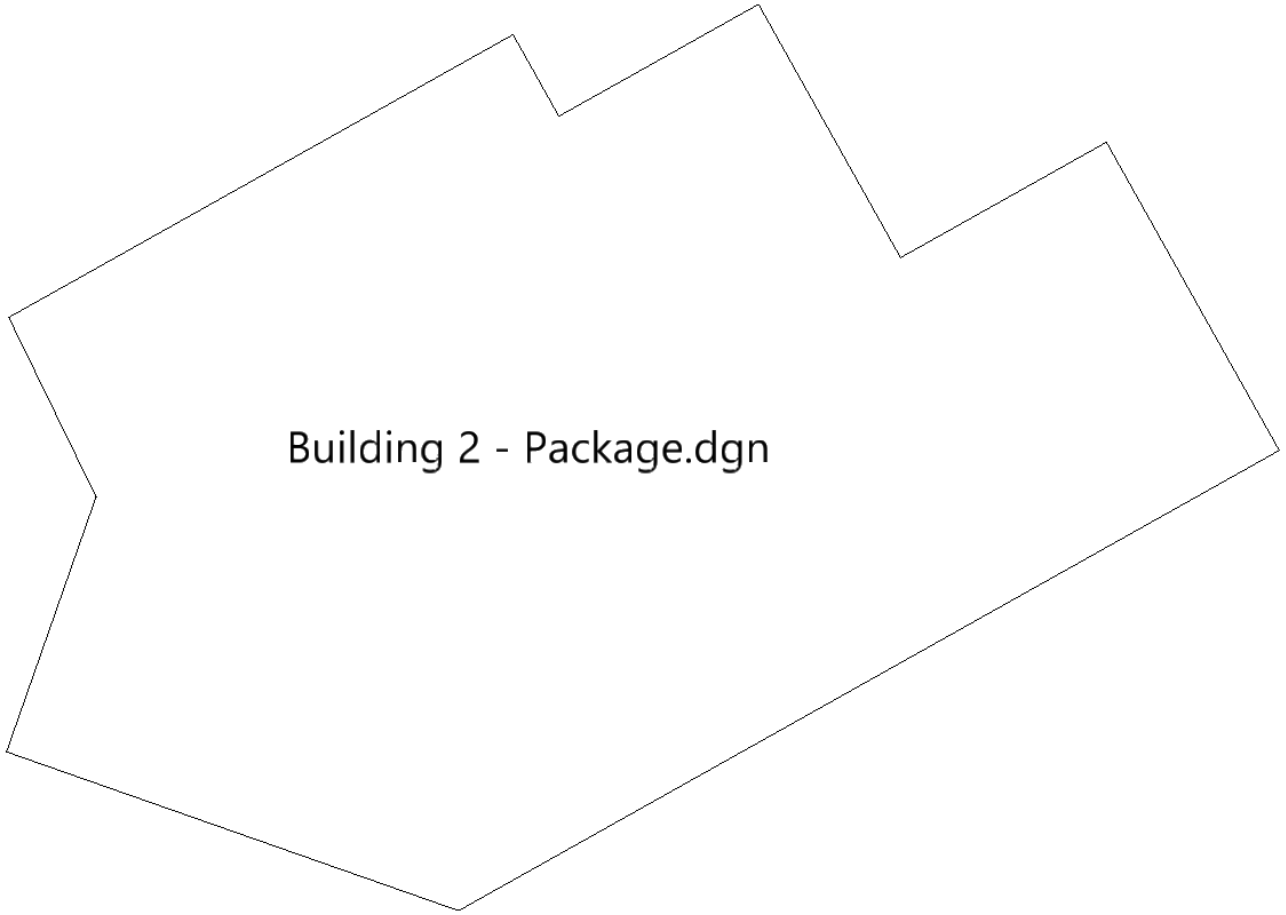
Assign Spatial Location – Spatial Location Files



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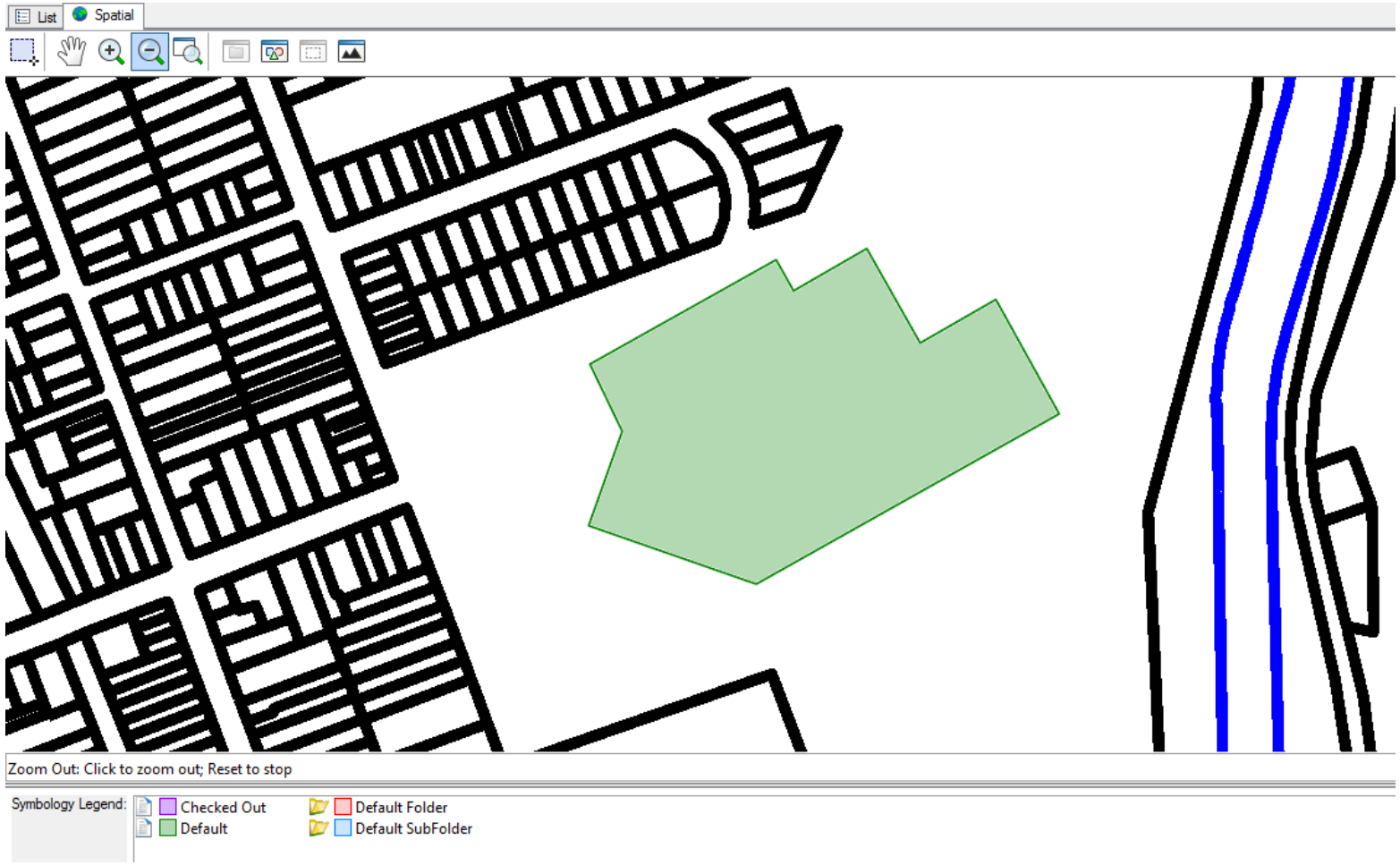

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Questions?

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