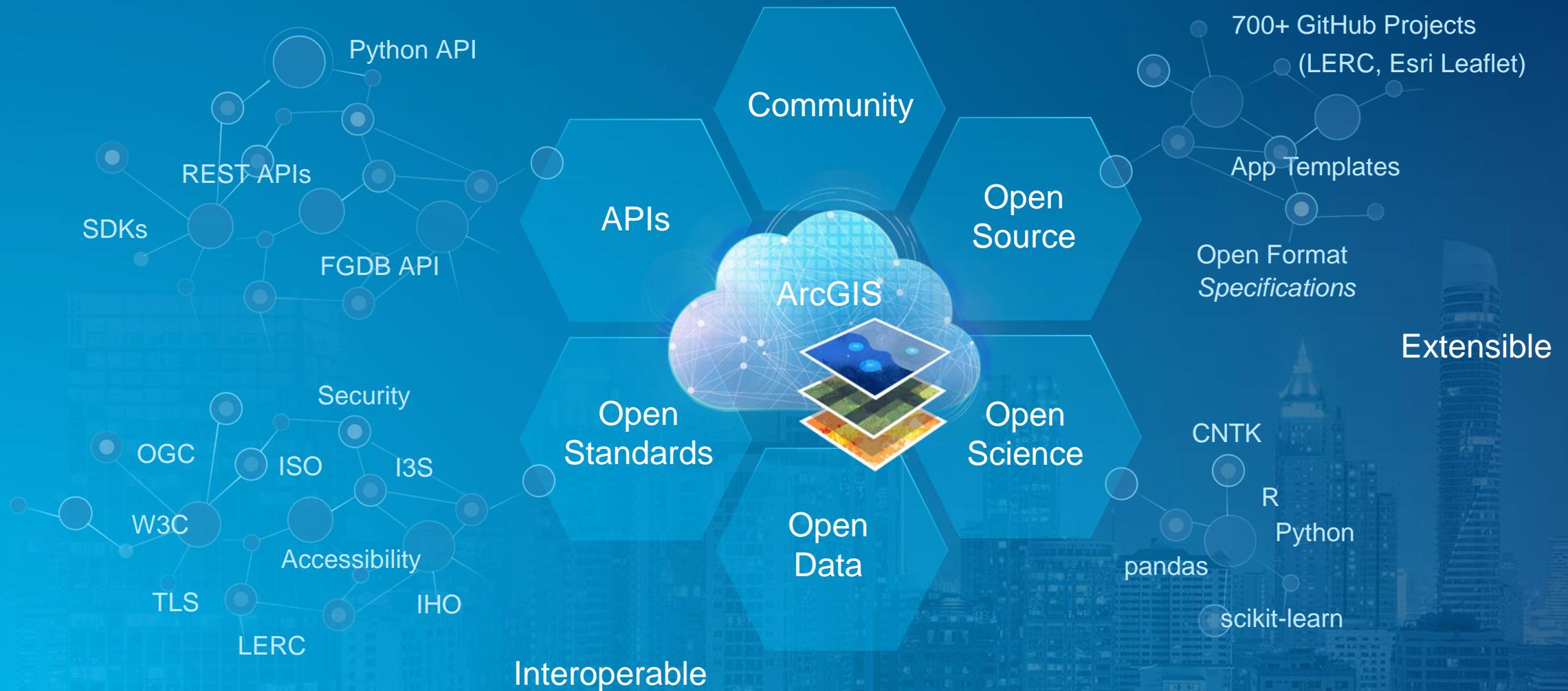


ArcGIS Is An Open Platform





Working with OGC WFS Services

Jillian Penney

A blue-toned background map featuring white contour lines and several data overlays. These overlays include a cluster of colored squares (yellow, green, red, purple) representing land use or zoning, a map of a city with a grid pattern, a cyan L-shaped polygon, a cyan cross-shaped polygon, and a cyan square. There are also small cyan and orange plus signs and a cyan L-shaped polygon in the bottom right corner.

SEE
WHAT
OTHERS
CAN'T

Overview

- What is WFS?
- Why would you use WFS?
- How we support WFS:
 - Publishing a WFS service
 - Consuming a WFS service
- What's new
- Roadmap



Web Feature Services (WFS)

- Serving data as vector features
- Uses GML
- WFS specification



Web Feature Services (WFS)

Two encodings:

- XML (HTTP POST or SOAP)
- Key/value pairs (HTTP GET)

POST

```
<GetCapabilities
  xmlns="http://www.opengis.net/wfs/2.0"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.opengis.net/wfs/2.0 http://schemas.opengis.net/wfs/2.0/wfs.xsd"
  service="WFS"
  version="2.0.0"
/>
```

GET

```
http://sampleserver6.arcgisonline.com/arcgis/services/SampleWorldCities/MapServer/WFSServer?request=GetCapabilities&service=WFS&version=2.0.0
```

Web Feature Services (WFS)

- GetCapabilities
- DescribeFeatureType
- GetFeature



Web Feature Services (WFS)

- GetCapabilities
- DescribeFeatureType
- GetFeature
- WFS-T
 - Editing:
 - Insert
 - Delete
 - Update

Web Feature Services (WFS)

- GetCapabilities
- DescribeFeatureType
- GetFeature
- WFS-T
 - Editing:
 - Insert
 - Delete
 - Update
- Versions supported:
 - 1.0.0
 - 1.1.0
 - 2.0.0



WFS vs. other service types

WMS

- Images
- OGC standard



WFS vs. other service types

WMS

- Images
- OGC standard



Esri Feature Service

- REST based
- Complex capabilities
- Not open standard



Why use a WFS service?

- Open standard
- Interoperability
- Geospatial analysis
- Transactions



Creating a WFS Service

Section Subhead

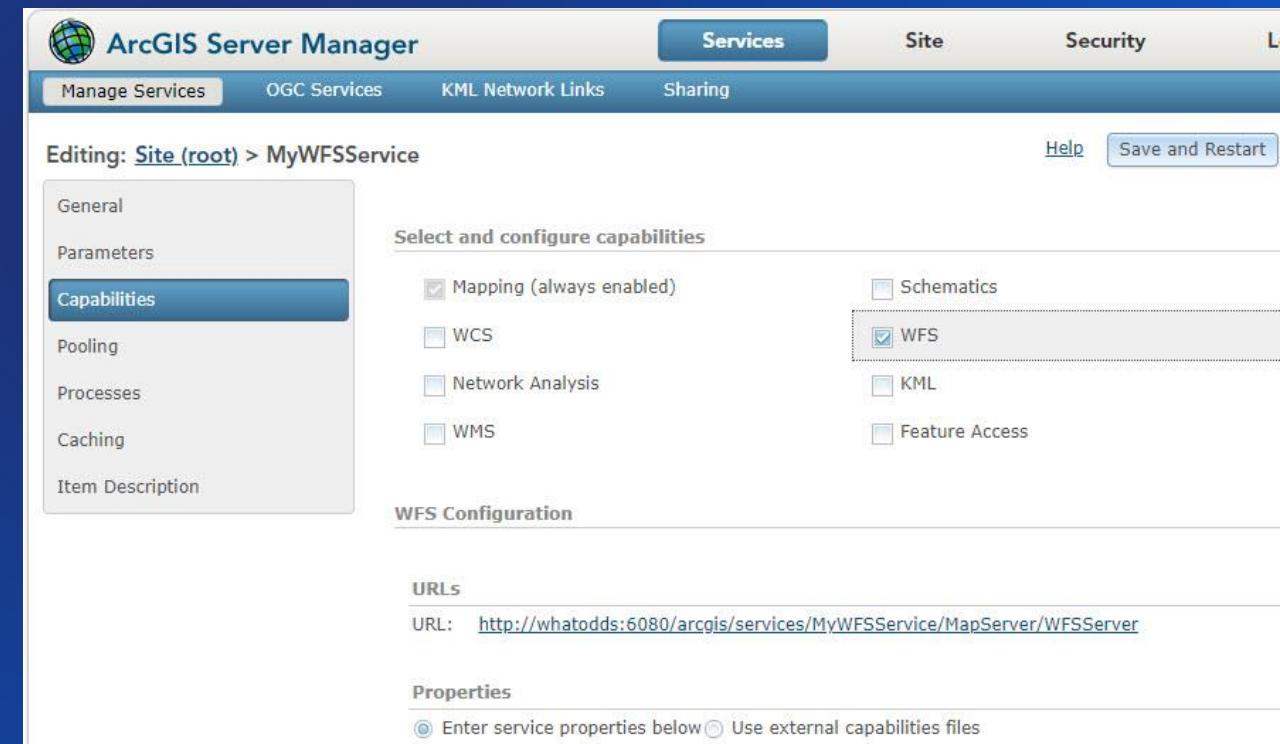
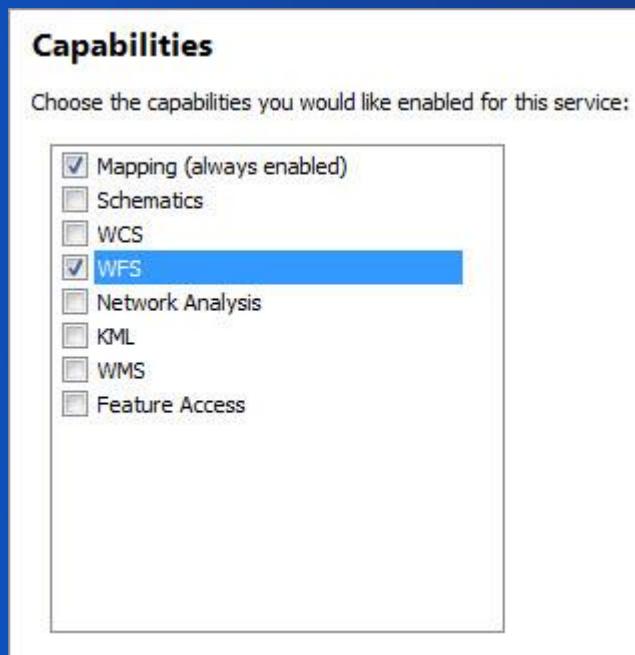
Create a WFS service

- Create from a map in ArcMap
 - ArcGIS Server
- Create from a hosted feature layer
 - ArcGIS Enterprise & ArcGIS Online
- Create from a map in ArcGIS Pro (Pro 2.3, Pro 2.4)



ArcGIS Server

- Enable on a new or existing map service



ArcGIS Server

The image displays two windows of the ArcGIS Server Service Editor, both showing the configuration for a service named "CaliforniaPolygons".

Left Window (WFS Configuration):

- General:** REST URL: [empty], SOAP URL: <http://whatodds:6080/arcgis/services/CaliforniaPolygons/MapServer/WFSServer>
- Parameters:** None
- Capabilities:** None
- Mapping:** None
- WFS:** REST URL: [empty], SOAP URL: <http://whatodds:6080/arcgis/services/CaliforniaPolygons/MapServer/WFSServer>
- Pooling:** None
- Processes:** None
- Caching:** None
- Item Description:** None
- Sharing:** None

Properties:

- Enter service properties below Use external capabilities files
- Table:

Property	Value
Name	CaliforniaPolygons
Title	
Abstract	
Keyword	
ServiceType	
ServiceTypeVersion	
Fees	
AccessConstraints	
ProviderName	
ProviderSite	
- Namespace: <http://www.esri.com>
- Prefix: esri

Right Window (WFS Configuration):

- General:** REST URL: [empty], SOAP URL: <http://whatodds:6080/arcgis/services/CaliforniaPolygons/MapServer/WFSServer>
- Parameters:** None
- Capabilities:** None
- Mapping:** None
- WFS:** REST URL: [empty], SOAP URL: <http://whatodds:6080/arcgis/services/CaliforniaPolygons/MapServer/WFSServer>
- Pooling:** None
- Processes:** None
- Caching:** None
- Item Description:** None
- Sharing:** None

Properties:

- Path or URL to stored query file (WFS 2.0): [empty]
- Enable transactions Enable feature locking Enable maximum number of features returned by service
- Max. number of features returned: 1000
- Force axis order for WFS 1.0.0:
 Longitude, Latitude Latitude, Longitude
- Force axis order for WFS 1.1.0:
 Longitude, Latitude Latitude, Longitude
- Force axis order for WFS 2.0.0:
 Longitude, Latitude Latitude, Longitude

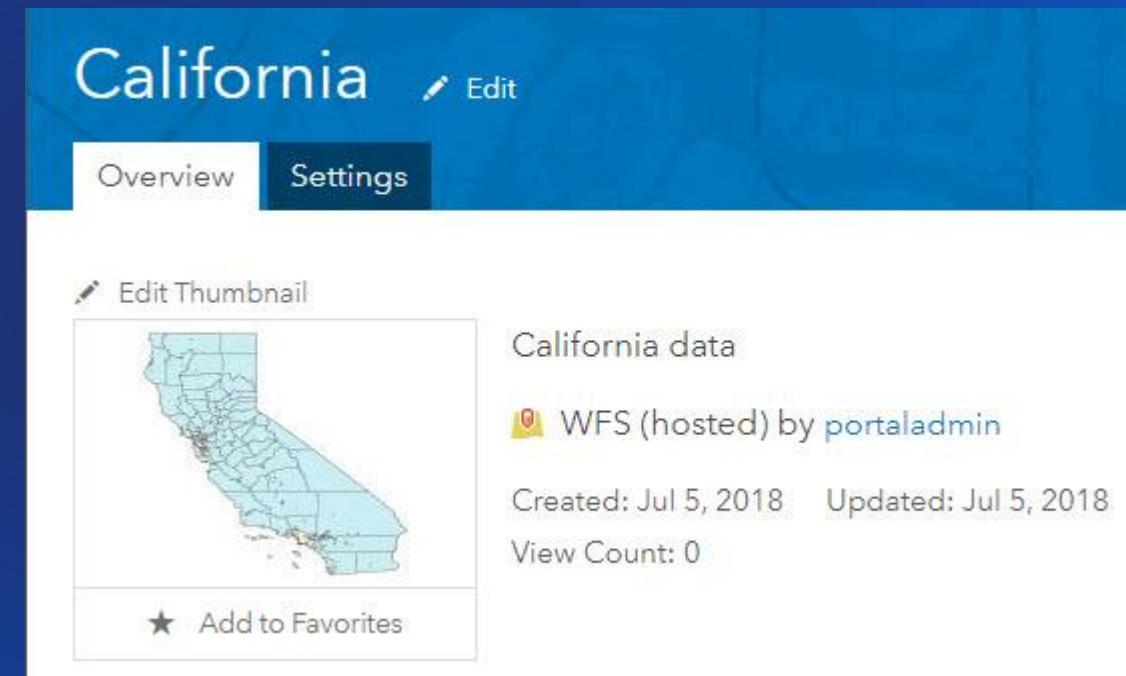
ArcGIS Enterprise or ArcGIS Online (Hosted)

- Publish from an existing hosted feature layer

The screenshot shows the ArcGIS Online item details page for a hosted feature layer named "California". The page has a blue header with navigation links: Home, Gallery, Map, Scene, Groups, Content, Organization, and a search bar. The main content area shows a thumbnail map of California, the item title "California", and a "Data" tab selected. Below the thumbnail is a "Description" section with a placeholder "Add an in-depth description of the item." To the right is a "Actions" sidebar with buttons for "Open in Map Viewer", "Open in Scene Viewer", "Open in ArcGIS Des...", "Publish", "Tile layer", "WFS" (with an arrow pointing to it), "Share", and "Metadata". The "Layers" section lists "UrbanAreas" and "Counties" with various management options. The "Item Information" section at the bottom includes a progress bar, "Learn more" link, and "Top Improvement" dropdown.

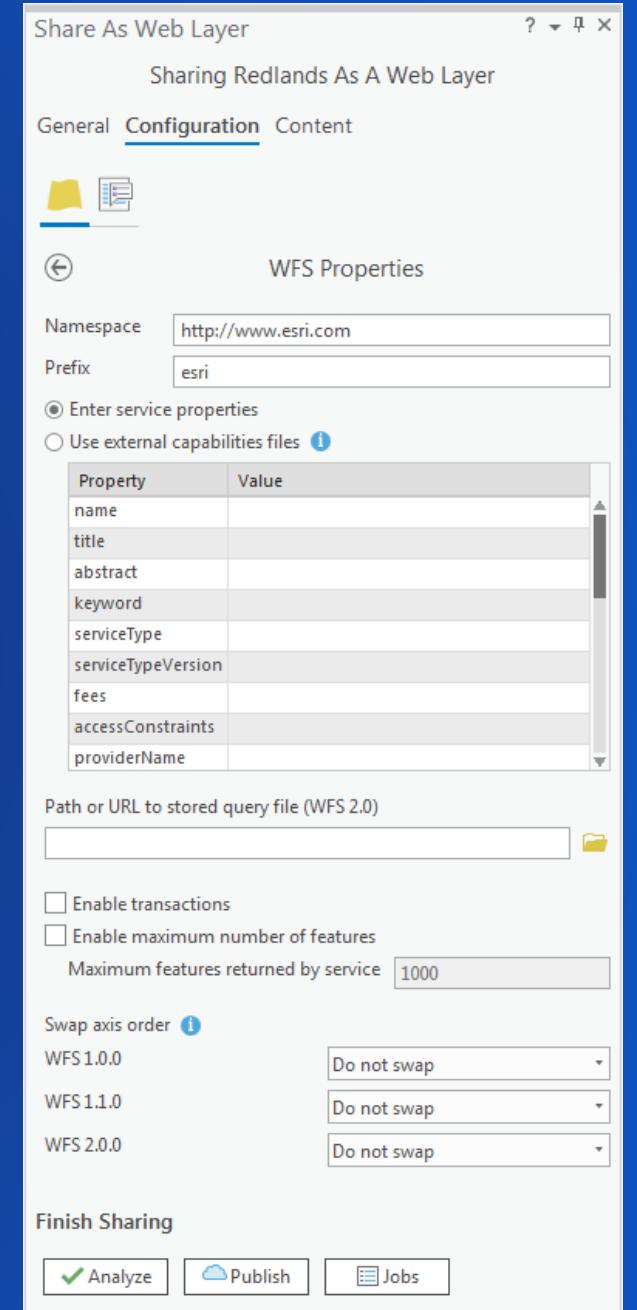
ArcGIS Enterprise or ArcGIS Online

- A new WFS (hosted) item is created
- Notes:
 - These must be shared with everyone
 - Lifetime is dependent on the hosted feature layer



ArcGIS Pro

- Hosted services (ArcGIS Online or ArcGIS Enterprise)
- Publish to ArcGIS Enterprise by reference
- Publish to ArcGIS Enterprise by copying the data to the server

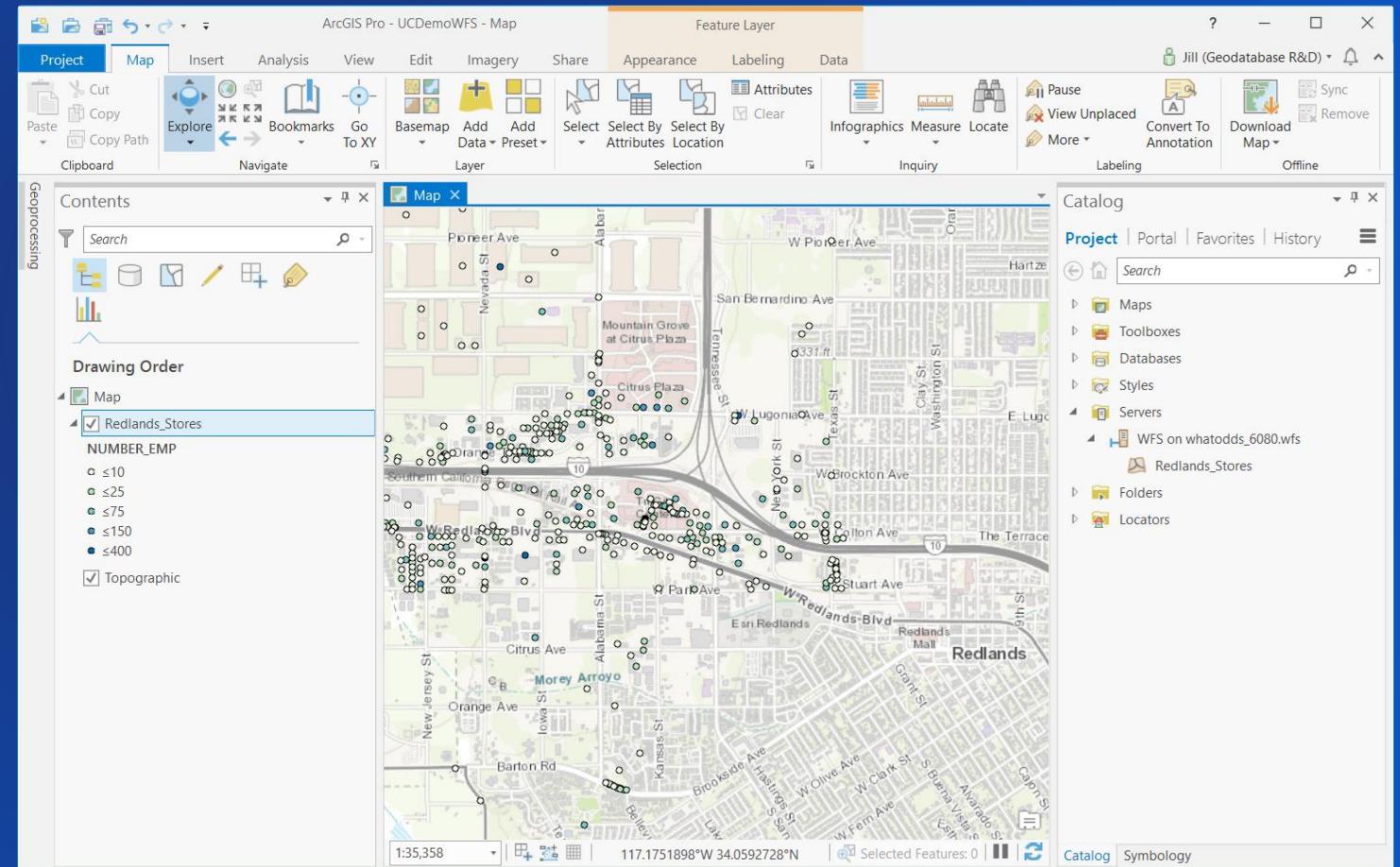


WFS Clients

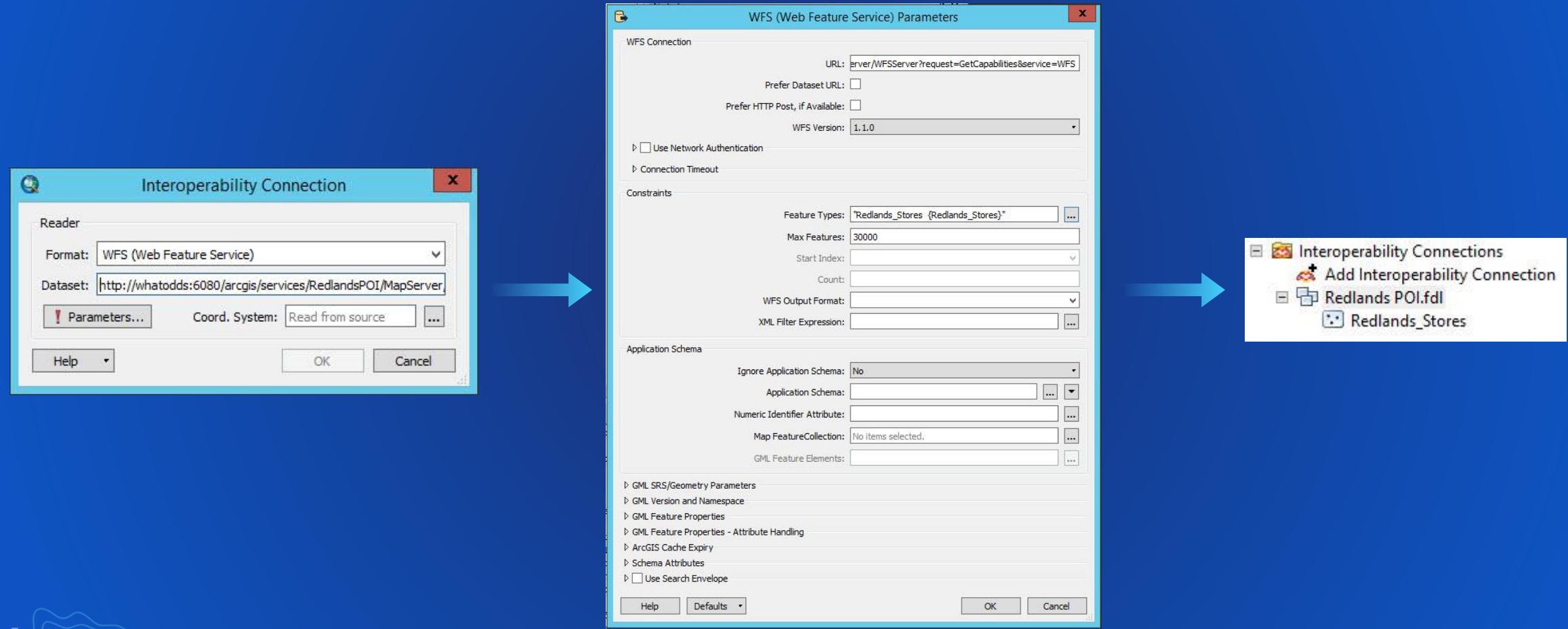
Section Subhead

ArcGIS WFS clients

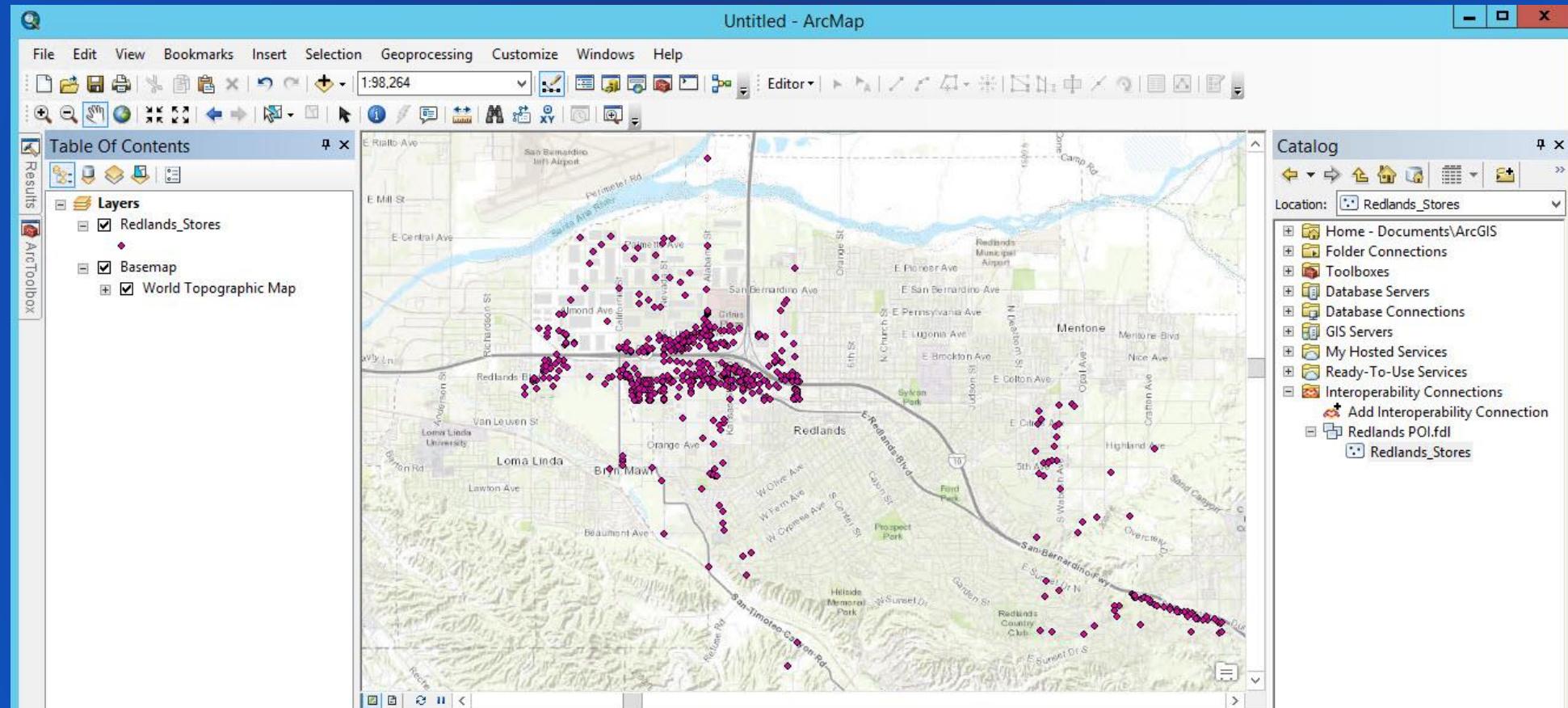
- Data Interoperability Extension in ArcMap
- ArcGIS Online/Enterprise Map Viewer
- ArcGIS Pro



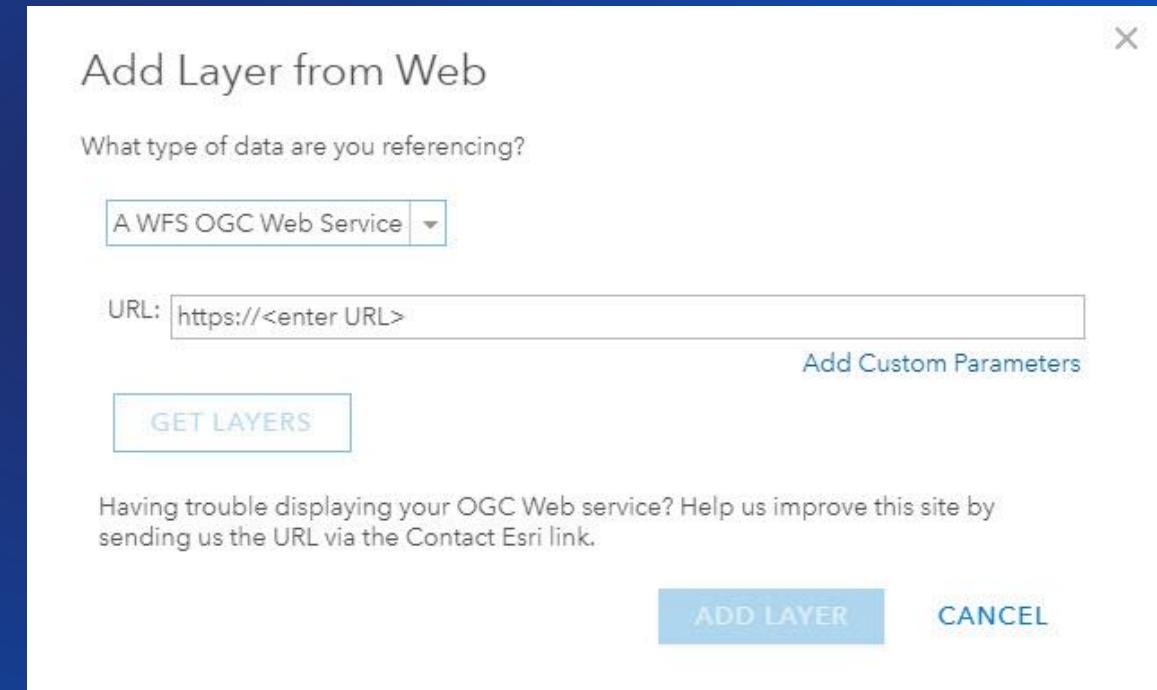
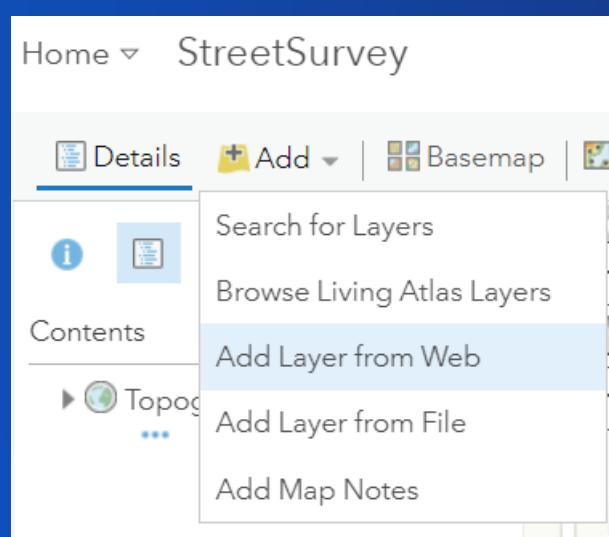
Data Interoperability Extension



Data Interoperability Extension



ArcGIS Online & ArcGIS Enterprise



ArcGIS Online & ArcGIS Enterprise

Home ▾ StreetSurvey

New Map  Jill ▾

Details Add ▾ Basemap Analysis Share Directions Bookmarks Find address or place

Legend Street_Pavement



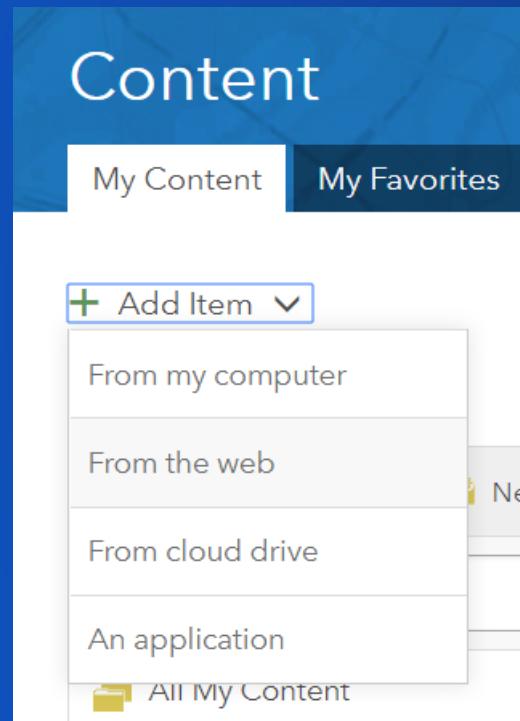
0 150 300ft

City of Redlands, County of Riverside, San Bernardino County, Bureau of Land Man...

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ArcGIS Online & ArcGIS Enterprise



Add an item from the web

Type:

ArcGIS Server web service KML
 WMS (OGC) WFS (OGC)
 WMTS (OGC) Document

URL:

`https://geodata.nationaalgeoregister.nl/nationaleparken/wfs`

Title:

My non-Esri WFS service

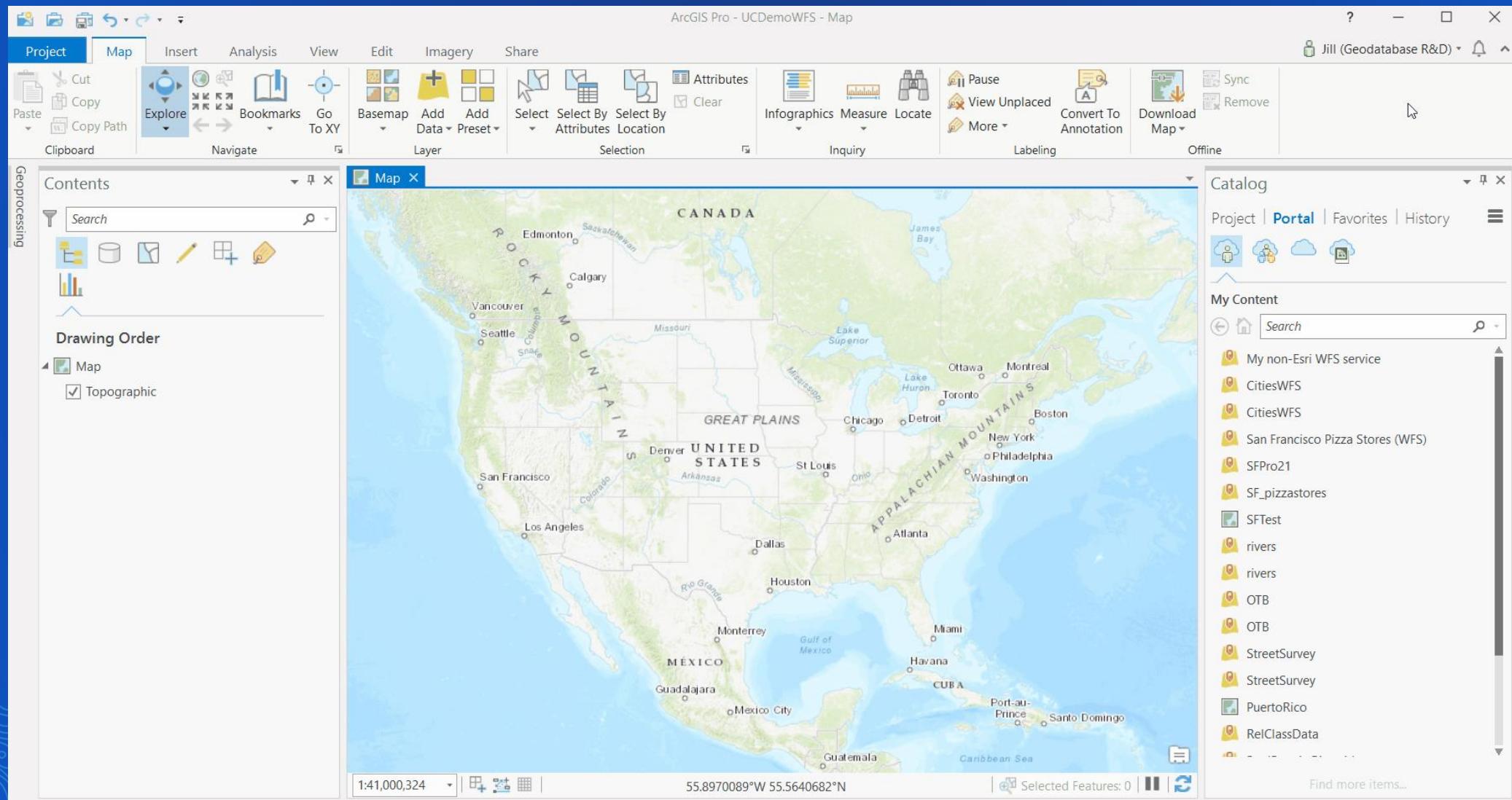
Tags:

Add tag(s)

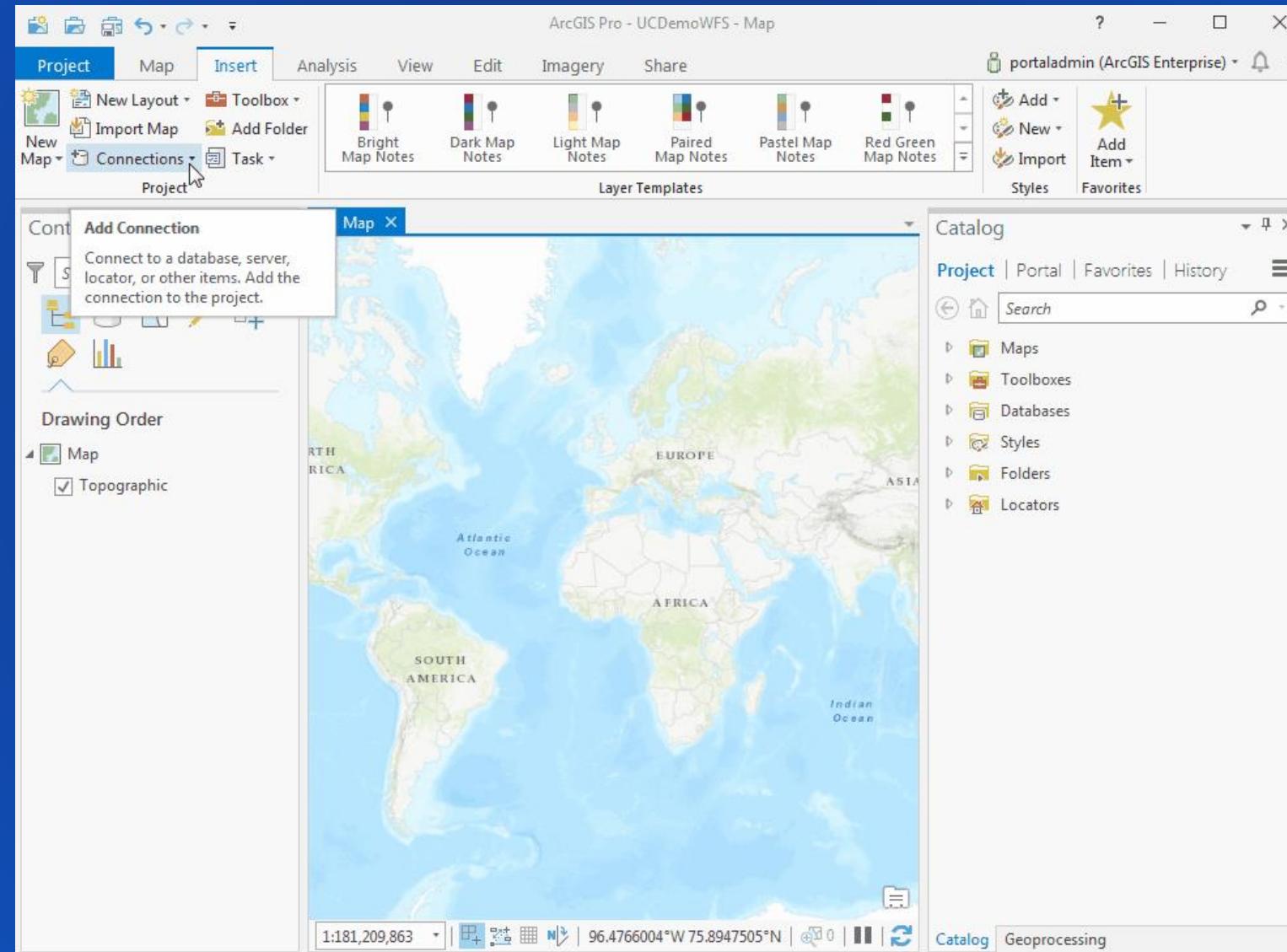
Layer:

nationaleparken ▾

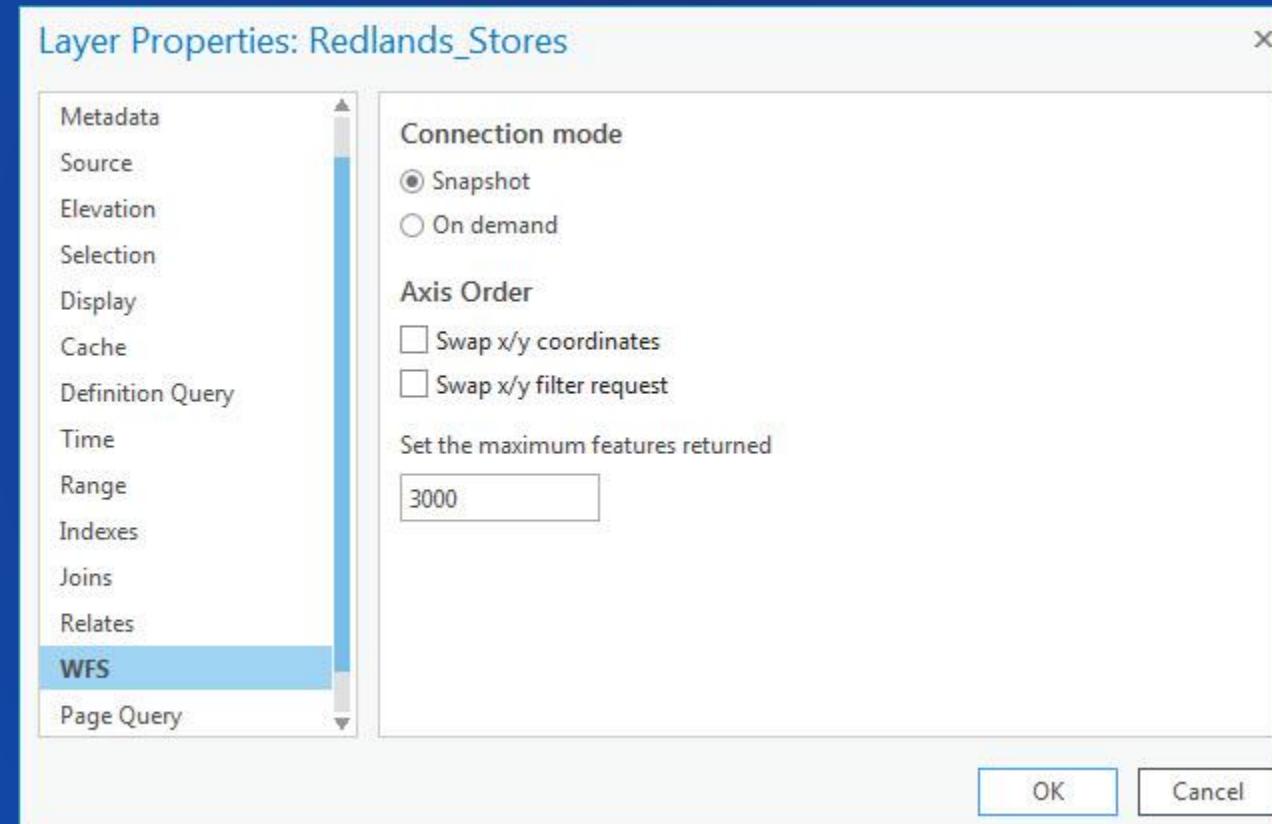
ArcGIS Pro (portal item)



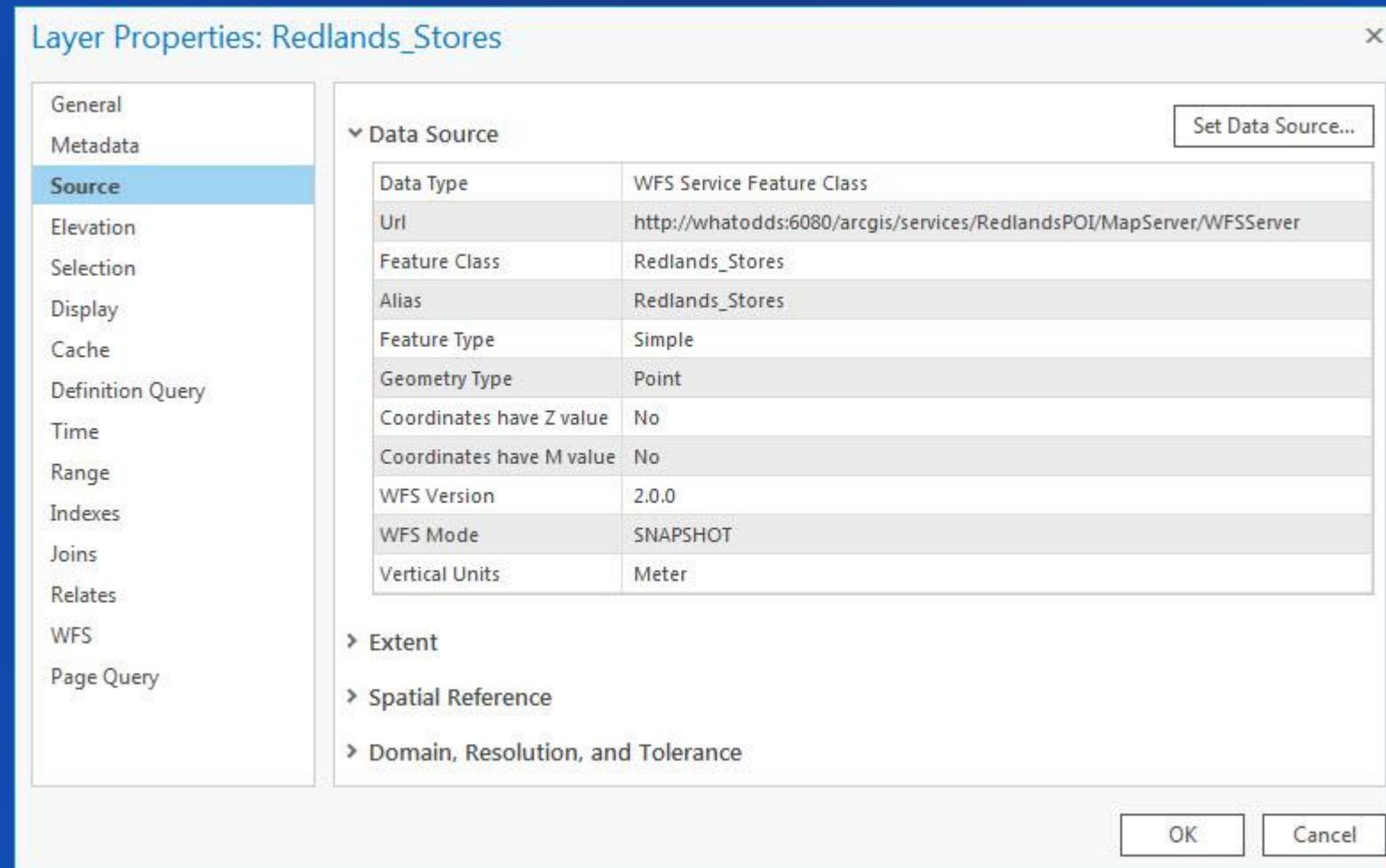
ArcGIS Pro (WFS Server connection)



ArcGIS Pro (WFS Server connection)



ArcGIS Pro (WFS Server connection)

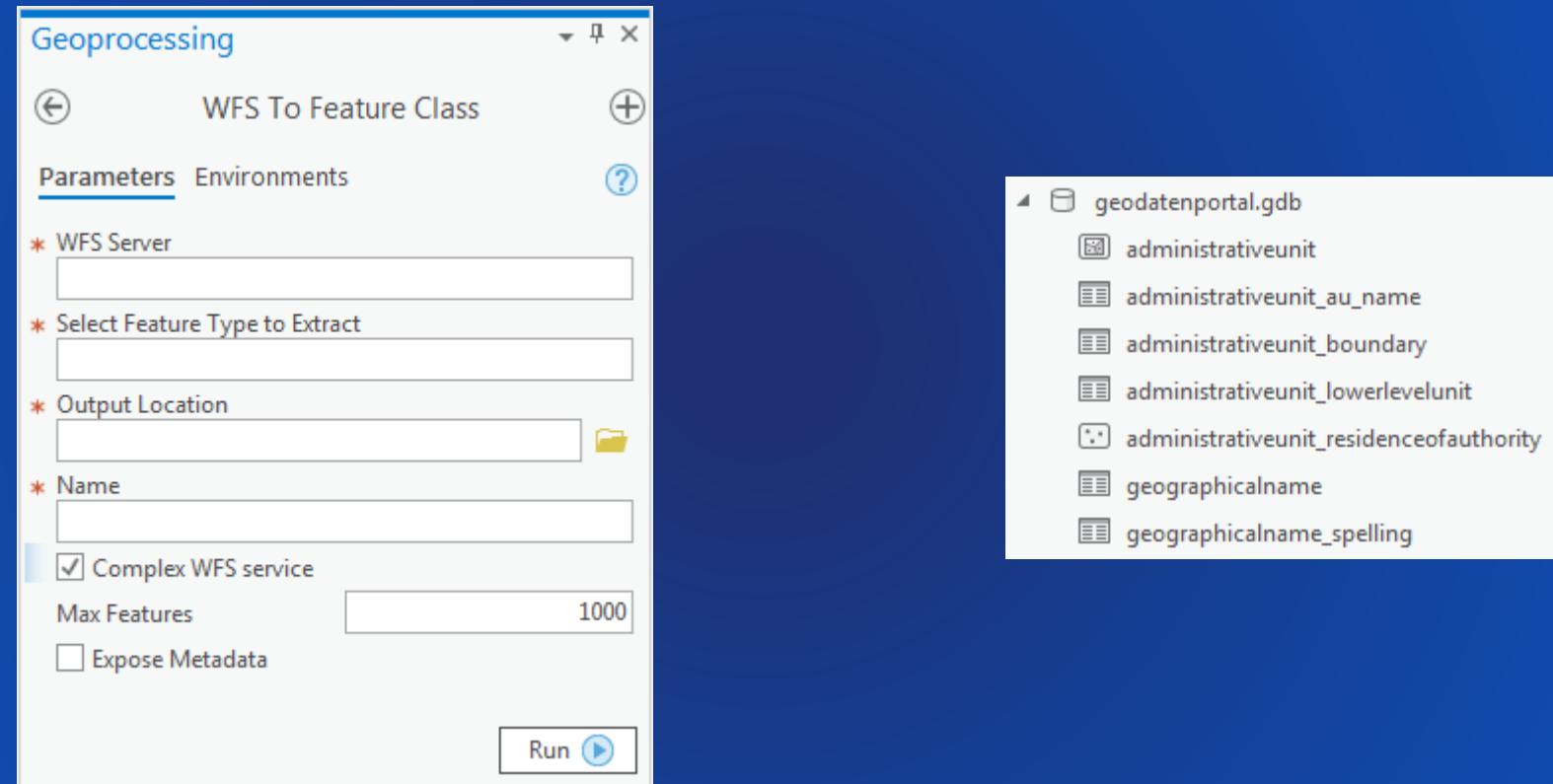


What's New

- ArcGIS Server/ArcGIS Enterprise
 - Maintenance and bug fixes
 - New WFS portal item
- ArcGIS Runtime
 - Support for WFS layers (100.5)
- ArcGIS Pro
 - Publishing (2.3)
 - Hosted and non-hosted WFS services
 - Ability to modify WFS Server connections
 - Improvements to WFS to Feature Class GP tool (2.4)
 - Support for complex services
 - Support for BBOX and filter custom parameters



What's New



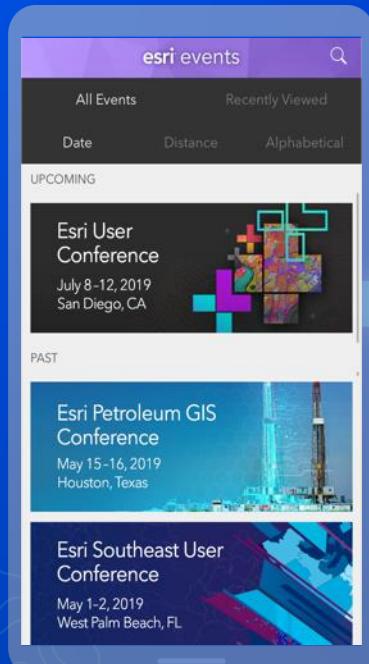
Roadmap

- Continued improvement in our clients and services
 - Your feedback helps us improve!
- R&D:
 - WFS 3.0.0
 - Output formats

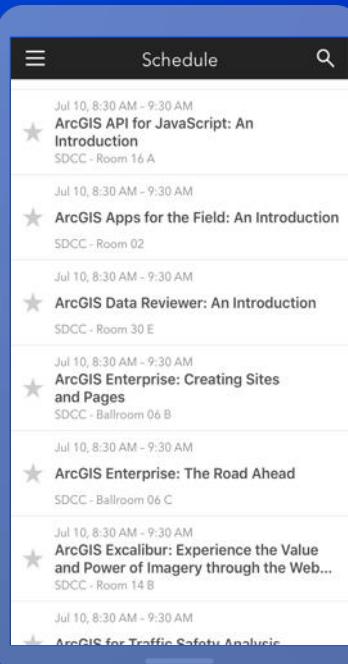


Please Share Your Feedback in the App

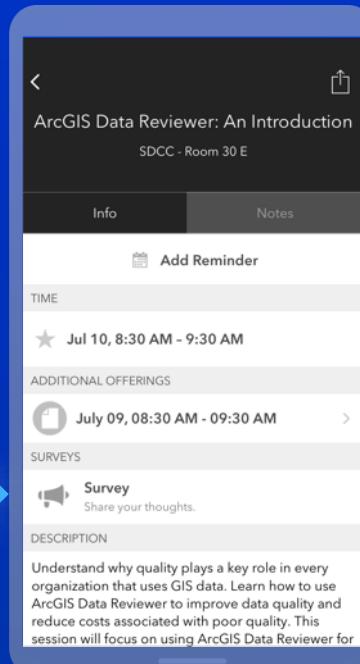
Download the Esri Events app and find your event



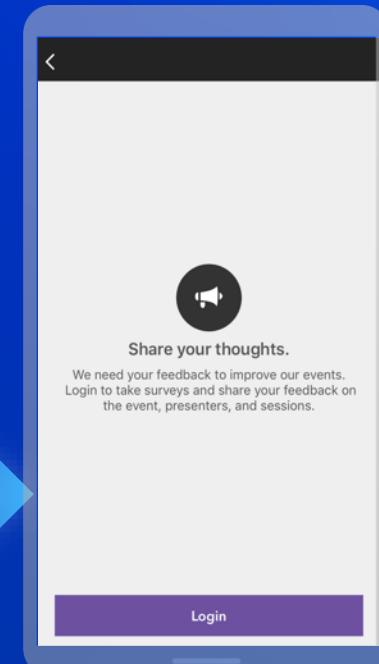
Select the session you attended



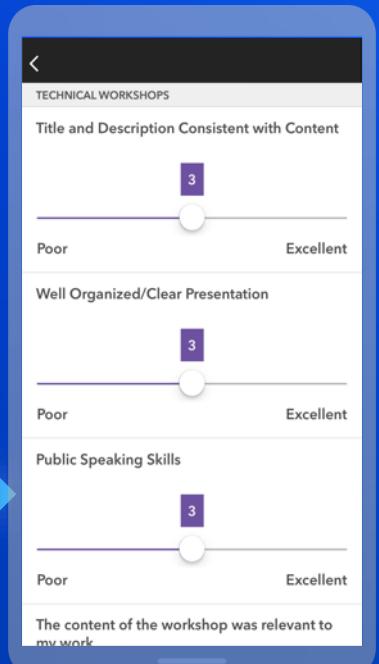
Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"





THE
SCIENCE
OF
WHERE

