

FORWARD PINELLAS MAX INDEX

Getting Started
Guide 2023



Forward Pinellas MAX Index – Getting Started

Intro:

The MAX Index is a tool for measuring the level of multimodal accessibility in a given area. It can be run as a tool in ArcGIS or ArcGIS Pro and analyzes various data sources to determine a total score, or MAX score, for an area. The data sources used include:

- Bike Lane Data
- Bus Headway Data
- Volume to Capacity Ratio Data
- Level of Service Data
- Transportation Improvement Program Data
- Trail Data
- Bike Sharrow Data
- Bus Stop Data
- Micromobility Data
- Walkability Data
- Bus Rapid Transit data

The MAX score is intended to provide urban planners and GIS professionals with a holistic view of an area's level of multimodal accessibility. This can be used to identify areas that need improvement, set goals for transportation and land-use projects, and evaluate the impact of transportation projects on accessibility.

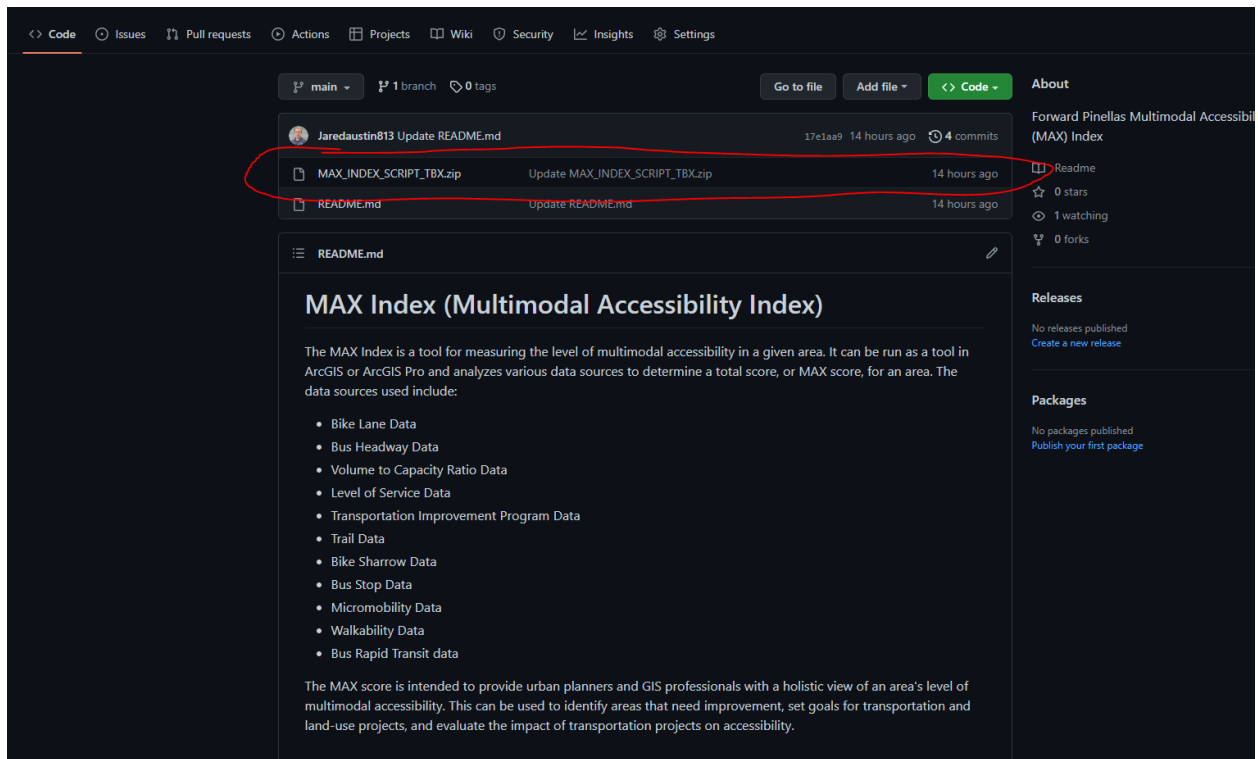
Running the MAX Index (5-10 Minutes):

To use the MAX Index, you will need to have ArcMap 10.x or ArcGIS Pro installed on your computer. The tool can be run on your own data or on sample data that is provided with the tool.

To download the tool and sample data follow this [link](#) and download the MAX_INDEX_TBX.zip folder.

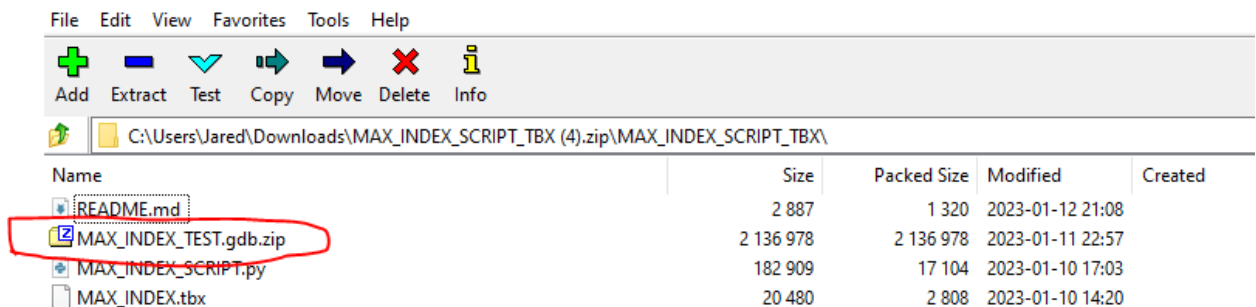
Extract the data, and be sure to unzip the MAX_INDEX_TEST.gdb.zip contained in the folder as well, as this is the geodatabase with the test data in it.

1. Navigate to Github and download the .zip folder



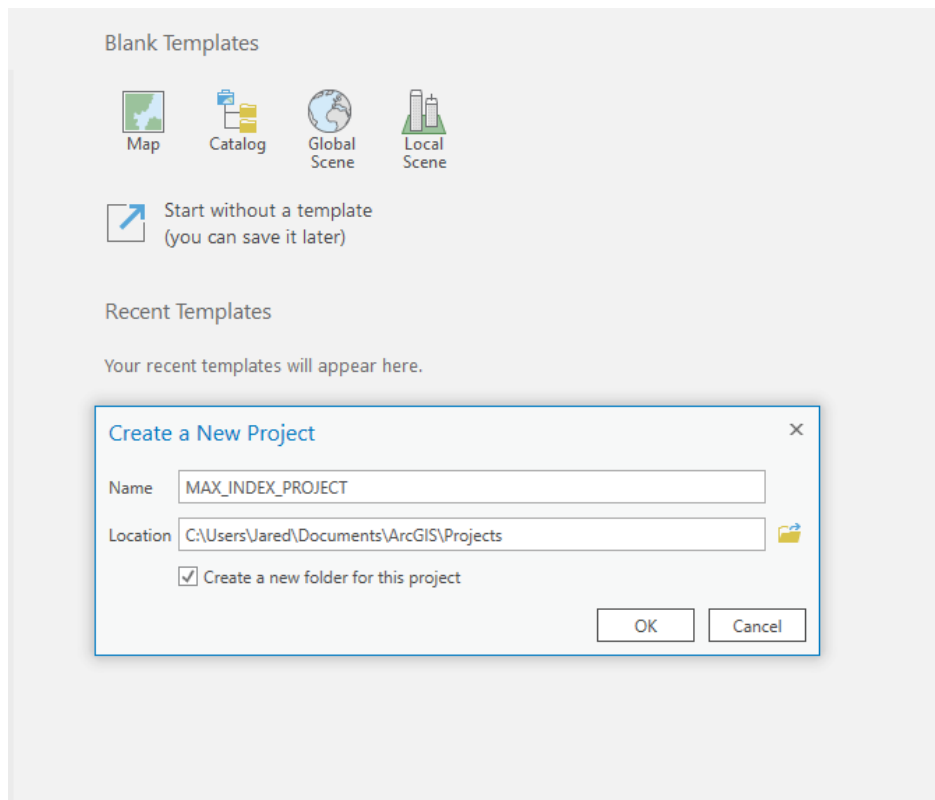
*** Will now say MAX_INDEX_TBX.zip instead of MAX_INDEX_SCRIPT_TBX.ZIP***

2. In addition to downloading and extracting the data shown above, be sure to also unzip the sample data geodatabase.



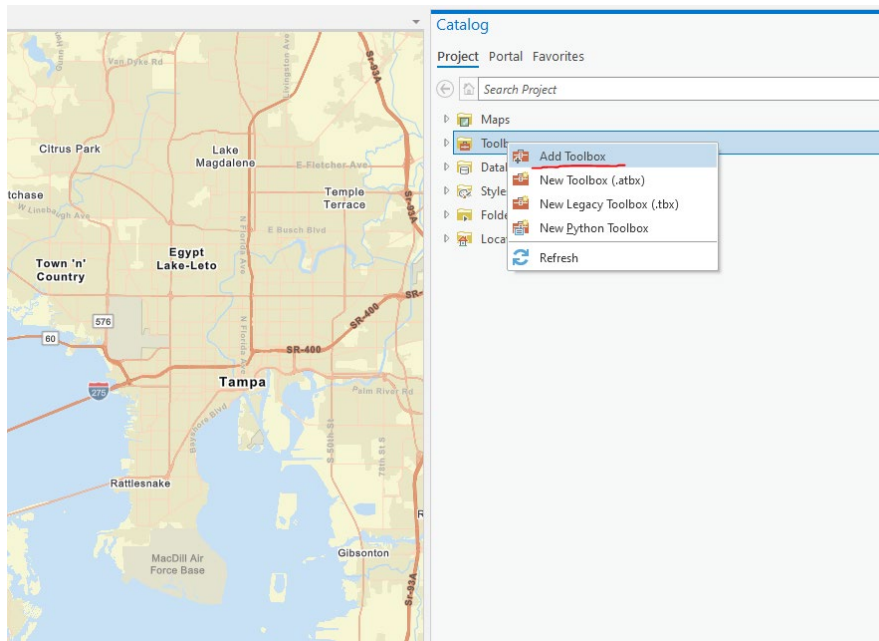
3. Next you will need to start a new project in ArcGIS pro and connect to the tool, script that runs the tool, and test data geodatabase (if applicable).

Create Project and click OK

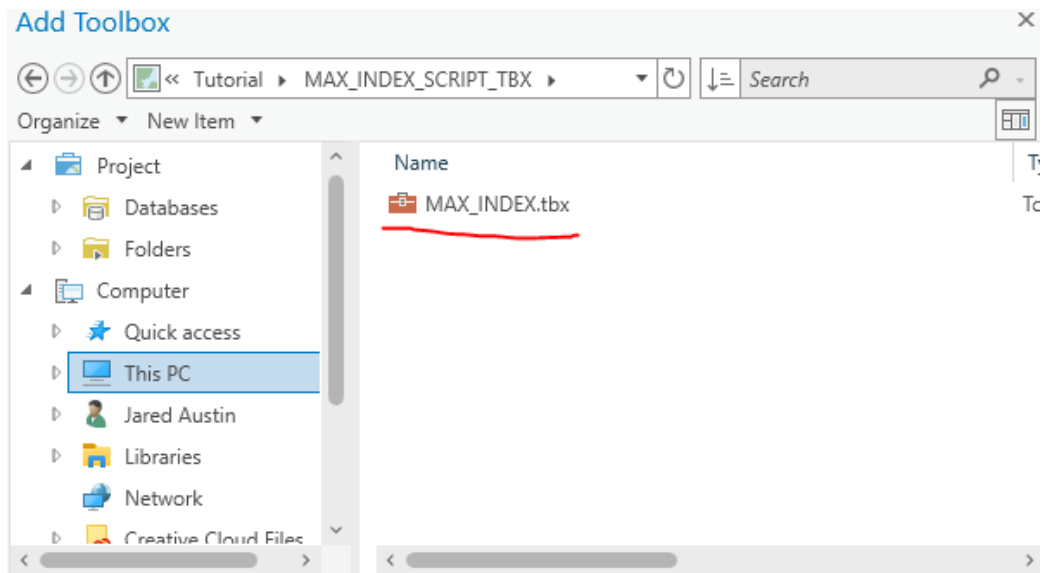


4. In the newly created project. Open your catalog pane and connect to the toolbox you extracted from the downloaded .zip data.

Right click Toolboxes and select add toolbox.

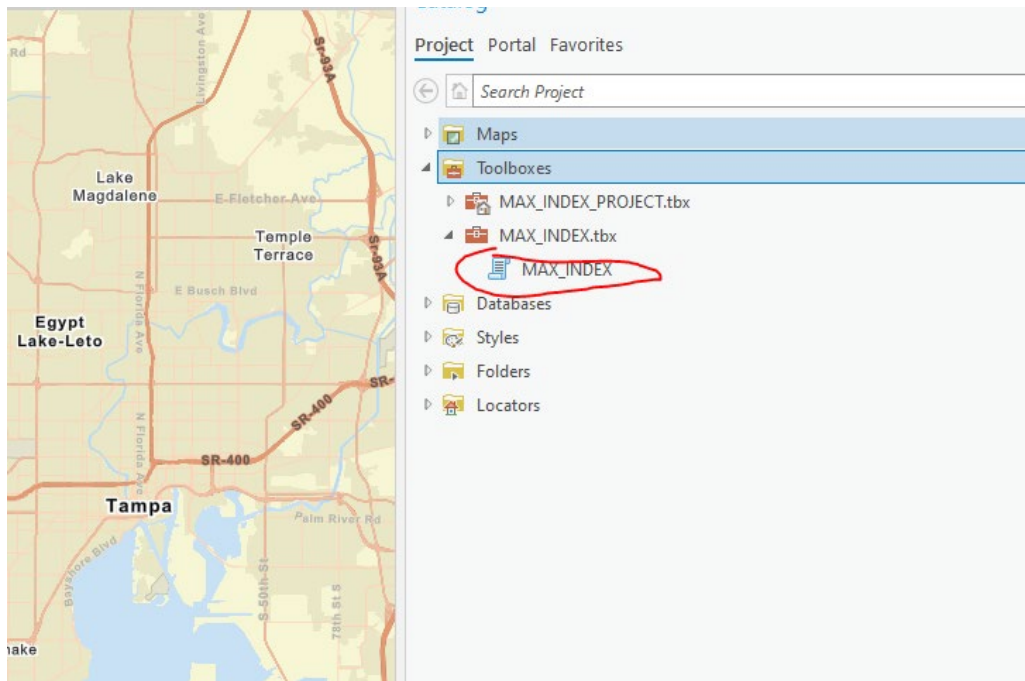


Navigate to where you extracted the MAX_INDEX_TBX data and Select MAX_INDEX_v2.tbx and click OK.



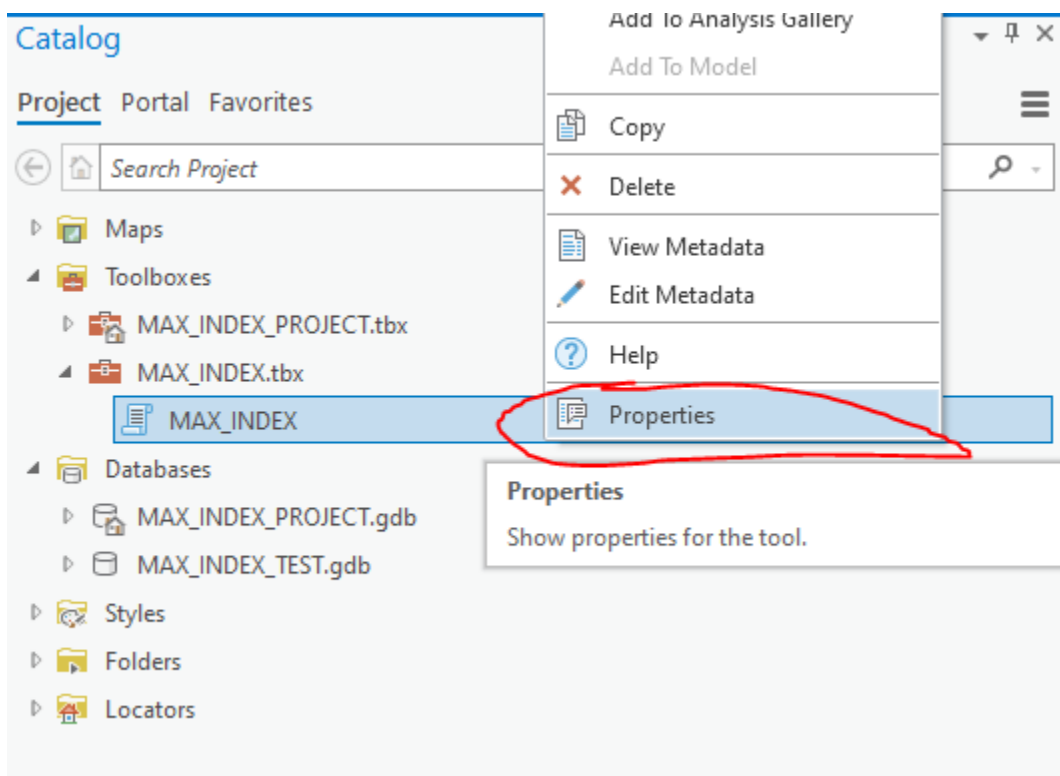
Will now say MAX_INDEX_v2.tbx instead of MAX_INDEX.tbx

This should appear in your catalog

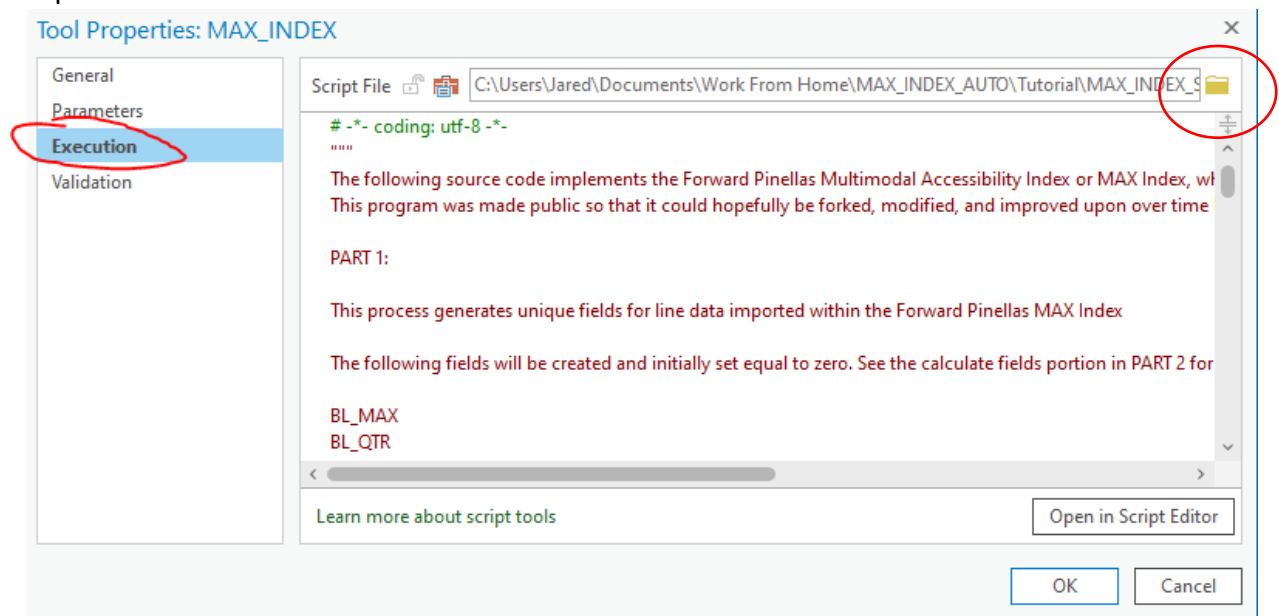


*** Will now say MAX_INDEX_v2.0 instead of MAX_INDEX***

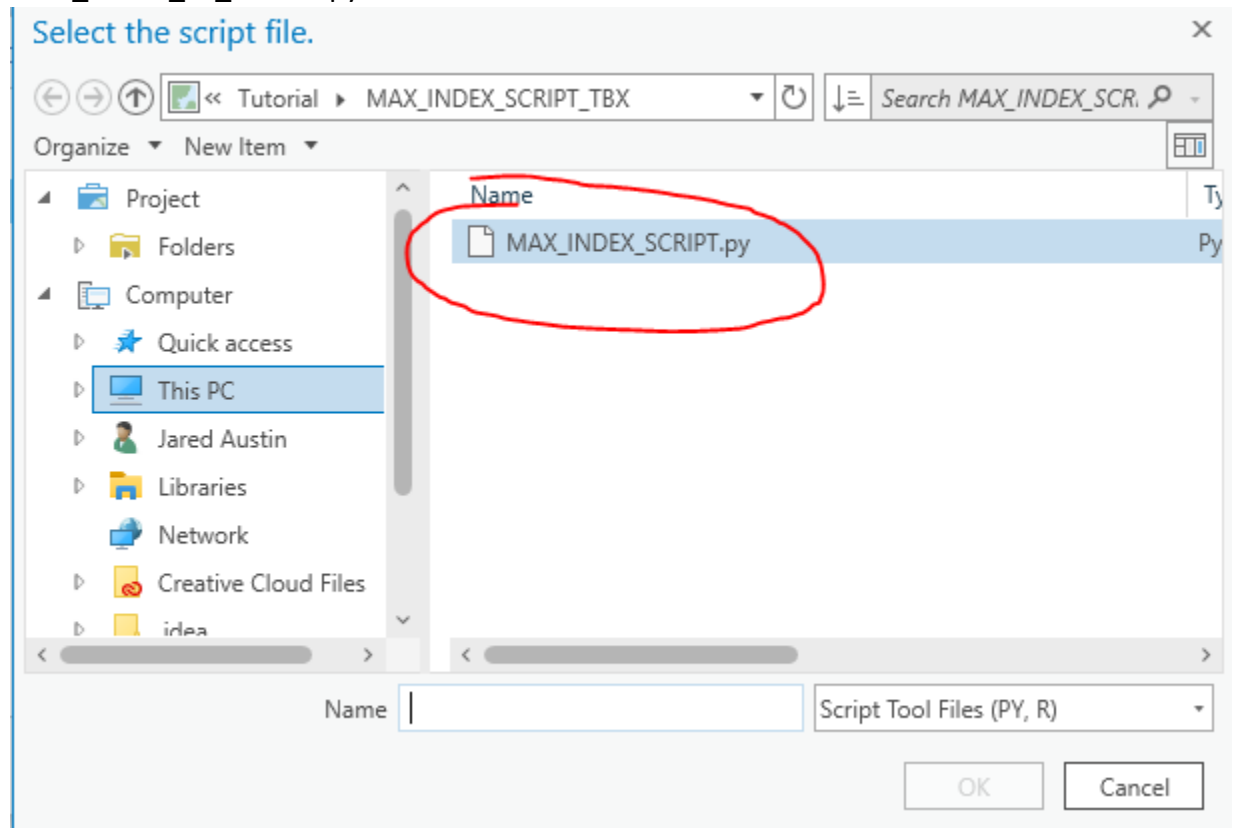
Next right click the MAX_INDEX script icon and select properties.



In the properties window navigate to execution and select the folder icon to import the script that runs the tool.



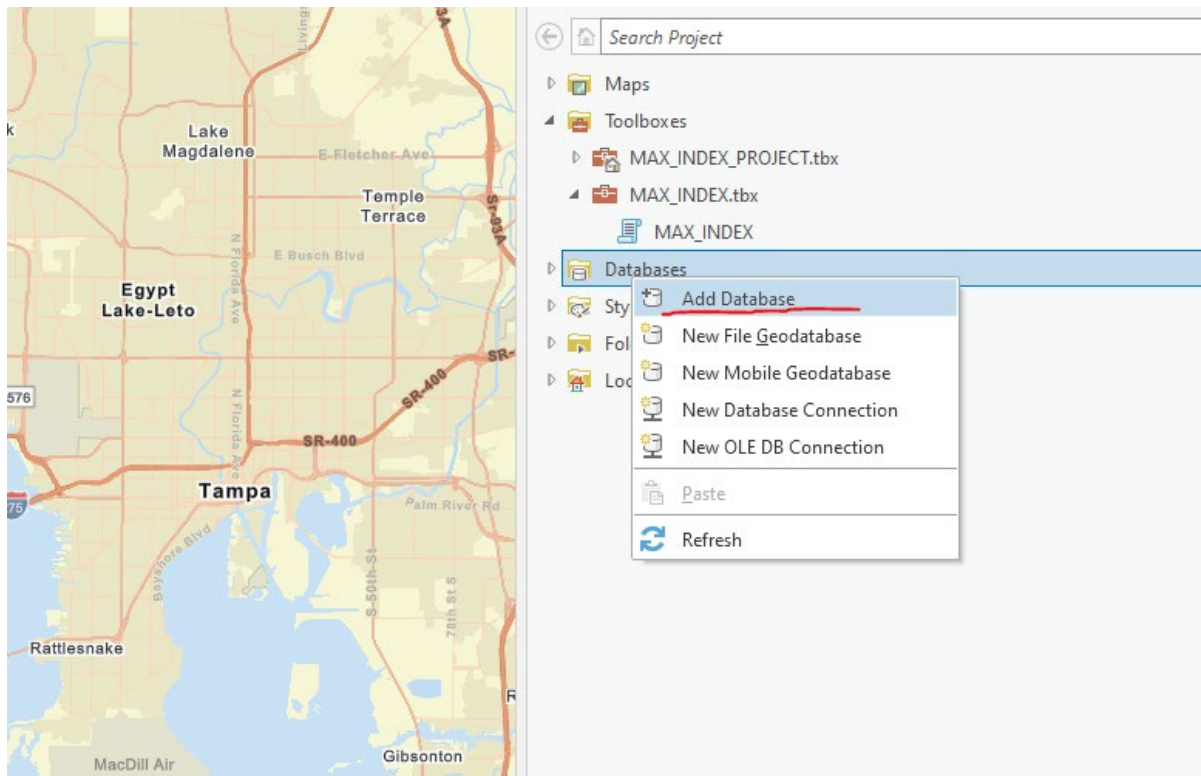
Navigate to where you extracted the MAX_INDEX_TBX data and select the MAX_INDEX_v2_SCRIPT.py and click OK.



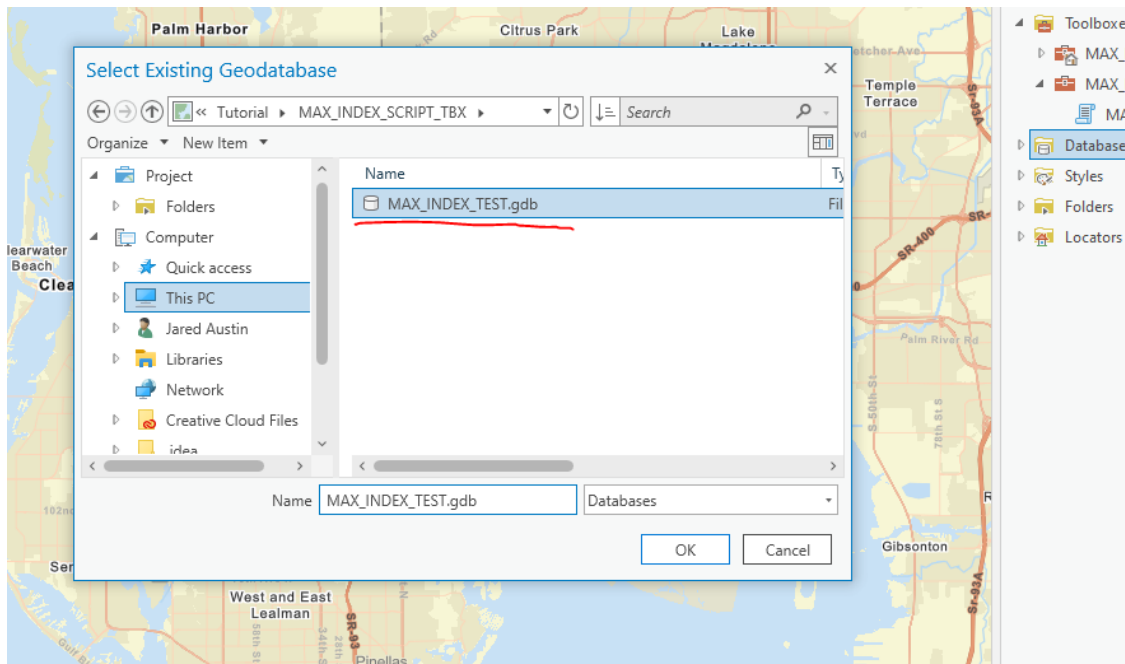
*****This will now say MAX_INDEX_v2_SCRIPT.py instead of MAX_INDEX_SCRIPT.py*****

5. Next, we will connect to the test geodatabase you extracted from the MAX_INDEX_TBX.zip data if applicable (if you are using your own data add your own database with all necessary data sets and skip to step 6).

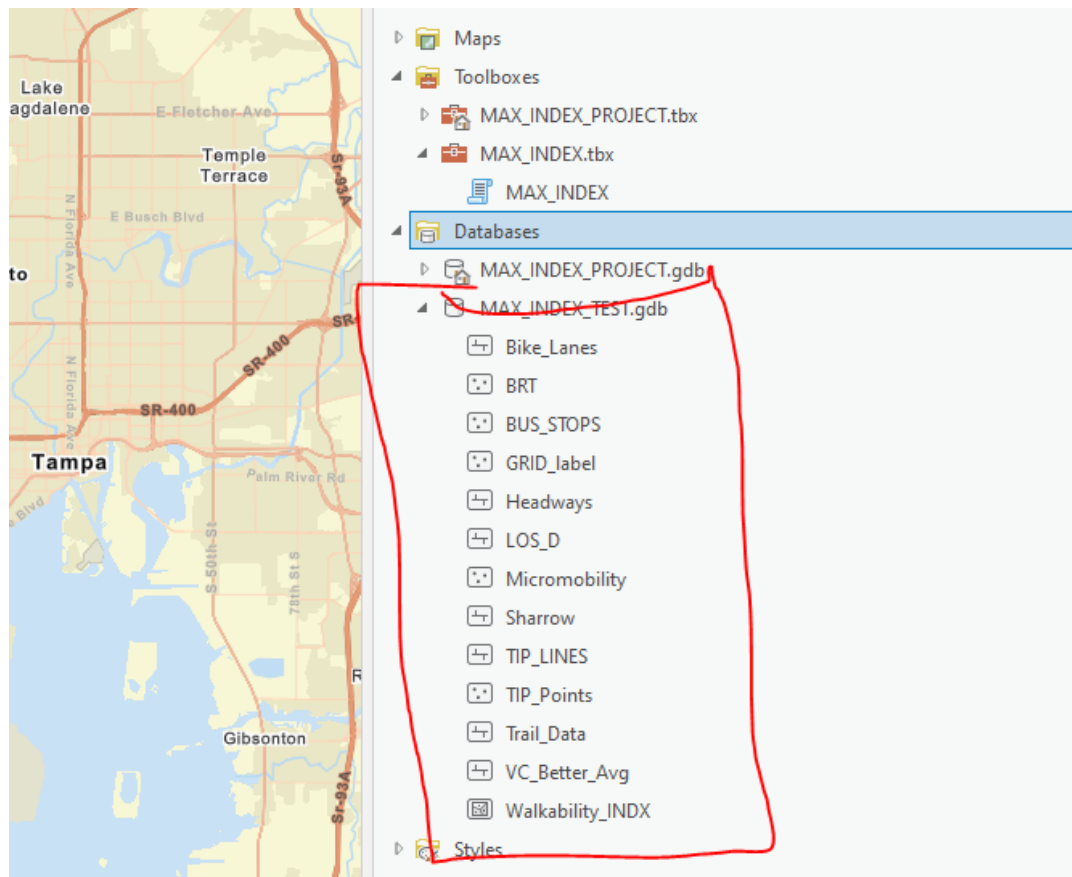
Right click the databases folder in your project Catalog and select Add Database



Next navigate to where you saved your MAX_INDEX_TBX data, or your own working database, and select the database and click OK.

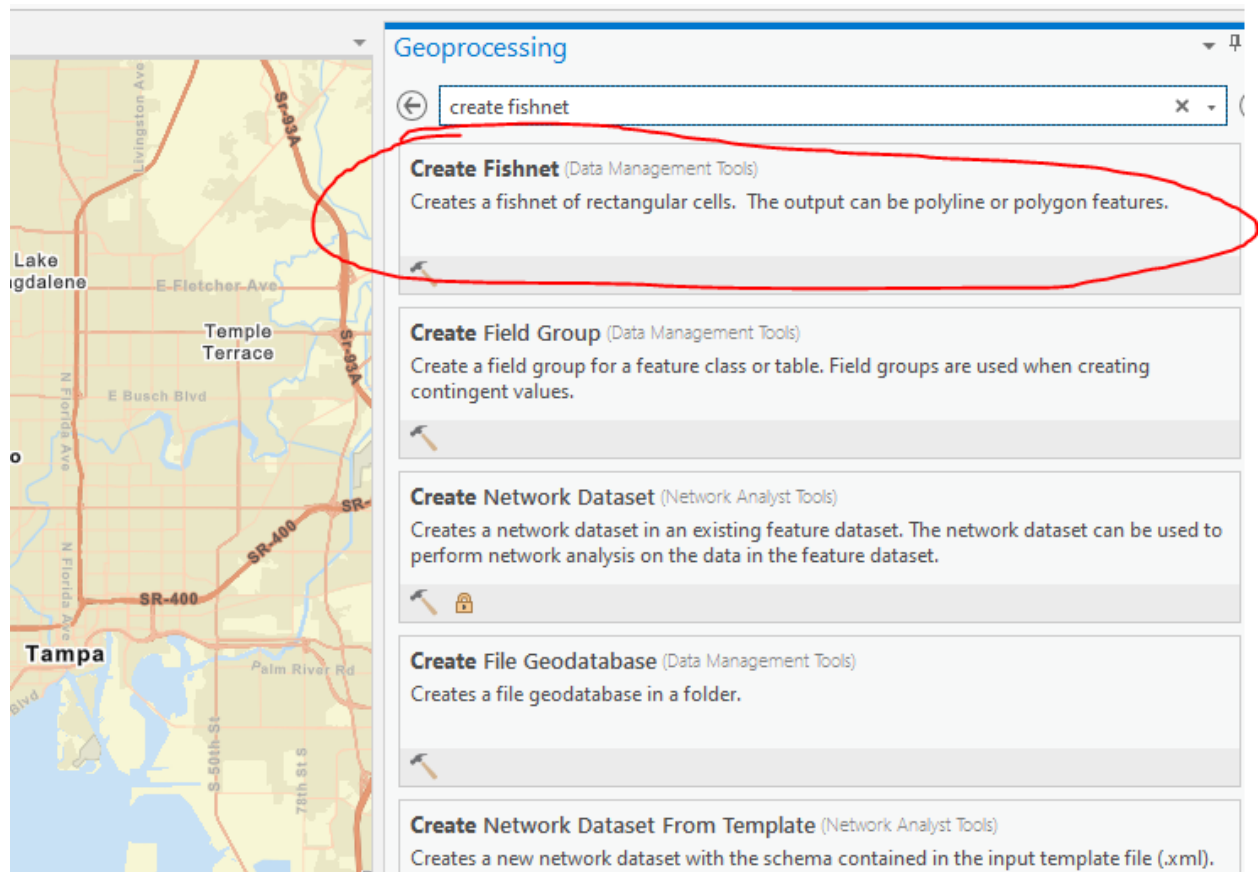


The following database should now be connected with all data needed to run the MAX Index tool.



- Now we need to create our quarter mile grids which are the crux of the MAX Index. These can be modified by the user as needed.

First go to the geoprocessing pane and search “Create Fishnet” and select the Create Fishnet tool.



Ensure that the output feature class (GRID) is in the Geodatabase with all other associated data you have pulled together for this project. In our case it is the MAX_INDEX_TEST.gdb.

In addition to this, the data parameters, such as coordinates, associated with your fishnet must be set equal to the **parcels layer** of the community you are working in. In our case PAO_Parcels for Pinellas County.

Ensure the create label points is checked off, and the geometry type is set to Polygon.

The screenshot shows the 'Create Fishnet' dialog box with the following settings:

- Output Feature Class:** GRID
- Fishnet Origin Coordinate:** X: 381171.730771258, Y: 1192277.85760944
- Template Extent:** As Specified Below
- Cell Size Width:** 381171.730771258
- Cell Size Height:** 1320
- Opposite corner of Fishnet:** X: 483056.247802343, Y: 1396422.20030419
- Create Label Points:** ☒
- Geometry Type:** Polygon
- Same As Layer:** PAO_Parcels

Cell size width and height are set equal to 1320 ft which produces our quarter mile grid cells.

Geoprocessing

Create Fishnet

Parameters Environments

Output Feature Class
GRID

Fishnet Origin Coordinate
X 381171.730771258 Y 1192277.85760944

Template Extent
As Specified Below

← 381171.730771258 → 483056.247802343
↓ 1192277.85760944 ↑ 1396422.20030419

Y-Axis Coordinate
X 381171.730771258 Y 1192287.85760944

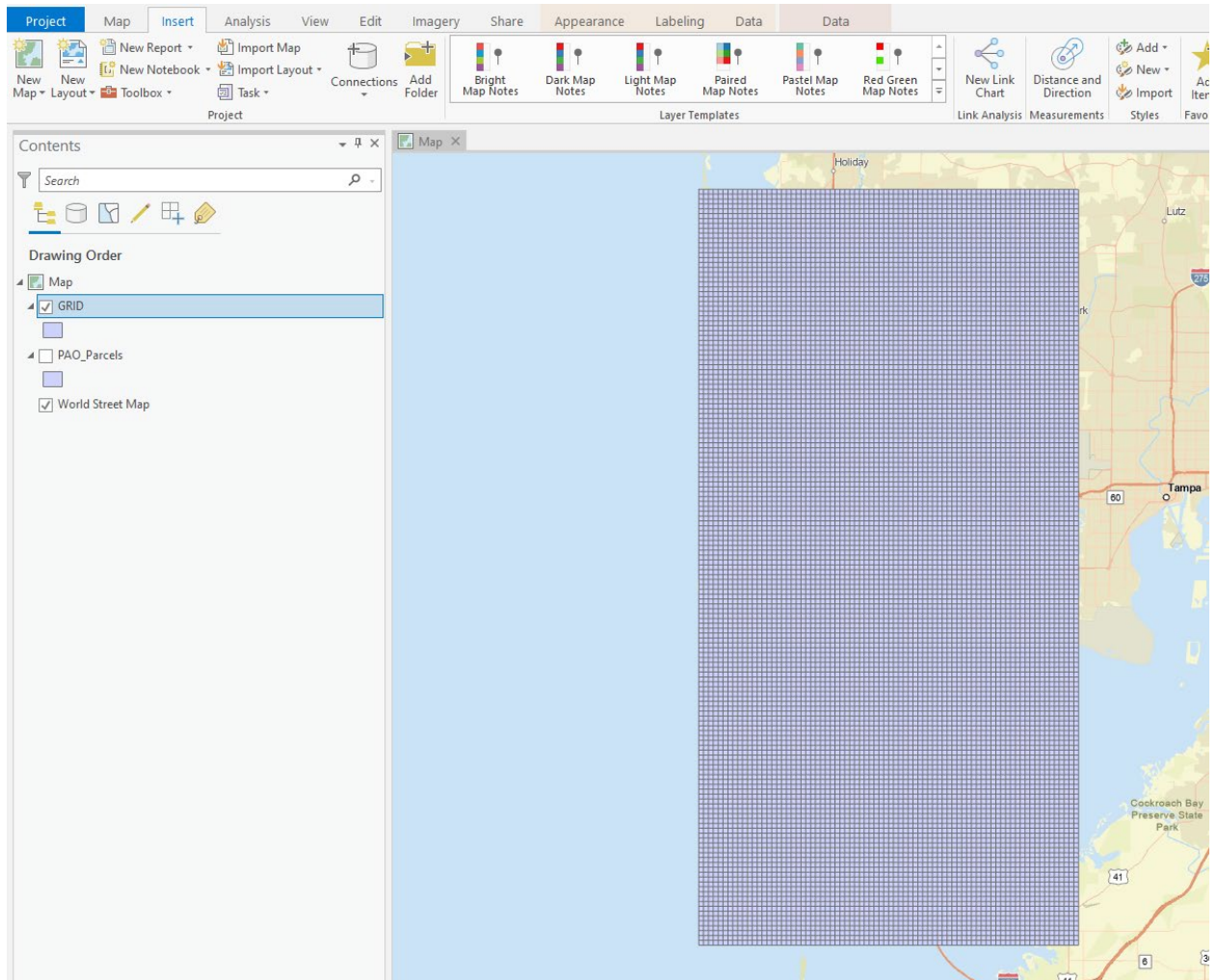
Cell Size Width 1320
Cell Size Height 1320

Opposite corner of Fishnet
X 483056.247802343 Y 1396422.20030419

☐ Create Label Points

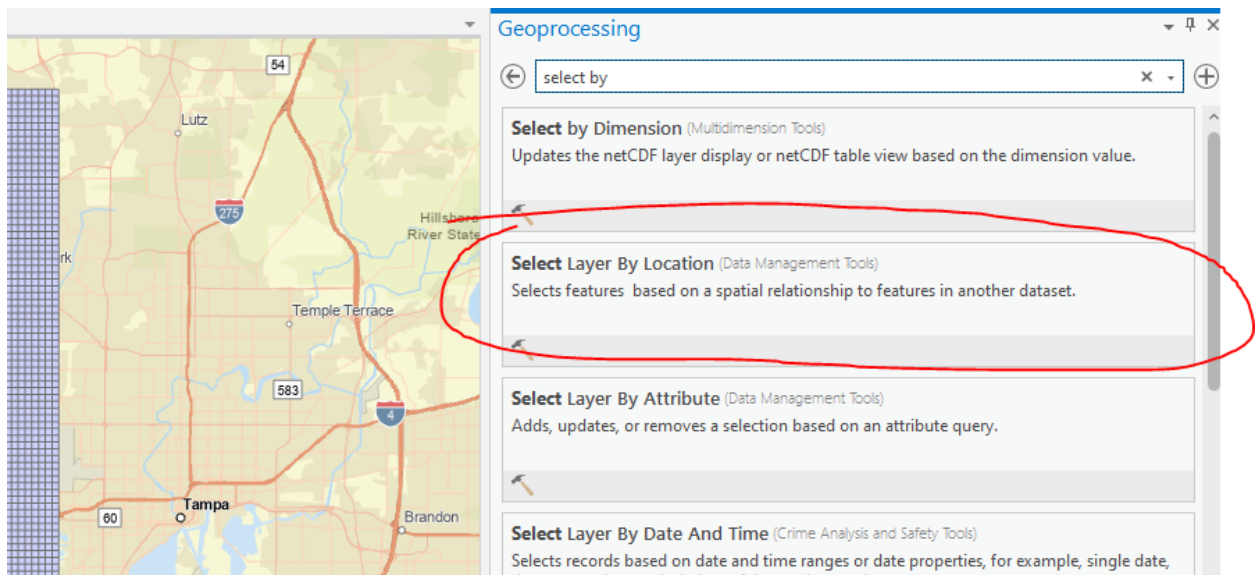
Geometry Type
Polygon

The output looks as follows for Pinellas County.

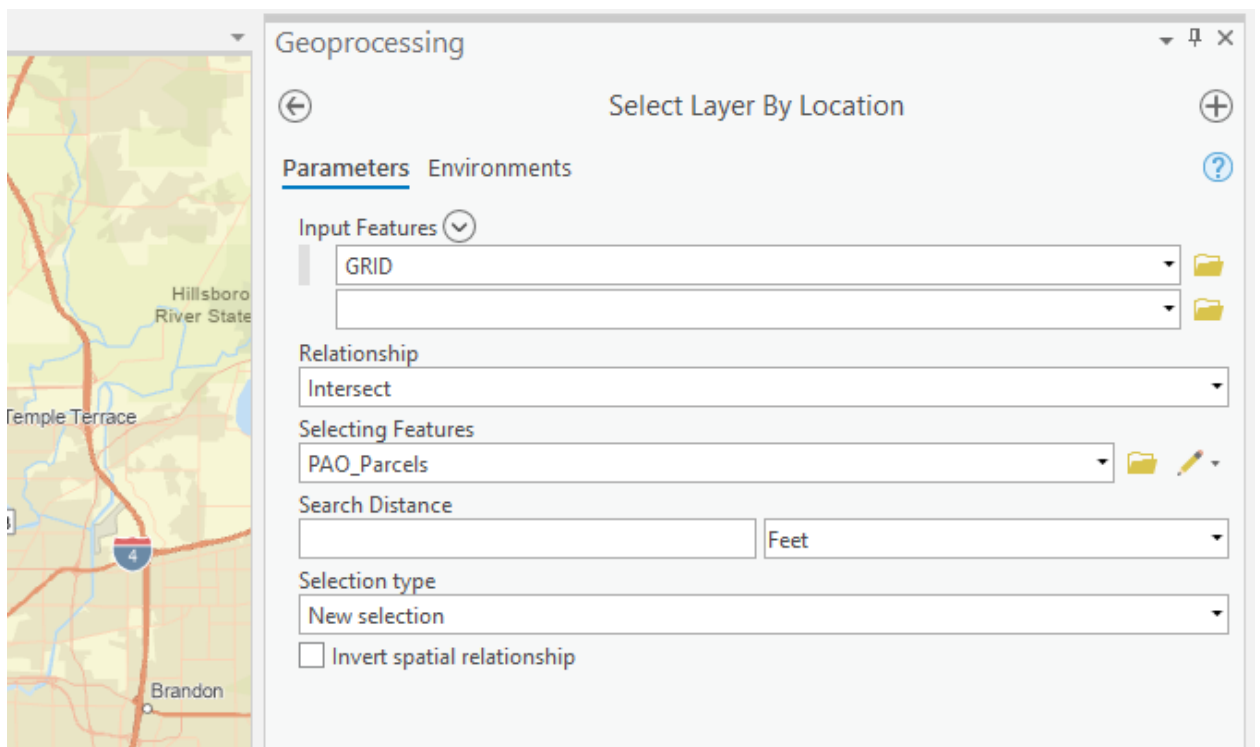


7. Now we need to isolate our grids to the community we are working in, based on the PARCELS data of the community.

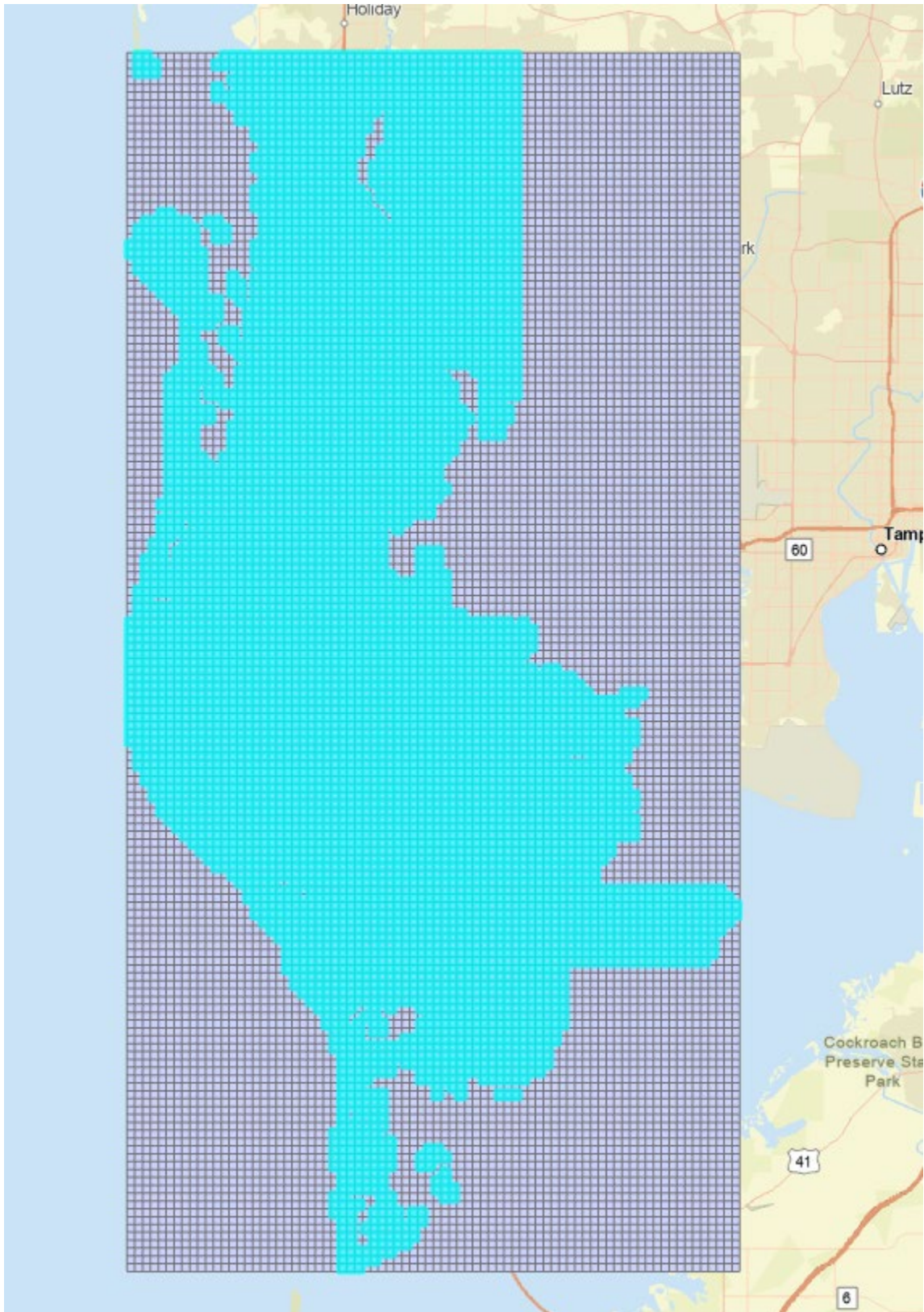
Navigate to the geoprocessing pane and search “Select Layer by Location” and click the associated tool circled below.



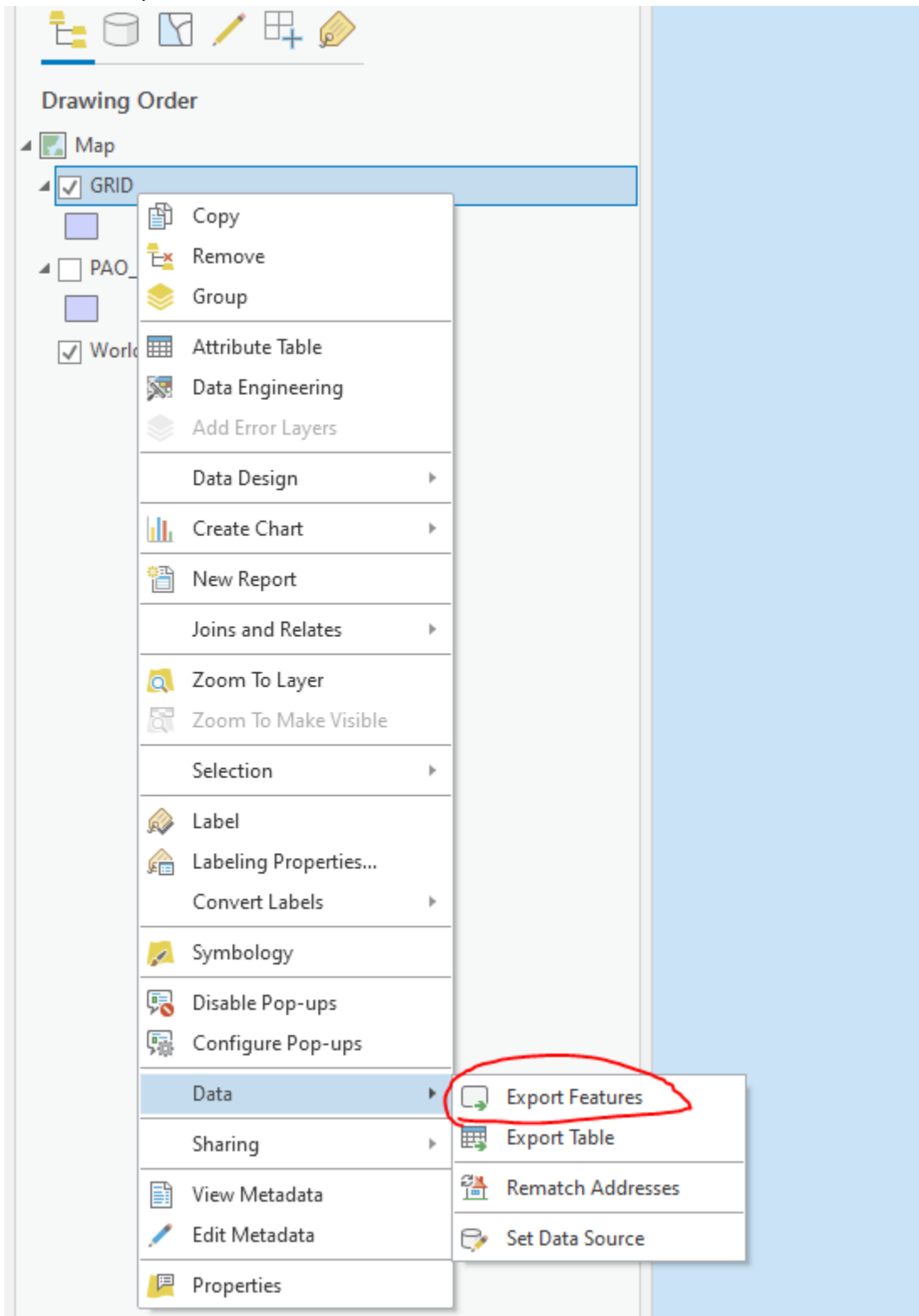
Once opened, use the GRID (or whatever you may have called it) layer as your input features and the community parcels layer as your selecting features. The relationship should be Intersect.



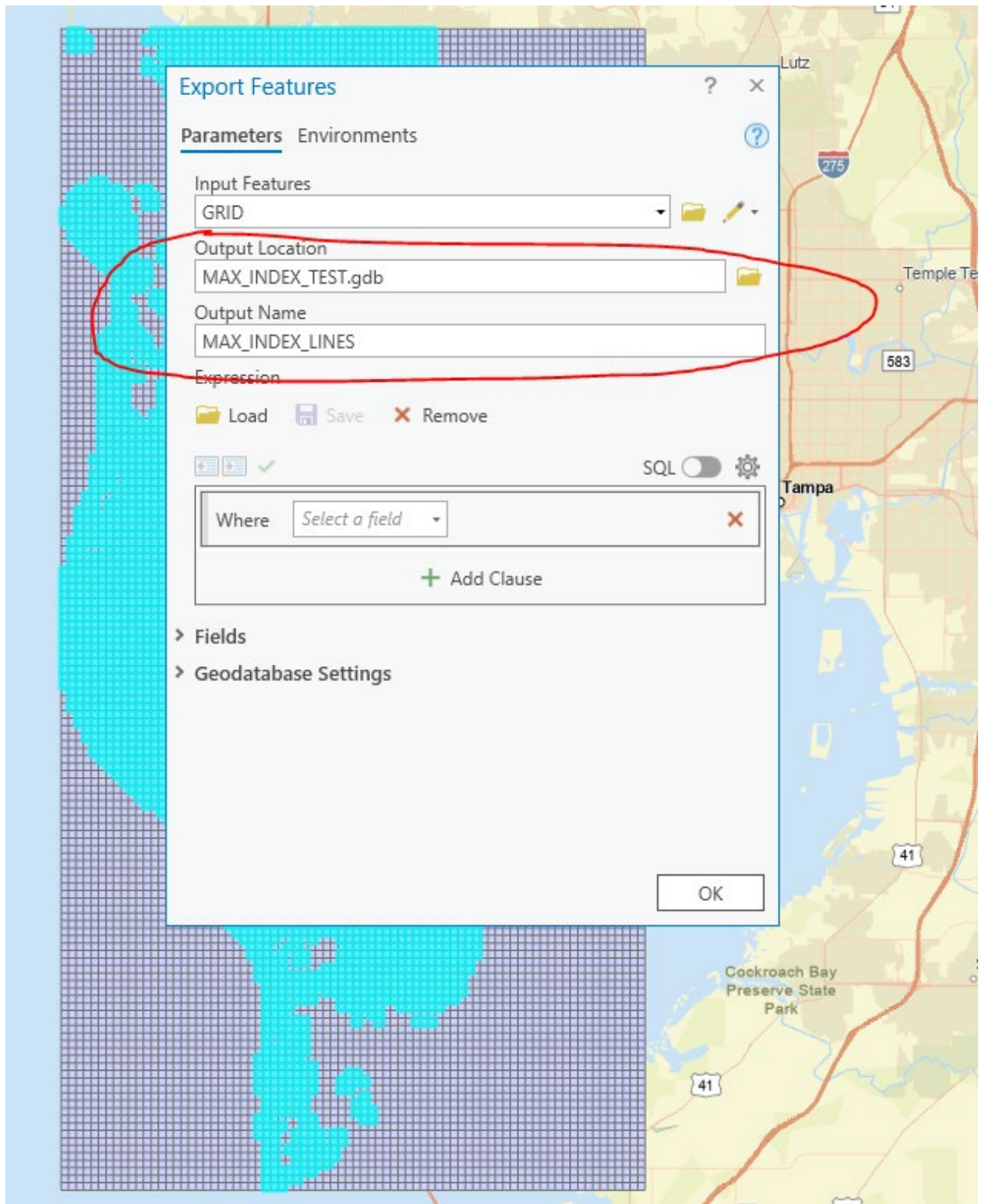
The output for Pinellas County looks like this.



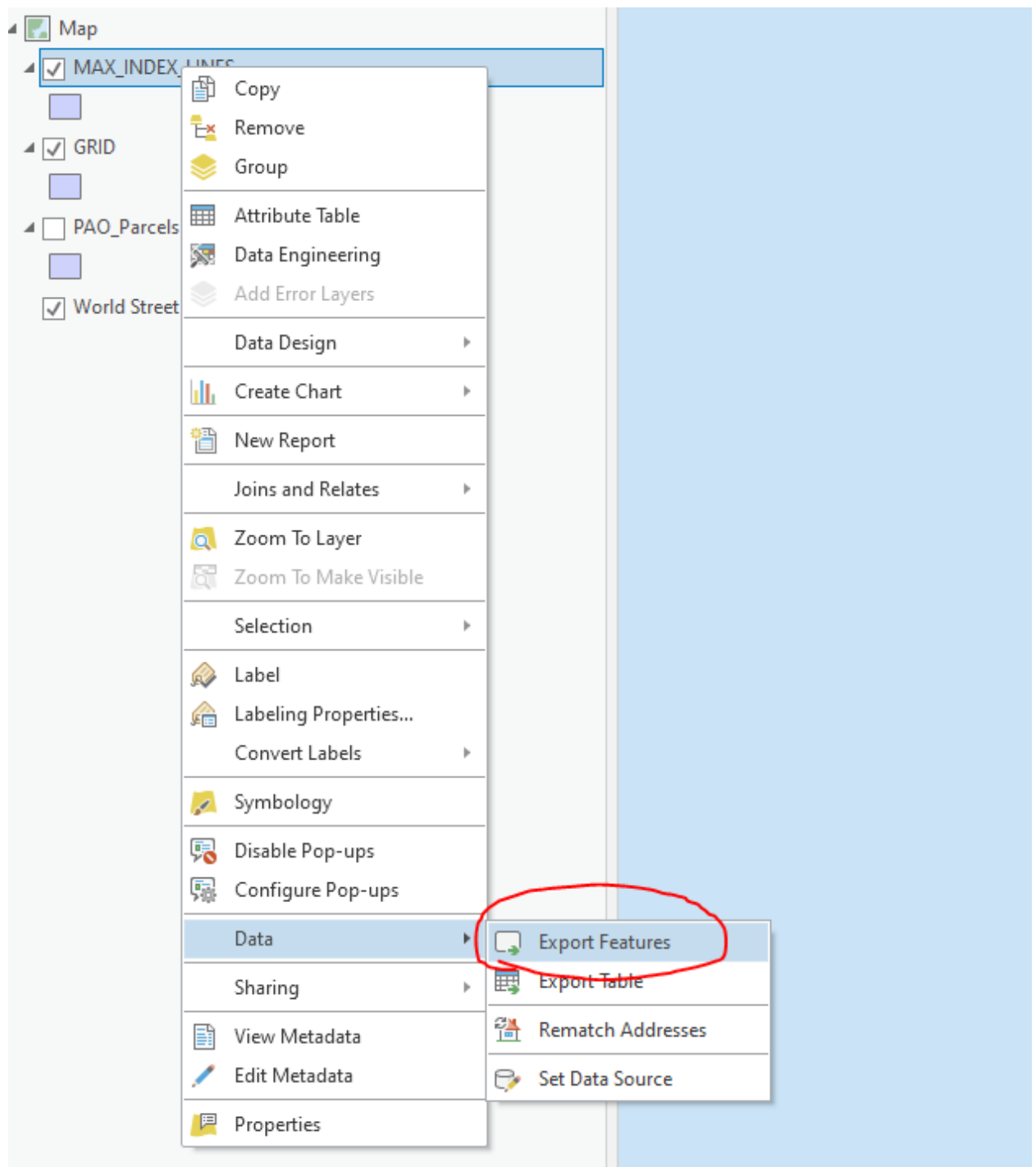
Next, right click your GRID layer with the newly selected features, scroll down to data, and click “Export Features”.



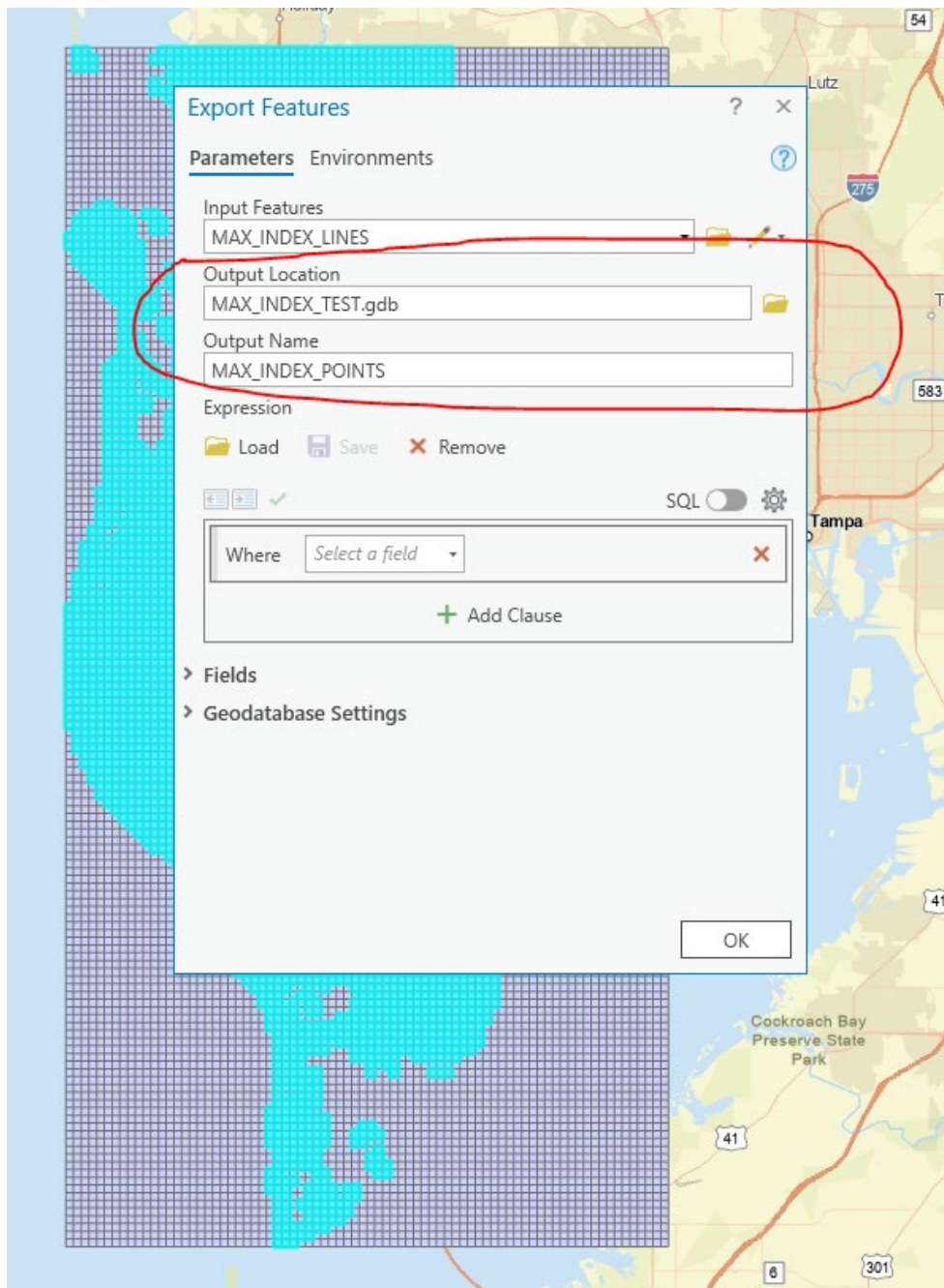
MAKE SURE the output location is the geodatabase with all other associated MAX Index data.



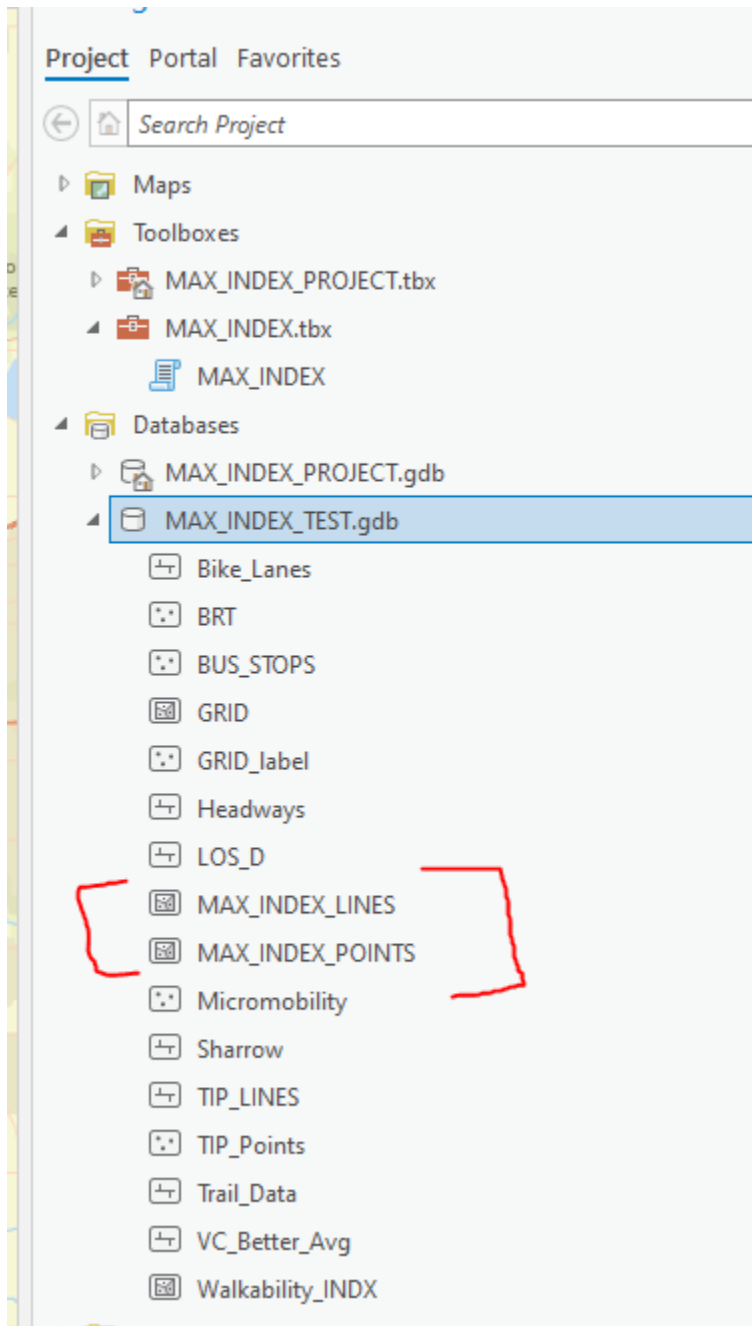
Once the MAX_INDEX_LINES (or whatever you may have called it) feature class has been exported and added to your map, right click it and go down to data, and click “Export Features”



MAKE SURE the output location is the geodatabase with all other associated MAX Index data.

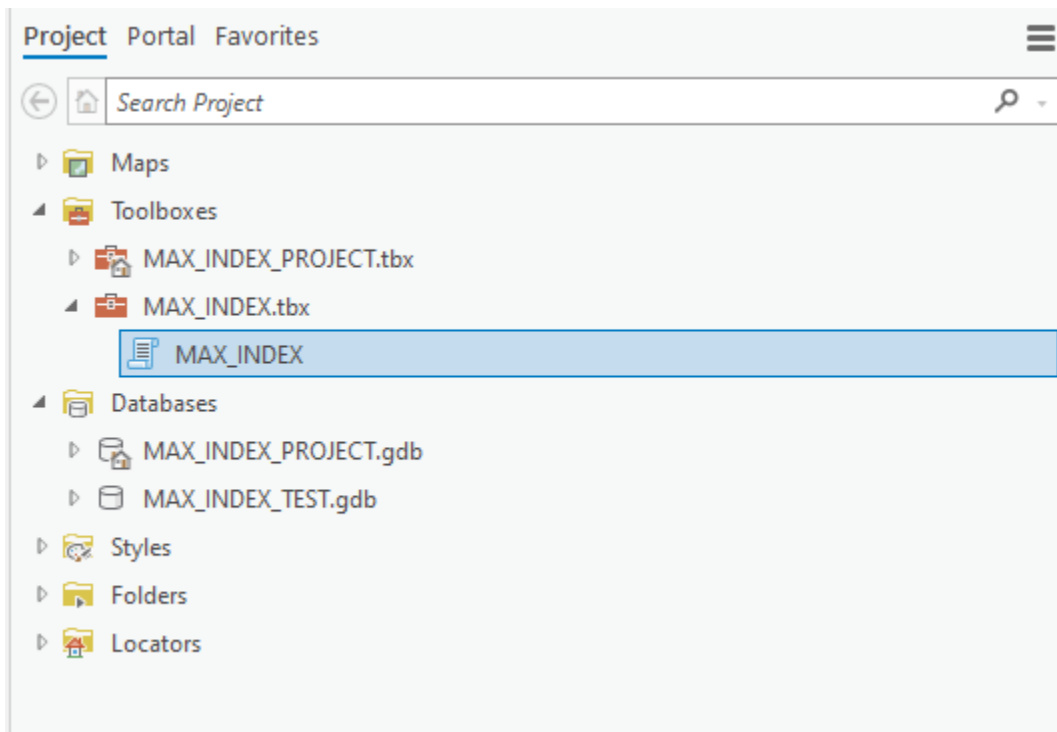


In your database you should now see “MAX_INDEX_POINTS” (or whatever you named your associated feature class) and “MAX_INDEX_LINES” (your input feature class).



8. Now we are ready to run the tool. Select the tool. Double click the MAX_INDEX_v2 script icon and input all associated data. Note all data sources MUST be in the same file geodatabase.

Double click MAX_INDEX_v2



*** Will now say MAX_INDEX_v2 instead of MAX_INDEX***

The following window will open. Put in all data from your working geodatabase (in our case MAX_INDEX_TEST.gdb) and click run. The tool can take anywhere from 1-10 minutes to run.

Geoprocessing

MAX_INDEX

Parameters Environments

Workspace (Database)
MAX_INDEX_TEST.gdb

MAX Index Grid LINES
MAX_INDEX_LINES

Bike Lanes (Lines)
Bike_Lanes

Bus Headways of 30 Minutes or Less (Lines)
Headways

Roadways With a LOS Grade of D or Better (Lines)
LOS_D

Roadways With a VC Ratio Greater Than The Community Average (Lines)
VC_Better_Avg

TIP Projects Line Data (Lines)
TIP_LINES

Trail Data (Lines)
Trail_Data

Sharrow Data (Lines)
Sharrow

MAX Index Grid POINTS
MAX_INDEX_POINTS

Micromobility Features(Scooters, Bikeshare, etc.)(Points)
Micromobility

TIP Projects Point Data
TIP_Points

Bus Rapid Transit Stations (Points)
BRT

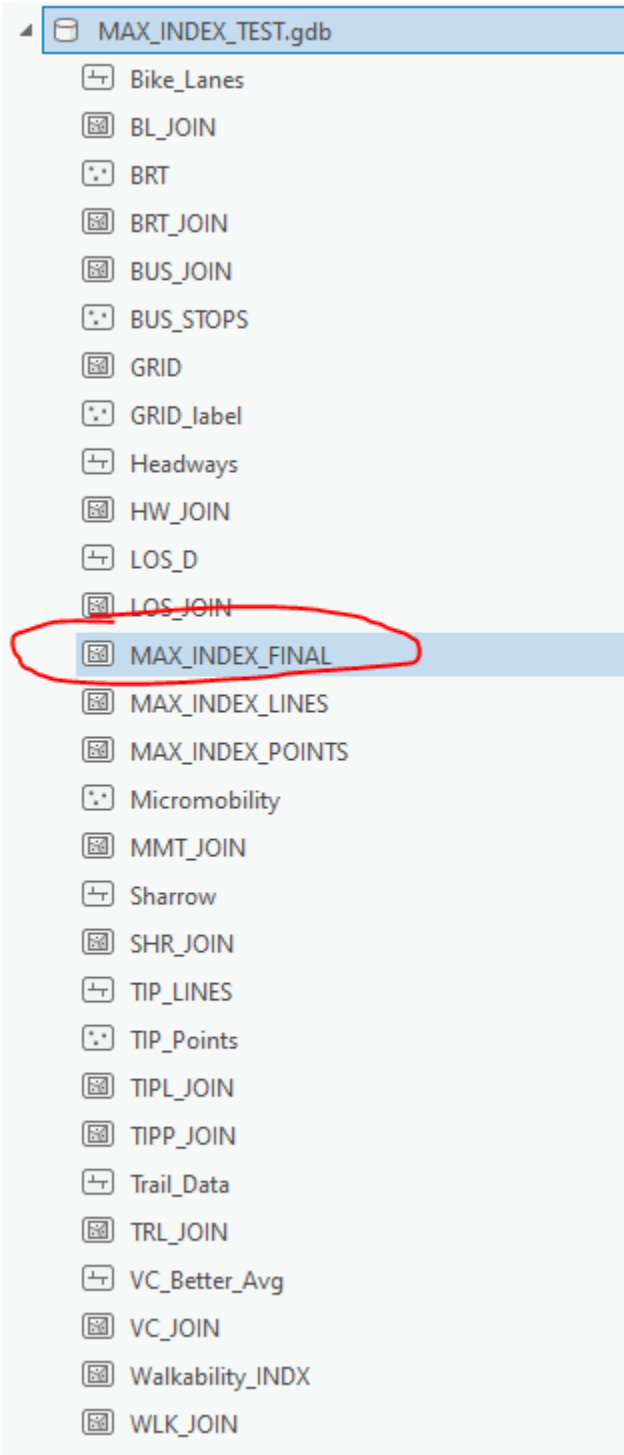
Bus Stop Data (Points)
BUS_STOPS

EPA Walkability Index (Polygon)
Walkability_IND

Run

9. Upon completion open the geodatabase you have been working in and look for the feature class called “MAX_INDEX_FINAL” the attribute field called “TOT_SCORE” will be the MAX Score for each grid in your community.

Open your geodatabase in the catalog pane and navigate to MAX_INDEX_FINAL and add it to your map.



Open the attribute table of the MAX_INDEX_FINAL layer and navigate all the way over to TOT_SCORE. This is the MAX score for each grid cell.

MAX_INDEX_FINAL

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy														
	DT	TIPP_MAX	TIPP_QTR	TIPP_HLF	TIPP_TOT	BUS_MAX	BUS_QTR	BUS_HLF	BUS_TOT	POINT_TOT	Shape_Length	Shape_Area	TOT_SCORE	WLK_TOT
1	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	1.5	0
2	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
3	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	1.5	0
4	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
5	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
6	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
7	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
8	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3.375	0
9	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	3	0
10	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	1.5	0
11	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	1.5	0
12	0	0	0	0	0	0	0	0	0	0	5279.999939	1742399.95952	4.875	0

Contact:

For any questions, please email Jaustin@forwardpinellas.org.