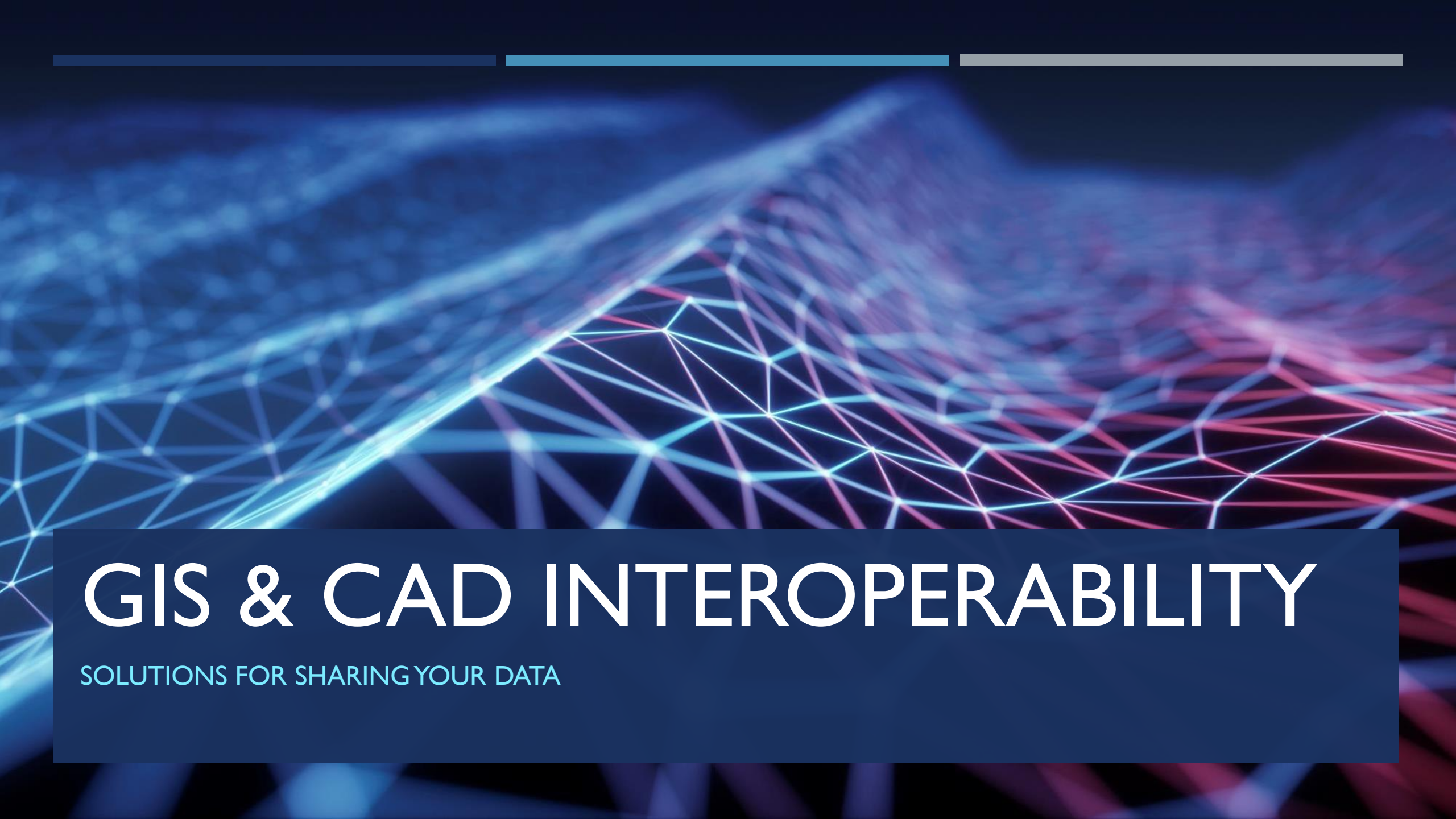


GIS & CAD INTEROPERABILITY

SOLUTIONS FOR SHARING YOUR DATA

COURTNEY ROE, GISP

CIVIL CAD DESIGNER (*SINCE 2013*)

PAPE-DAWSON ENGINEERS IN AUSTIN, TX

RESIDENTIAL LAND DEVELOPMENT (*SINCE 2016*)

CERTIFIED CIVIL 3D PROFESSIONAL (*SINCE 2016*)

GISP (*SINCE 2017*)

FAA SMALL UAS REMOTE PILOT (*PART 107 CERTIFIED*)

5 ASSOCIATES FROM ACC & BAAS FROM TX STATE UNIVERSITY

SWIGGIS, URISA TX, ATX & TXGIS DAY, CAD UG, AUSTIN WIT, ETC.

LIVE IN KYLE, TX WITH JEREMY AND MINI DACHSHUNDS BONNIE & CLYDE

RSVP

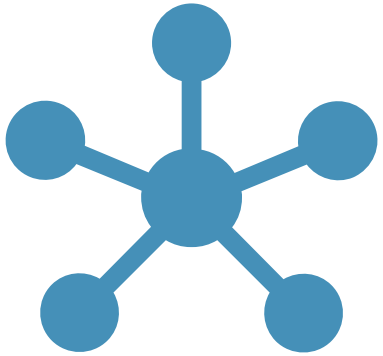
URISATEXAS.ORG/EVENT-4698640

GIS & CAD INTEROPERABILITY

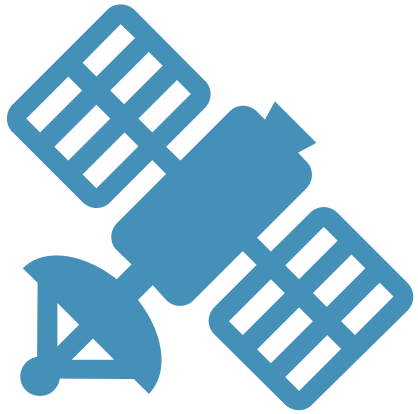
Sharing datasets between CAD & GIS software can be easier! Let's look at how they are imported and exported and discuss methods to effectively communicate workflows and data preparation to work more seamlessly.

Why can't it be easier to share data? The basis of the conversation is understanding the user's needs and the software they use. How can we improve communication between GIS and CAD users to work more seamlessly and provide each other with valuable, usable datasets? Using examples of Autodesk Civil 3D and Esri ArcMap, how can workflows be applied when not using the most up-to-date software? What is on the horizon for newer versions of the software and what will we need to look out for to prepare for a shift in interoperability or lack thereof?

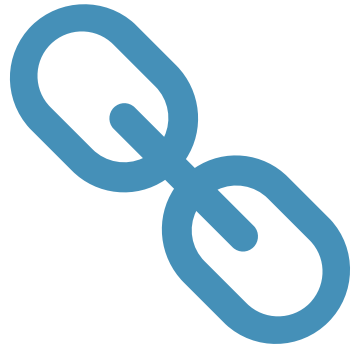
SOLUTIONS FOR SHARING YOUR DATA



WHO



QUALITY



WHERE

DATA! DATA!! DATA!!!

FEDERAL

USGS [National Map Viewer] (NHD)
USFW (NWI)
USDA [GeoSpatial Data Gateway]
FEMA [Map Service Center]

STATE

TNRIS [Data Hub]
TCEQ
GLO
TxDOT

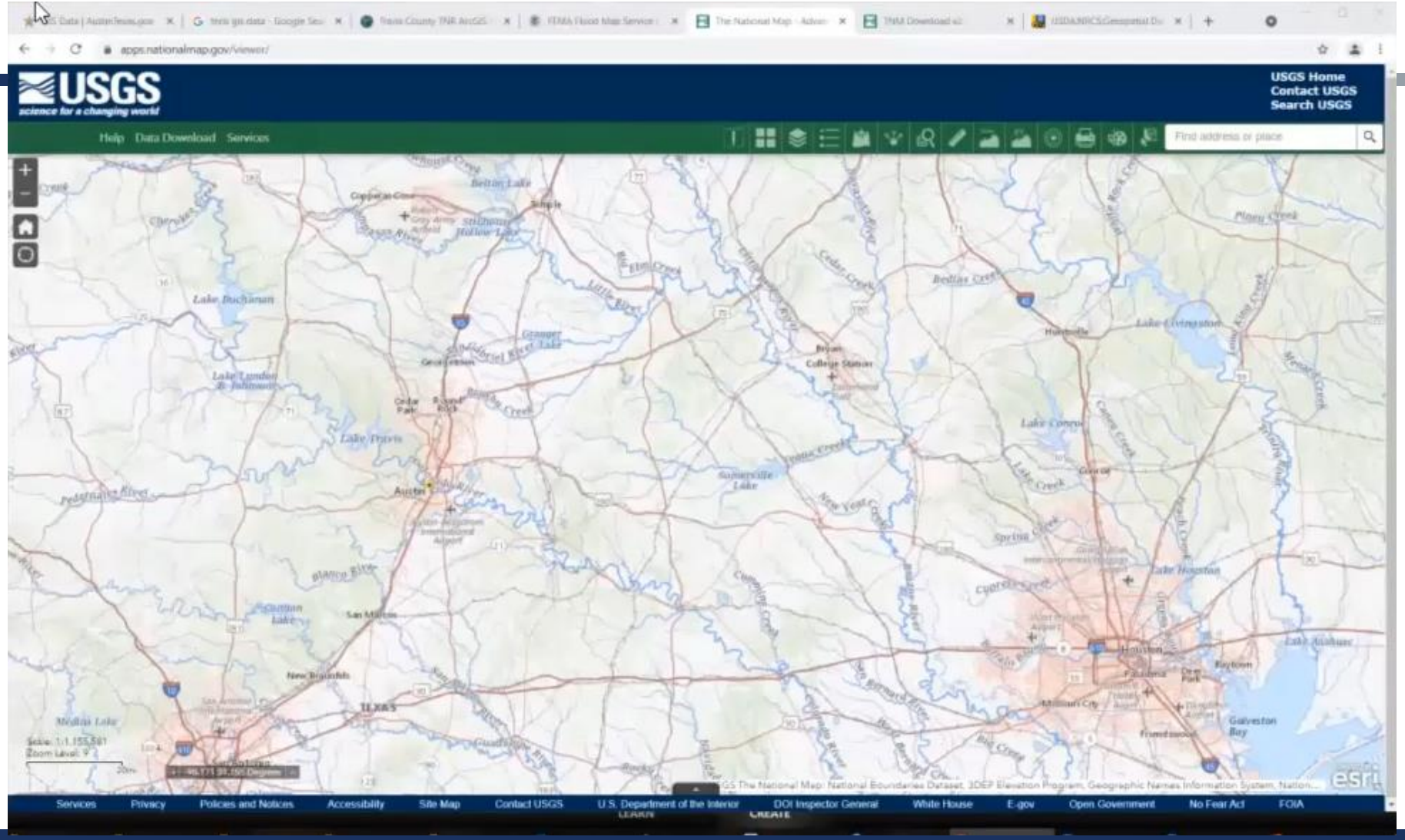
COUNTY

COGs & Appraisal District (Parcels)

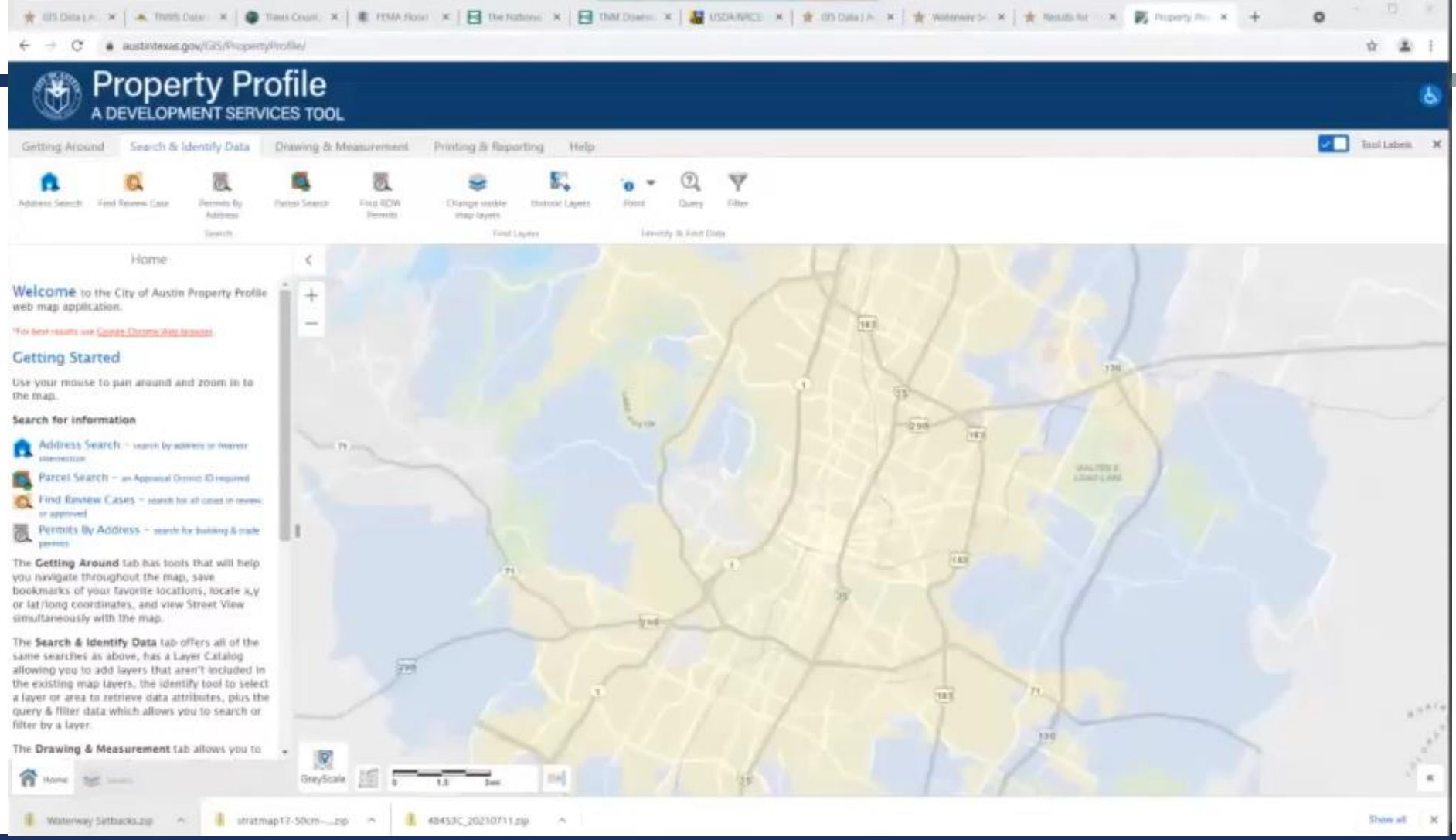
CITY

Important Local Data

a few DATA SOURCES



DATA DOWNLOAD



DATA MANAGEMENT

GIS > DATA > SourceData >

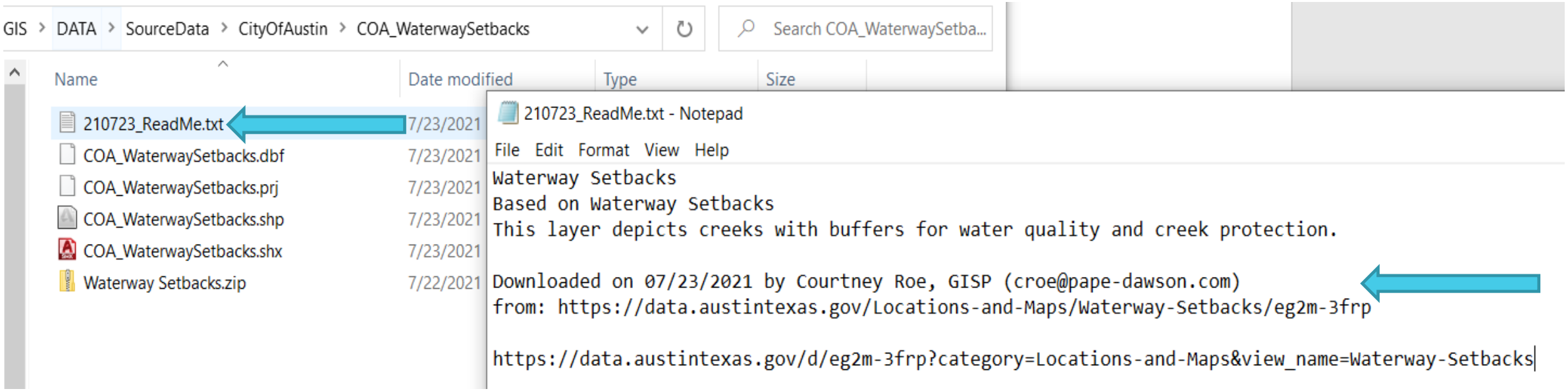
- Austin_Water
- CAPCOG
- CEF_Buffers
- COA_Boundaries
- COA_Creek_Buffers
- COA_Creek_Lines
- FEMA
- FloodplainModel_DryEastWatershed
- TPWD
- TCAD_Parcels2016

- Creek_Lines.dbf
- Creek_Lines.prj
- Creek_Lines.shp
- Creek_Lines.shx
- Creek_Lines_161012.zip
- ReadMe_20161012.txt

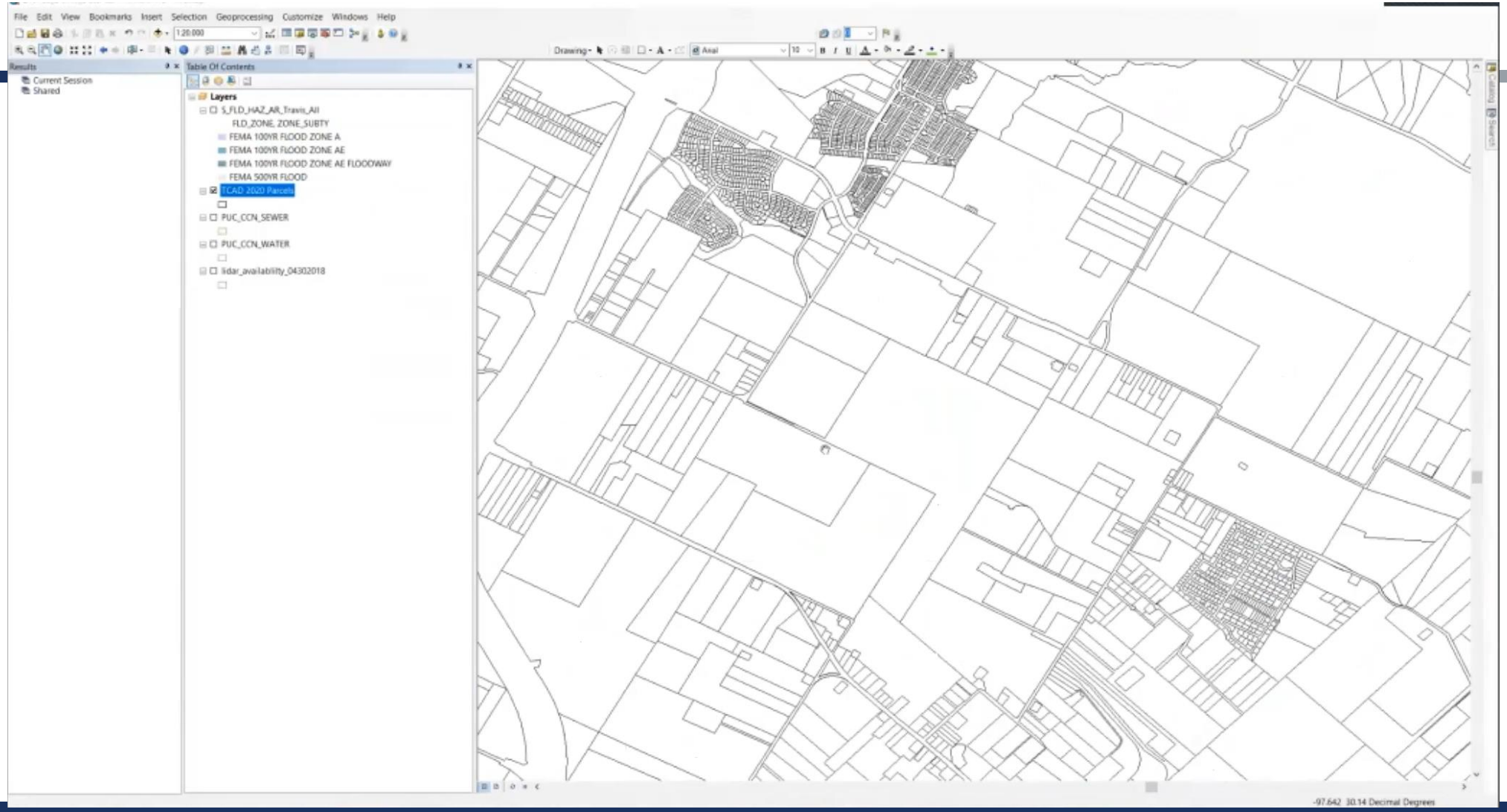
GIS > DATA > WorkingData > COA > Streams

- COA_Creek_Buffers_CWQZ_IndvStream.cpg
- COA_Creek_Buffers_CWQZ_IndvStream.dbf
- COA_Creek_Buffers_CWQZ_IndvStream.prj
- COA_Creek_Buffers_CWQZ_IndvStream.sbn
- COA_Creek_Buffers_CWQZ_IndvStream.sbx
- COA_Creek_Buffers_CWQZ_IndvStream.shp
- COA_Creek_Buffers_CWQZ_IndvStream.shp.xml
- COA_Creek_Buffers_CWQZ_IndvStream.shx
- COA_Creek_Lines.cpg
- COA_Creek_Lines.dbf
- COA_Creek_Lines.idx
- COA_Creek_Lines.prj
- COA_Creek_Lines.sbn
- COA_Creek_Lines.sbx
- COA_Creek_Lines.shp
- COA_Creek_Lines.shp.xml
- COA_Creek_Lines.shx

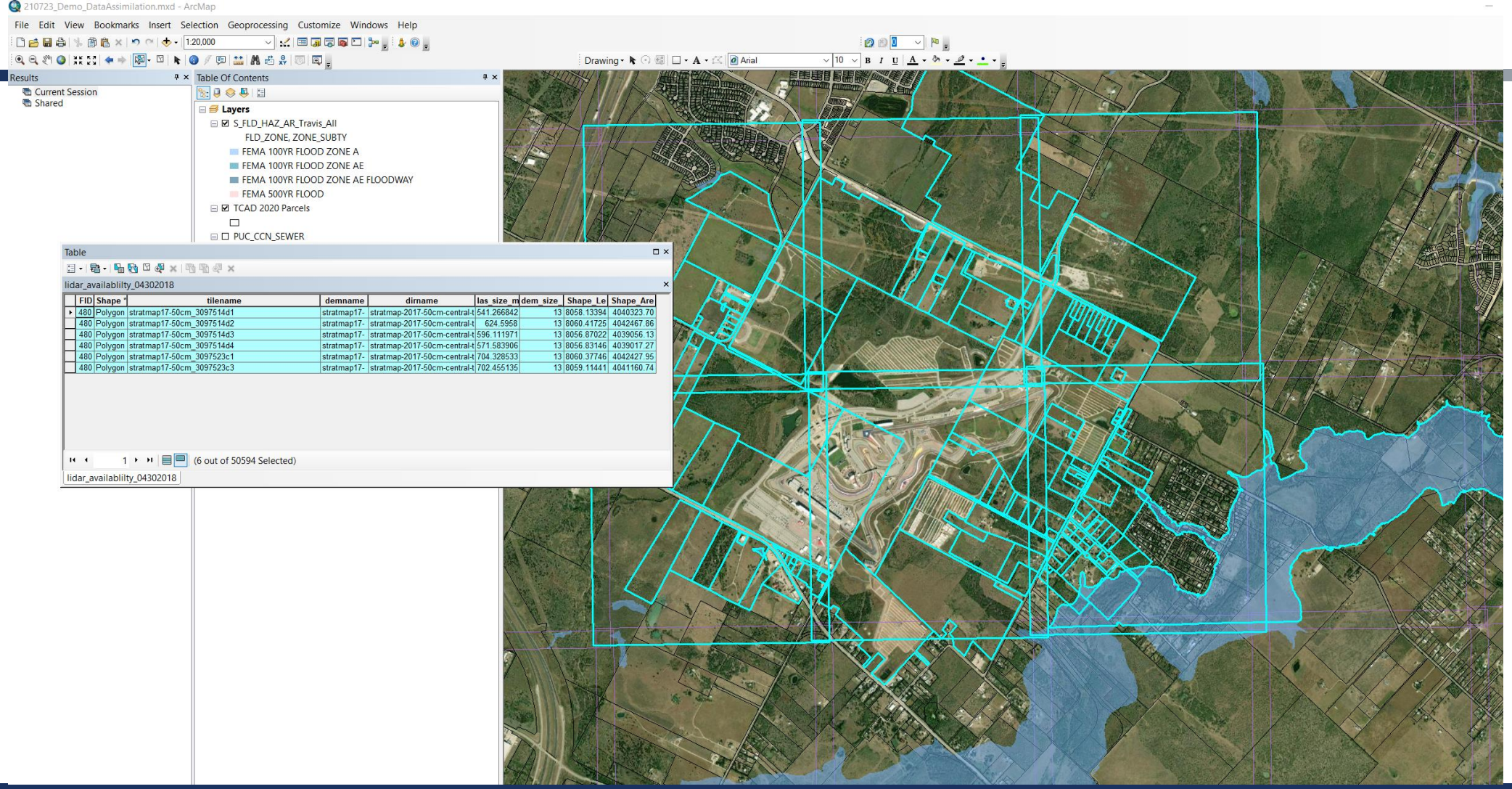
DATA ASSIMLATION



DATA ASSIMLATION



DATA PREPARATION IN ARCMAP



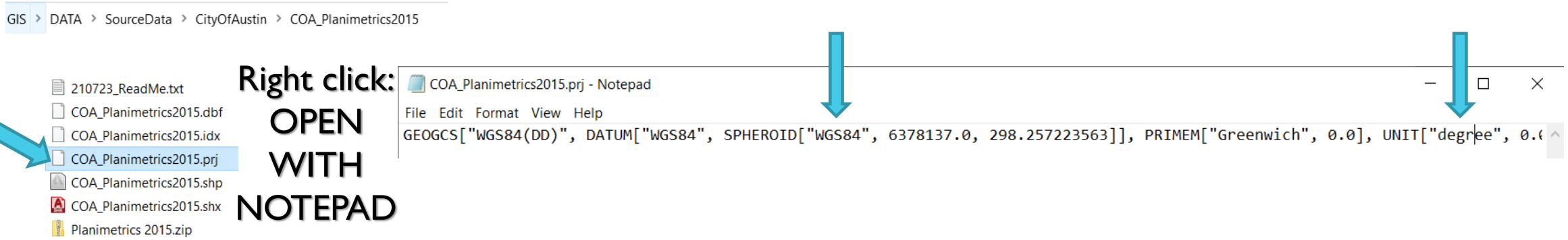
DATA PREPARATION IN ARCMAP

MAPIMPORT	Statically Imports GIS Data w/ Attributes & CAN edit in CAD
MAPEXPORT	Statically Exports CAD Data to GIS w/ Attributes
MAPTRIM	Trim vector data in CAD & Retain Attributes
MAPIINSERT	Inserts an Image (RASTER) Utilizing world files
_AeccImportGISData	Creates Pipe Network from GIS Data
_AeccCreateSurface FromGISData	Creates Surface from GIS Data. CAUTION code uses Int. feet
MAPWSPACE	Under the Planning & Analysis Workspace (MAP3D). Use to connect to GIS Data (in GRID)
EXPORTKML	Must be scaled to GRID first & Drape Objects on Ground

a few MAP3D CAD COMMANDS

HOW TO BRING GIS DATA INTO CIVIL3D STATICALLY

- SET COORDINATE SYSTEM
- MAPIMPORT & SCALE (MAPTRIM)
- MAPEXPORT to .SHP

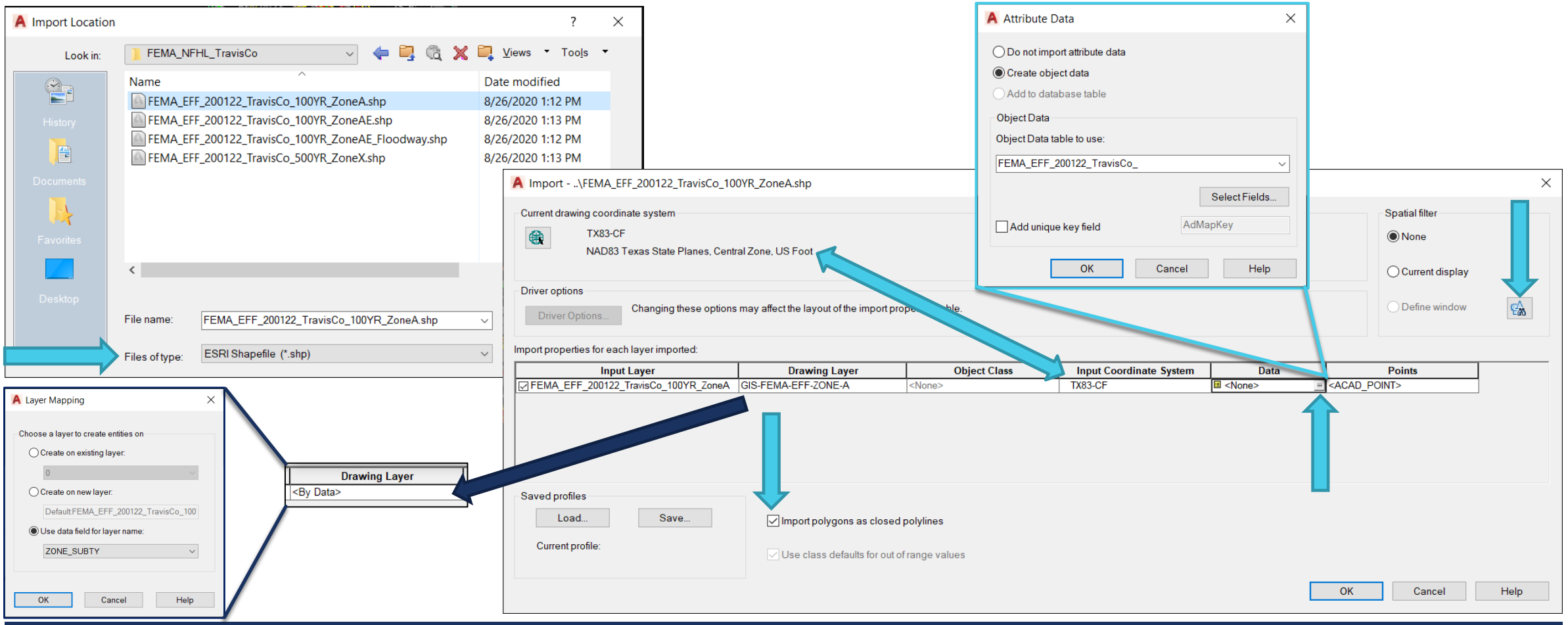


SCALE FACTOR

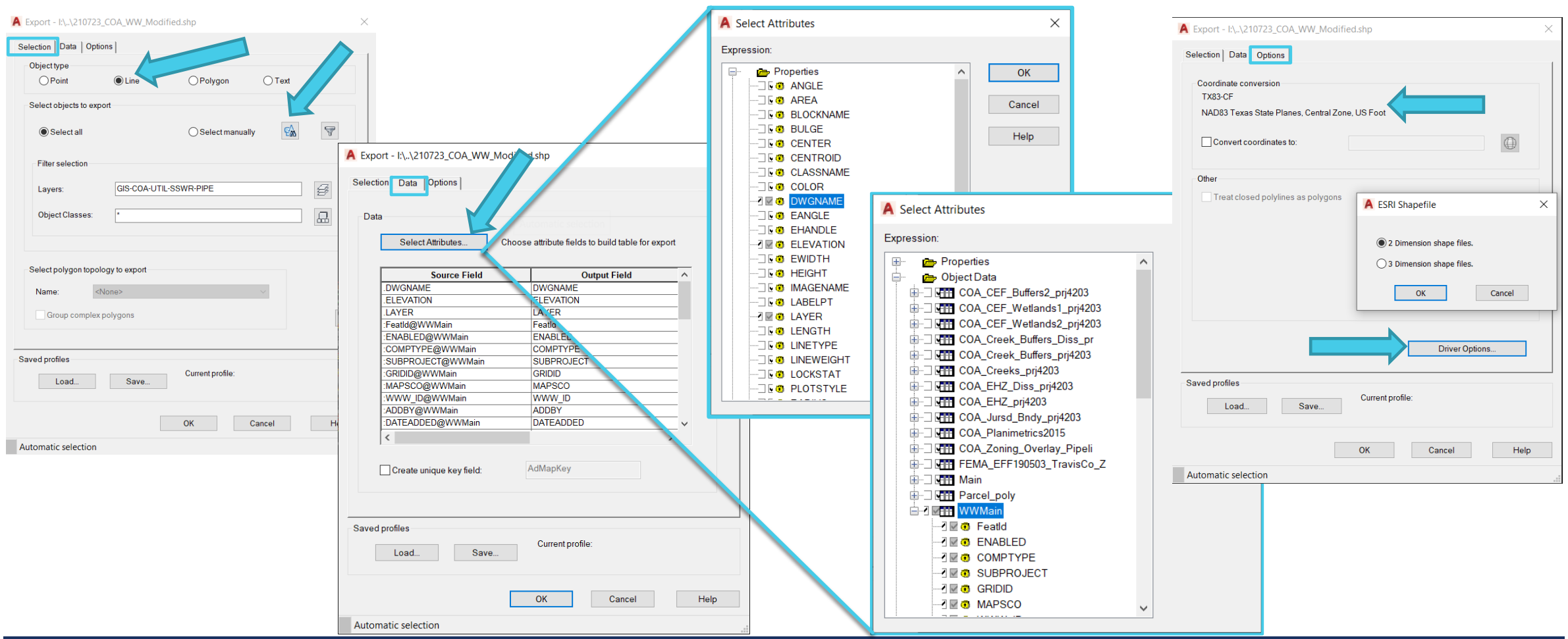
#1 Comes from Surveyor of the Project; know the origin!
#2 Often used in Civil Design.
#3 WATCH OUT for Coordinate Creep!

For example: Published Scale Factor is 1.00012
In Civil3D when scaling (SC)>Basepoint (often is 0,0,0)>Scale Factor
(Enter in the proper fraction to go from GRID to GROUND 100012/100000)

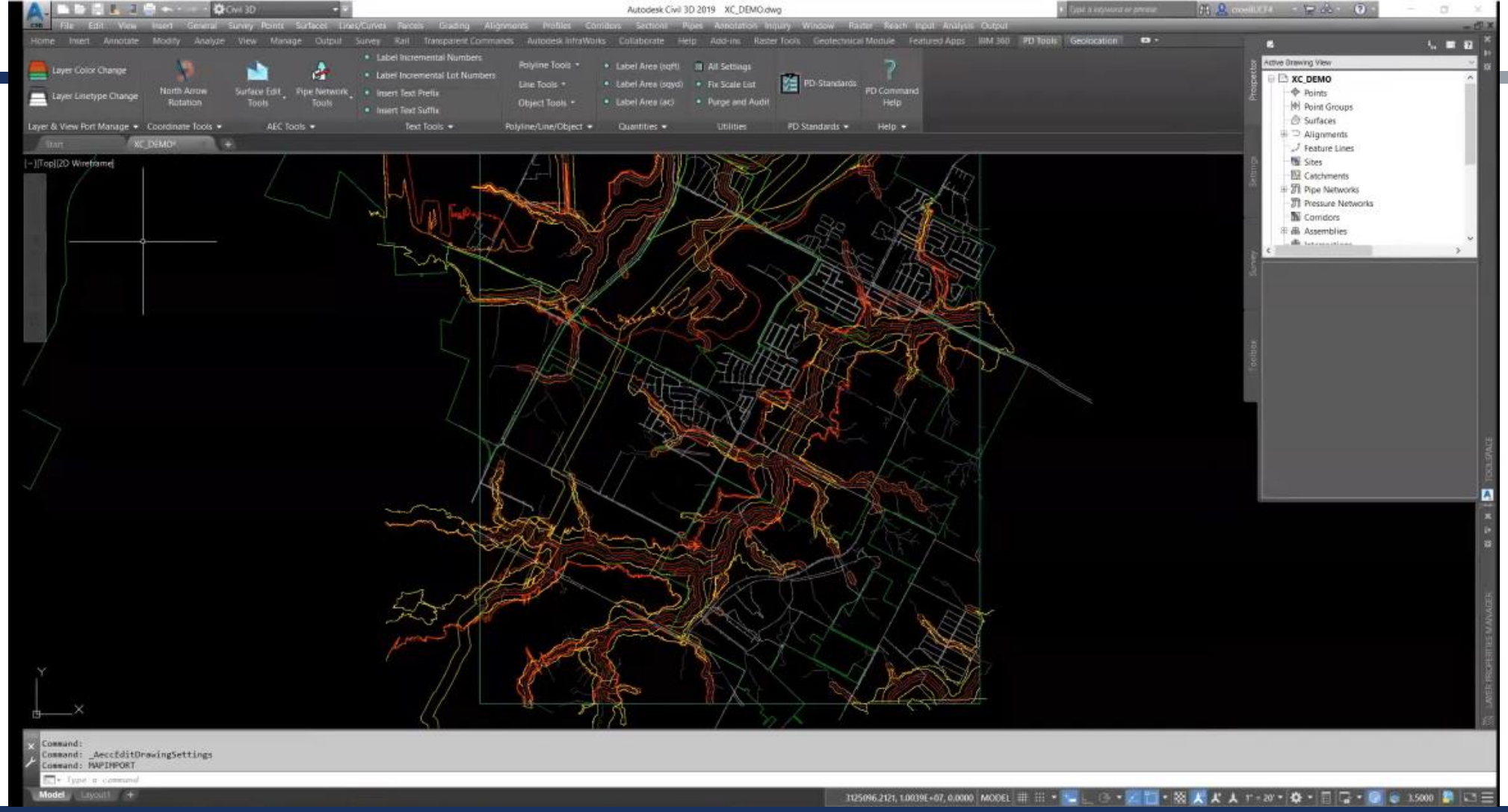
.PRJ FILES & SCALE FACTORS



MAPIMPORT INTO CIVIL3D



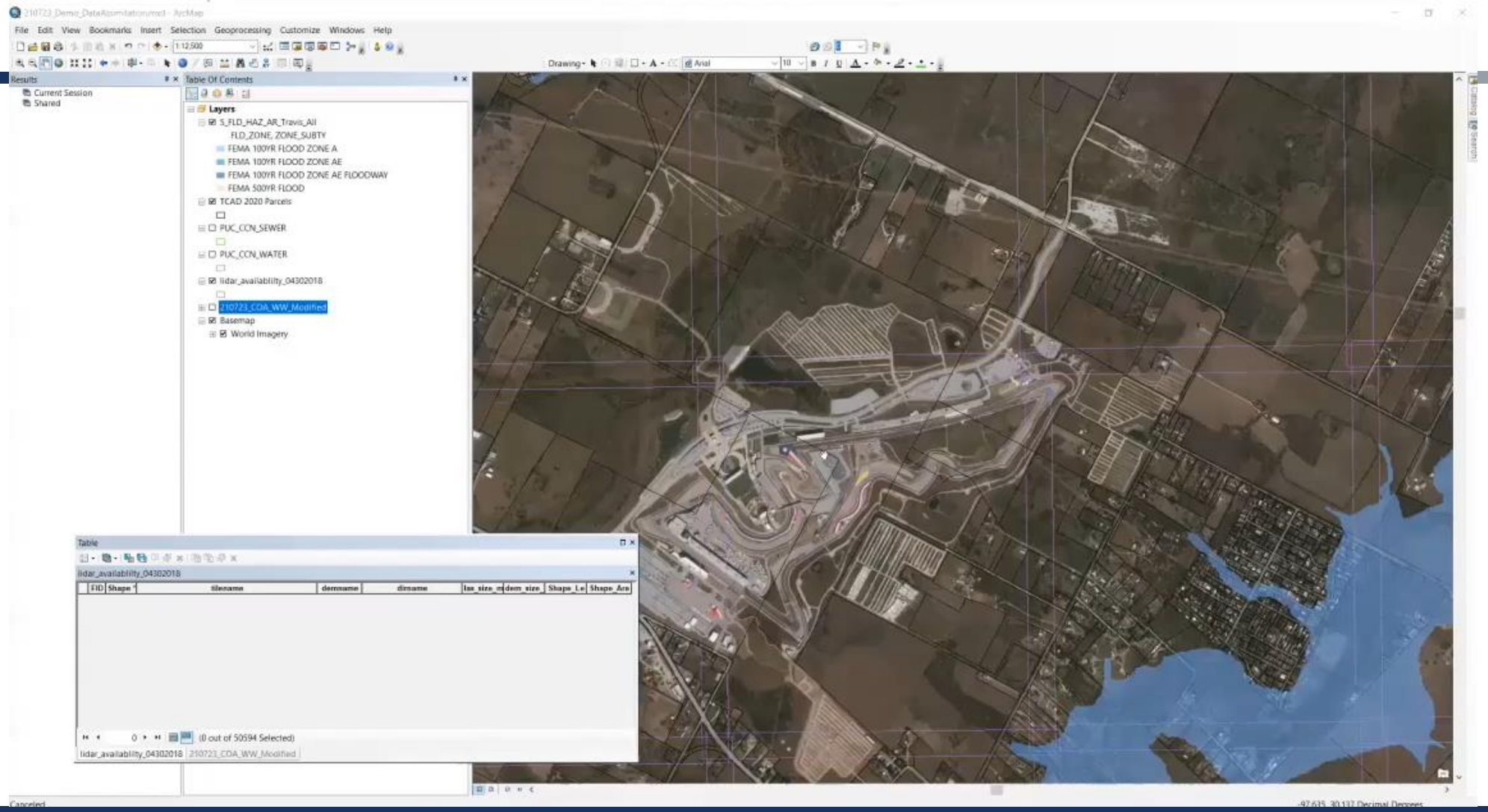
MAPEXPORT MEANINGFUL .SHP



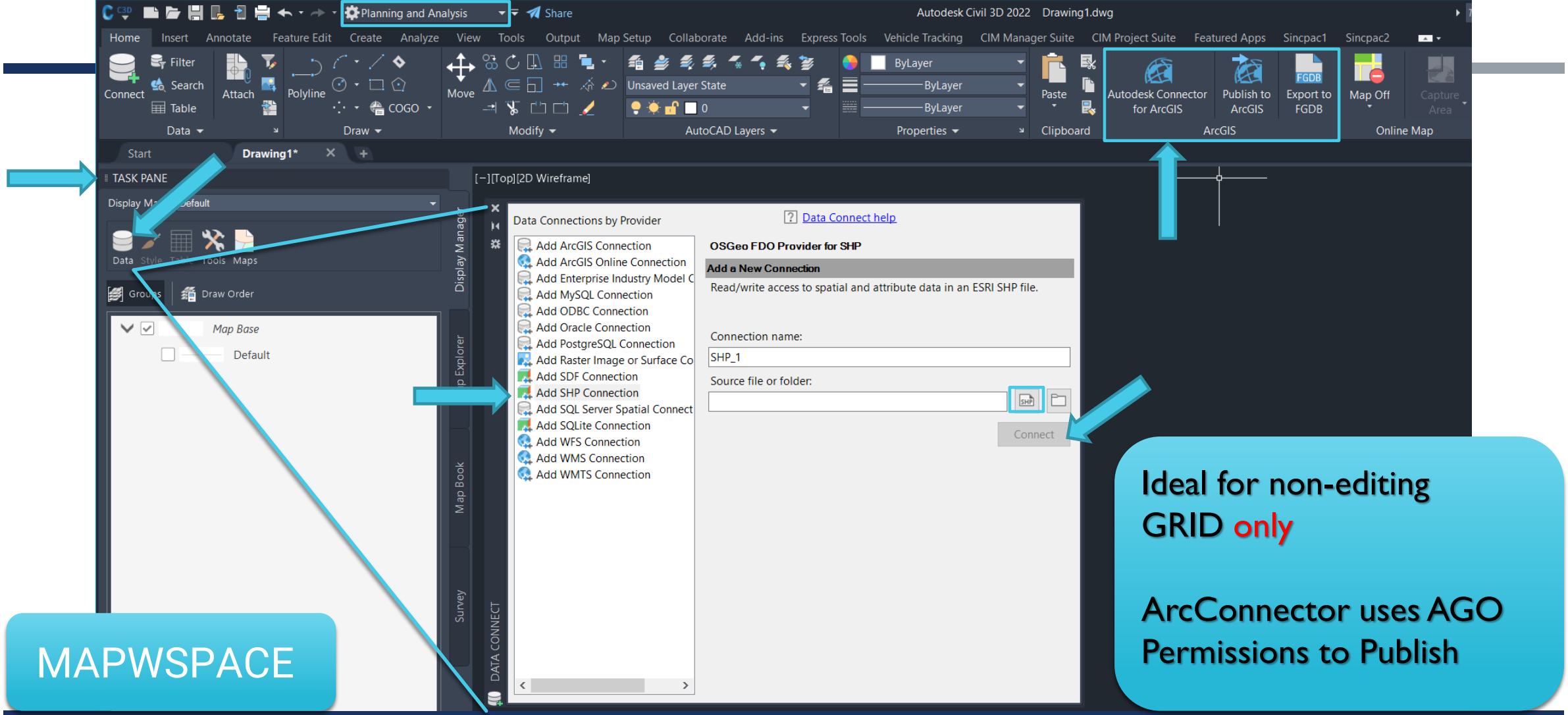
MAPIMPORT INTO CIVIL3D & EXPORT

CREATING A SURFACE FROM GIS CONTOURS

- MAPIMPORT & SCALE (MAPTRIM)
- ATTACH & EXECUTE QUERY
- CREATE SURFACE, SWAP EDGES, & CROP



CREATE A SCALED SURFACE

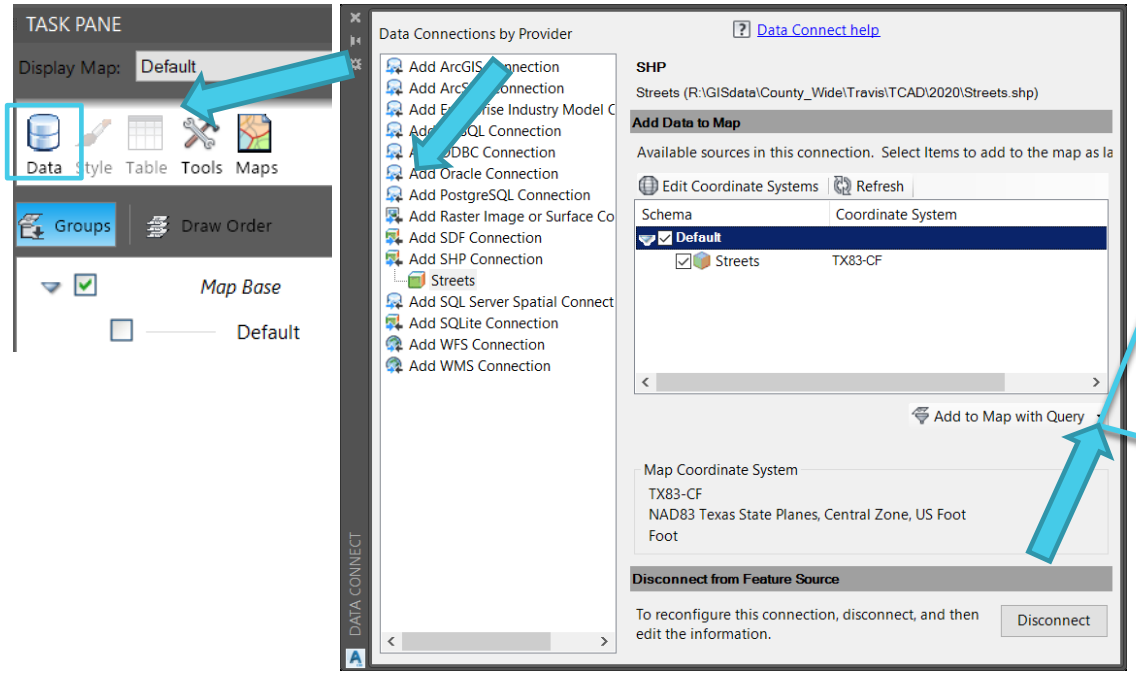


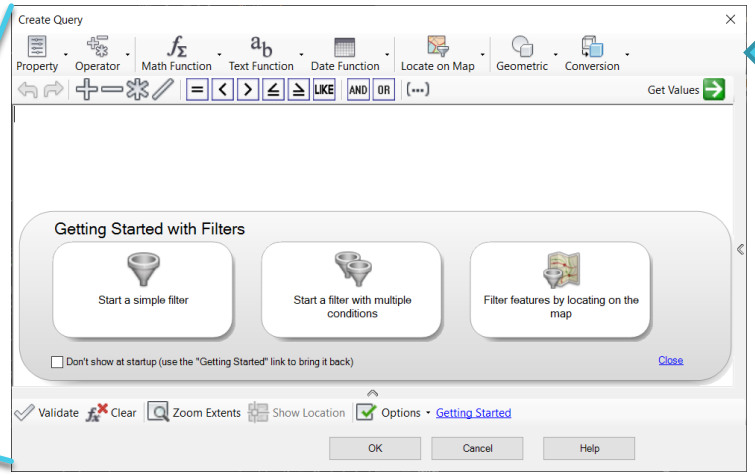
MAPWSPACE

Ideal for non-editing GRID only

ArcConnector uses AGO Permissions to Publish

PLANNING & ANALYSIS





Many methods to Query (SQL)

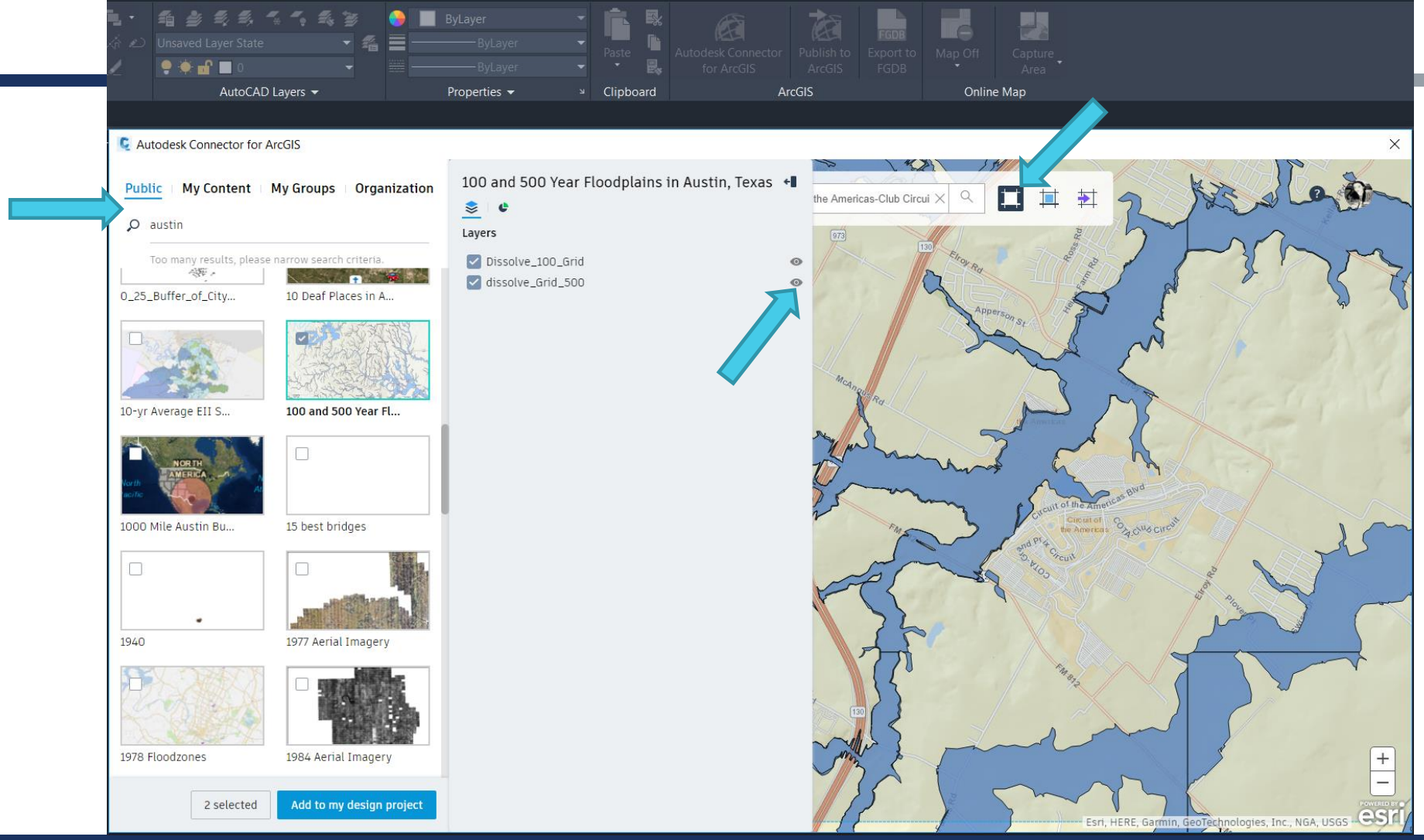
ADEDEFDATA

Creates CAD attribute data fields that can be filled by CAD user

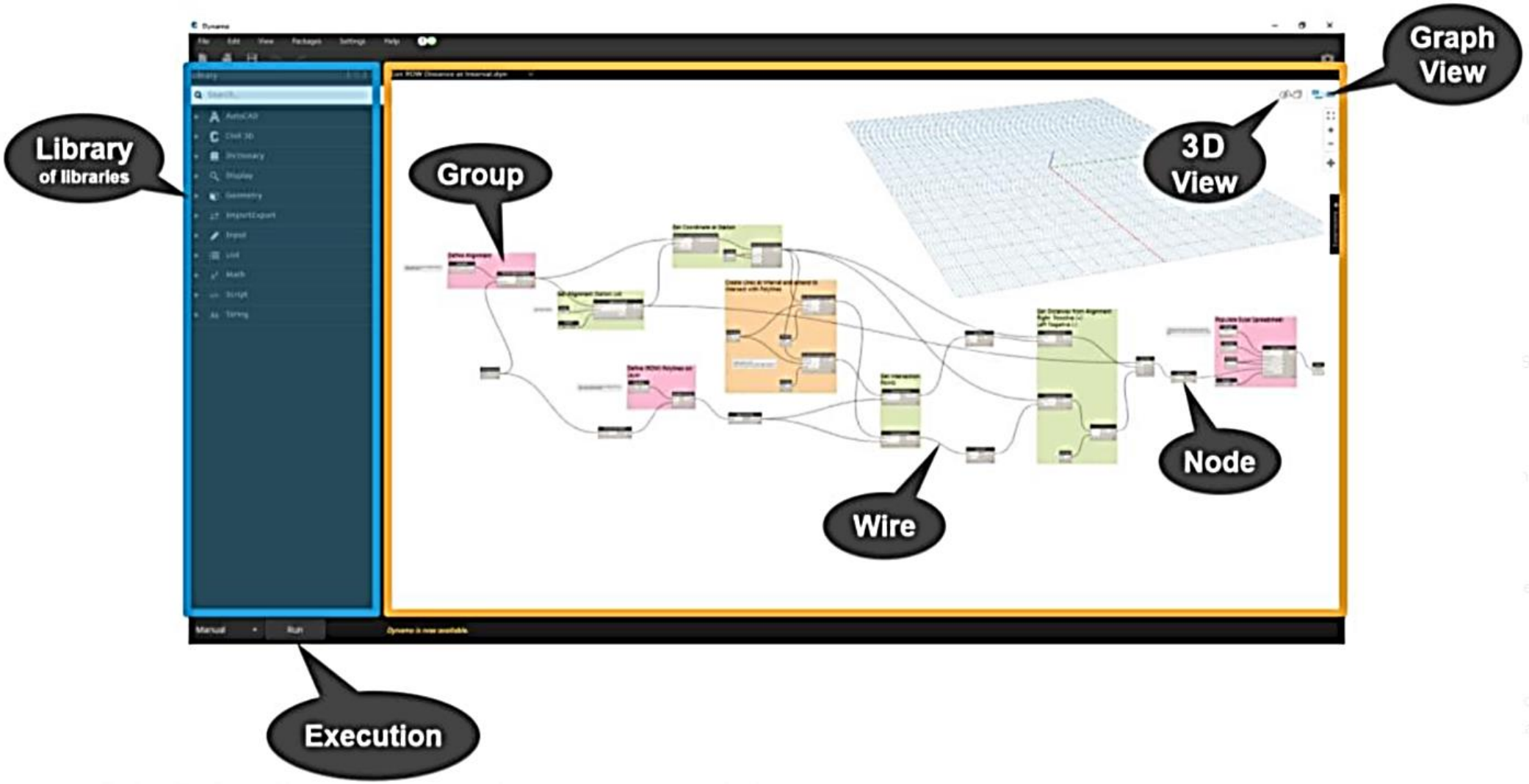
MAPANNTEXT

Creates CAD BLOCKS with Annotation based on attribute data

QUERIES & ATTRIBUTES



CONNECTOR & ARCGIS ONLINE



DYNAMO IN CIVIL3D

THANK YOU TNRIS & TX GIS FORUM

courtney.f.roe@gmail.com

ANY QUESTIONS?