



Designing a Water Pipeline Across Seven Counties with GIS

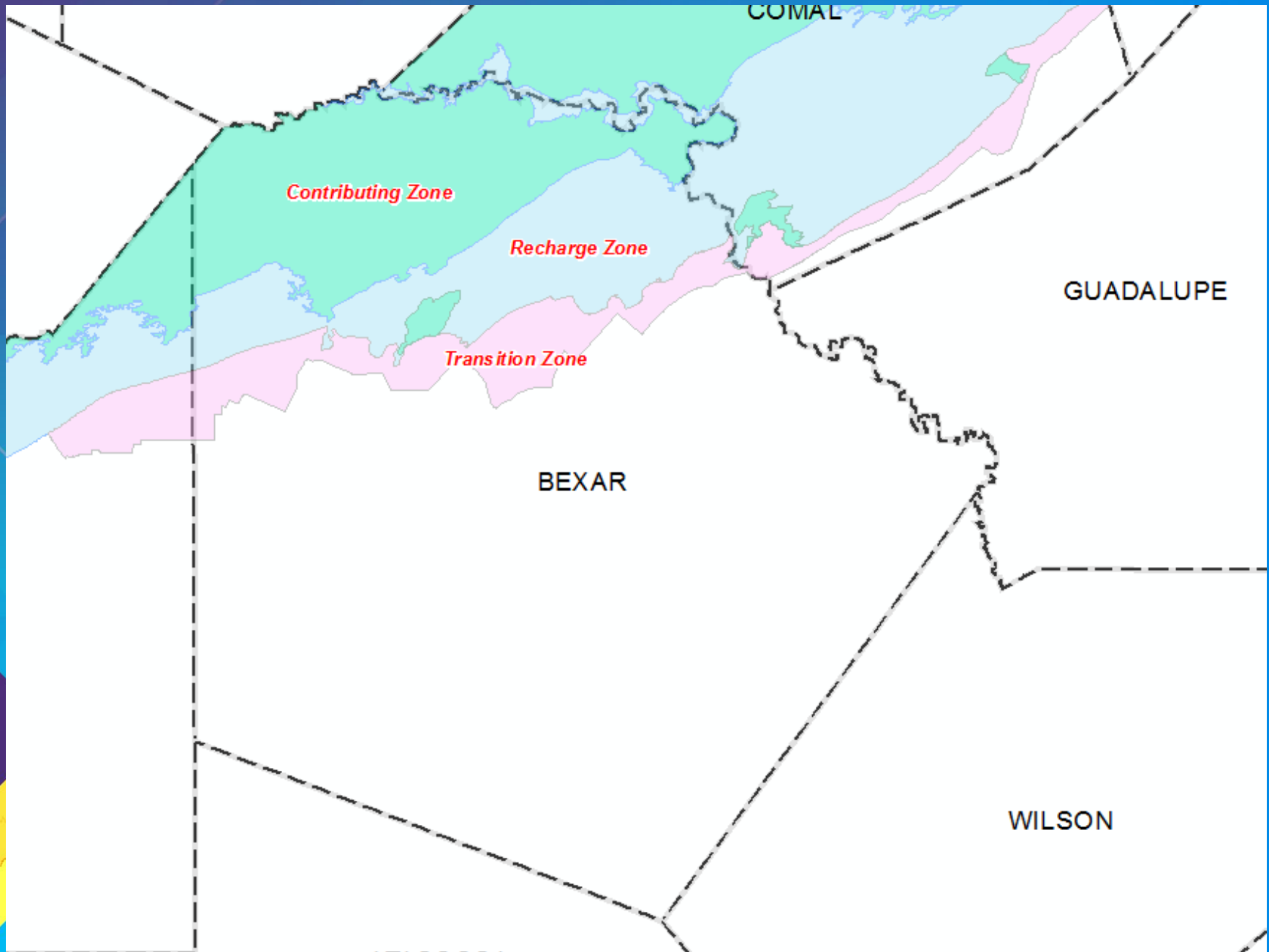
Michael A. Garza, GISP

Texas Counties



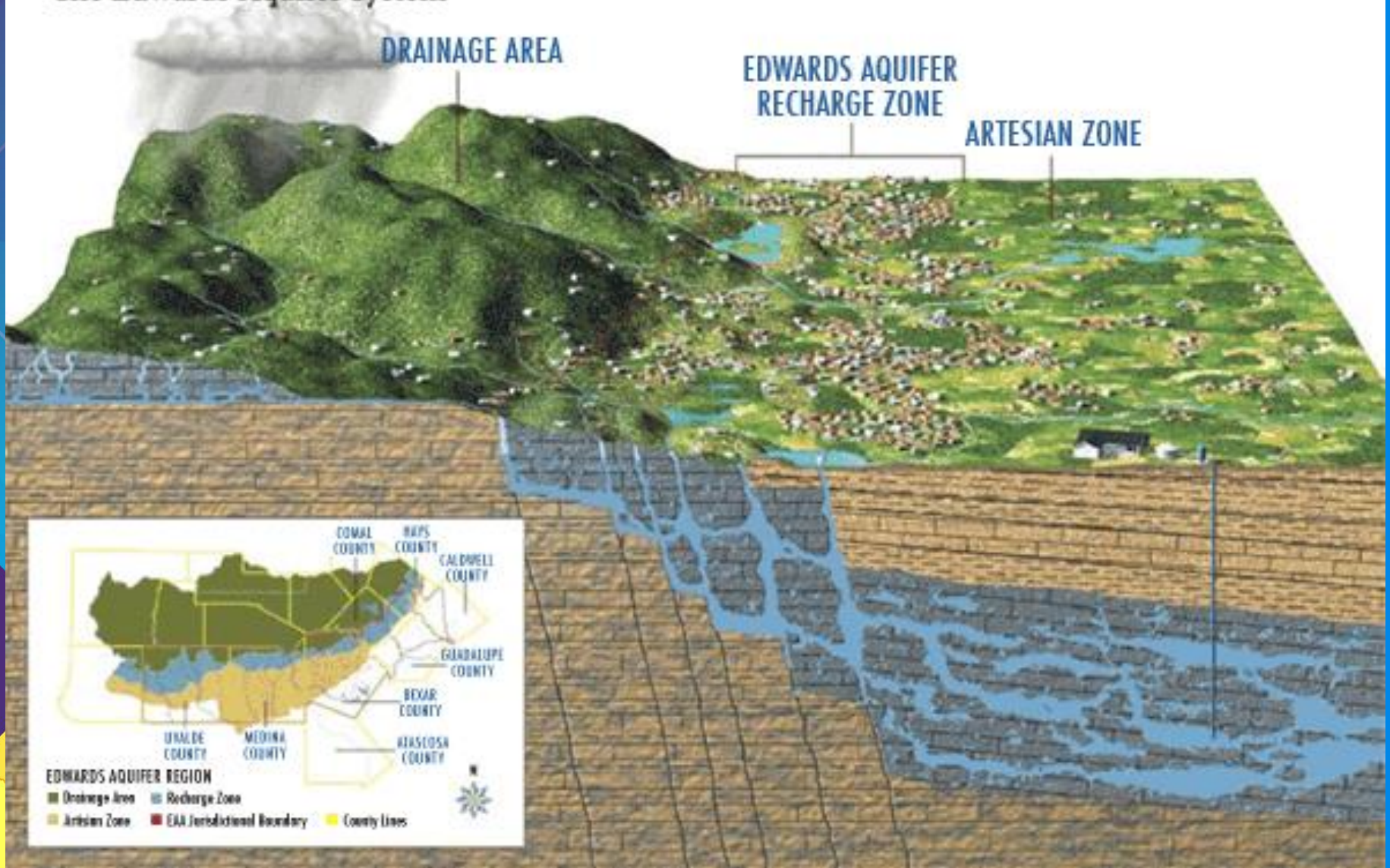
Bexar County

EDWARDS AQUIFER RECHARGE ZONES

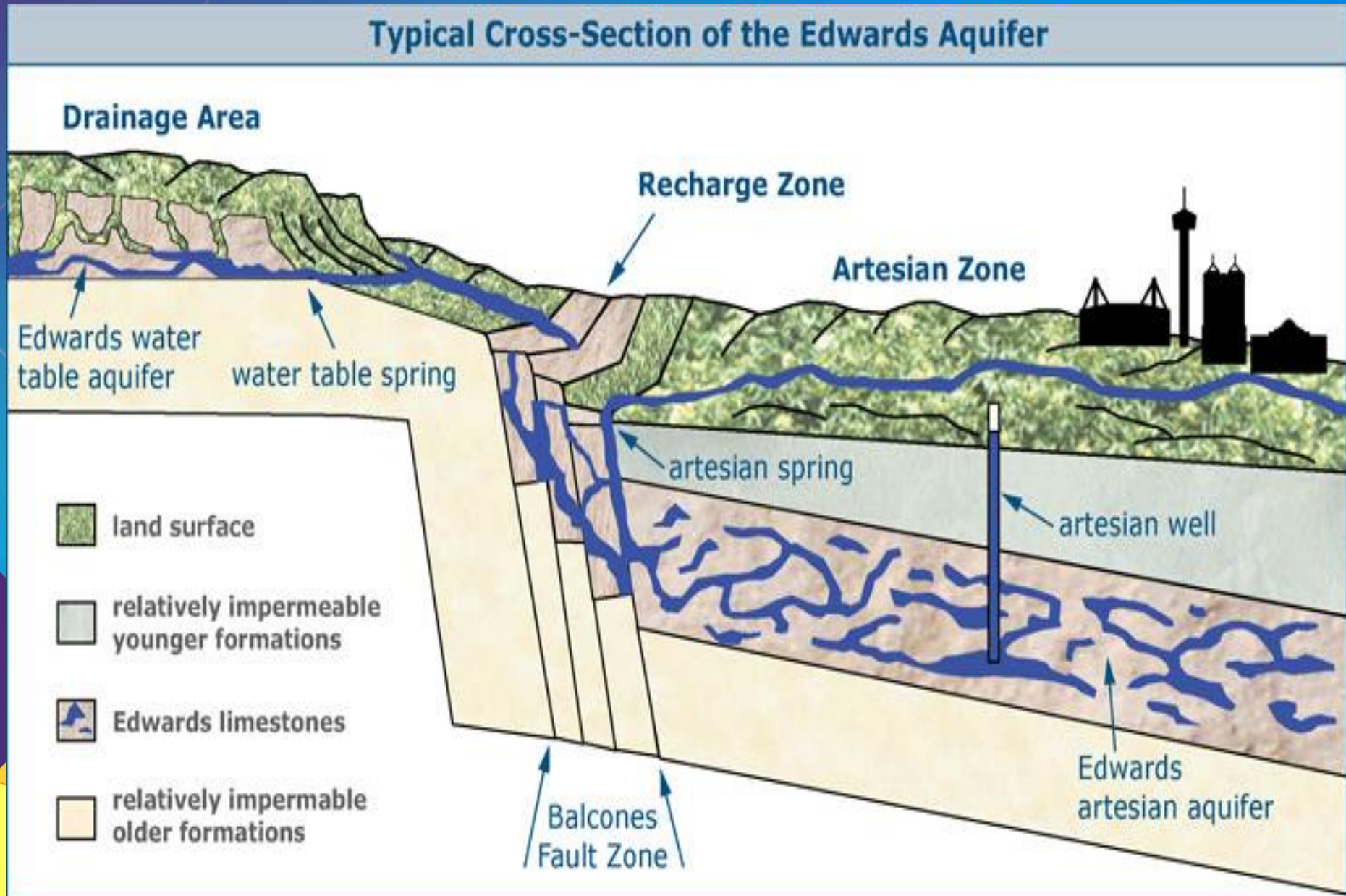


What is the Edwards Aquifer?

The Edwards Aquifer System



The Edwards Aquifer is the primary water source for a growing population of more than 1.7 million people.



DEMOGRAPHICS

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Real Estate

Videos

Relocation Resource



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DEMOGRAPHICS

San Antonio, the seventh largest municipality in the U.S., grew by 6.6% between 2010 and 2015, and is projected to grow an additional 6.34% through the year 2020. The city's metropolitan area grew by 9.05% between 2010 and 2015, and is projected to grow an additional 7.64% through the year 2020.

San Antonio, the largest city in Bexar County, encompasses a total geographic area of 467 square miles with a population density of 3,393 persons per square mile. The total land area for Bexar County is 1,247 square miles with a population density of 1,383 persons per square mile.

Source: 2014 U.S. Census Bureau

Population and Projections




| Area | 2010 Census | Est. Pop. 2014 | Projected Growth 2015-2020 |
|--------------|-------------|----------------|----------------------------|
| San Antonio | 1,327,407 | 1,416,291 | 6.34% |
| Bexar County | 1,714,773 | 1,861,562 | 7.40% |
| Metro Area | 2,142,508 | 2,336,330 | 7.64% |

Source: Claritas

CONTACT US

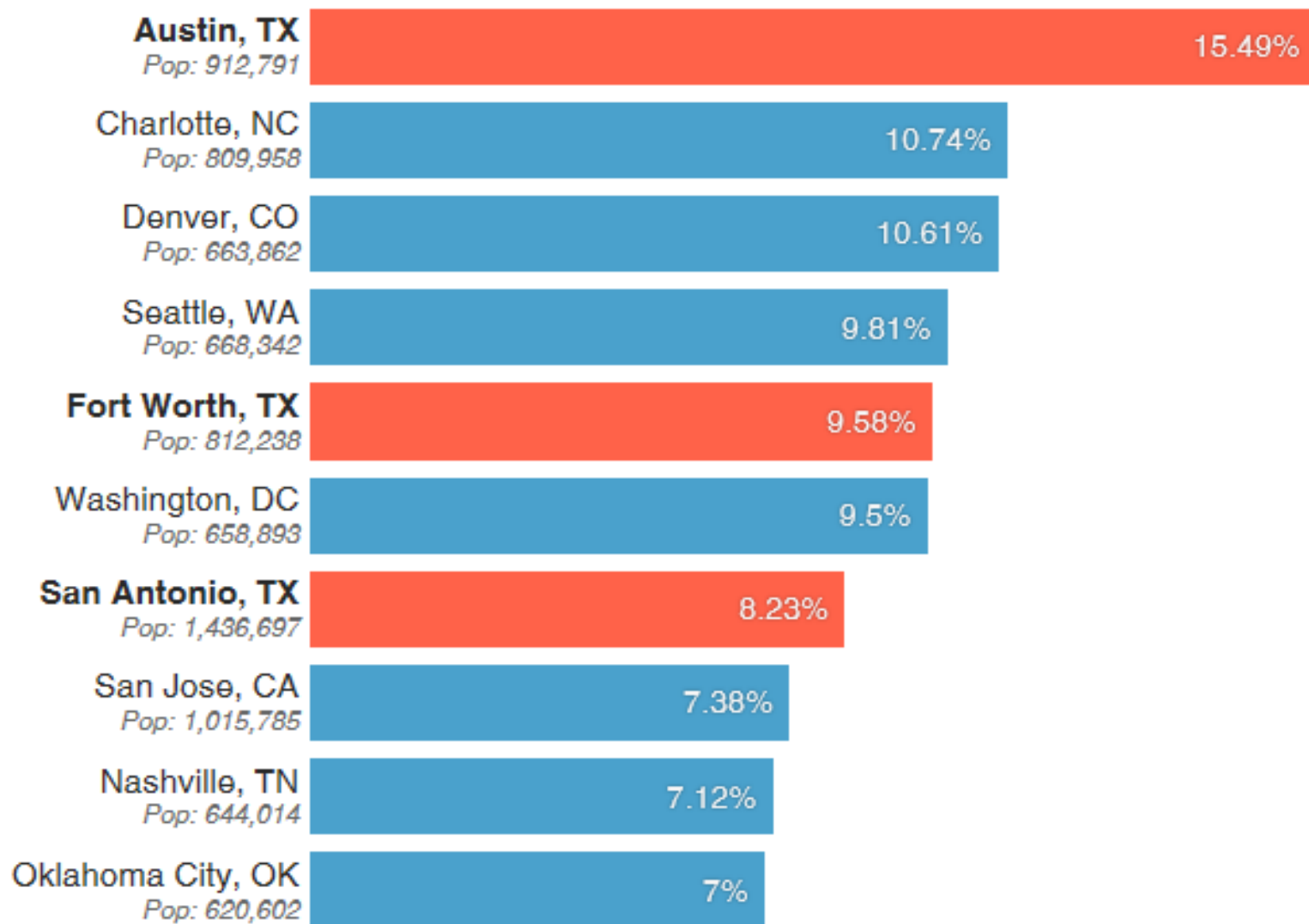
602 E. Commerce St.
San Antonio, Texas 78205
210.226.1394
Toll Free 1.866.949.0357

edf@sanantonioedf.com
Community Partners & Information

FOLLOW US   

Ten Fastest-Growing Cities in the U.S.

Between 2010 and 2014, three Texas cities were among the 10 fastest-growing cities in the U.S. for cities with a population larger than 500,000. Austin, the nation's fastest-growing big city, grew by nearly 16 percent.





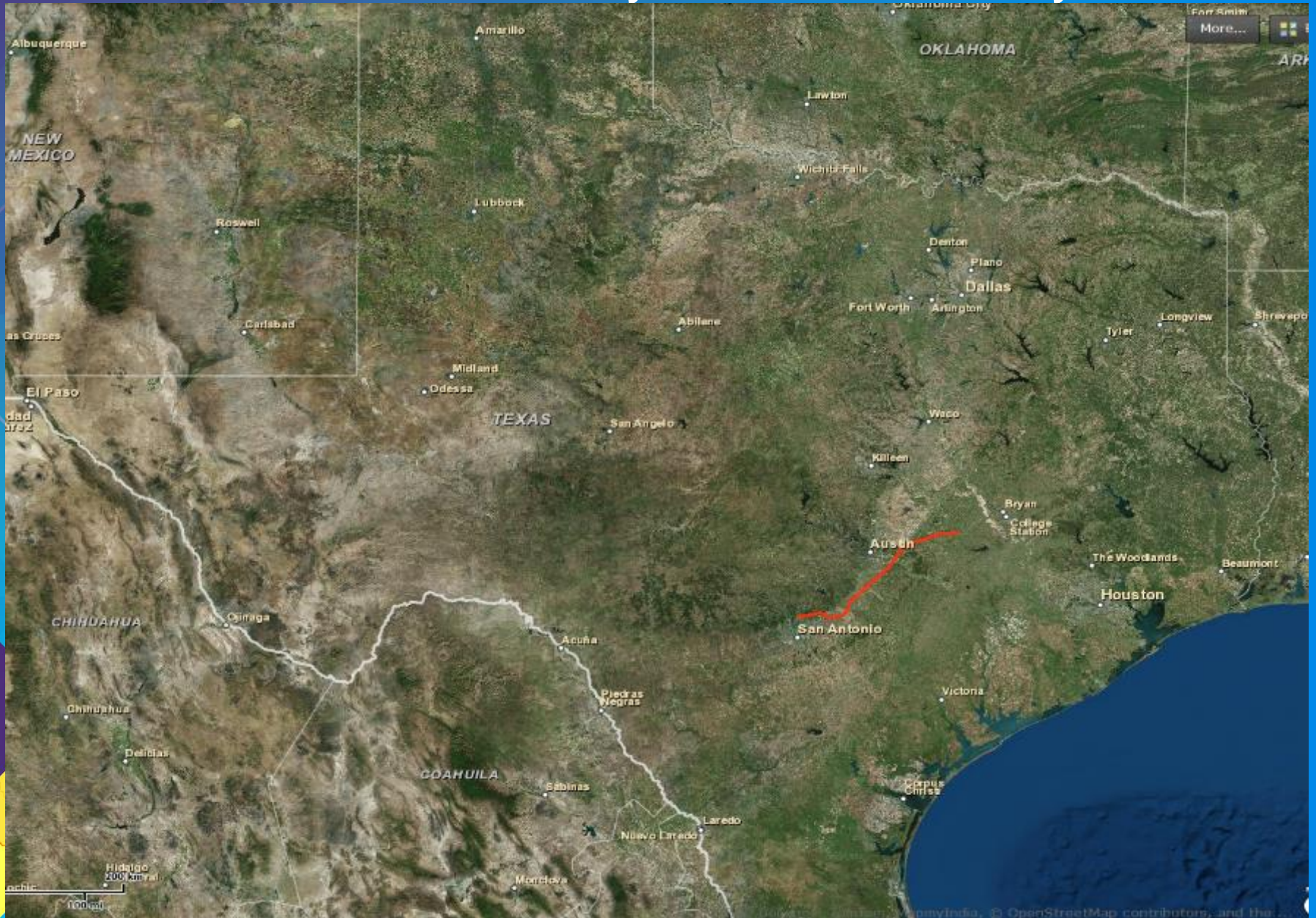
Next City members make our features possible. Donate today.

Hot, Crowded and Smart

San Antonio Is Growing and the Water Supply Is Diminishing.
What's the Strategy?

Source: nextcity.org

The solution is to design a waterline to bring water from Burleson County down to Bexar County



The waterline Spans Seven Counties, Crosses 490 +/- Parcels, and is approx. 140 Miles in length.

VRRSP Consultants, LLC



Who are the Players that are involved in this Project?

Financial Investors



Geo-Technical Engineers



Engineers



Environmentalist



Surveyors



Land Acquisition Group
(ROE's, Appraisals, Easements,
& Title Tracking)



Flex site with multiple widgets

VRRSP Consultants, LLC



Enter address

About

More...

Basemap

Enhanced Search Widget

Search Layer: Guadalupe County Aff...
Search Layer Field: Parcel GIS Code
Search by: Owner Name
Parcel GIS Code
Example: 50520

Search Clear

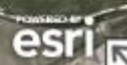
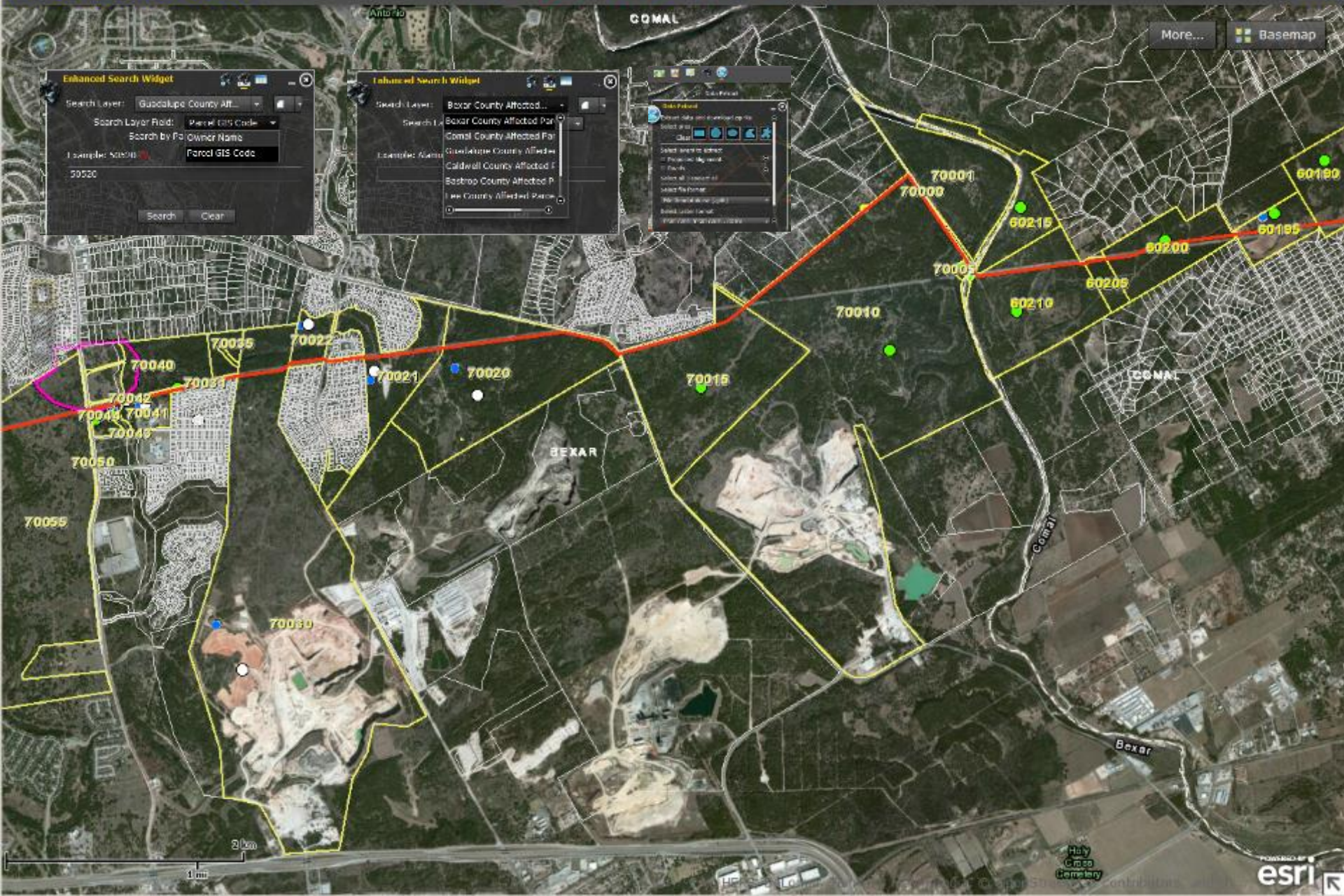
Enhanced Search Widget

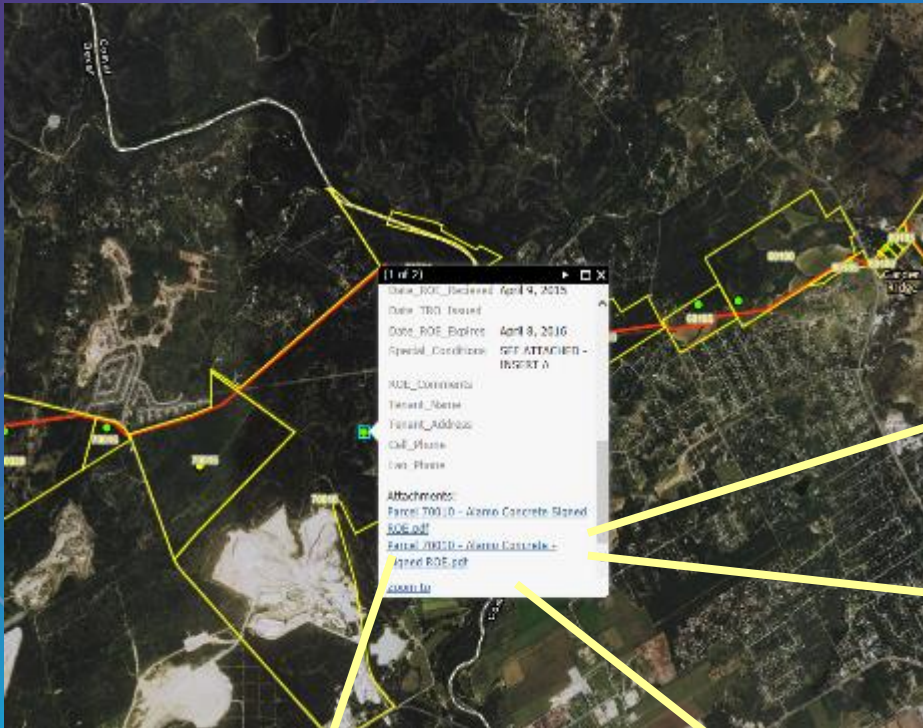
Search Layer: Bexar County Affected...
Search Layer Field: Parcel GIS Code
Search by: Owner Name
Parcel GIS Code
Example: 70020

Search Clear

Info Popup

Parcel GIS Code: 70000
Owner Name: [Redacted]
Address: [Redacted]





Form 0990
Right of Entry Permit Form

RIGHT OF ENTRY AGREEMENT

THIS RIGHT OF ENTRY AGREEMENT ("Agreement") is entered into this _____ day of _____, 2015 by and between the **Central Texas Regional Water Supply Company ("OWNER")** and **ALAMO CONCRETE PRODUCTS ("OWNER")**, situated as follows:

Property Description: Parcel 700.0
 MCS 2455 BLK 1 LOT 0555 LAND BEHIND FOR LEGAL RESUBDIVISION NCD 8091, NCD 8092, NCD 8093 & NCD 8094

NOW THEREFORE, in good and lawful consideration, the receipt and sufficiency of which is hereby acknowledged, the parties have agreed as follows:

OWNER and its contractors and design shall have twelve (12) months from the date of this Agreement to open up the above described Property to conduct investigations, including surface investigations, soil tests, geotechnical borings, geophysical and boundary surveys, geologic studies, planning feasibility studies, hydrological and environmental assessments, leachate, storm water and surface leachate, as necessary, a study of drainage and storm, applicable and all such other investigations and surveys (collectively "Investigations") as OWNER may require to determine the suitability of the Property for OWNER's intended use. OWNER, in the conduct of its investigations, shall not unreasonably interfere with any existing operations on the Property, and OWNER shall not unreasonably interfere with OWNER's investigations. Furthermore, OWNER shall indemnify and release any loss or claim resulting from OWNER's investigations as soon as reasonably practicable after completion of its investigations.

OWNER shall provide reasonable notice to OWNER of the hours and unannounced duration of the necessary investigations.

This Agreement shall be executed and entered in accordance with the laws of the State of Texas.

OWNER: **ALAMO CONCRETE PRODUCTS LTD** GRANITE Central Texas Regional Water Supply Corporation
 By: *[Signature]* By: _____
 Print Name: **Kirk Taylor** Print Name: **MOW BRAD**
 Title: **President** Title: **President**
 Telephone: **512-297-8888** Date: **4/9/15**
 Date: **4/9/15**

Reports

Core Samples

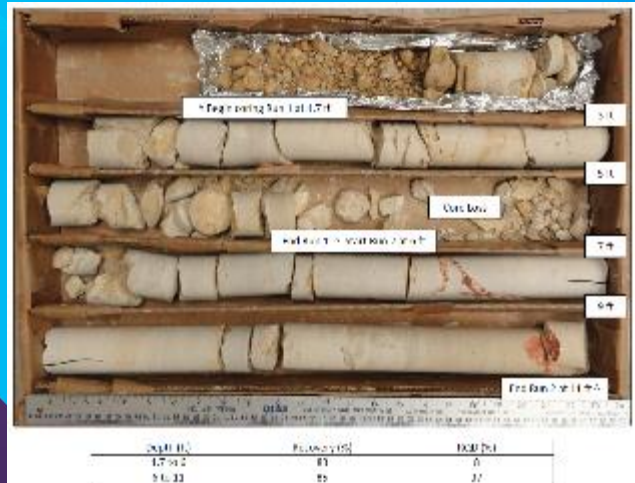


Images

LOG OF BORING NO. B-70021-01
 VISTA RIDGE REGIONAL SUPPLY PROJECT
 TEXAS

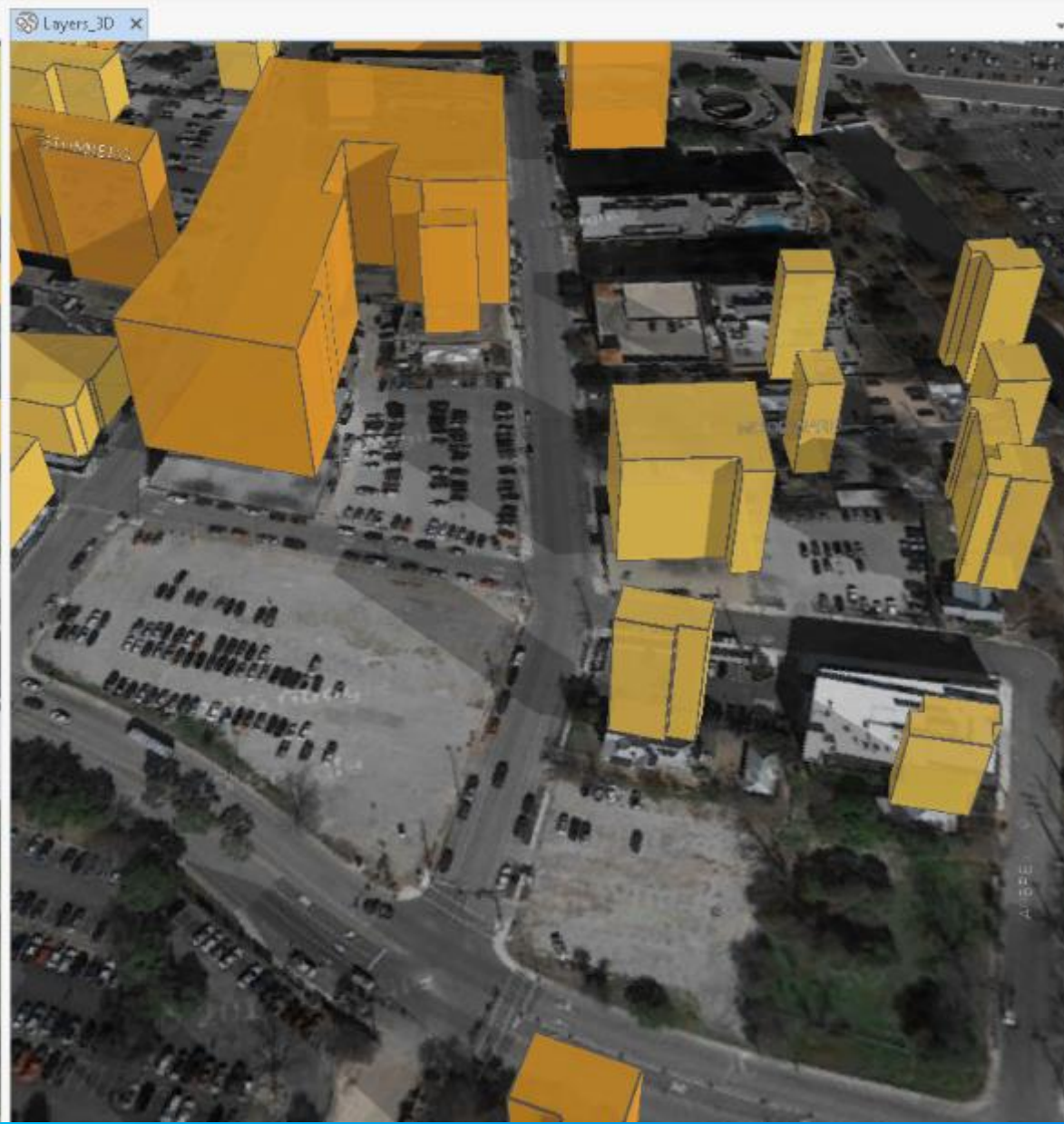
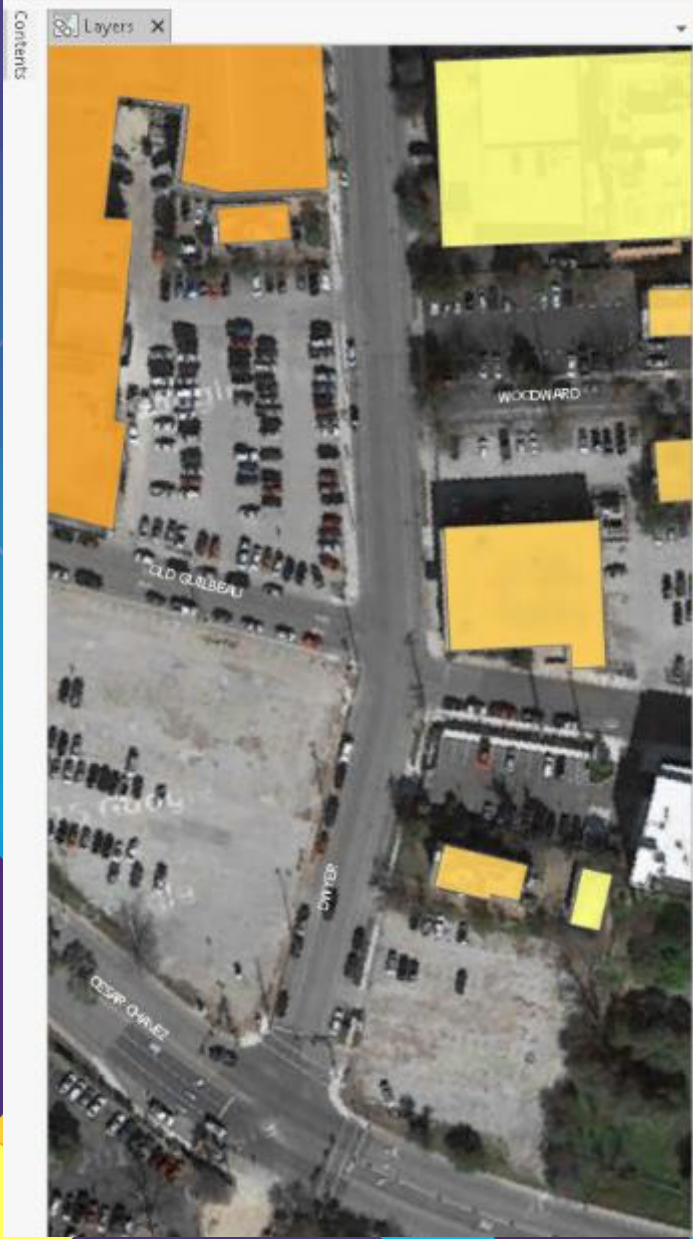
RABA KISTNER
 LULU P. O. BOX 120080, DALLAS, TEXAS 75212

| DEPTH (FEET) | DIAMETER (INCHES) | DESCRIPTION OF MATERIAL | REMARKS | SHEAR STRENGTH (TONS/FT ²) | | WATER CONTENT (%) | UNIT WEIGHT (PCF) |
|--------------|-------------------|---|---------|--|----|-------------------|-------------------|
| | | | | CU | UU | | |
| 0.00 | 12.00 | SURFACE ELEVATION: 244.1 CLAY, Green, Tan, with nodules of calcite | | | | | |
| 1.00 | 12.00 | BRICKS, Tan - hard from 1 to 1.5 ft | | | | | |
| 1.50 | 12.00 | RED #25 RCE #30 - hard from 2 to 2.5 ft | | | | | |
| 20.00 | 12.00 | RED #25 RCE #30 | | | | | |
| 24.00 | 12.00 | red inactive nodules from 20.0 to 24.0 ft | | | | | |



2-D

3-D



The background features a complex geometric pattern of overlapping triangles and polygons in various shades of blue, purple, and yellow. The colors transition from dark purple on the left to bright blue on the right. A prominent yellow shape with a grid pattern is visible in the lower-left quadrant.

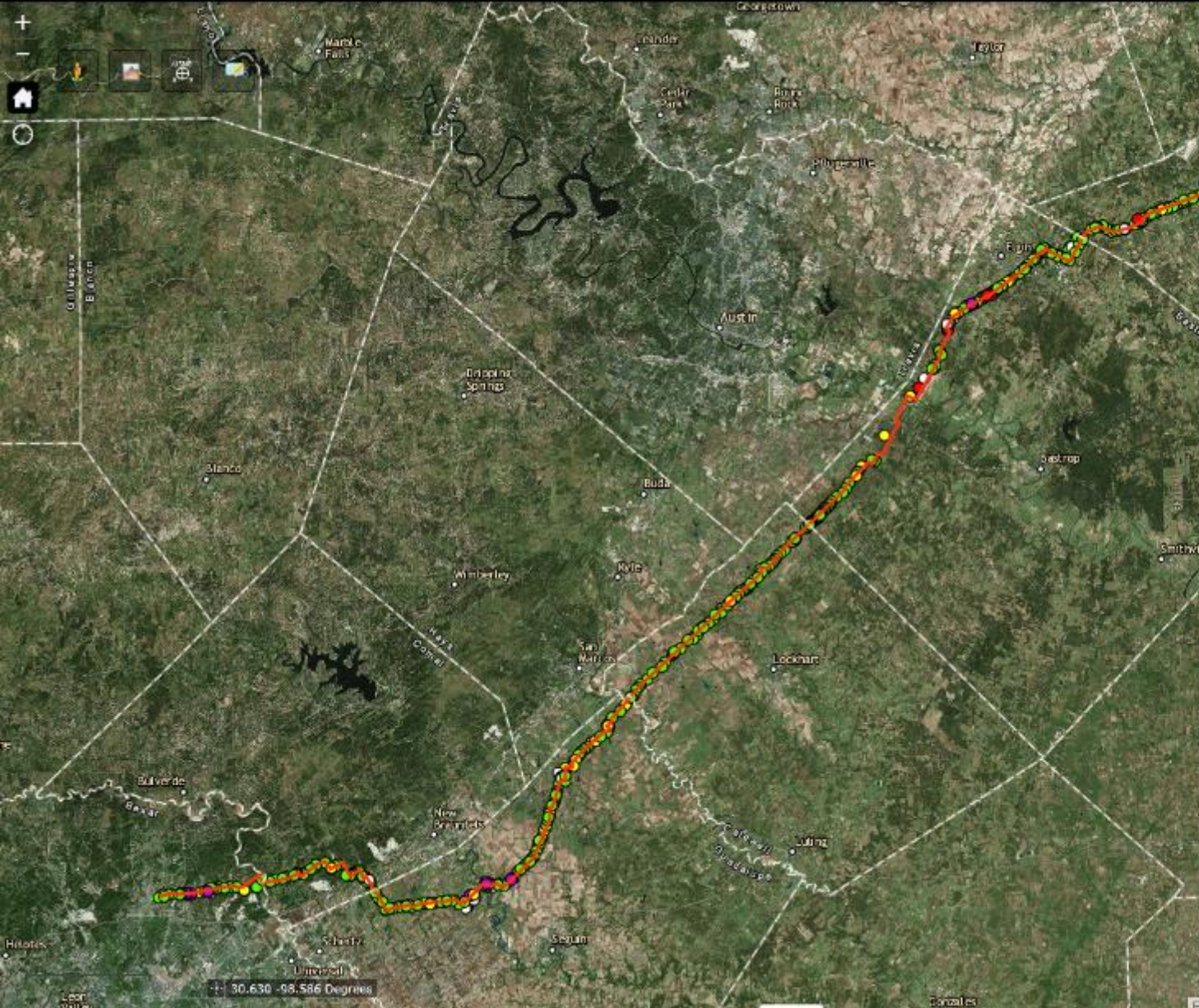
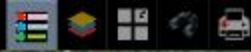
Embedded 3-D Video



Show Embedded Video

Main Water Supply Line

Created by Pape-Dawson Engineers



Legend

Proposed Alignment



ROE Tracking

- Not Needed (purple dot)
- No (red dot)
- Yes (green dot)
- Mailed (white dot)
- Expired (yellow dot)

ArcGIS Online Groups

ArcGIS Online Maps



created by PD_Admin on December 19, 2014

[Details](#)



Environmental
Environmental Group
created by PD_Admin on March 25, 2015

[Details](#)



Landman
Group
created by PD_Admin on March 25, 2015

[Details](#)



Survey
Survey
created by PD_Admin on March 25, 2015

[Details](#)



created by PD_Admin on April 29, 2015

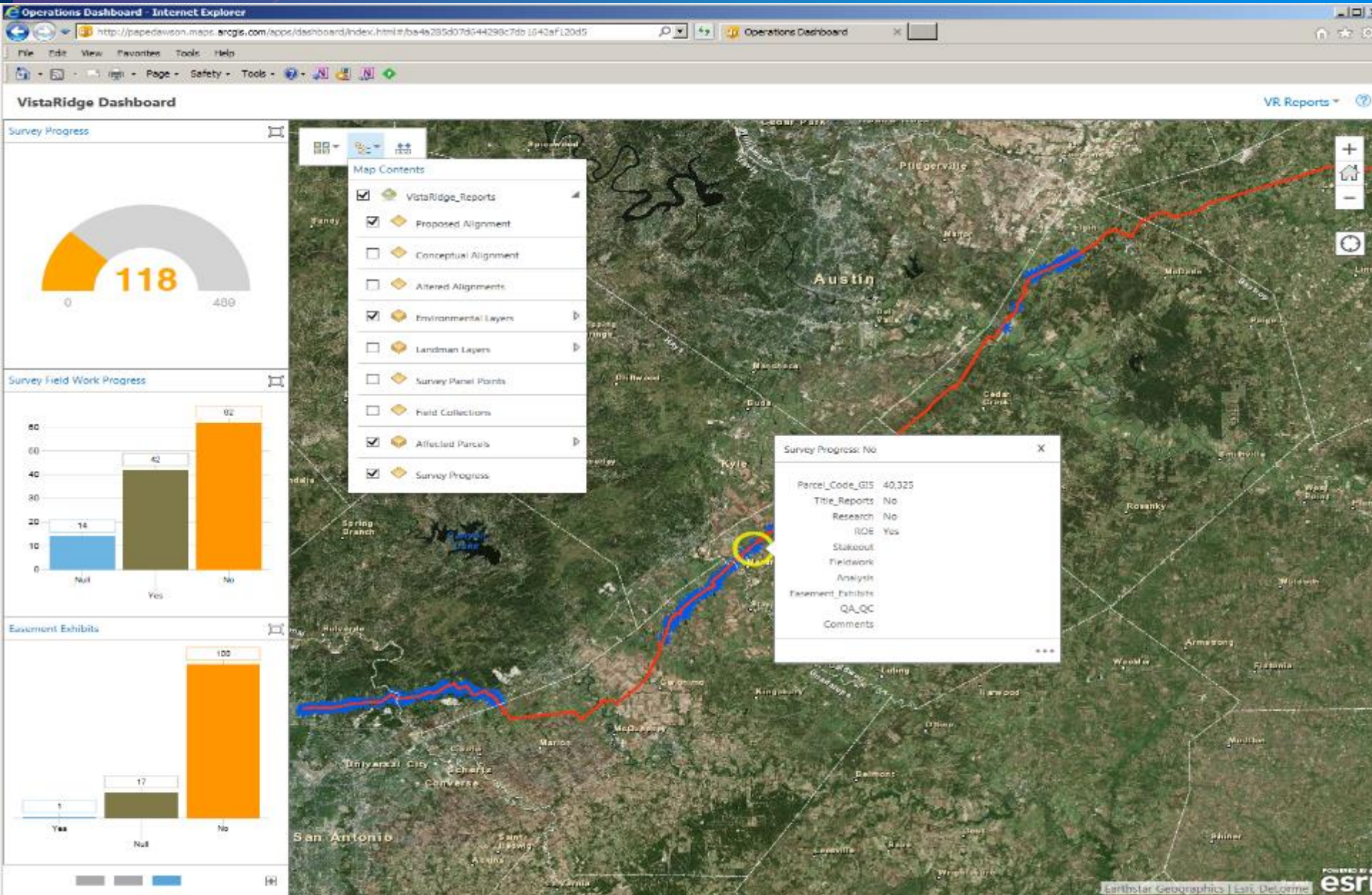
[Details](#)



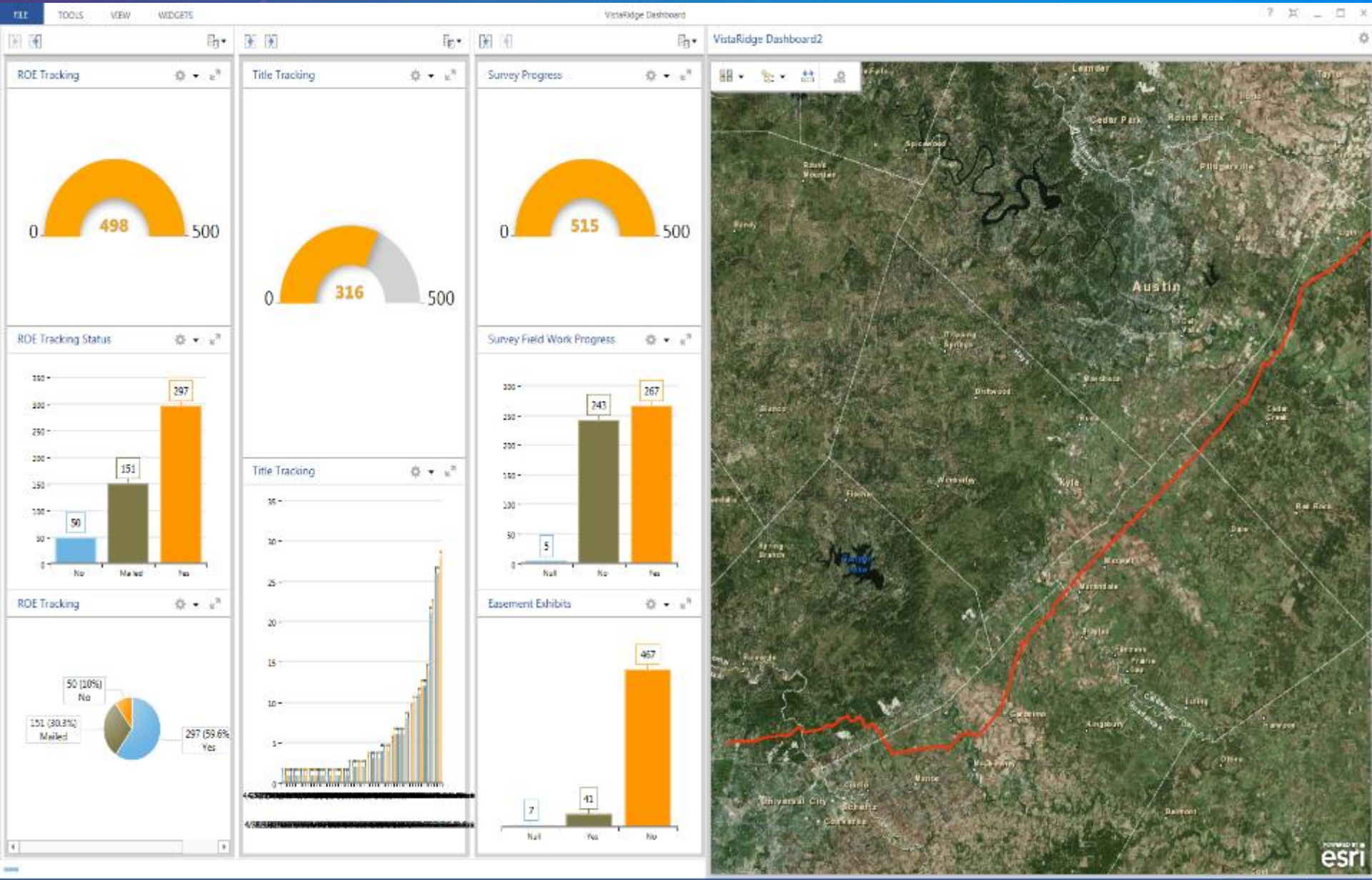
| + | Add Item | + | Create | + | Share | X | Delete | + | Move | + | Change Owner | | |
|--------------------------|----------|---|--------|---|-------|---|--------|---|------|---|--------------|--------------------------------|-------------------------|
| | | | | | | | | | | | | Title | Type |
| <input type="checkbox"/> | | | | | | | | | | | | Test Web App Builder | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | Vista Ridge | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | Vista Ridge | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | Vista Ridge Bexar Utilities | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | Vista Ridge Environmental | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | Vista Ridge Environmental | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge Dashboard | Operation View |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge Survey Map | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge Survey Map | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_Engineers | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_Engineers | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_Landman | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_Landman | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_Reports | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_SUE | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VistaRidge_SUE | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VR_GeoTech | Web Map |
| <input type="checkbox"/> | | | | | | | | | | | | VR_GeoTech | Web Mapping Application |
| <input type="checkbox"/> | | | | | | | | | | | | VRRSP Consultants, LLC GeoForm | Web Mapping Application |



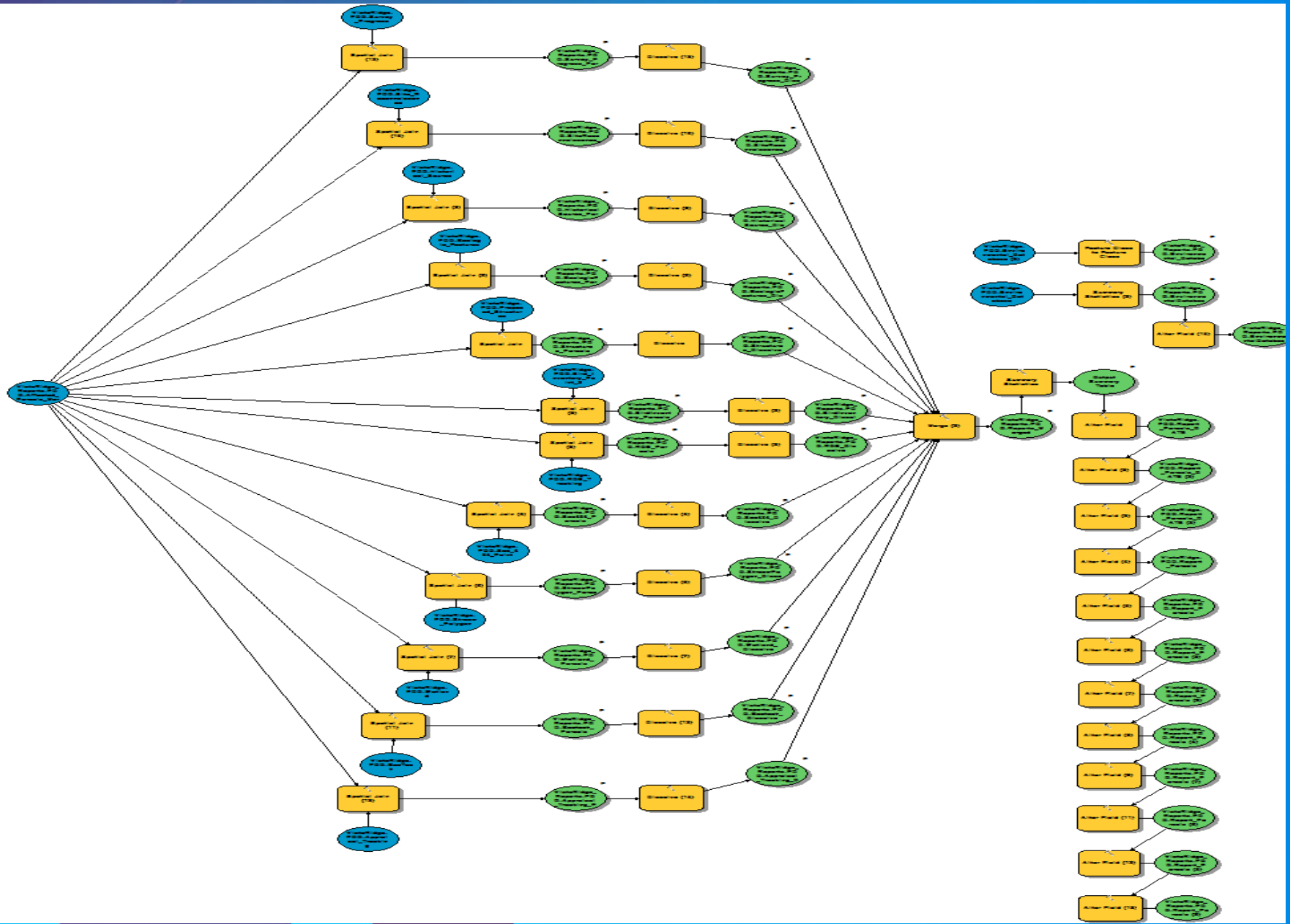
Operations Dashboard



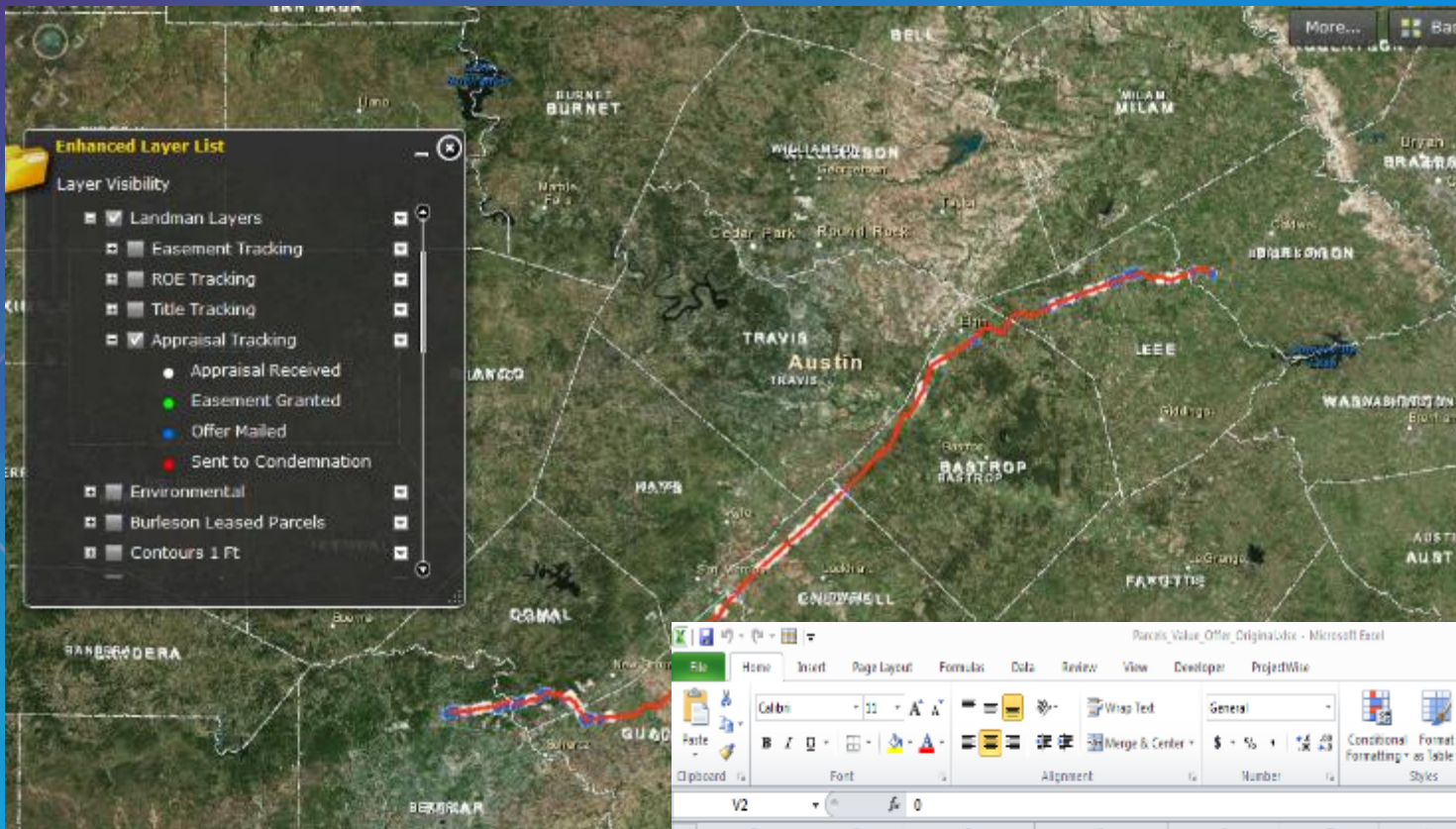
Operations Dashboard



The GIS Model That Tied it All Together for Reports



Maps tied to Pivot Tables



Parcels, Value, Offer, Original.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer ProjectWise

Calibri 11 A

Clipboard Font Alignment Number Conditional Formatting Styles Cell Styles Insert Delete Format Cells Editing

| | Q | P | Q | R | S | T | U | V | W | X |
|----|---------------|-------------|------------------|------------------|---------------|----------------|----------------|----------------|---------------|-------------|
| | | | | | | Estimated Cost | | | | |
| 1 | Offer_Damages | Final_Value | Final_Perm_Value | Final_Temp_Value | Final_Damages | March | Appraised Cost | Offer Easement | Offer Damages | Total Offer |
| 2 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 3 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 4 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 5 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 6 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 7 | | | | | | 0 | #DIV/0! | \$ - | \$ - | \$ - |
| 8 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 9 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 10 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 11 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 12 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 13 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 14 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 15 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 16 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |
| 17 | | | | | | 0 | #DIV/0! | 0 | 0 | 0 |

LESSONS LEARNED

**Securing Rest
Services &
AGO Maps**

**Constant
Schema
Changes**

**Creating
Multiple User
Groups**

**Data Sync &
Disconnected
Editing**



**Username &
Passwords for
Each Group**

**Republishing
Feature/Map
Services**

**Created a
Separate Web
Page for Security**

**Having To
Login Twice/
Creating a Proxy**

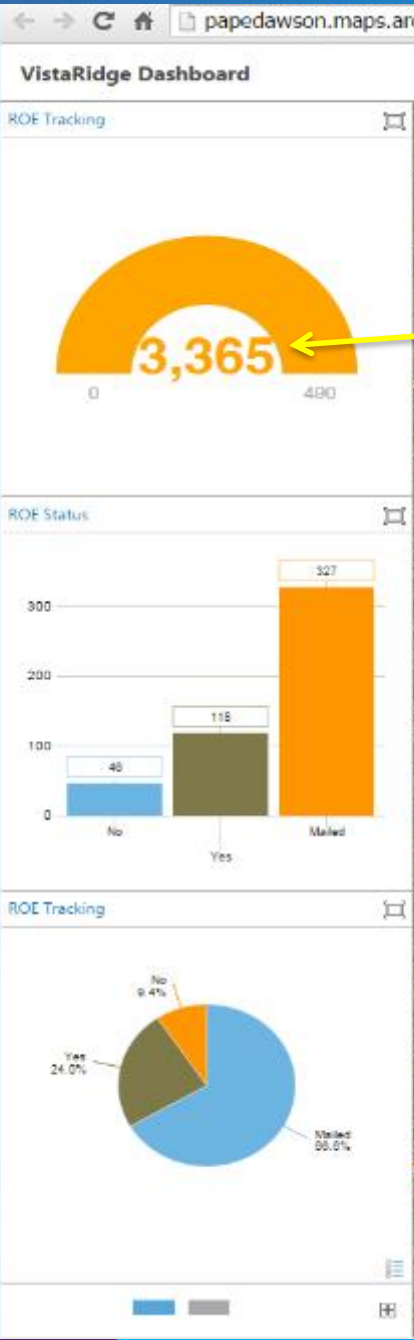
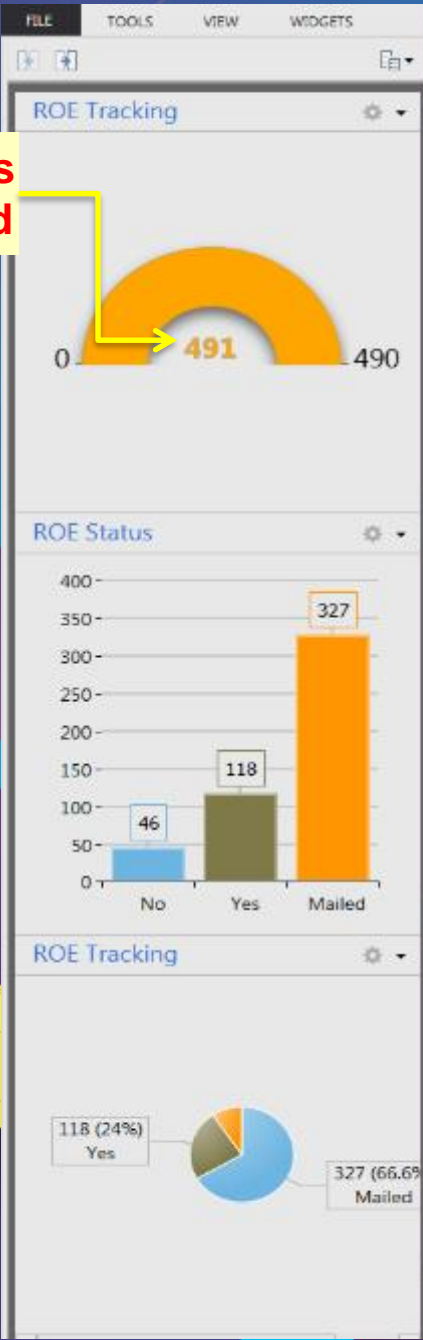


Pape-Dawson Engineers
2000 NW Loop 410
San Antonio, TX. 78213

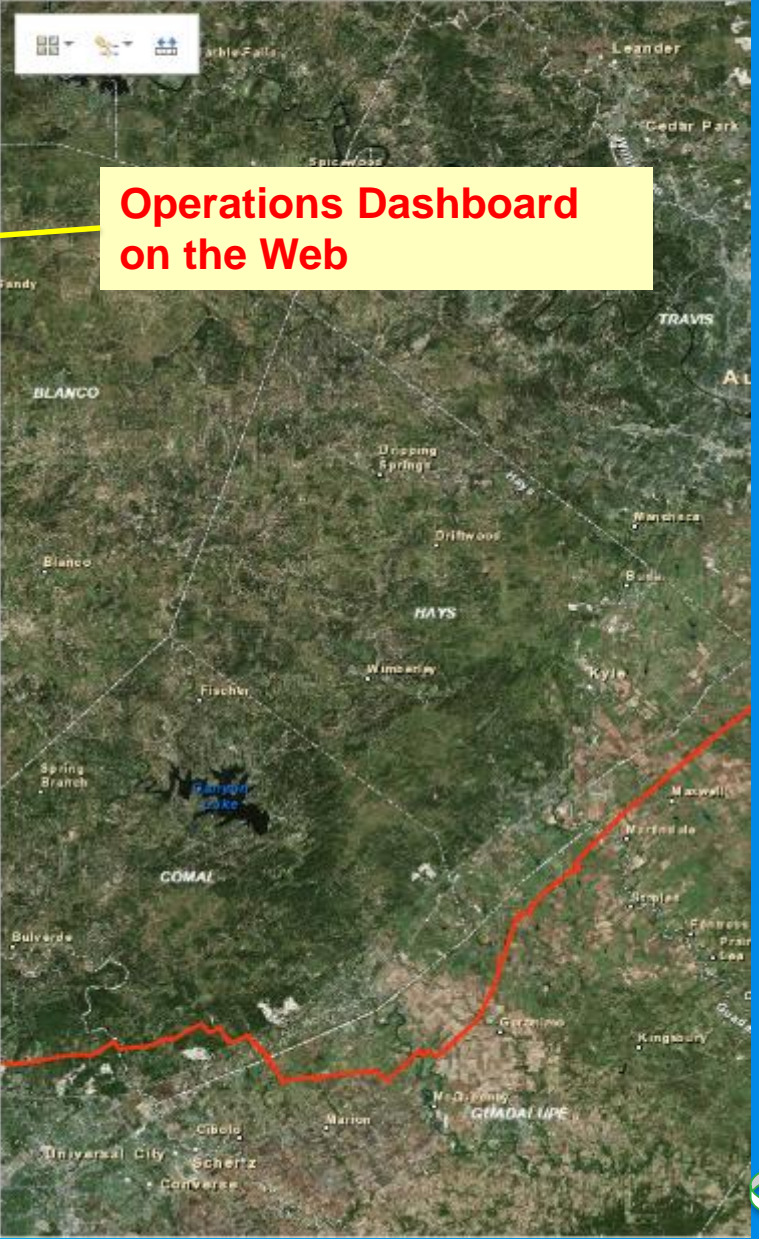
Presenter: Michael A. Garza, GISP
Email: mgarza@pape-dawson.com
Phone: 210-375-9000 Ext. 426

Lessons Learned. You cannot track data that is intended for Disconnected editing.

Operations Dashboard

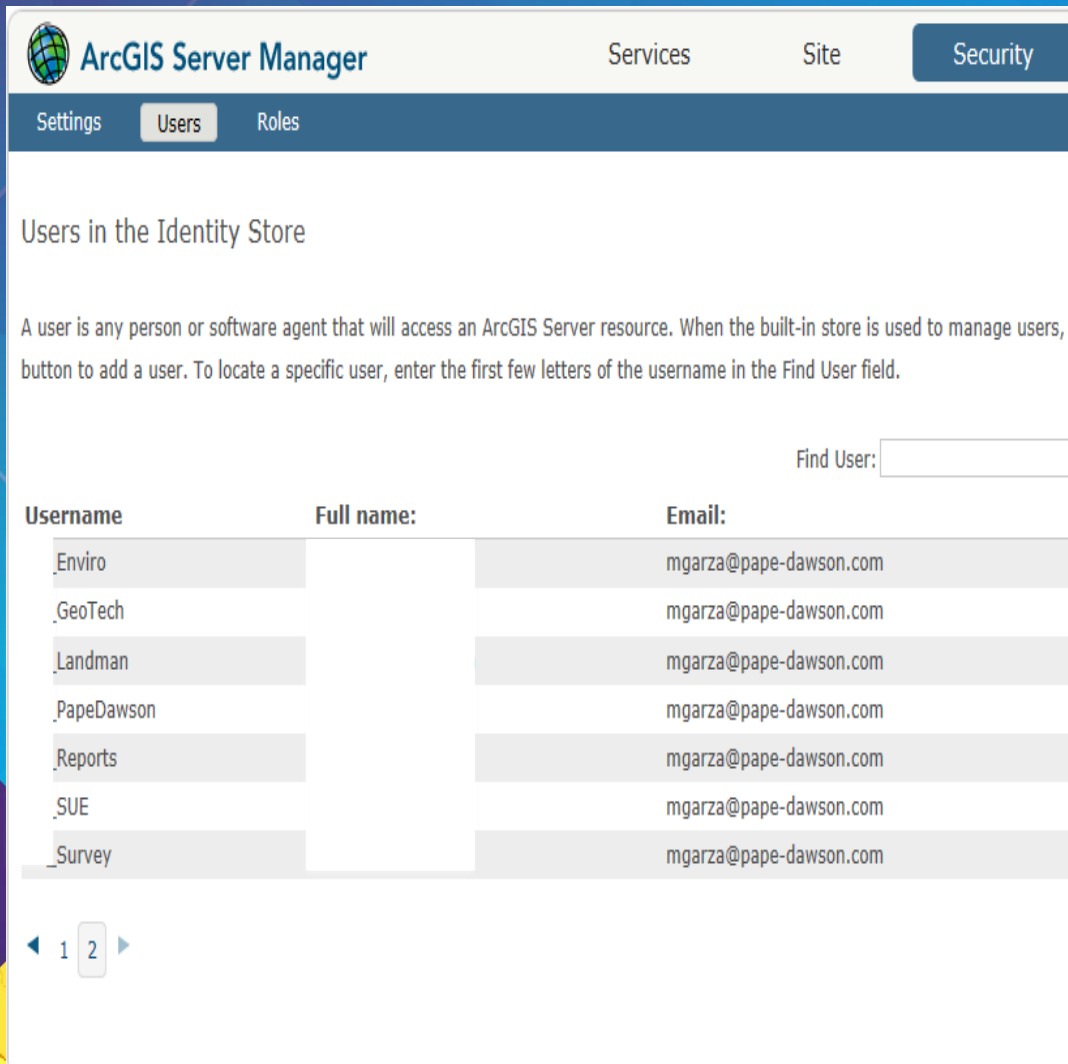


Operations Dashboard on the Web



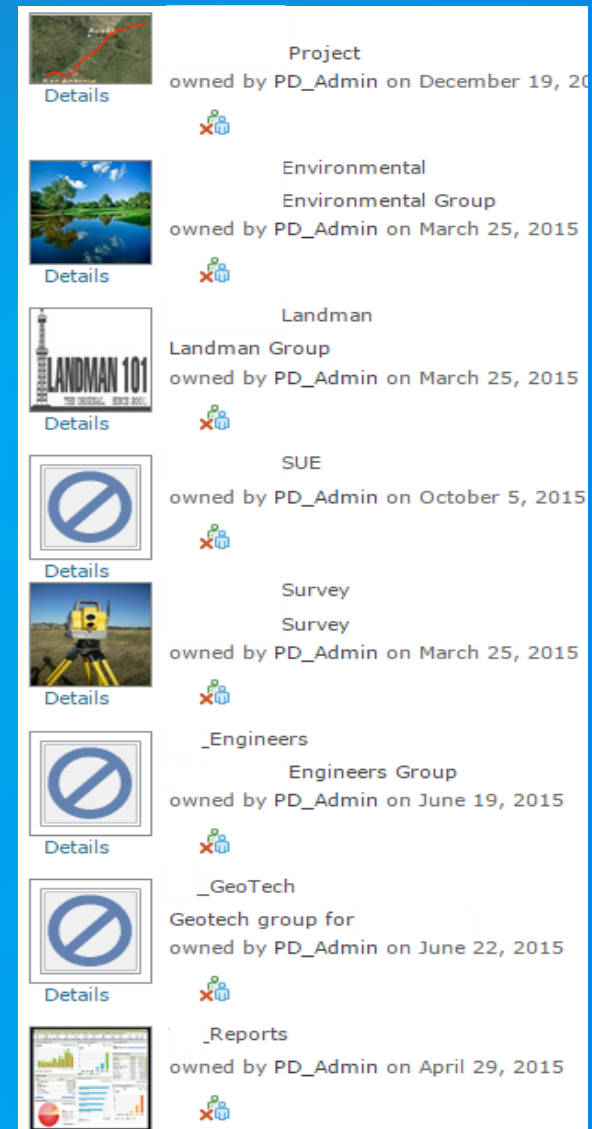
Server Manager Security Roles

AGOL Secured Groups



The screenshot shows the ArcGIS Server Manager interface. At the top, there are tabs for 'Settings', 'Users', and 'Roles'. The 'Security' tab is selected. Below the navigation, the page title is 'Users in the Identity Store'. A descriptive paragraph explains that a user is any person or software agent that will access an ArcGIS Server resource. Below the text is a 'Find User:' search field. A table lists several users with their usernames, full names, and email addresses. At the bottom left, there are navigation arrows and page numbers '1' and '2'.

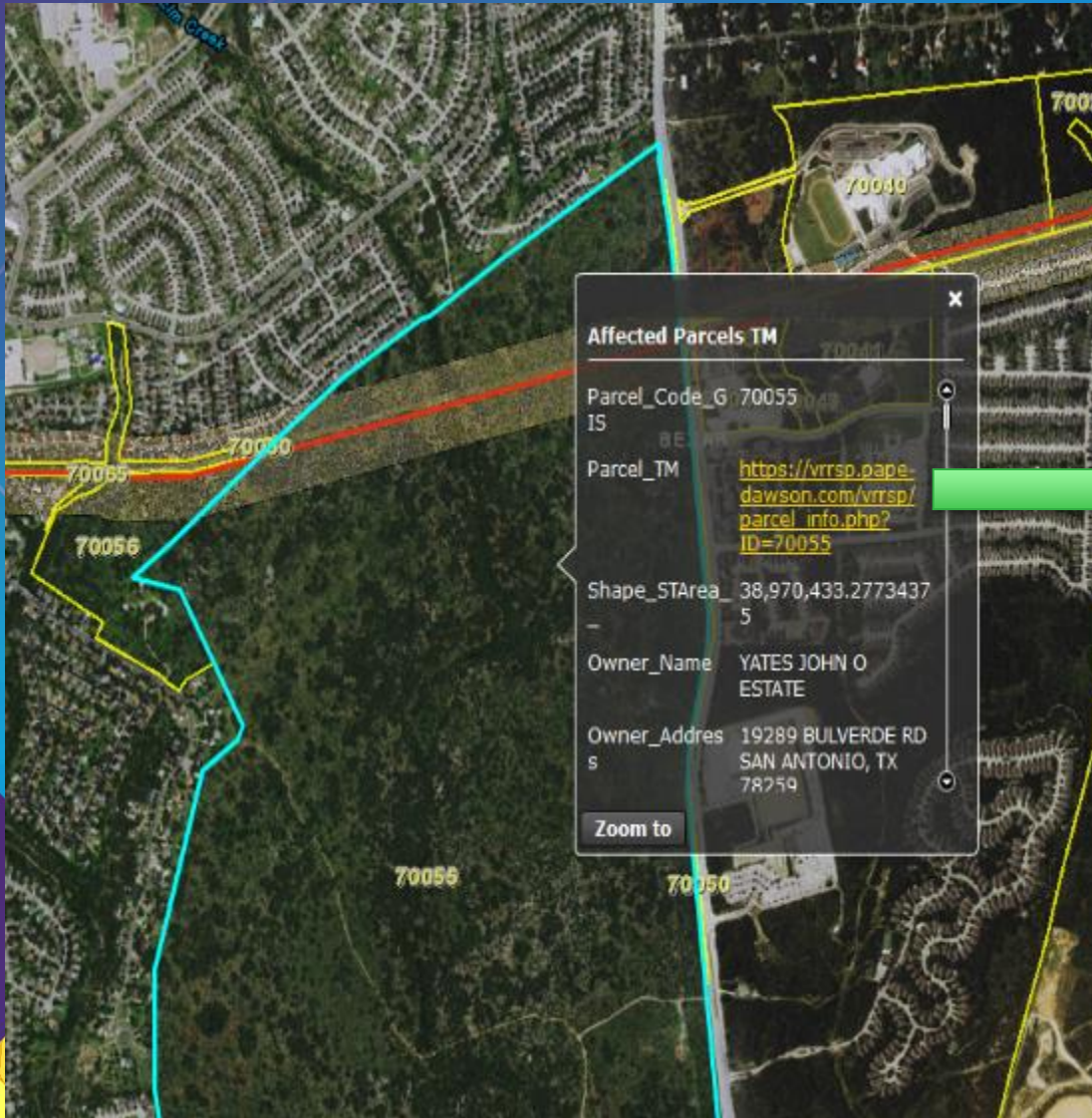
| Username | Full name: | Email: |
|-------------|------------|------------------------|
| .Enviro | | mgarza@pape-dawson.com |
| .GeoTech | | mgarza@pape-dawson.com |
| .Landman | | mgarza@pape-dawson.com |
| .PapeDawson | | mgarza@pape-dawson.com |
| .Reports | | mgarza@pape-dawson.com |
| .SUE | | mgarza@pape-dawson.com |
| .Survey | | mgarza@pape-dawson.com |



The screenshot shows a list of AGOL Secured Groups. Each group entry includes a thumbnail image, a title, a description of ownership, and a 'Details' link. The groups listed are:

- Project**: owned by PD_Admin on December 19, 2015
- Environmental Environmental Group**: owned by PD_Admin on March 25, 2015
- Landman Landman Group**: owned by PD_Admin on March 25, 2015
- SUE**: owned by PD_Admin on October 5, 2015
- Survey Survey**: owned by PD_Admin on March 25, 2015
- _Engineers Engineers Group**: owned by PD_Admin on June 19, 2015
- _GeoTech Geotech group for**: owned by PD_Admin on June 22, 2015
- _Reports**: owned by PD_Admin on April 29, 2015





VRRSP Consultants, LLC
Vista Ridge Regional Supply Project Parcel Crossing Information

You must log in to access the site.
These are your specific log in credentials not the GIS log in.

Login:

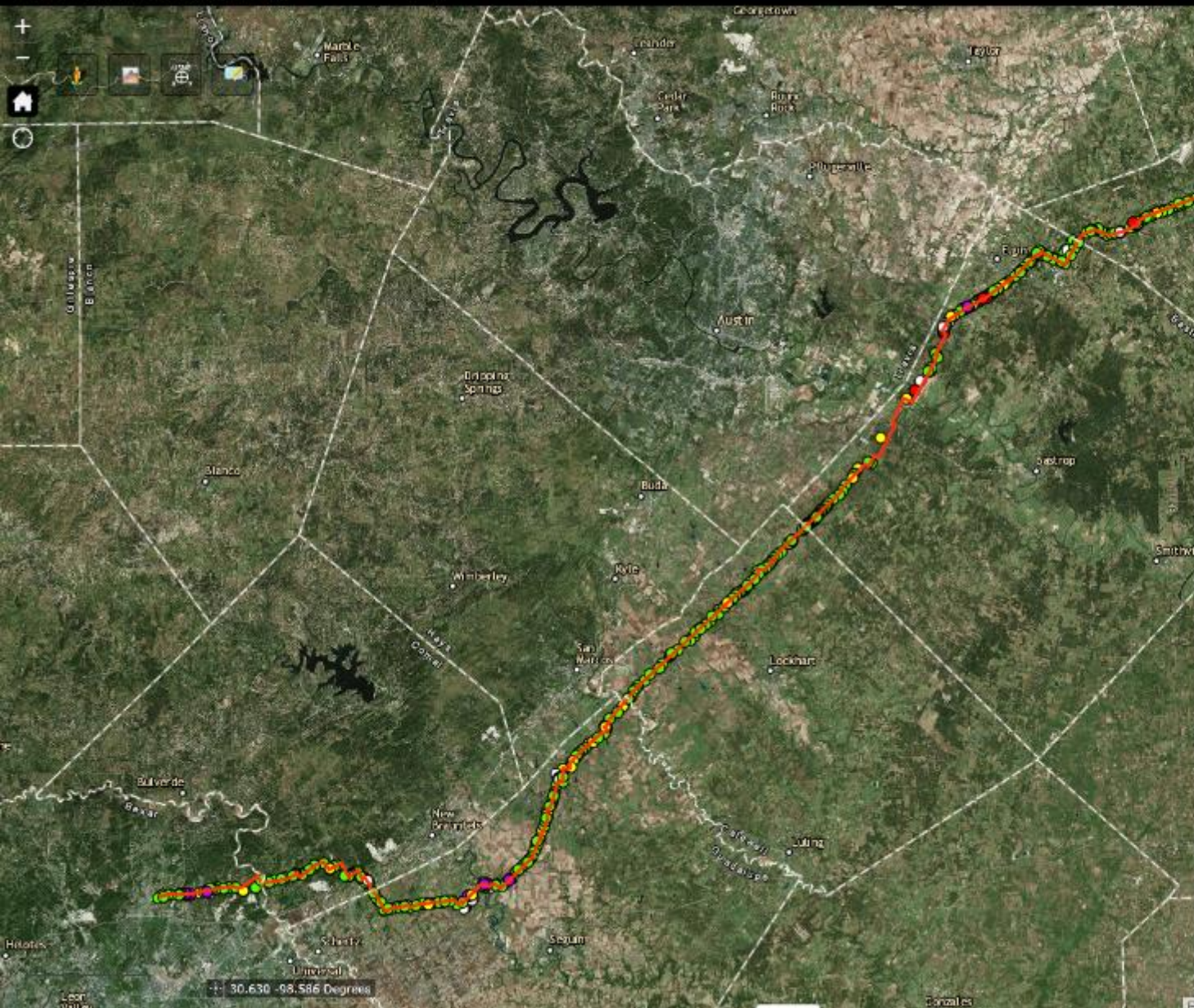
Password:



WebApp Developer

Main Water Supply Line

Created by Pape-Dawson Engineers



Legend

Proposed Alignment



ROE Tracking

- Not Needed (Purple circle)
- No (Red circle)
- Yes (Green circle)
- Mailed (White circle)
- Expired (Yellow circle)





<https://gis.pape-dawson.com/watermain/>

http://gis.pape-dawson.com/VR_Reports