

TRACKING LAND & OPERATIONS IN GIS AT A SMALL INDEPENDENT



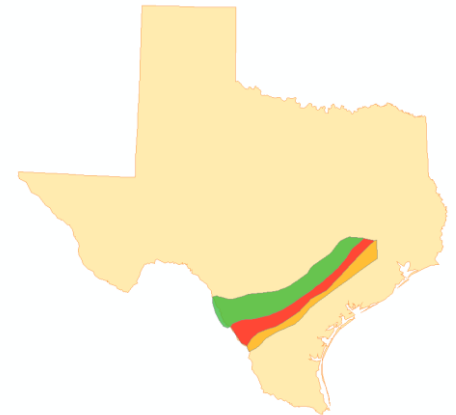
AGENDA

- I. About Stonegate
- II. Building our land management and GIS solution
- III. Using the solution in GIS
- IV. Putting the power of GIS in all hands
- V. GIS as a big solution at a small independent
- VI. Questions



ABOUT STONEGATE

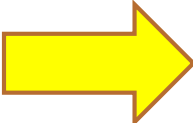
- Founded in 2007
- Headquarters in Houston, TX
- Focus on Texas operations
- Currently have an interest in 60,000 gross acres and 30,000 net acres in the Eagle Ford Basin
- Operate 130 producing wells and have an interest in another 150 non-operated wells
- 40 full-time employees
- Brought land function completely in-house in 2014
 - Implemented Quorum Land



WHY MAKE A CHANGE FOR LAND?

Majority of land activity was previously tracked externally

- Difficulty in tracking leases on spreadsheets
- Little organization and internal understanding of physical lease files
- Long wait for retrieving reports and maps

High costs  **little benefits**

***Building a land management and GIS
solution...***

SOLUTIONS

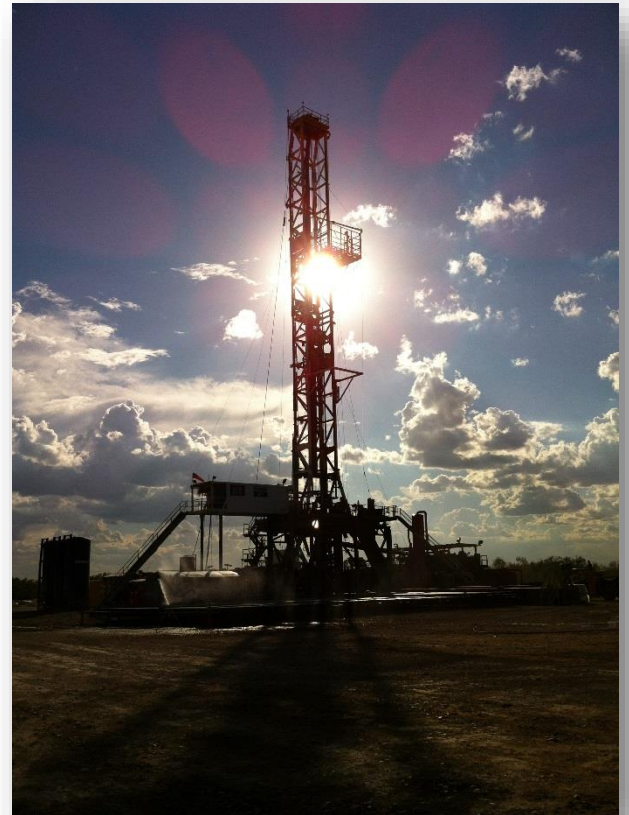
- Brought land in-house by hiring landmen, analysts, techs
- Installed ArcGIS 10.2 with 7 ArcMap licenses
- Implemented Quorum Land and GIS in 2014
 - Land team began entering and mapping all agreements into land system
- Created new physical filing system

CAPTURING AGREEMENT DATA

Leases, units, contracts, easements, title opinions, wells

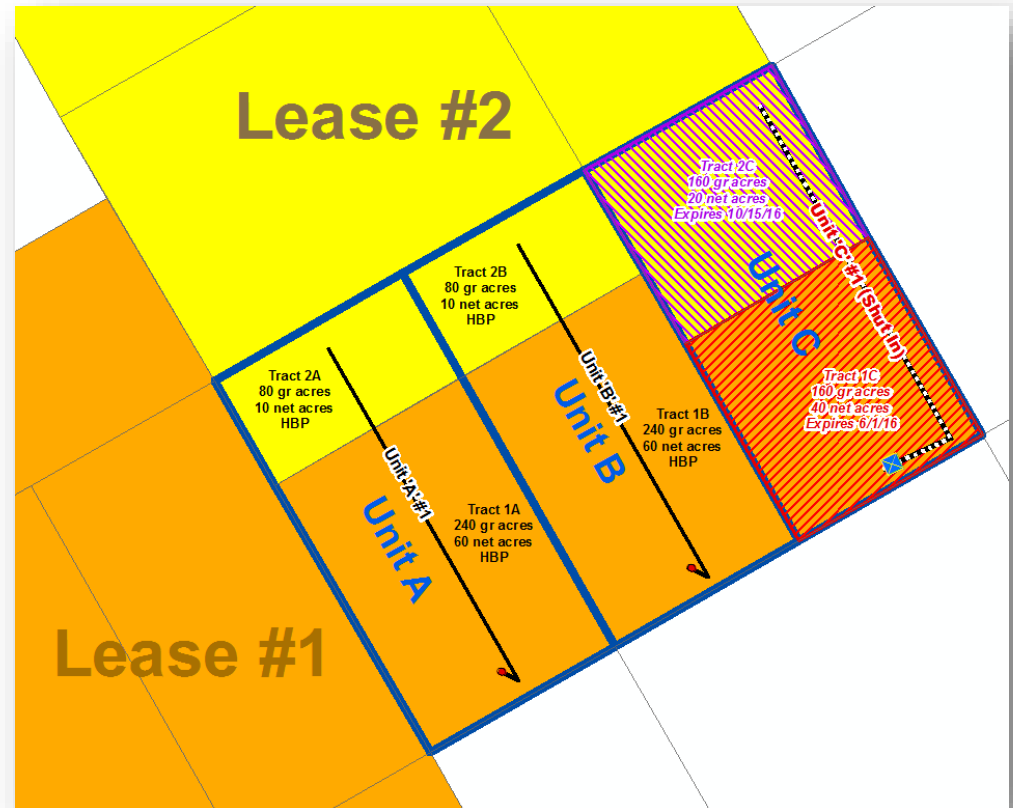
- Agreement data captured in Quorum
 - Dates, payments, interests, cost centers, depths, obligations, scanned documents, recording information, permits, legal descriptions, related agreements
 - Data capture process focused on end result
- Physical files
 - Original documents, correspondence, deeds, data sheet, customized company plat

Using the solution in GIS...



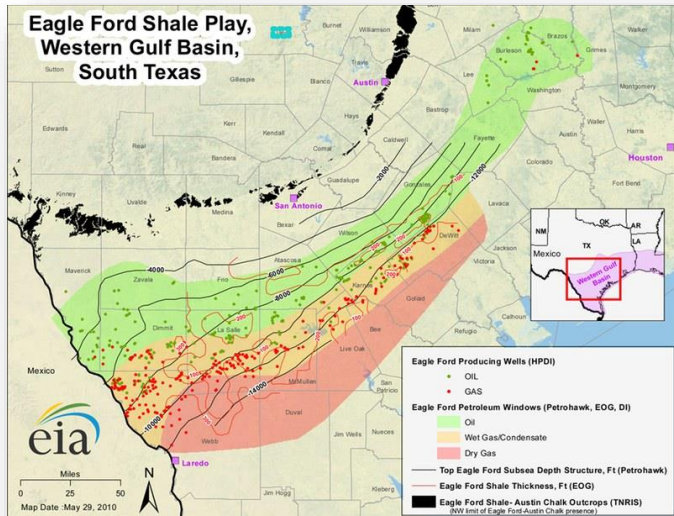
CREATING AND PUSHING GIS LEASE DATA OUT

- Land
 - Tract out leases per unit
 - Mapped tracts at legal level
 - Linked to land database

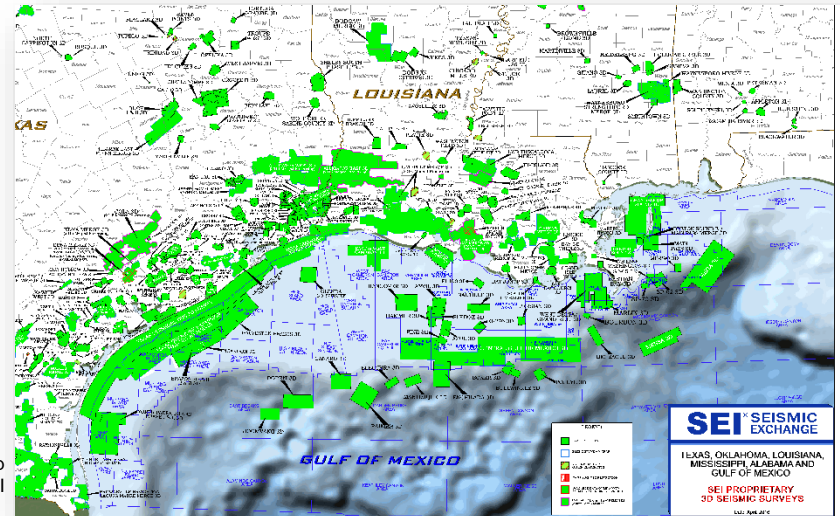


BRINGING LAND AND OPERATIONS TOGETHER

- Geology
 - Geologists provide basins, formations, faults, seismic data
 - Data comes in from scanned plats or other geo programs



Public map from
US Energy
Information
Administration

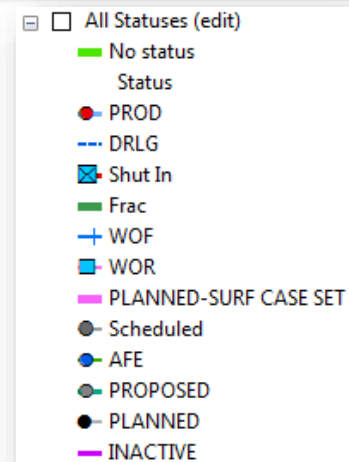


Public map
from SEI

BRINGING LAND AND OPERATIONS TOGETHER

■ Drilling

- As-drilled laterals created from driller surveys and/or IHS
- Engineers provide current drilling activity and statuses from operations database to be displayed on map



	MD (ft)	Inc (deg)	Asl (deg)	TVD (ft)	Vsec (ft)	N±/S- (ft)	E±/W- (ft)	Dogleg (deg/100ft)	Subsea (ft)
1	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0
2	15.7	0.00	0.00	15.7	0.0	0.0	0.0	0.00	15.7
3	132.2	0.80	225.10	132.2	-0.6	-0.6	0.69	132.2	
4	220.8	0.60	0.50	220.8	-1.0	-0.5	-1.0	1.46	220.8
5	329.1	0.60	354.90	329.1	-1.1	0.6	-1.1	0.05	329.1
6	417.7	1.00	74.00	417.7	-0.4	1.3	-0.4	1.20	417.7
7	506.2	1.20	64.10	506.2	1.2	1.9	1.2	0.31	506.2
8	594.8	0.80	57.10	594.8	2.6	2.6	2.6	0.47	594.8
9	640.7	0.93	69.03	640.6	3.2	2.9	3.2	0.48	640.6
10	683.1	1.07	77.23	683.0	3.9	3.1	3.9	0.47	683.0
11	727.7	1.93	108.85	727.6	5.0	3.0	5.0	2.61	727.6
12	772.3	4.71	128.24	772.1	7.2	1.6	7.2	6.64	772.1
13	816.9	7.71	133.98	816.5	10.8	-1.6	10.8	6.86	816.5
14	861.5	9.57	136.10	860.6	15.5	-6.4	15.5	4.23	860.6
15	906.5	12.23	139.19	904.8	21.2	-12.7	21.2	6.05	904.8
16	951.1	15.07	147.69	948.1	27.4	-21.1	27.4	7.78	948.1
17	995.7	18.95	153.04	990.7	33.8	-32.5	33.8	9.37	990.7
18	1040.4	24.09	154.80	1032.3	40.9	-47.2	40.9	11.59	1032.3
19	1085.0	29.50	155.08	1072.1	49.5	-45.4	49.5	12.13	1072.1
20	1129.6	34.18	153.33	1110.0	59.7	-86.6	59.7	10.69	1110.0



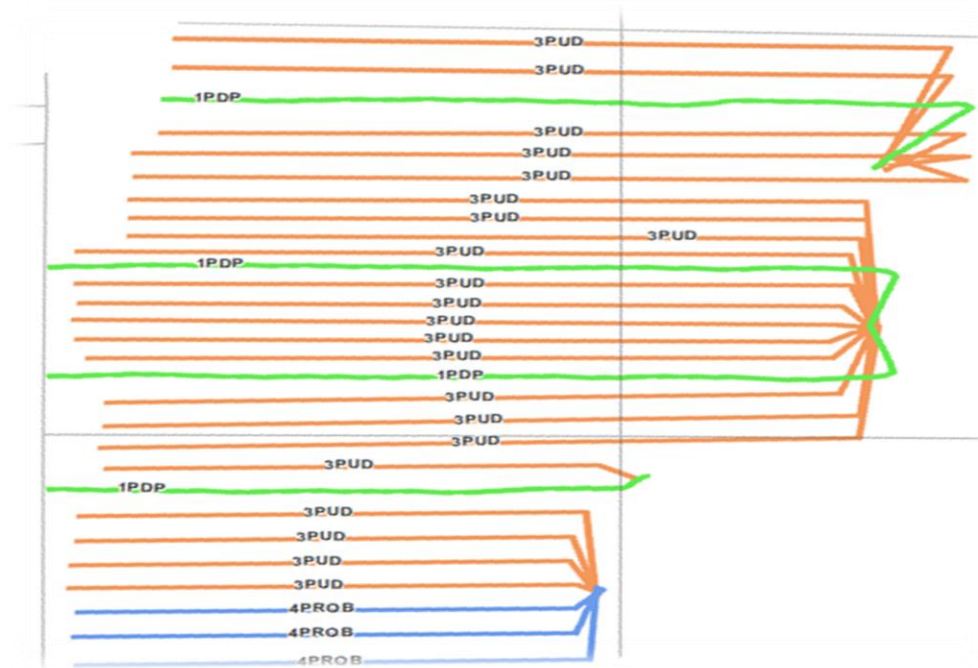
BRINGING LAND AND OPERATIONS TOGETHER

- Production
 - Engineers provide current well production rates collected from field
 - Data linked into a mapped laterals to be symbolized in map
 - Competitor production captured from IHS (allocated)



BRINGING LAND AND OPERATIONS TOGETHER

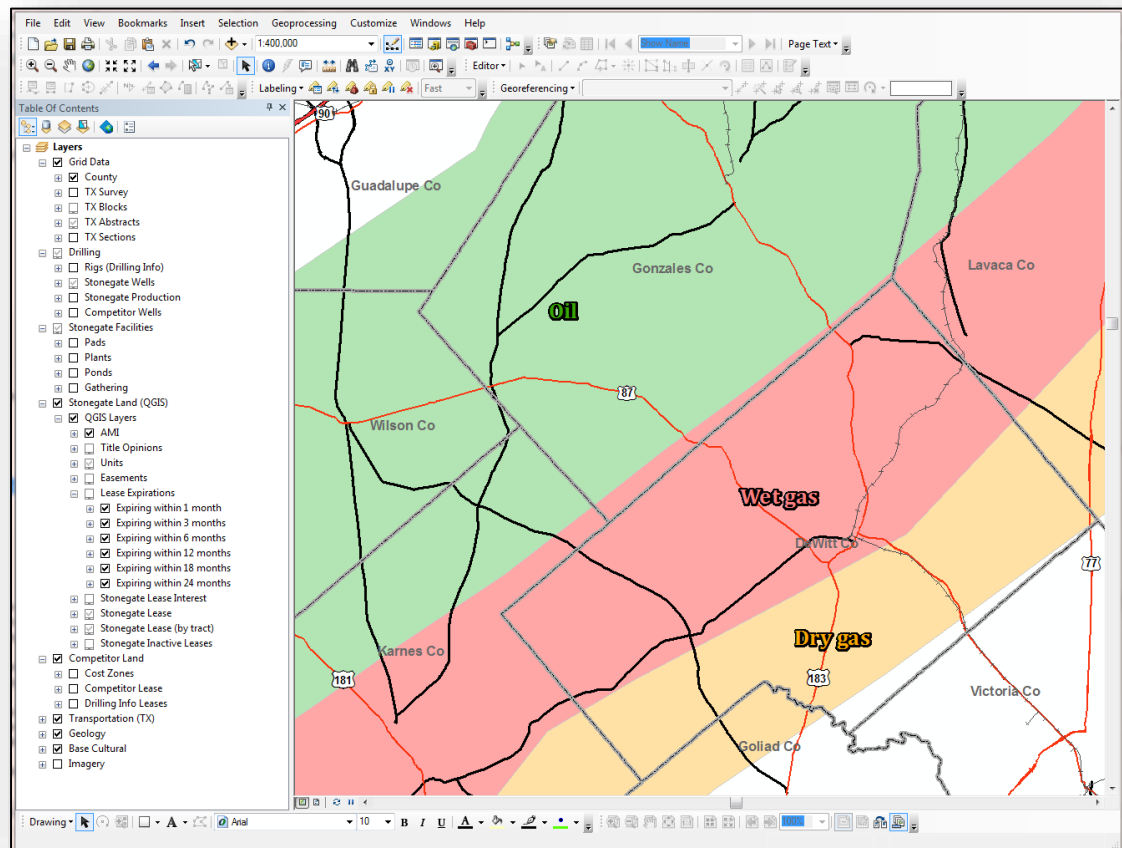
- Reservoir
 - Engineers provide reservoir and well planning data
 - PDP's, PUDS, Probables, Possibles



Putting the power of GIS in all hands...

CREATING AND PUSHING GIS LEASE DATA OUT

- Pushing out GIS data to users
 - Created a single ArcMap project
 - Created unique layers
 - Drilling
 - Facilities
 - Land
 - Competitor Land
 - Base data



- Landmen, techs, geologists, engineers typically already have some GIS experience working with other programs
- Take advantage of slow period in industry to cross-train staff in other skills
- Developed a simple GIS training geared towards basic ArcMap tools that are most useful for our data and for an individual's role
- Made the ArcMap project available to all users

BUSINESS DEVELOPMENT

- Tracking competitors and potential new development in ArcMap...
- Leasing activity
- Drilling/Rig Activity
- Production



***GIS as a big solution at a small
independent...***



IMPROVEMENTS

- 1) Better internal understanding of company leasehold
 - Know lease terms, lessors, landowners, etc...
- 2) Land and operations tracking capability increased and more accurate
 - Much effort was taken to input aspects of every lease correctly in our database to be able to depict details across our leasehold on a map and in reports
- 3) Map production time almost zero
 - Can view data directly in ArcMap or quickly pull current data for printed or presentation maps
- 4) Costs savings in lease management process
 - Able to investigate internal leases or make customized maps quickly through the database without paying extra to an outside firm

IMPROVEMENTS

- 5) GIS projects become more in depth and include more data
 - Engineers and geologists know more data sources and are able to gather and incorporate it into company maps
- 6) Portable data
 - Exporting data and maps to smart devices to be used in the field
- 7) Taken advantage of industry slow-down to cross train staff
 - ArcMap training geared towards our data and specific needs
- 8) Employee's skillset broadened
 - Landmen, geologists, engineers become even more valuable using GIS on their own

IMPROVEMENTS

- 9) Staff is able to quickly visualize data across our area
 - Customize their own maps tailored to their projects
- 10) Query for data on vendor websites by using our spatial data
 - Upload lease outlines, well queries, and production areas into vendor's programs for acquiring other data
- 11) GIS is driving company business development decisions
 - Can visually show drilling and leasing in potential growth areas
 - Tell our story to investors through maps
- 12) Upper management sees benefits of GIS directly in weekly company-wide meetings
 - Able to answer questions immediately with data linked in GIS
 - CEO: "Show me a map"

OBSERVATIONS IN THE OIL AND GAS INDUSTRY

- Colleges are beginning to require GIS courses for non-GIS/geography majors
 - Newer land professionals, geologists, engineers are going to already have experience with it and expect access coming into a job
- Once trained, landmen and geologists prefer ArcMap versus a webmap
 - Coupling previous college coursework knowledge with specific in-house training creates a demand for more control over maps



STONEGATE

THANK YOU!