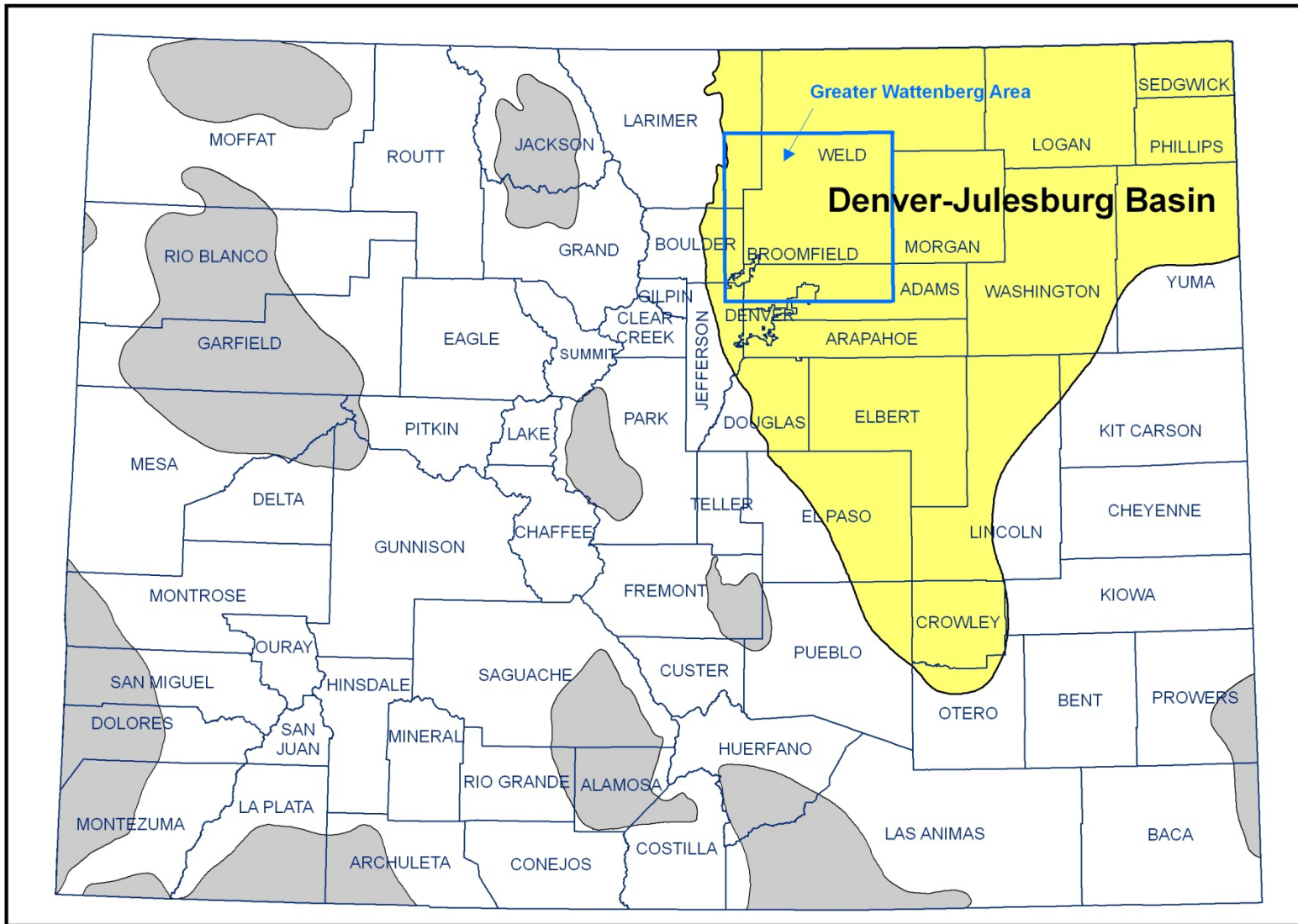


Greater Wattenberg Area Special Well Location, Spacing and Unit Designation Rule

Rule 318A



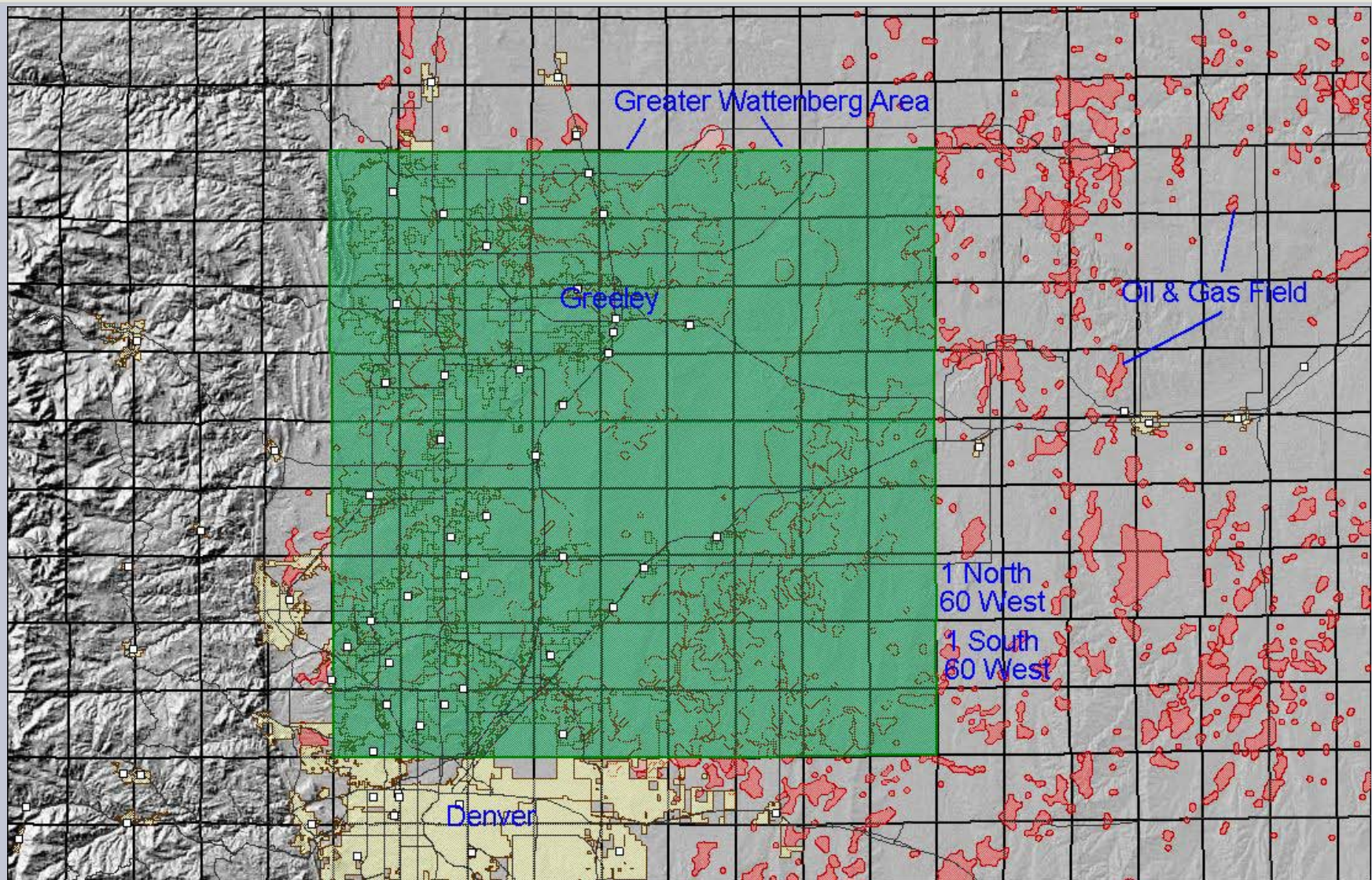
OIL & GAS CONSERVATION COMMISSION



○ Geologic Basin

0 40 80 Miles

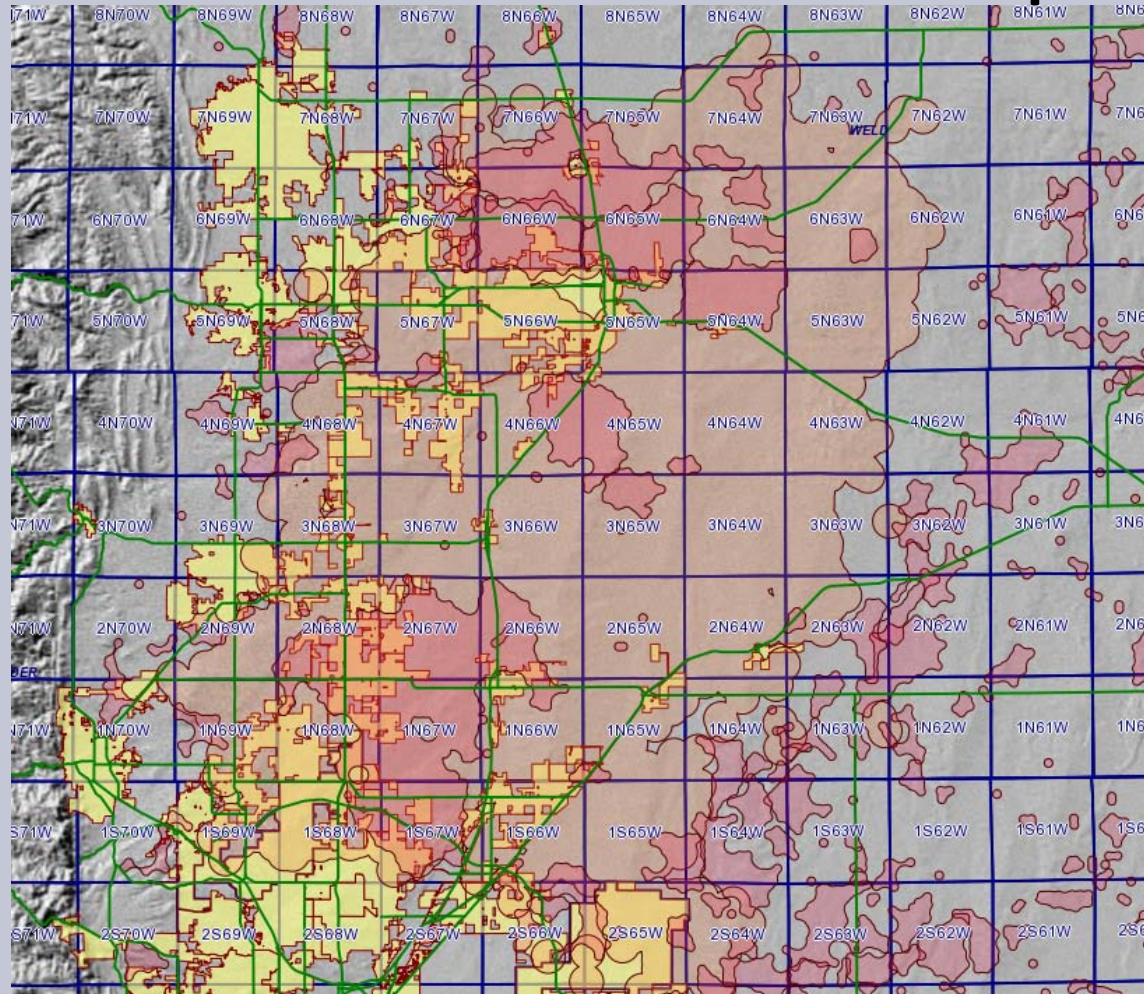
**LOCATION OF THE GREATER WATTENBERG AREA
DENVER-JULESBURG BASIN, COLORADO**



Townships 2 South to 7 North Ranges 61 to 69 West

OIL & GAS CONSERVATION COMMISSION

Oil and Gas Fields Map



Light Pink – Wattenberg Field

Dark Pink – Oil and Gas Fields

Yellow – Cities



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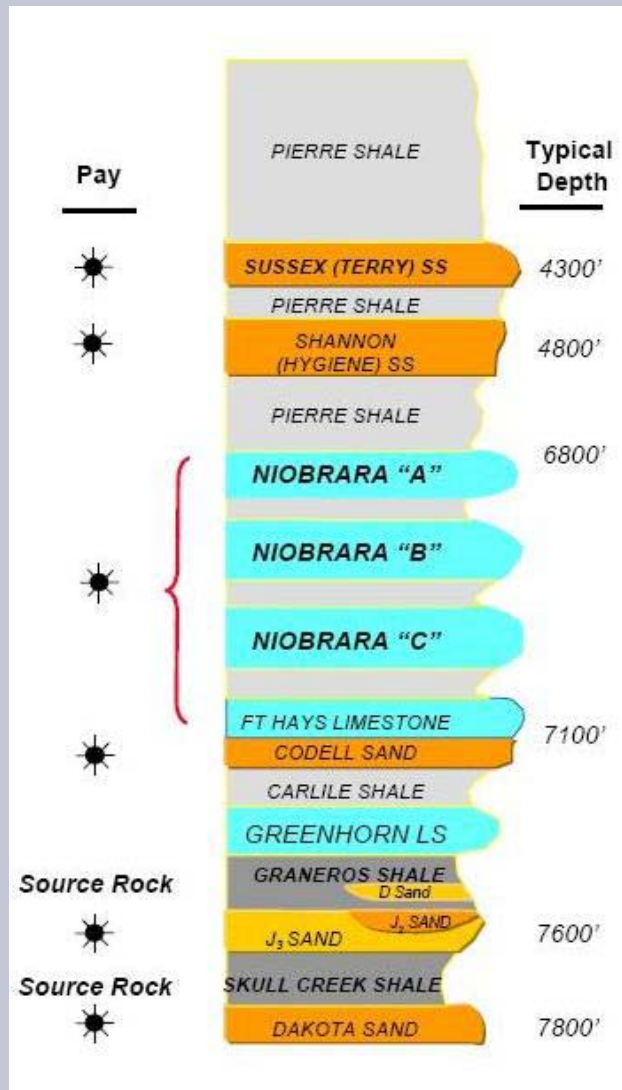
Historical Fields

There are 98 Named Fields in GWA

Field Name	Discovery Year	2011 Well Count
BERTHOUD	1927	3
GREASEWOOD	1930	7
LOVELAND	1950	86
BLACK HOLLOW	1953	2
ROGGEN	1953	34
LOST CREEK	1957	17
BAXTER LAKE	1964	16
JAMBOREE	1970	48
WATTENBERG	1970	14799
SINGLETREE (SPINDLE)	1971	2
IRONDALE	1972	25
JOHNSTOWN	1972	13
LONGBRANCH	1972	21
SPINDLE	1972	1248
AMBUSH	1973	12



Producing Formations

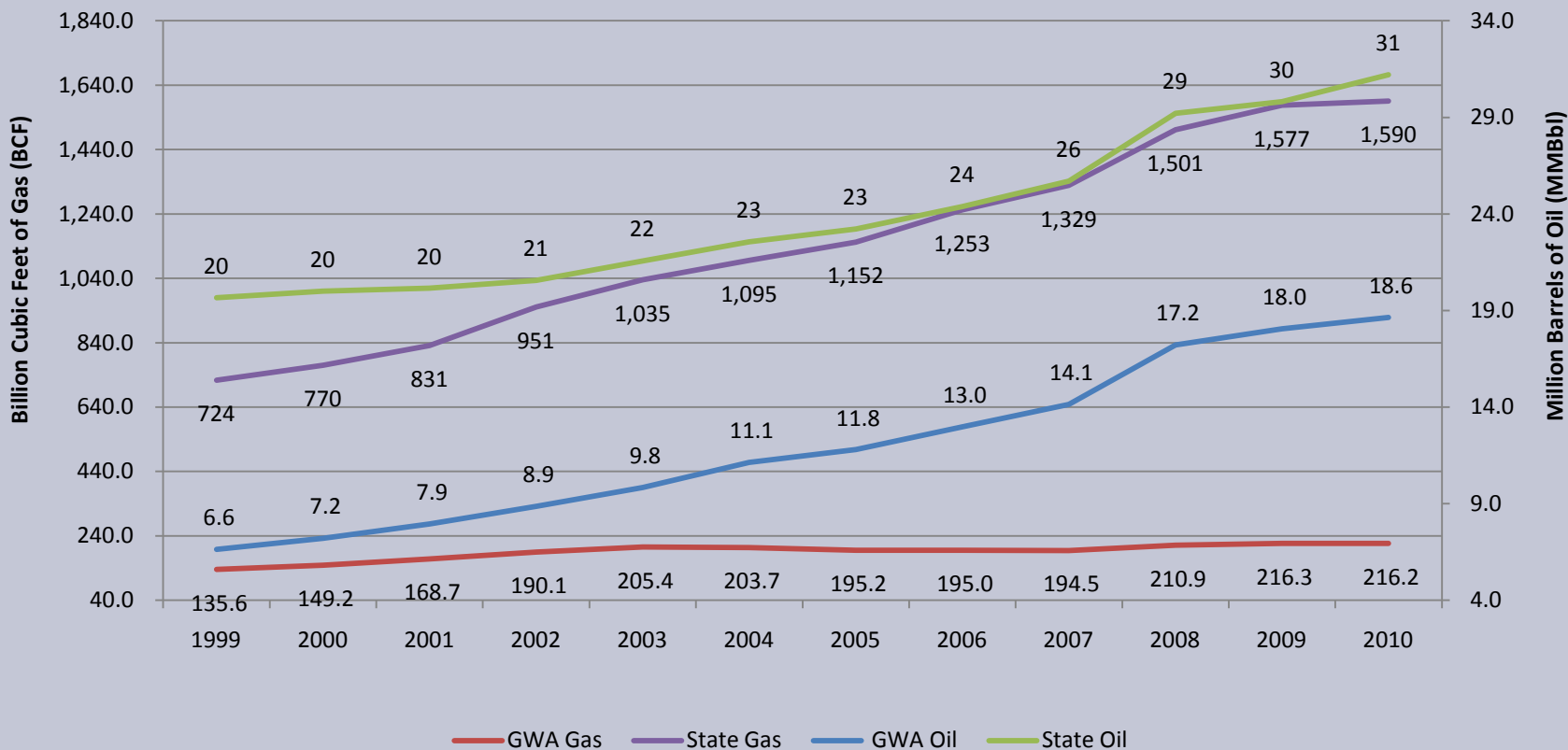


Formation	Well Completions
Parkman	27
Sussex	2,043
Shannon	444
Niobrara	11,444
Codell	15,119
Greenhorn	65
Graneros	8
D Sand	346
J Sand	5,719
Dakota	499

<http://shaleoilandgas.blogspot.com>



State and GWA Annual Production

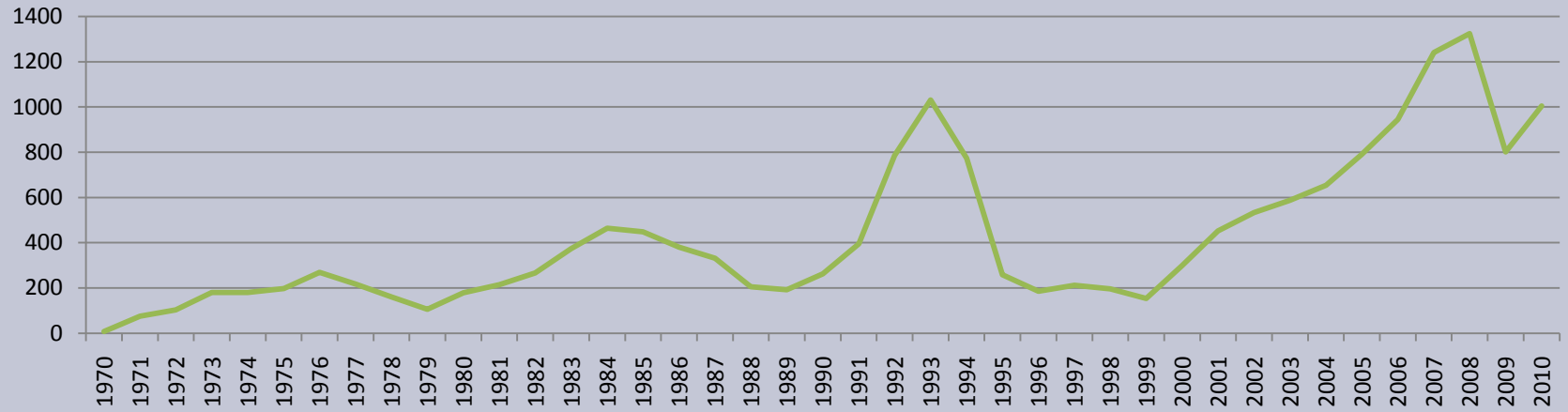


GWA accounts for more than half the state's oil production since 2006.



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New Wells Drilled by Year



Oil and Gas Drilling Activity Drivers

- | | | | |
|---------|---|---------|---------------------------------|
| 1974-83 | Drilling activity creates gas surplus | 1973-74 | Arab Oil Embargo |
| 1989 | Natural gas prices begin recovery | 1979-80 | Oil Price Peaks \$70 |
| 1992 | Section 29 tight gas credit expires | 1984 | Oil Prices slide to lower \$20 |
| 2000-05 | Gas prices climb to new high | 1989-90 | Oil prices increase to \$30 |
| 2006 | Gas price crash period begins with high market volatility | 1990-91 | Gulf War |
| | | 1997-98 | Oil Prices drop to \$18 |
| | | 2002-08 | Oil Prices climb to record high |
| | | 2009-10 | Oil prices drop then recover |



Land of Many Uses

Agricultural Production - Weld County #8 in 2009 Agricultural Production in the U.S.

Ranching

Irrigated Farming

Dry Land Farming

Poultry

Manufacturing

Food

Chemical

Machinery

Urban Areas

Expanding Denver Metro Area

Loveland- Fort Collins

Greeley

DIA

Mineral Development

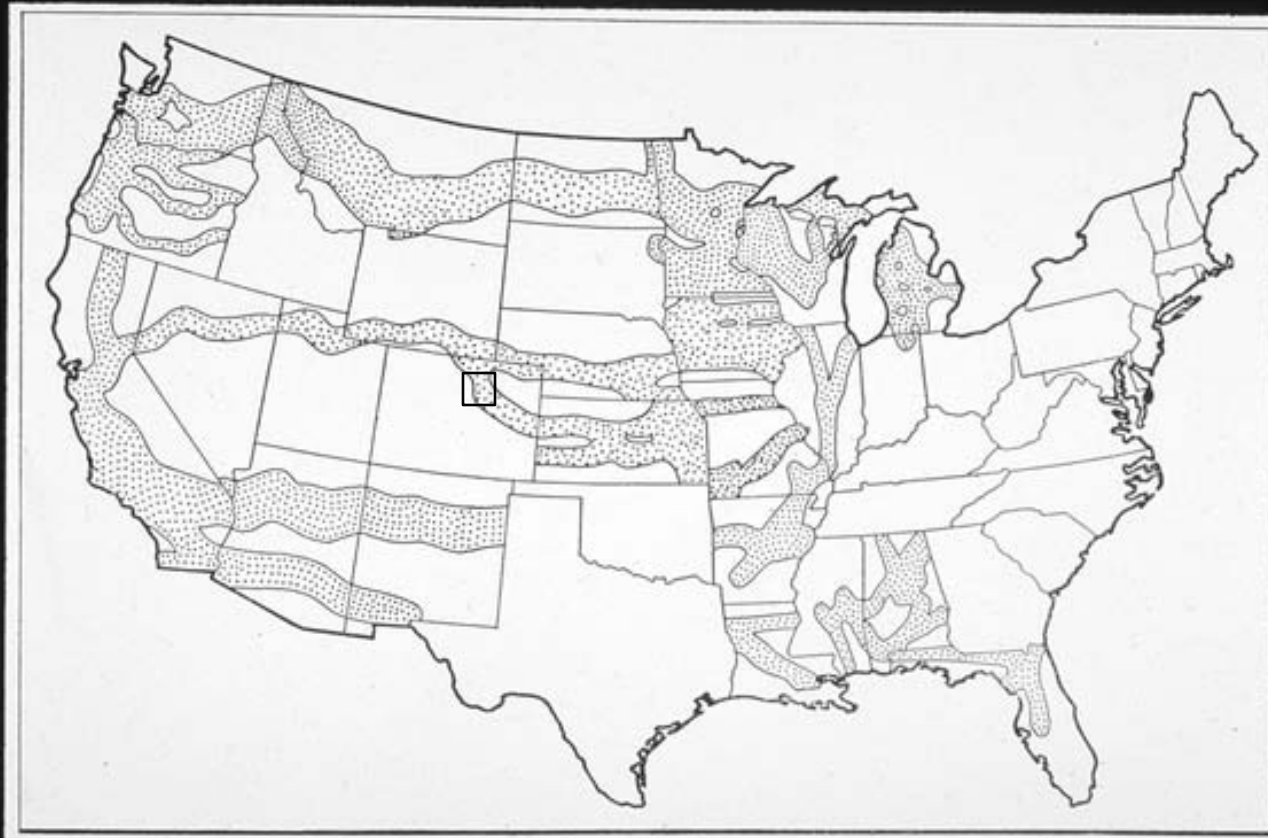
Historic Coal Mining

Oil and Gas Development



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Railroad Lands



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Severed Minerals

- Railroad was awarded the odd sections in the heart of Wattenberg area.
 - Sold the surface for cash to recover railroad expansion expenses.
- Federal and State governments will sell surface estate but not the mineral.
- Developers frequently sell only the surface estate retaining minerals.
- Resource development caused farmers and ranchers to retain the mineral estate.
- Energy or mineral companies purchase mineral estate.



Oil and Gas Development

The intensive increase of drilling in the 1990s raised many issues and forced industry and the COGCC to address some of these in order to develop the resources in this area.

1. Local governments did not know when wells were being proposed in their boundaries.
2. Industry did not consistently use a best practices with surface owners when siting and constructing well locations.
3. Surface owners did not always benefit from the production revenues.
4. The land was valuable and subject to many uses.
5. The GWA reservoirs were unconventional in their nature and would require many wells to access.



OIL & GAS CONSERVATION COMMISSION

April 1992 Rulemaking

- Local Governmental Designee Program
 - LGD standing
 - Notice of Permit to Drill by Operator and COGCC
 - Notice of abandonment
 - Consultation on road and production facility location
- Reclamation
 - Interim reclamation timing and requirements
 - LGD and surface owner or tenant may protest to Commission
- High Density Rules
 - Standard for establishing high population density
 - New setback standards for High Density Areas
- Noise and Aesthetics Rules
 - Reuse of roads
 - Consultation with surface owners and LGD for road and facility location
 - Noise and light abatement
 - Exhaust direction and muffling
 - Visual mitigation



DJ Basin Policy

- 30 day notice prior to entering site with heavy equipment
 - Surface owner consultation after notice, prior to construction
 - Damage agreement or bond required
 - Fencing
 - Soil segregation and reclamation standards
 - LGD or Surface Owner alleged violation procedure
-
- February, 1993 DJ Basin Policy
 - August, 1993 Policy adopted as Wattenberg Special Area Rules
 - June, 1994 area expanded to include all of Weld County
 - March, 1996 special area rules become state wide requirements



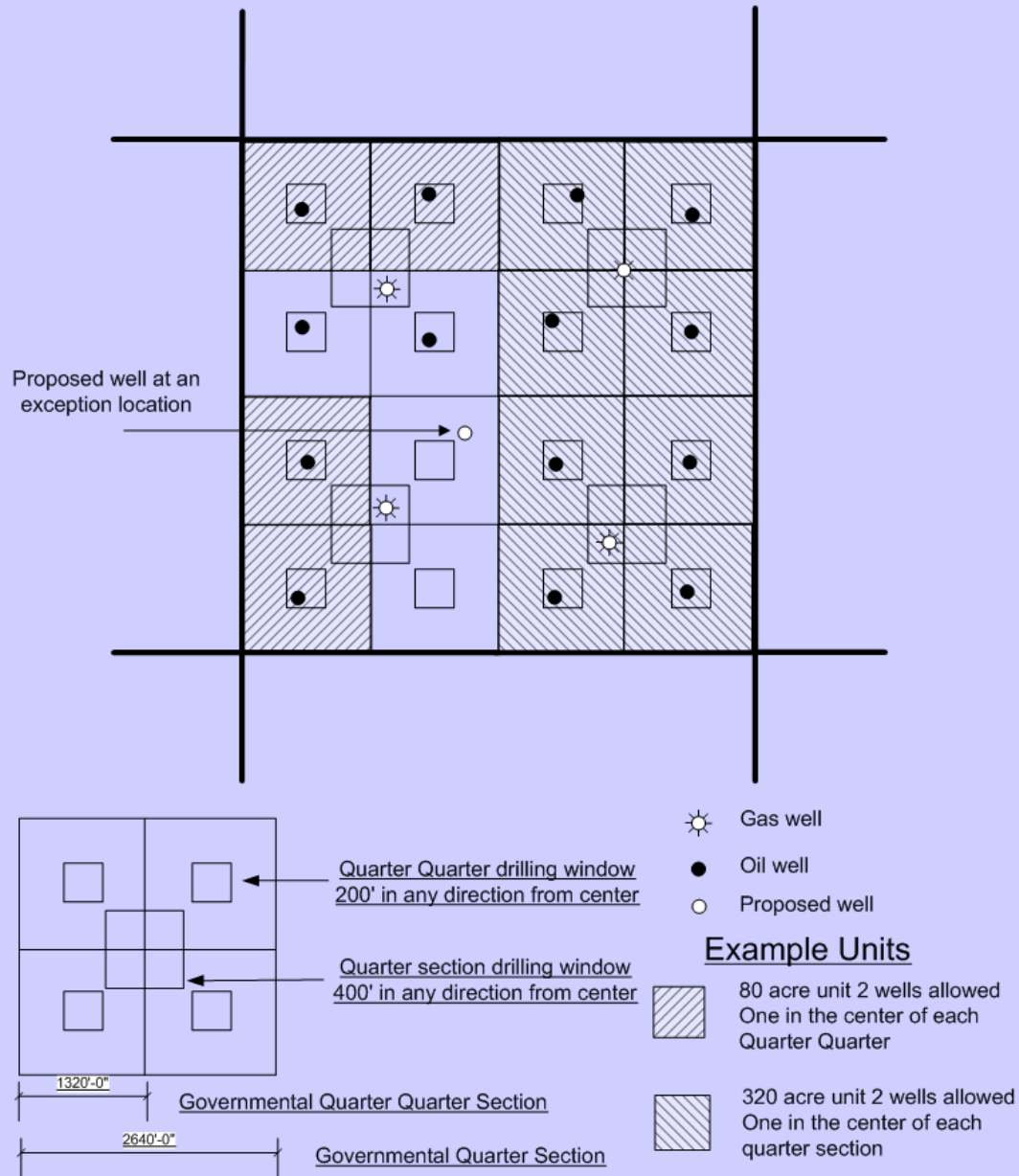
Greater Wattenberg Area Special Well Location Rule

- April, 1998 Rule 318A first adopted
 - Limit well sites to five per quarter section
 - Required new wells to twin existing wells on well site
 - Allow all Cretaceous Age formations to be completed in any well
 - Did not alter the existing spacing units

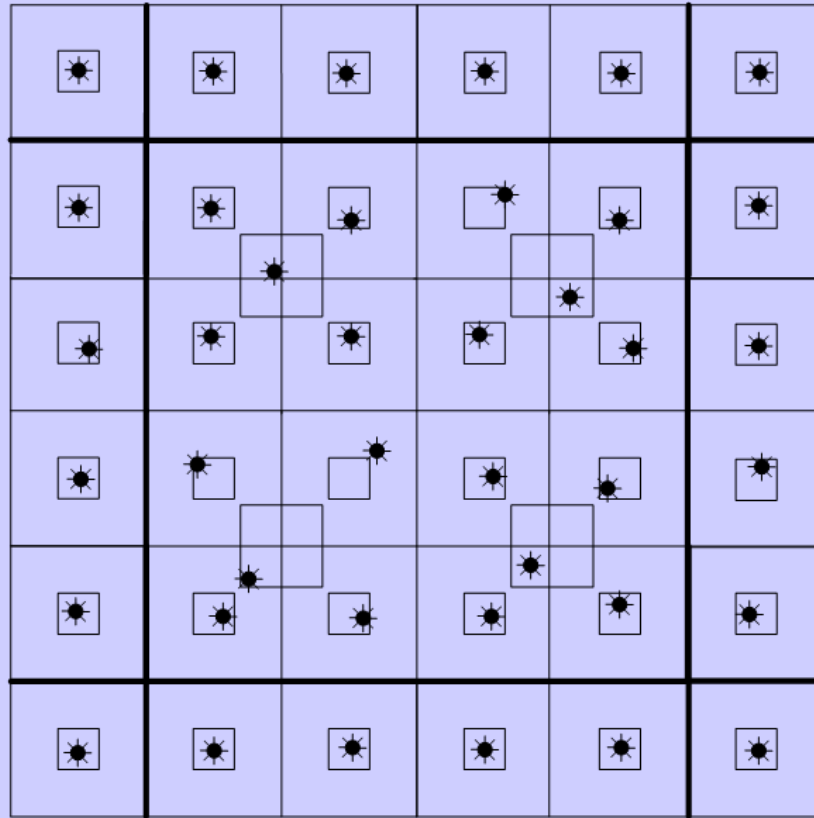


Greater Wattenberg Area (GWA)

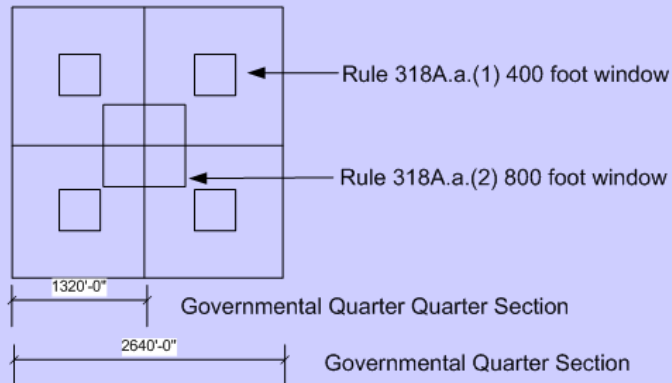
Drilling & Spacing Exhibit



Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



☀ Pre-GWA Authorized Well



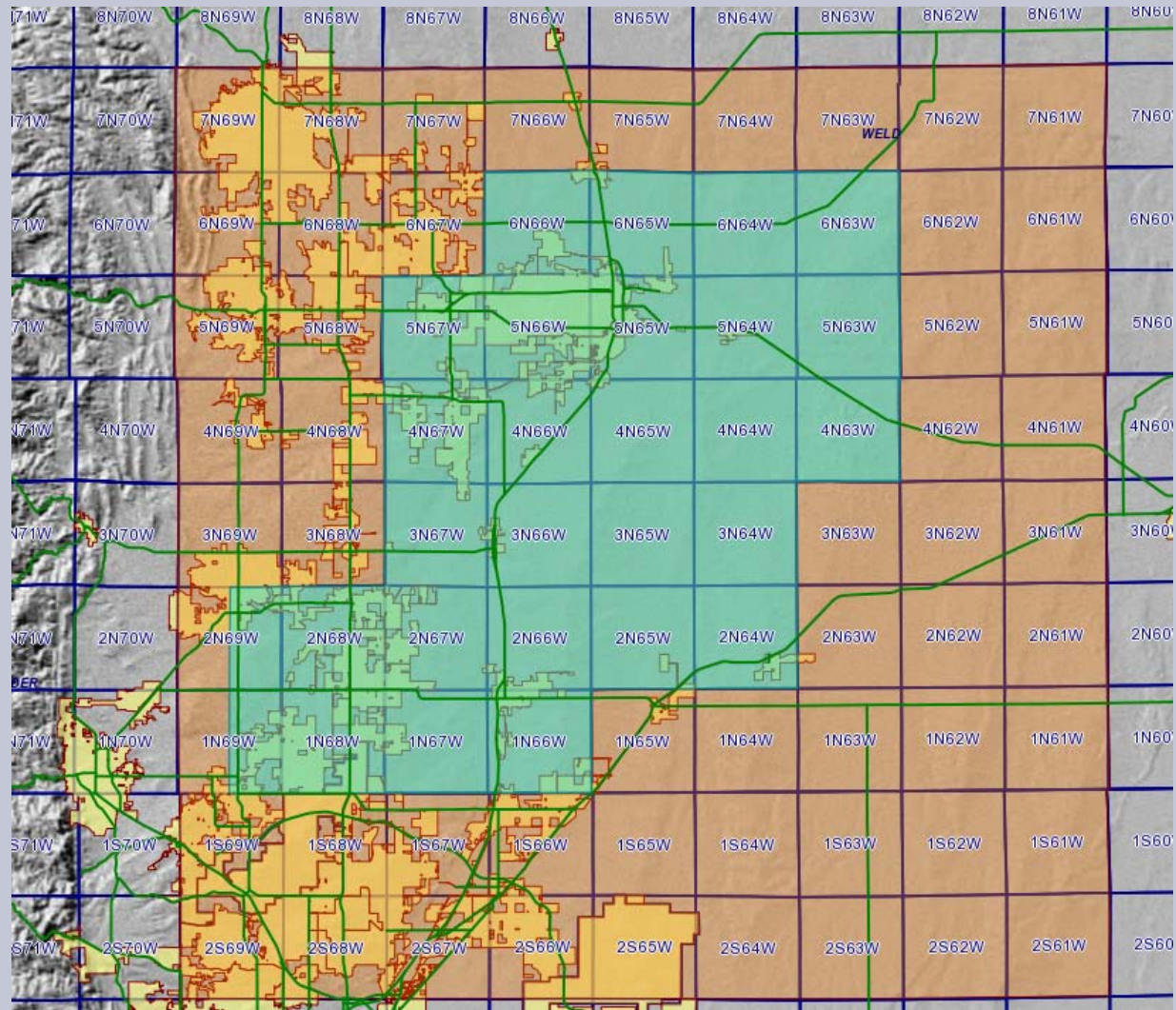
Example Units

Greater Wattenberg Area Special Well Location, Spacing and Unit Designation Rule

- December, 2005 Rule 318A Modified
 - Allow infill and boundary wells
 - Provides rules for designating spacing units
 - Provided limitations for well completions
 - Infill and boundary well area established
 - Limit of 8 completions in J Sand, Codell, or Niobrara formations in a quarter section
 - Requires water samples in every section in the infill area



318A e. Infill Area



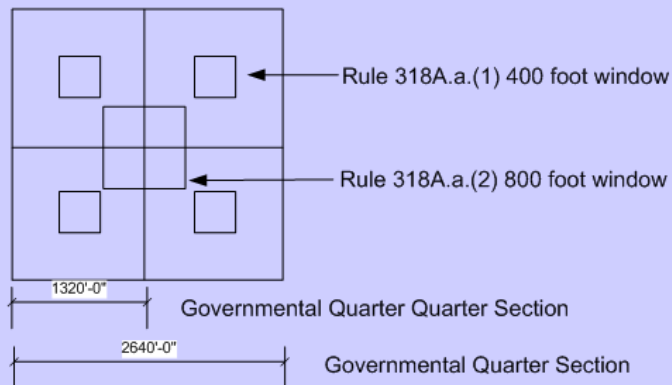
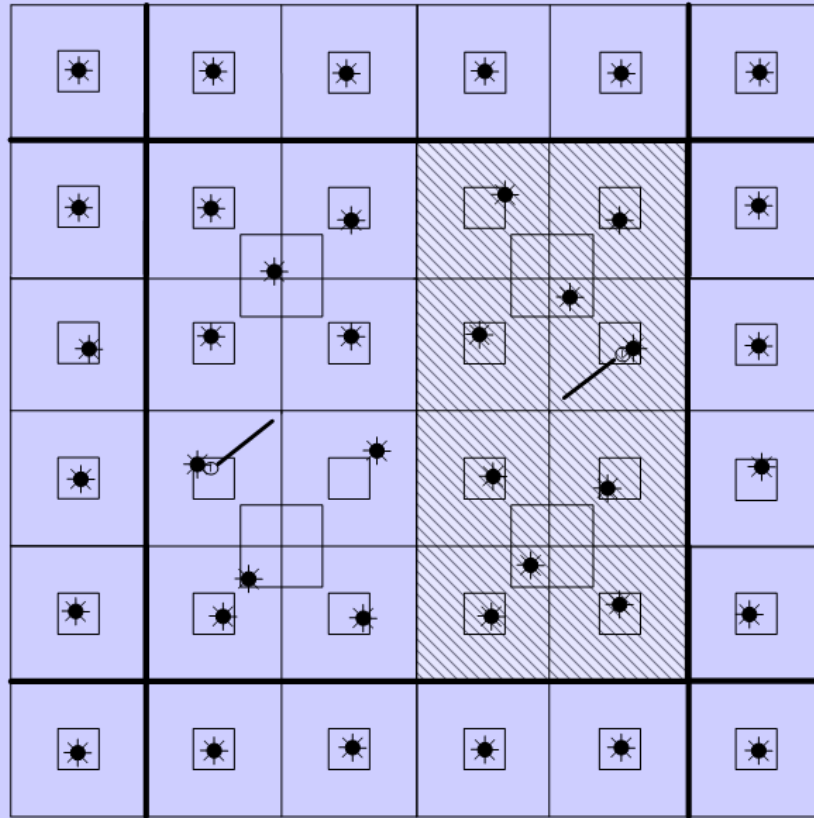
Orange – 318A area

Green – 318A.e. Infill Area



OIL & GAS CONSERVATION COMMISSION


Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



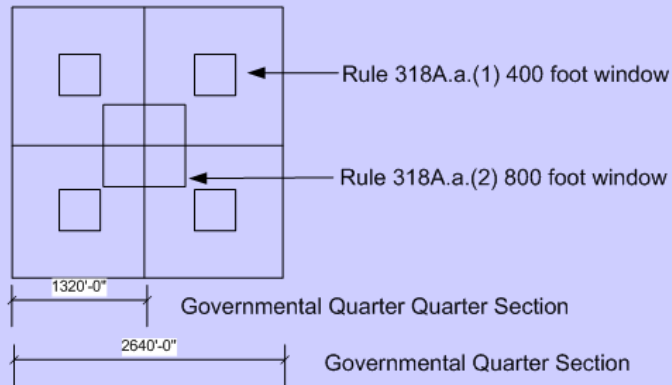
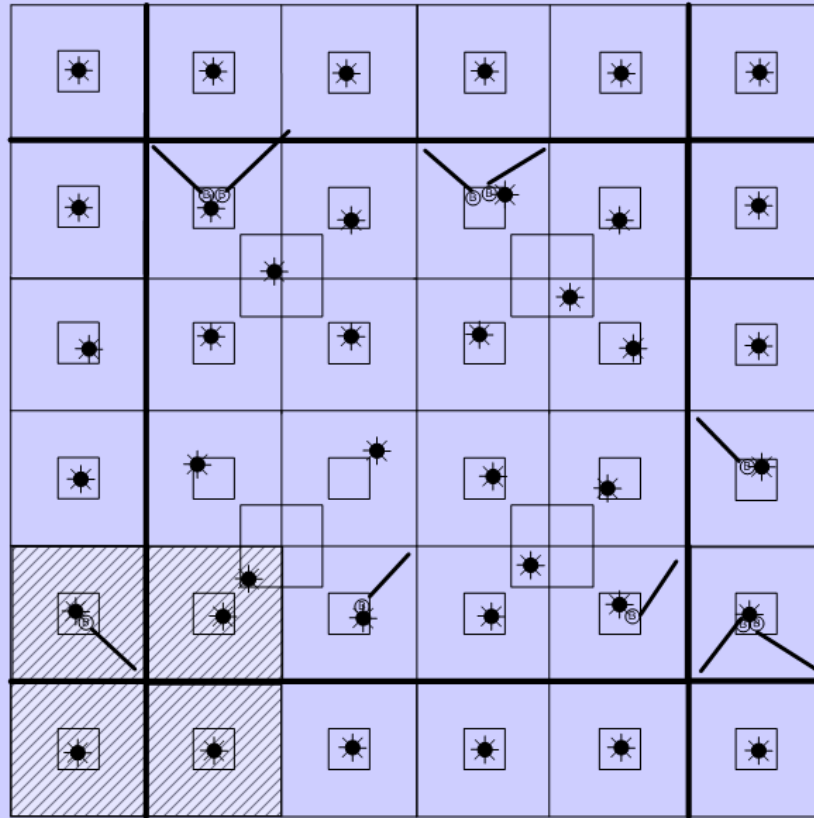
☀ Pre-GWA Authorized Well

⓪ GWA Interior Infill Well

Example Units


 320 acre J Sand Spacing Unit

Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit

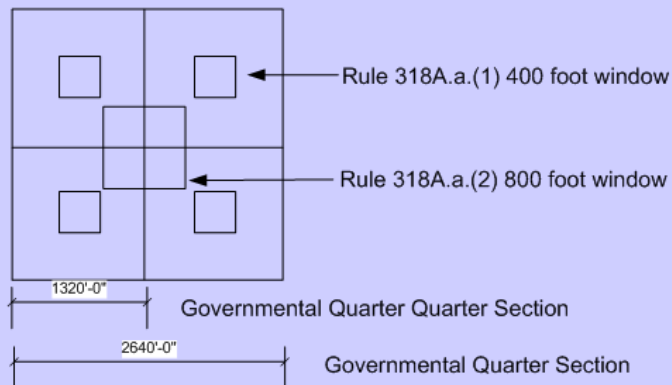
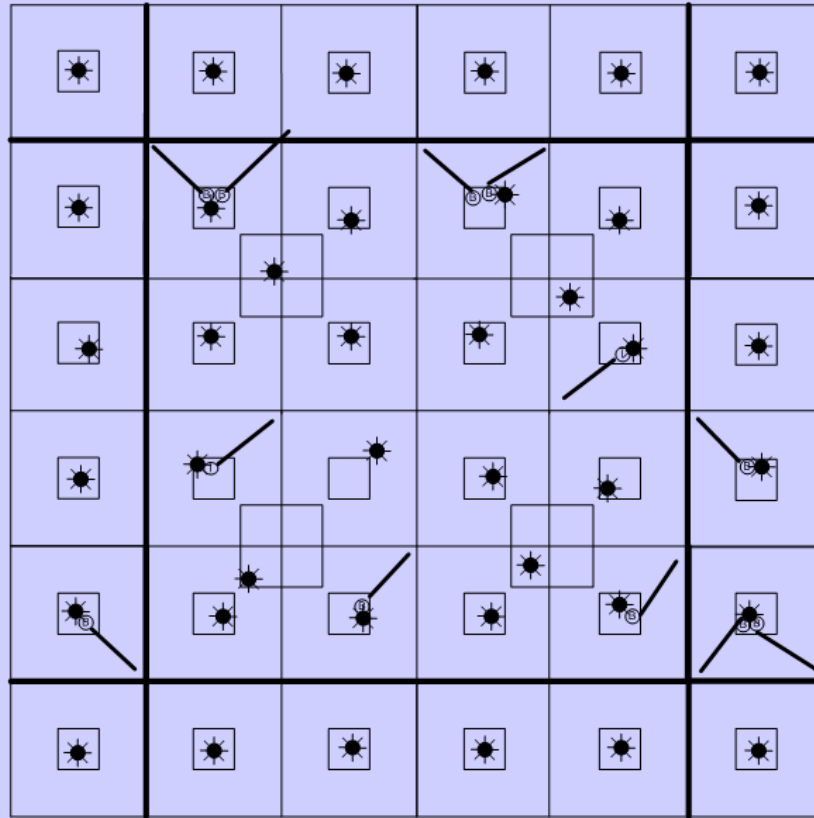


- ☀ Pre-GWA Authorized Well
- Ⓜ GWA Boundary Well

Example Units

-  Rule 318A.a.(4)C. Wellbore Spacing Unit

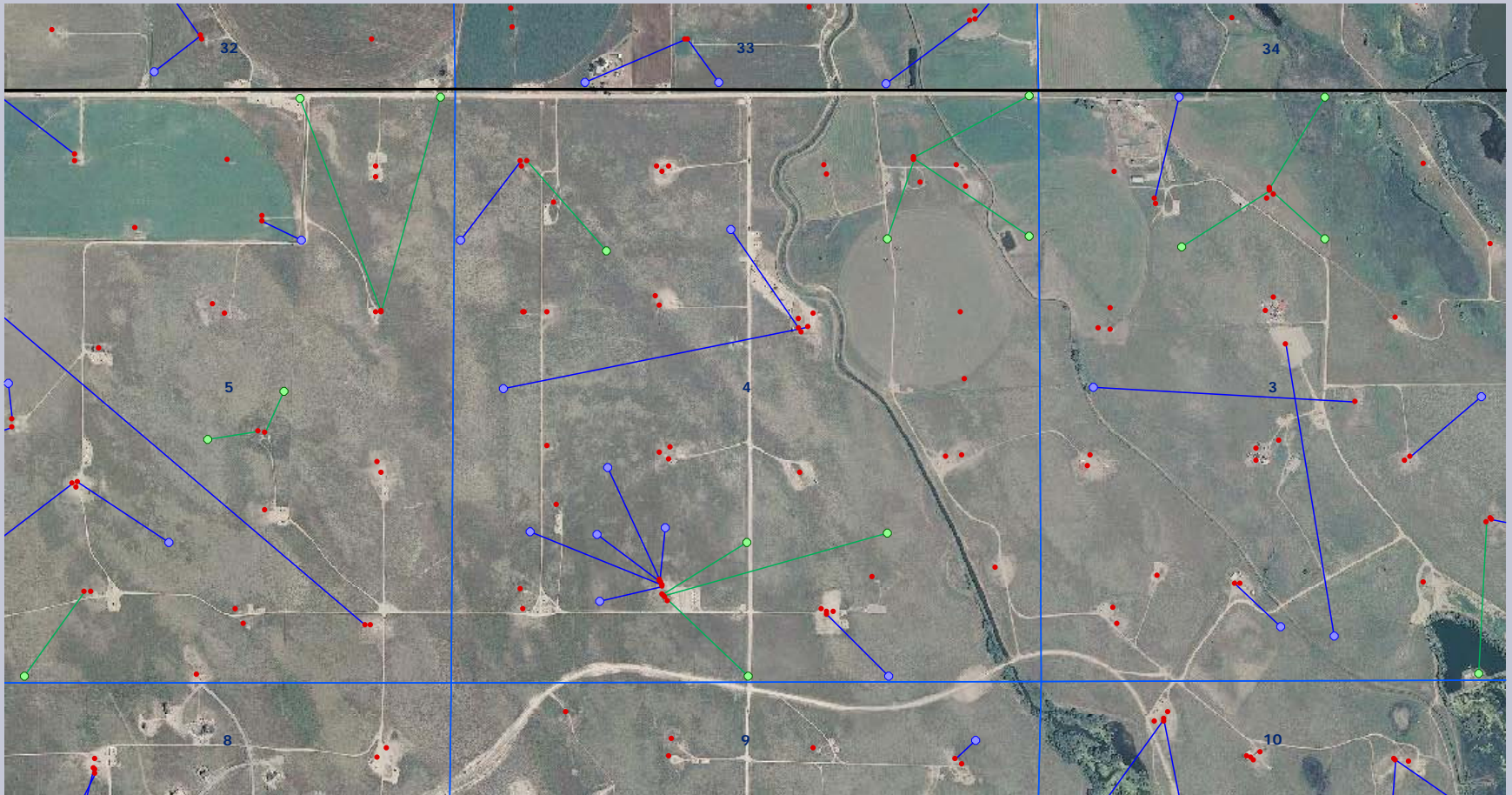
Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



- ☀ Pre-GWA Authorized Well
- ⓑ GWA Boundary Well
- ⓐ GWA Interior Infill Well

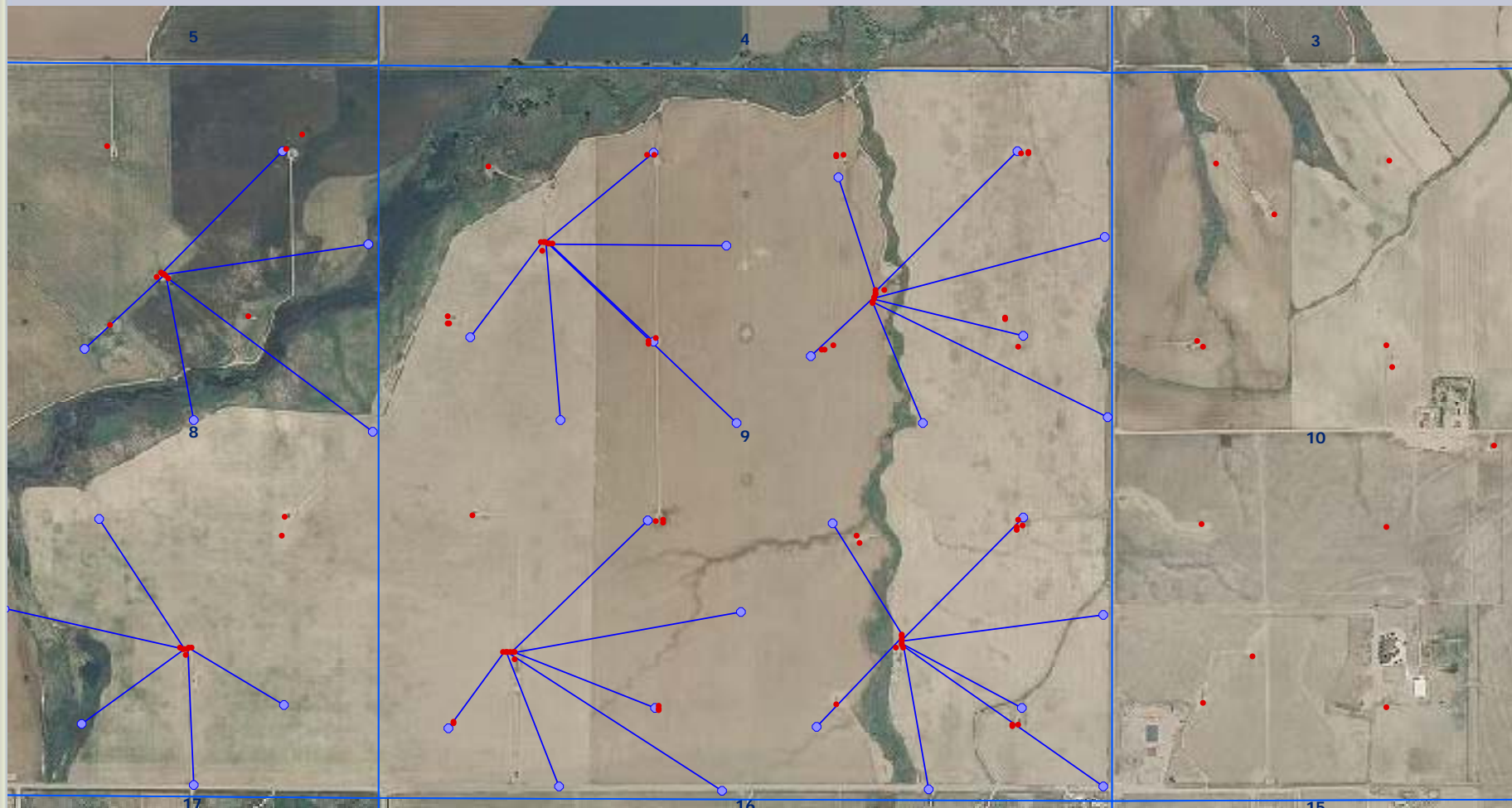
Example Units

318A Multiple Operators and Objective Formations



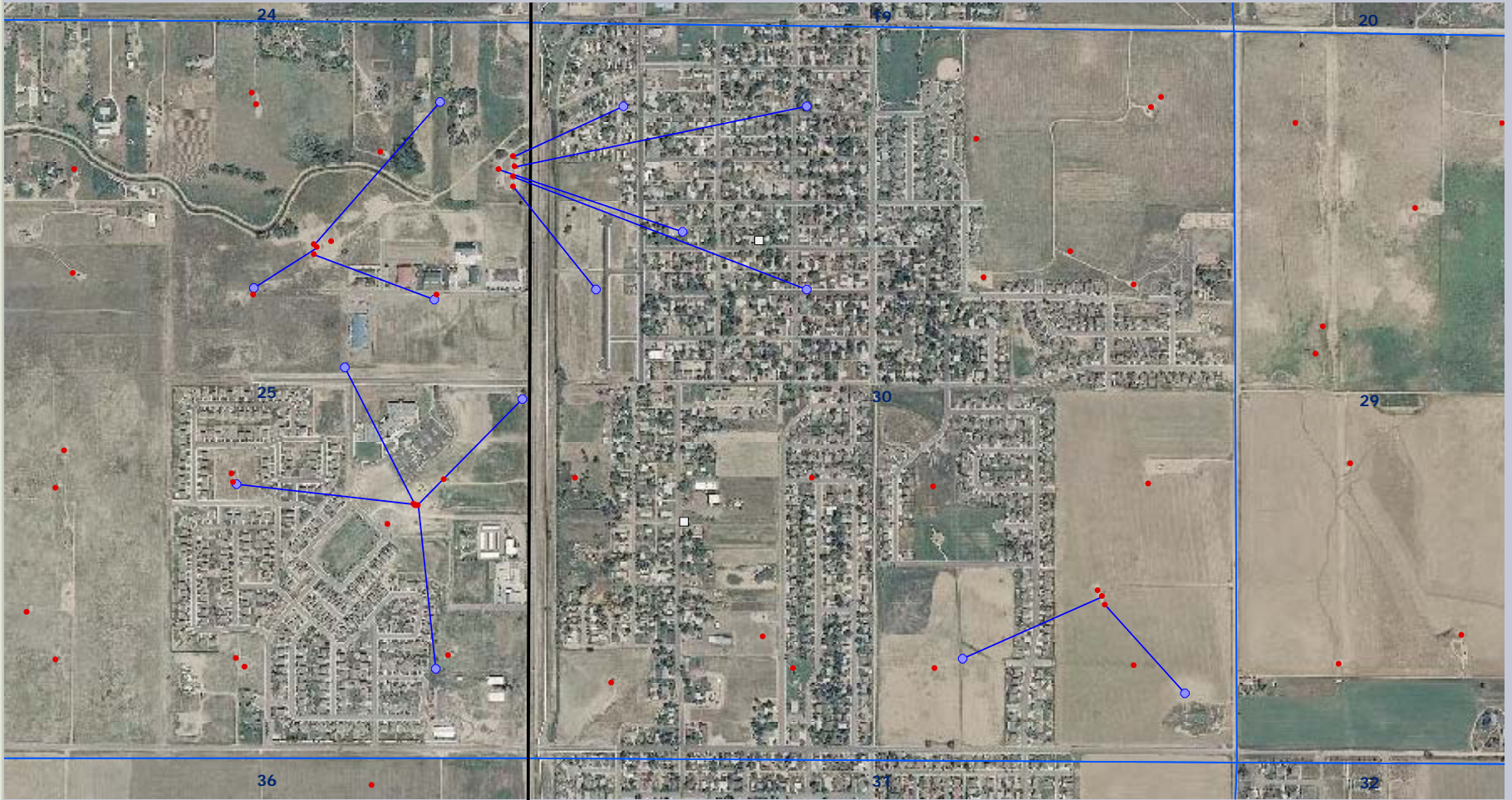
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318A Multiple Operators and Objective Formations



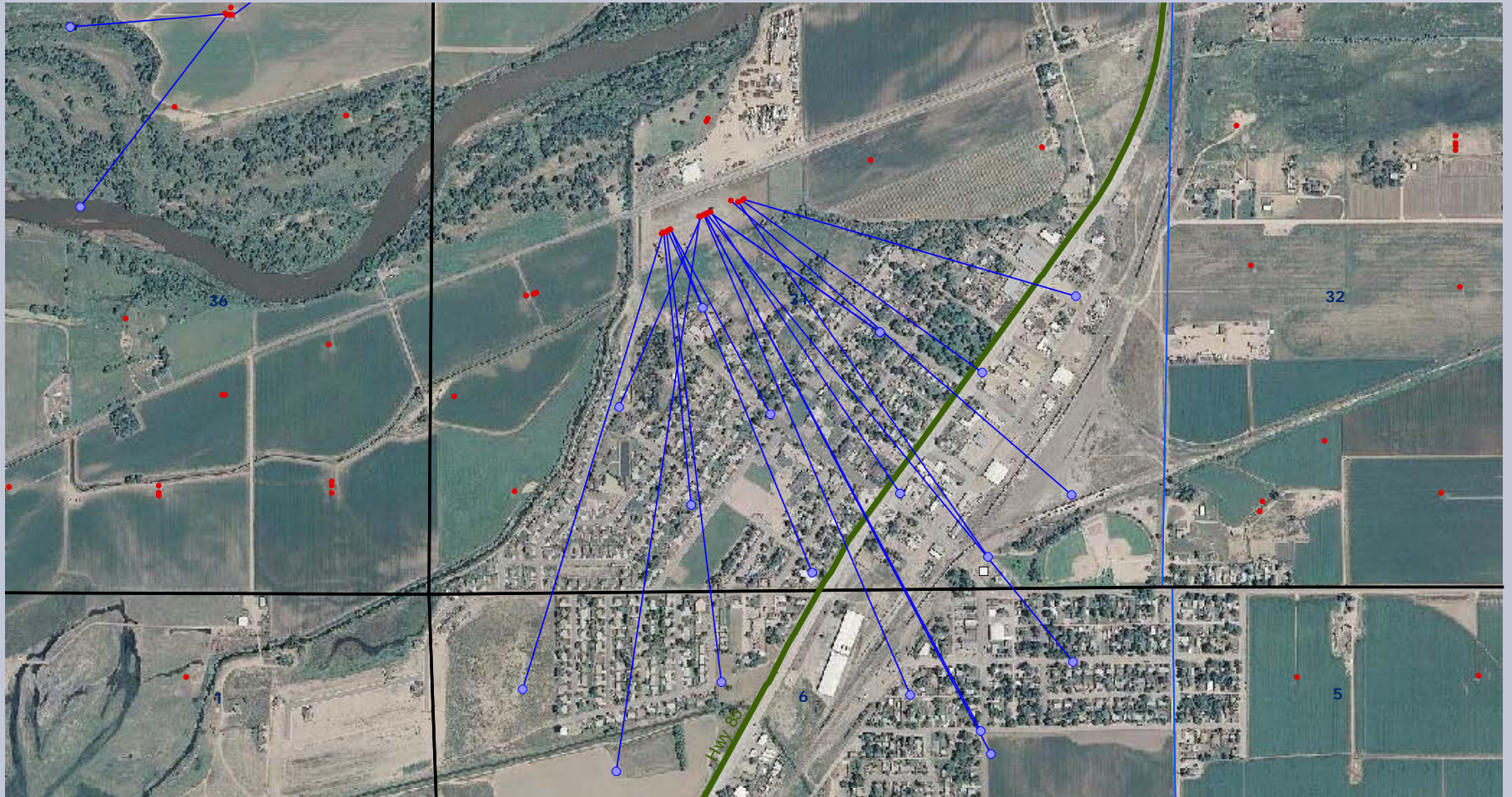
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Mixed Land Use Development



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Urban Development



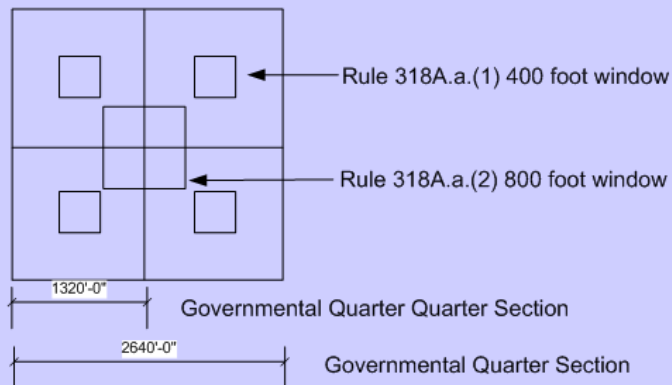
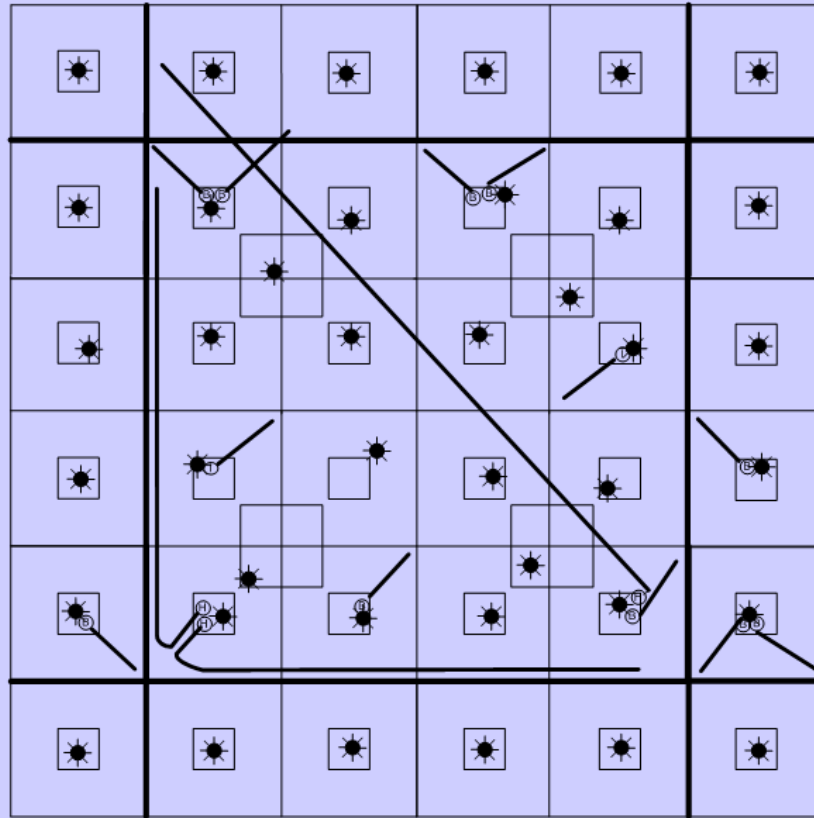
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Advancement of geological and engineering science has resulted in the opportunity to use existing and newer technology to produce bypassed oil and gas reserves.



OIL & GAS CONSERVATION COMMISSION

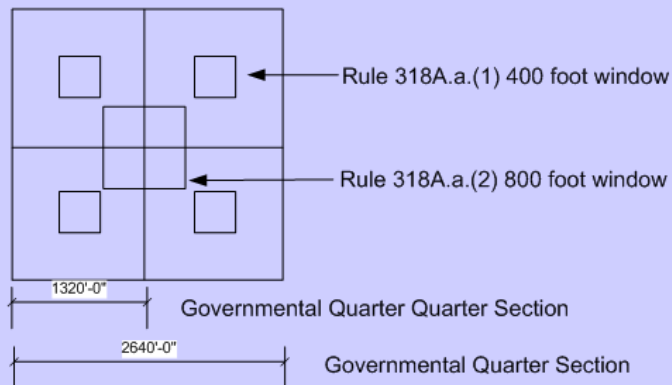
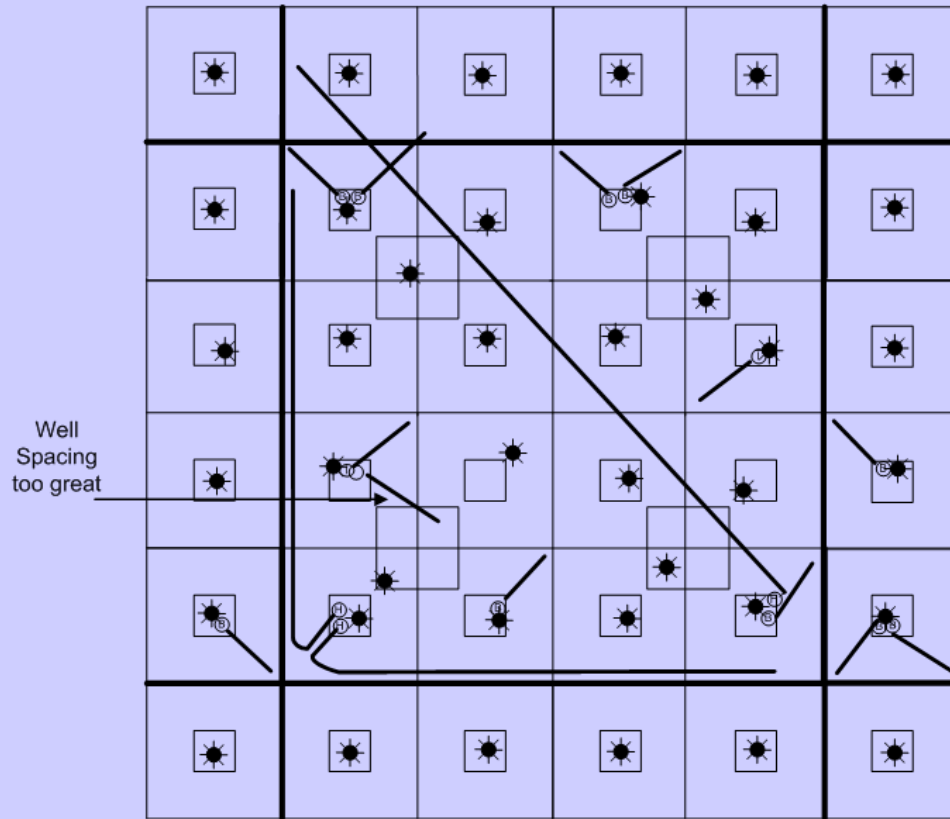
Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



- ☀ Pre-GWA Authorized Well
- ⊙ GWA Boundary Well
- ⊙ GWA Interior Infill Well
- ⊙ GWA Horizontal Well

Example Units

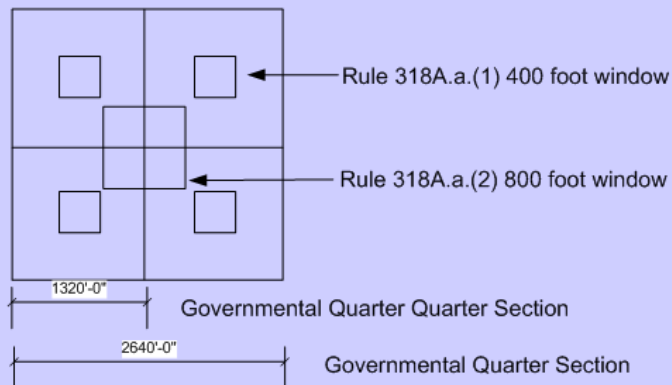
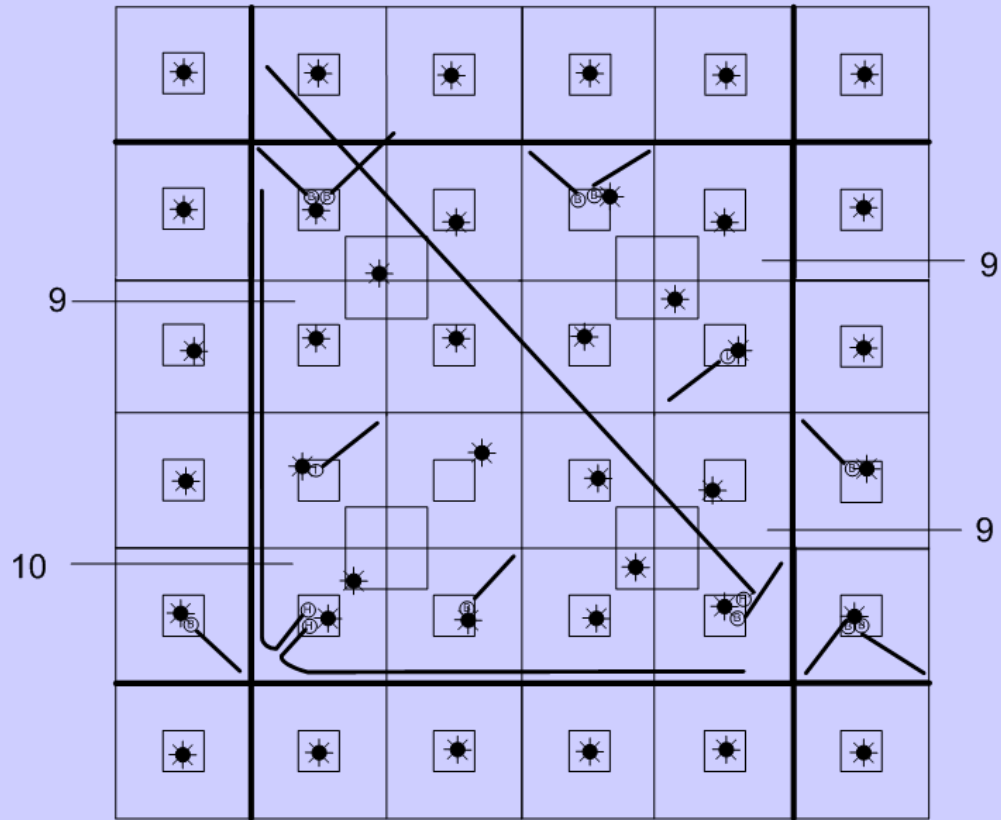
Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



- ☀ Pre-GWA Authorized Well
- ⊙ GWA Boundary Well
- ⊙ GWA Interior Infill Well
- ⊙ GWA Horizontal Well

Example Units

Greater Wattenberg Area (GWA) Drilling & Spacing Exhibit



- ☀ Pre-GWA Authorized Well
- Ⓜ GWA Boundary Well
- ① GWA Interior Infill Well
- Ⓜ GWA Horizontal Well

Example Units

Proposed Amendments

- Changes the wellbore spacing unit to a more flexible concept for horizontal wells
- Changes the procedures for Notice and Hearing for mineral interest owners in wellbore spacing units
- Eliminates the infill area making infill and boundary wells optional in all of GWA
- Eliminates the need to count completions by quarter section
- Adds water sampling in any section in GWA where none has been reported
- Adds the requirement for operators to submit Waste Management Plans



The End

For more Information see
<http://colorado.gov/COGCC>



OIL & GAS CONSERVATION COMMISSION