

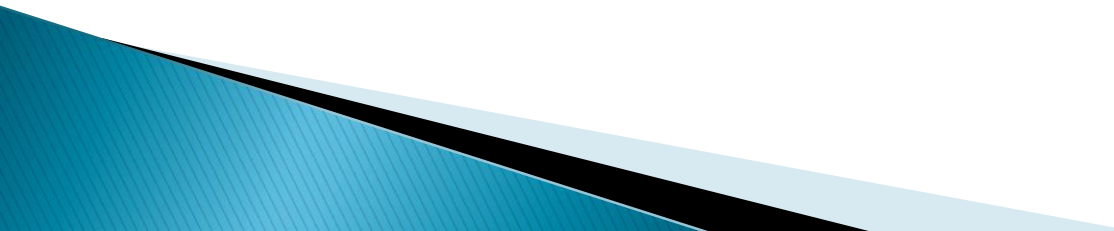
Administration, Well Permitting, and Adjudication of Nontributary Ground Water

How ground water in Colorado is administered and the special treatment of nontributary ground water in Colorado water law



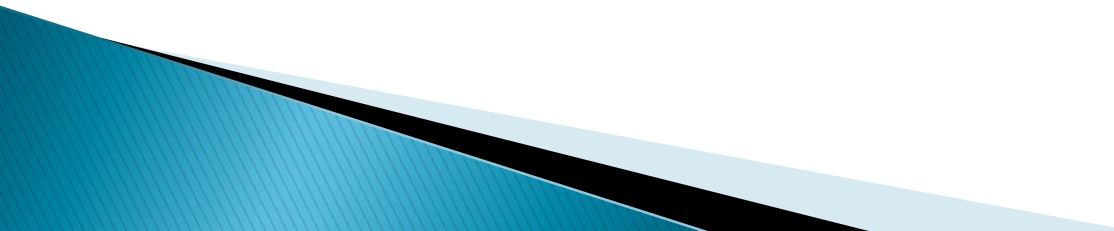
Four Important Points!

(or, what you should take home from tonight)

- ▶ Tributary vs. Nontributary
 - ▶ Senate Bill 213, Landowner's Rights
 - ▶ Senate Bill 5, Denver Basin Rules
 - ▶ Effect of Adjudication
- 

Ground Water Today

Legal/administrative perspective: four types of ground water

- ▶ Tributary
 - ▶ Nontributary
 - ▶ Denver Basin (Nontributary and Not Nontributary)
 - ▶ Designated
- 

Brief History of Ground Water Administration

1900's through 1960's

- ▶ Well pumping was allowed (all types of ground water)
- ▶ Increasing attention to impacts to surface water
 - What impacts?
 - Most ground water is connected to surface streams
 - Pumping the ground water depletes those streams.
- ▶ What about nontributary ground water?
 - Recognition that some formations were “not tributary to any stream” (was not called “nontributary” yet)
 - This ground water pumping had little or no impact
 - Qualitative understanding

Focus on Nontributary Ground Water

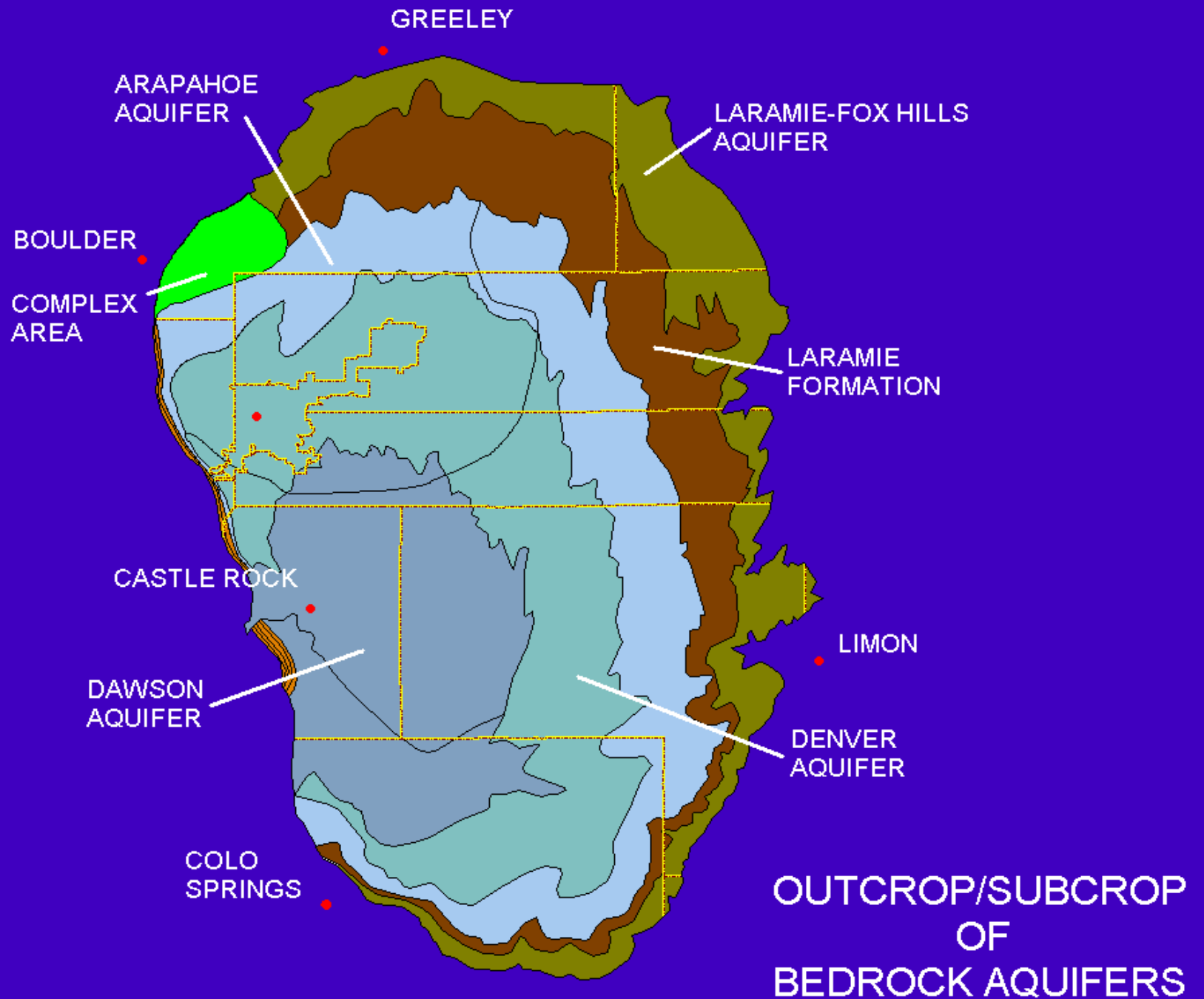
Denver Basin Ground Water

- ▶ A “layering” of water bearing formations (aquifers) along the Front Range
- ▶ Special attention from state law
- ▶ Formal Rules
 - further guide administration
 - describe physical/hydrologic properties

Focus on Nontributary Ground Water

Denver Basin Ground Water

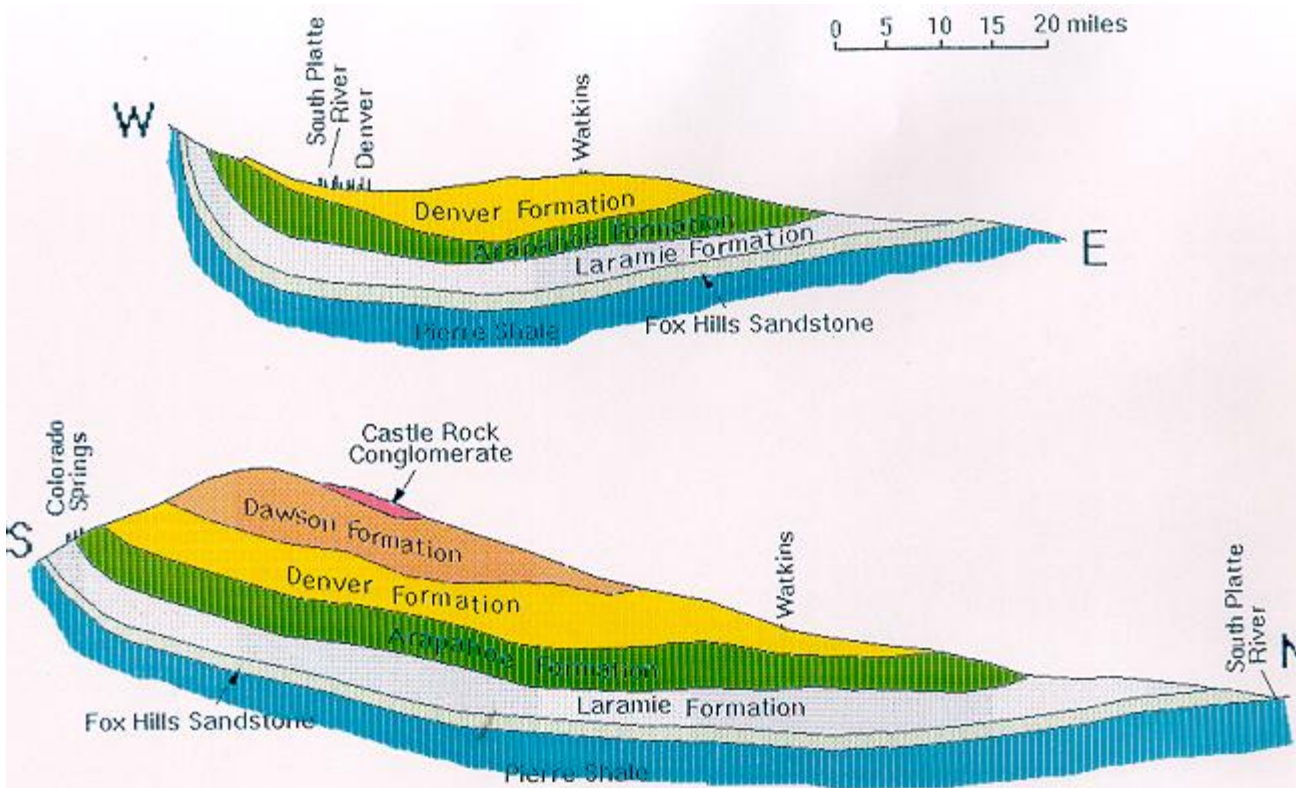
- ▶ Four aquifers
 - Dawson (Upper and Lower) aquifer
 - Denver aquifer
 - Arapahoe (Upper and Lower) aquifer
 - Laramie-Fox Hills aquifer



Focus on Nontributary Ground Water

Denver Basin Ground Water

- ▶ Nontributary ground water has a limited connection with the surface water (below a legal threshold)
 - No potential to injure surface water rights
- ▶ Not nontributary ground water is water in the Denver Basin aquifers that does not meet the legal threshold
 - Can injure surface water rights

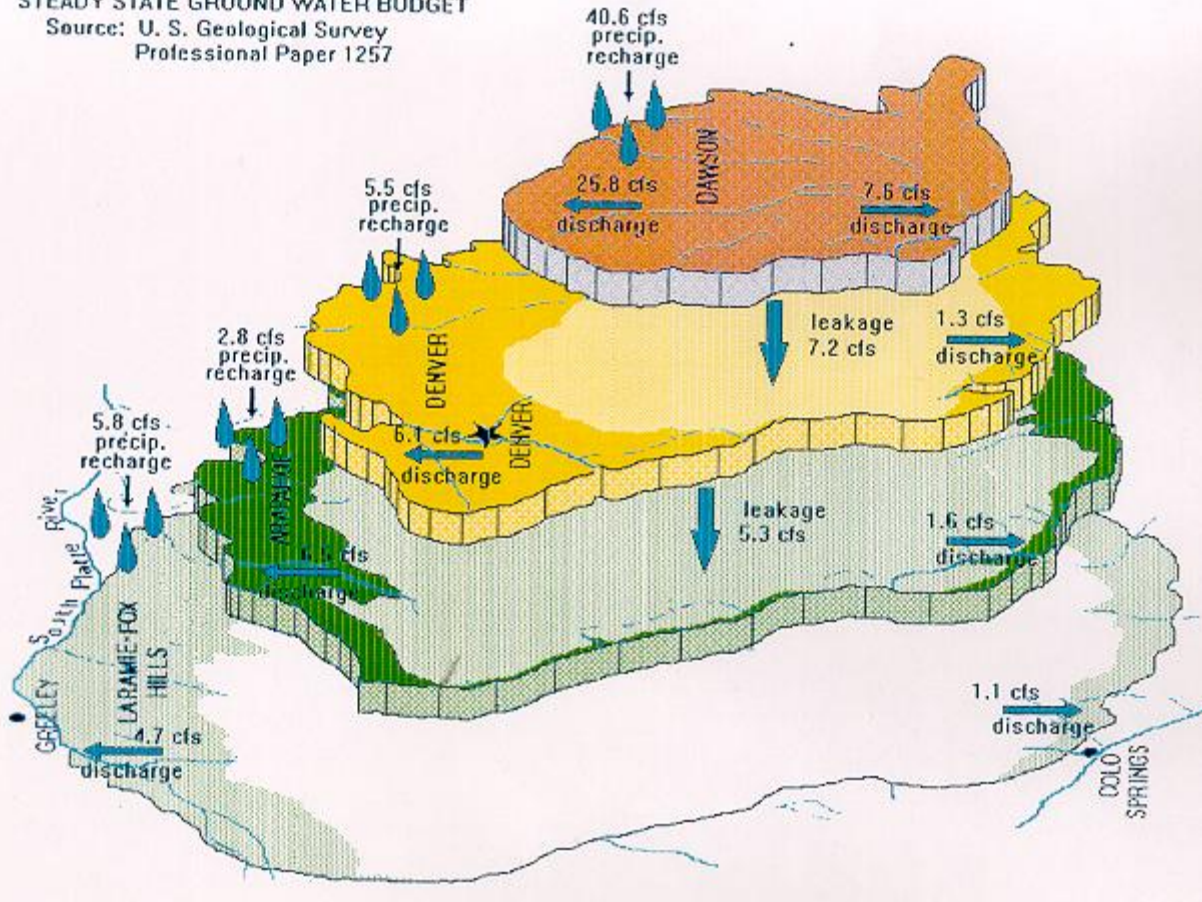


GENERALIZED GEOLOGIC SECTIONS THROUGH THE DENVER BASIN

DENVER BASIN

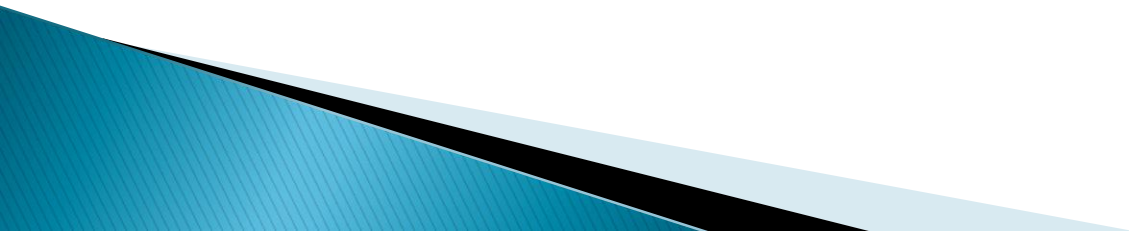
STEADY STATE GROUND WATER BUDGET

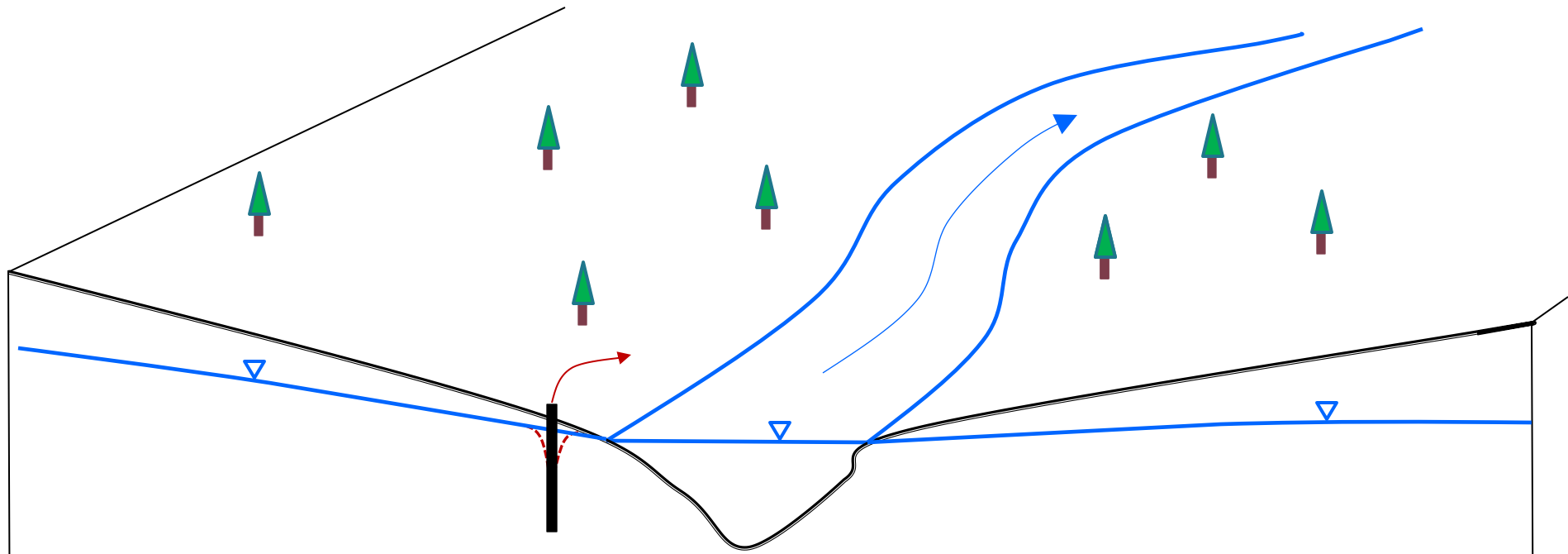
Source: U. S. Geological Survey
Professional Paper 1257



Focus on Nontributary Ground Water

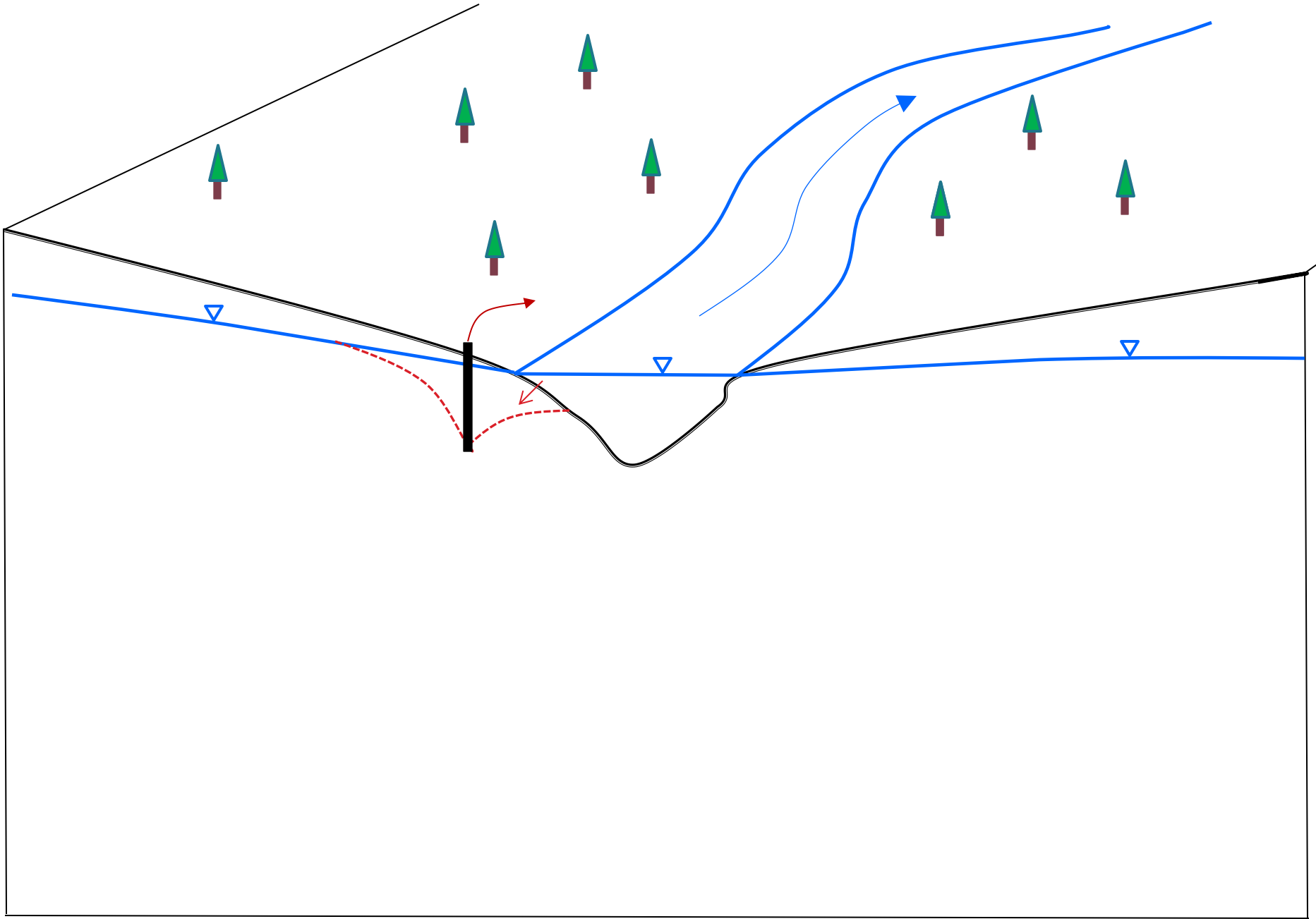
Understanding Nontributary
Ground Water





Tributary and Nontributary -

It's all about ground water's interaction with surface water



Brief History (continued)

▶ Before 1963

- Ground water that was not tributary to the stream was regarded as “developed water”
- 1963, Supreme Court, owner of surface estate has the right

Brief History

- ▶ From 1969 on,
 - Laws and rules that addressed tributary ground water
 - Water court, augmentation plans, South Platte Rules,
 - Did not apply to nontributary ground water
- ▶ 1973, Nontributary ground water law
- ▶ 1985, Nontributary ground water law

Brief History

- ▶ 1973, Nontributary ground water law
 - Senate Bill 213
 - Ground water use limited to volume underlying a landowner's parcel
 - Landowner has the sole right to withdraw that amount
 - One percent per year (“100-year aquifer life”)
- ▶ Still, no definition, no standard for nontributary ground water

Brief History

- ▶ 1985, Nontributary ground water law
 - Senate Bill 5
 - Defined “Nontributary” ground water for the first time (Section 37-90-103(10.5), C.R.S.)
 - Determination requires ground water modeling
 - Rulemaking by the State Engineer
 - Allowed permitting and administration rules (“Statewide Nontributary Ground Water Rules”)
 - Required rules setting location-specific aquifer characteristics (“Denver Basin Rules”)

Brief History

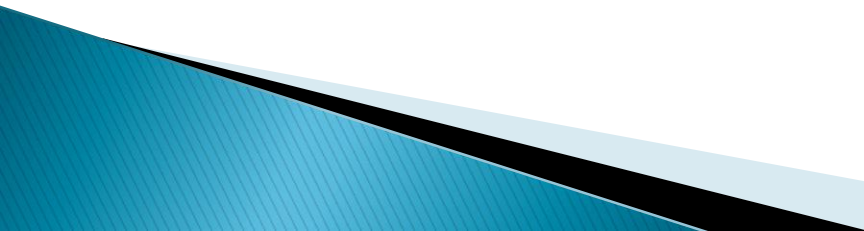
- ▶ Denver Basin Rules
 - Which location-specific aquifer characteristics?
 - Nontributary?
 - Not nontributary (1996)
 - Specific yield
 - Tops and bottoms
 - Saturated thickness

Well Permitting and Adjudication

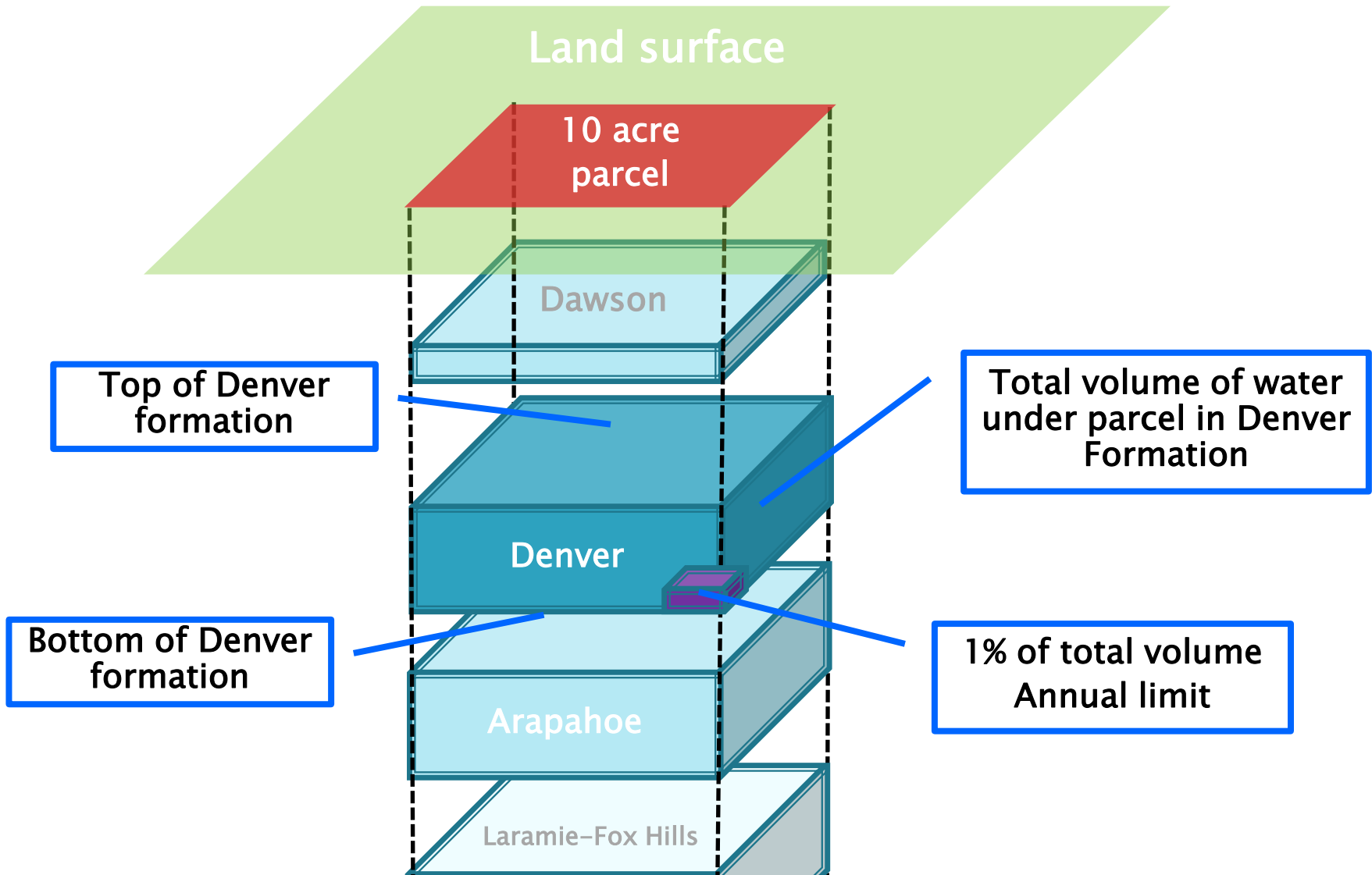
Now, with the help of:

- ▶ Senate Bill 213
- ▶ Senate Bill 5
- ▶ Statewide Nontributary Ground Water Rules
- ▶ Denver Basin Rules

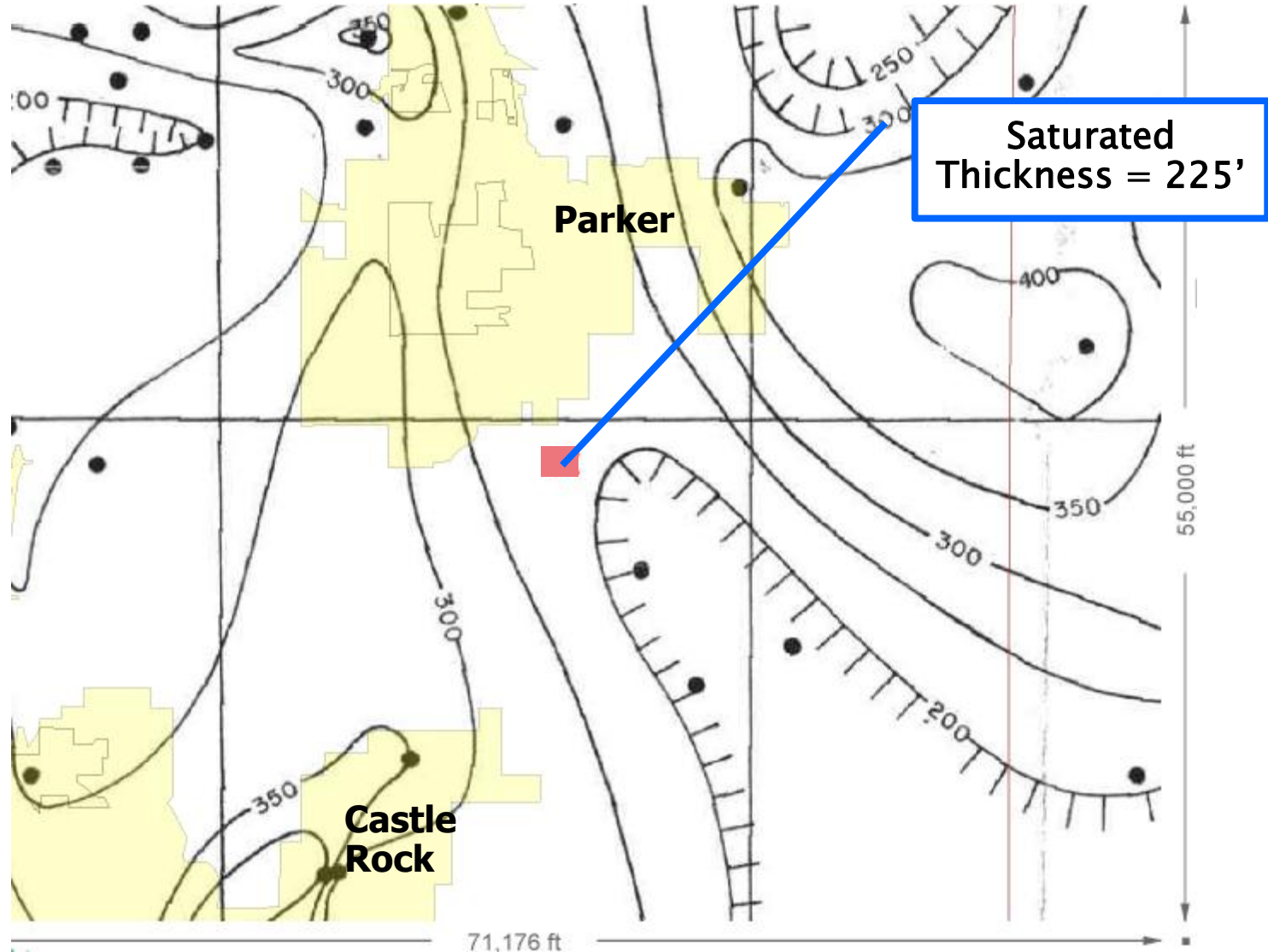
...we have what we need to issue well permits and assist the court with adjudication.



Example Quantification of Underlying Water – Denver Formation



Denver Formation Sandstone Isolith

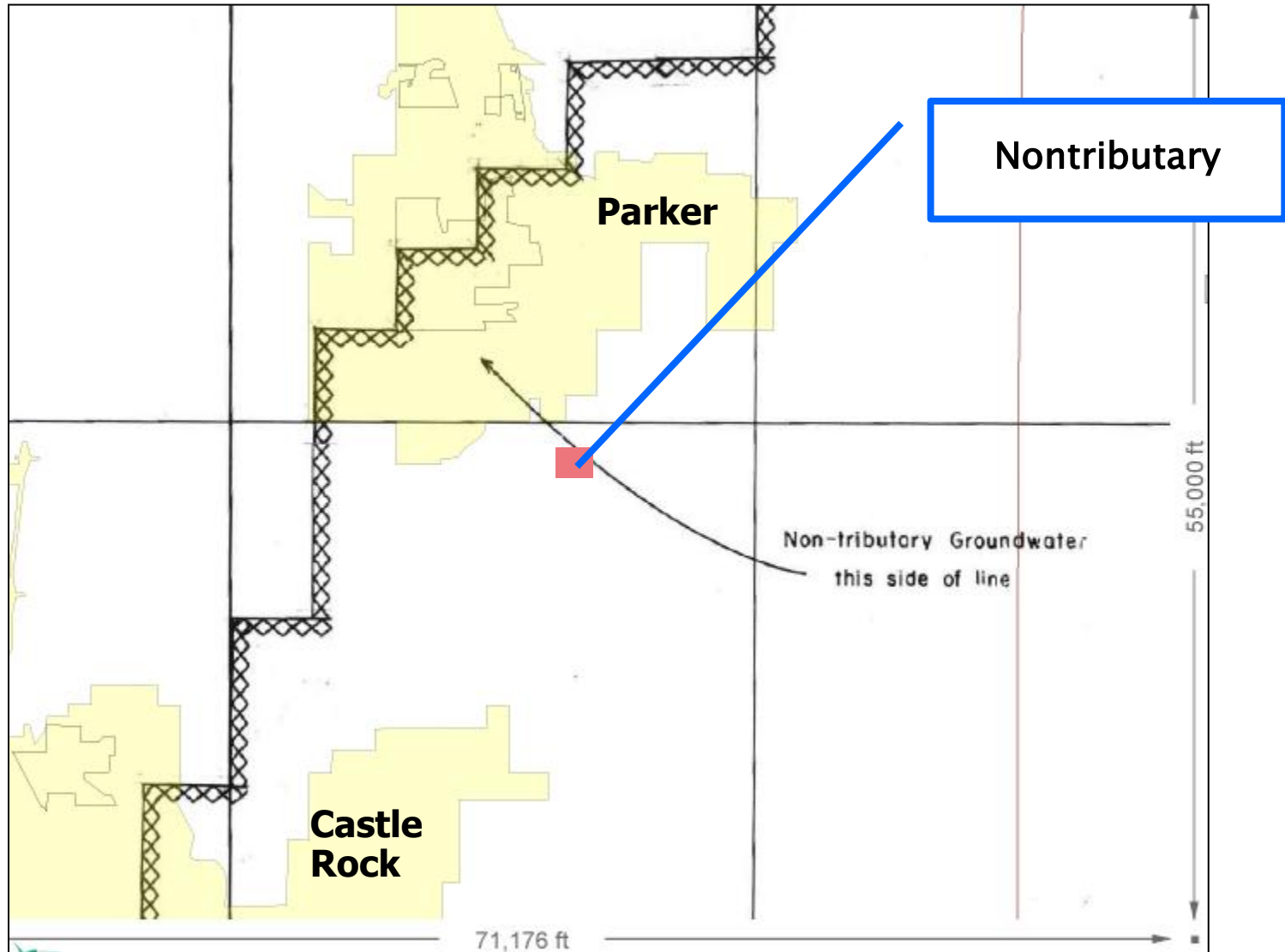


Calculate Water Volume in Denver Formation

- ▶ Per Senate Bill 5, Denver Formation specific yield = 17%
- ▶ Per Senate Bill 5 (map), saturated thickness = 225'

- ▶ Total volume = 10 acres x 17% x 225'
- ▶ = 382.5 acre-feet
- ▶ 1% per year = 3.8 acre-feet per year

Is water nontributary or not-nontributary? Atlas of Denver Aquifer



Well Permitting

- ▶ Today, all water wells in Colorado require a well permit
 - Construction
 - Operation
- ▶ This applies to nontributary ground water
- ▶ Amount needs to be quantified
- ▶ Adjudication is not necessary to get a well permit

Adjudication of Nontributary Ground Water

- ▶ The water court's formal acknowledgement of a water right
 - Landowner already has an "inchoate" right without adjudication (37-90-137(4); Bayou Land Co v. Talley; Chatfield East)
 - Can this inchoate right be taken away?
 - Adjudication vests that right
 - Allows transfer of right

Remember our Brief History?

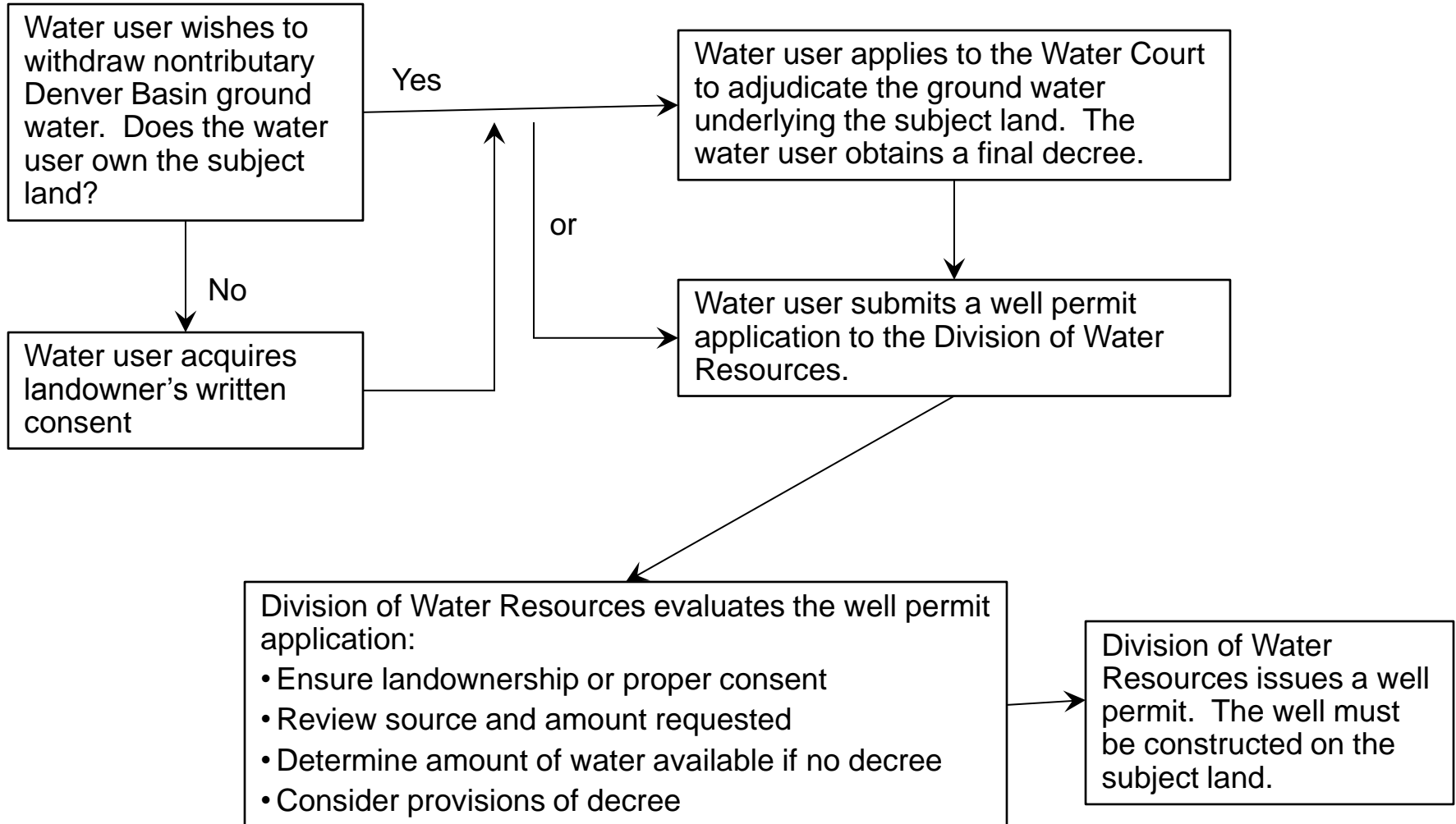
- ▶ 1973, Nontributary ground water law
 - Senate Bill 213
 - Amount of ground water use limited to that underlying owned land
 - **Landowner has the sole right to withdraw that amount**
 - One percent per year (100-year aquifer life)
- ▶ Still, no definition, no standard for nontributary ground water

Adjudication of Nontributary Ground Water

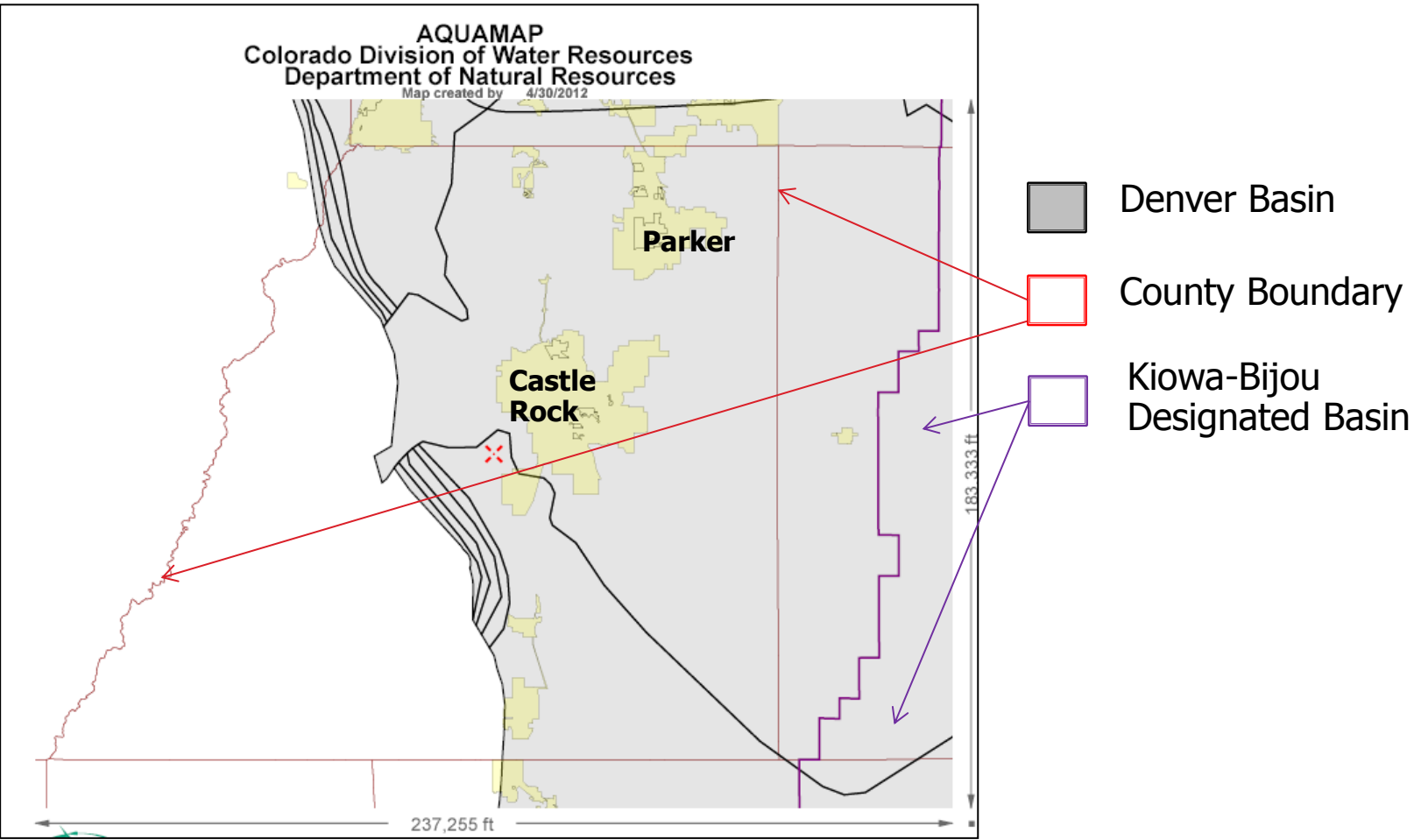
- ▶ The water court's formal acknowledgement of a water right
 - Landowner already has an "inchoate" right without adjudication (37-90-137(4); Bayou Land Co v. Talley; Chatfield East)
 - Can this ever be changed?
 - Adjudication vests that right
 - Allows transfer of right

Denver Basin Ground Water, *outside* Designated Ground Water Basins

Start

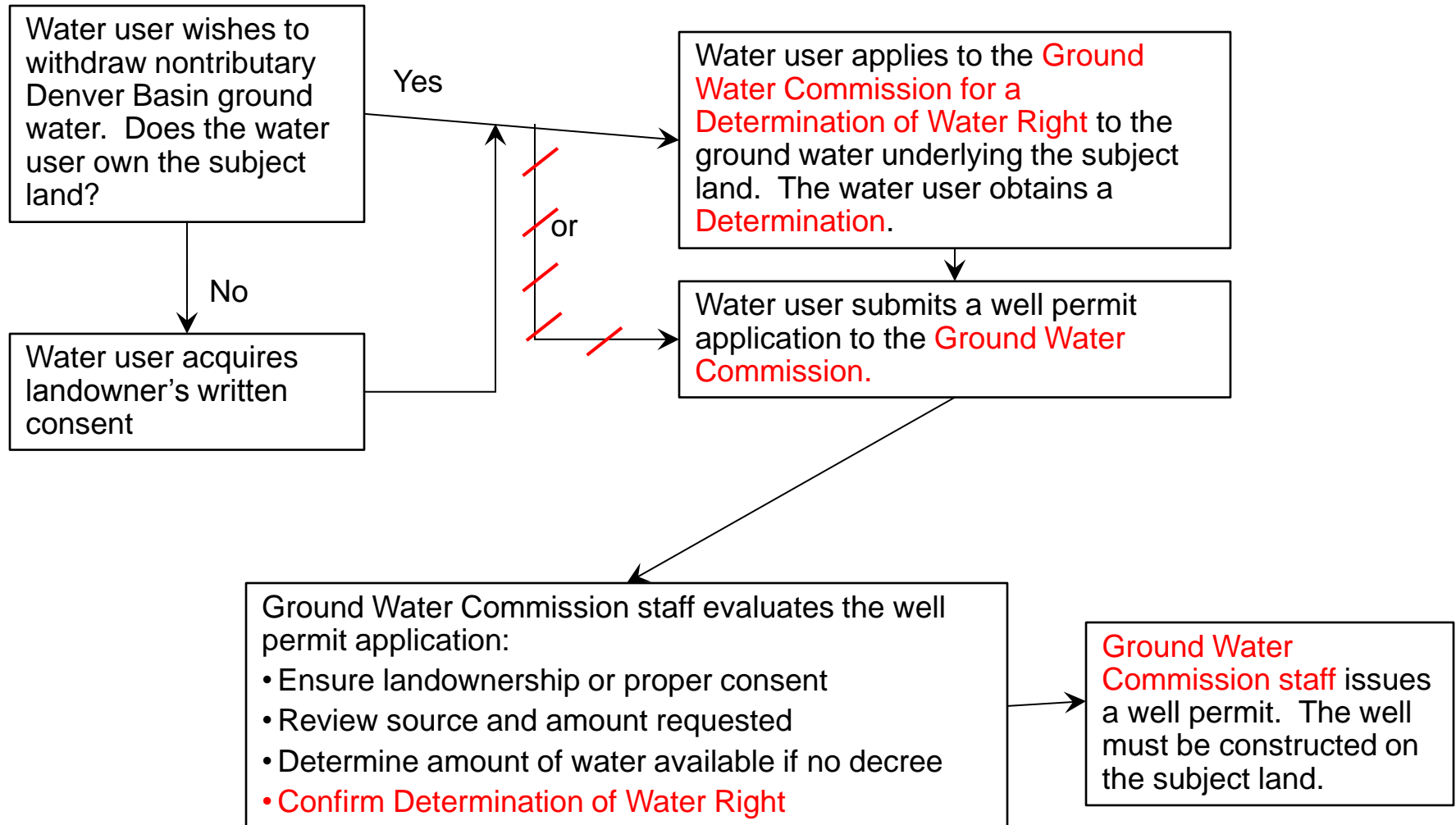


Douglas County Groundwater



Denver Basin Ground Water, *inside* Designated Ground Water Basins

Start



Exceptions

- ▶ Appropriations from before 1973 (Pre-213 cylinders)
- ▶ Deemed Consent
- ▶ Subdivision water supply plan
- ▶ Previously conveyed by deed

These are nearly always pre-existing



Exceptions Map

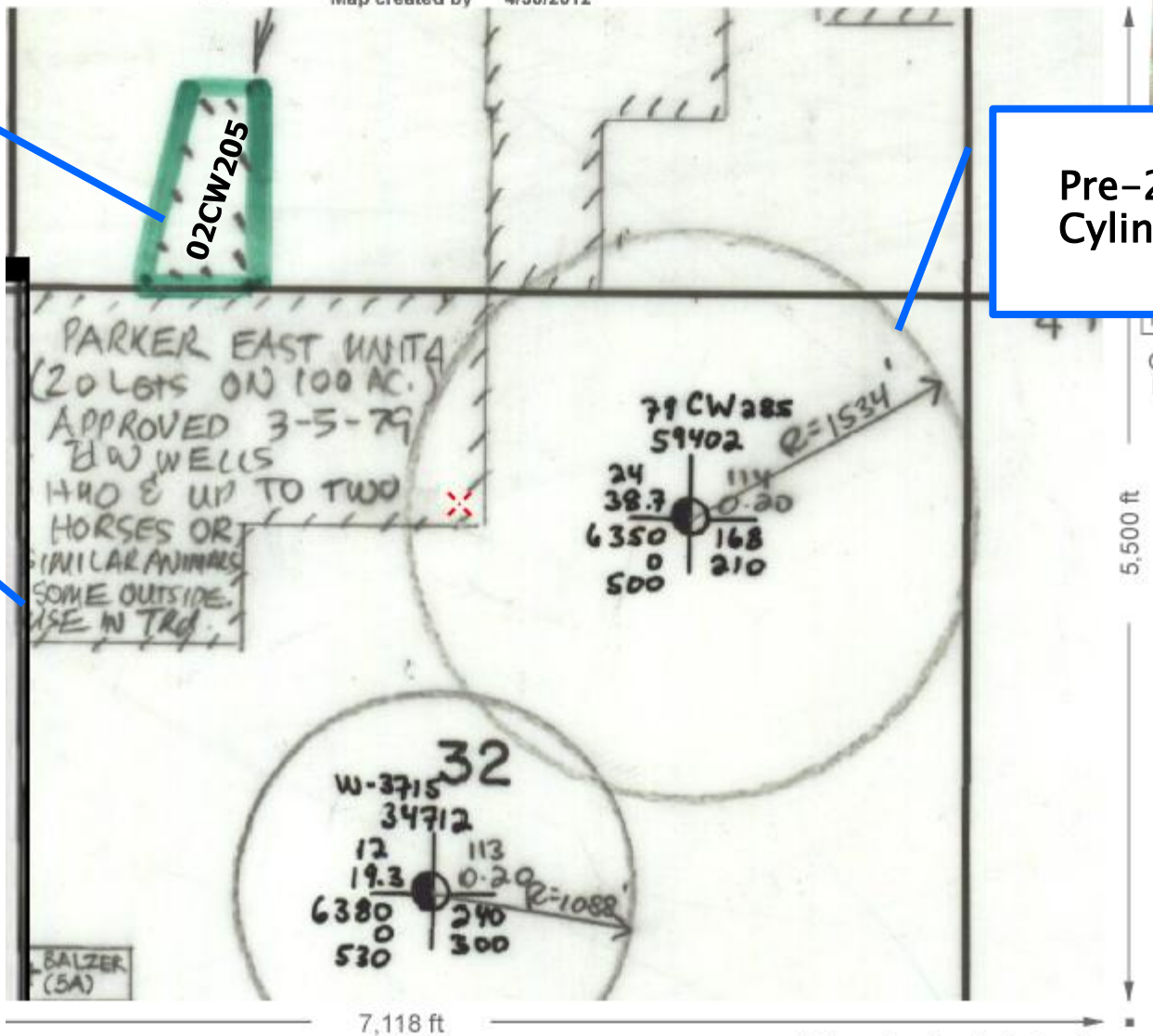
Map created by 4/30/2012

Previously Adjudicated, could be deeded

02CW205

Pre-213 Cylinder

Subdivision Water Supply Plan



Questions