

AWSE Groundwater Management Strategies

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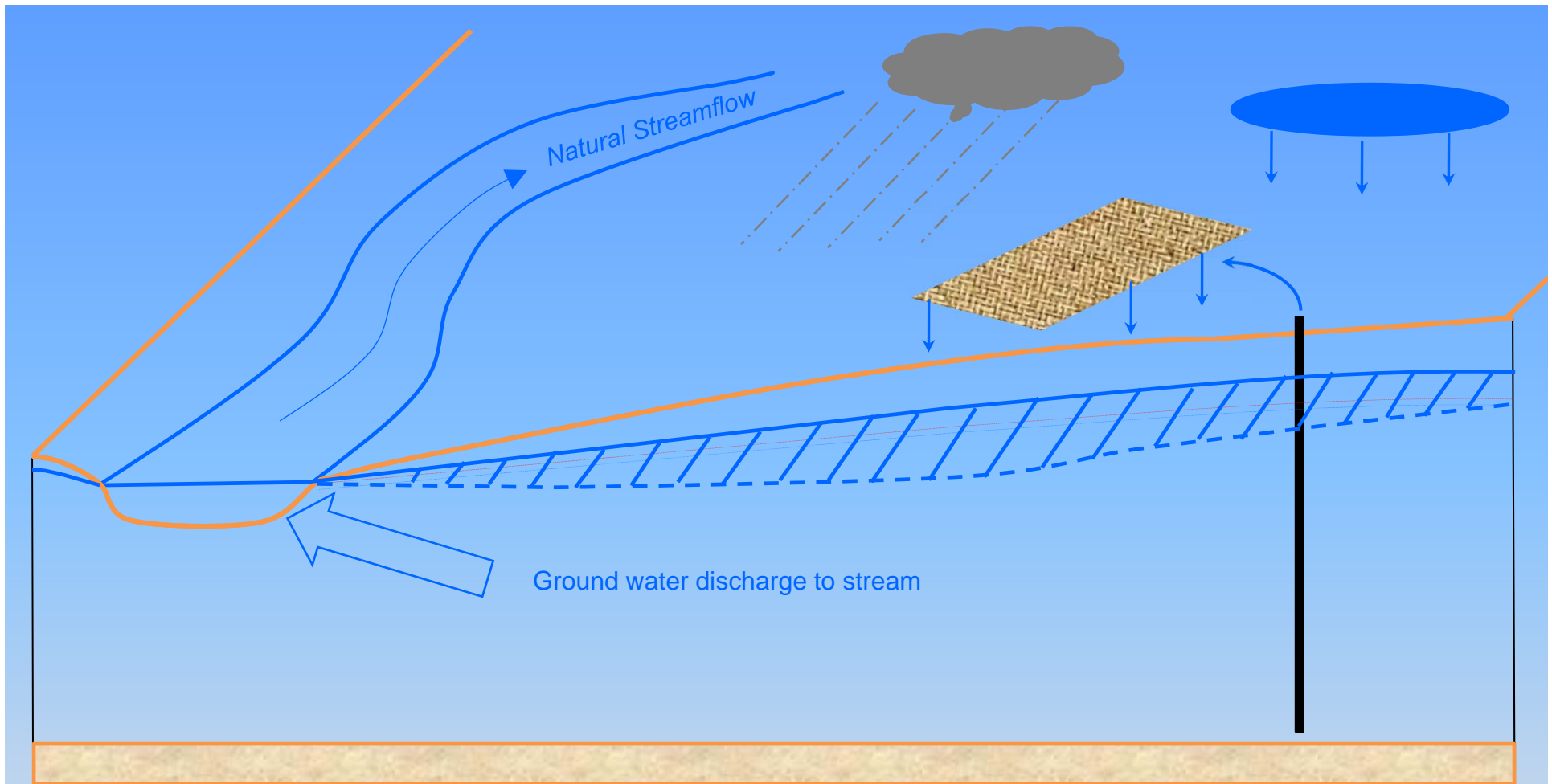


Strategies

- State reserves all water to the citizens
- GW is generally deemed tributary (Rebuttable)
- Management:
 - Tributary - Priority impacts
 - Must replace depletions to the stream
 - Augmentation plan
 - Recharge/accretion plan
 - Other (?)
 - Non-tributary determinations
 - SEO
 - Legislative
 - Denver basins
 - Designated basins

Tributary Management

- Exempt vs non-exempt
 - Exempt: Allows for some rural development under a presumption of non injury. Generally household use with a septic return...a de minimus consumption.
 - Not Subdivisions!
 - Non-Exempt: Subject to administration like SW
 - Irrigation, Municipal, Industrial, Piscatorial, Developments, etc.
 - Court Decree generally required
 - Emergency and Temporary Plans via SEO

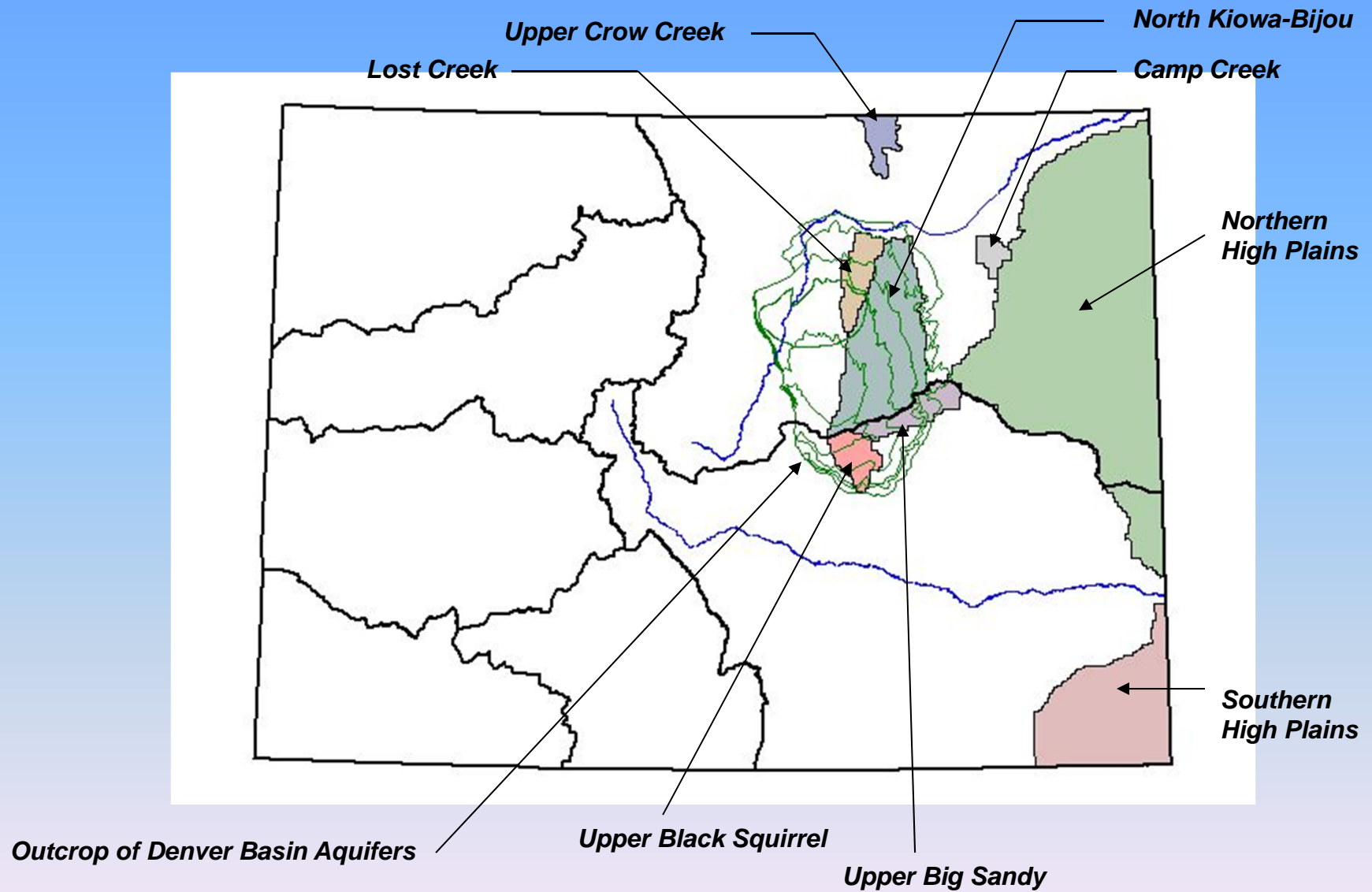


In an over-appropriated stream system, the well owner must plan for the stream being on call when the depletions finally hit the river, and have access to adequate replacement water. That planning must be done through a plan approved by the water court.

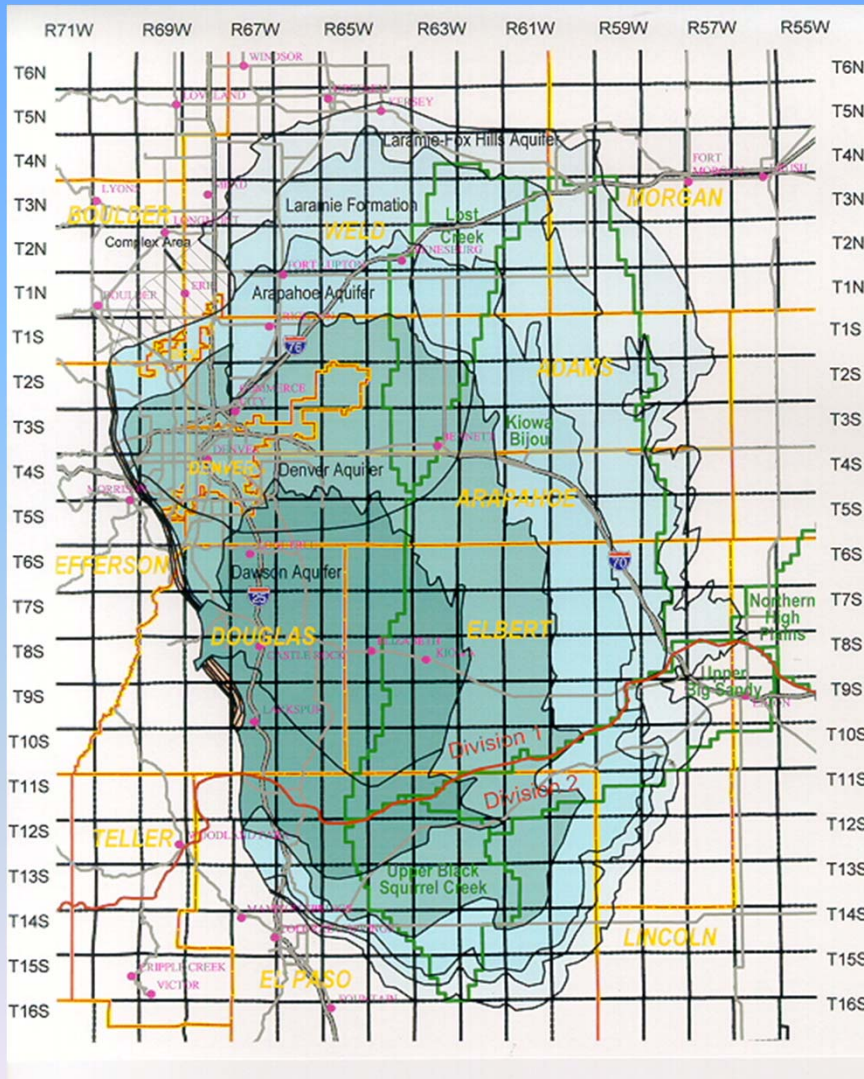
Non-tributary Management

- Designated basins
 - Ground Water Commission
 - SEO staff for permitting large and small wells
 - GWMD may have rules for small wells
- Non Tributary Aquifers
 - $<1/10^{\text{th}}$ of 1% of the annual withdrawal
 - Denver Basin Aquifers
 - Specific Determinations By SEO

Denver Basin and Designated Ground Water Basins



Subdivision Water Supply Plans



Counties with a Water Supply Approach beyond the Statutory 100 Years and the date it was adopted:

- Adams – 300-year (August 25, 1999)
- Arapahoe – 50% recovery (June 1, 2001)
- Elbert – 300-year (April 19, 1995)
- El Paso – 300-year (November 20, 1986)
- Weld – 300-year (December 23, 2002)
- Douglas – Renewable only zones, other

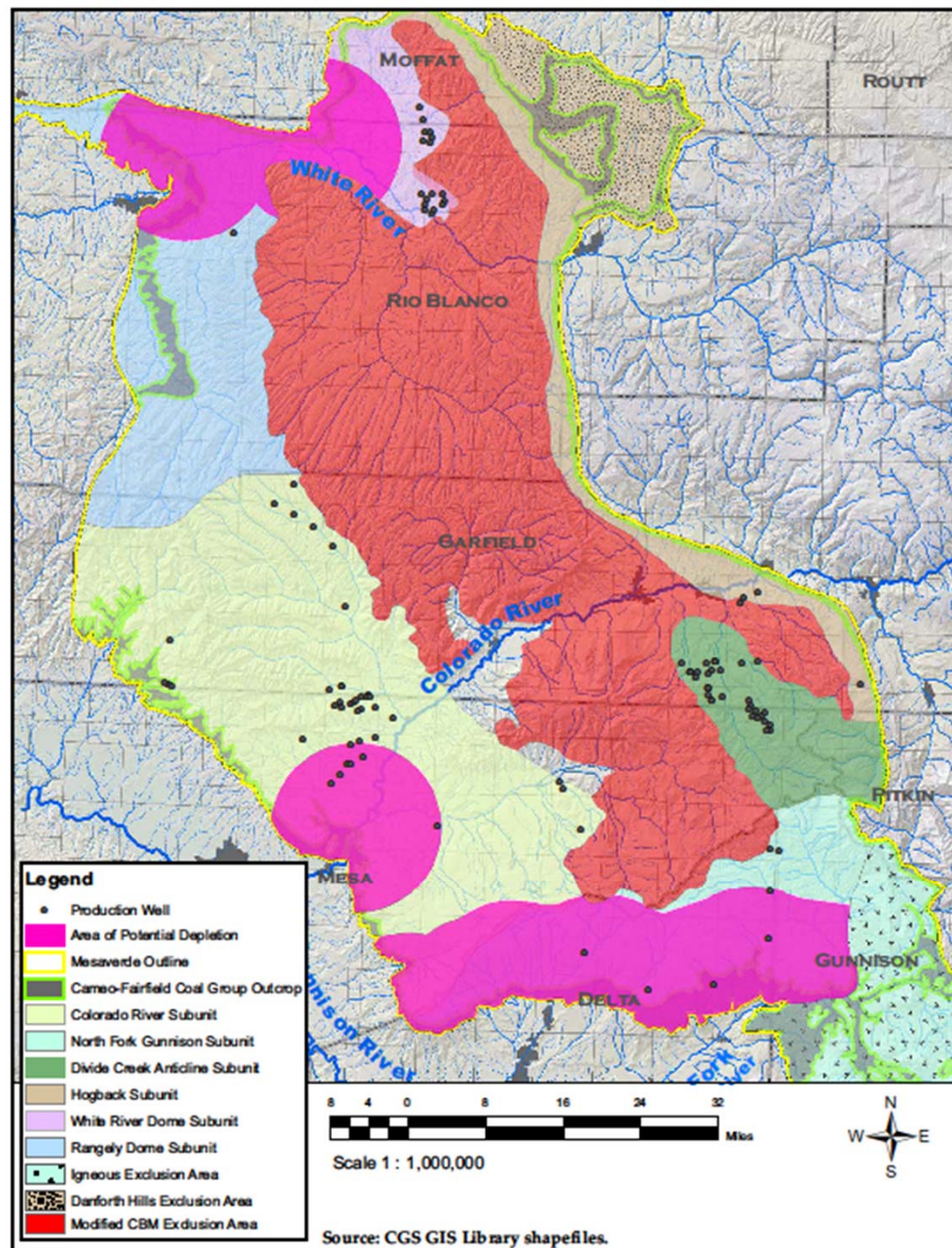


Figure 6.1. Area with Potential for Depletion to Exceed 0.1% in 100 Years

Authority and Implementation

- Rules and Regulations
 - Per legislation R&R for administration
- BOE to enforce construction standards
 - Inspection staff
- Permitting section to evaluate applications
 - Permitting staff
 - Water Supply Reviews (aka subdivision reviews)
- Water court approval (alternate path)
 - For tributary groundwater

On the Ground Management

- Tributary-
 - Field SW staff work with GW staff on depletion and replacement timing
 - Record keeping
 - Metering requirements (SW and GW)
- Non-Tributary
 - Annual reporting of use

Various Systems

- South Platte River
 - Augmentation
 - Recharge
- Rio Grande
 - GWMP
 - Annual Replacement Plan
 - Sustainability
- Arkansas River
 - Annual Replacement Plan
- Oil and Gas
 - CBM and Produced Water
- Non-Tributary
 - Being used for some temporary replacement obligations

Management Considerations

- Modeling
 - Simple
 - Complex
- Legal
 - Priority administration
 - Augmentation Plan (OOP replacement)
 - GWMP (large groups replacing depletions)
- Field
 - Metering, data collection, administration

Future Management

- Increased Science
- Modeling Enhancements
- Legislative impacts
- Sustainability?
 - ??