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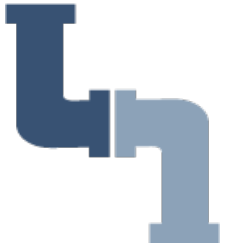
Weather Modification



Importation

Reuse

# Water Augmentation

**Water and Natural Resources Committee**
**October 5, 2023**

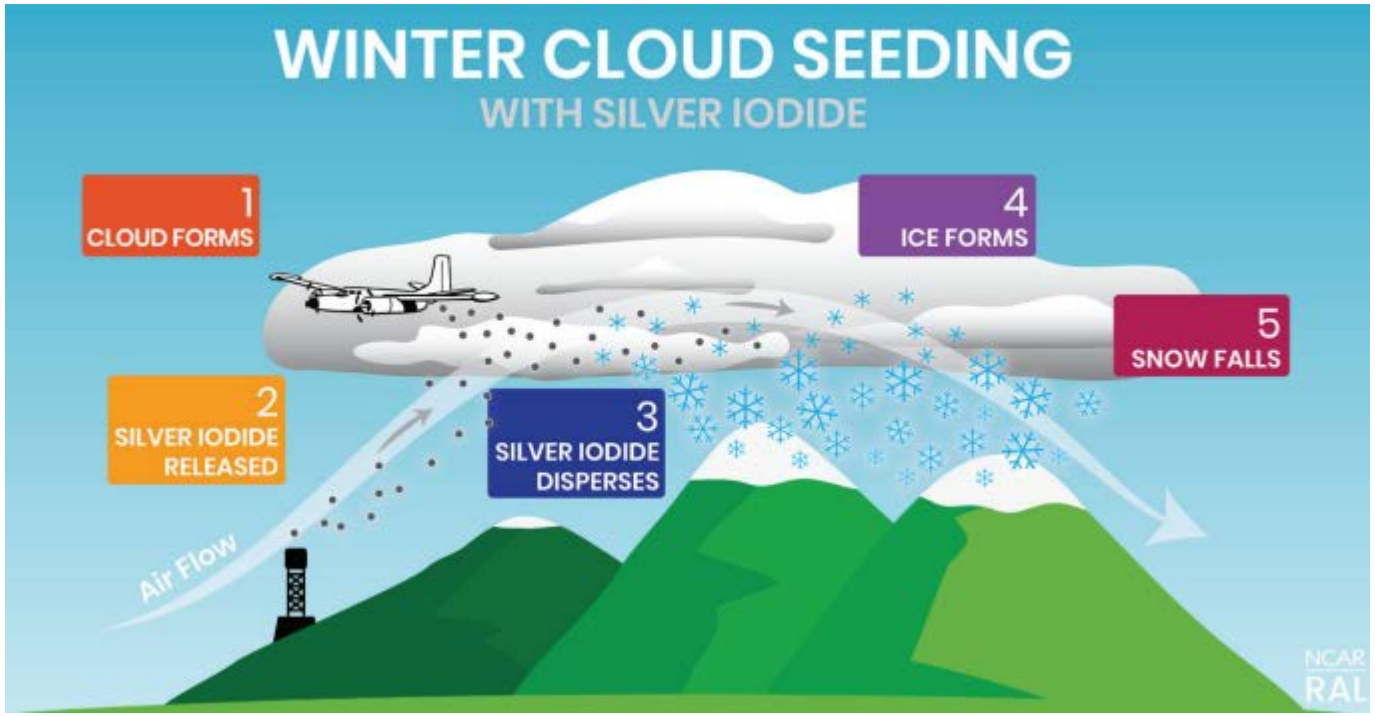

# Reference/Sources

- The Colorado River Basin Study
  - **Reclamation, 2012**
    (**Lower Colorado Region | Bureau of Reclamation (usbr.gov)**)
- Water 2120
  - **The Albuquerque Bernalillo County Water Utility Authority, 2016**
    (**Water_2120_Volume_I.pdf (abcwua.org)**)
- Winter Cloudseeding Handout
  - **NCAR, 2023**
    (**wintercloudseedingbroch202108.pdf (ucar.edu)**)
- Caveats
  - **Costs and energy numbers are approximate and have not been adjusted from original source data**

Hazen

# Water Augmentation, Weather Modification

- What is it?
  - **Apply Silver Iodide to help in the formation of ice**
- Advantages
  - **Seems like magic – it works**
  - **Relatively low cost**
- Limitations
  - **Need moisture – requires a cloud as a starting point**
  - **Applicable with super-cooled liquid water**
  - **More precipitation doesn't result in a 1:1 with runoff**
  - **Advective storm seeding is less certain, needs more study**
  - **Hasn't been done at a basin scale**
- Costs
  - *Relatively inexpensive ~$50/AF*
  - **Energy**
    - *2,000 kWhr/AF*

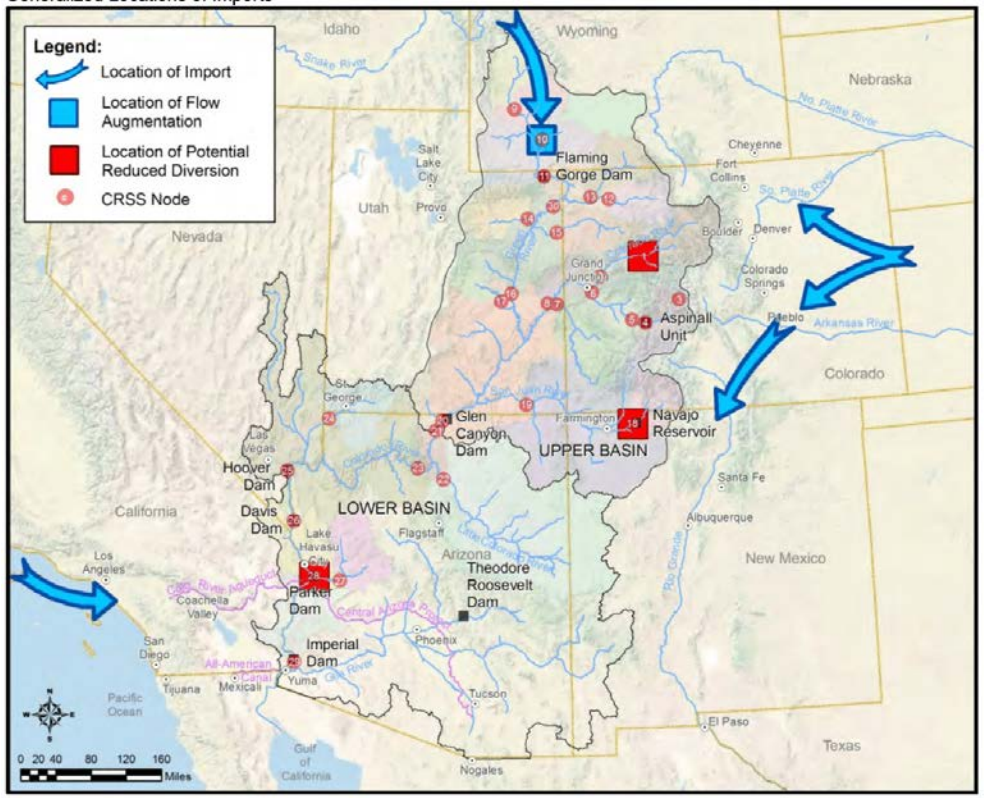



Weather Modification

# Water Augmentation, Importation

- Example Concept
  - **Mississippi River pipeline**
    - *From CRBS – 600,000 AFY of supply, including 150,000 AFY to upper Rio Grande (800 cfs out of more than 200,000 cfs)*
- Advantages
  - **Completely new supply of water, can be used to extinction**
- Limitations
  - **Political, social, and environmental costs**
  - **High energy use**
- Costs
  - *Mississippi river pipeline >$15B with $1.5B just for the spur to NM*
  - *>$2,000/AF life cycle cost*
  - **Energy**
    - *12,000 kWhr/AF of energy use annually >$500M per year in annual cost*

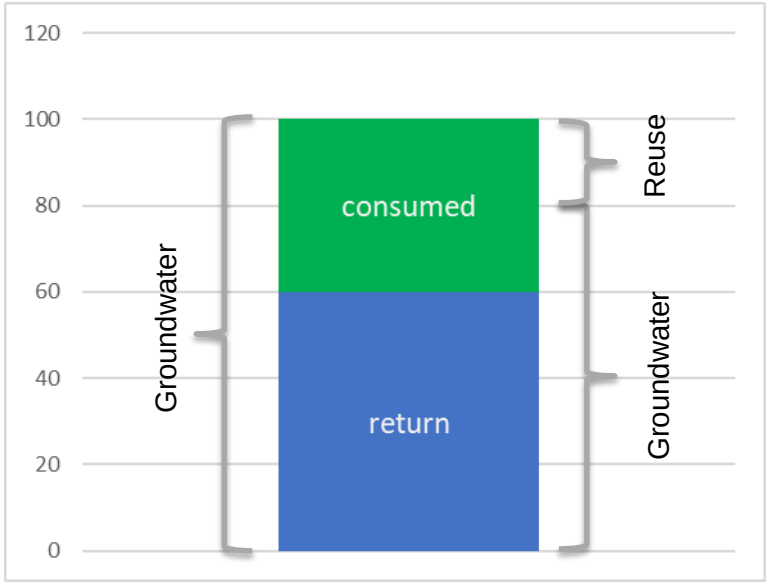
**FIGURE F4-1**
Generalized Locations of Imports




Importation

# Water Augmentation, Reuse

- Example Concept
  - **CR – basin wide**
    - *From CRBS – 600,000 AFY of supply*
- Advantages
  - **Optimizes local resources/multiplies effectiveness of current sources**
  - **Incorporates feedback**
- Limitations
  - **Water rights**
  - **Uncertainty around IDPR/DPR**
- Costs
  - *600,000 AFY >$5B or $1,500-$1,900/AF life cycle*
  - **Energy**
    - *IDPR/DPR - 4,500 kWhr/AF of energy use annually*
    - *Non-potable 500 kWhr/AF*




Reuse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