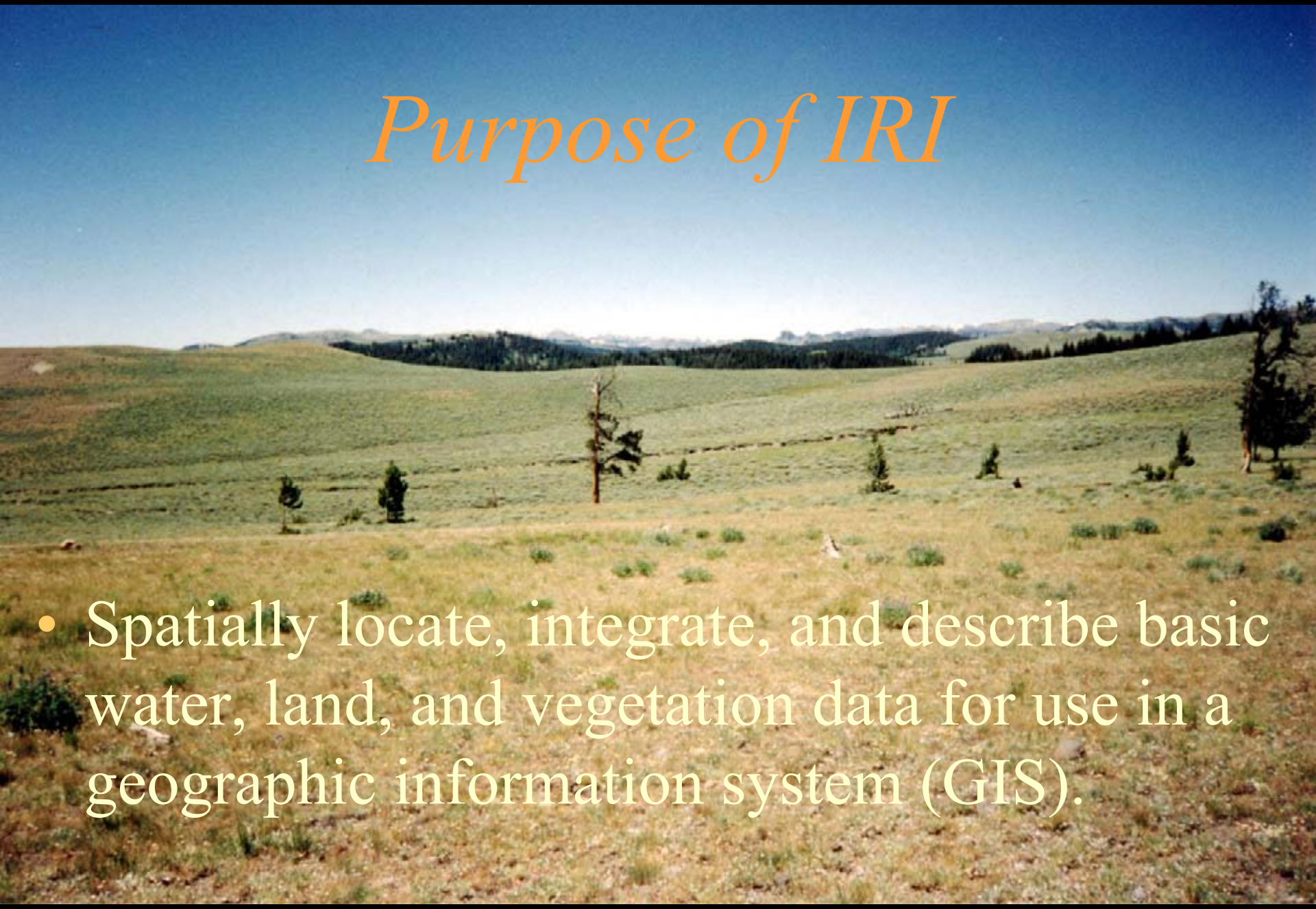
Integrated Resource Inventory

US Forest Service

bhigginson, November 2003

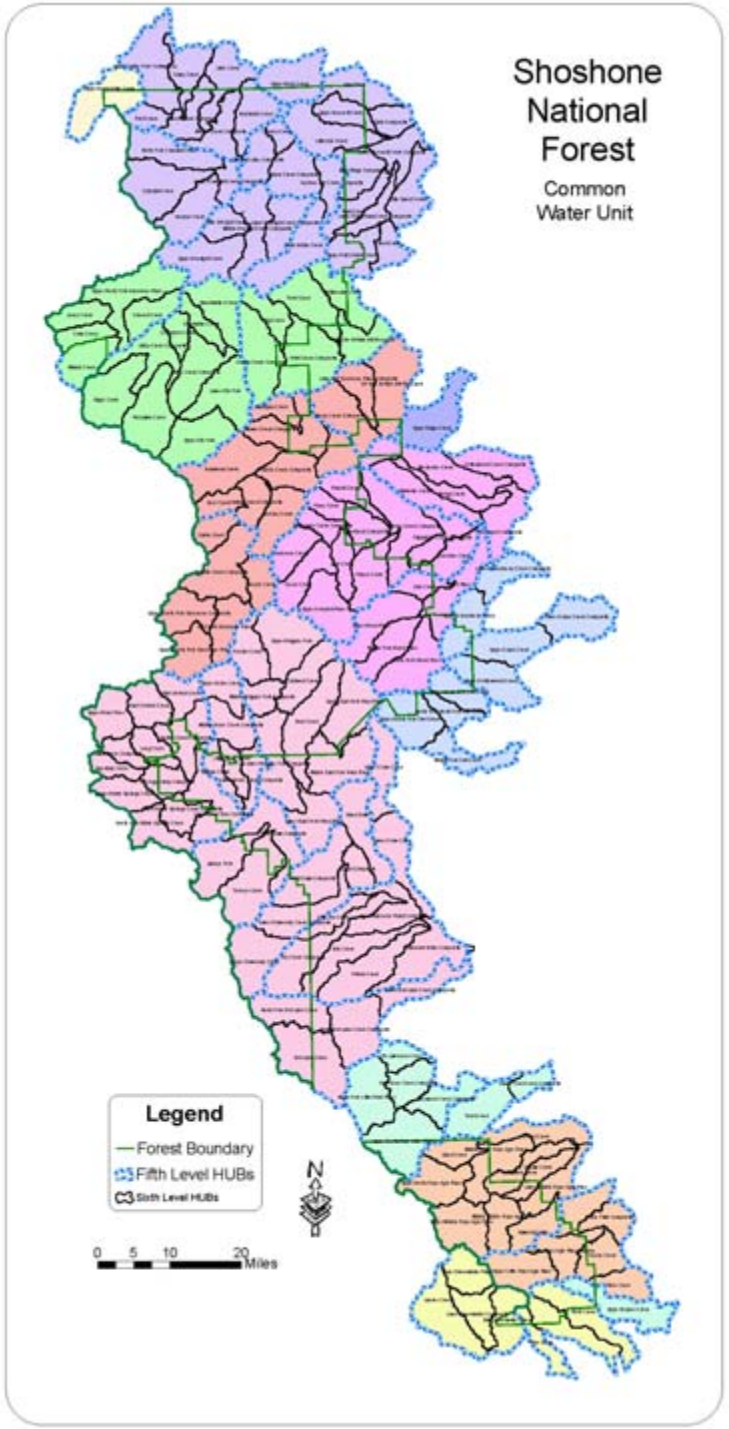
Purpose of IRI



- Spatially locate, integrate, and describe basic water, land, and vegetation data for use in a geographic information system (GIS).

Three Themes to IRI

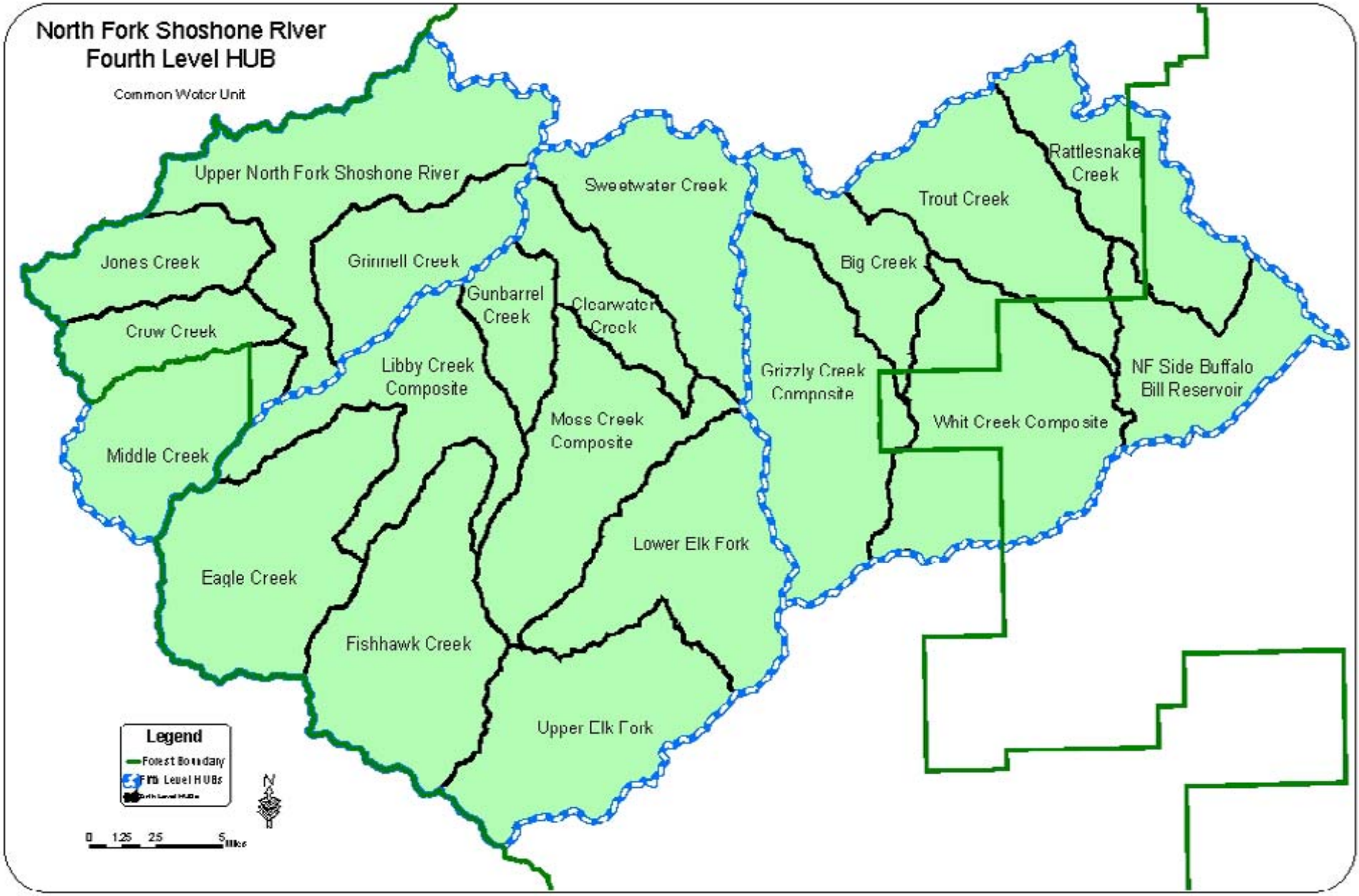
- Common Water Unit – Aquatic system
- Common Land Unit – Geology, geomorpholgy, soils, and potential natural vegetation
- Common Vegetation Unit – Transitory vegetation that currently exists

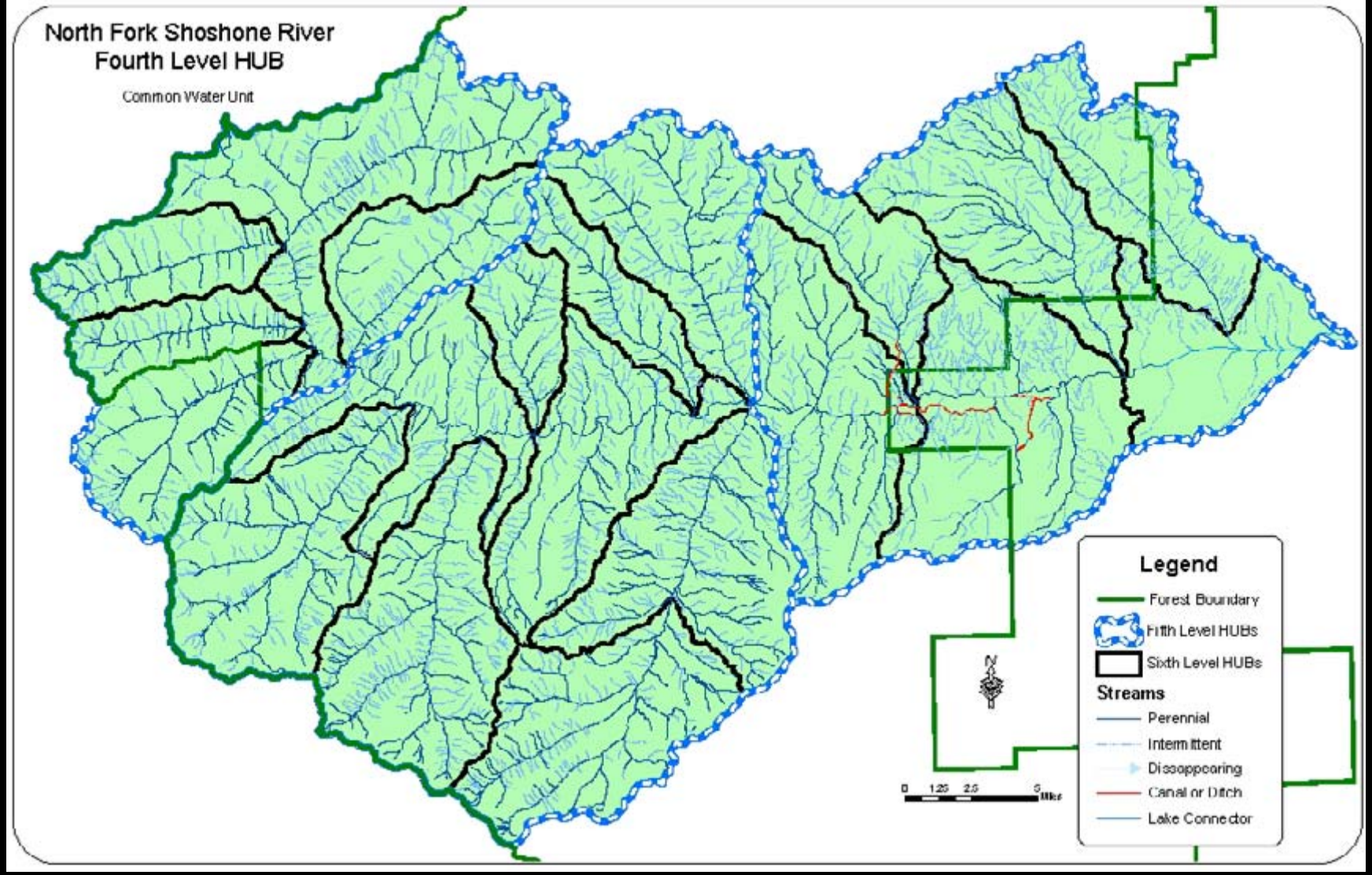


Common Water Unit

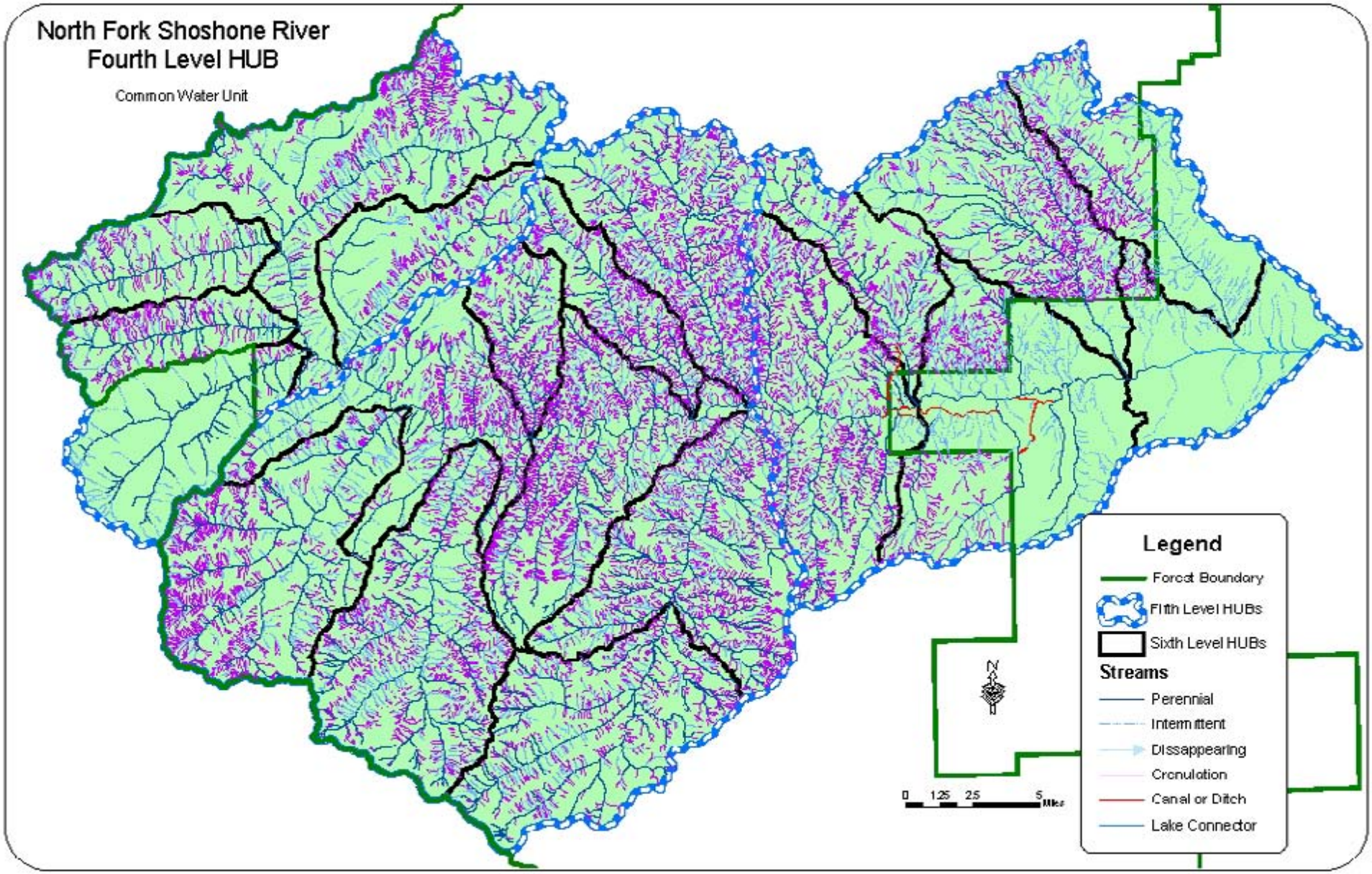
Watershed Level

- Watershed delineation down to sixth level HUBs
- Sixth level HUBs are also the base for the CVU and CLU


North Fork Shoshone River
Fourth Level HUB
Common Water Unit
Upper North Fork Shoshone River
Sweetwater Creek
Rattlesnake Creek
Trout Creek
Jones Creek
Grinnell Creek
Gunbarrel Creek
Clearwater Creek
Big Creek
Cruw Creek
Libby Creek Composite
Grizzly Creek Composite
NF Side Buffalo Bill Reservoir
Moss Creek Composite
Whit Creek Composite
Middle Creek
Lower Elk Fork
Eagle Creek
Fishhawk Creek
Upper Elk Fork
Legend
Forest Boundary
Fifth Level HUBs
N
0 1.25 2.5 5 Miles



- Stream network
- Supplemental water features (ditches)
- Lakes, ponds, and reservoirs

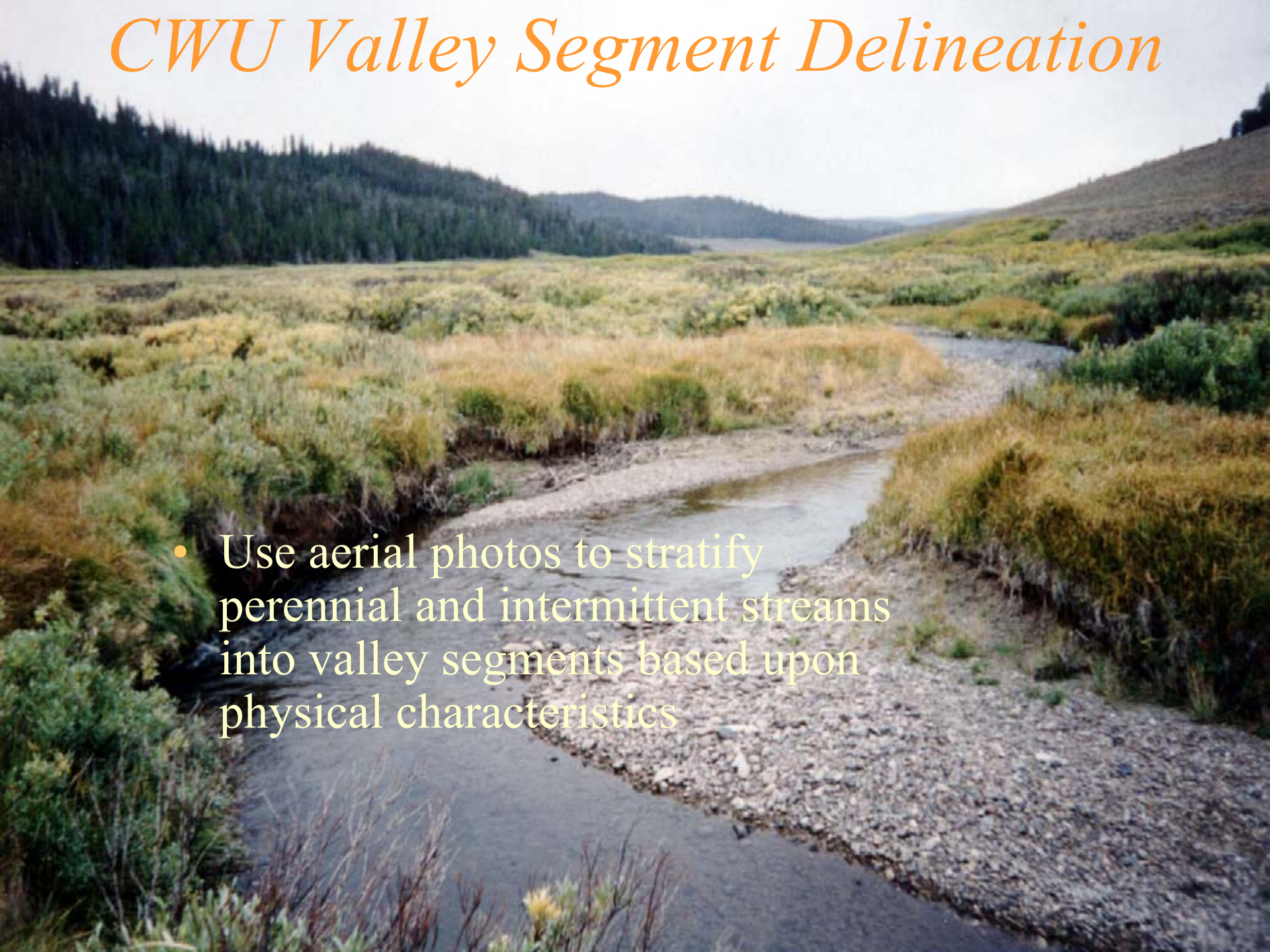


- Delineation of crenulations
- Contour bend angle of 120^{o} or less

Shoshone NF Streams

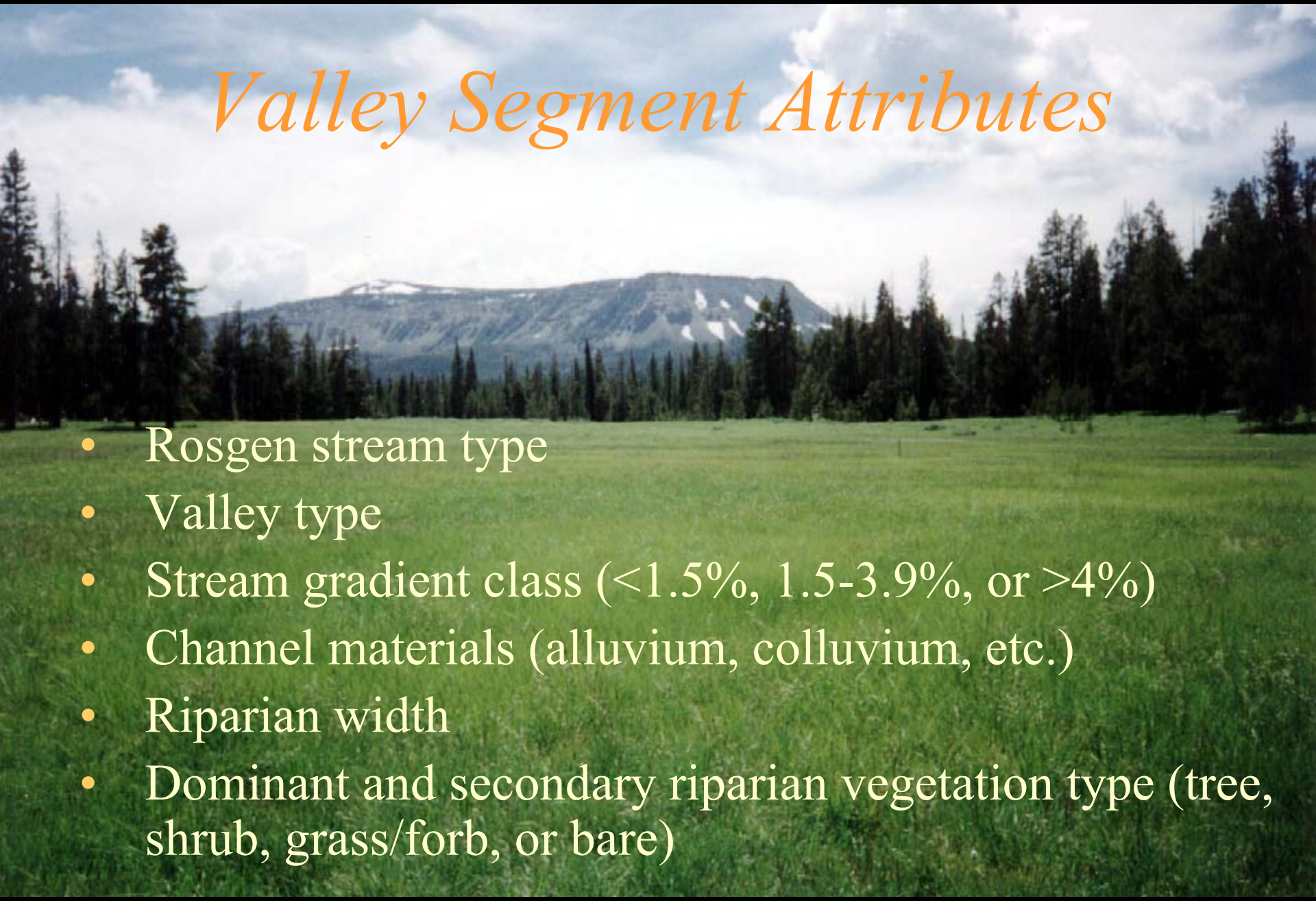
Streams	Miles
Perennial	3,926
Intermittent	4,550
Crenulations	10,319

CWU Valley Segment Delineation



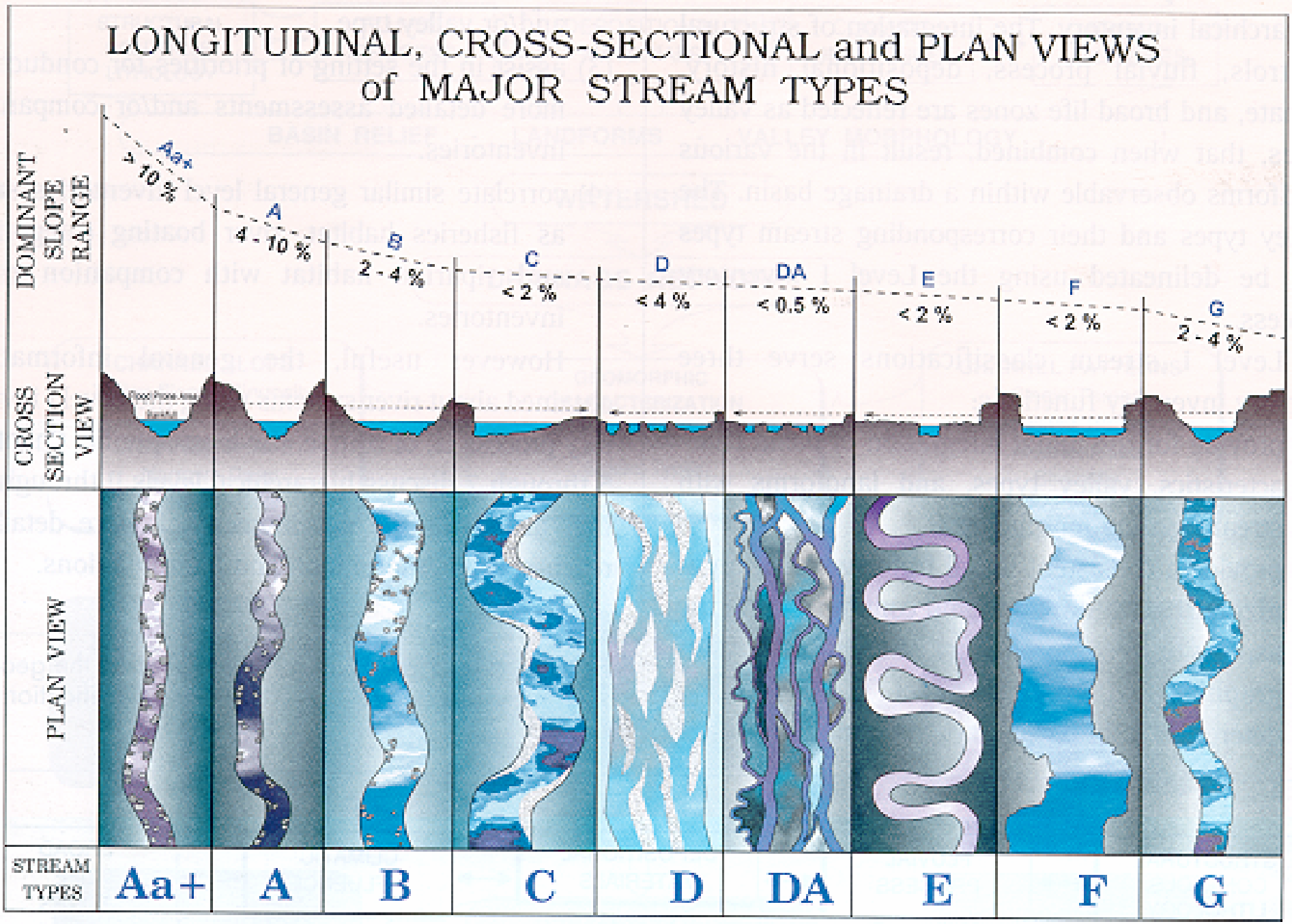
- Use aerial photos to stratify perennial and intermittent streams into valley segments based upon physical characteristics

Valley Segment Attributes



- Rosgen stream type
- Valley type
- Stream gradient class (<1.5%, 1.5-3.9%, or >4%)
- Channel materials (alluvium, colluvium, etc.)
- Riparian width
- Dominant and secondary riparian vegetation type (tree, shrub, grass/forb, or bare)

LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES



Brooks Lake Creek

- "Aa+" Stream Type

Crow Creek

- "B" Stream Type


• “C” Stream Type

- “E” Stream Type

Rosgen Valley Types

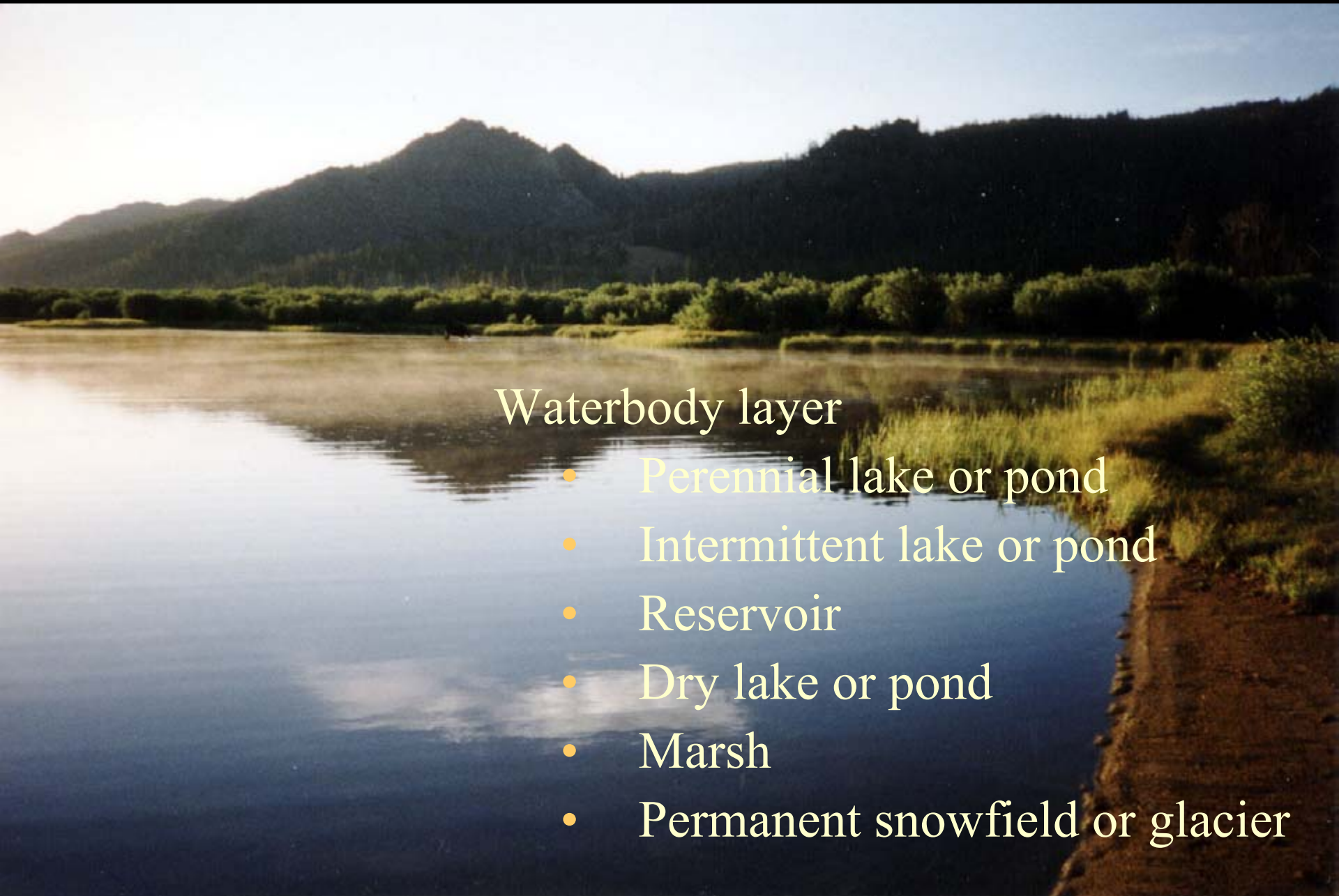
I. V notched canyons (steep)
II. Colluvial valleys (moderately steep)
III. Alluvial fan or debris cone
IV. Gorges and confined alluvial valleys
V. Glaciated Valley ("U" Shaped)
VI. Fault controlled valleys (moderately steep)
VII. Highly dissected fluvial slopes
VIII. Wide/gentle valley with large floodplain and terraces.
IX. Broad valley - glacial outwash or eolian sand dunes
X. Broad valley with larger floodplain

Source: Rosgen, D. 1996. "*Applied River Morphology*"

Channel Materials

- Alluvium
- Colluvium
- Residual
- Bedrock
- Organic
- Mass Movement
- Glacial

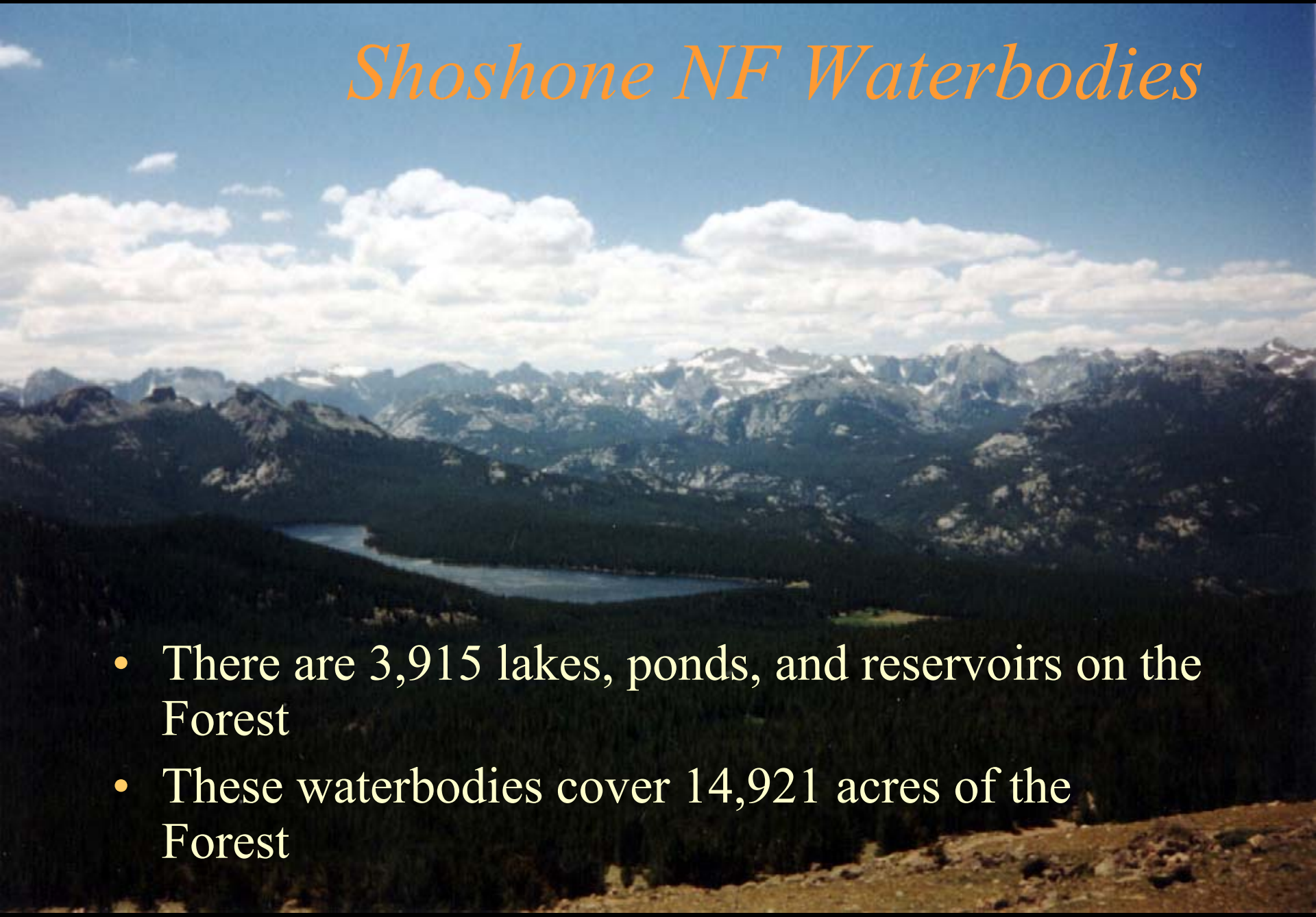
Lacustrine System



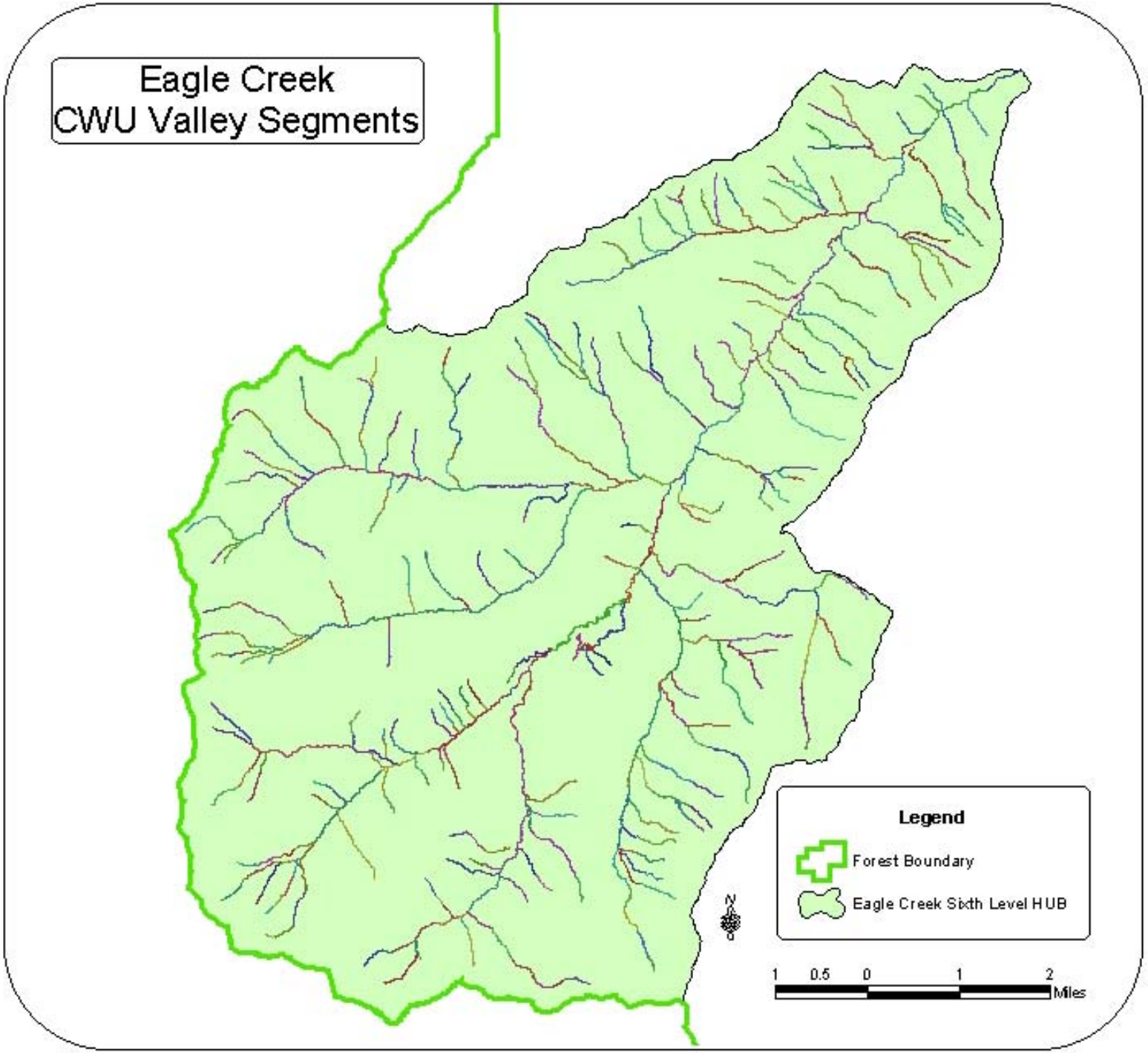
Waterbody layer

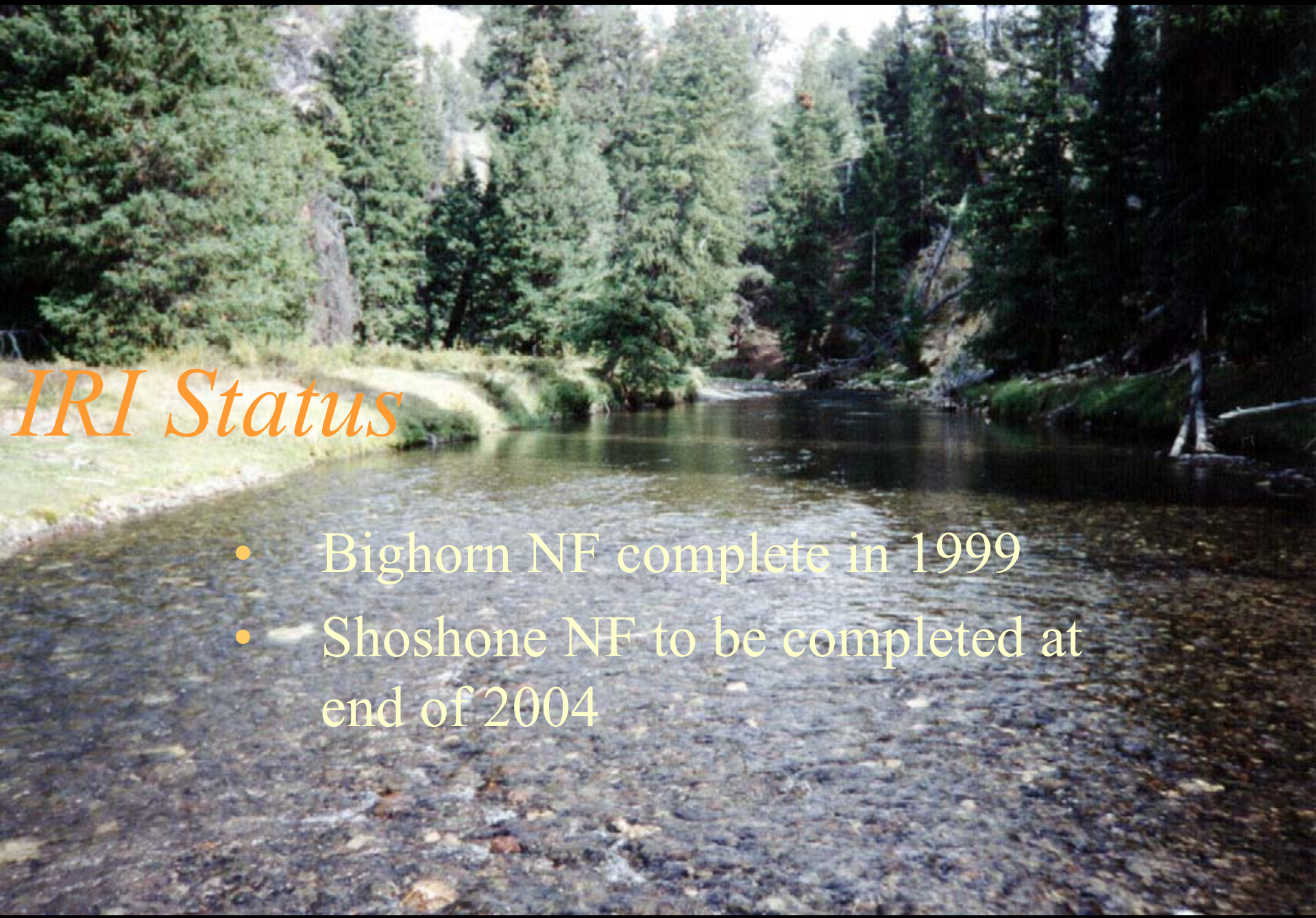
- Perennial lake or pond
- Intermittent lake or pond
- Reservoir
- Dry lake or pond
- Marsh
- Permanent snowfield or glacier

Shoshone NF Waterbodies



- There are 3,915 lakes, ponds, and reservoirs on the Forest
- These waterbodies cover 14,921 acres of the Forest

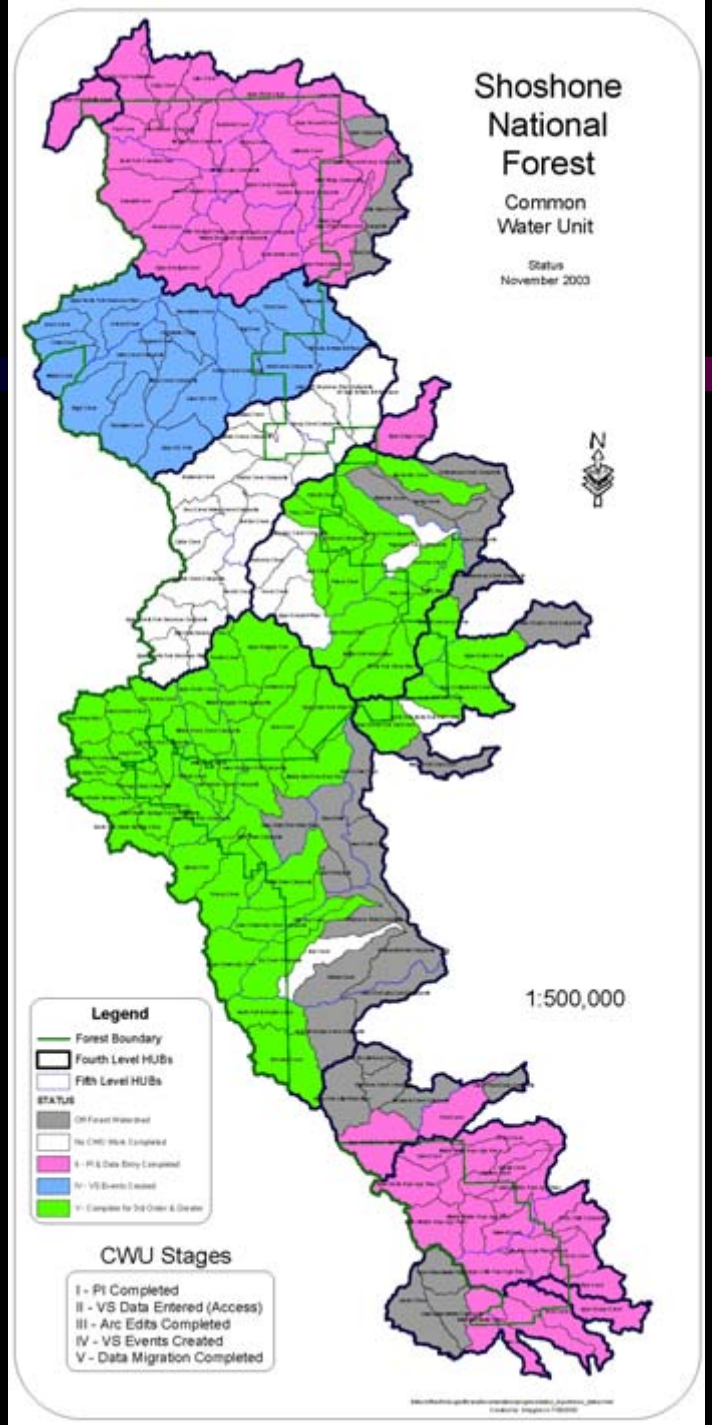

Eagle Creek
CWU Valley Segments
Legend
Forest Boundary
Eagle Creek Sixth Level HUB
N
1 0.5 0 1 2
Miles



IRI Status

- Bighorn NF complete in 1999
- Shoshone NF to be completed at end of 2004

Shoshone NF CWU Status



IRI Uses

- Identify reaches that are sensitive to management activities
- Identify road/stream crossings
- Stratify based on flow regime or stream type

Stream type	Sensitivity to disturbance[a]	Recovery potential[b]	Sediment supply[c]	Streambank erosion potential	Vegetation controlling influence[d]
A1	very low	excellent	very low	very low	negligible
A2	very low	excellent	very low	very low	negligible
A3	very high	very poor	very high	very high	negligible
A4	extreme	very poor	very high	very high	negligible
A5	extreme	very poor	very high	very high	negligible
A6	high	poor	high	high	negligible
B1	very low	excellent	very low	very low	negligible
B2	very low	excellent	very low	very low	negligible
B3	low	excellent	low	low	moderate
B4	moderate	excellent	moderate	low	moderate
B5	moderate	excellent	moderate	moderate	moderate
B6	moderate	excellent	moderate	low	moderate
C1	low	very good	very low	low	moderate
C2	low	very good	low	low	moderate
C3	moderate	good	moderate	moderate	very high
C4	very high	good	high	very high	very high
C5	very high	fair	very high	very high	very high
C6	very high	good	high	high	very high
D3	very high	poor	very high	very high	moderate
D4	very high	poor	very high	very high	moderate
D5	very high	poor	very high	very high	moderate
D6	high	poor	high	high	moderate
Da4	moderate	good	very low	low	very high
DA5	moderate	good	low	low	very high
DA6	moderate	good	very low	very low	very high
E3	high	good	low	moderate	very high
E4	very high	good	moderate	high	very high
E5	very high	good	moderate	high	very high
E6	very high	good	low	moderate	very high
F1	low	fair	low	moderate	low
F2	low	fair	moderate	moderate	low
F3	moderate	poor	very high	very high	moderate
F4	extreme	poor	very high	very high	moderate
F5	very high	poor	very high	very high	moderate
F6	very high	fair	high	very high	moderate
G1	low	good	low	low	low
G2	moderate	fair	moderate	moderate	low
G3	very high	poor	very high	very high	high
G4	extreme	very poor	very high	very high	high
G5	extreme	very poor	very high	very high	high
G6	very high	poor	high	high	high

a Includes increases in streamflow magnitude and timing and/or sediment increases.
b Assumes natural recovery once cause of instability is corrected.
c Includes suspended and bedload from channel derived sources and/or from stream adjacent slopes.
d Vegetation that influences width/depth ratio-stability.

- Stream Type Sensitivity (Rosgen, 1996)

Source: Rosgen, D. 1996. "*Applied River Morphology*"

IRI Contacts

- Bighorn NF
  - Dan Scaife 674-2646, dscaife@fs.fed.us
- Shoshone NF –
  - CWU – Brad Higginson 578-1289, bhigginson@fs.fed.us,
  - CWU – Robert Vannoy 578-1257, rvannoy@fs.fed.us
  - CVU – Myrna Ulmer 587-1211, mulmer@fs.fed.us
  - CLU – Kathy Emerson 587-1283, kmerson@fs.fed.us