First Stop – Sligar's Hot Springs

Hagerman Valley Geology

A Focus on:

The Effect of Large-scale Heterogeneities and Geologic Structures on Spring Spatial Distribution

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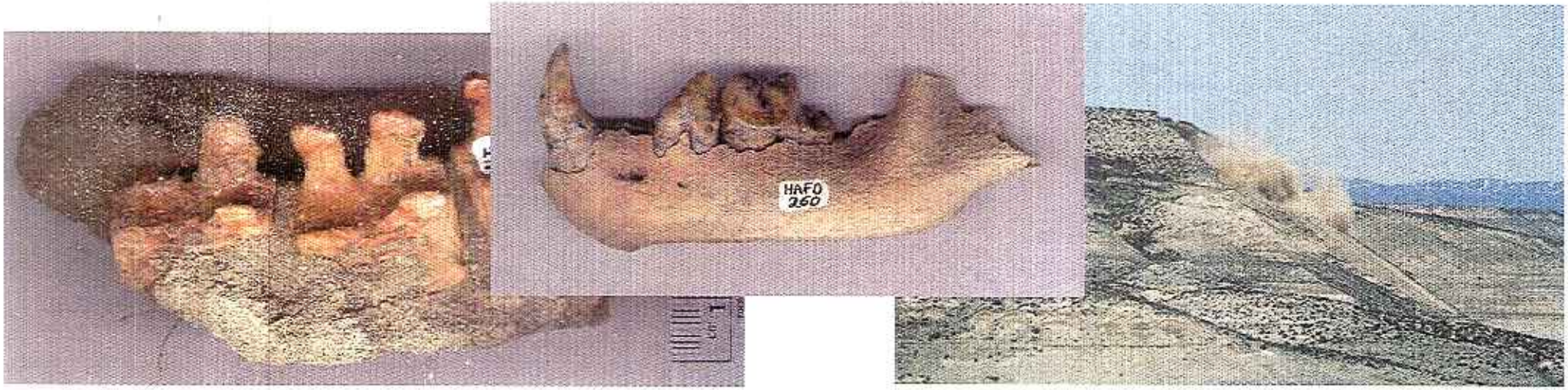
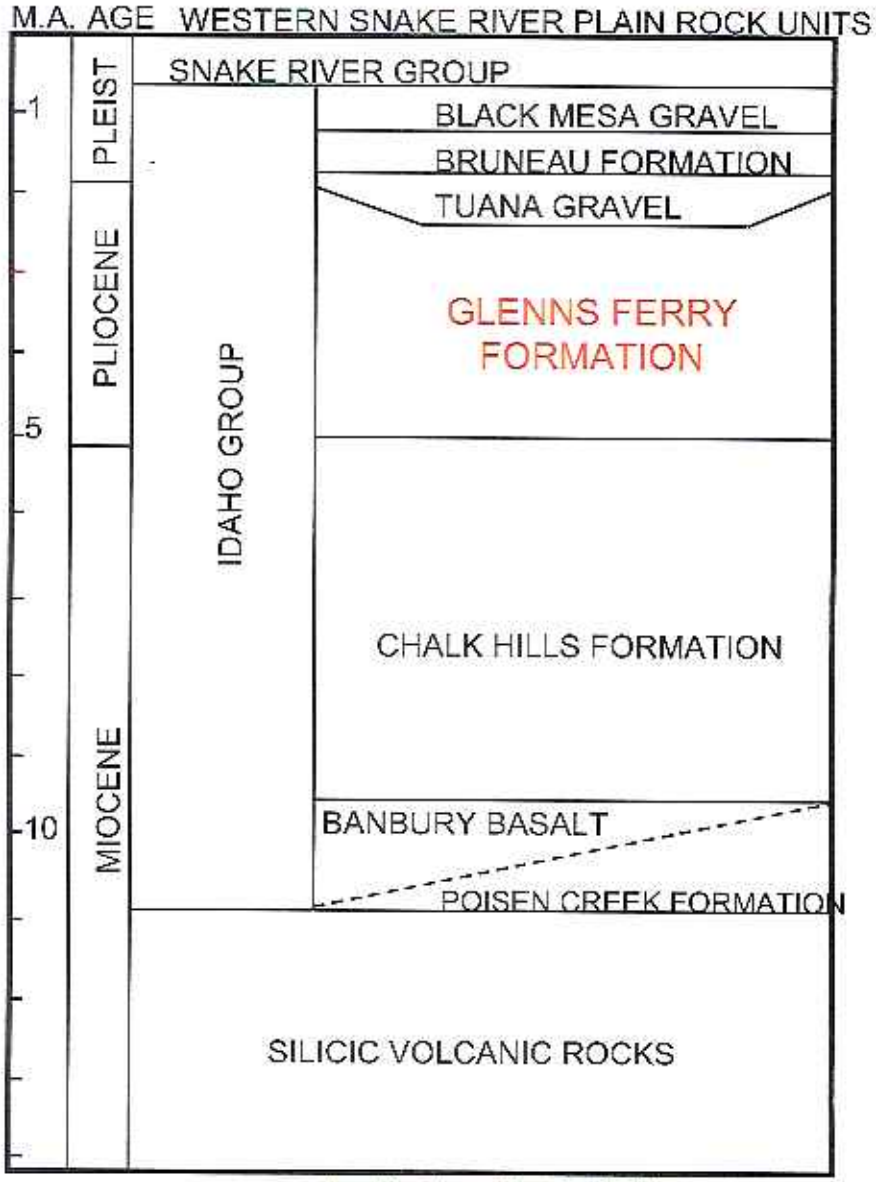


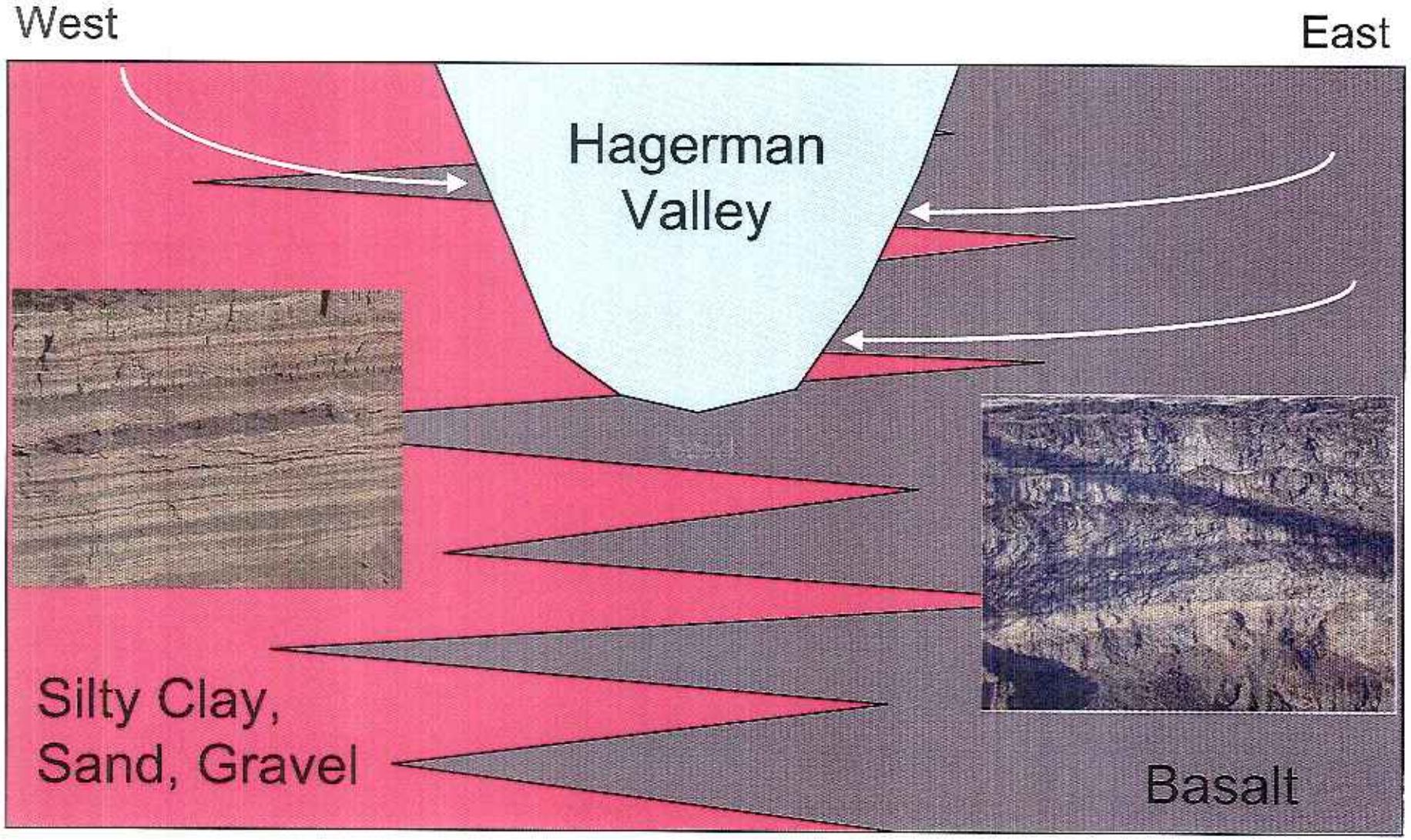
'Lake Idaho'

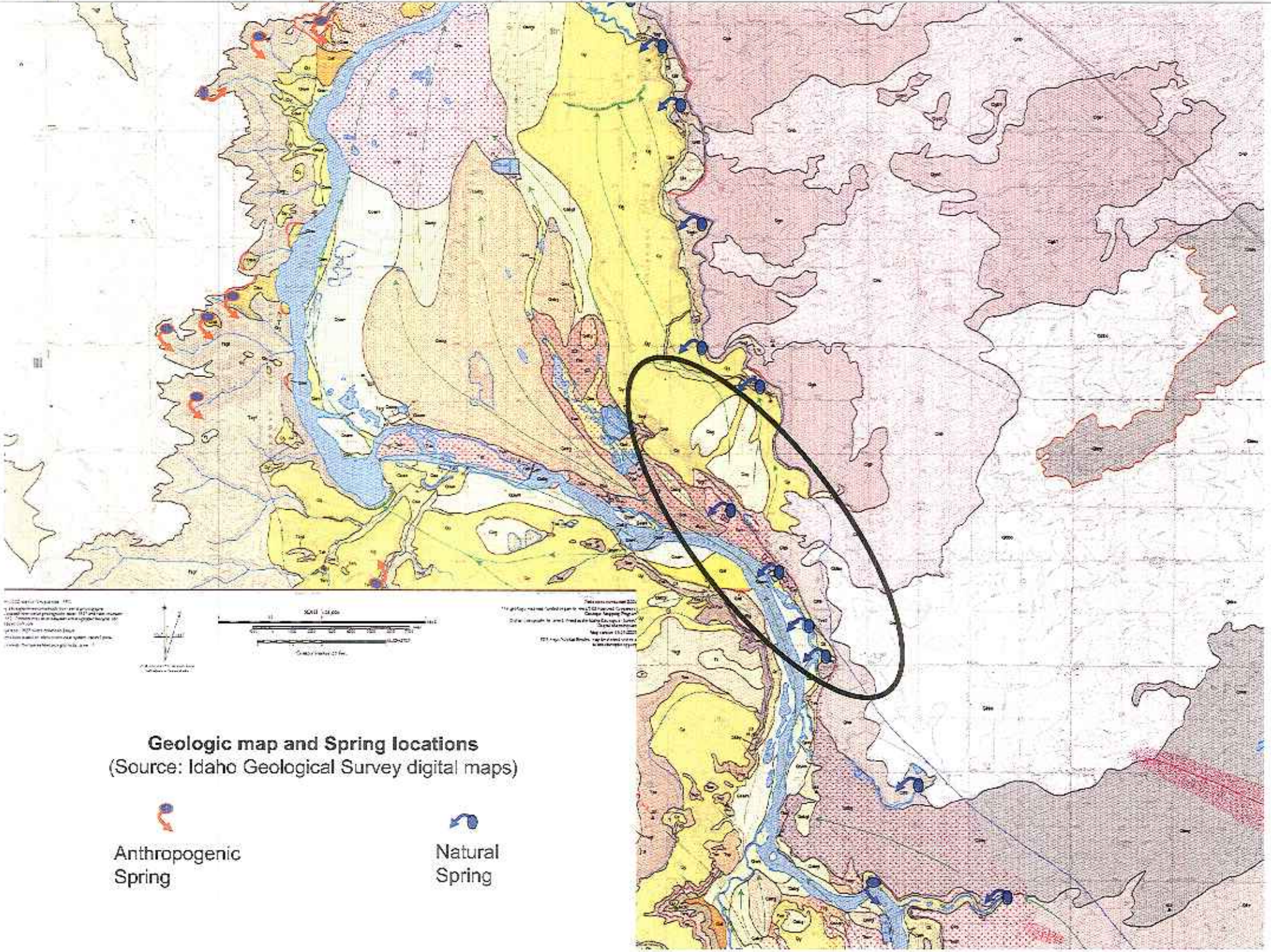
- 5 to 1.5 m.a.
- deposited Glenns Ferry Formation.
- about 50 miles wide and 150 miles long.
- some fossils are radioactive including the official Idaho State Fossil – "The Hagerman Horse".



(modified from Malde, 1972)

"East Meets West" – Geologic Transition Zone of the Eastern and Western Snake River Plain



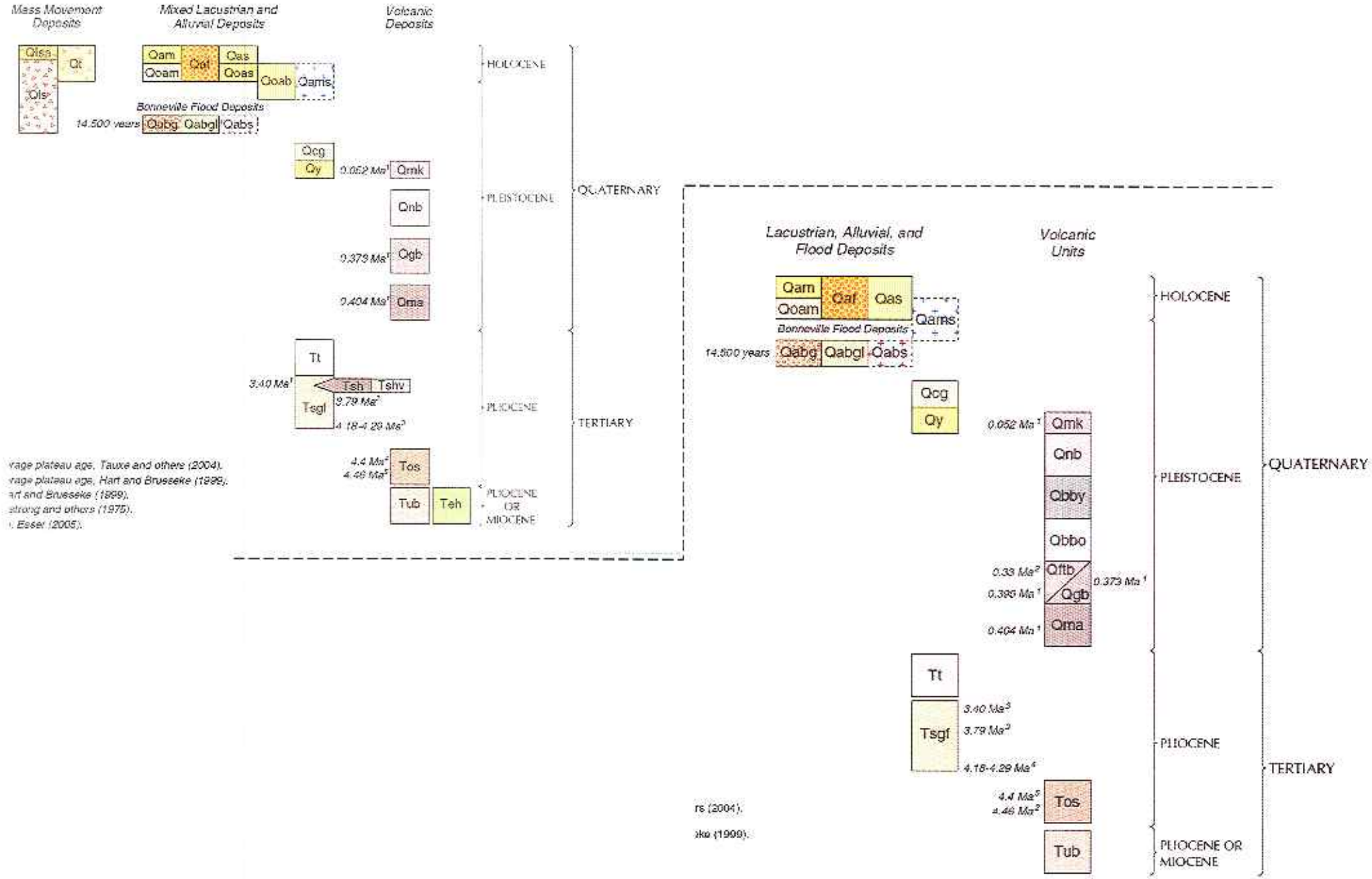


Geologic map and Spring locations
(Source: Idaho Geological Survey digital maps)

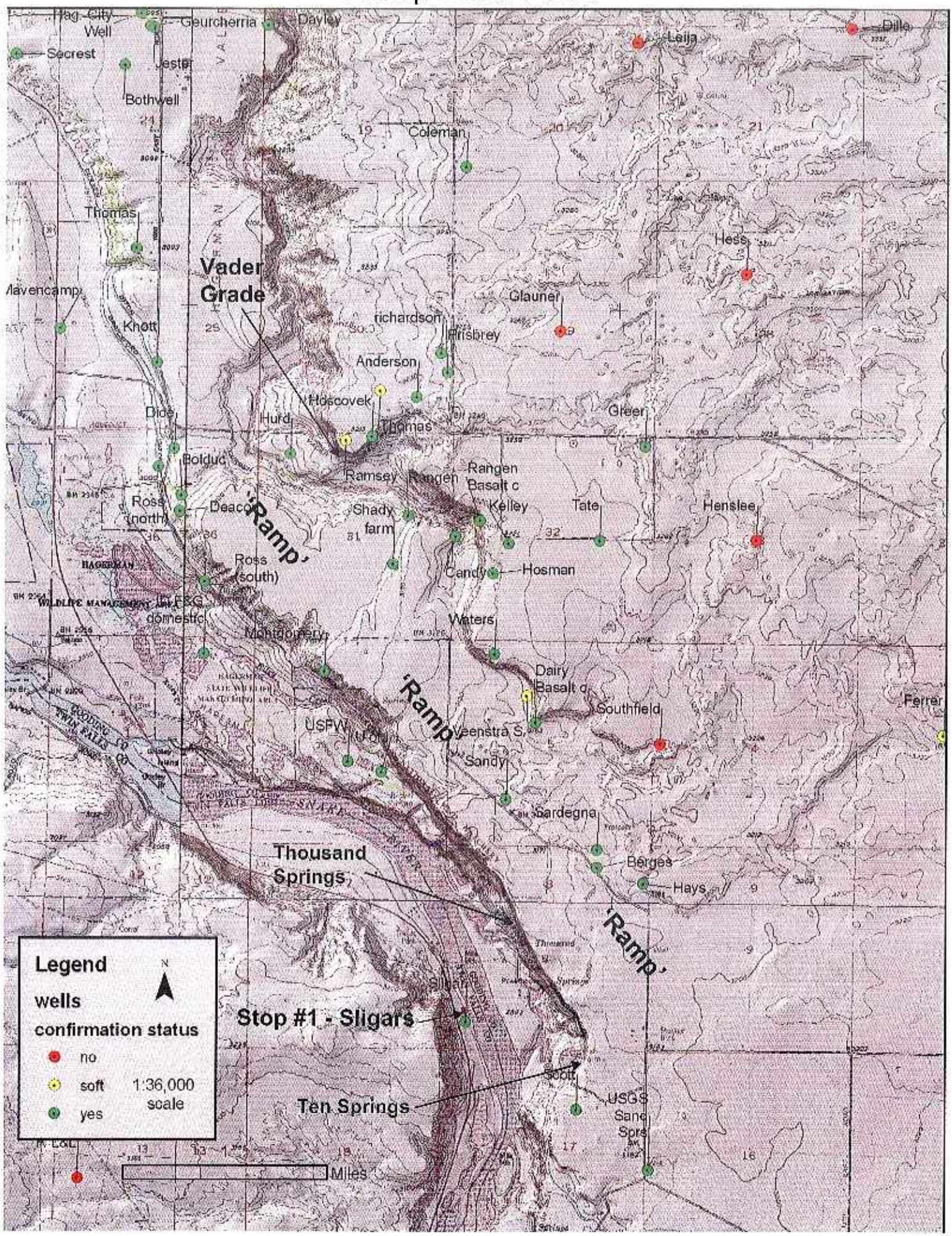
Anthropogenic Spring

Natural Spring

CORRELATION OF MAP UNITS



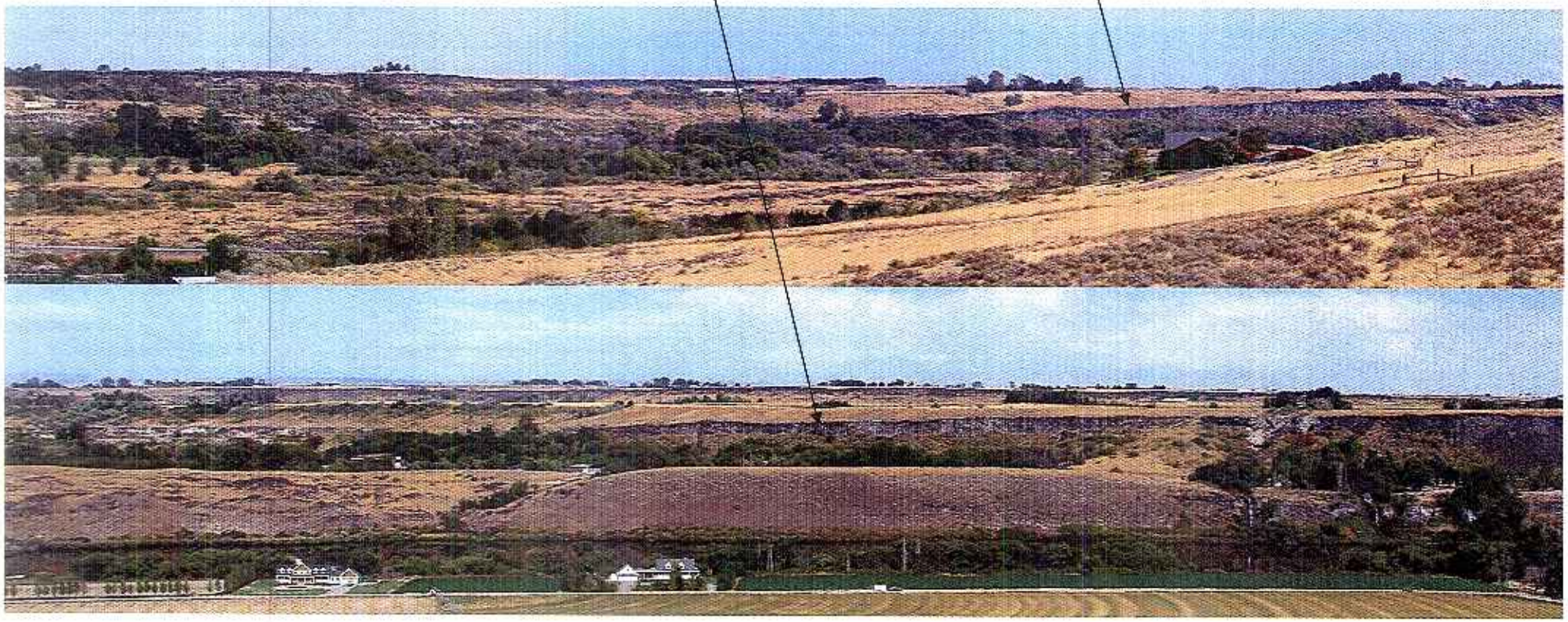
'Ramp' Area Wells



Thousand Springs – note the dip of the springs and contact.

Northwest Dipping Basalt near Thousand Springs

(view azimuth is east)



Conceptual Block Diagram of Geology A-A'

(vertical and horizontal are not to scale)

North West

A

A'

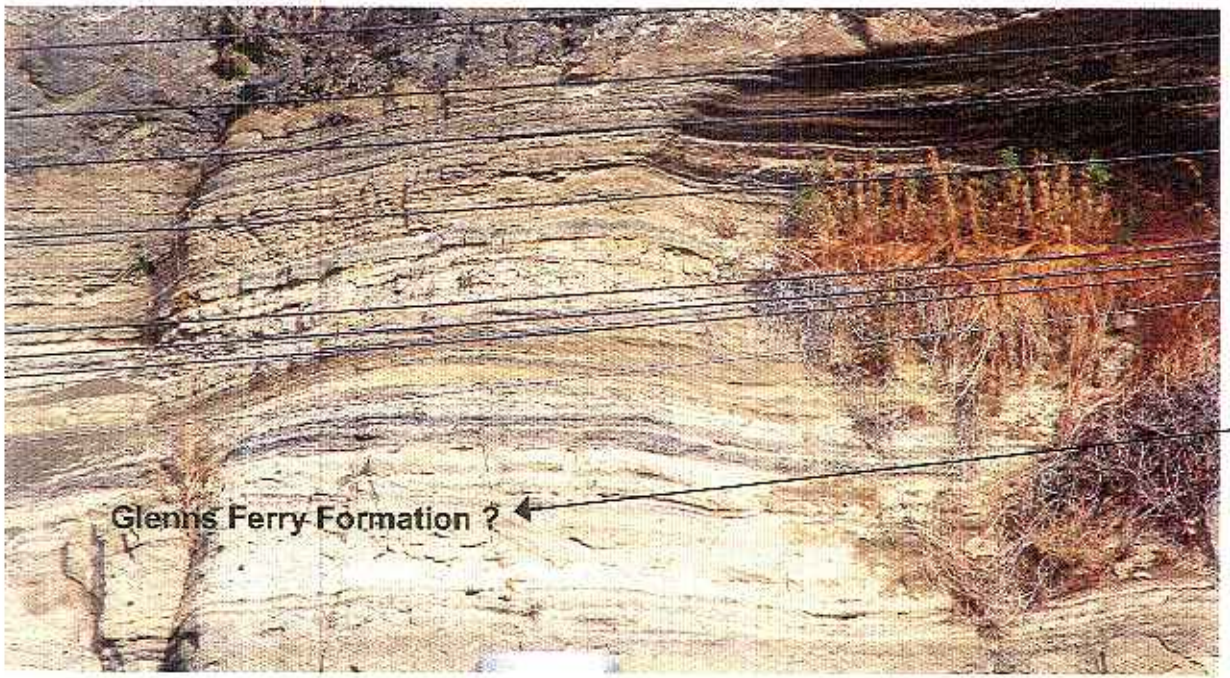
South East

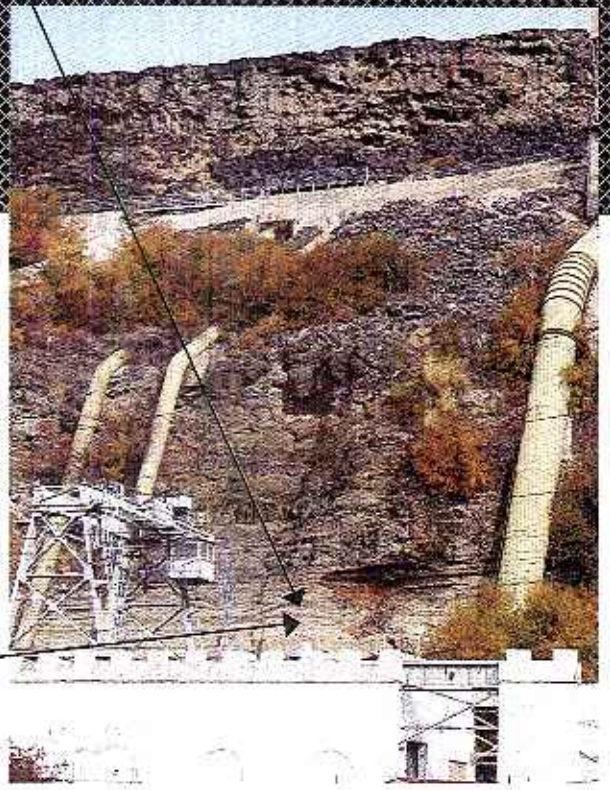
Yahoo Clay Fm.
(50,000 m.a.)

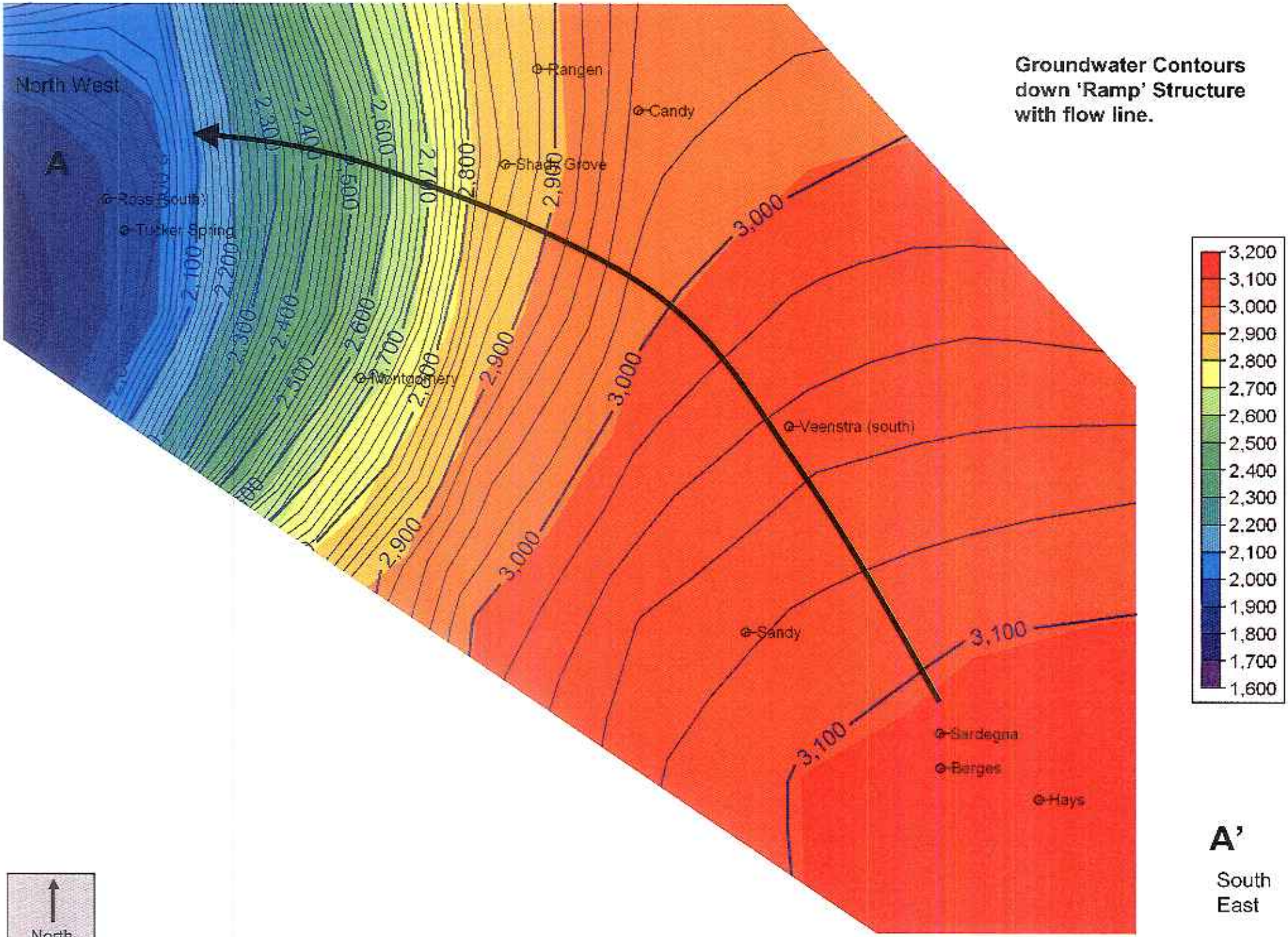
Basalt Flow Contact

Thousand Springs

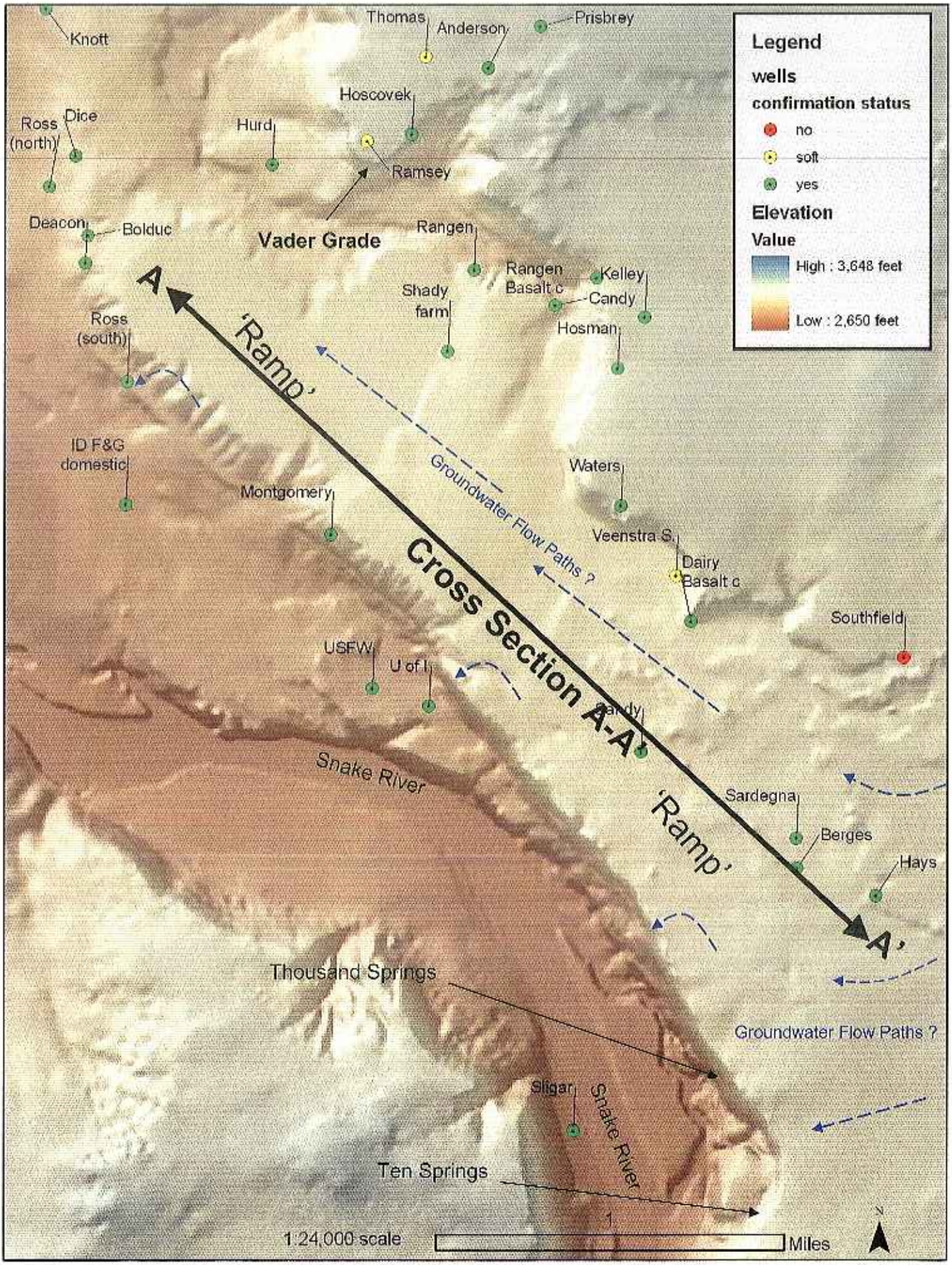
?






Groundwater Contours
down 'Ramp' Structure
with flow line.
North West
A
Rangen
Candy
Shady Grove
Ross South
Trucker Spring
Montgomery
Veenstra (south)
Sandy
Sardegna
Berges
Hays
3,000
2,900
3,100
3,200
3,100
3,000
2,900
2,800
2,700
2,600
2,500
2,400
2,300
2,200
2,100
2,000
1,900
1,800
1,700
1,600
A'
South
East
North

'Ramp' Area Wells



Geologic Dips and Groundwater Flow Direction
Perched Aquifer Flow
Aquifer Flow
Perched Aquifer Flow
Aquifer Flow
Dip of Snake Ash
Dip of Yahoo Basalt
Dip of Thousand Springs Basalt
North
0.5 mile

Northwest Dipping Basalt on west side of Snake River

(view azimuth is to the west from National Fish Hatchery)

Northward Dipping Basalt at Yahoo Creek Intercalated with Glenns Ferry Fm.

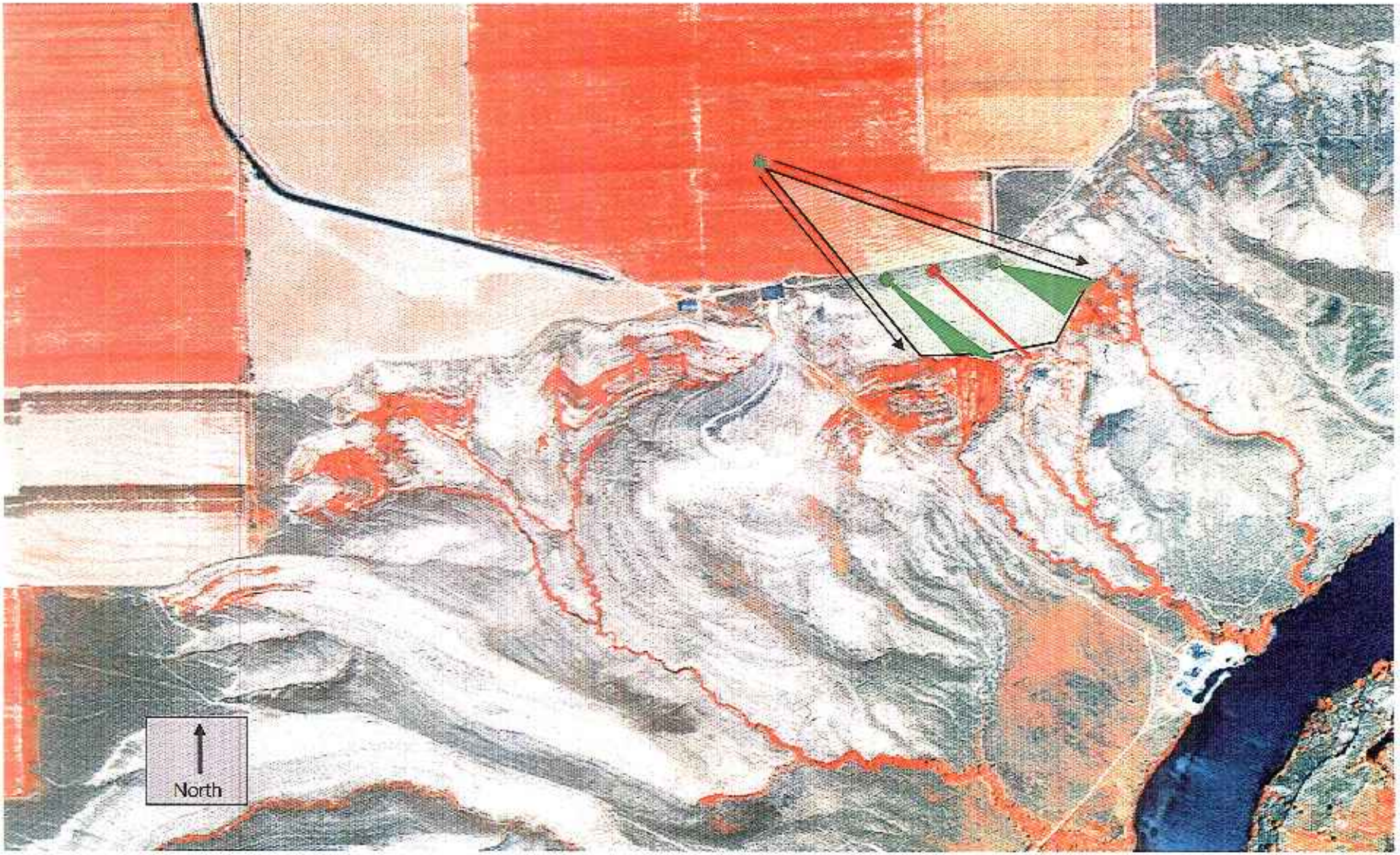
(view azimuth is west)

North Eastward Dipping Ash Interbedded within Glenns Ferry Fm.

(view azimuth is west)

Flourescent dye groundwater tracer tests document direction of groundwater flow is to southeast.

Surveyed geologic outcrops and well logs in this area support a southeast dipping architecture.



Flourescent Dye Groundwater Tracer Tests