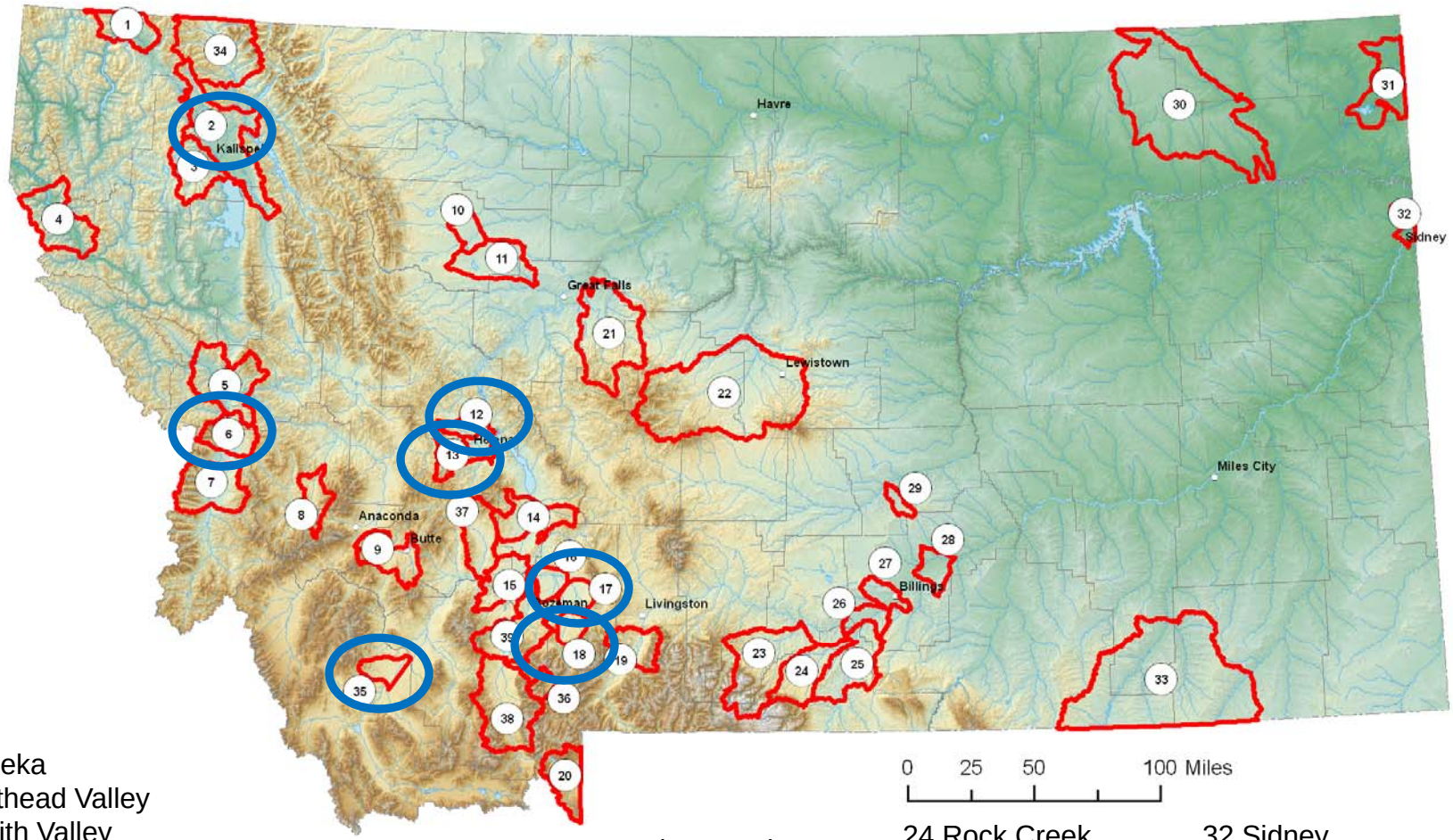
Ground Water Investigation Program

update

John Metesh
Montana Bureau of Mines and Geology
Presented to:
Water Policy Interim Committee
Helena September 21, 2009



1 Eureka
2 Flathead Valley
3 Smith Valley
4 Noxon
5 Missoula Valley
6 Florence
7 Hamilton

8 Georgetown Lake
9 Summit Valley
10 Priest Butte Lake
11 Greenfield Bench
12 North Hills
13 Scratchgravel Hills
14 Townsend, Toston

15 Three Forks
16 Manhattan
17 Belgrade
18 Four Corners
19 Pine Creek
20 W.Yellowstone
21 Belt, Monarch
22 Little Belt Mtns
23 Stillwater Valley

24 Rock Creek
25 Prior Mtns
26 Park City
27 West Billings
28 East Billings
29 Roundup
30 Flaxville gravels (several sub basins)
31 Clear Lake

32 Sidney
33 Coalbed methane (several sub basins)
34 NF Flathead
35 Beaverhead – west
36 Big Sky
37 L Boulder
38 Ennis
39 L Madison

Florence

Missoula
Florence
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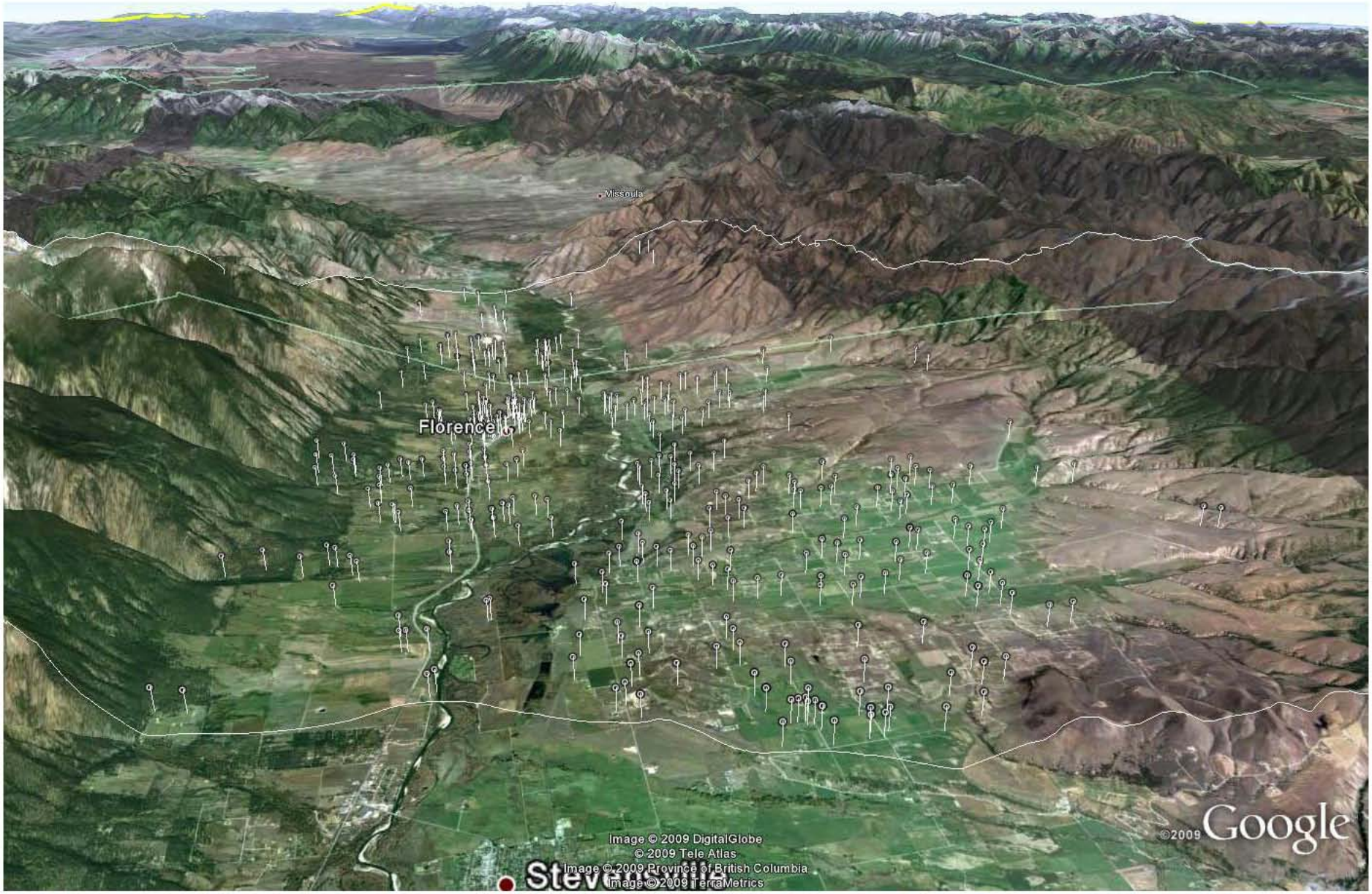
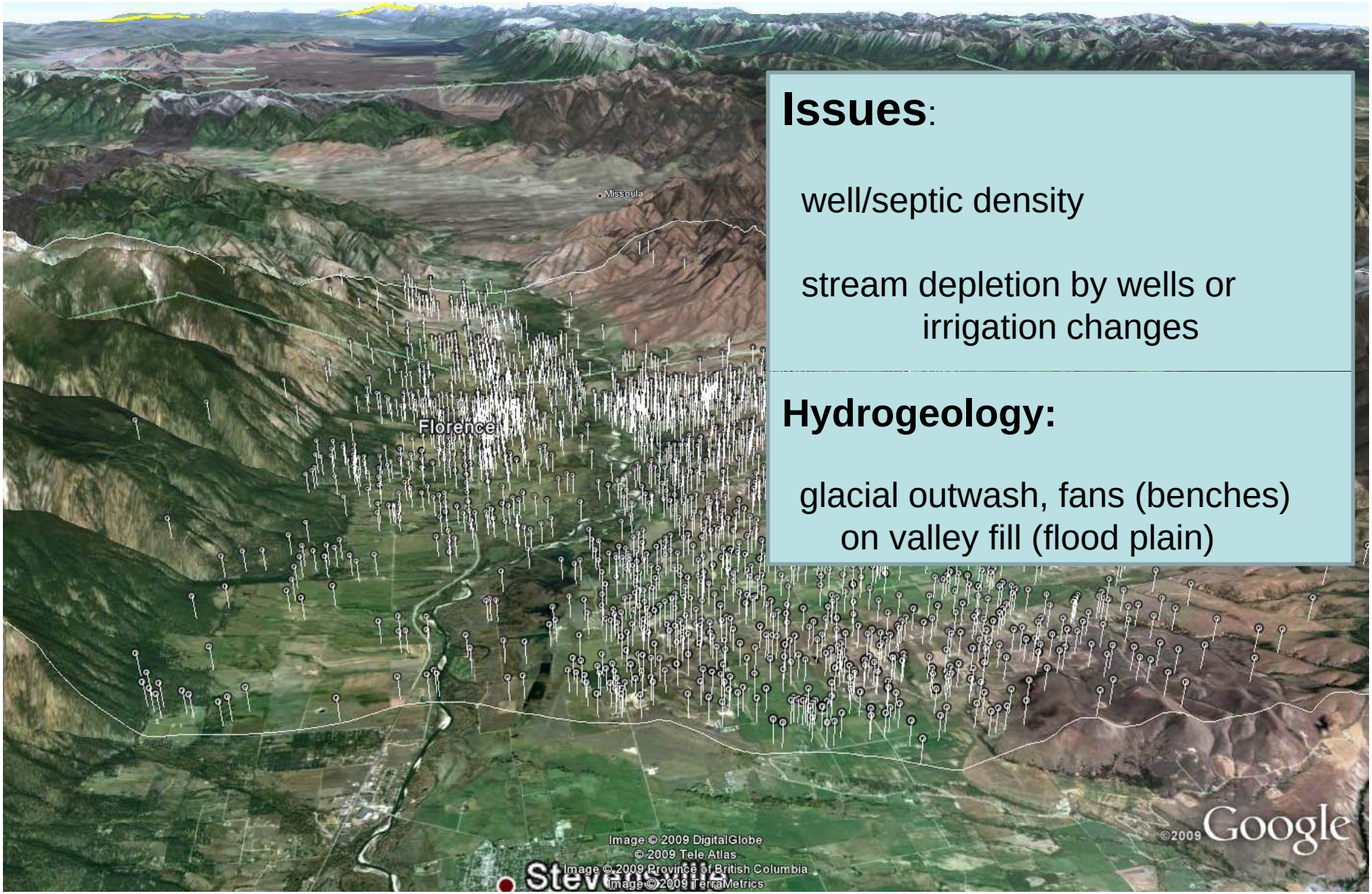
Florence 1975



Florence today



Issues:

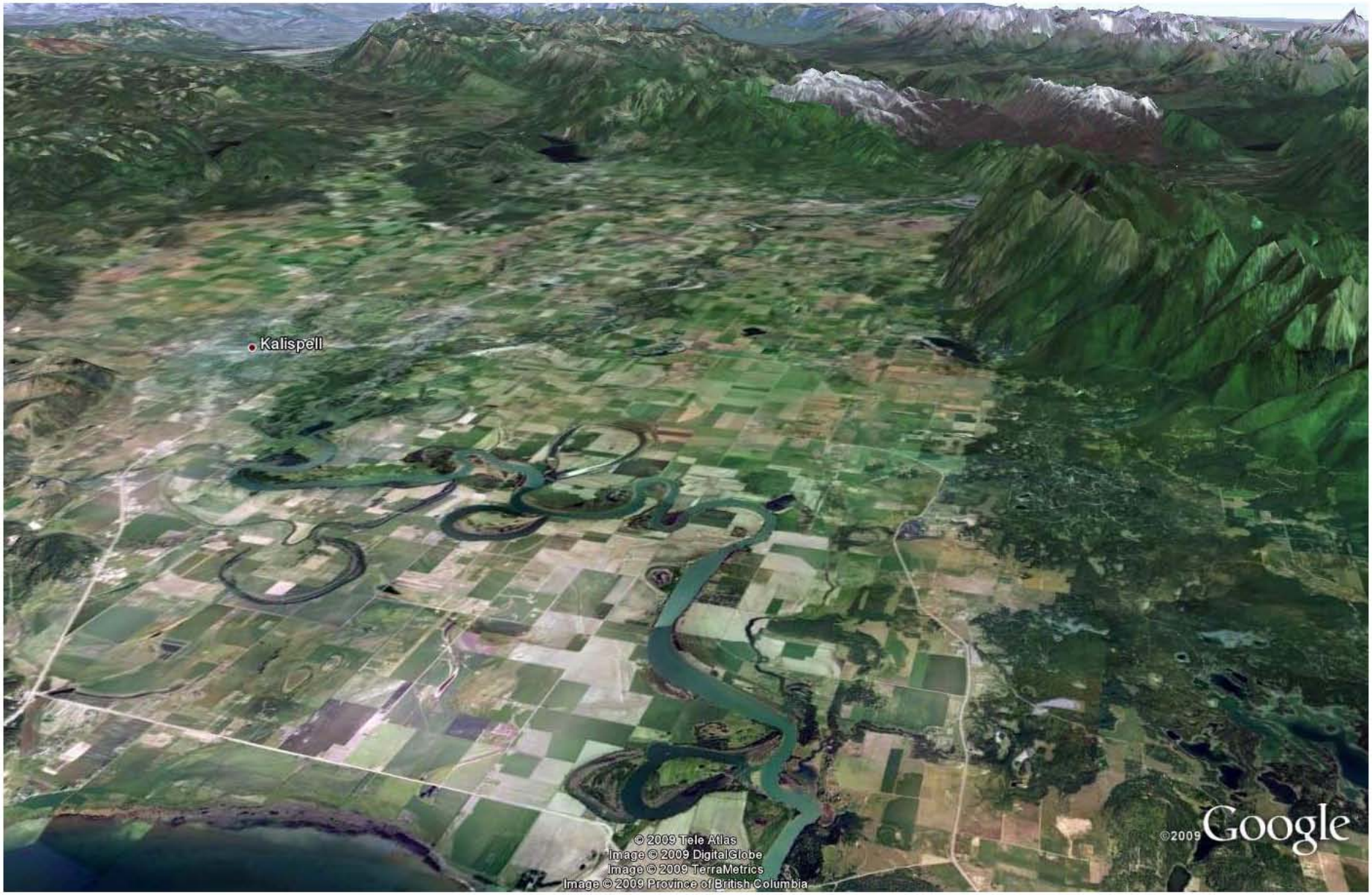
well/septic density

stream depletion by wells or irrigation changes

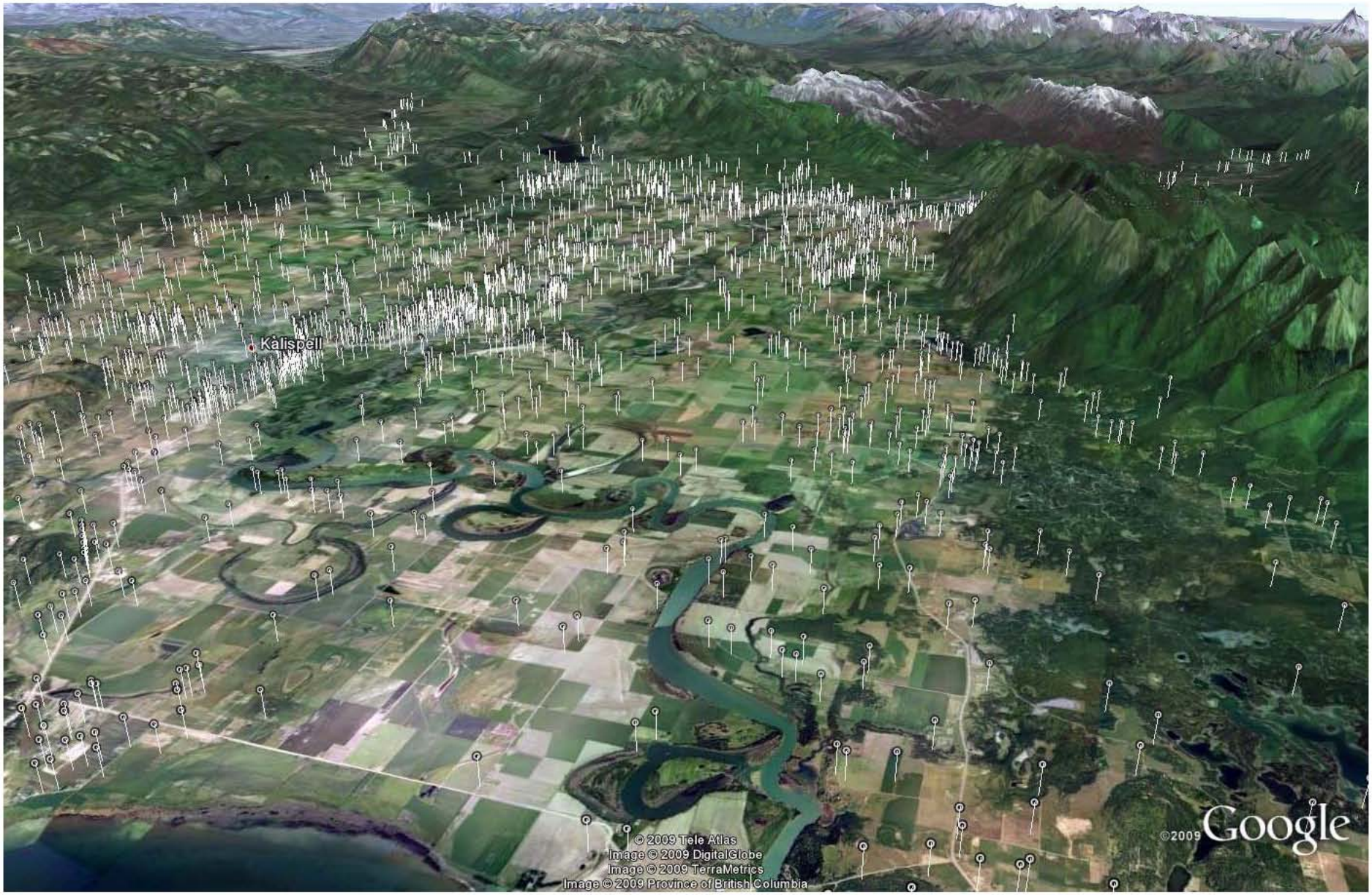
Hydrogeology:

glacial outwash, fans (benches) on valley fill (flood plain)

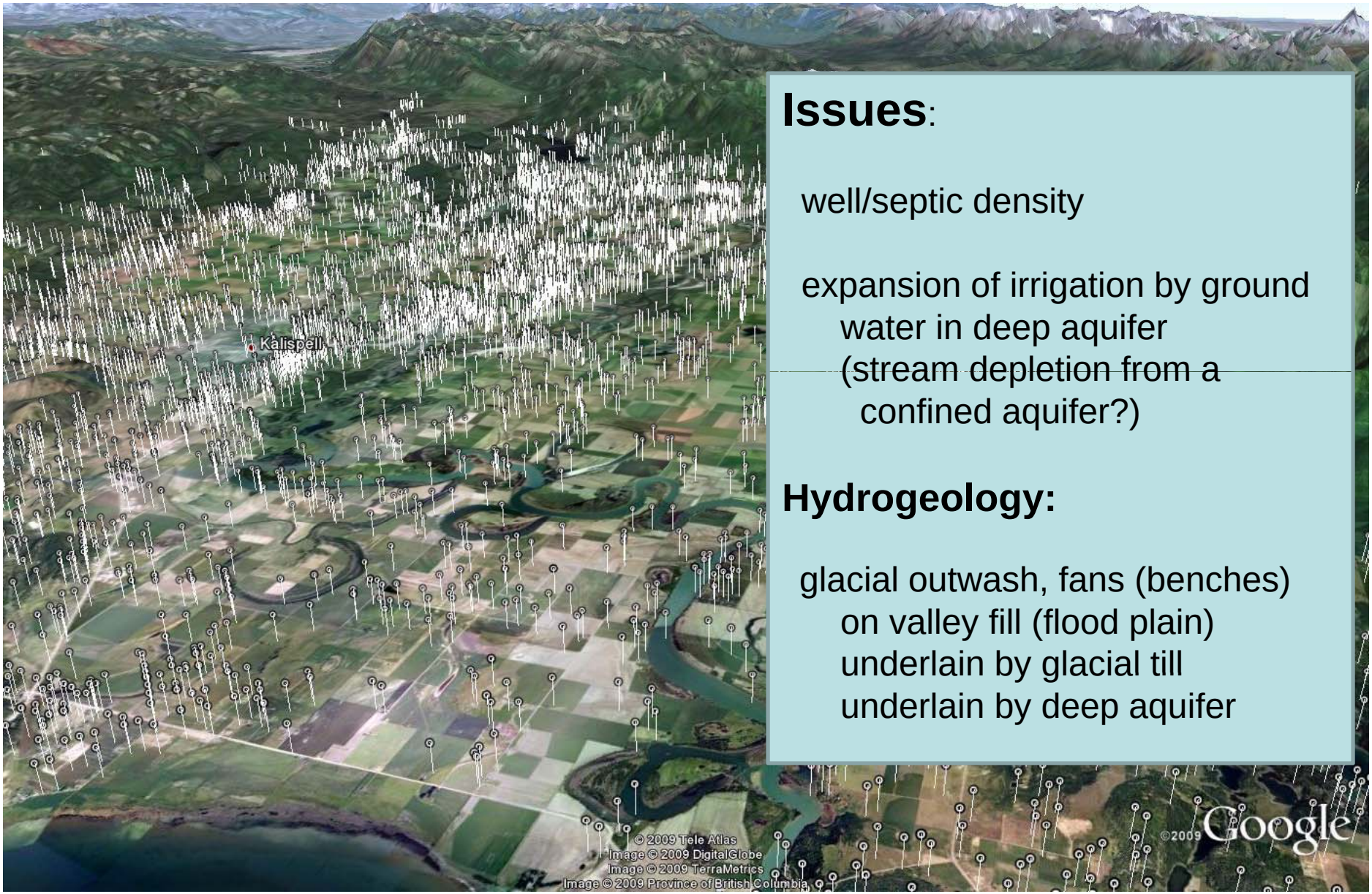
Flathead Valley



Flathead 1975



Flathead today



Issues:

well/septic density

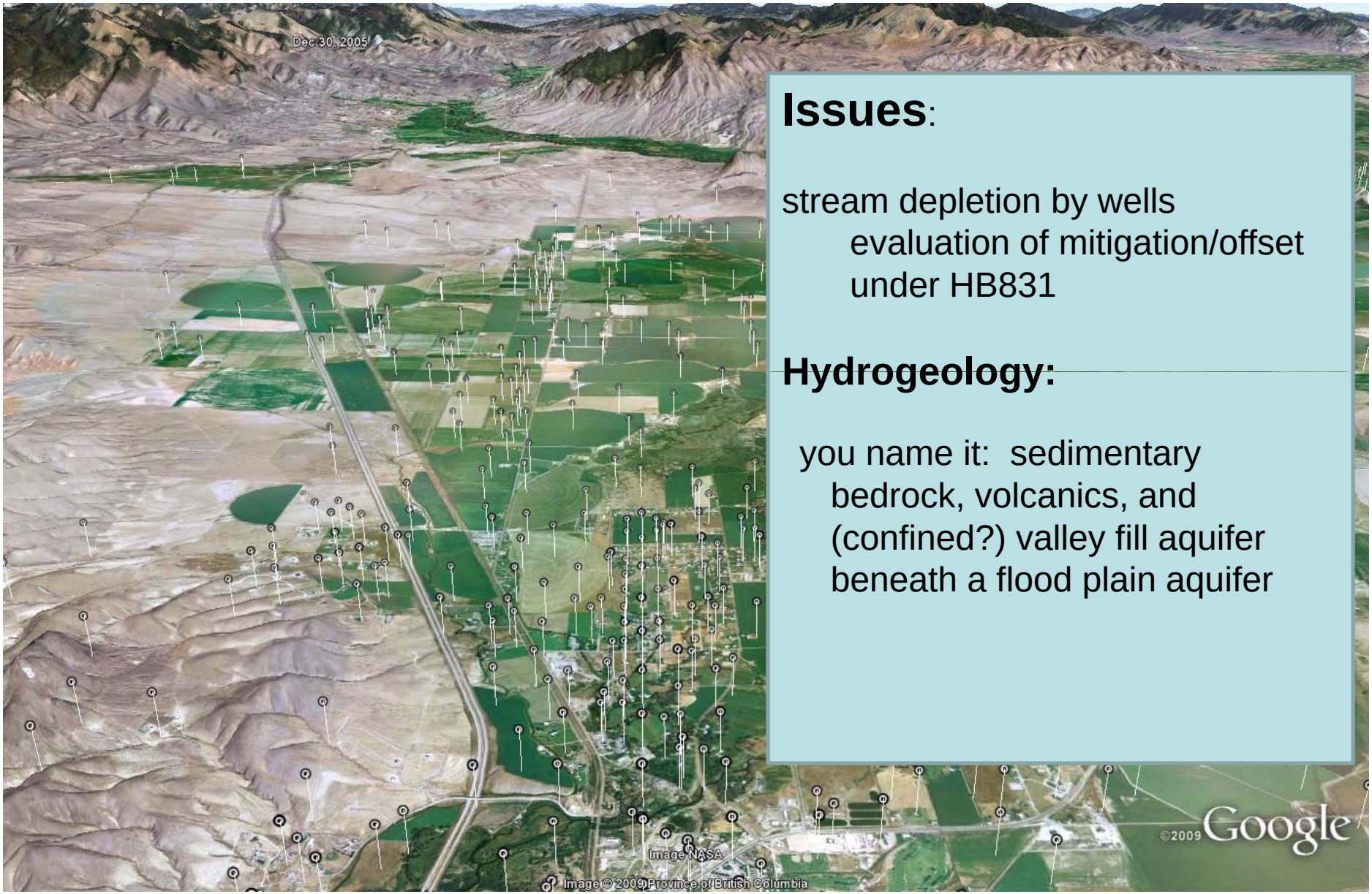
expansion of irrigation by ground water in deep aquifer
(stream depletion from a confined aquifer?)

Hydrogeology:

glacial outwash, fans (benches) on valley fill (flood plain)
underlain by glacial till
underlain by deep aquifer

Beaverhead west

Beaverhead west with wells



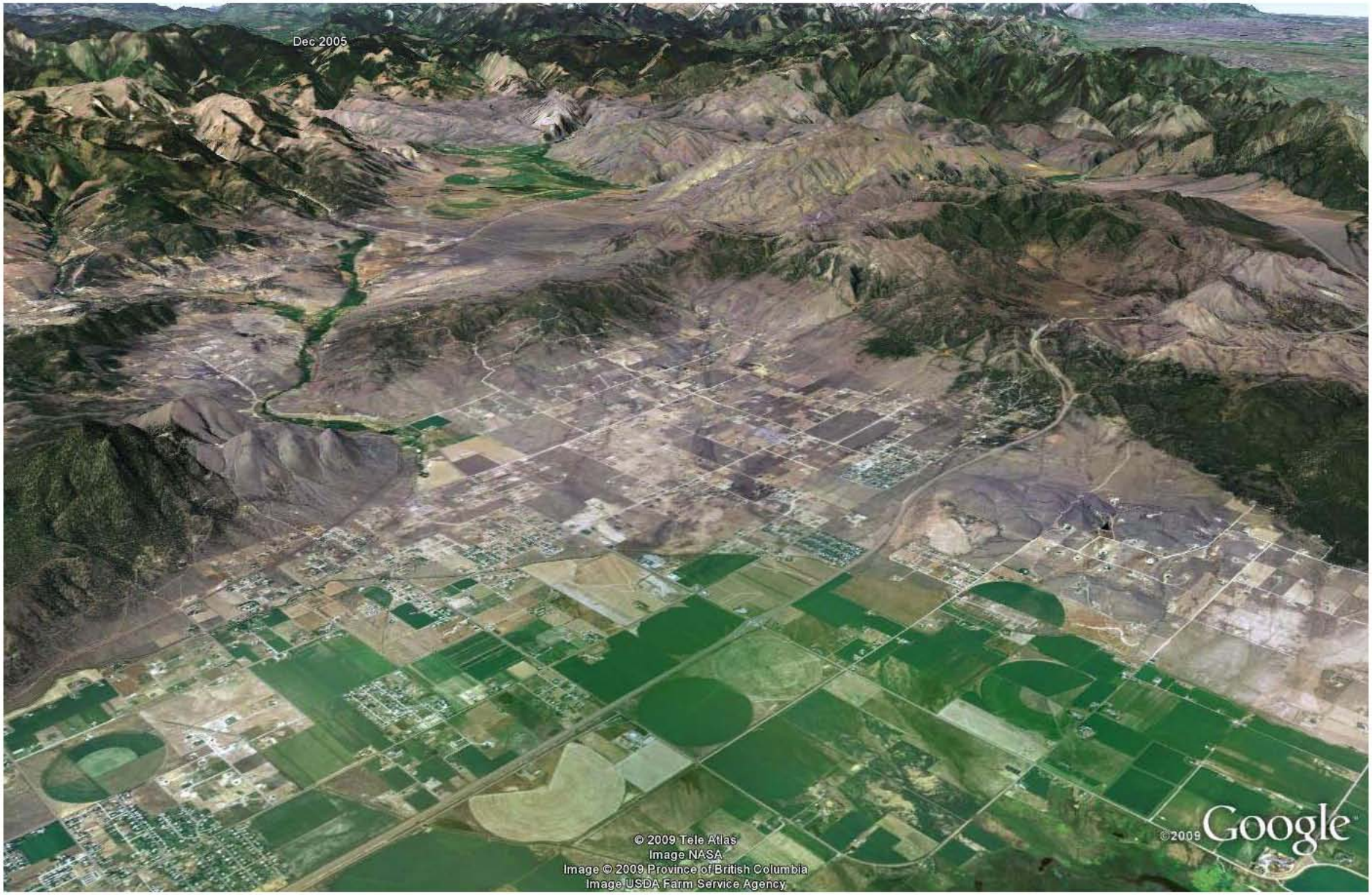
Issues:

stream depletion by wells
evaluation of mitigation/offset under HB831

Hydrogeology:

you name it: sedimentary bedrock, volcanics, and (confined?) valley fill aquifer beneath a flood plain aquifer

North Hills


Dec 2005
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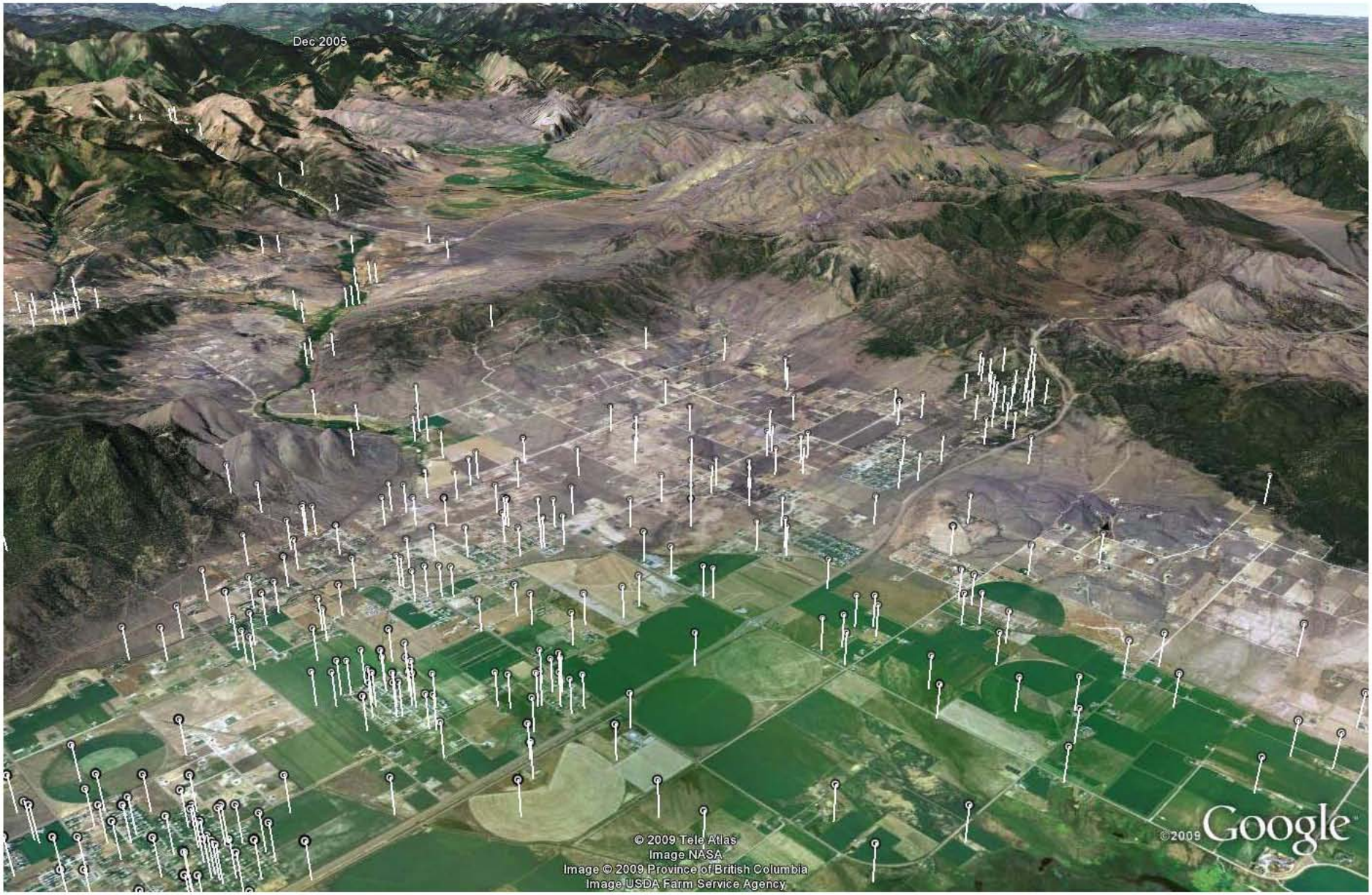
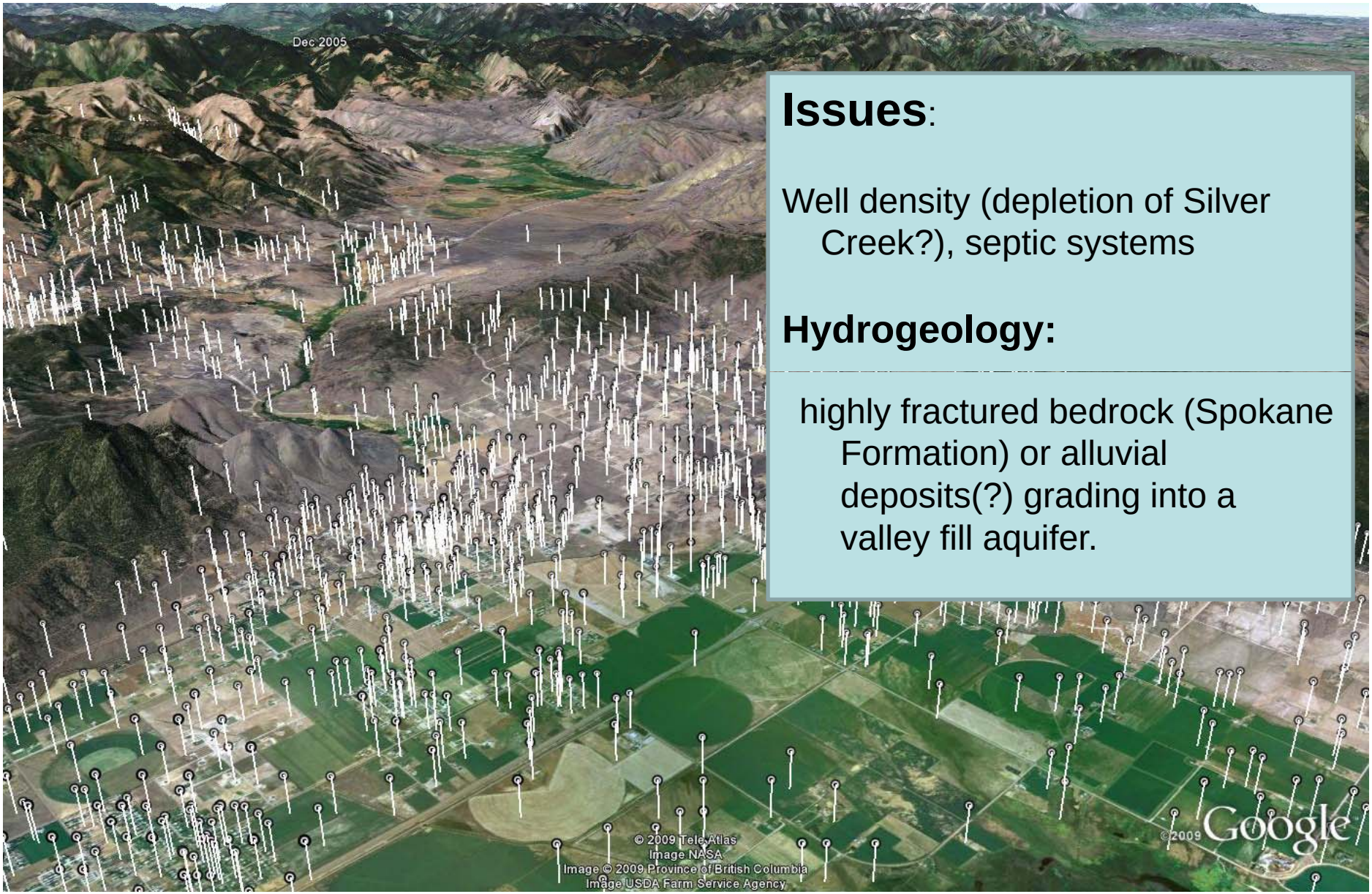
North Hills 1975



North Hills today



Issues:

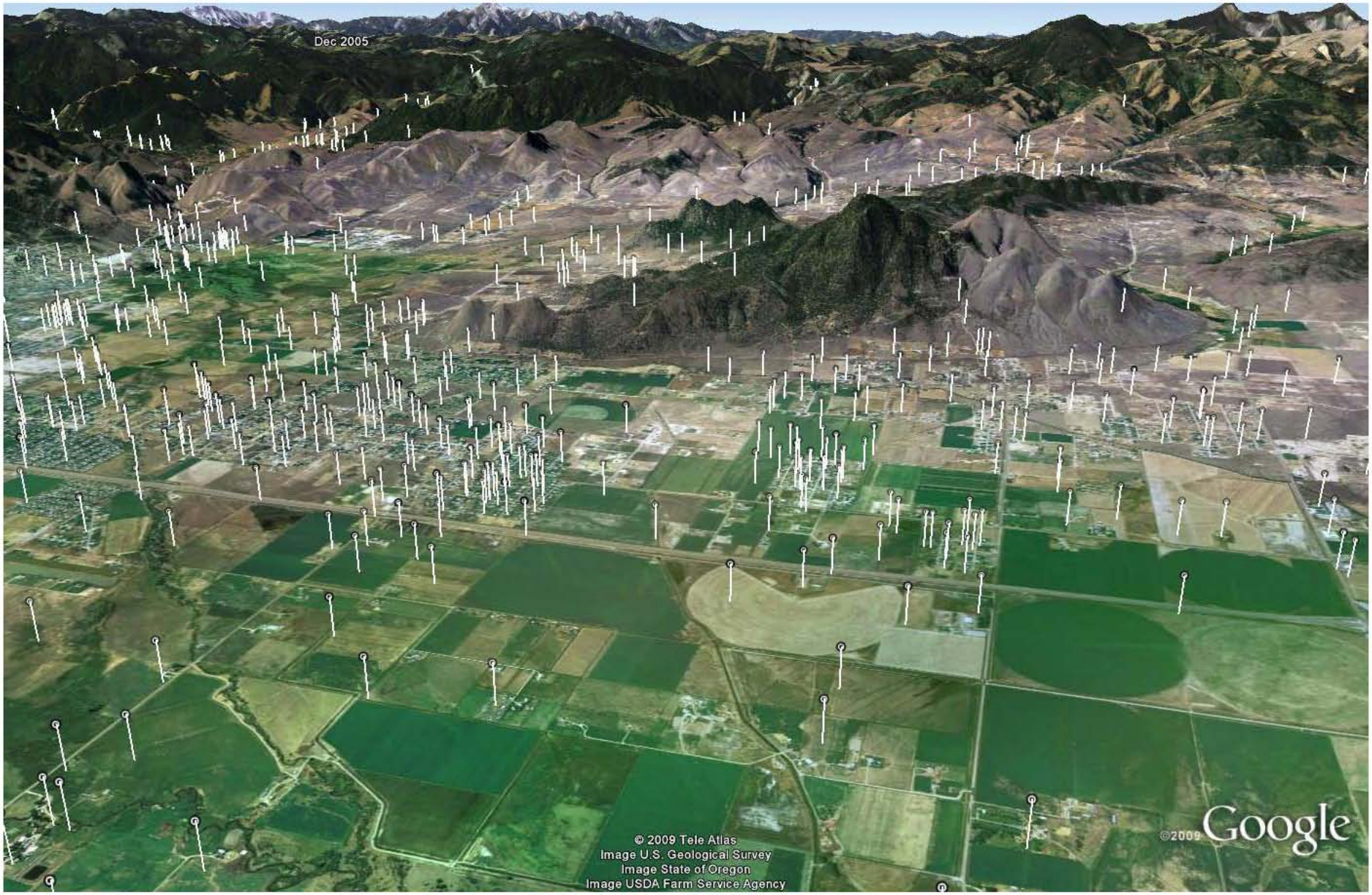
Well density (depletion of Silver Creek?), septic systems

Hydrogeology:

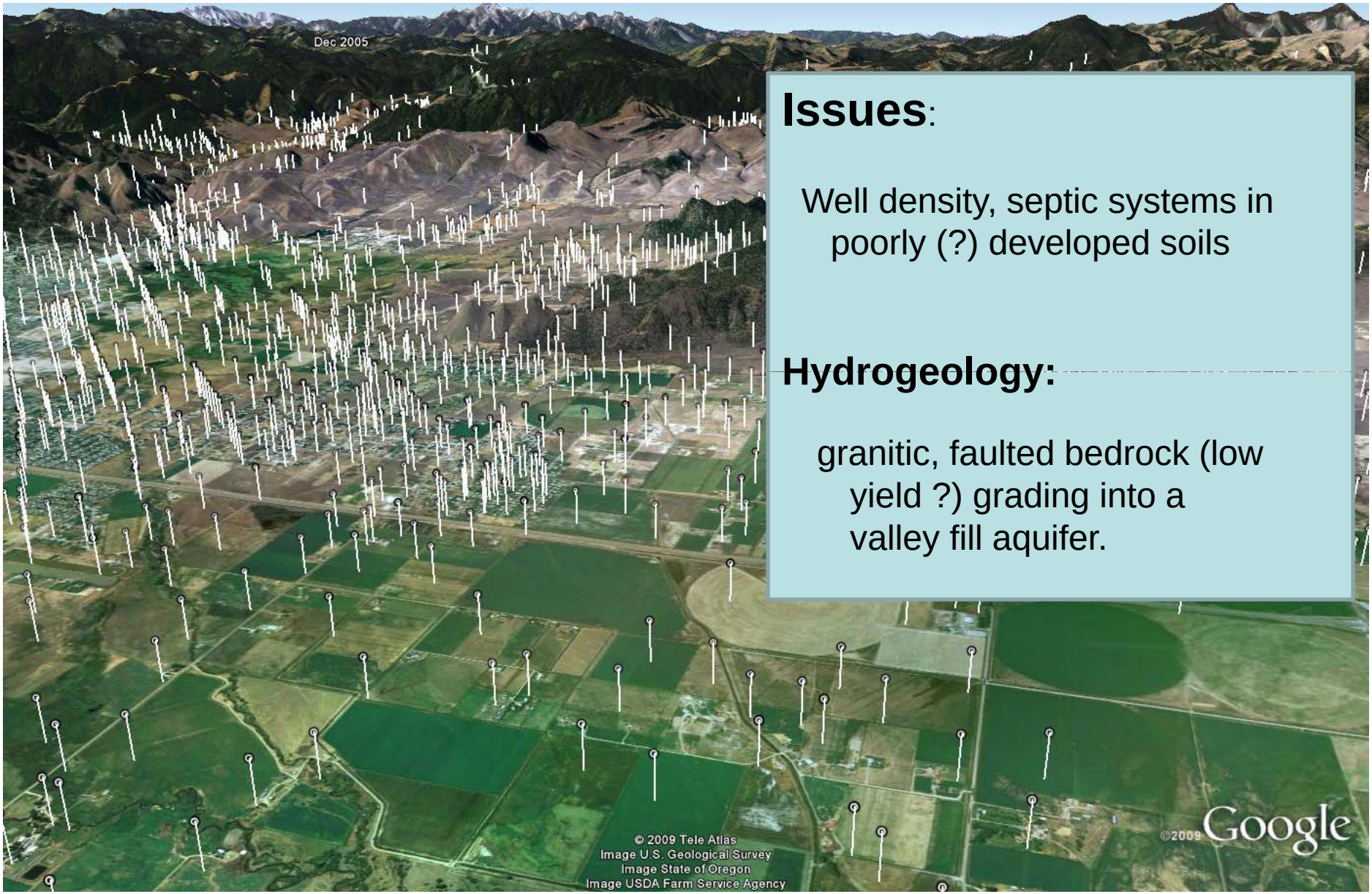
highly fractured bedrock (Spokane Formation) or alluvial deposits(?) grading into a valley fill aquifer.

Scratch Gravel Hills

Scratch Gravel Hills 1975



Scratch Gravel Hills today



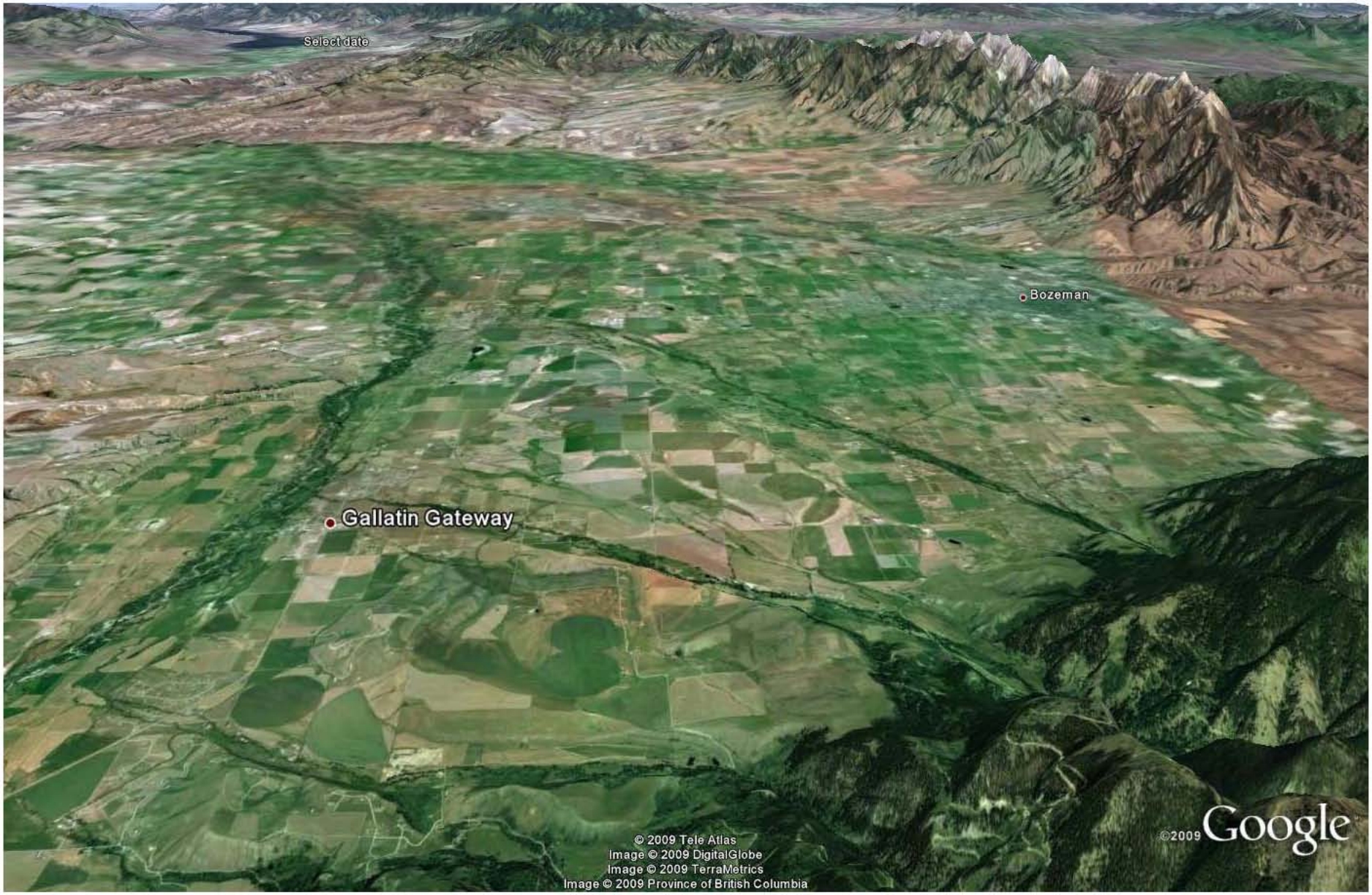
Issues:

Well density, septic systems in poorly (?) developed soils

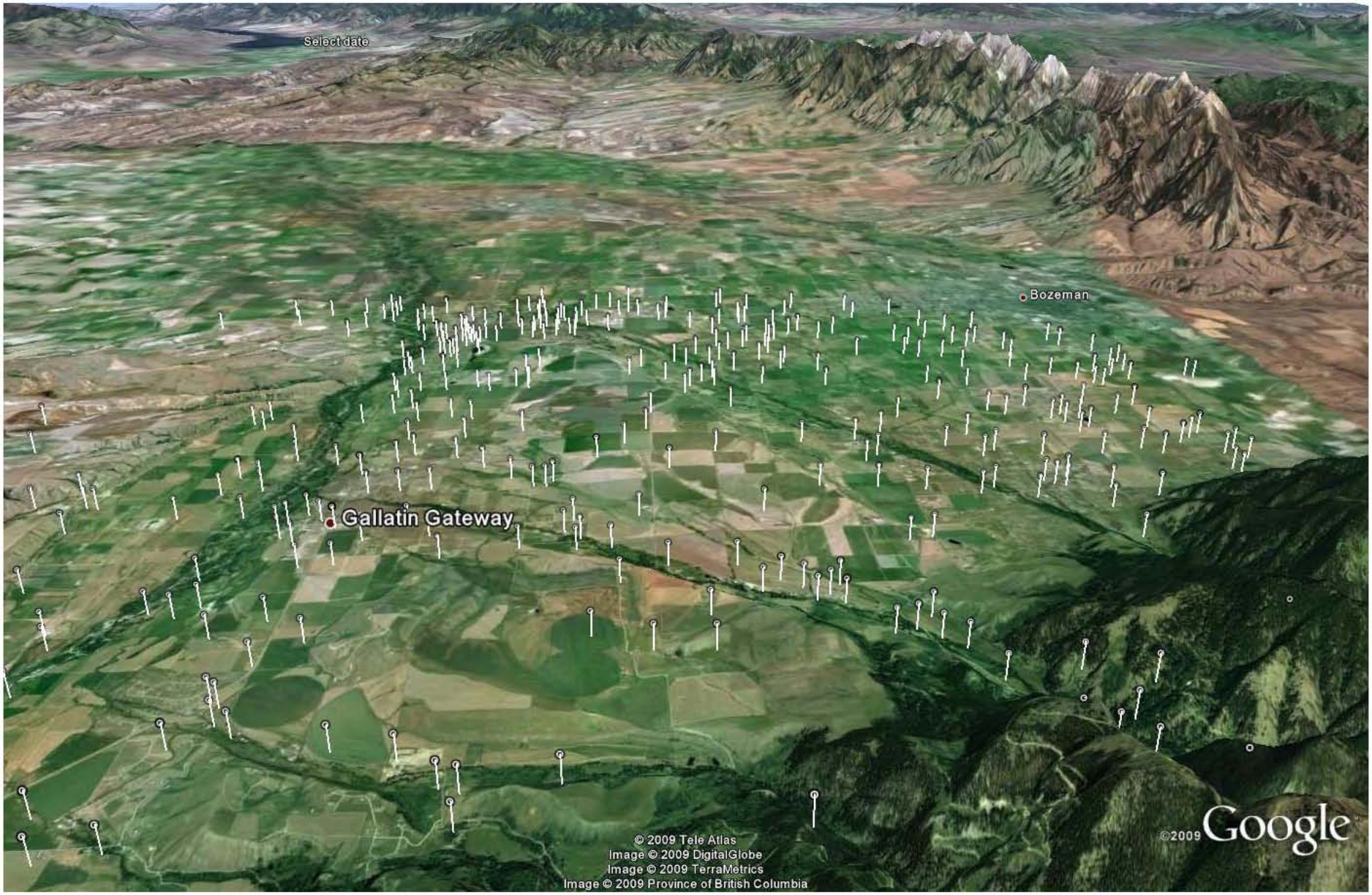
Hydrogeology:

granitic, faulted bedrock (low yield ?) grading into a valley fill aquifer.

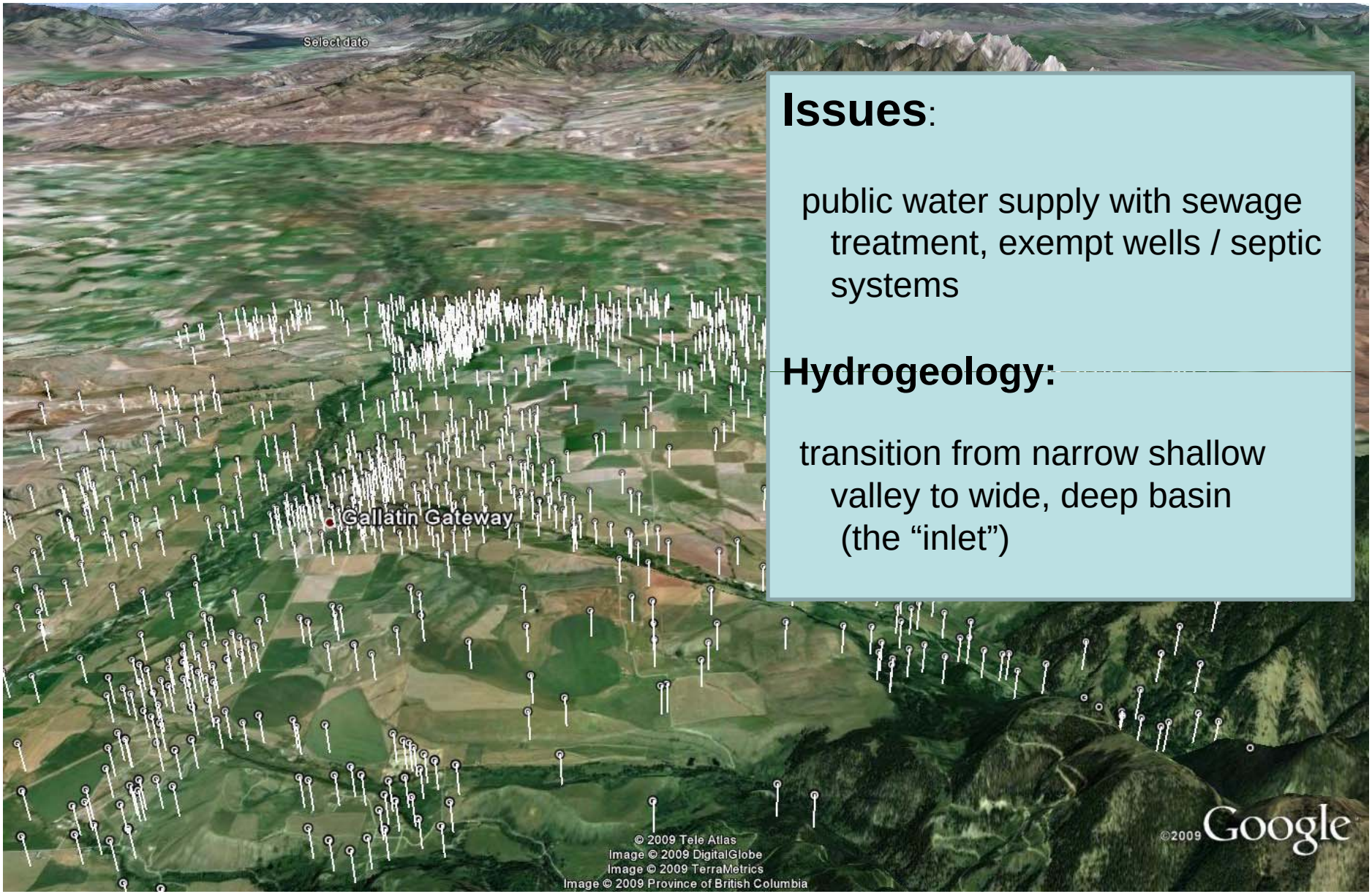
Four Corners



Four Corners 1975



Four Corners today



Issues:

public water supply with sewage treatment, exempt wells / septic systems

Hydrogeology:

transition from narrow shallow valley to wide, deep basin (the “inlet”)

Belgrade

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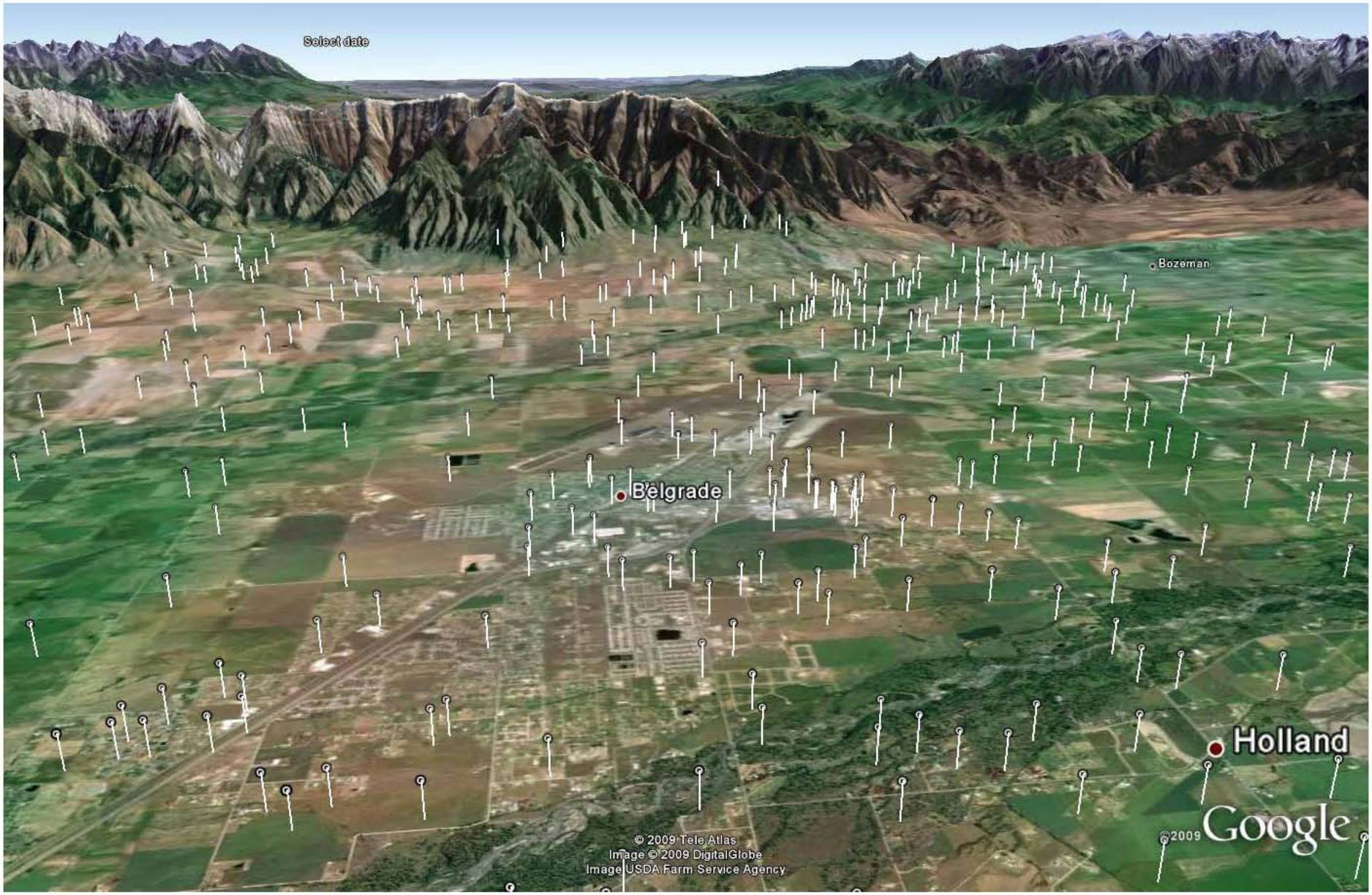
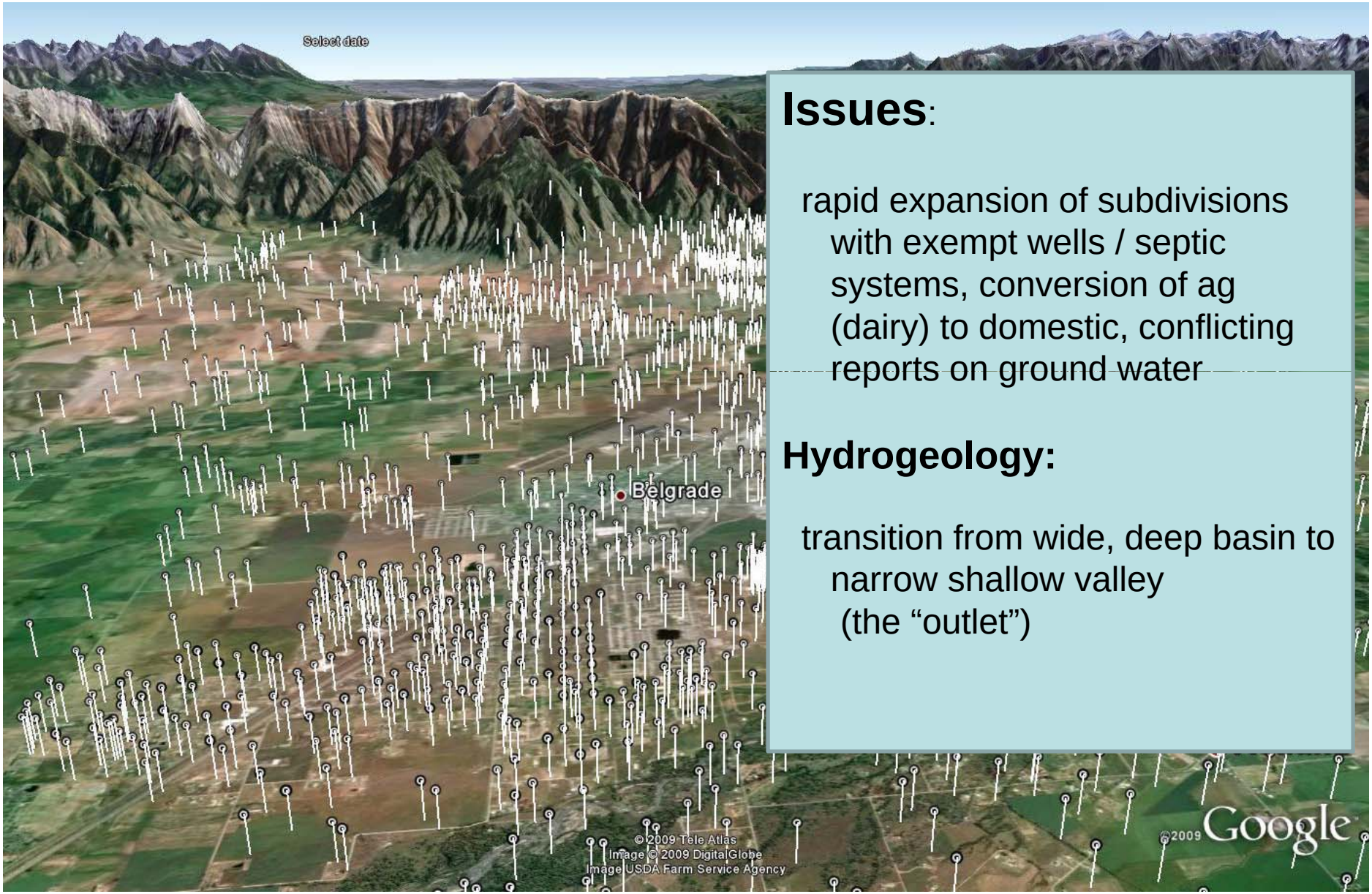
Belgrade 1975



Belgrade today



Issues:

rapid expansion of subdivisions with exempt wells / septic systems, conversion of ag (dairy) to domestic, conflicting reports on ground water

Hydrogeology:

transition from wide, deep basin to narrow shallow valley (the “outlet”)

Belgrade

Select date
Bozeman
Belgrade
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Cooperative efforts…

"Town hall" meetings with
- John LaFave (GWAP), John Wheaton (GWIP) – Hamilton
- Kirk Waren – Helena
- Tom Michalek – Four Corners, Belgrade
- Ginette Abdo, Julie Ahern – Beaverhead/BofRec

Aquifer testing – North Hills subdivision

Gallatin Valley monitoring with DNRC

Sand & Gravel (Sen. Larsen)
- resource mapping … data sharing