

A landscape photograph of a river valley. In the foreground, a dirt road with tire tracks leads towards a river. There are patches of snow on the ground, particularly on the right side. The river flows through the middle ground, with some small islands of vegetation. In the background, there are rolling hills and a clear blue sky with a few wispy clouds. The overall scene is a natural, somewhat arid environment.

Potential for Managed Recharge in the Treasure Valley

Treasure Valley Comprehensive
Aquifer Management Plan Meeting

3 February 2011

Idaho Water Resources Research Institute

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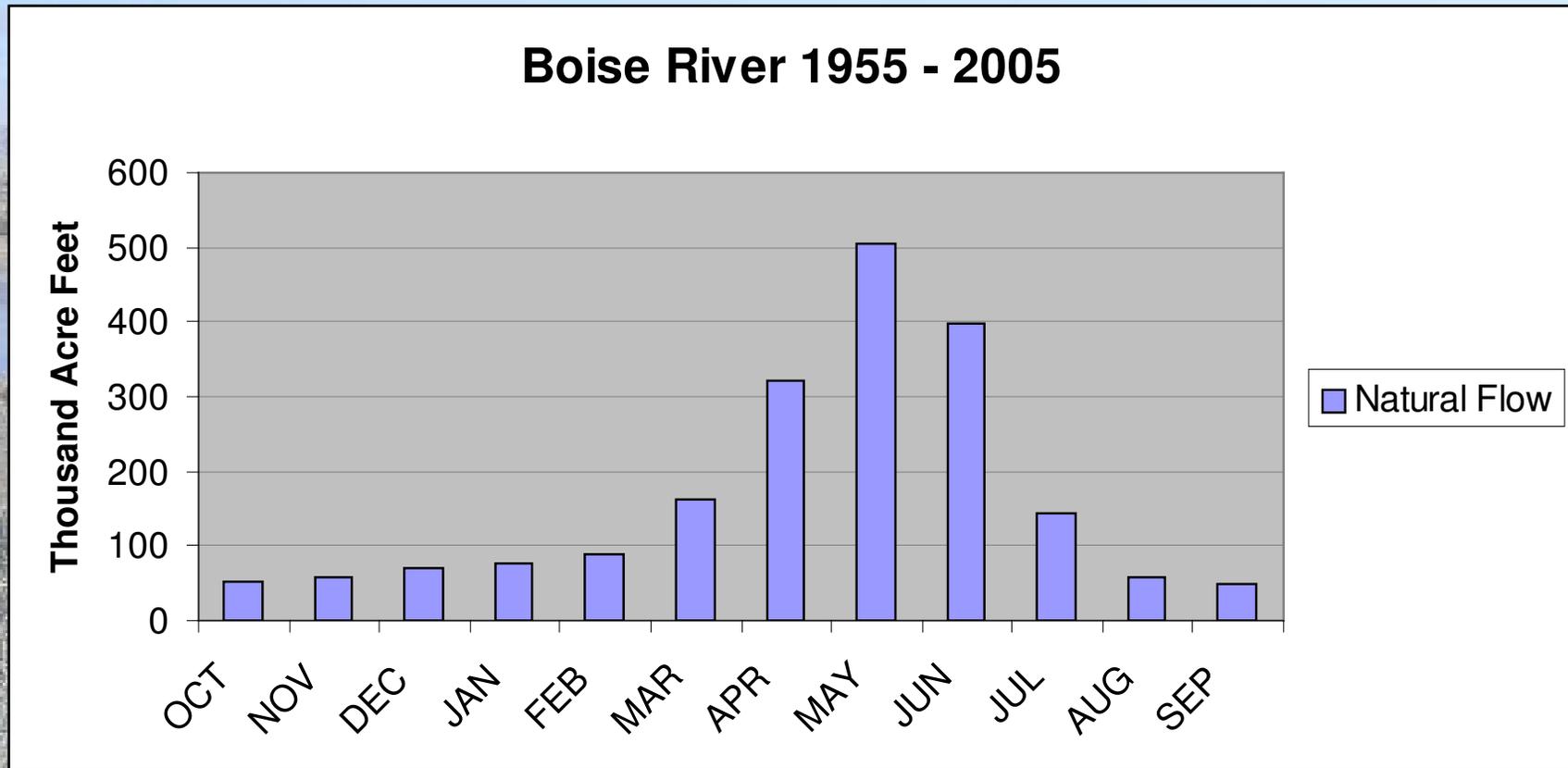
Funding: USGS and IDWR

Outline

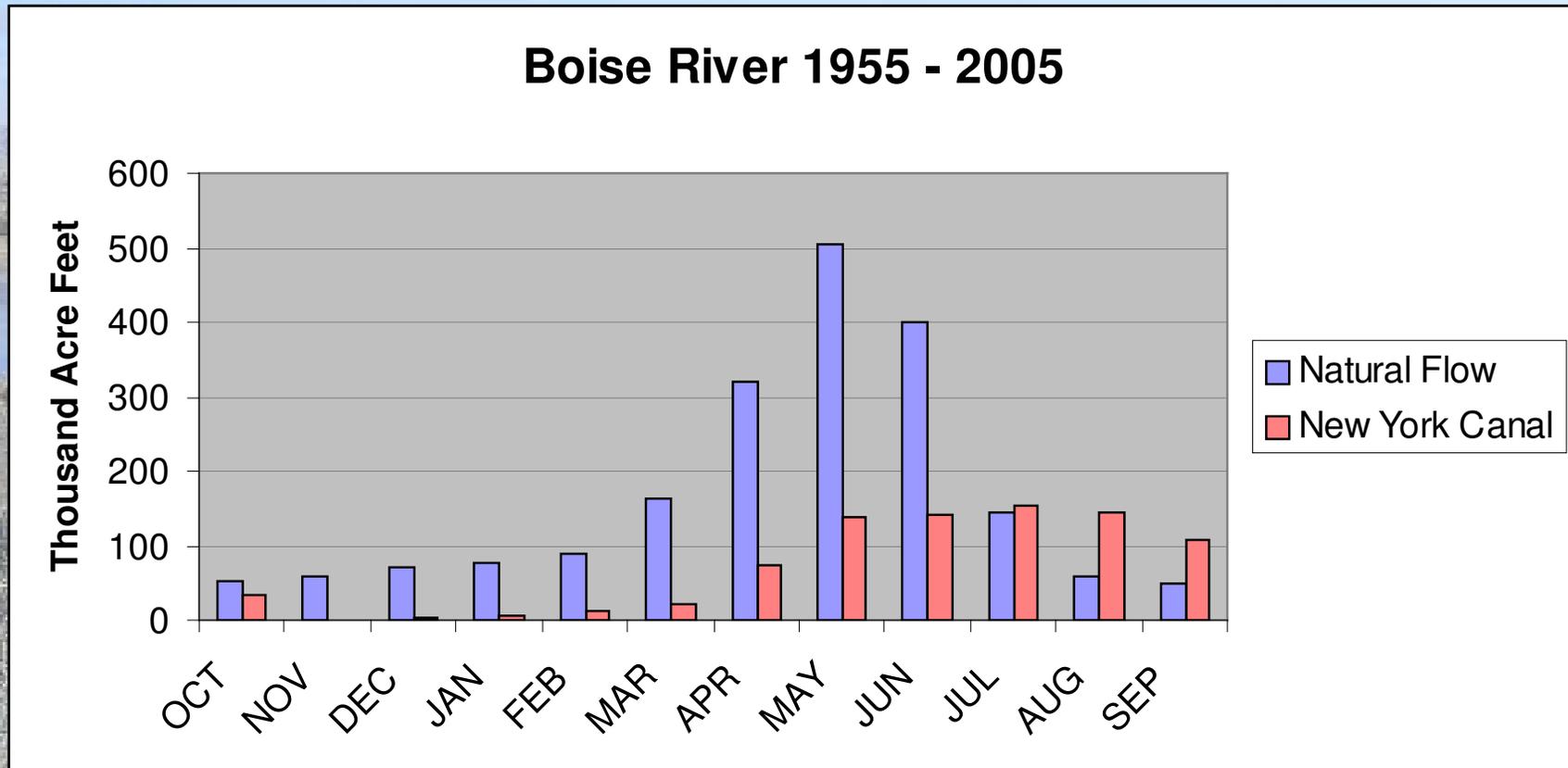
- Recharge Overview
- Recharge in Treasure Valley
- Questions to Ask
- Discussion



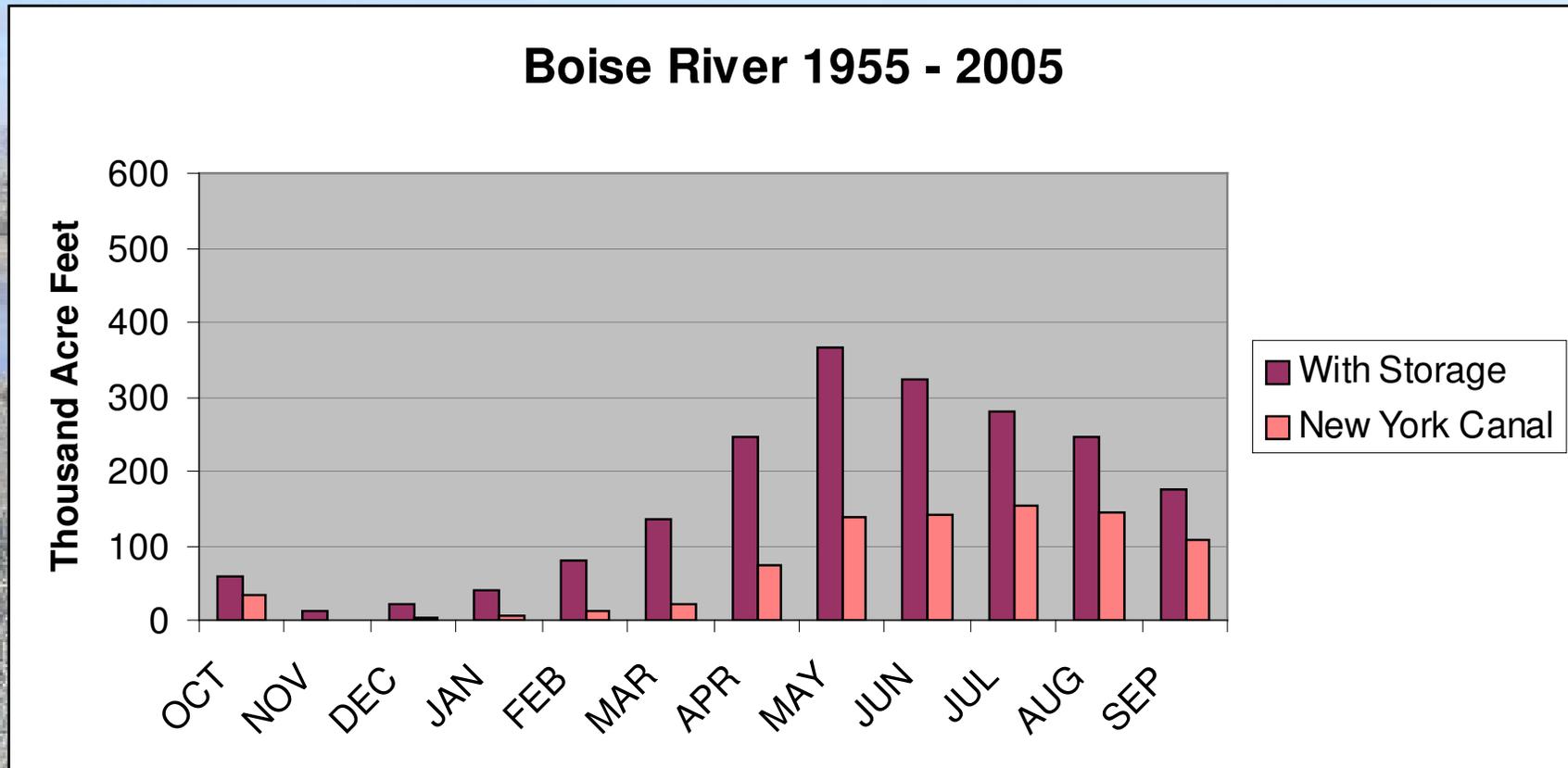
Recharge Overview - Why?



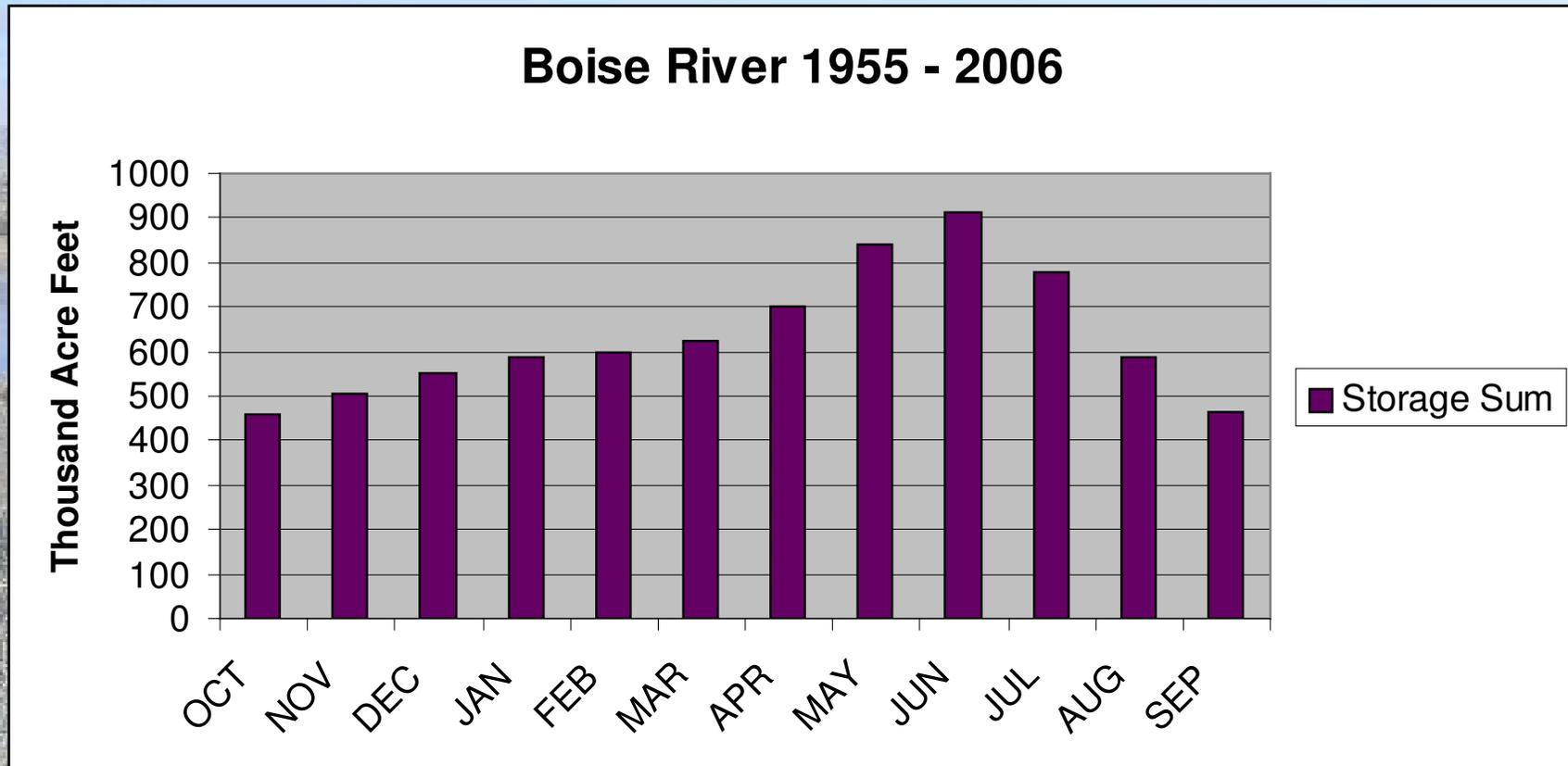
Recharge Overview - Why?



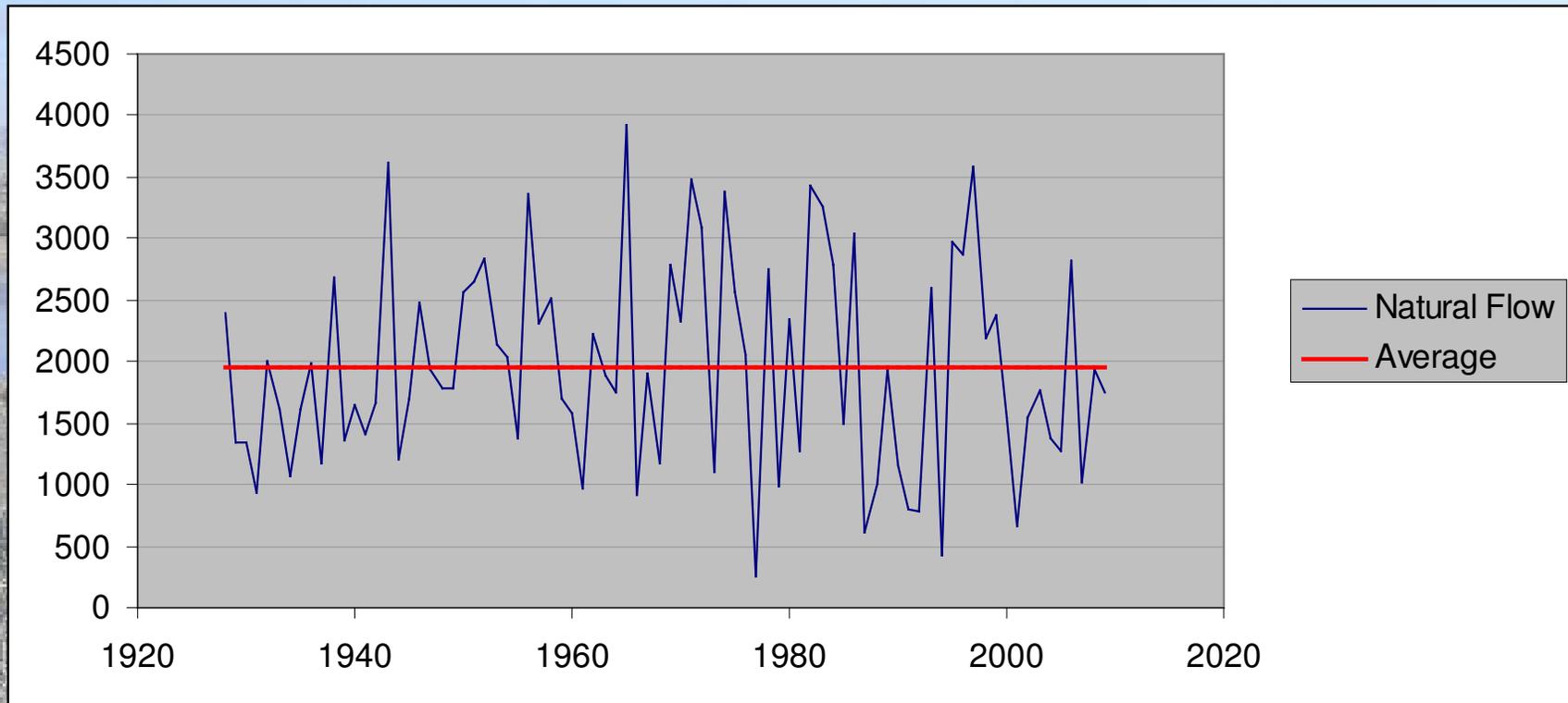
Recharge Overview - Why?



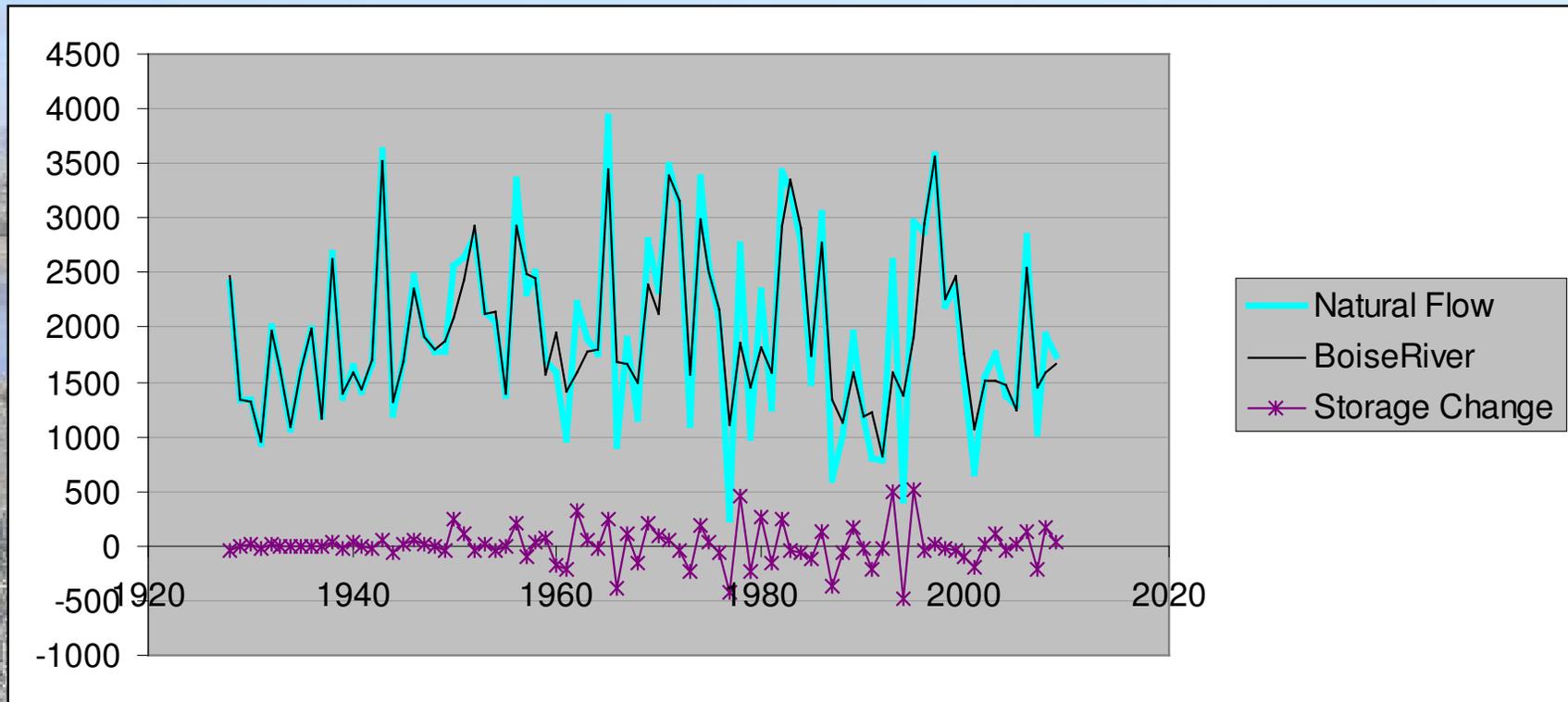
Recharge Overview - Why?



Recharge Overview - Why?



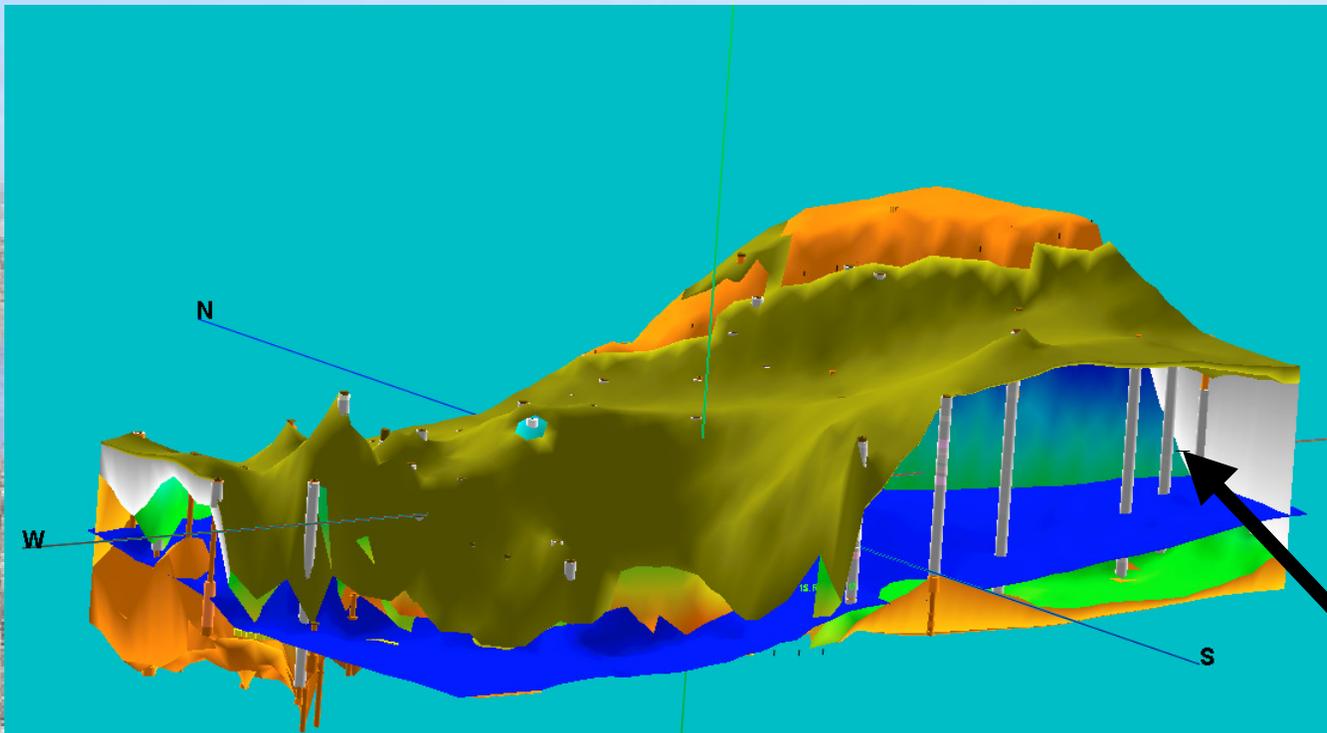
Recharge Overview - Why?



Recharge Overview - Why?

- Teton Rebuild -
 - \$500 Million to \$ 1 Billion
 - 230,000 acre feet capacity
 - \$2,200 to \$4,400 per acre foot capacity
- Minidoka Dam Enlargement -
 - \$150 Million to \$220 Million
 - 50,000 acre feet capacity improvement
 - \$3,000 to \$4,400 per acre foot capacity

Recharge Overview - Potential



4,000,000 to 8,000,000 acre feet of “empty” pore space.

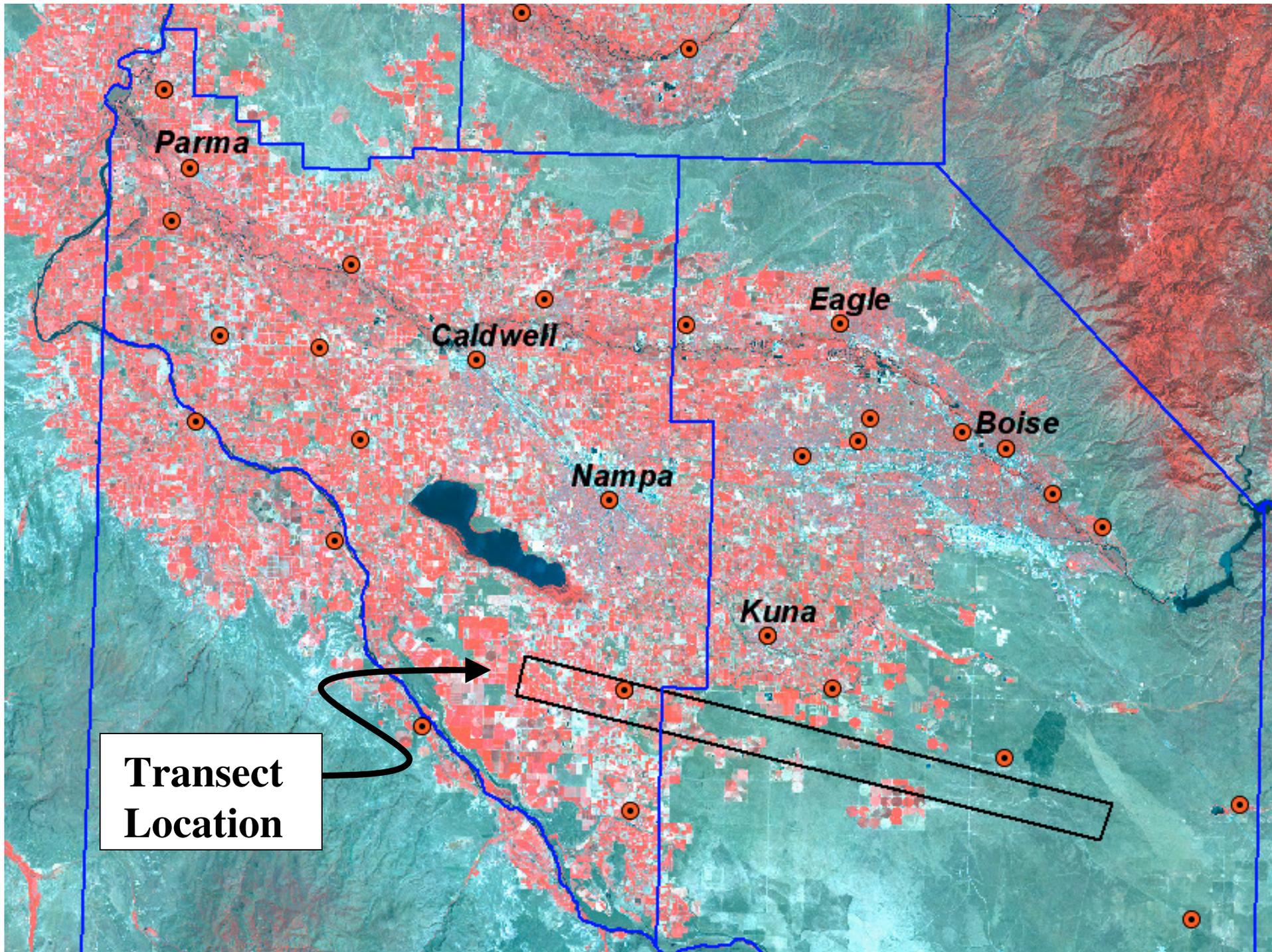
Construction cost: Zero (sort of)

Geological figures courtesy Neal Farmer, IDWR



WHOA!!!

How 'bout a little reality check...

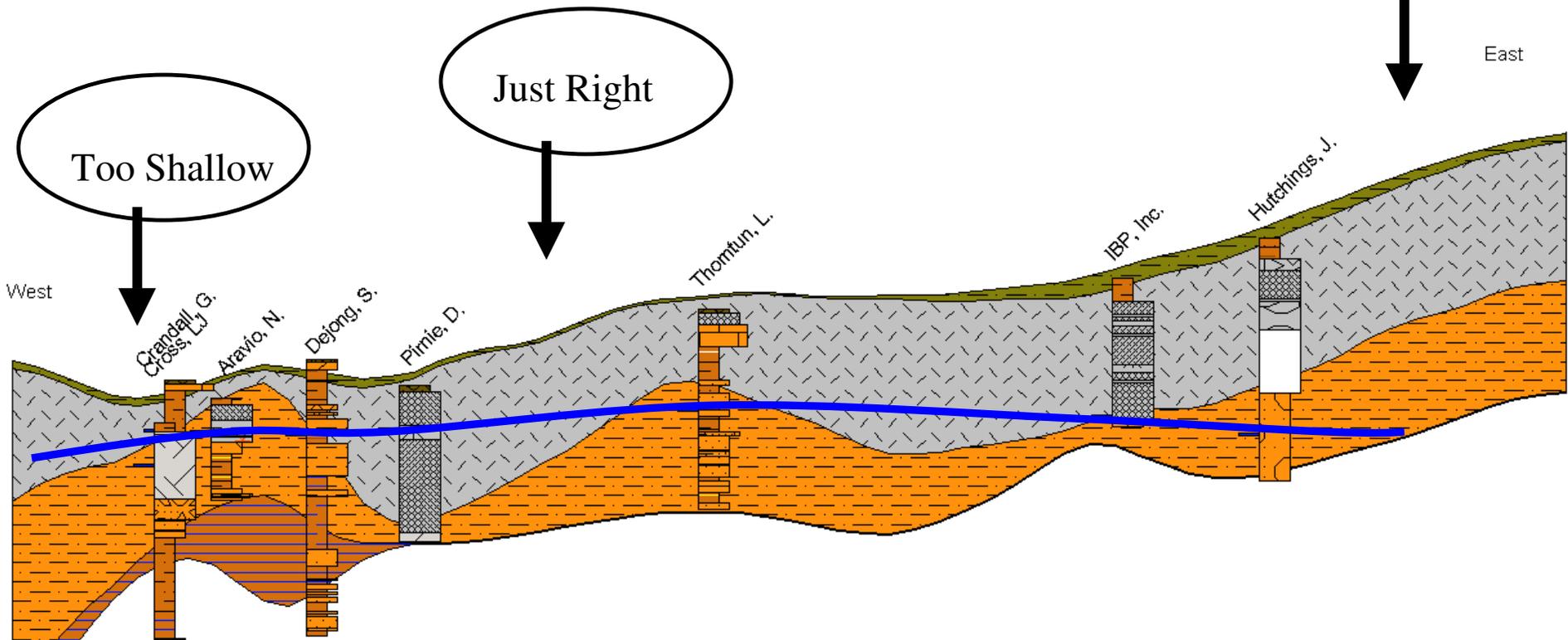


**Transect
Location**



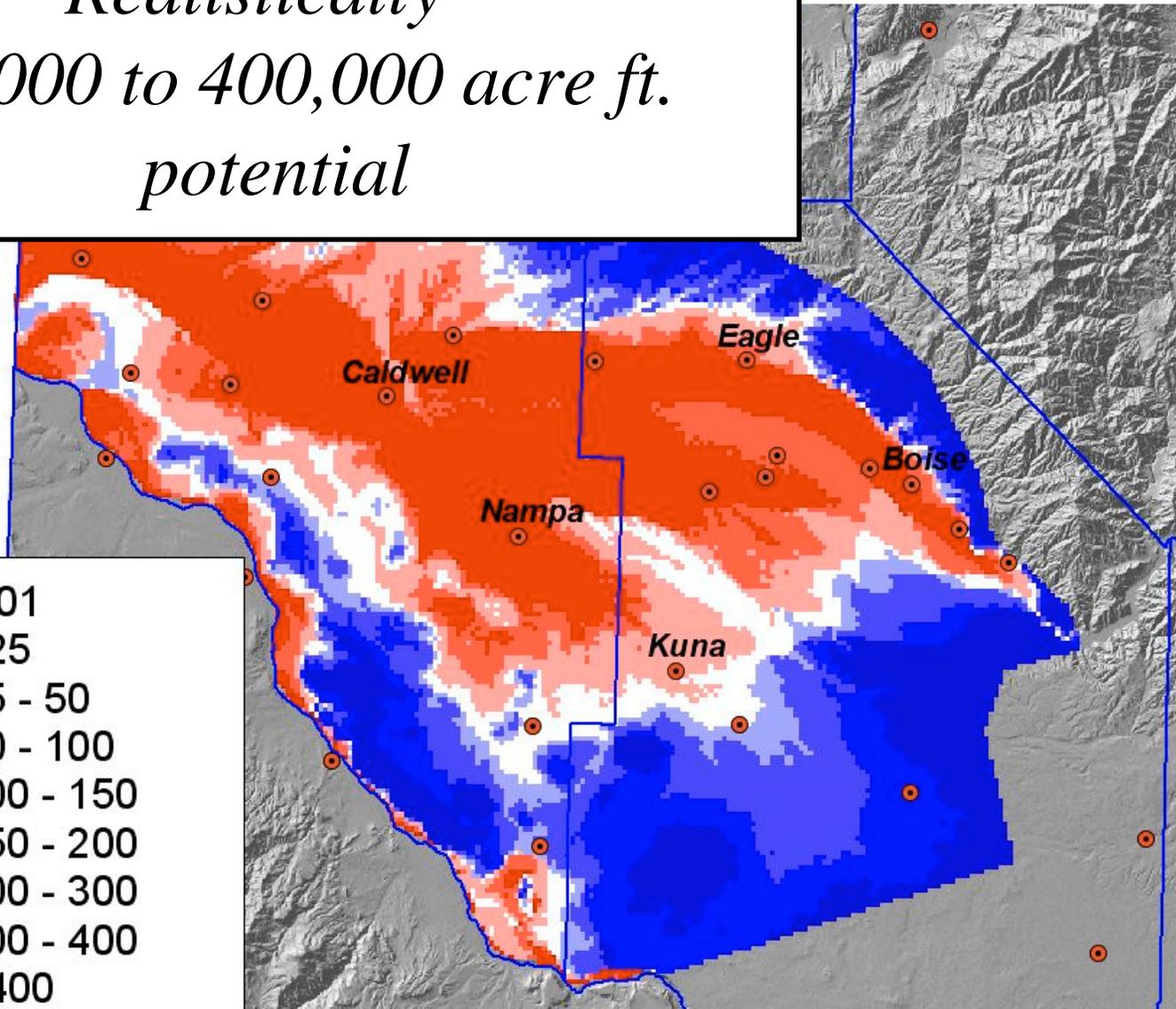
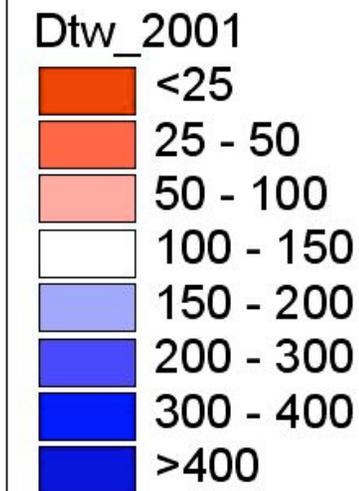
Google Images

Too High

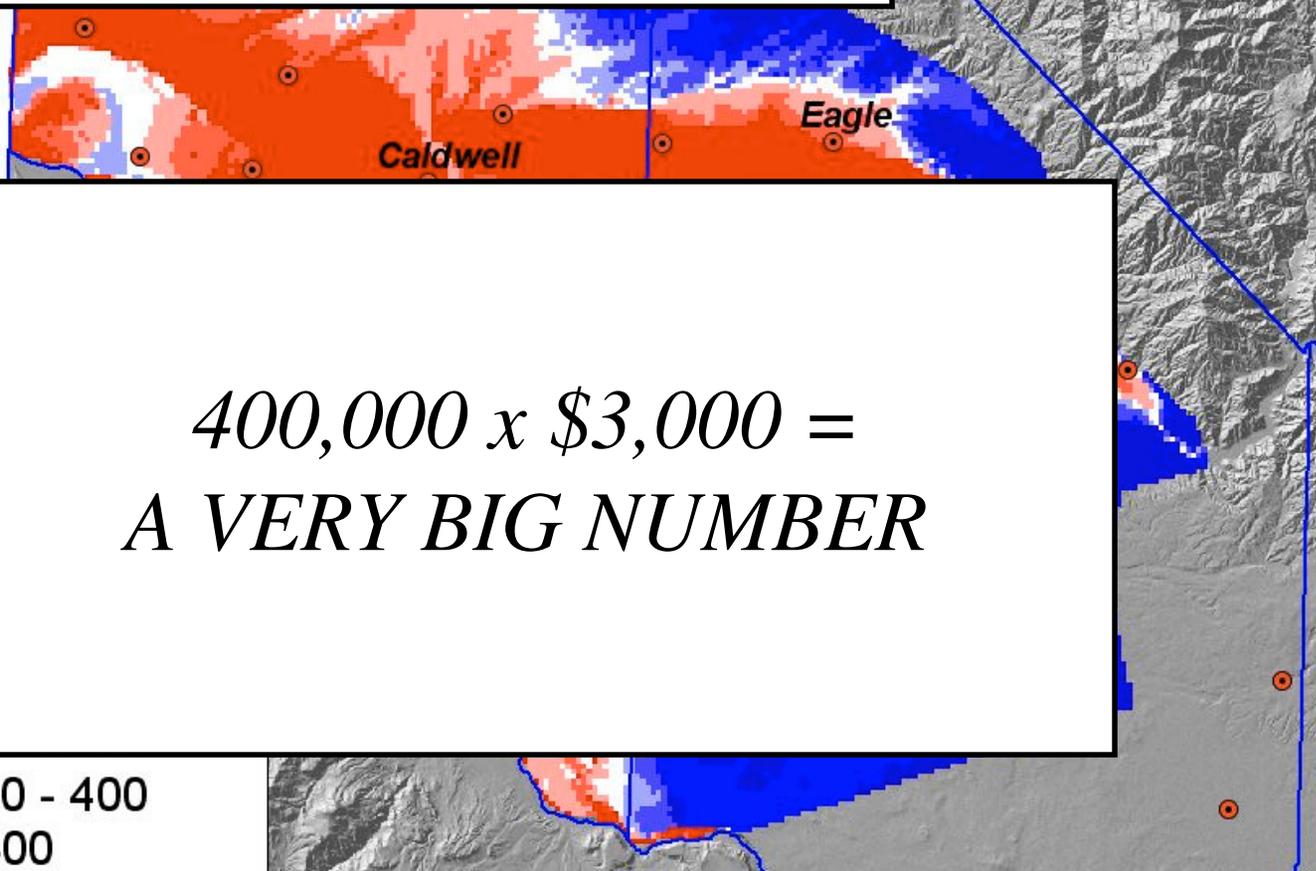


Geological figures courtesy Neal Farmer, IDWR

*Realistically -
200,000 to 400,000 acre ft.
potential*

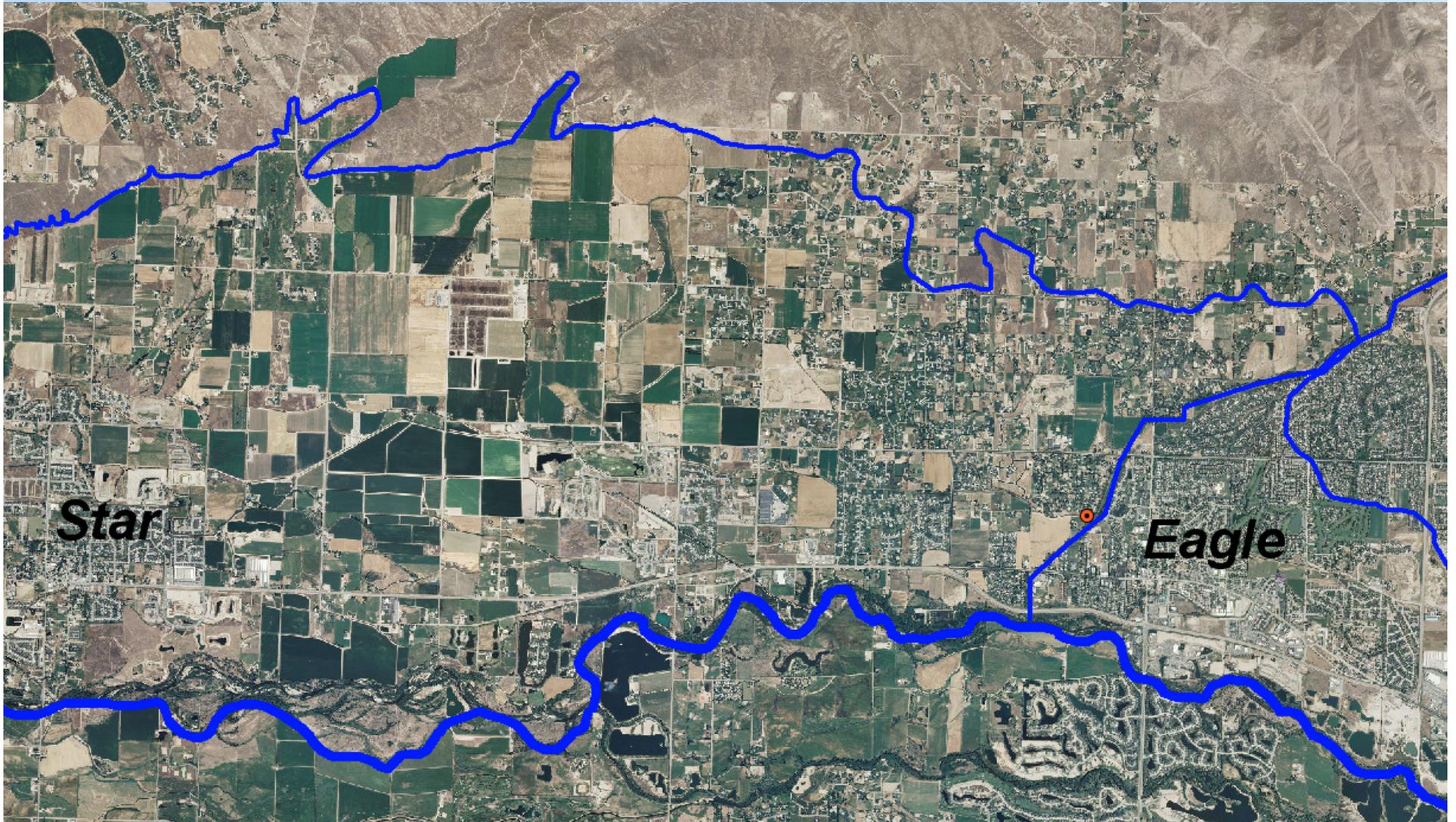


*Realistically -
200,000 to 400,000 acre ft.
potential*



$400,000 \times \$3,000 =$
A VERY BIG NUMBER

Hypothetical Application

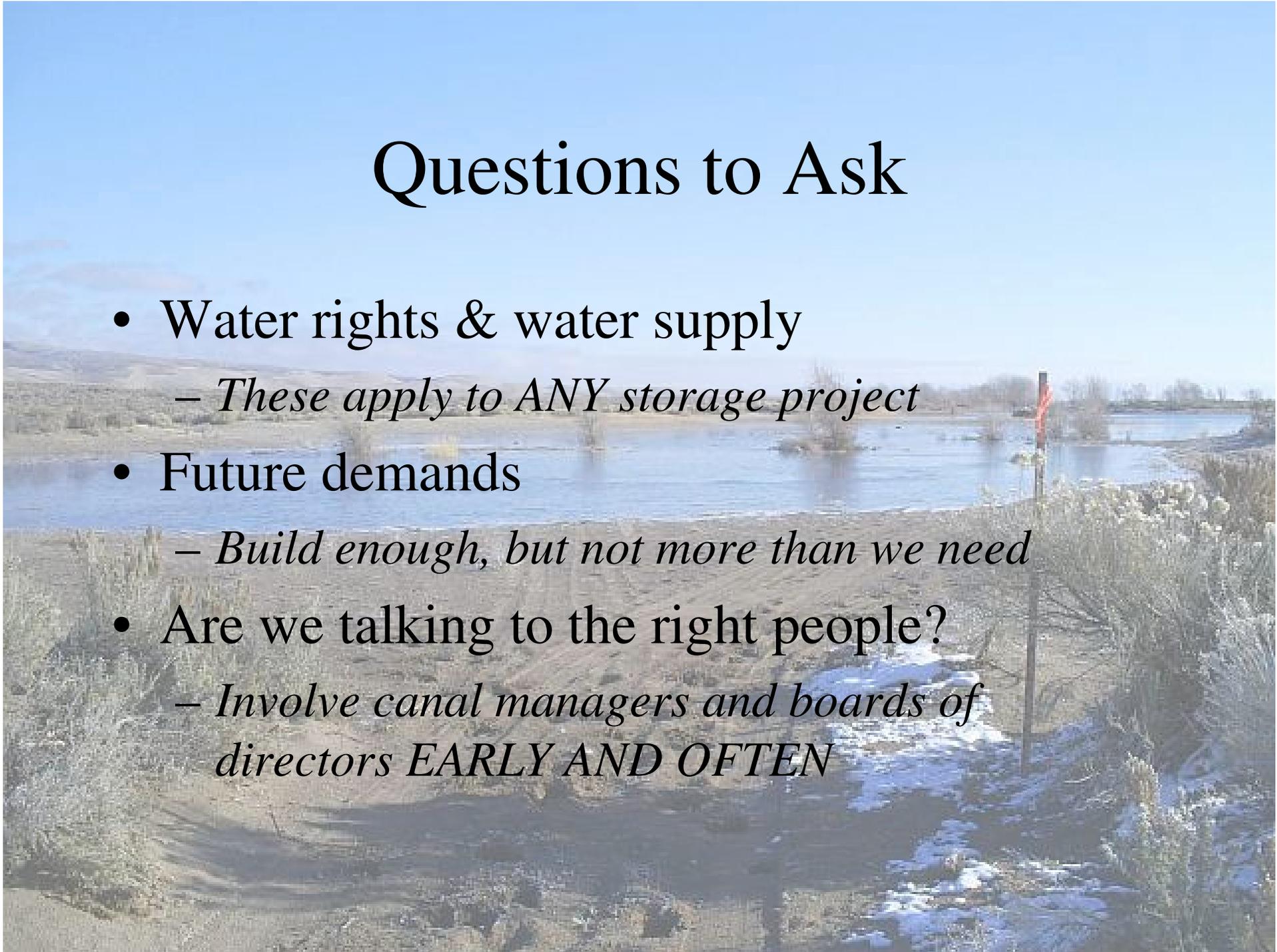




2011/01/26 12:27

Questions to Ask

- Water rights & water supply
 - *These apply to ANY storage project*
- Future demands
 - *Build enough, but not more than we need*
- Are we talking to the right people?
 - *Involve canal managers and boards of directors EARLY AND OFTEN*



Questions to Ask

- Are we prepared to deal with winter-time operations?



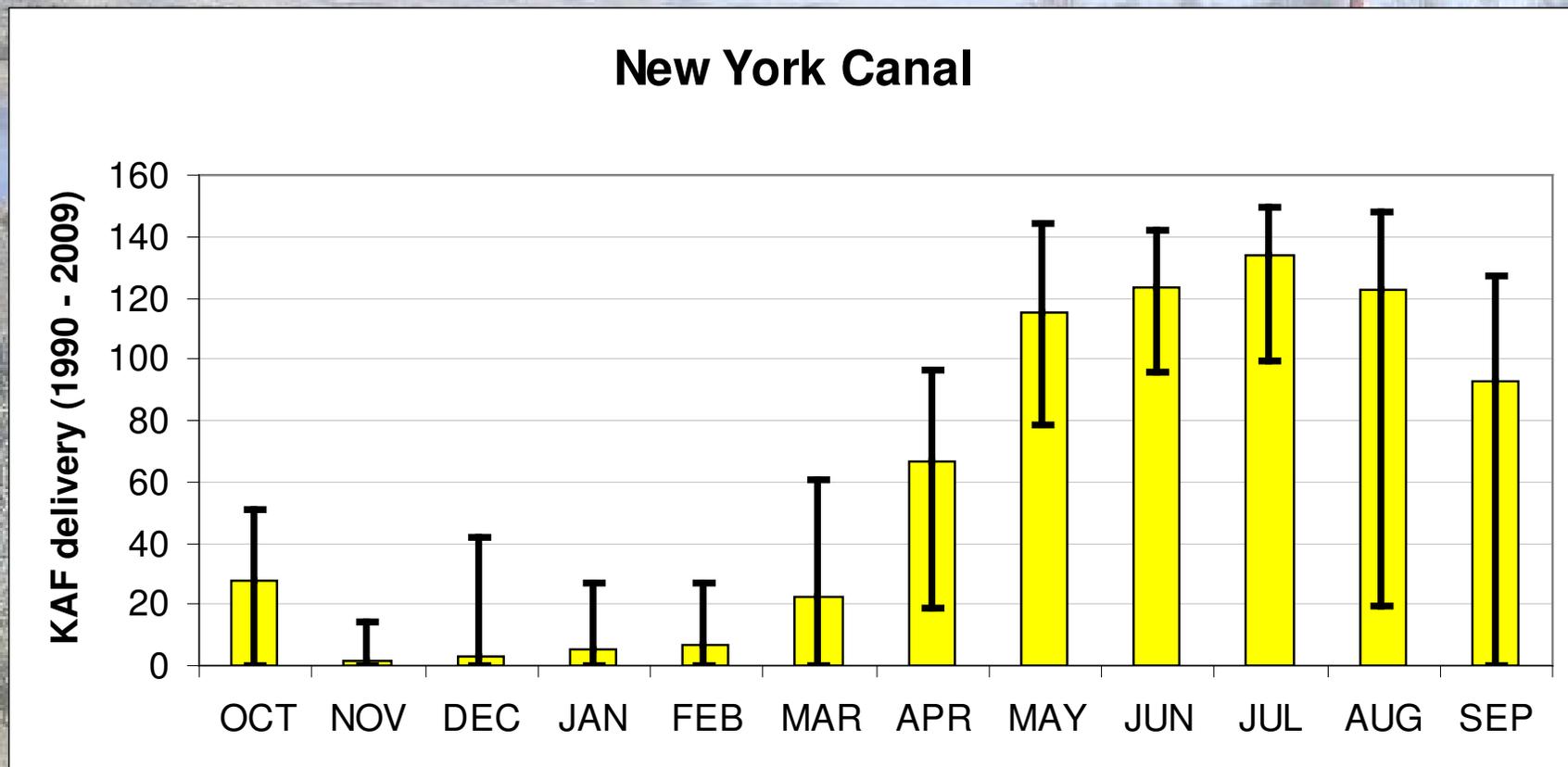
Questions to Ask

- What is our hydrologic monitoring plan?



Questions to Ask

- Do we have delivery capacity?



Questions to Ask

- Do we need infrastructure or management adaptations?

$400,000 \times \$3,000 =$
A VERY BIG NUMBER



Flap Gate at Turlock ID (6/21/00)

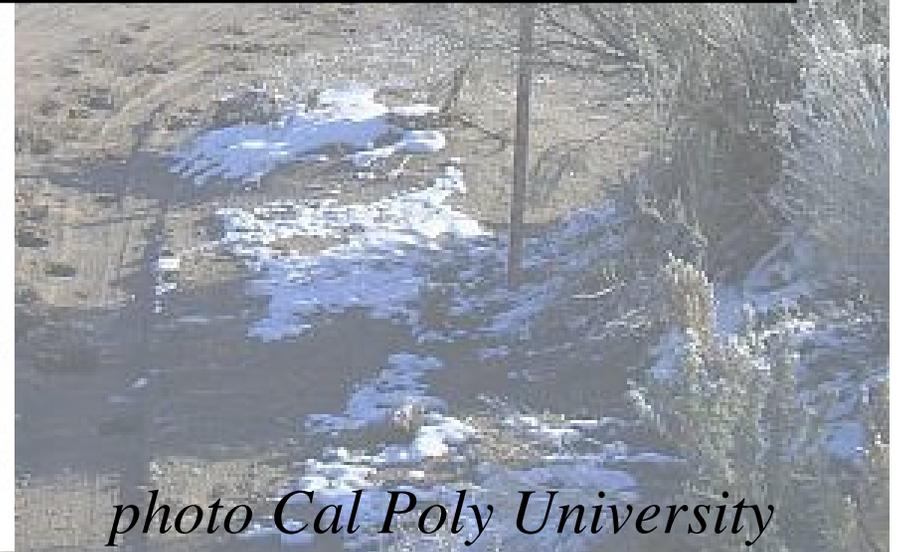


photo Cal Poly University

Questions to Ask

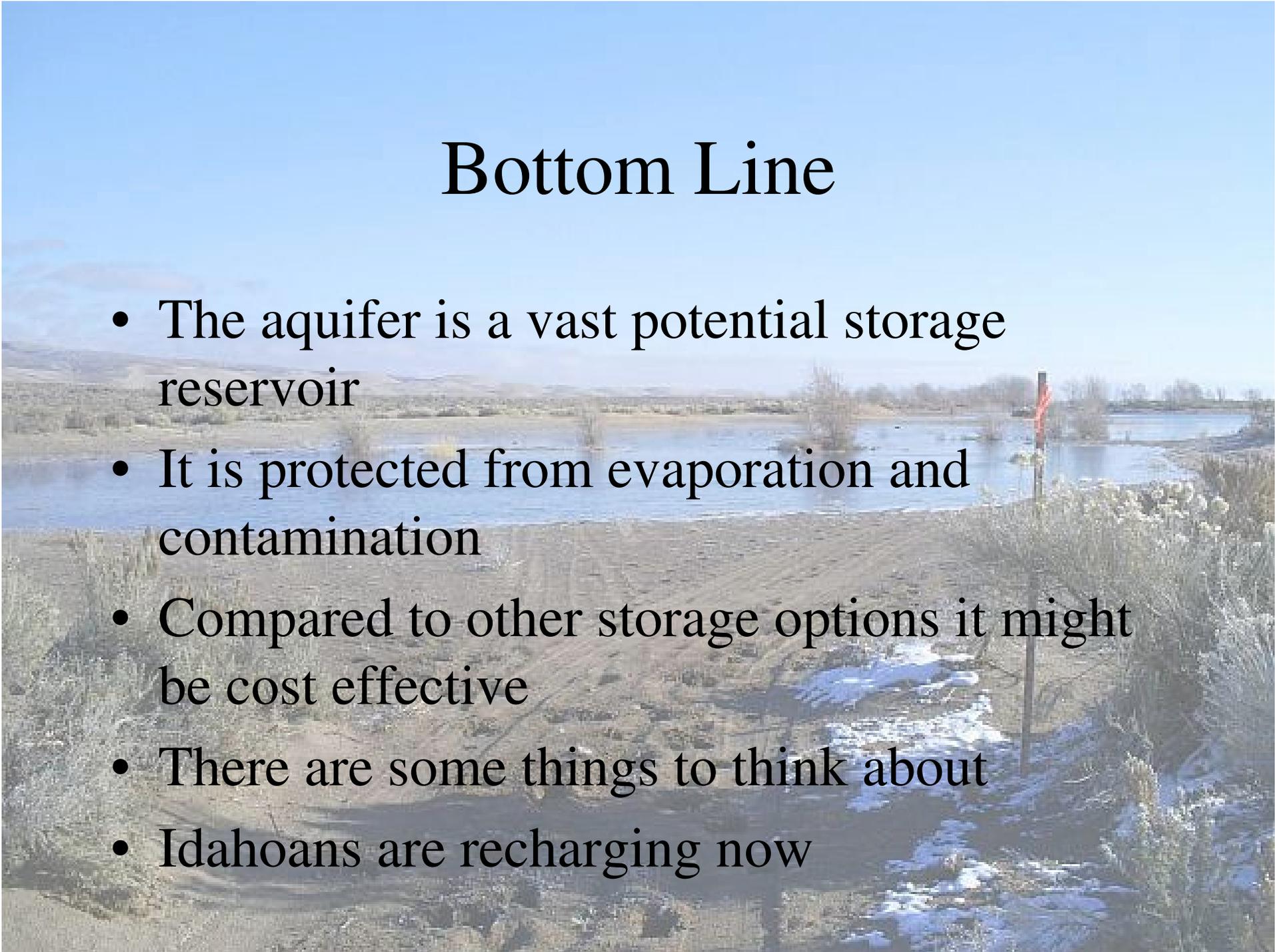
- What about water quality and safety?



http://co.water.usgs.gov/nawqa/hpgw/photos/bennet_pump.jpg

Bottom Line

- The aquifer is a vast potential storage reservoir
- It is protected from evaporation and contamination
- Compared to other storage options it might be cost effective
- There are some things to think about
- Idahoans are recharging now



Discussion



(Backup Slides)



Dry Creek Stream Stats (USGS)

FlowStatsRepor.pdf - Adobe Reader

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Streamstats Ungaged Site Report

Date: Sat Jan 29 2011 12:32:59 Mountain Standard Time

Site Location: Idaho

NAD27 Latitude: 43.7007 (43 42 03)

NAD27 Longitude: -116.3597 (-116 21 35)

NAD83 Latitude: 43.7006 (43 42 02)

NAD83 Longitude: -116.3607 (-116 21 38)

Drainage Area: 65.1 mi²

Percent Urban: 2.53 %

Percent Impervious: 0.25 %

Dry Creek Stream Stats (USGS)

tsRepor.pdf - Adobe Reader

ew Document Tools Window Help



Monthly and Annual Streamflow Statistics Area

Statistic	Flow (ft ³ /s)	Estimation Error (percent)	E
QA	22.4	35	
JAND20	44.6	43	
JAND50	13.6	51	
JAND80	7.83	53	
FEBD20	81.9	41	
FEBD50	30.3	45	
FEBD80	13.6	48	
MARD20	126	45	
MARD50	55.8	47	
MARD80	23.1	55	
APRD20	81.9	39	
APRD50	32	44	
APRD80	11.9	56	
MAYD20	37.5	39	
MAYD50	12.2	59	
MAYD80	8.79	60	

*Winter time average flow (Nov - March)
around 7300 acre feet,
enough to support 2400 acres of alfalfa*

OCTD20	7.27		53
OCTD50	5.72		61
OCTD80	4.49		68
NOVD20	10.2		48
NOVD50	7.13		52
NOVD80	5.87		58
DECD20	15.3		58
DECD50	9.13		51
DECD80	6.4		57

Navigation icons for the document.

IWRRI/IDWR Report - Before March 2011

DRAFT

*Managed Aquifer Recharge in the
Treasure Valley:
A Component of a Comprehensive
Aquifer Management Plan and a
Response to Climate Change*



(IDWR Logo Here)

Idaho Water Resources Research Institute

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Idaho Department of Water Resources

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S. Thiel*

IWRRI Technical Completion Report 201102X

Calculating Residence Time

http://www.iwrri.uidaho.edu/documents/Contor_01-JAN-2011.pdf?pid=120052&doc=1

Adaptation of the Glover/Balmer/Jenkins Analytical
Stream-Depletion Methods for No-flow and Recharge
Boundaries



Accounting Methods



JAWRA

JOURNAL OF
THE AMERICAN WATER
RESOURCES ASSOCIATION

Groundwater Banking in Aquifers that Interact With Surface Water: Aquifer Response Functions and Double-Entry Accounting[†]

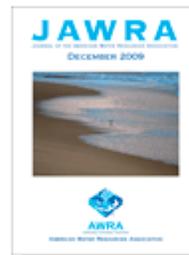
Bryce A. Contor

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Keywords:

water resource economics; surface water/groundwater interactions; water allocation; groundwater banking; aquifer response functions; double-entry accounting

SEARCH

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Literature

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