

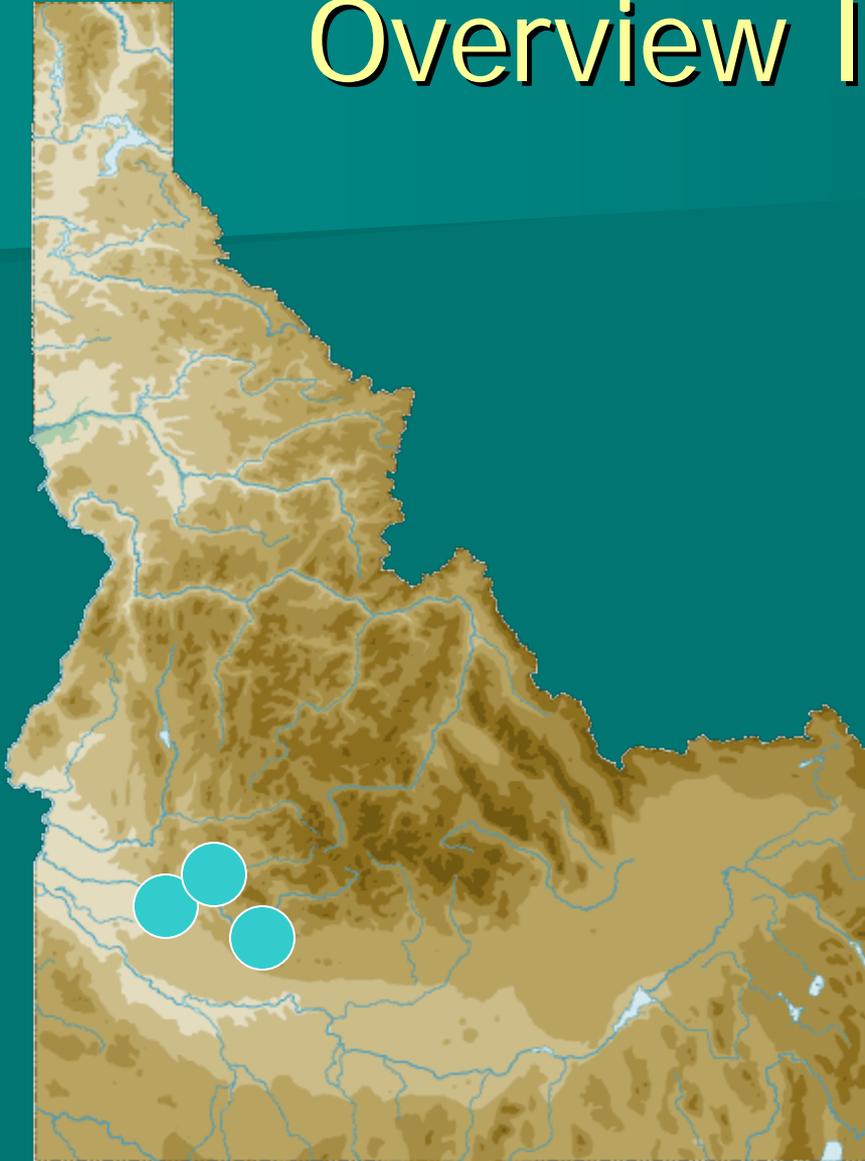
EDC's and PPCP Activities in Idaho

Steve Tanner
Idaho Department of Environmental Quality

PNWS- AWWA Spring Conference
Salem, Oregon
May 6, 2009



Overview Idaho Sites



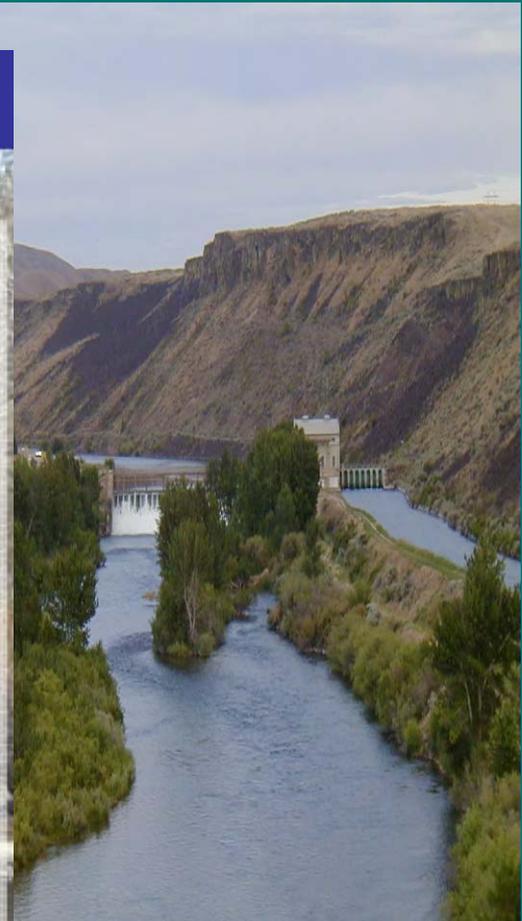
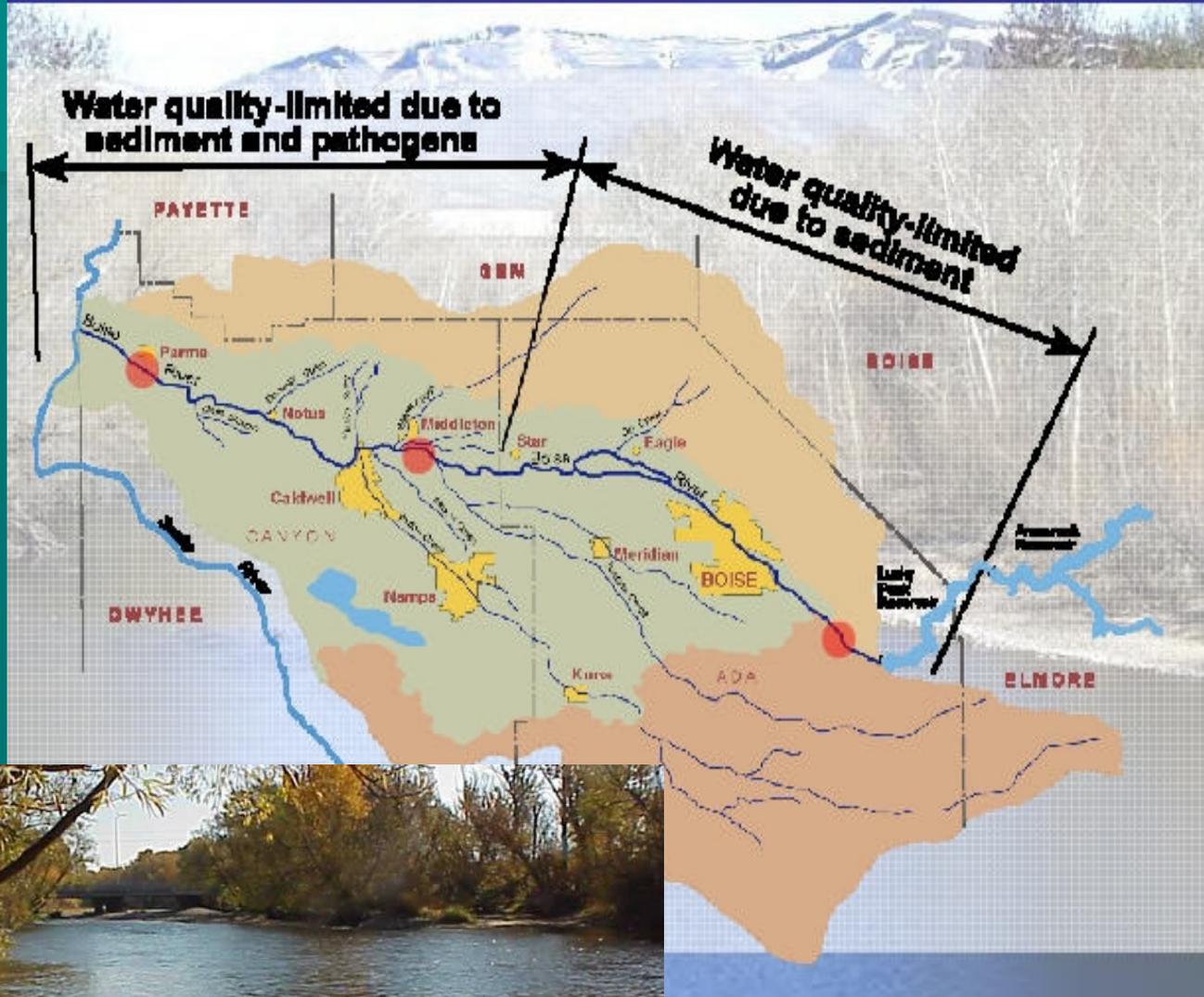
- USGS Studies of Boise River
- Barber Wastewater Ponds in Boise
- City of Mountain Home Wastewater Lagoons

USGS study sampled locations in 139 streams during 1999 and 2000 including Boise River

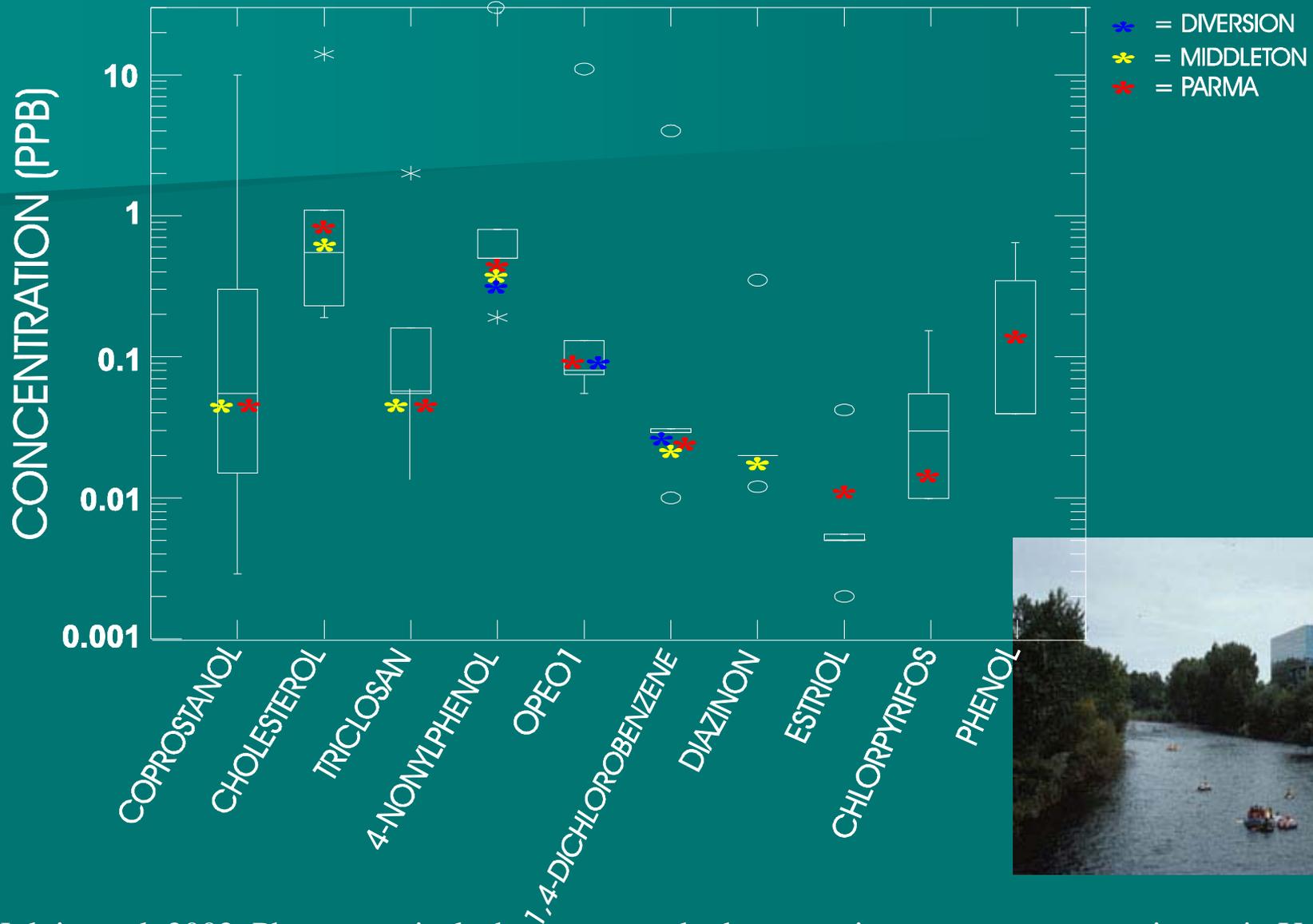


Kolpin et al. 2002. Pharmaceuticals, hormones and other organic wastewater contaminants in U.S. streams, 1999-2000; a national reconnaissance. *Environ. Sci. Technol.* 36(6), 1202-1211.

Lower Boise River Watershed



BOISE RIVER VS SITES NATIONWIDE



Kolpin et al. 2002. Pharmaceuticals, hormones and other organic wastewater contaminants in U.S. streams, 1999-2000; a national reconnaissance. *Environ. Sci. Technol.* 36(6), 1202-1211.

EDCs and PPCPs in Municipal Wastewater



Municipal Wastewater Lagoons



Idaho Wastewater Rules

IDAPA 58.01.16.493

- Lagoons constructed after April 21, 2007 must leak less than $1/8$ inch per day (3400 gallons per acre per day).
- Existing lagoons constructed before that date may leak up to $1/4$ inch per day (6800 gallons per acre per day).

Lagoon Seepage

lagoon

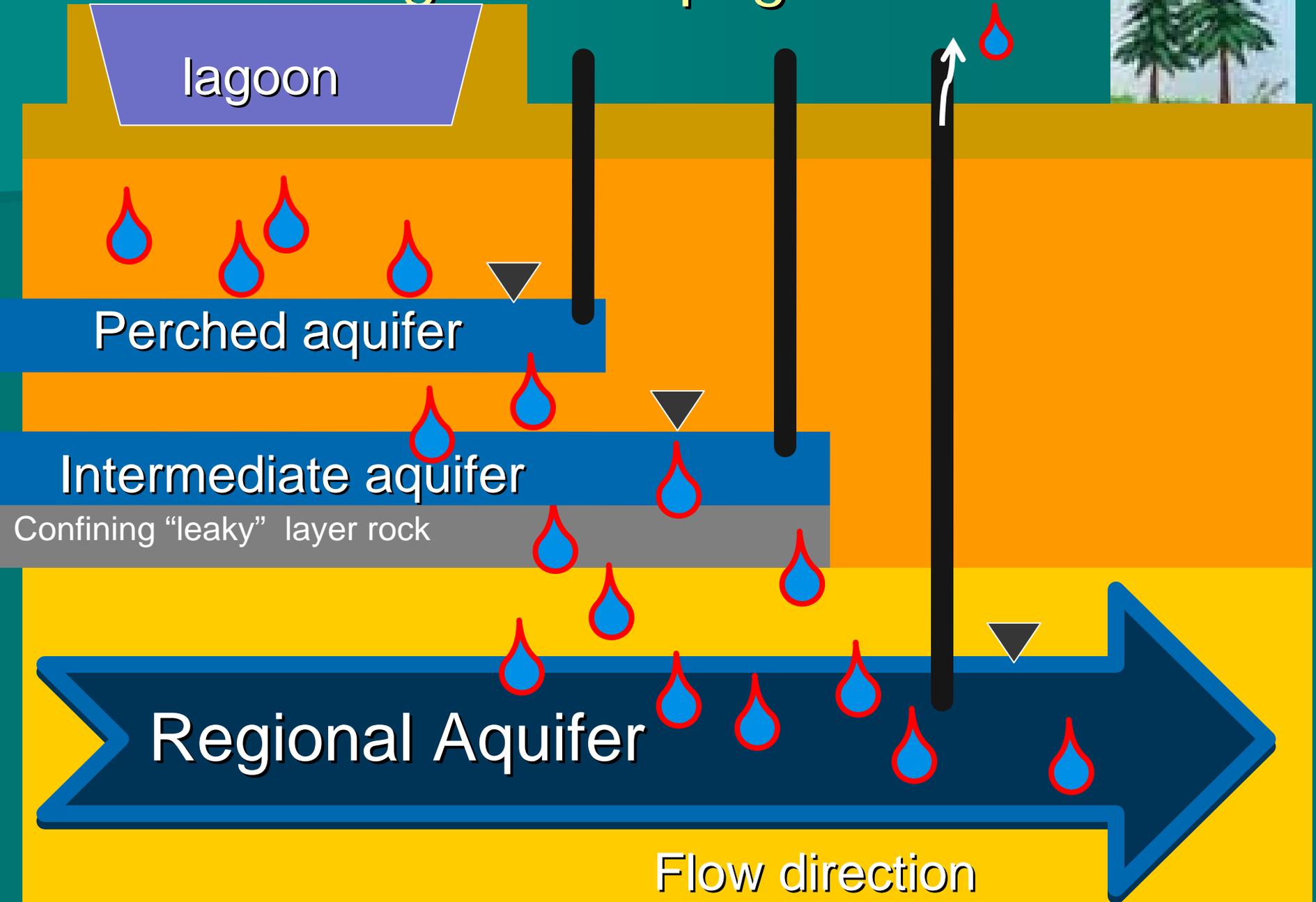
Perched aquifer

Intermediate aquifer

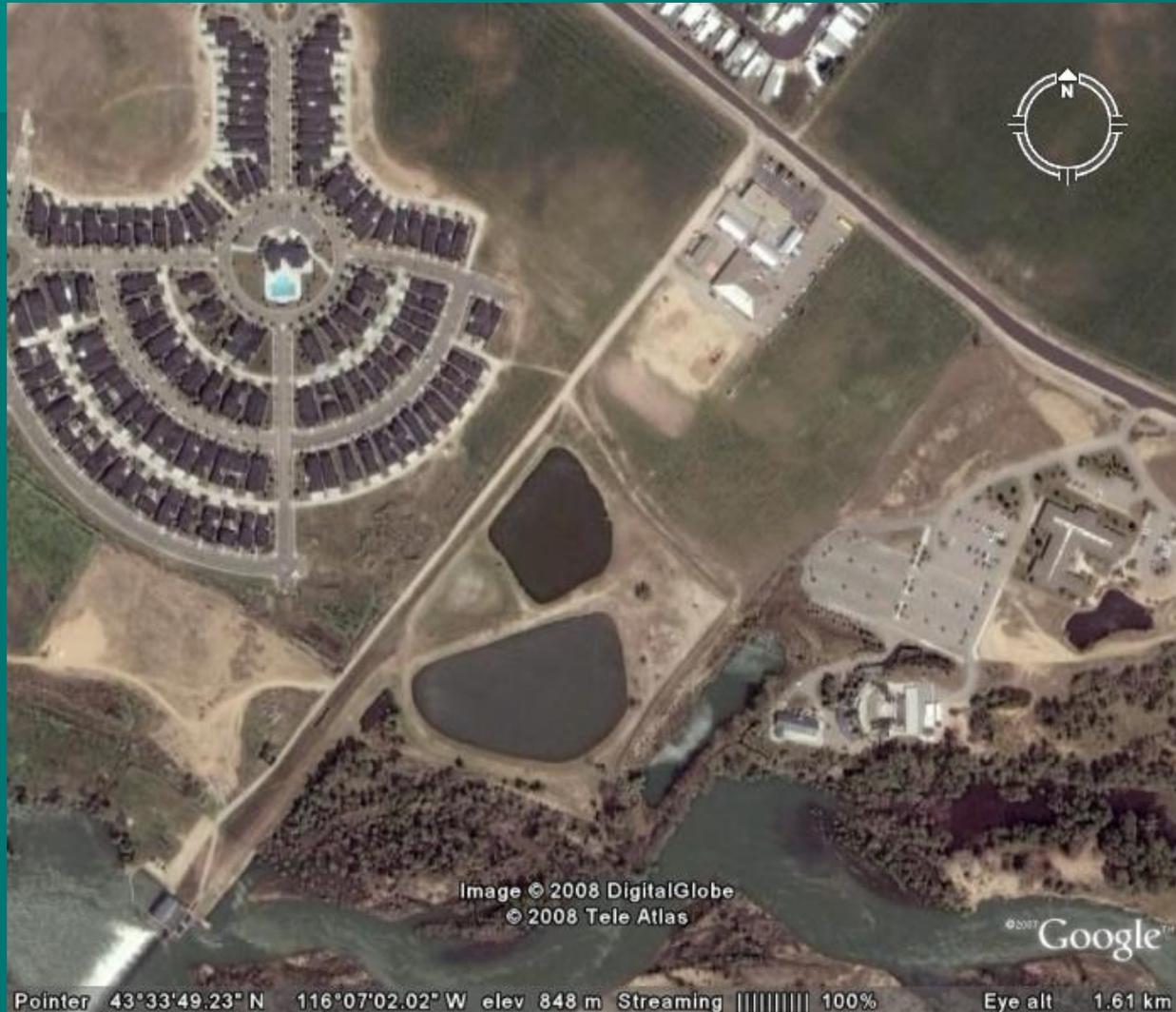
Confining "leaky" layer rock

Regional Aquifer

Flow direction



Barber Ponds



Barber Ponds



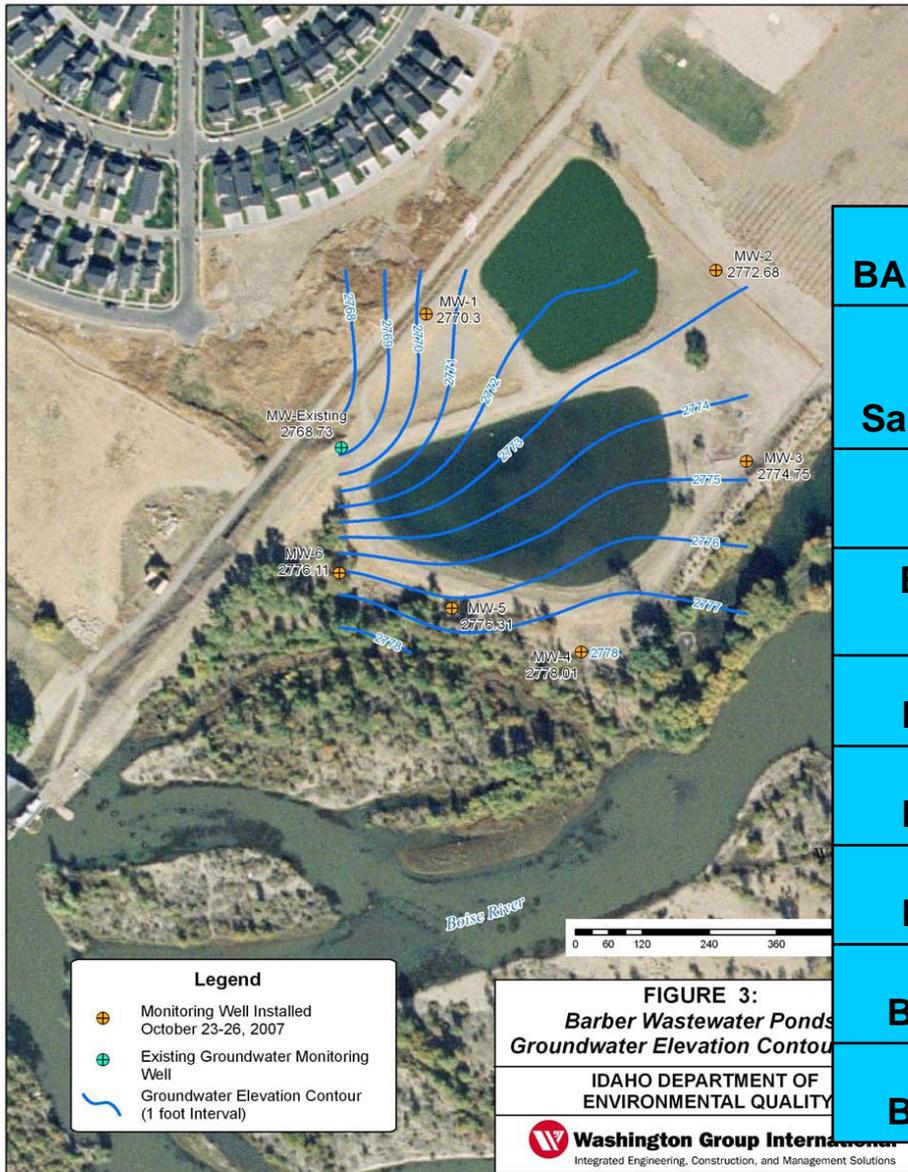
FIGURE 2:
Barber Wastewater Ponds
Site Layout Map

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Washington Group International
 Integrated Engineering, Construction, and Management Solutions



PPCPs



BARBER WASTE PONDS

Sample ID	Carbamazepine ug/l	Sulfamethoxazole ug/l
Equip Blank	< .005	< .005
MW-1	0.011	< .005
MW-5	0.154	< .005
MW-6	< .005	< .005
BP1-L1	0.275	1.9
BP2-L1	0.144	0.474

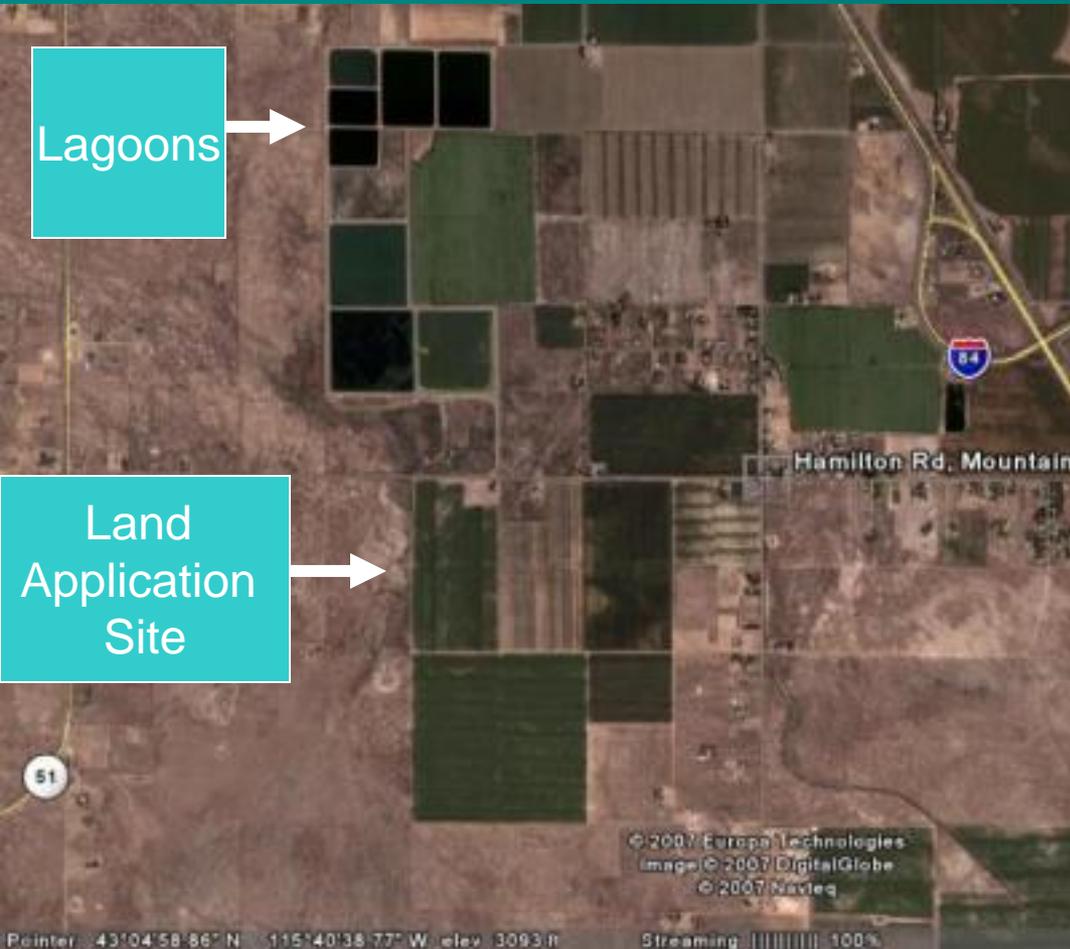
FIGURE 3:
Barber Wastewater Ponds
Groundwater Elevation Contour

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ENVIRONMENTAL QUALITY



Washington Group International
Integrated Engineering, Construction, and Management Solutions

Project Site: Facultative lagoons with land Application



- Series of treatment lagoons covering 200 acres with land application to 260 acres of crops
- Site permitted since 1989.

Lagoons



- 9 lagoons collect, treat and store wastewater.
- Lagoons leak or seep.

Quality Assurance Project Plan

Similar to procedures for using EPA Method 1669 (i.e., “clean hands/dirty hands” procedures) for Sampling Ambient Water for Trace Metals.



Groundwater Flow



Deeper wells

Carbamazepine	80
Sulfamethoxazole	3.1



Headworks

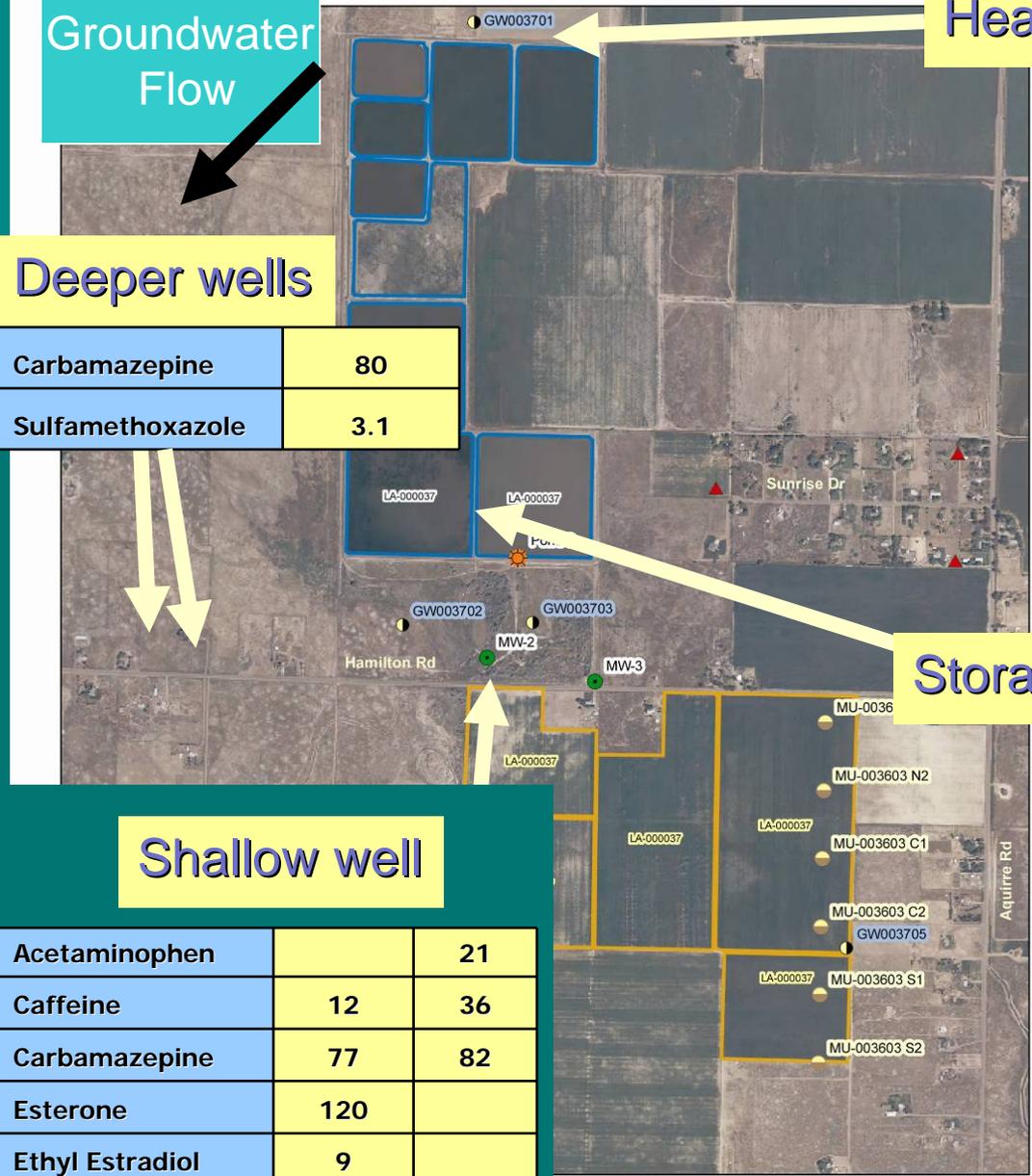
Analytes	ng/L
Acetaminophen	17700
Caffeine	7920
Carbamazepine	92
Esterone	16
Gemfibrozil	440
Ibuprofen	1820
Iopromide	17
Progesterone	520
Sulfamethoxazole	158
Triclosan	43
Trimethoprim	40

Storage lagoon

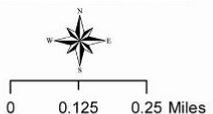
Caffeine	48
Carbamazepine	64
Esterone	450
Esteradiol, 17B	49
Ethyl Estradiol	62
Gemfibrozil	880
Sulfamethoxazole	87

Shallow well

Acetaminophen		21
Caffeine	12	36
Carbamazepine	77	82
Esterone	120	
Ethyl Estradiol	9	
Iopromide	6.8	
Sulfamethoxazole	1.1	5.8



Legend
 Monitoring Wells
 Lagoons
 Waste Water Land Apps
 Public Water Systems
 Imagery: 2004 NAIP



PPCPs are introduced to the environment when:

- Pass out of the body.
- Washed off the body.
- Placed in the trash.
- Drugs are flushed down the toilet.



Idaho Pharmaceutical Take Back Pilot Programs



Idaho's efforts to keep drugs out of the waste stream

- Pharmaceutical Take Back Pilot Programs
 - Post Falls, Coeur d'Alene, Meridian, Boise, BSU
- Board of Pharmacy draft legislation for 2010
 - Remove barriers for local take back programs

Wastewater Reuse in Idaho

- Eliminates the need for discharge to surface water.
- It can be the primary source of irrigation water for nutrient utilization by crops
- a source for aquifer recharge
- toilet flushing, and other uses.



Wastewater Reuse Conference in Boise Idaho May 13 and 14



- DEQ has twenty years of experience managing more than 150 wastewater reuse permits with land application.
- Growing and non growing season uses

- Idaho case studies
- Water rights issues
- EDCs
- Regulatory issues



Acknowledgements

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