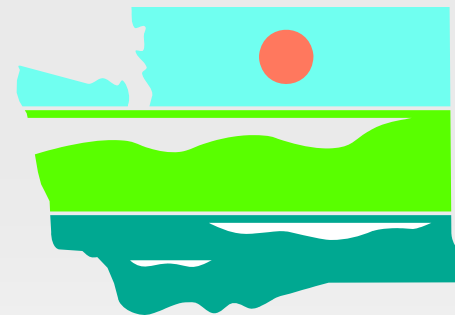


Yakima River DDT Water Quality Improvement Plan (TMDL)

**June 4, 2008
Portland, Oregon**



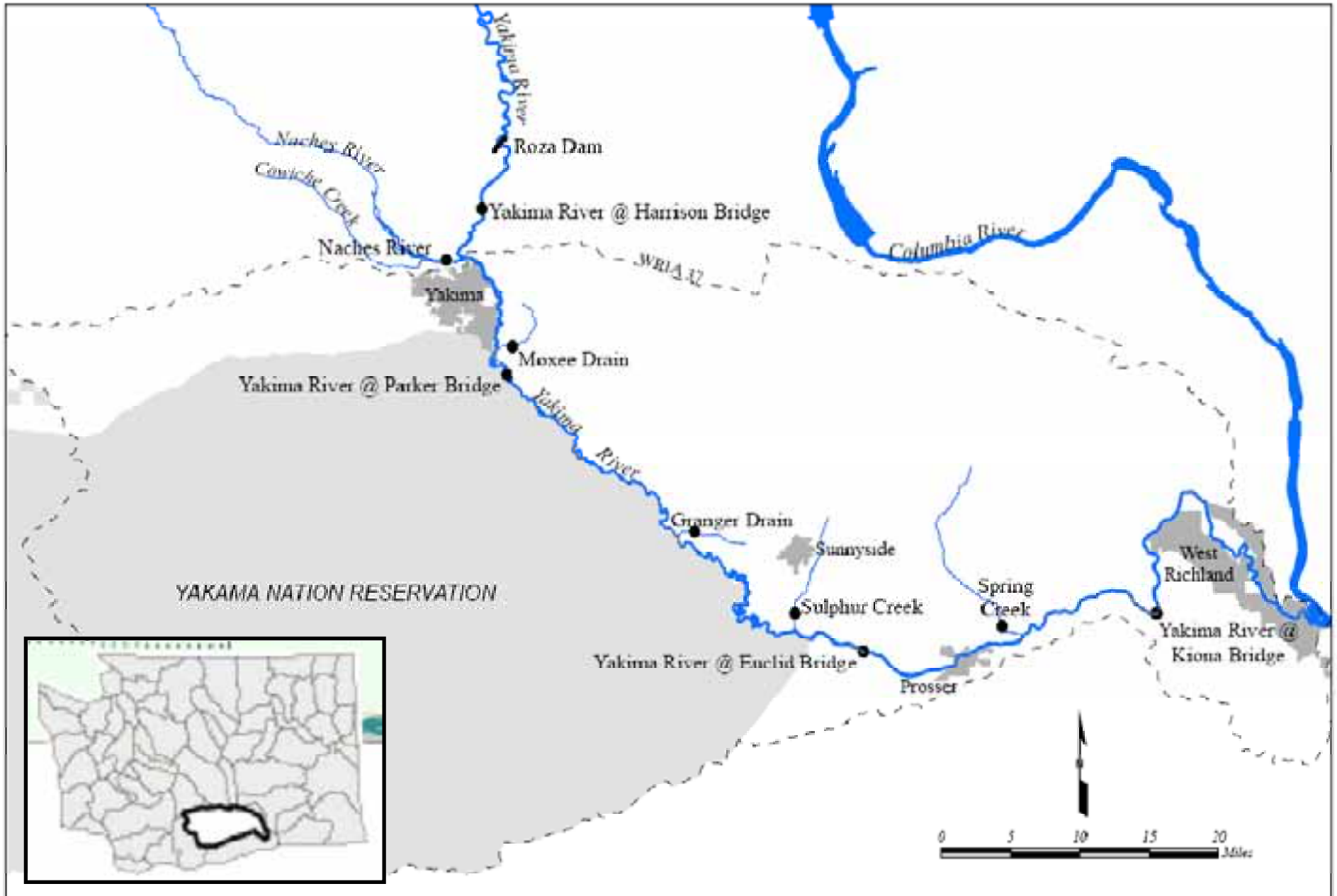
WASHINGTON STATE
DEPARTMENT OF
E C O L O G Y



Yakima River

- The lower Yakima River watershed:
 - intensively irrigated
 - agriculturally diverse
- Runoff carries soil and pesticides to the river.

Yakima River

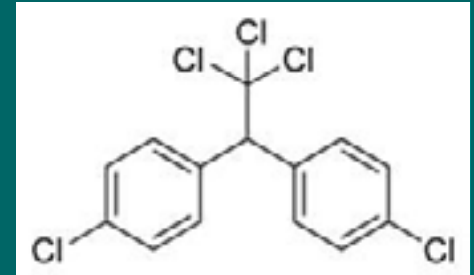


DDT Problem

- Fish in lower Yakima River had one of the highest concentrations of DDT in the nation
- 1993 Fish Advisory (Washington Dept. of Health)
- Ecology began a water quality improvement plan (also called a TMDL) under the Clean Water Act.

DDT

- Pesticide, banned in 1972
- Does not break down easily
- Remains in river sediments and moves through the food web
- DDT linked to cancer
- DDT can also weaken eggshells
- Harms or kills aquatic insects



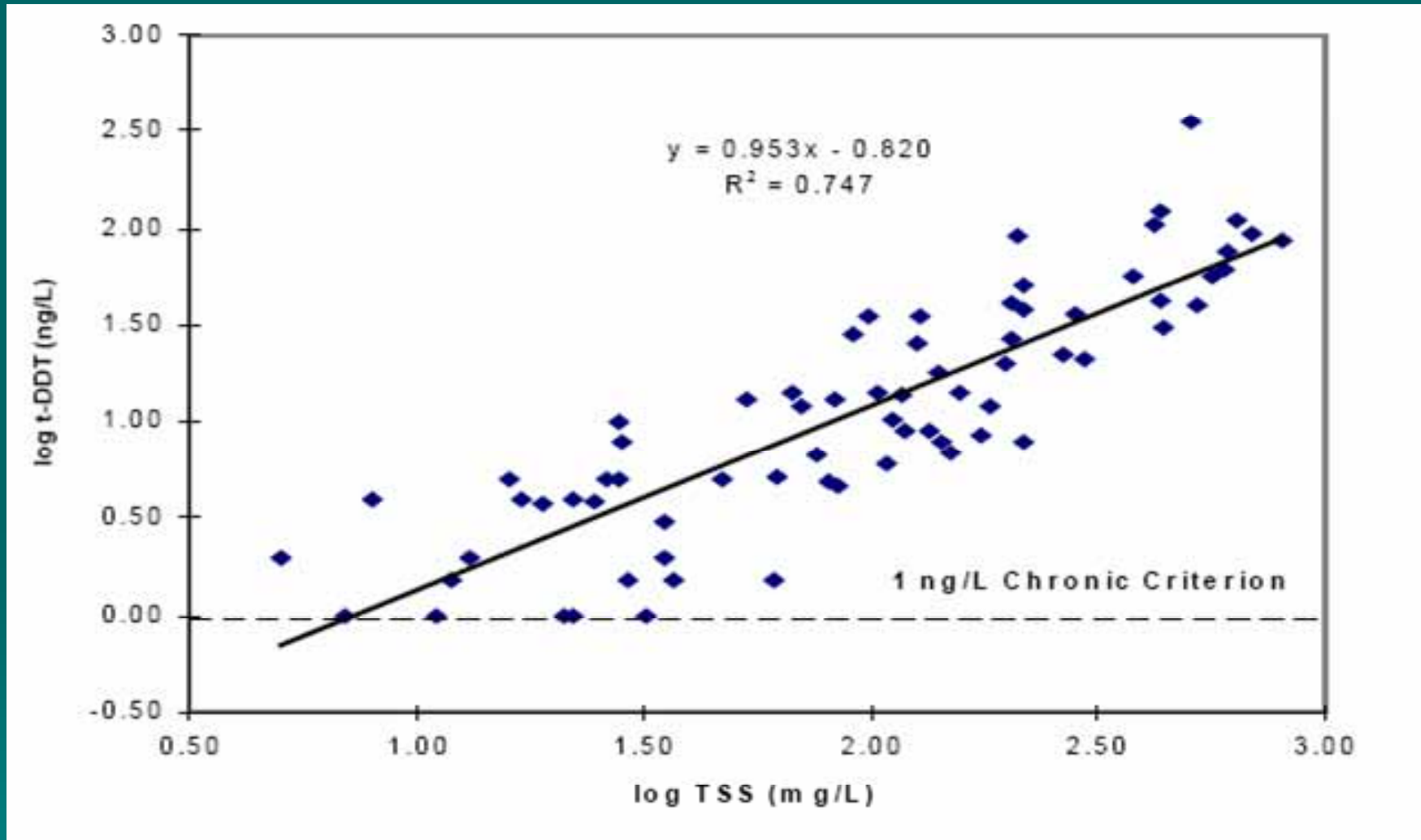
DDT Concentrations

- Total DDT above human health & aquatic life chronic toxicity criteria
- Concentrations (water)¹:
 - Range: 4 – 357 ng/L
 - Median: 8.3 ng/L
 - Criteria: 1 ng/L
- Largescale sucker total DDT concentrations up to 3,728 µg/kg DDT¹

DDT and Erosion

- Certain pesticides, like DDT, attach to soil particles where the pesticides were applied
- Eroding soil carries the DDT into streams

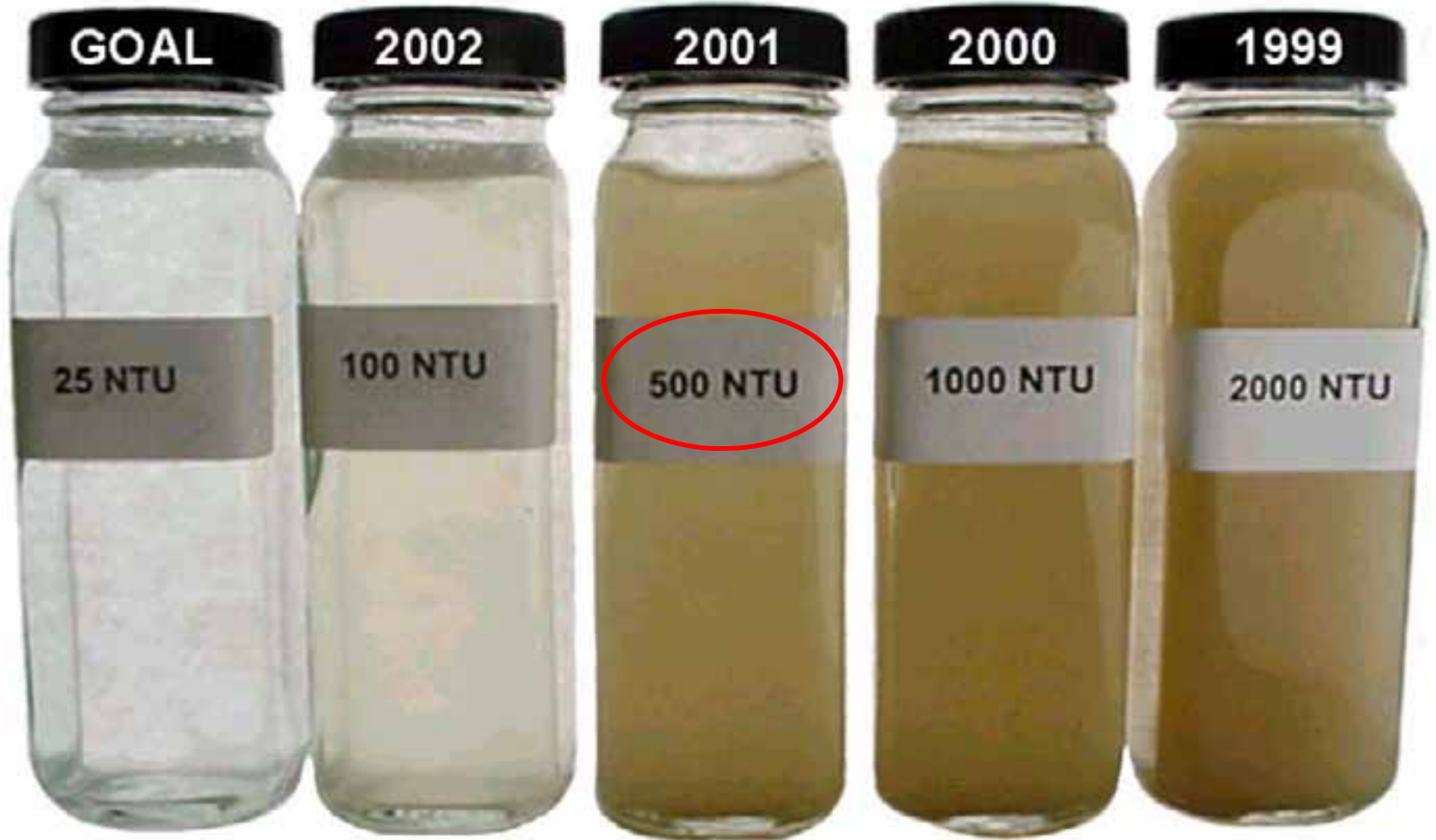
DDT & Total Suspended Solids¹



What Happened

- Irrigation Districts, Conservation Districts and others worked with farmers to develop a comprehensive Water Quality Policy that set specific on-farm turbidity targets.
- Many farmers voluntarily converted thousands of acres of cropland from erosive rill and furrow irrigation methods to less-erosive sprinkler and drip systems.

Yearly Turbidity Targets





Loan Program

RID funded \$1.6M
for on-farm irrigation
improvements in
1999

Overwhelming
interest prompted
application to for
Ecology for addition
SRF low interest
loans

RSBOJC



Loan Program

RSBOJC received \$10 million low interest loan through Ecology

Funding provided by the Centennial Clean Water Fund, Washington State Water Pollution Control Revolving Fund, and the Clean Water Act Section 319 Nonpoint-Source Fund

RSBOJC



RSBOJC Loan Criteria

Four-year
repayment;
low 1% interest
loan

Rill irrigation
improvements

NRCS approved

RSBOJC




Success

- 4,400 acres for \$3.3M (RID)
- 3,259 acres for \$2.6M (SVID)
- \$800 per acre

- 9,000+ acres converted or scheduled since 1999.

RSBOJC



Approved Loan Projects

- Drip
- Micro-spray
- Solid Set
- Center Pivot
- Tail Water Return
- Piping Tail Ditch

Drip





Solid Set

Overhead Sprinklers





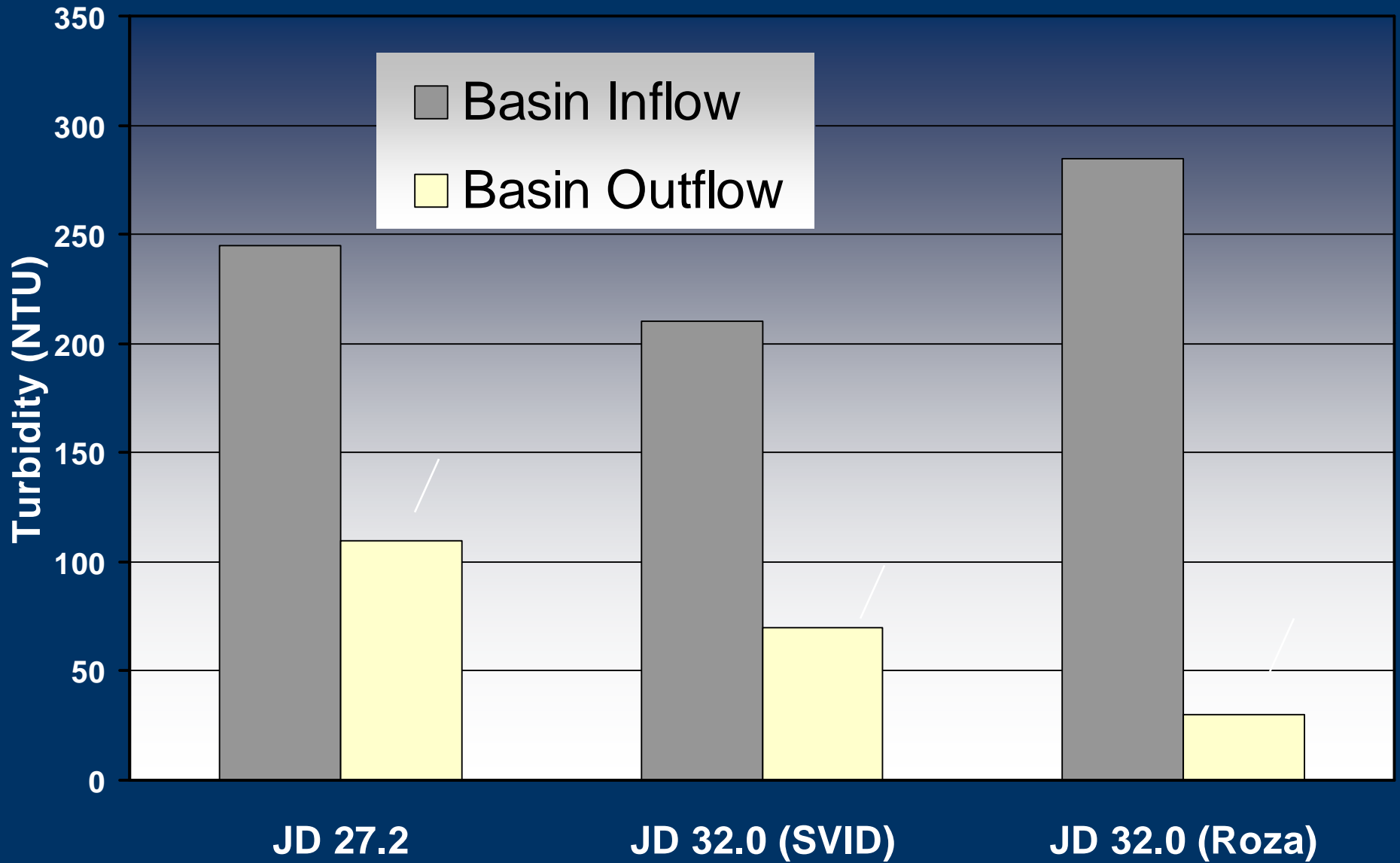
Wheel Lines

Center Pivot





Turbidity at Sedimentation Basins in 1998





Monitor return
flow from
individual farms

Corrective
action if
exceeding
turbidity target

Monitoring

RSBOJC



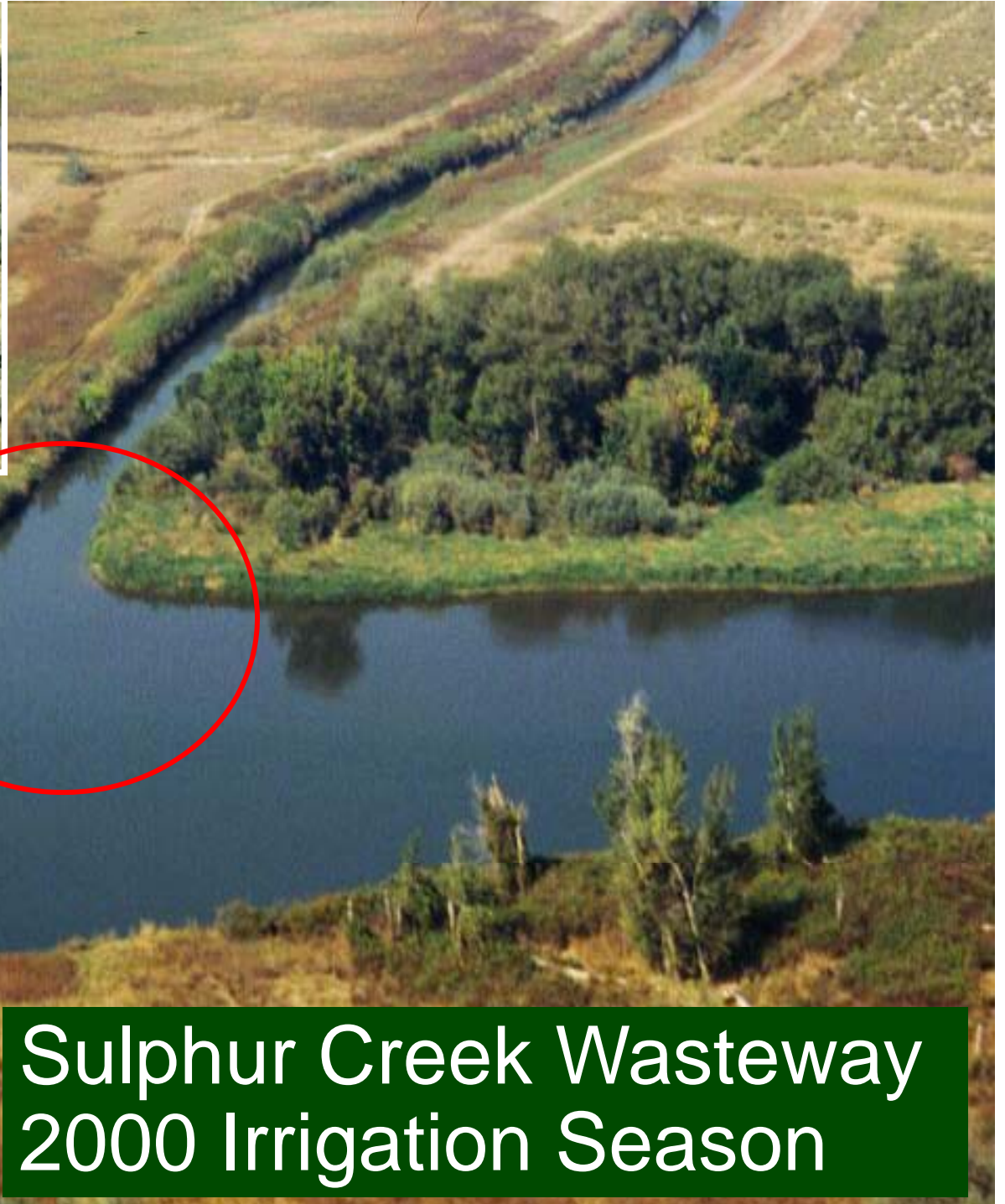
Failure To Comply

Short & long-term plans to address water quality

Water reduction

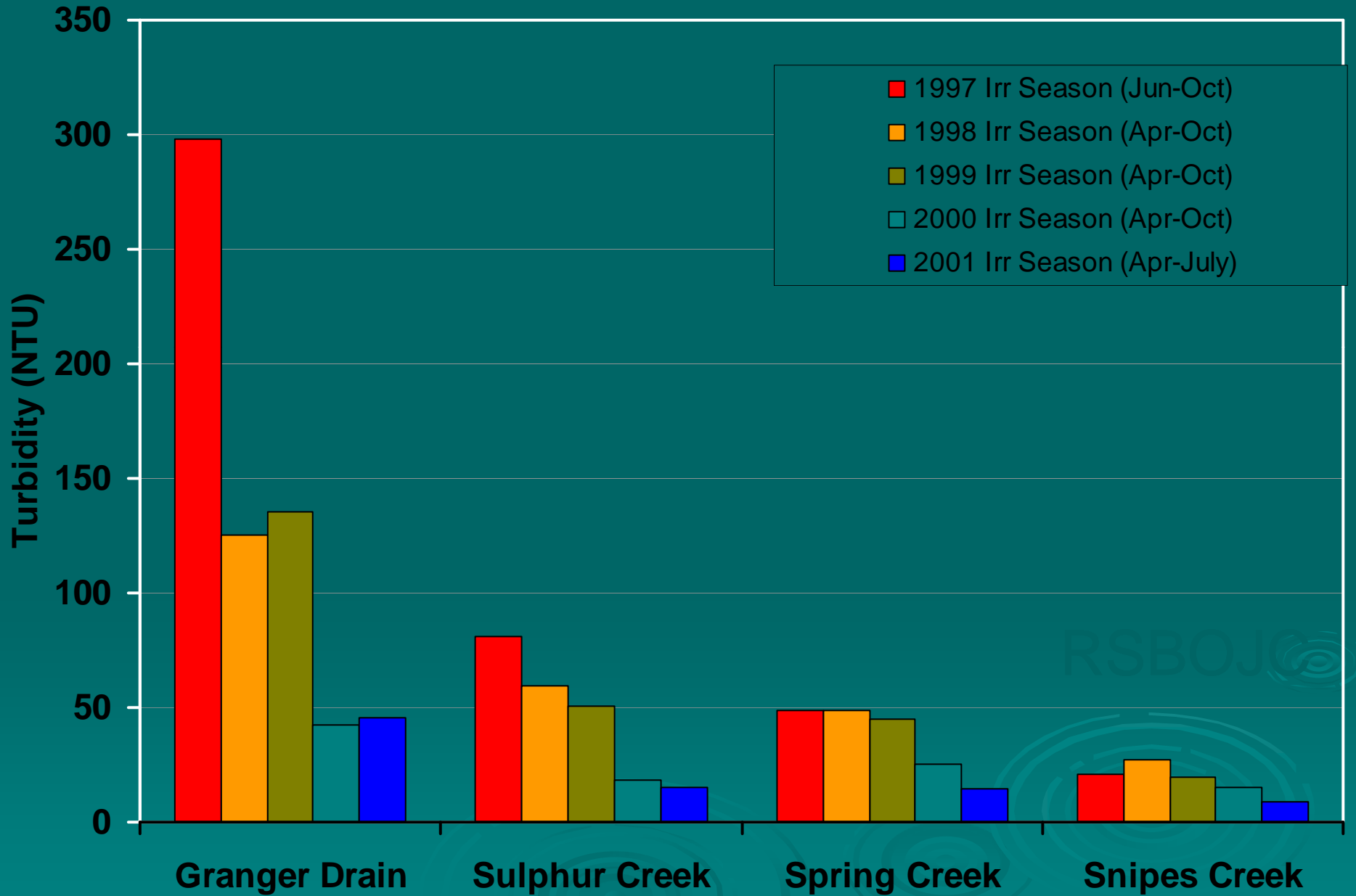
RSBOJC

1997

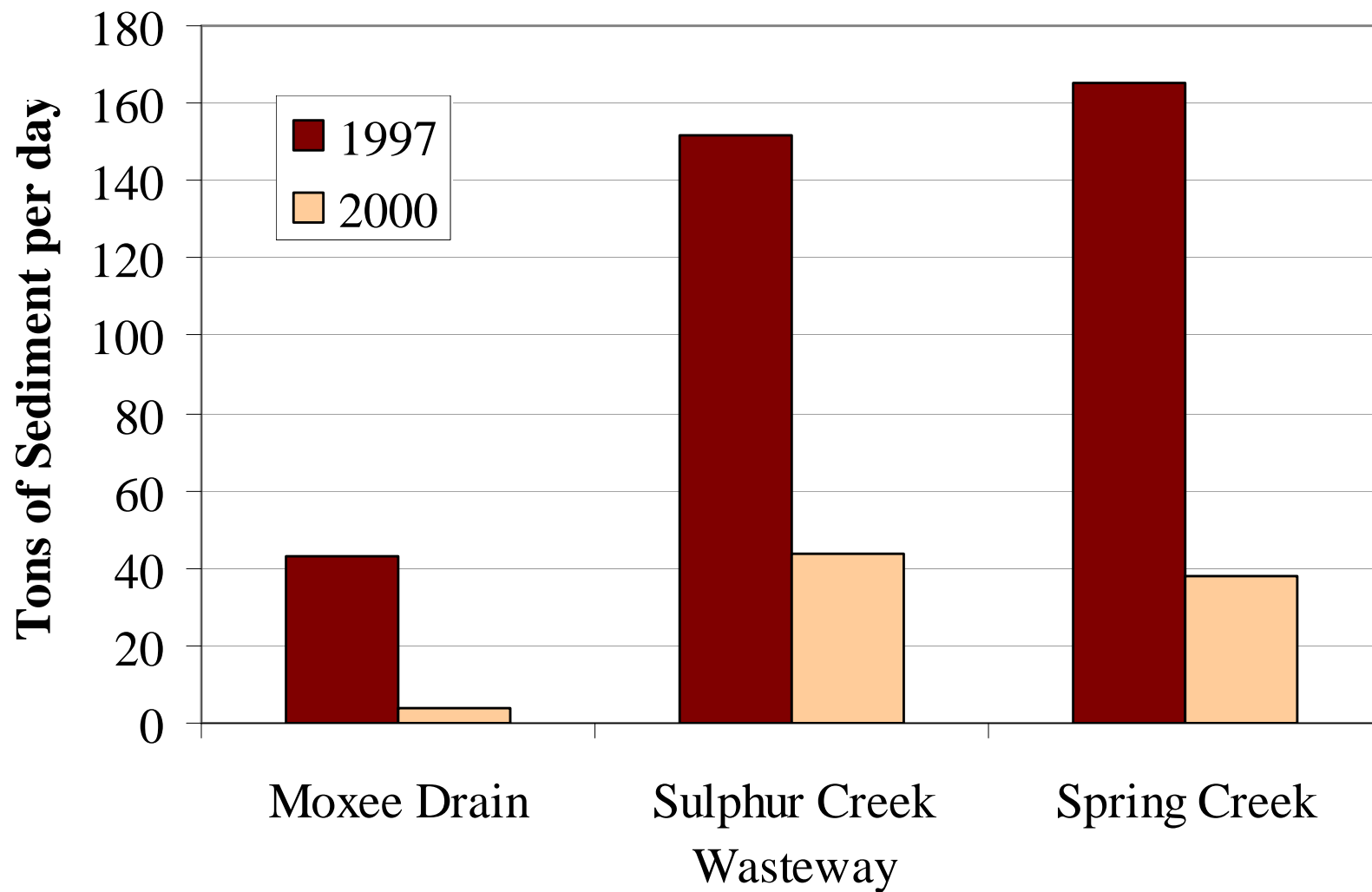


Sulphur Creek Wasteway
2000 Irrigation Season

90th Percentile Turbidity at Drainage Outlet Sites



Results³



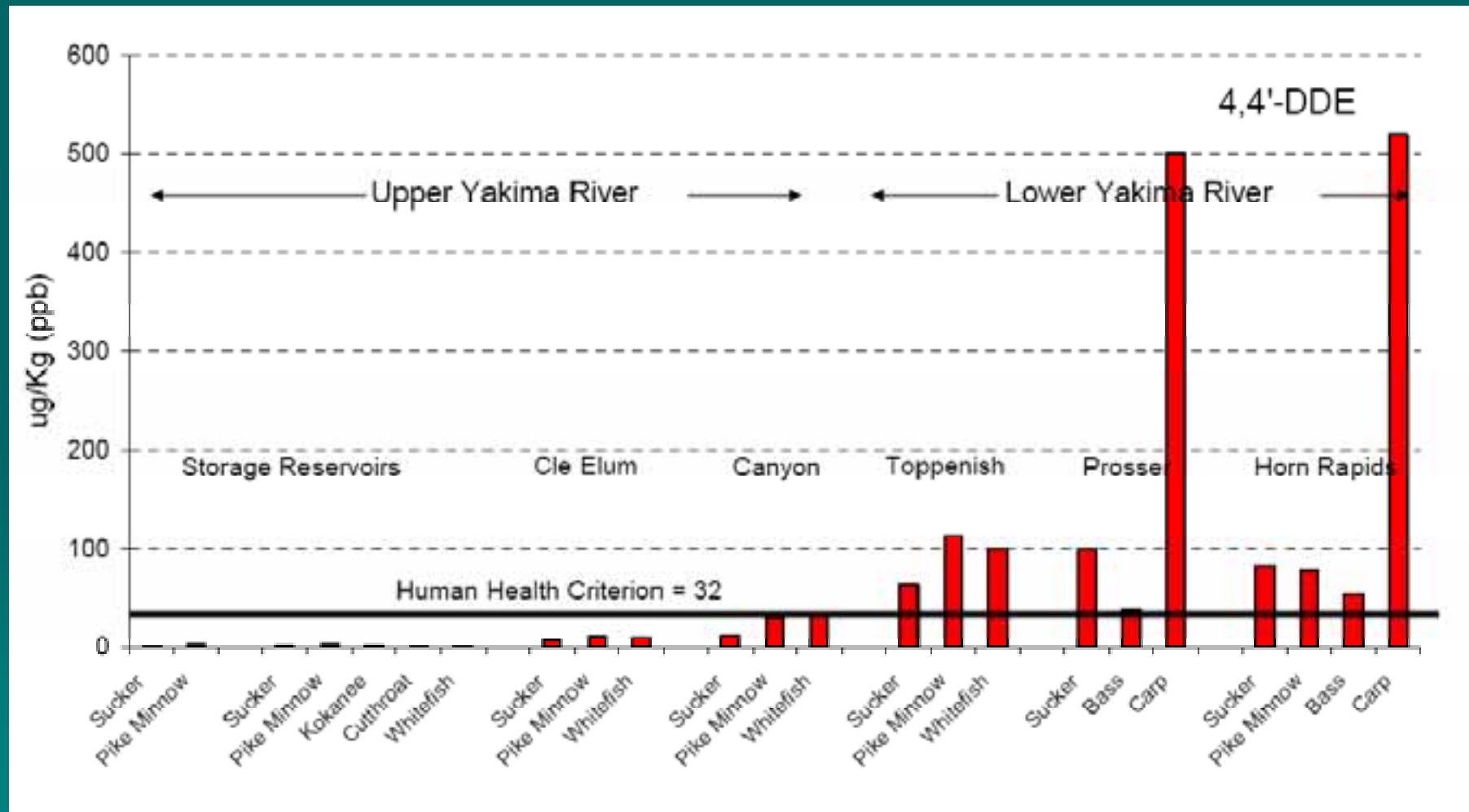
Results

2003 monitoring showed:

- 3 of 4 major agricultural drains met the TMDL goals for turbidity.
- The mainstem Yakima River was also cleaner; TSS decreased 50-70%.

DDT Results²

DDT going down....



Lessons Learned: why it worked

1. Local Partners:

- Roza & Sunnyside Valley Irrigation Districts
- Benton and 2 Yakima Conservation Districts
- WSU Extension, NRCS
- Yakima-Kittitas Resource Conservation and Development (RC&D)

Lessons Learned: why it worked

2. Ecology 1-on-1 staff time:

- 1998-2000
- Attend board meetings, field days, commodity group meetings, conventions, etc
- Ecology staff worked from irrigation district office (enforcement, communication, loan program)

Plant Growth

- Less sediment = more light penetration = more plant growth in low water years
- Eutrophication problem in the Yakima needs to be solved (not caused by TMDL)

Next Steps

- Ecology is now collecting data for a large study of various toxic chemicals in the entire Yakima River watershed (upper and lower).



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http://www.ecy.wa.gov/programs/wq/tmdl/tmdls_by_wria/tmdl-wria37.html

Footnotes

¹ <http://www.ecy.wa.gov/pubs/97321.pdf>, A Suspended Sediment and DDT Total Maximum Daily Load Evaluation Report for the Yakima River, July 1997, Publication No. 97-321

² <http://www.ecy.wa.gov/pubs/0703036.pdf>, Chlorinated Pesticides, PCBs, and Dioxins in Yakima River Fish in 2006: Data Summary and Comparison to Human Health Criteria, July 2007, Publication No. 07-03-036

³ <http://www.nacdnet.org/policy/environment/water/tmdl/casestudies/washington.phtml>