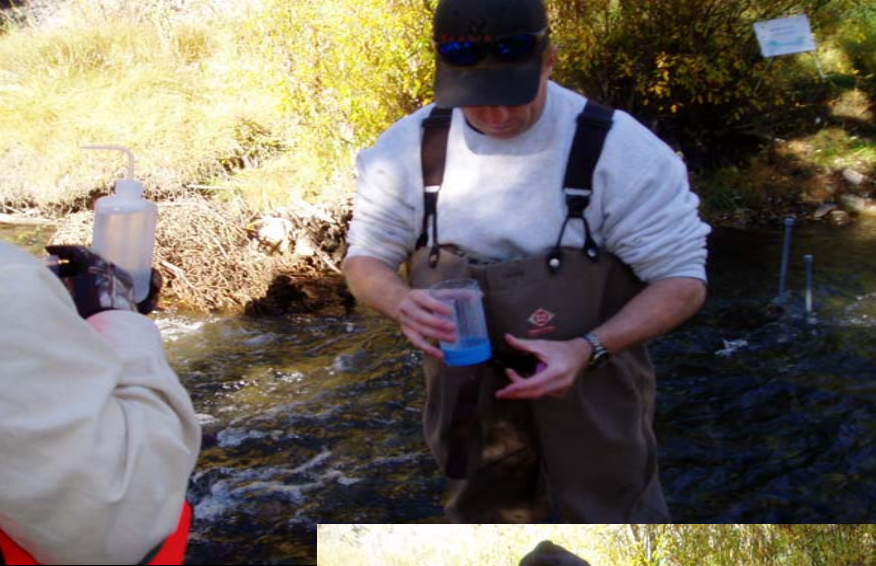
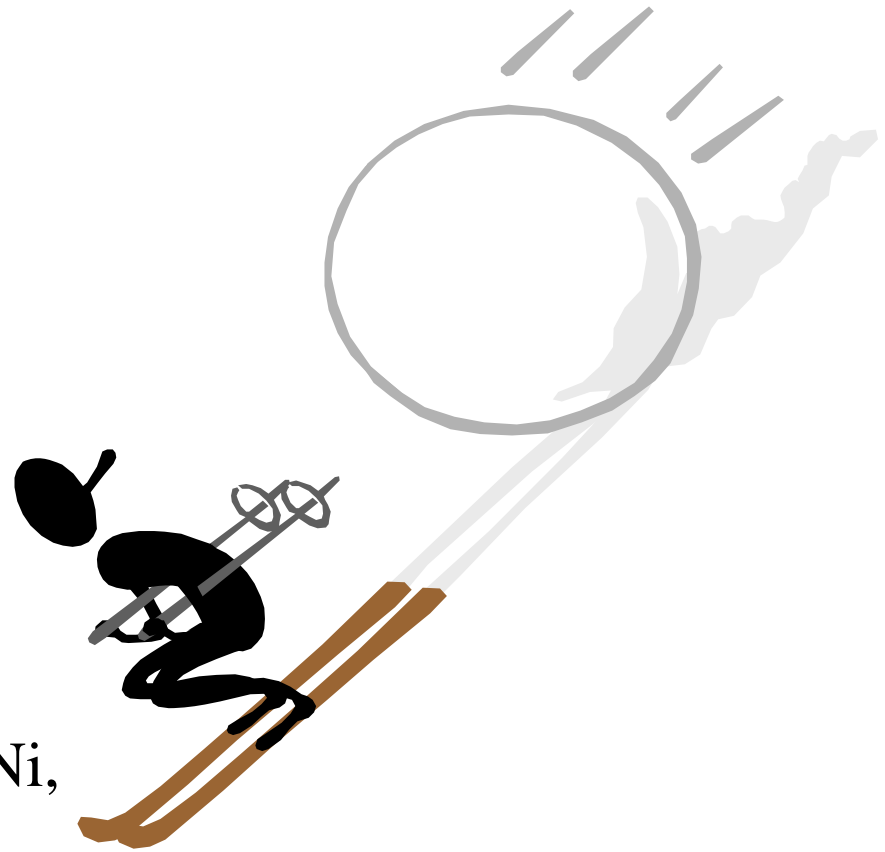


GSI Study Detailed Data Screening



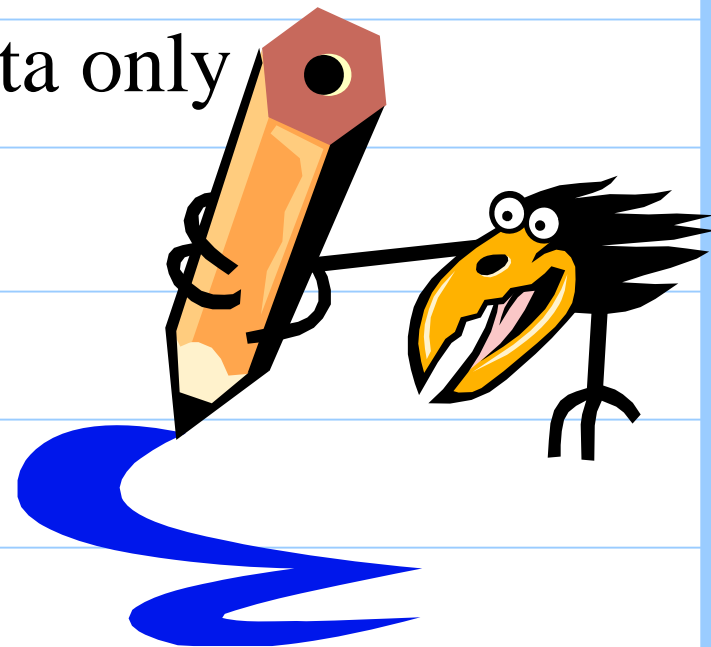
COPCs from Preliminary Screen

- Piezometer Water
 - Al, Ba, B, Cd, Cu, Fe, Pb, Mn, Mo, Ni, Tl, Va, Zn
- Chamber Water
 - Al, Ba, B, Cd
- Surface Water
 - Al, Ba, B, Cd
- Sediment
 - Ba, Be, Cu, Pb, Mn, Mo, Ni, Tl, Va, Zn



Graphing Methods

- Non-detects were graphed as $\frac{1}{2}$ detection limit
- Surface Water: dissolved data only
- Only COPCs and Mo were graphed



Questions from January Meeting





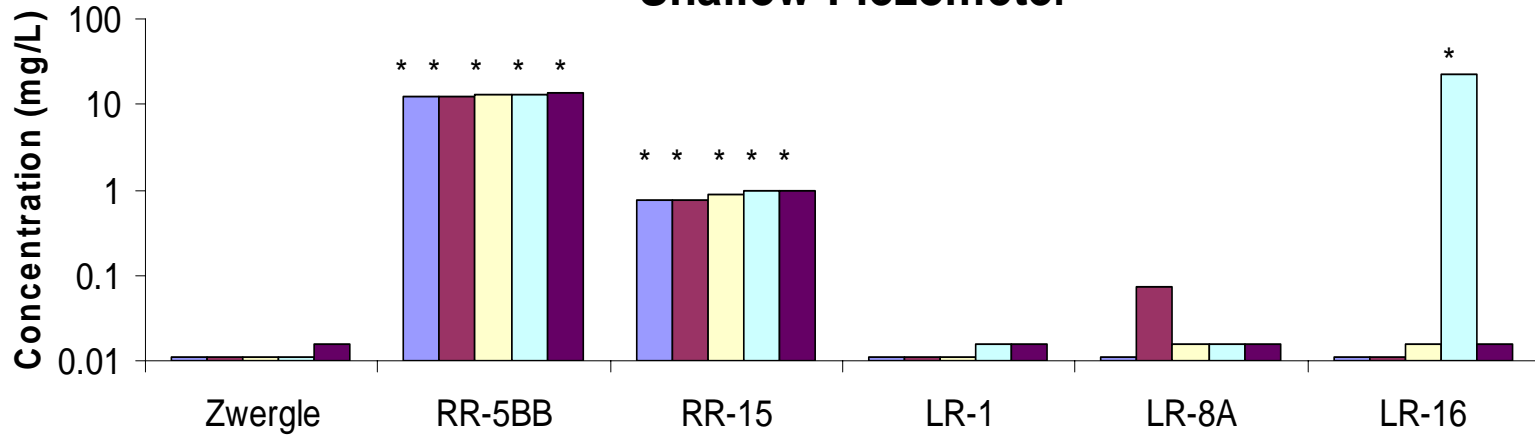
Did the deep
piezometers have
higher concentrations?

Aluminum

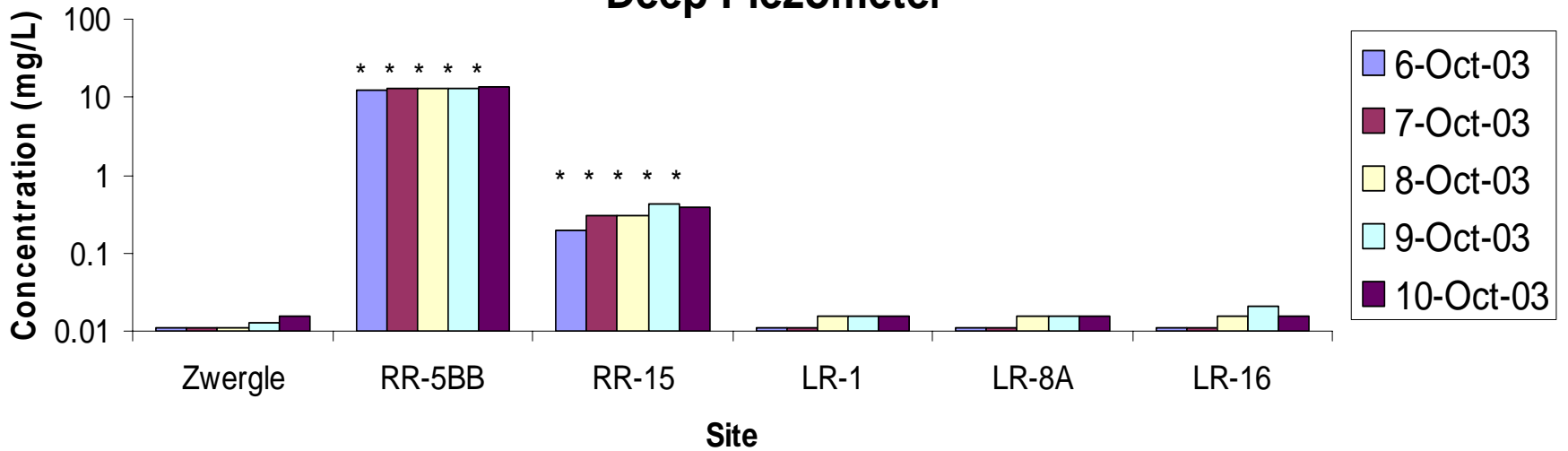
SLC=0.087 mg/L

* Exceeds SLC

Shallow Piezometer



Deep Piezometer

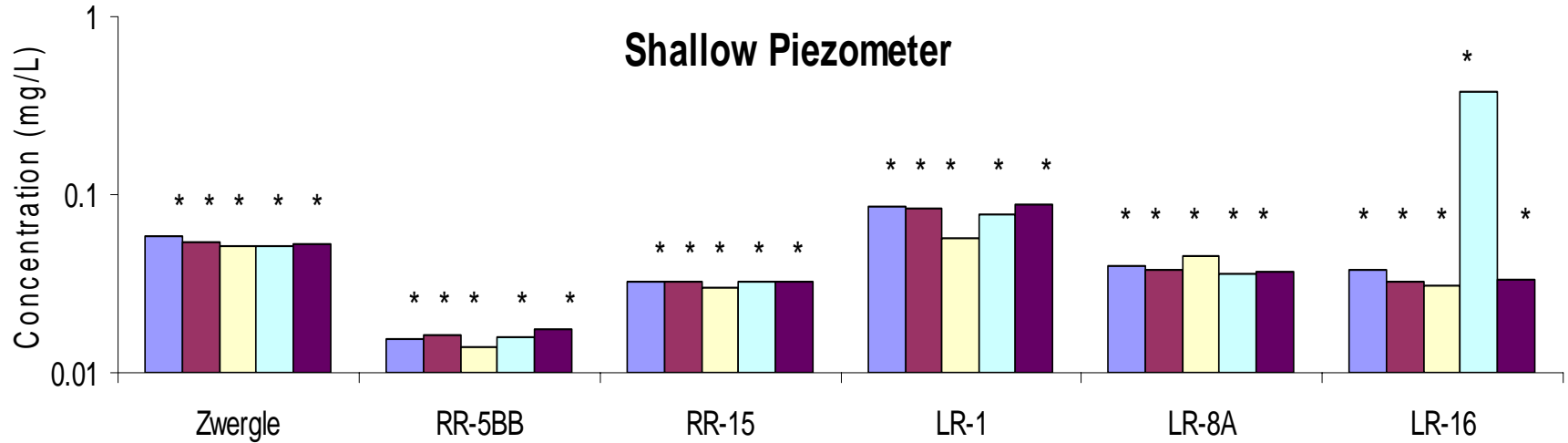


Barium

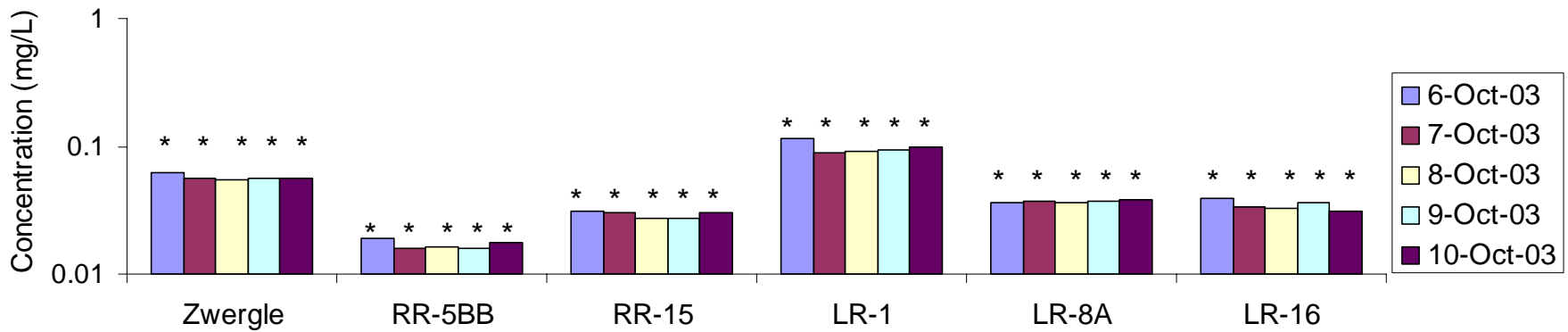
SLC=0.004 mg/L

*Exceeds Screen

Shallow Piezometer



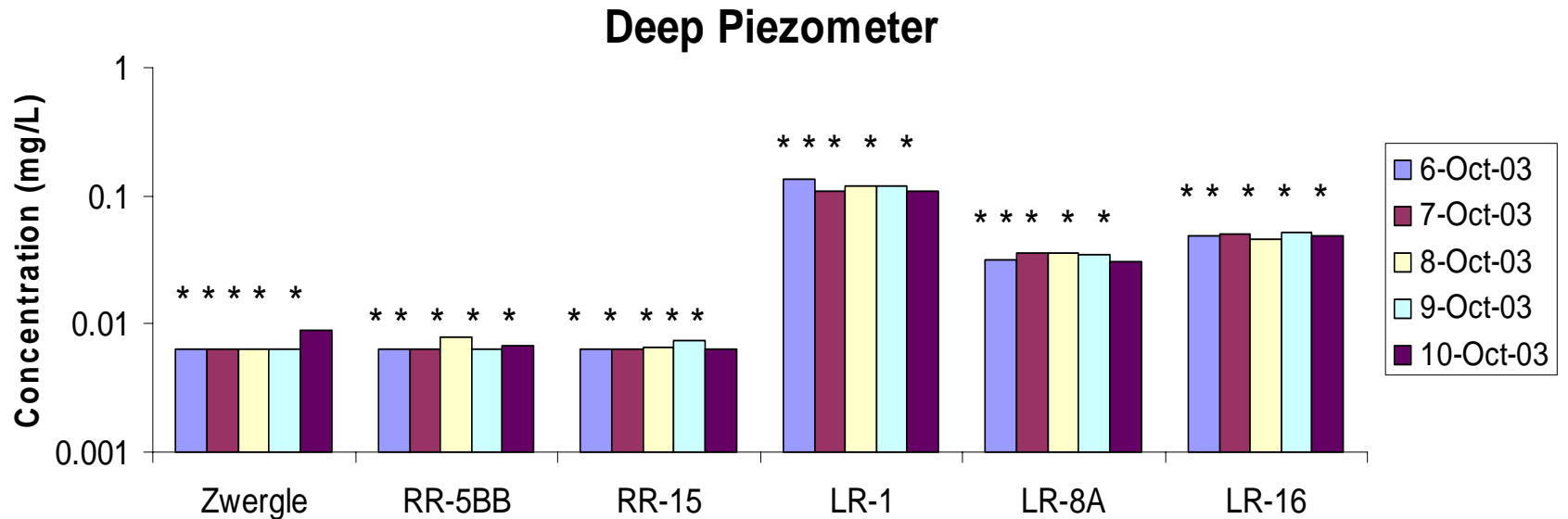
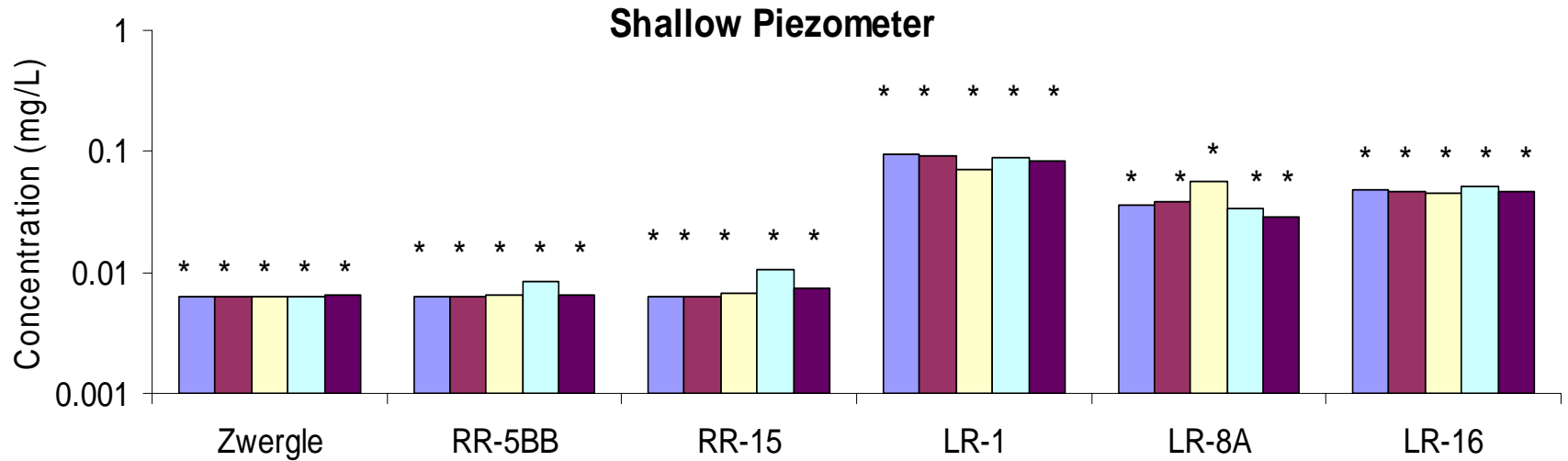
Deep Piezometer



Boron

SLC=0.0016 mg/L

*Exceeds screen

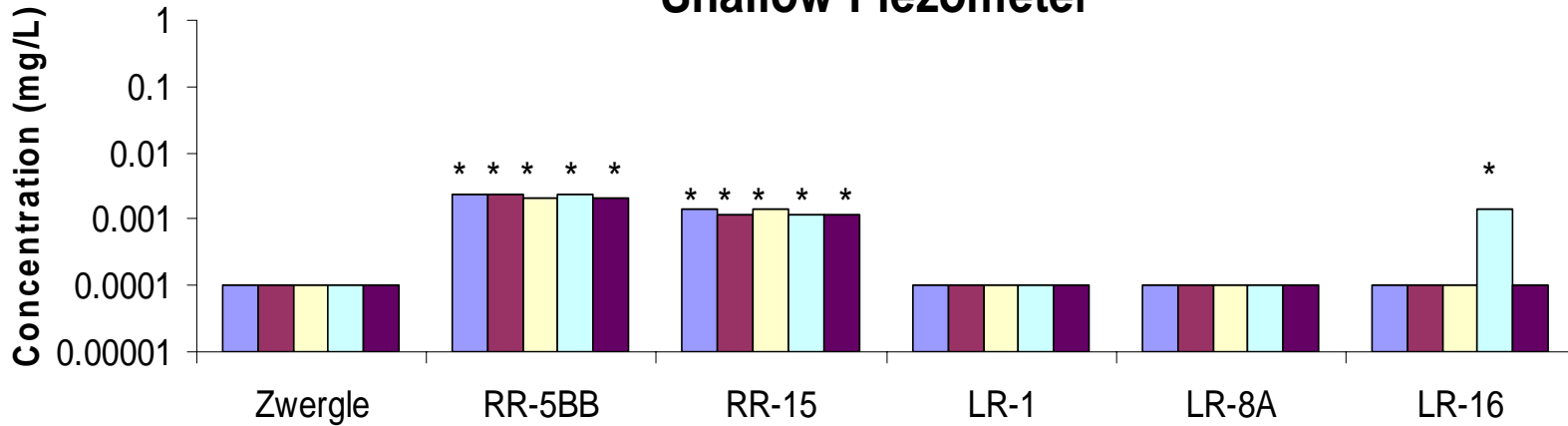


Cadmium

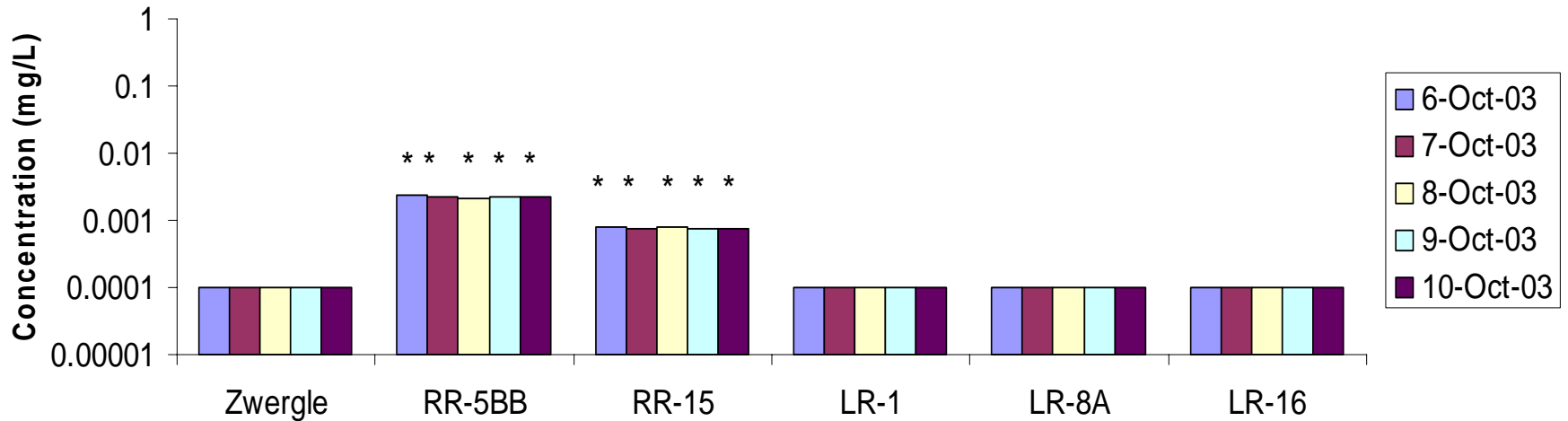
SLC=0.00025 mg/L

* Exceeds screen

Shallow Piezometer



Deep Piezometer

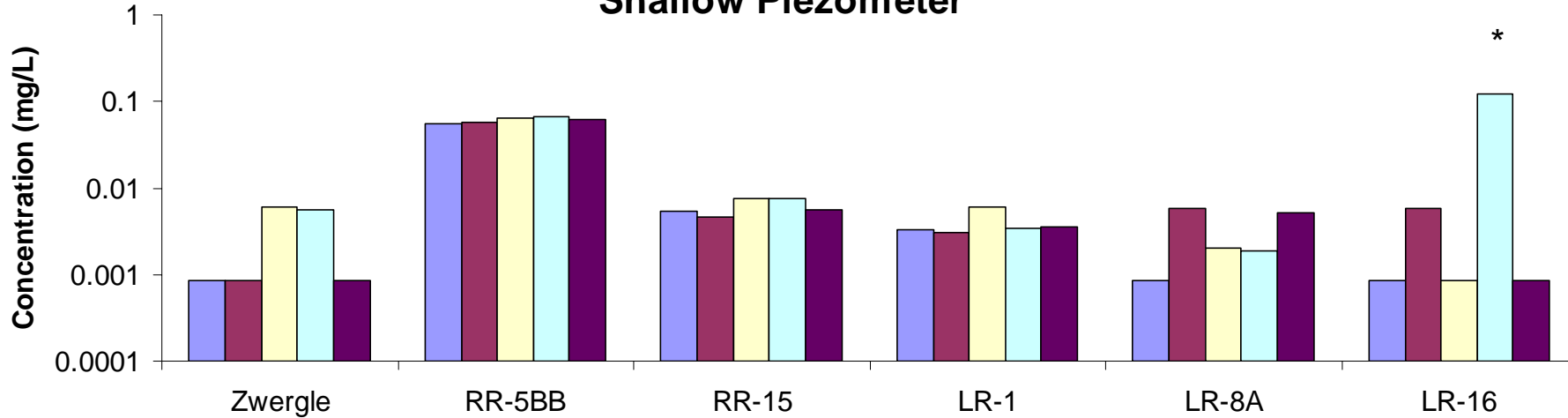


Copper

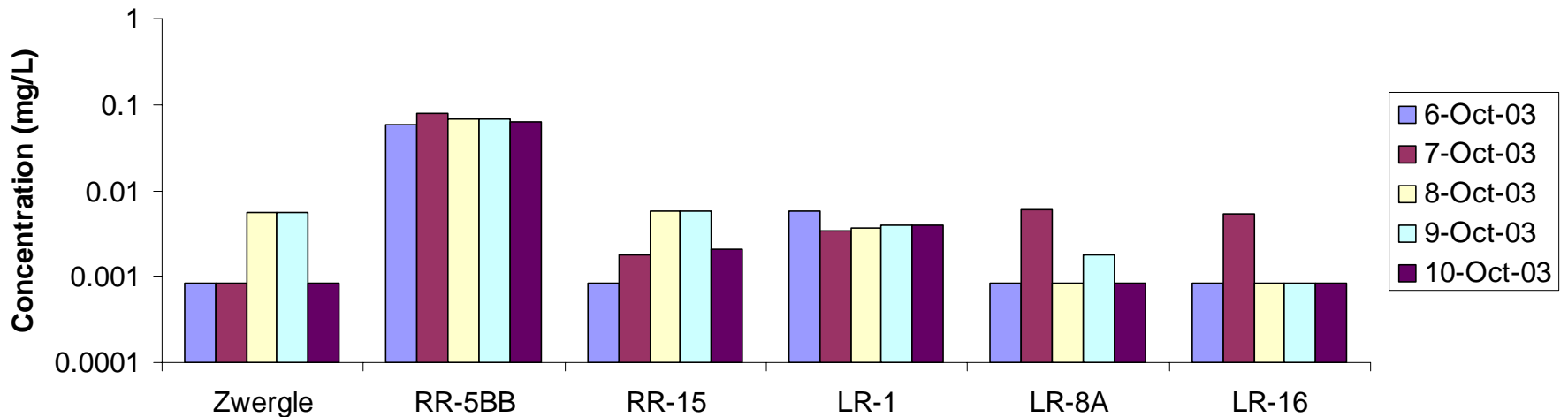
SLC=0.009 mg/L

*Exceeds screen

Shallow Piezometer



Deep Piezometer

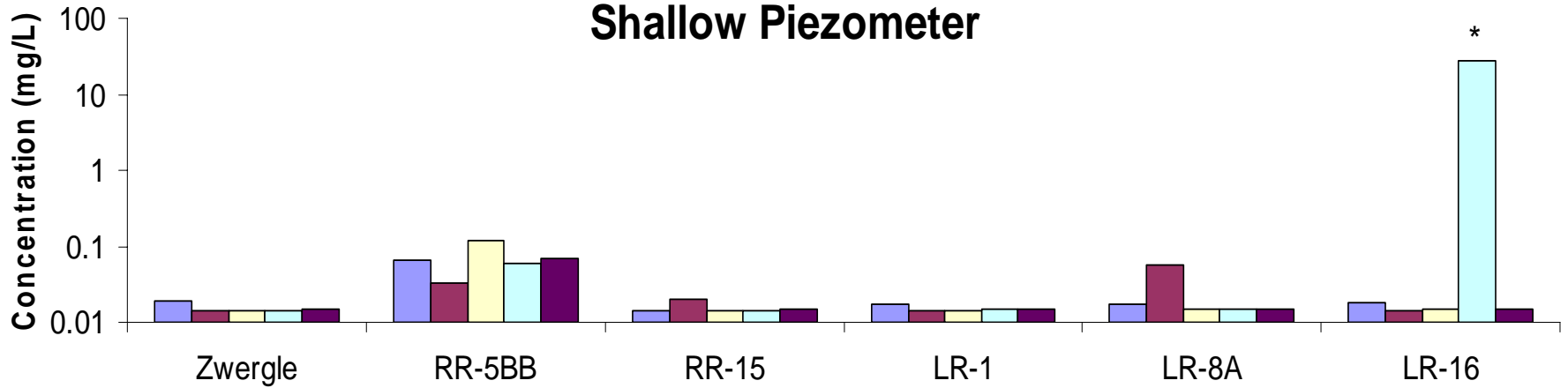


Iron

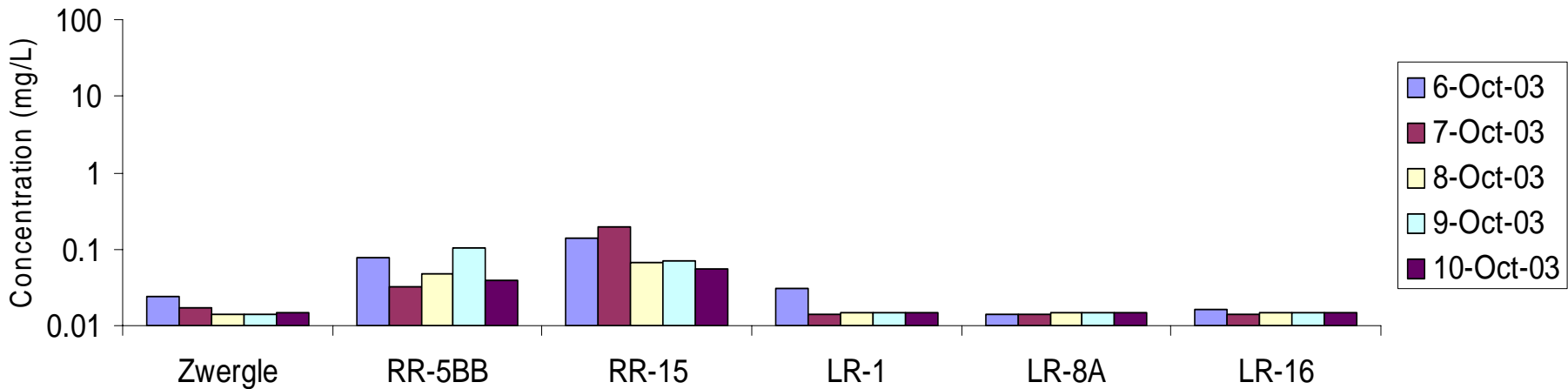
SLC=1 mg/L

*Exceeds screen

Shallow Piezometer



Deep Piezometer

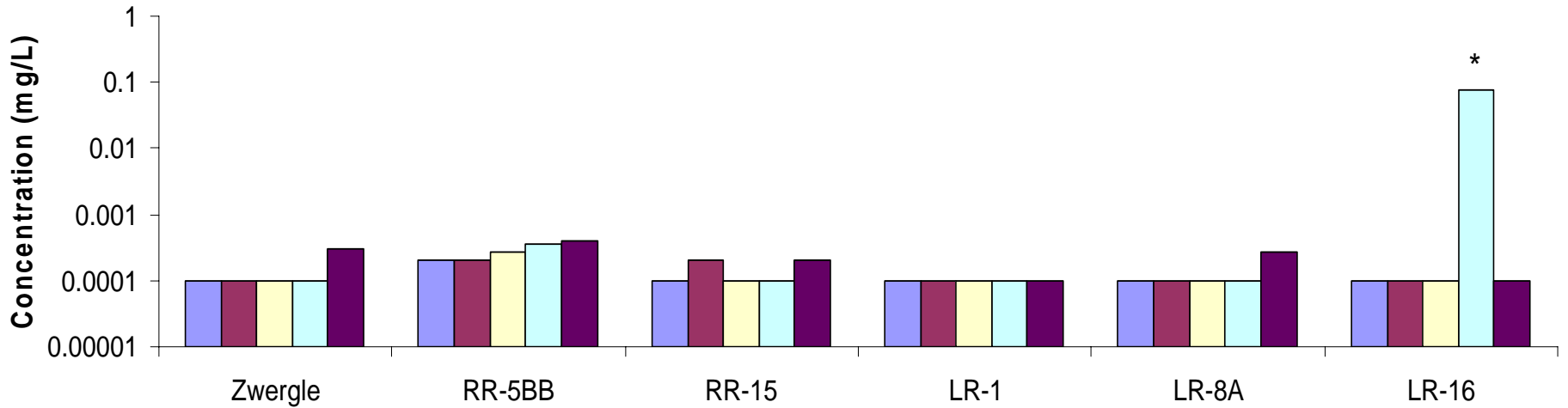


Lead

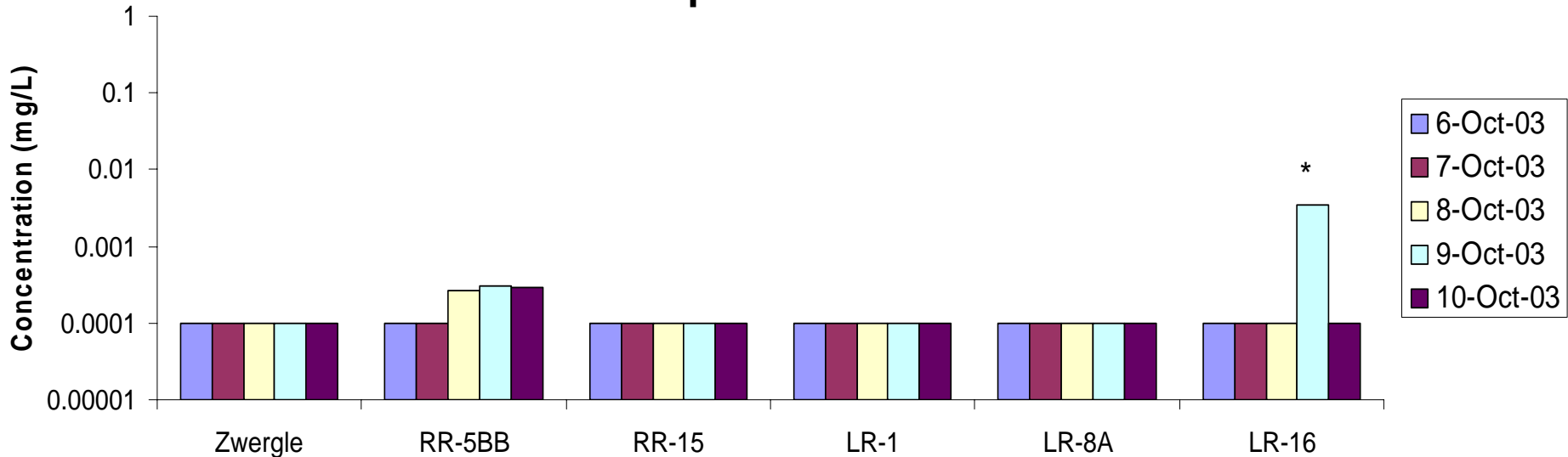
Shallow Piezometer

SLC=0.0025 mg/L

*Exceeds screen



Deep Piezometer

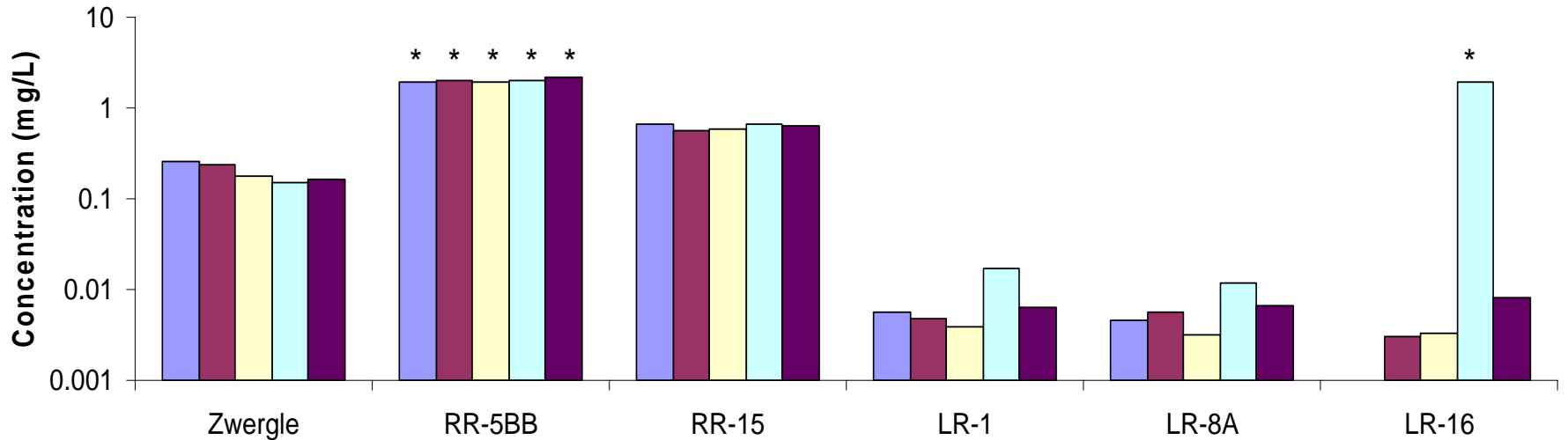


Manganese

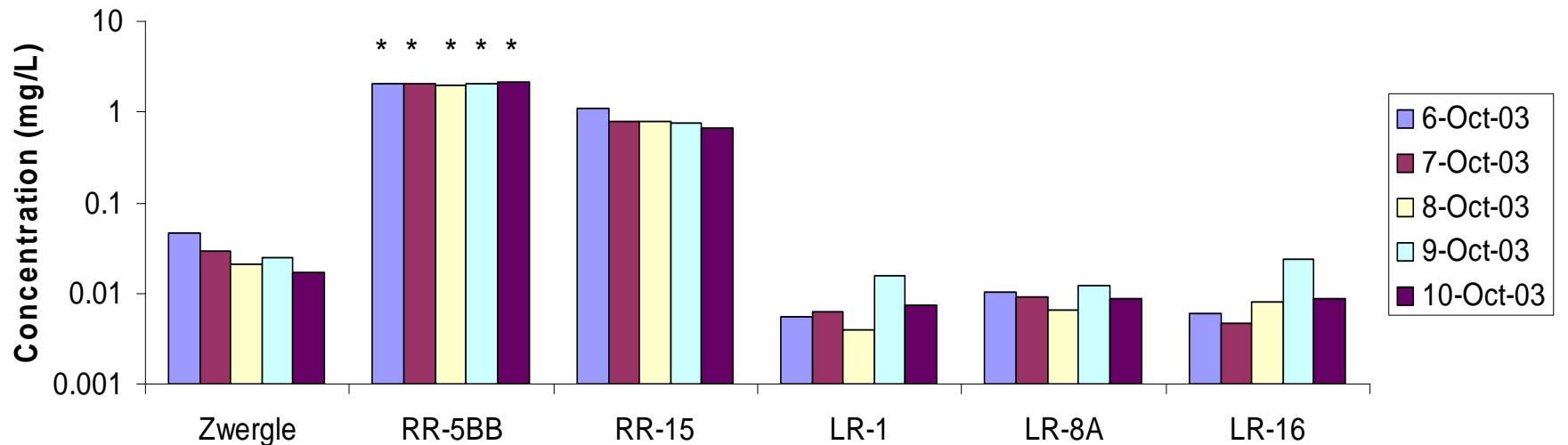
Shallow Piezometer

SLC=1.165 mg/L

*Exceeds screen



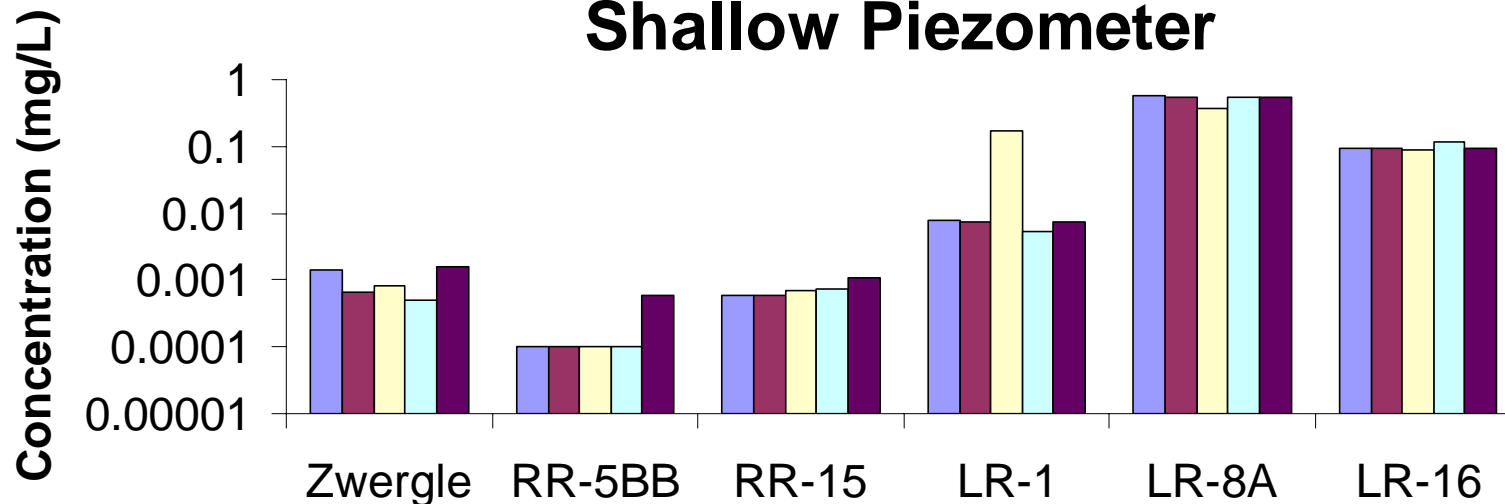
Deep Piezometer



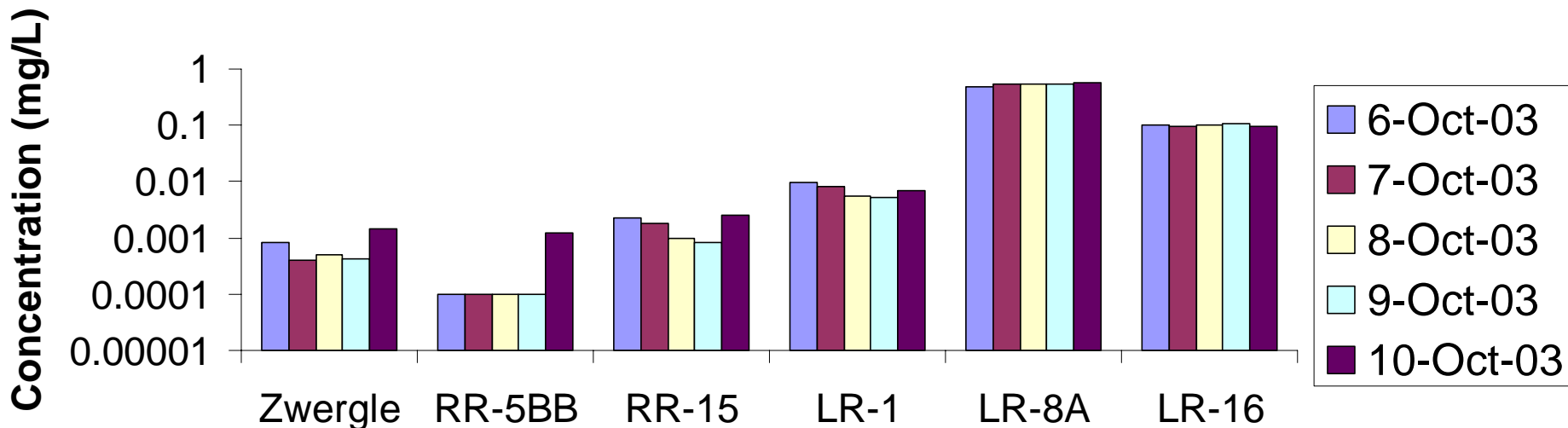
Molybdenum

Shallow Piezometer

SLC= 2 mg/L
* Exceeds screen

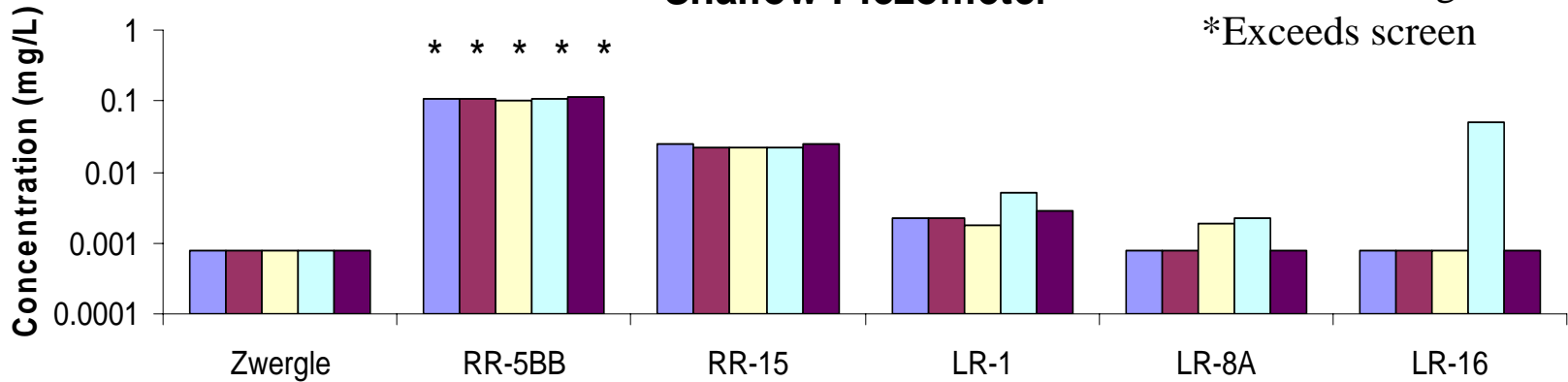


Deep Piezometer

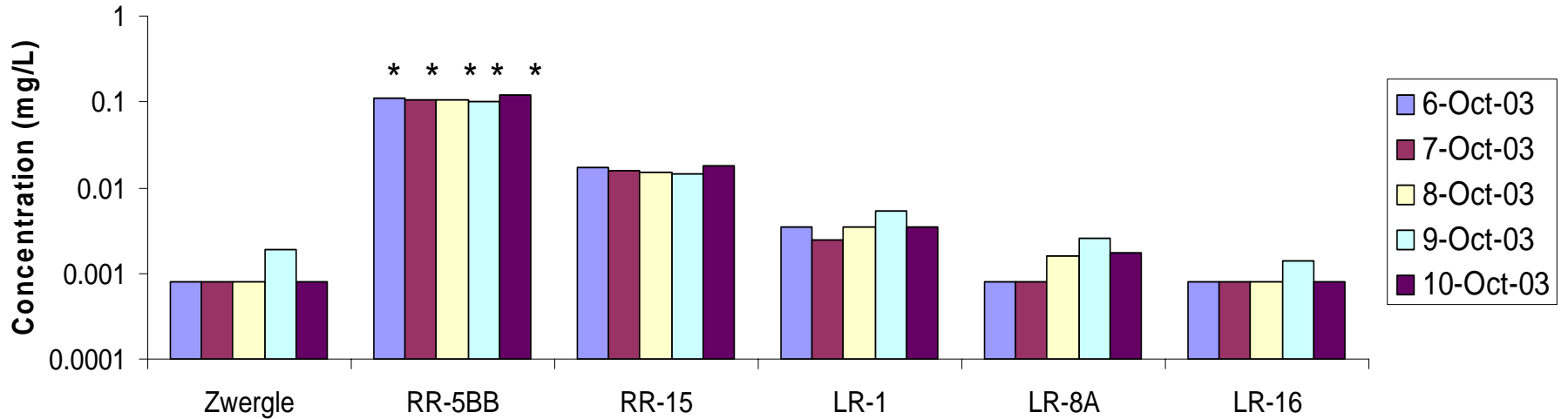


Nickel

Shallow Piezometer



Deep Piezometer

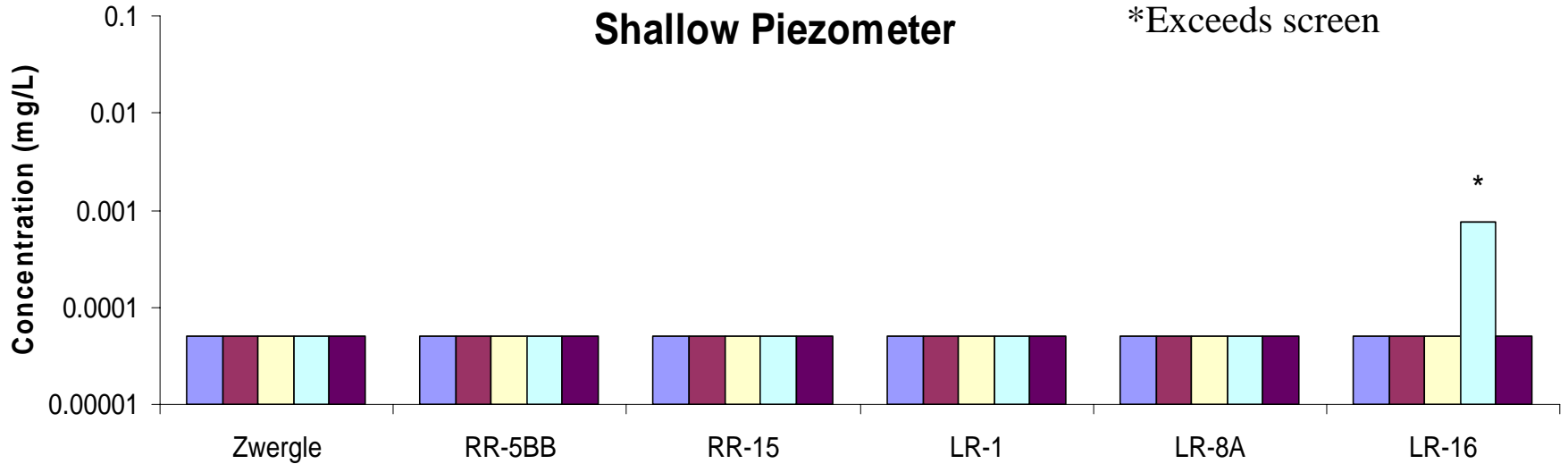


Silver

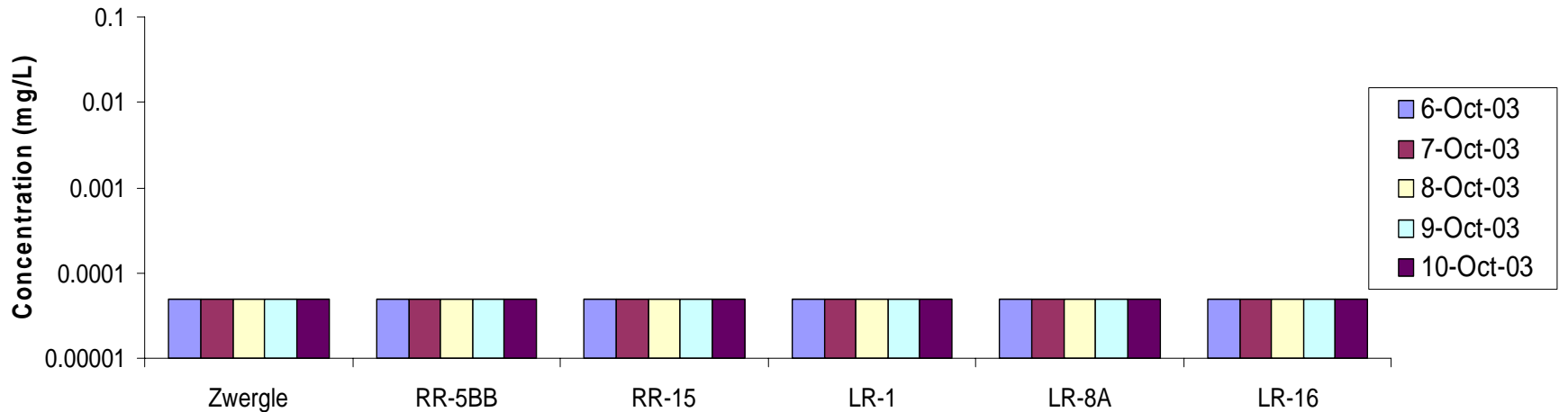
Shallow Piezometer

SLC=0.00032 mg/L

*Exceeds screen



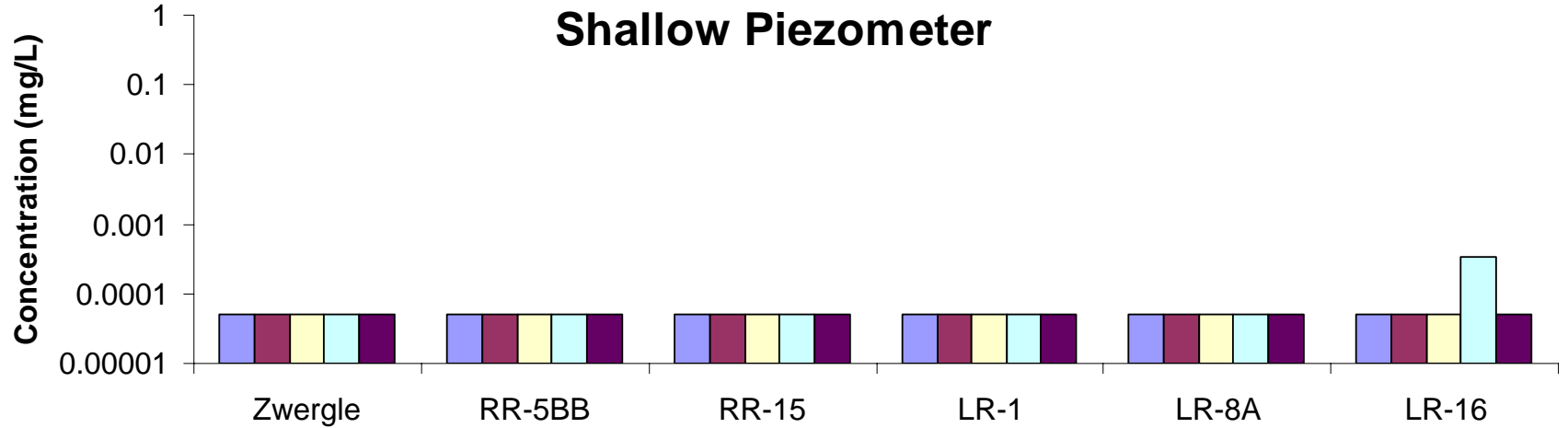
Deep Piezometer



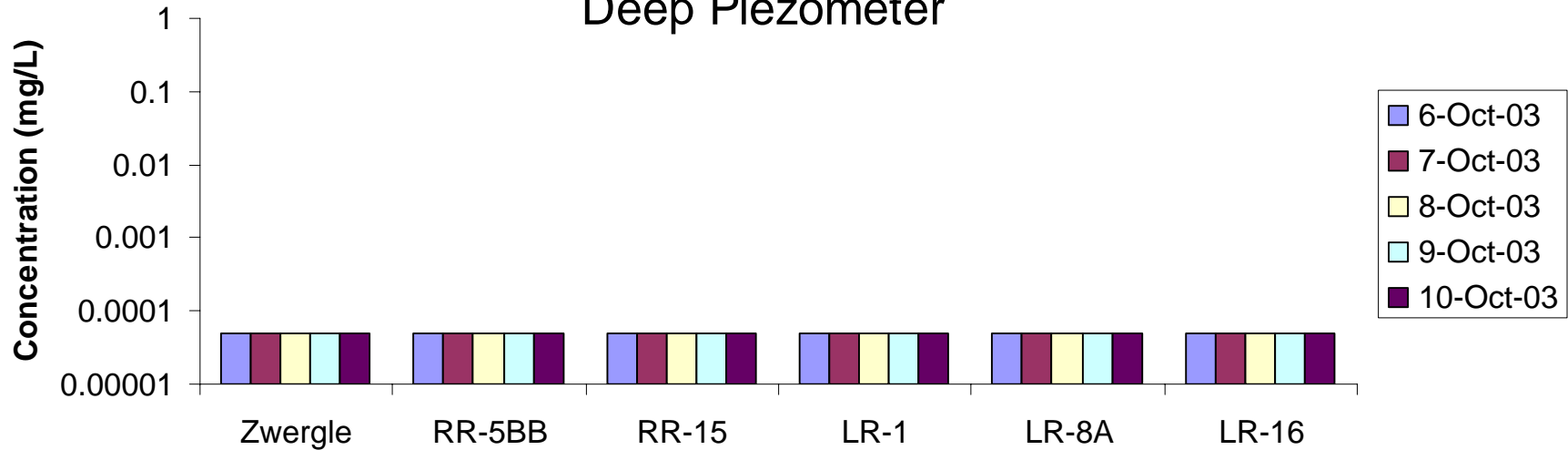
Thallium

SLC= None

Shallow Piezometer



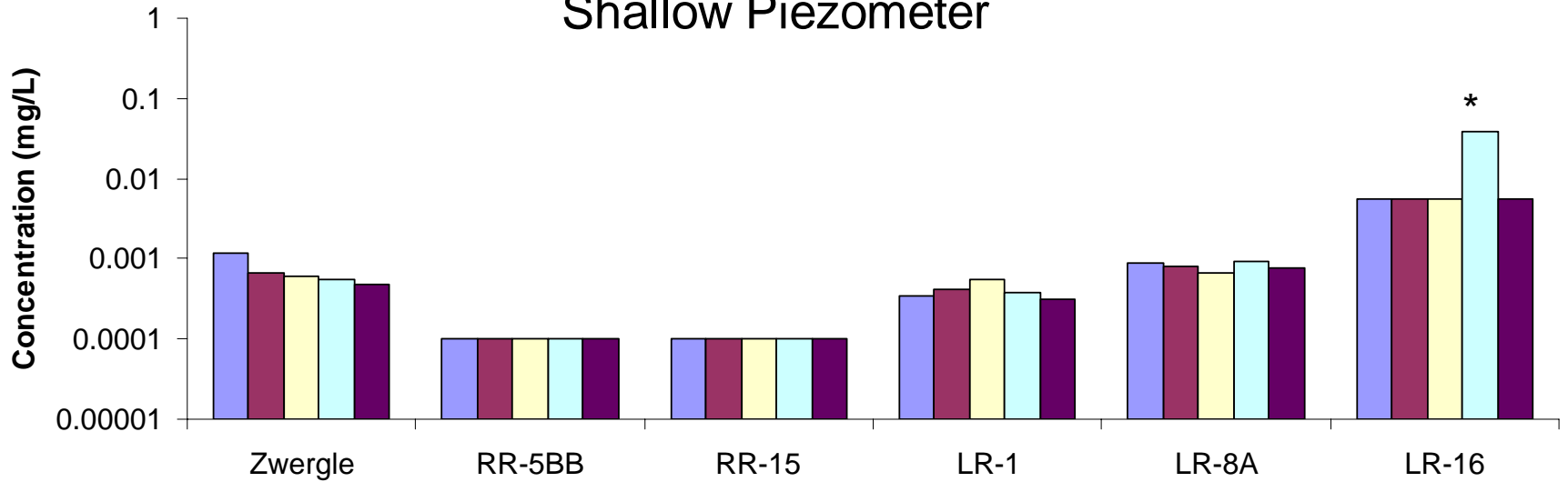
Deep Piezometer



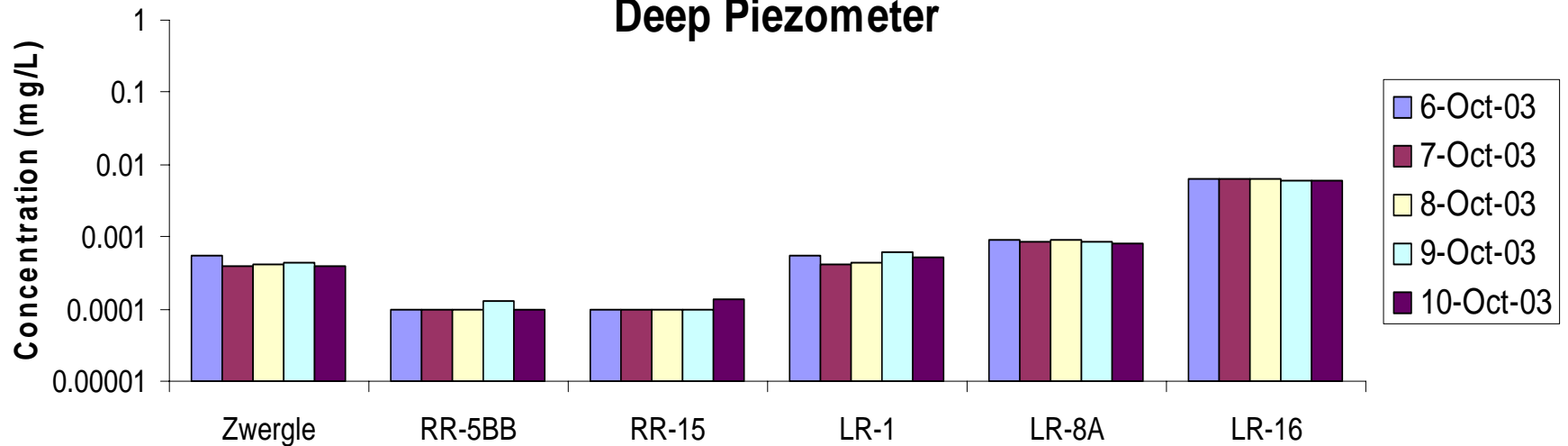
Vanadium

Shallow Piezometer

SLC= 0.019 mg/L
*Exceeds screen



Deep Piezometer

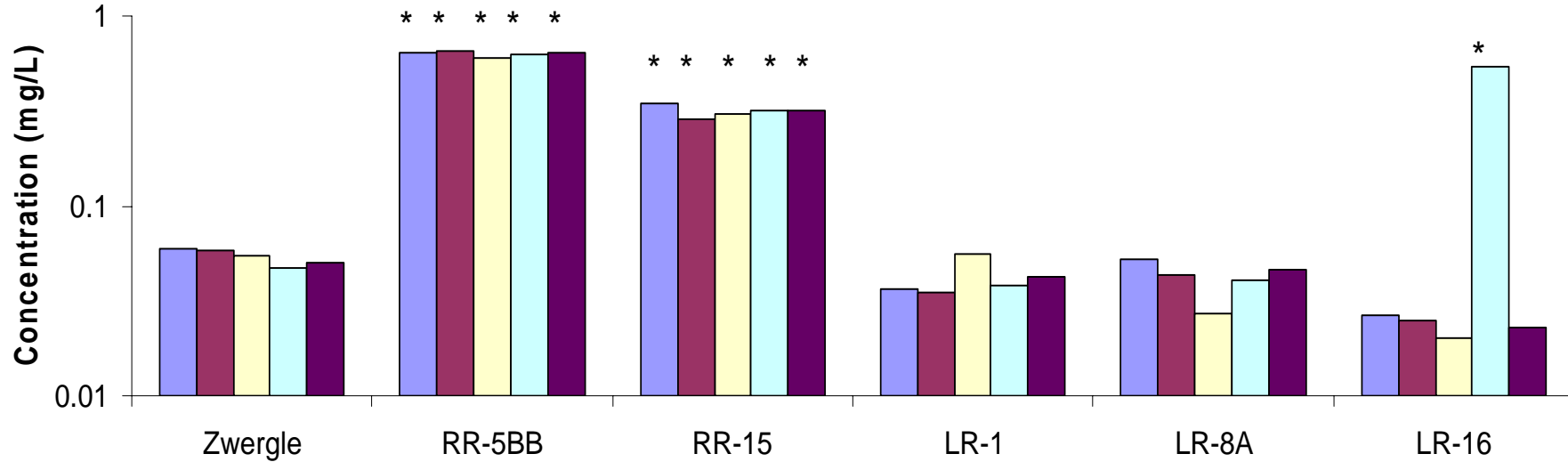


Zinc

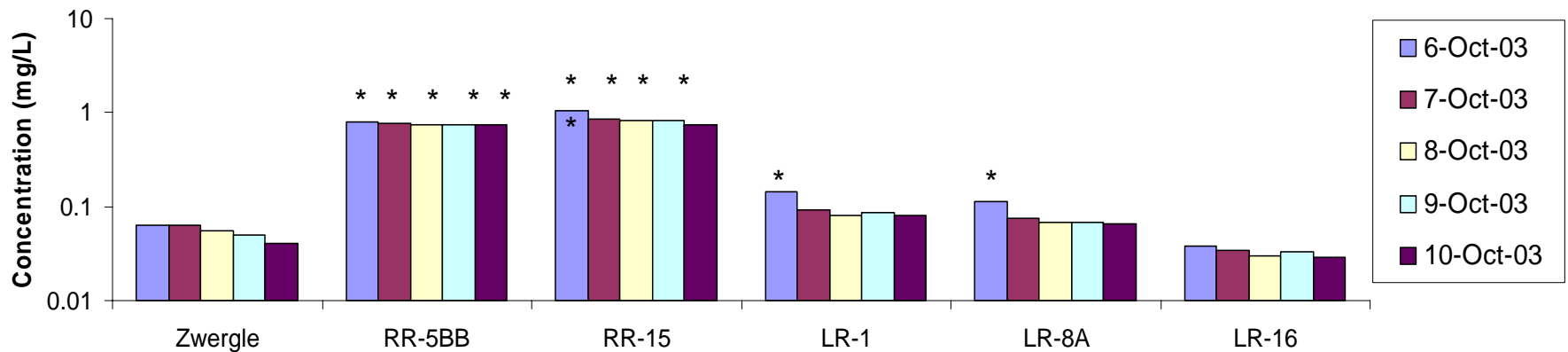
SLC= 0.12 mg/L

*Exceeds screen

Shallow Piezometer



Deep Piezometer

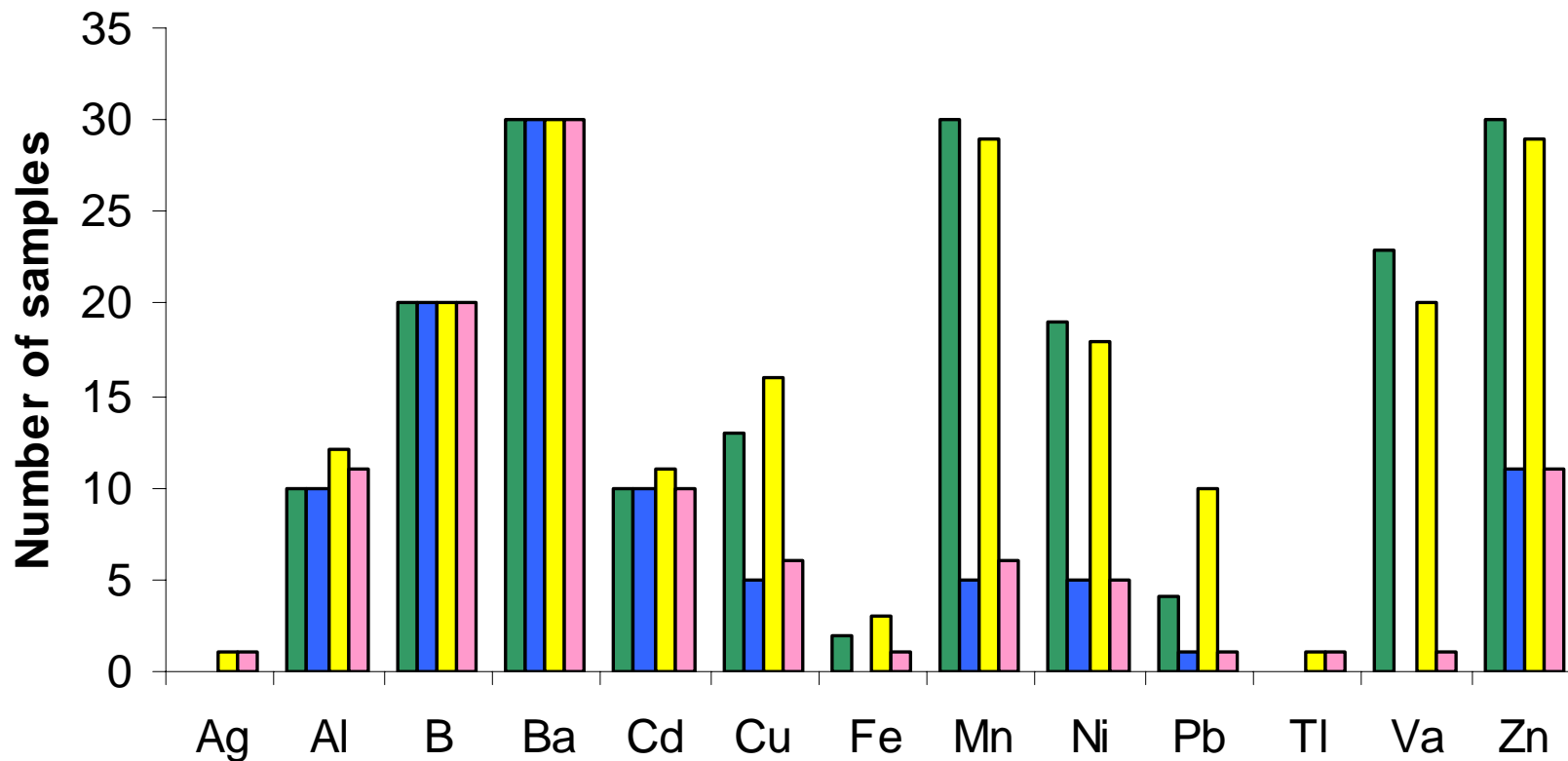




Did the deep
piezometers have
MORE
exceedances?

Overall

Detections vs. Exceedences

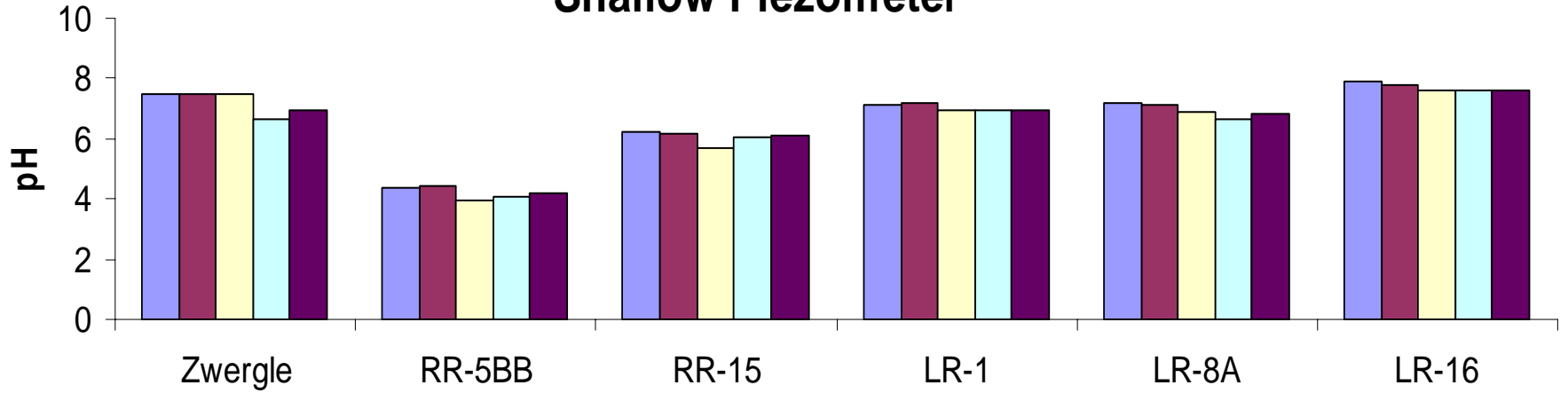




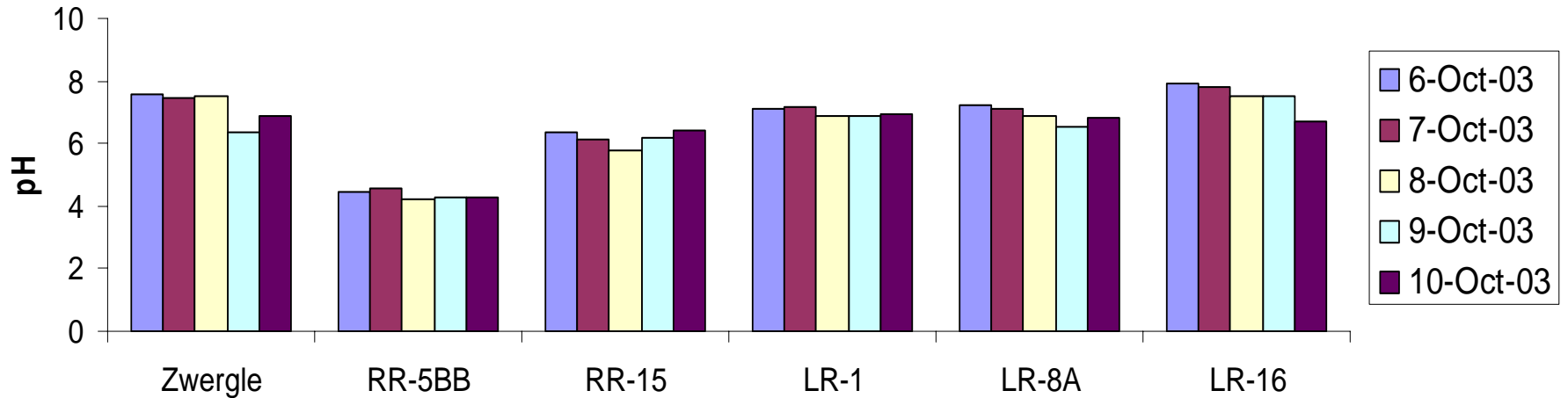
Are any of the
exceedances related
to pH?

pH

Shallow Piezometer



Deep Piezometer





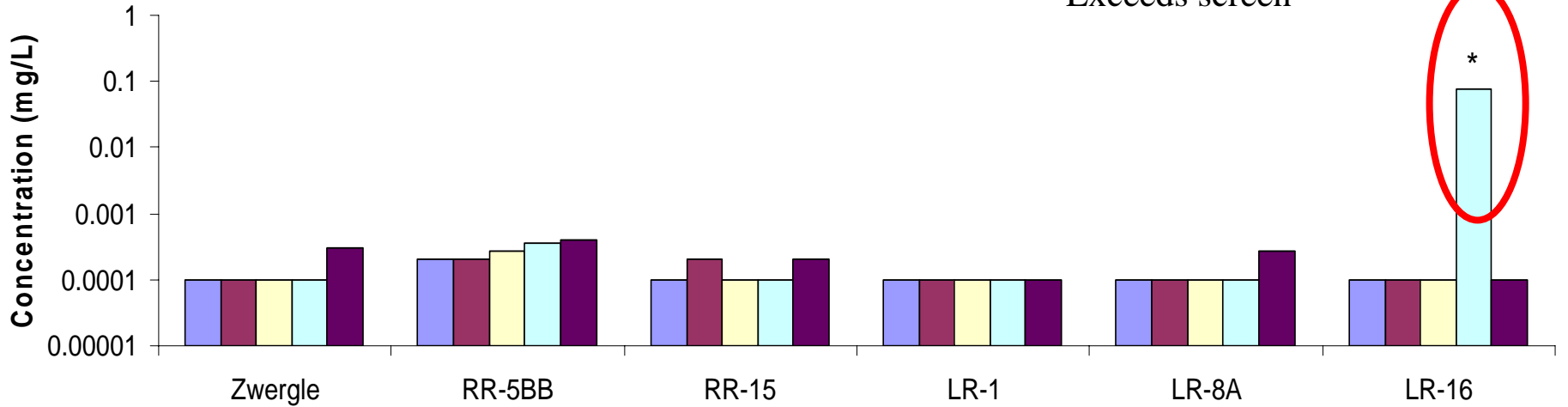
Are any of the
exceedances
related to
increased
upwelling?

Lead (and several others)

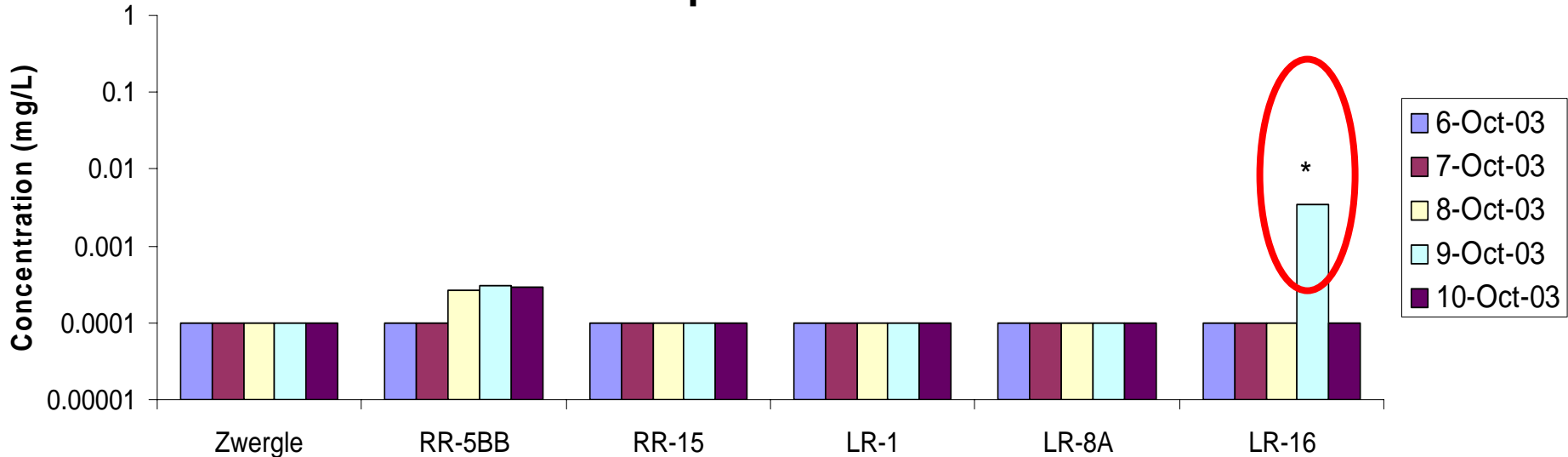
Shallow Piezometer

SLC=0.0025 mg/L

*Exceeds screen

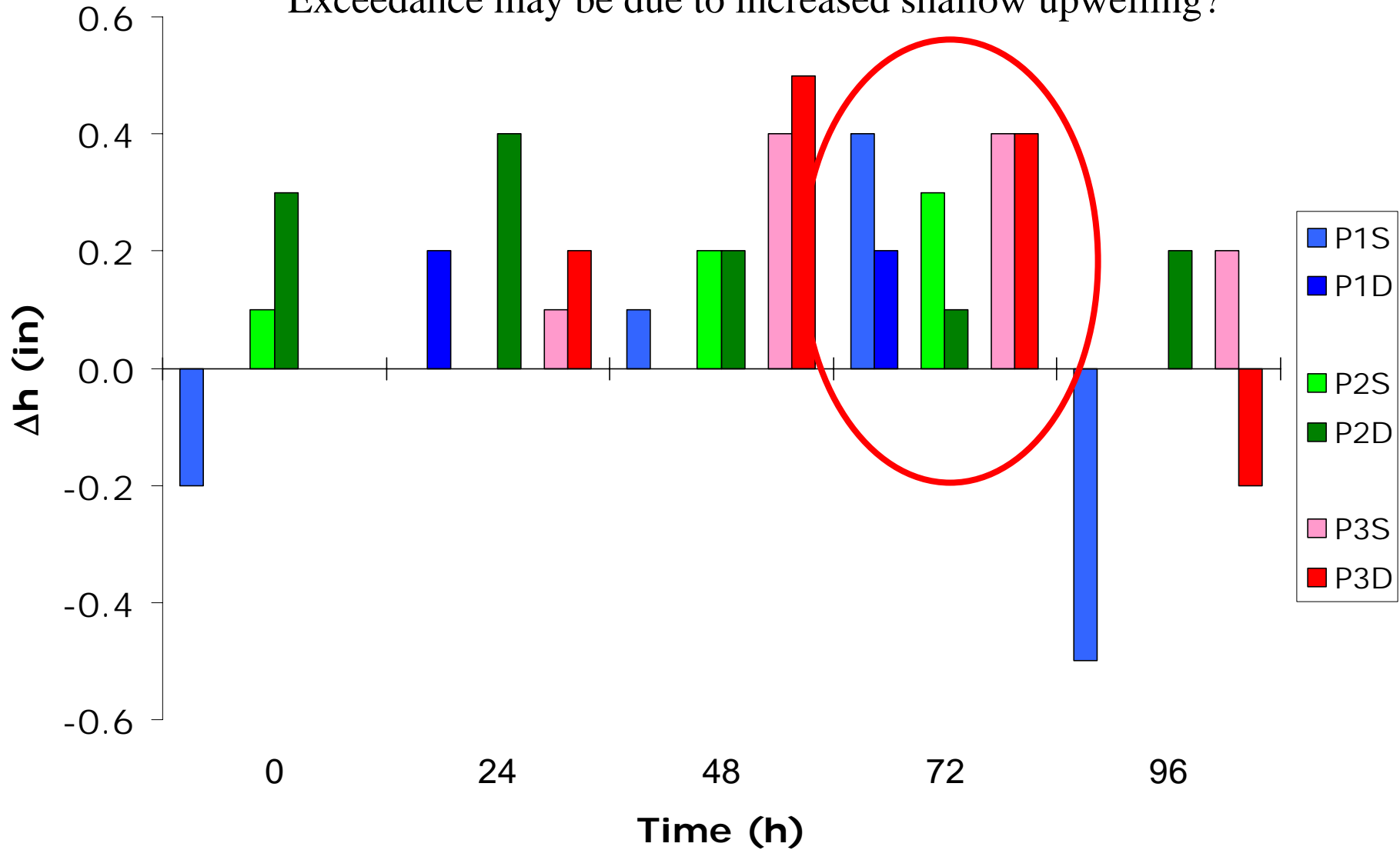


Deep Piezometer



LR-16 Differential Pressures

Exceedance may be due to increased shallow upwelling?

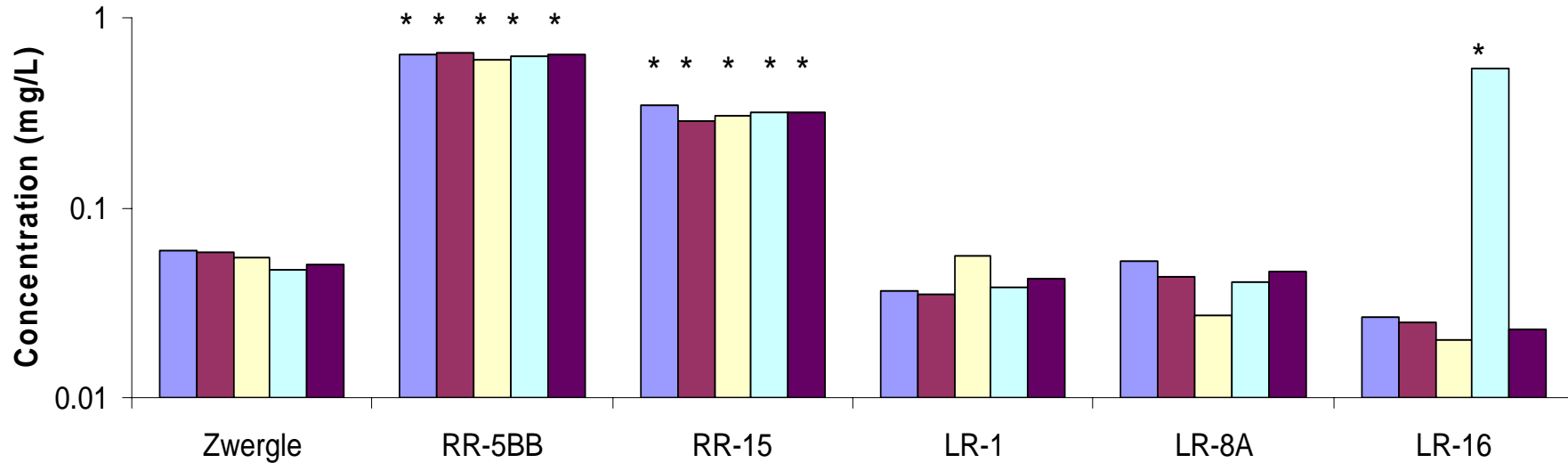


Zinc

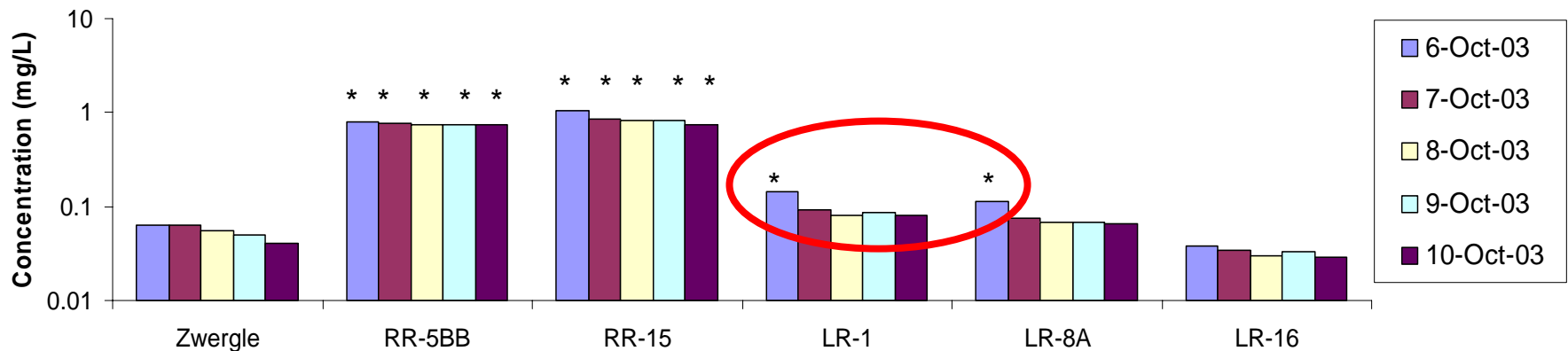
SLC= 0.12 mg/L

*Exceeds screen

Shallow Piezometer

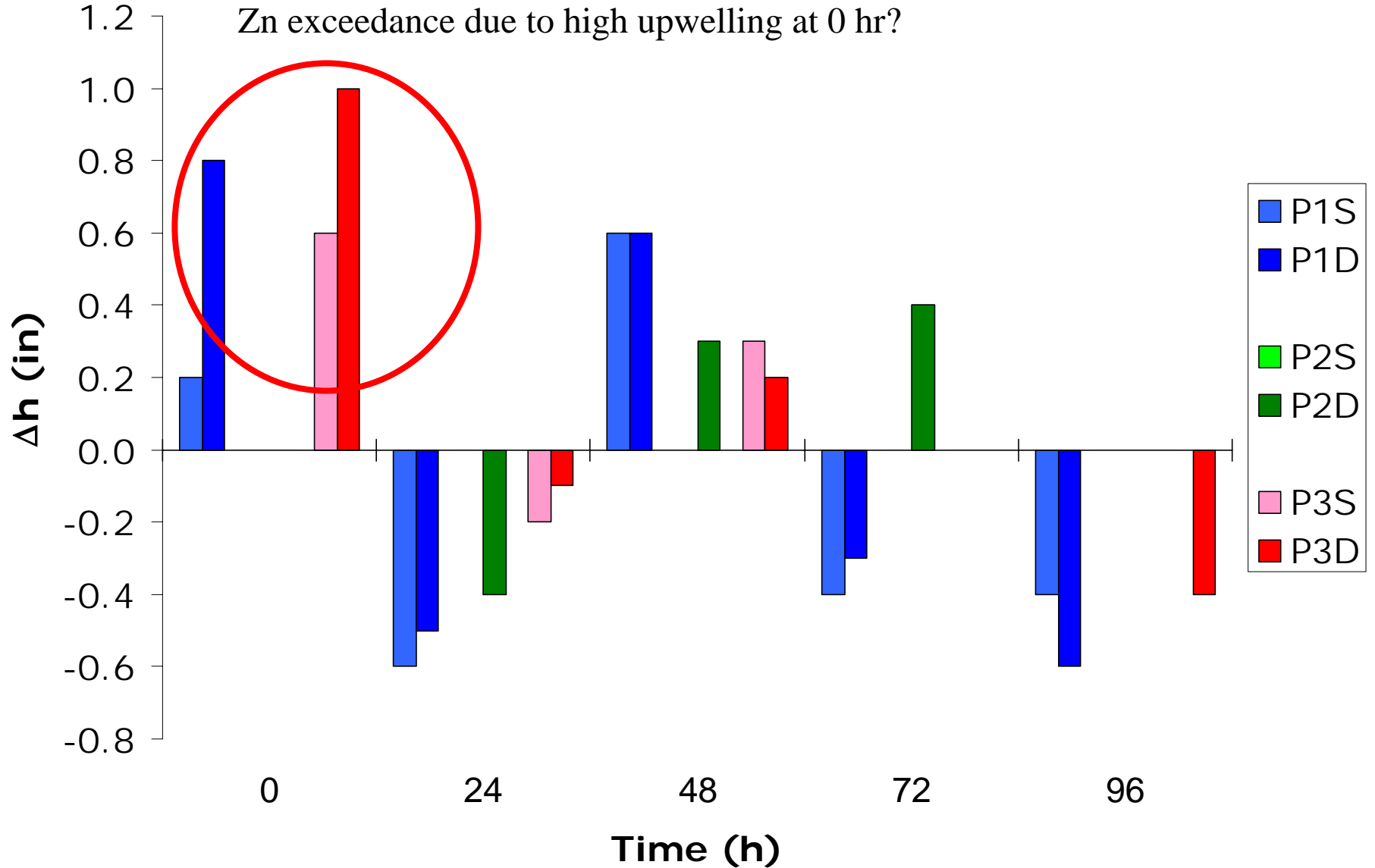


Deep Piezometer



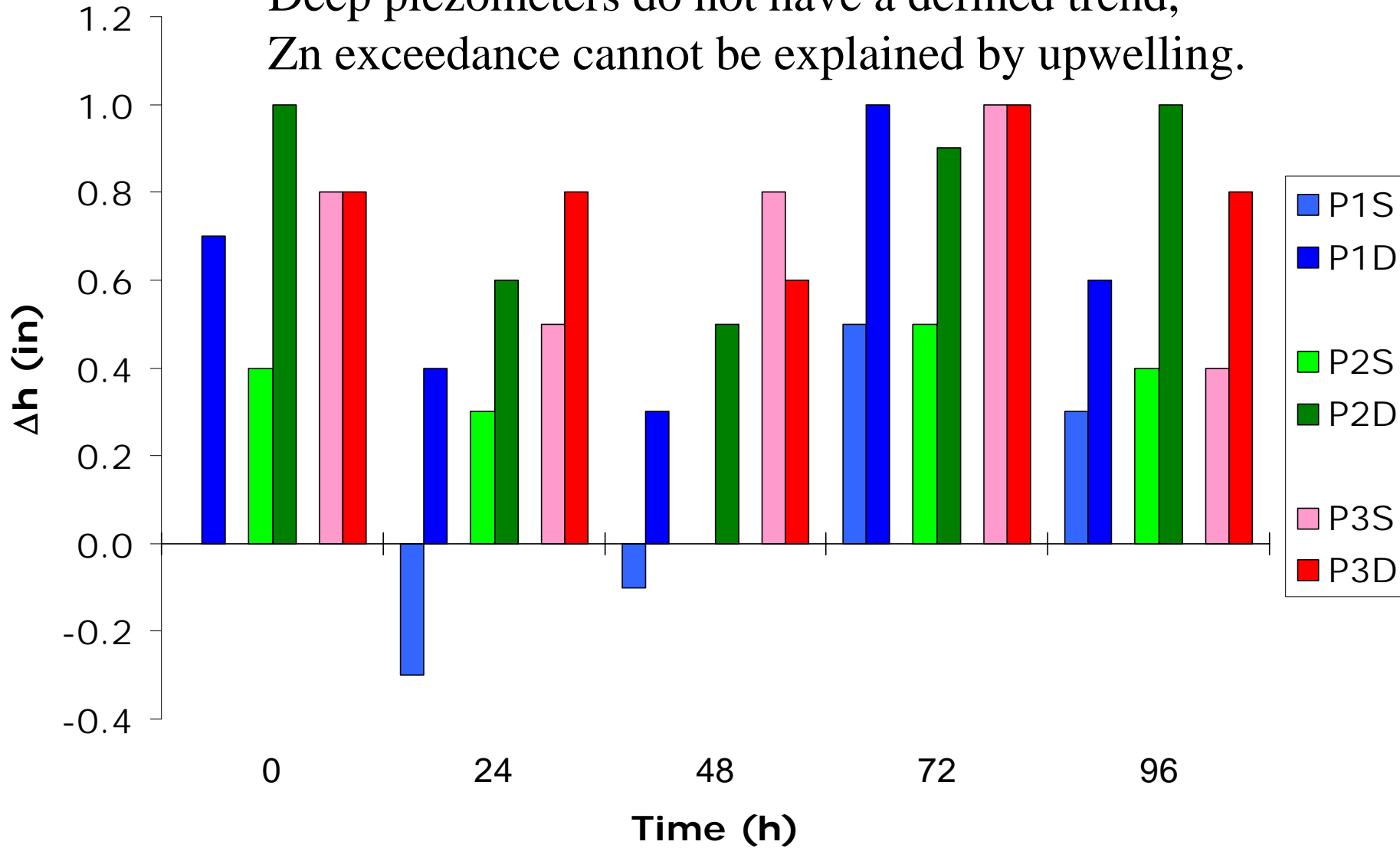
LR-1 Differential Pressures

Zn exceedance due to high upwelling at 0 hr?



LR-8A Differential Pressures

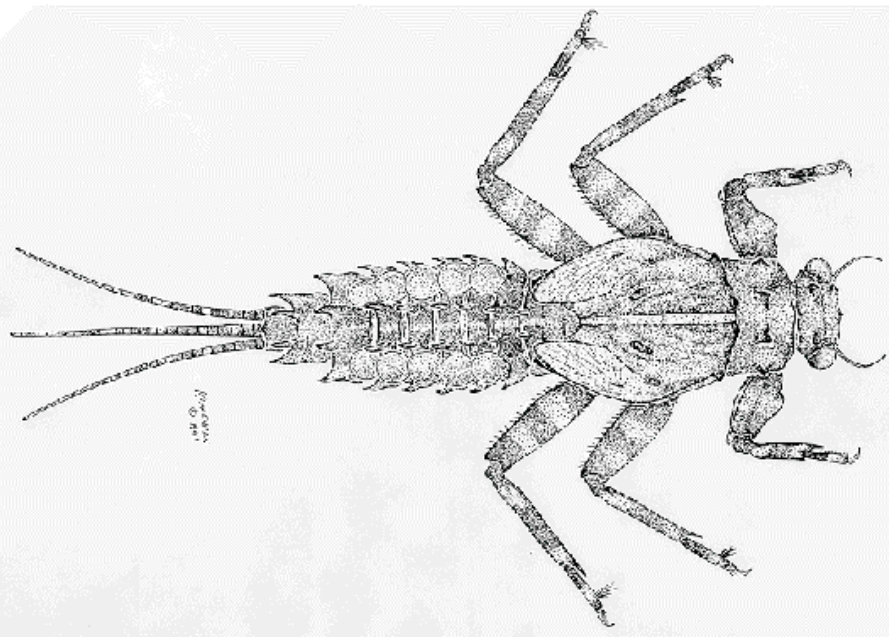
Deep piezometers do not have a defined trend,
Zn exceedance cannot be explained by upwelling.



Summary of Piezometer Screen

- RR-5BB has lowest pH (avg=4.3) and could explain why it has the greatest number of COPCs
- There are 10 metals that exceed at LR-16 ONLY on 10/9/03 (72 hr) in the shallow wells
 - Erroneous sample?
 - Due to higher upwelling?
 - Not pH related
 - Not representative of the other days
- Summary list of COPCs:
 - Al, Ba, Cd, Cu, Fe, Pb, Mn, Ni, Ag, Tl, Va, Zn

Chamber Water Screen





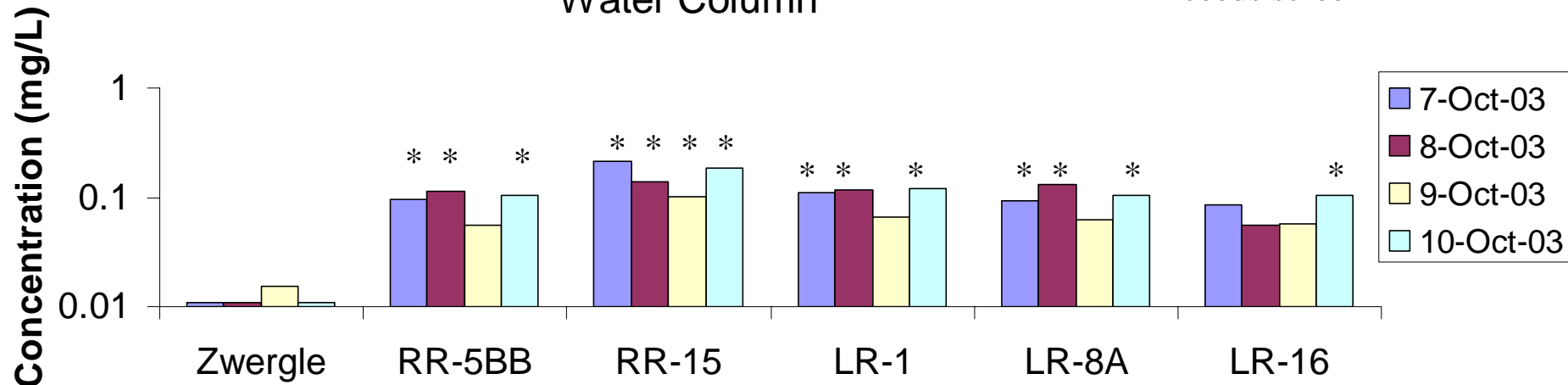
Were concentrations
higher in the against
sediment chambers?

Aluminum

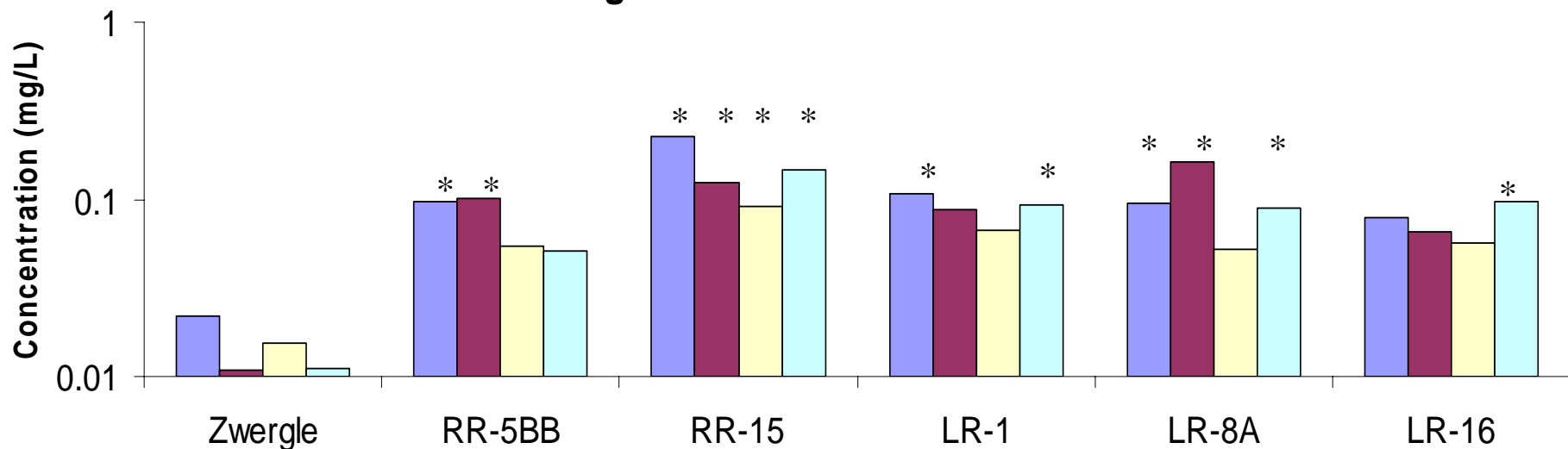
SLC=0.087 mg/L

*Exceeds screen

Water Column



Against Sediments

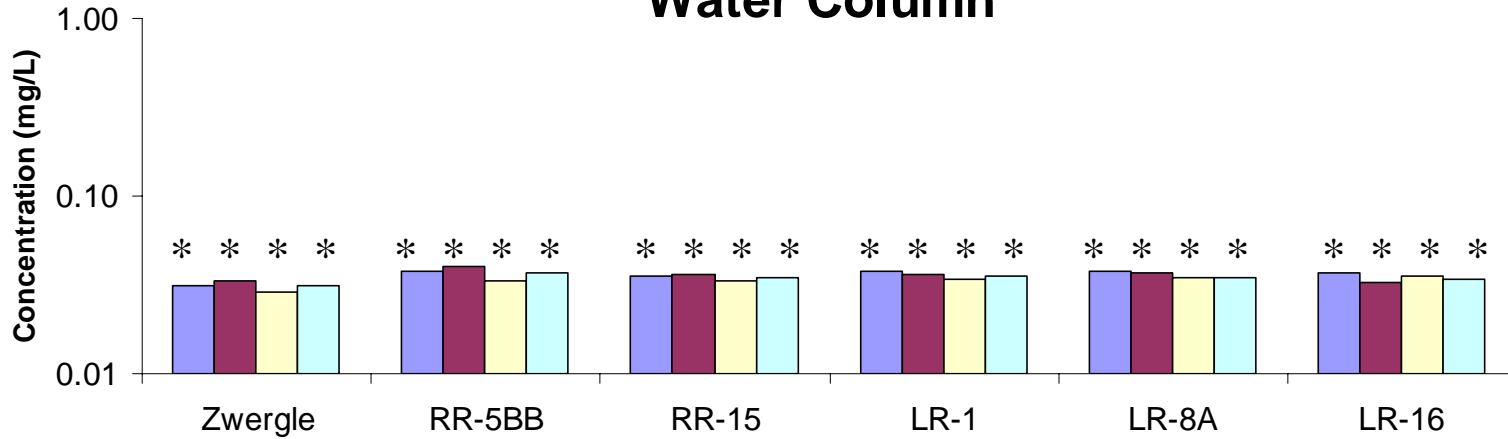


Barium

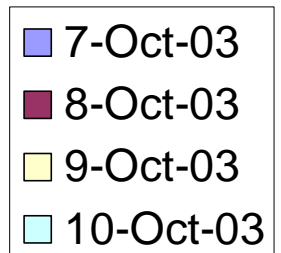
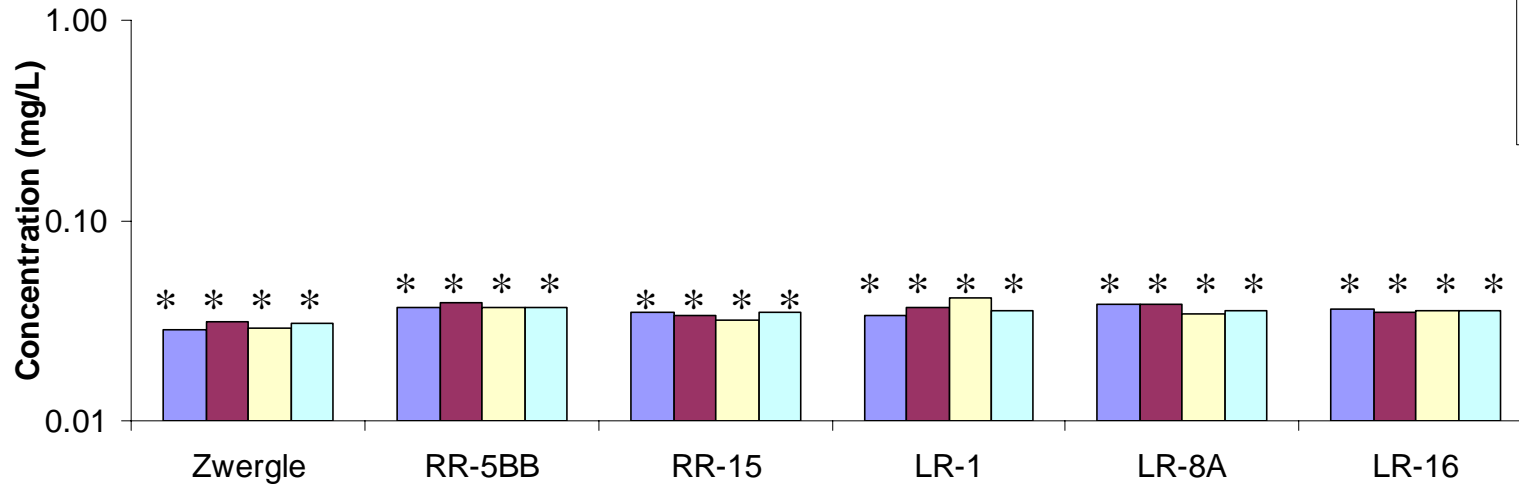
SLC=0.004 mg/L

*Exceeds screen

Water Column

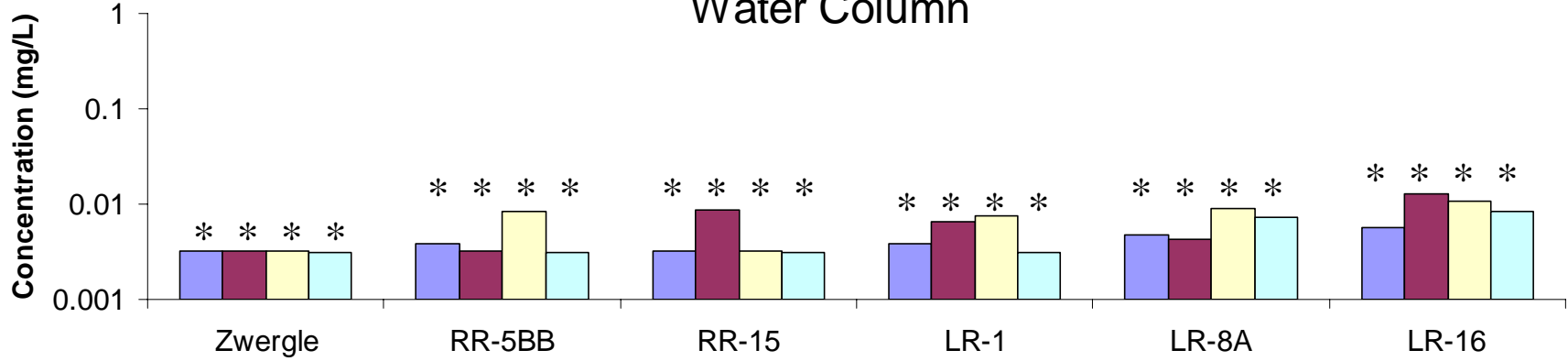


Against Sediments

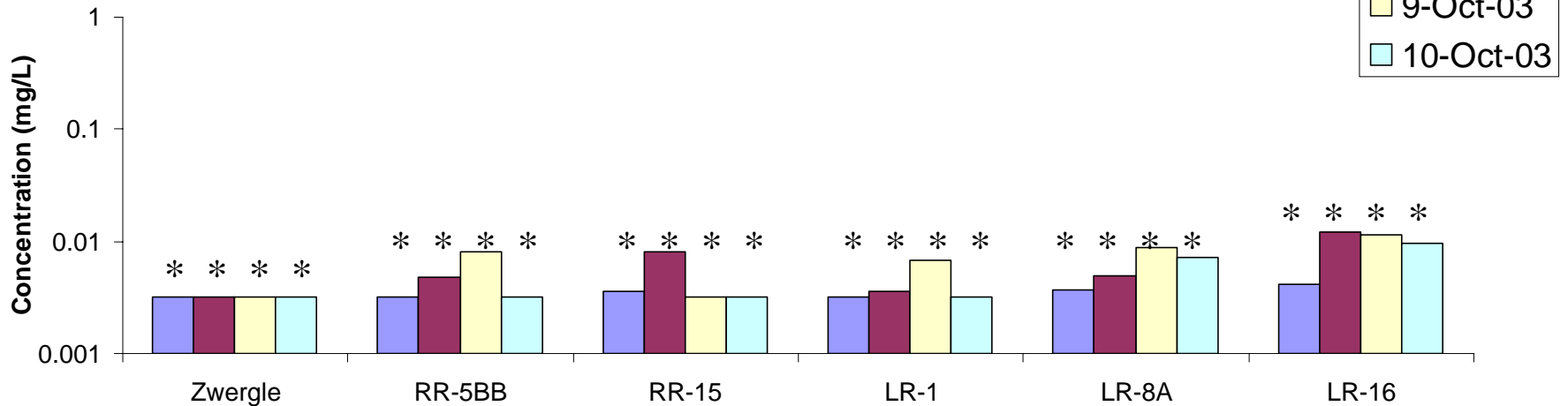


Boron

Water Column



Against Sediments

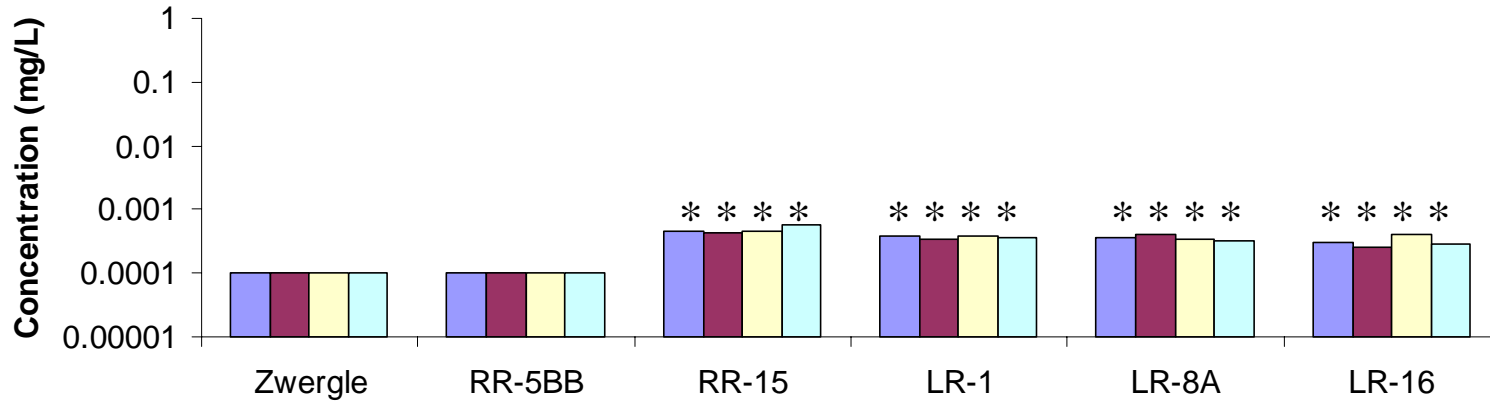


Cadmium

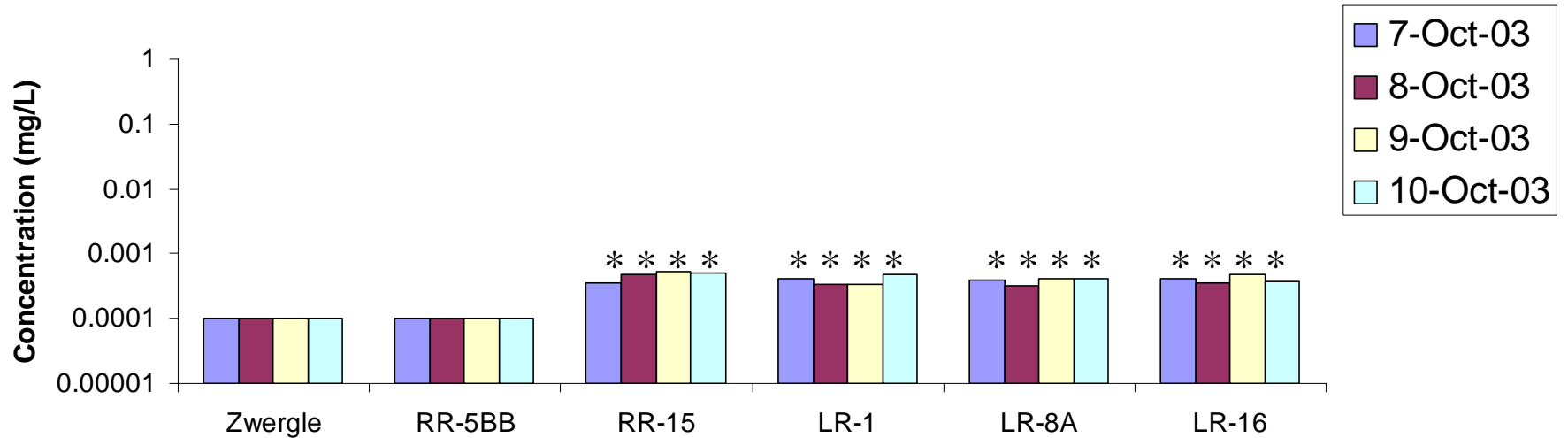
SLC=0.00025 mg/L

*Exceeds screen

Water Column



Against Sediment

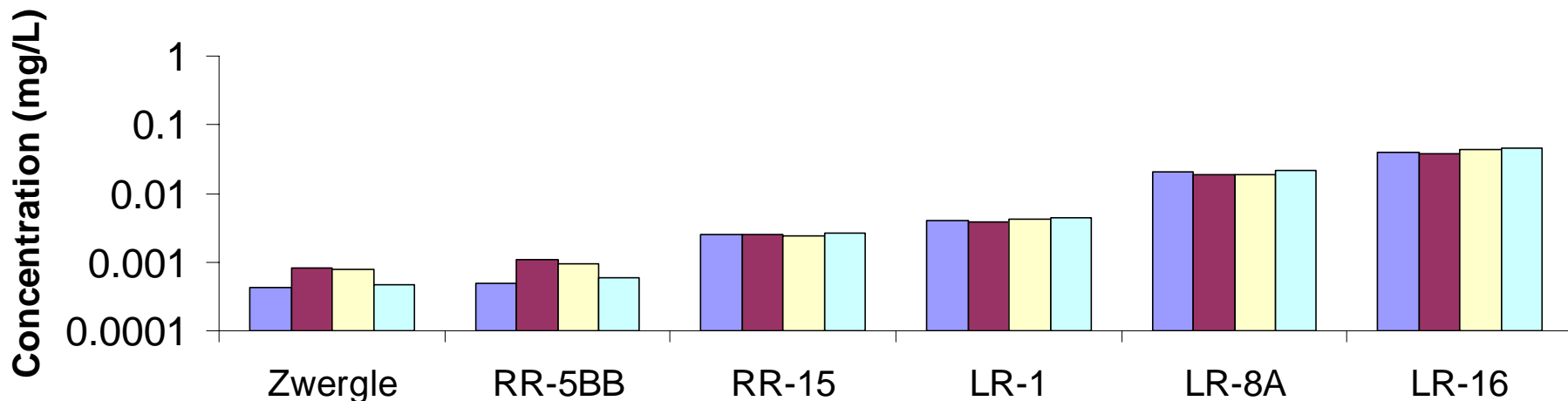


Molybdenum

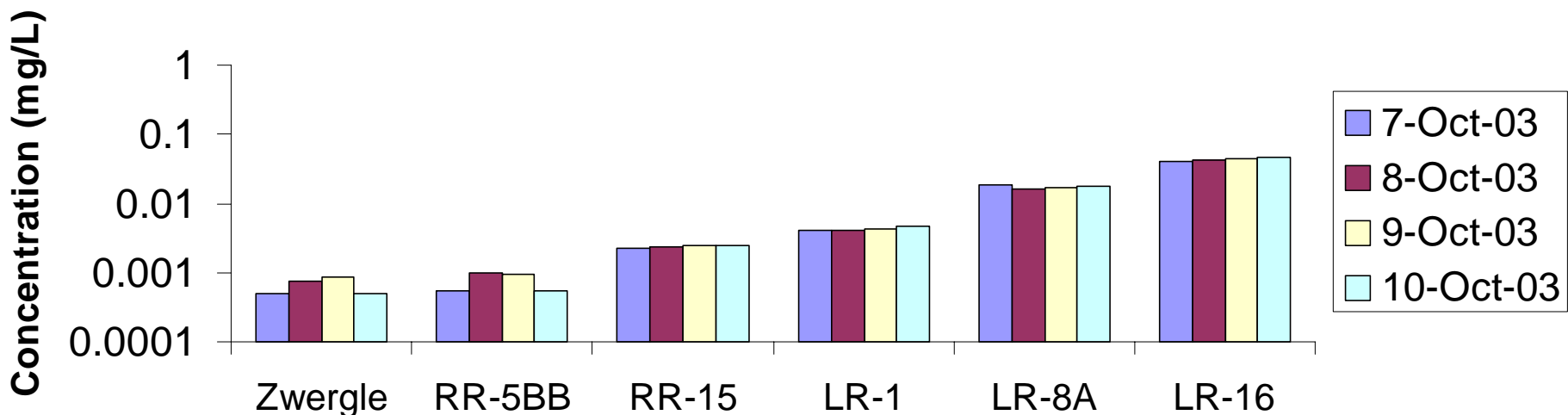
Water Column

SLC=2 mg/L

*Exceeds screen



Against Sediment

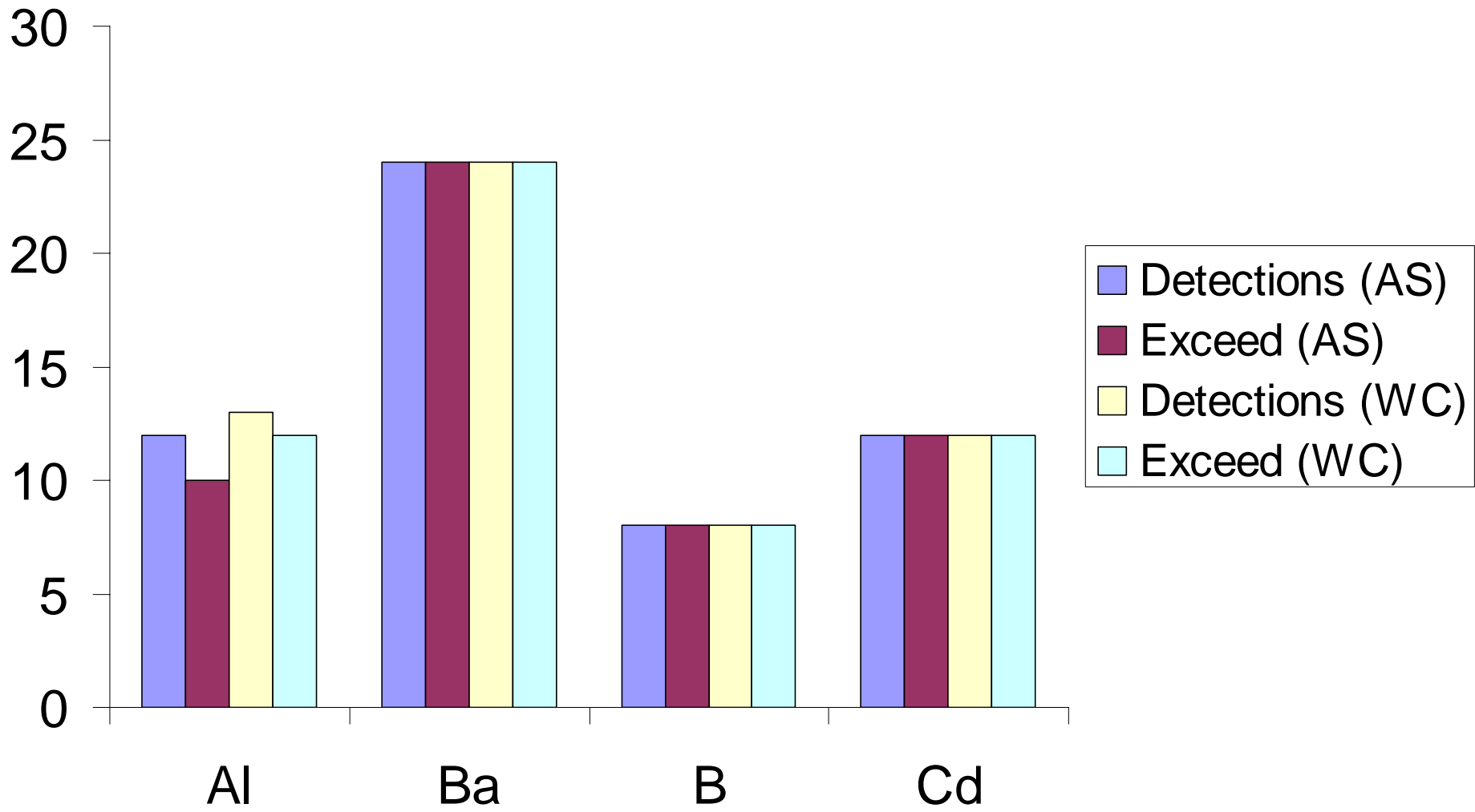




Were there more
exceedances in the
against sediment
chambers?

Chamber Water

Detections vs. Exceedences



Do chamber water samples reflect surface water concentrations (ie. similar magnitudes)?



Yes. Both the against sediment and water column are similar to the surface water concentrations. In addition, surface water and chamber samples have the same list of COPCs.

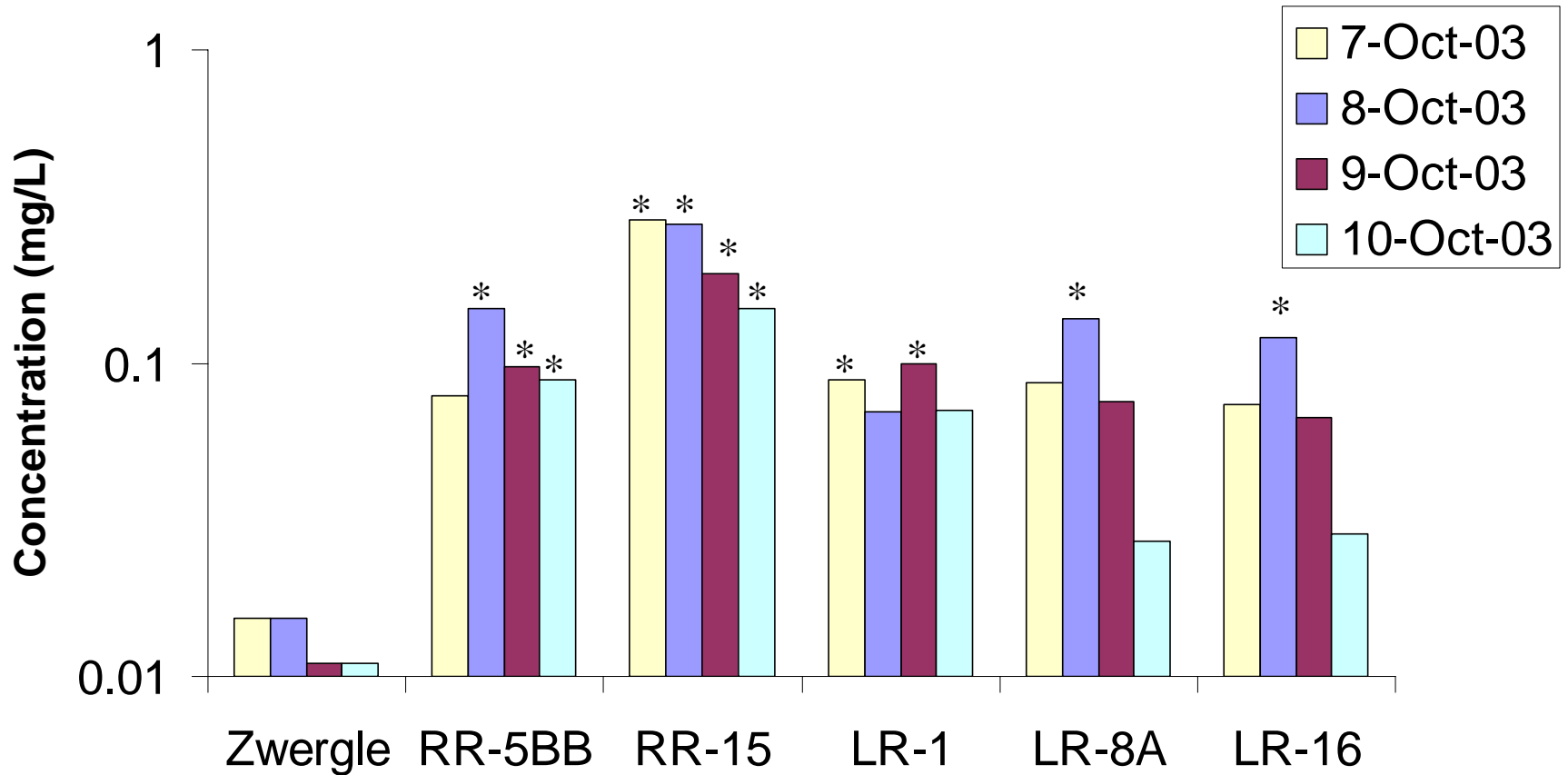
Surface Water



Aluminum

SLC=0.087 mg/L

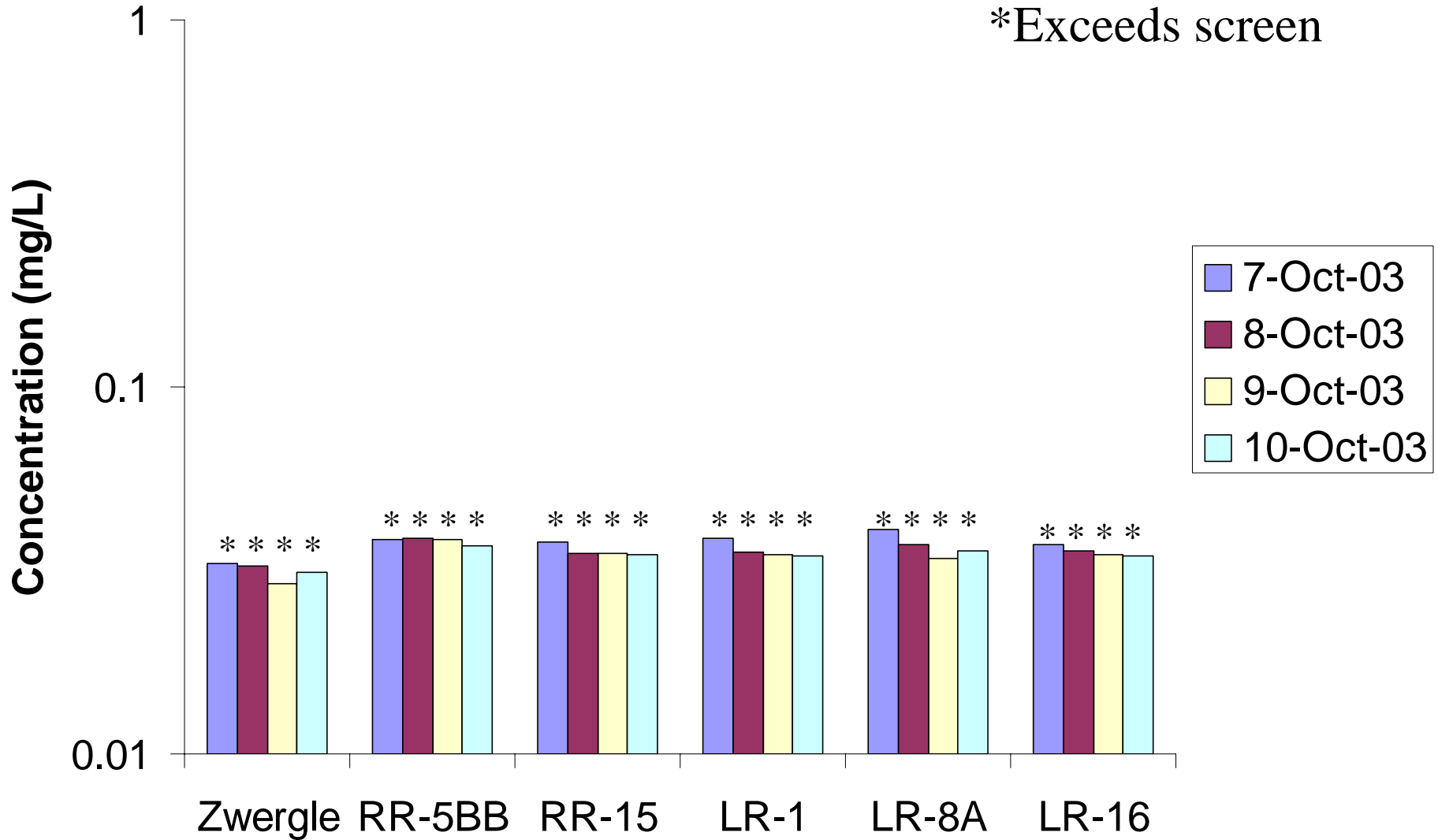
*Exceeds screen



Barium

SLC=0.004 mg/L

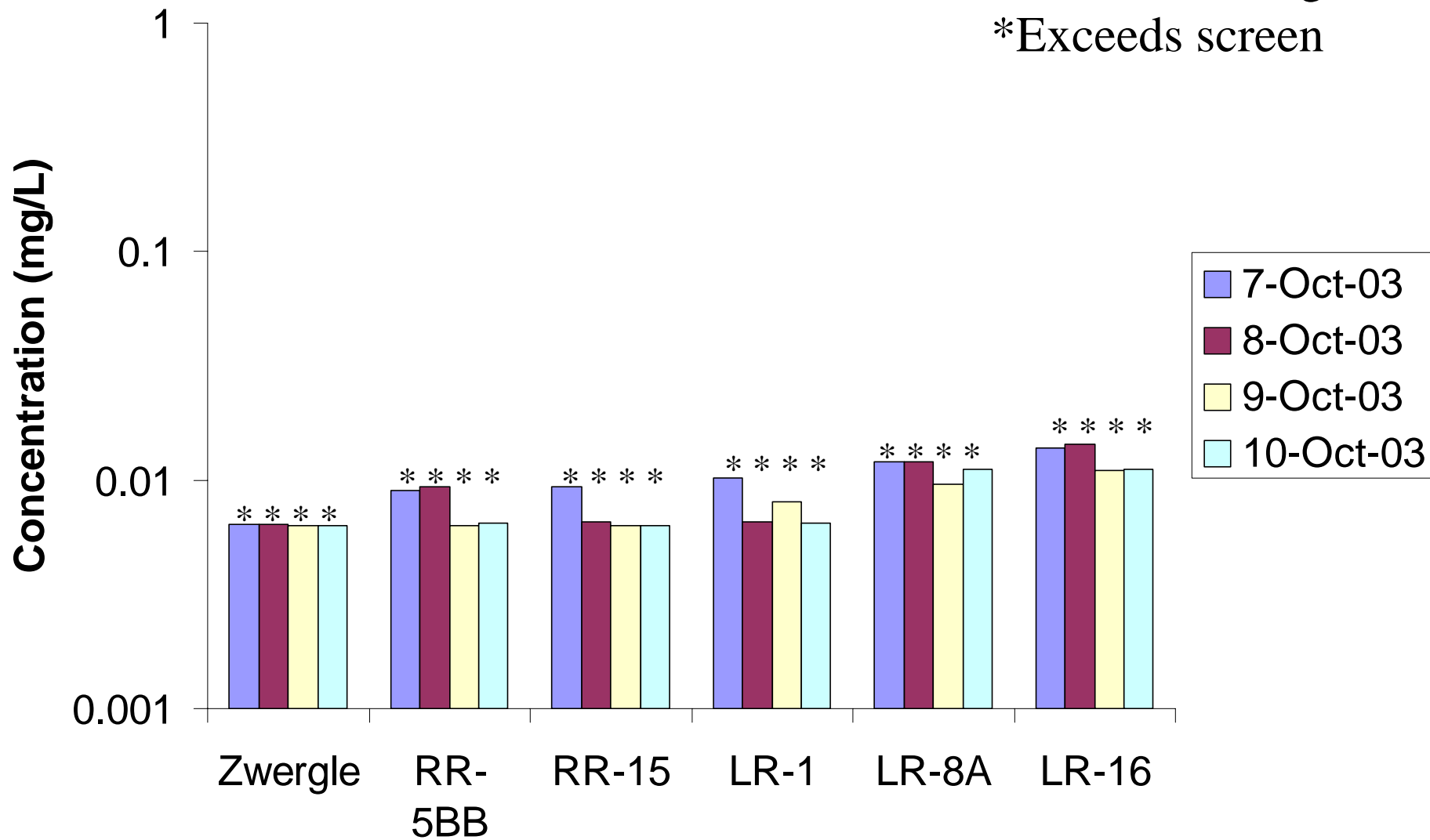
*Exceeds screen



Boron

SLC=0.0016 mg/L

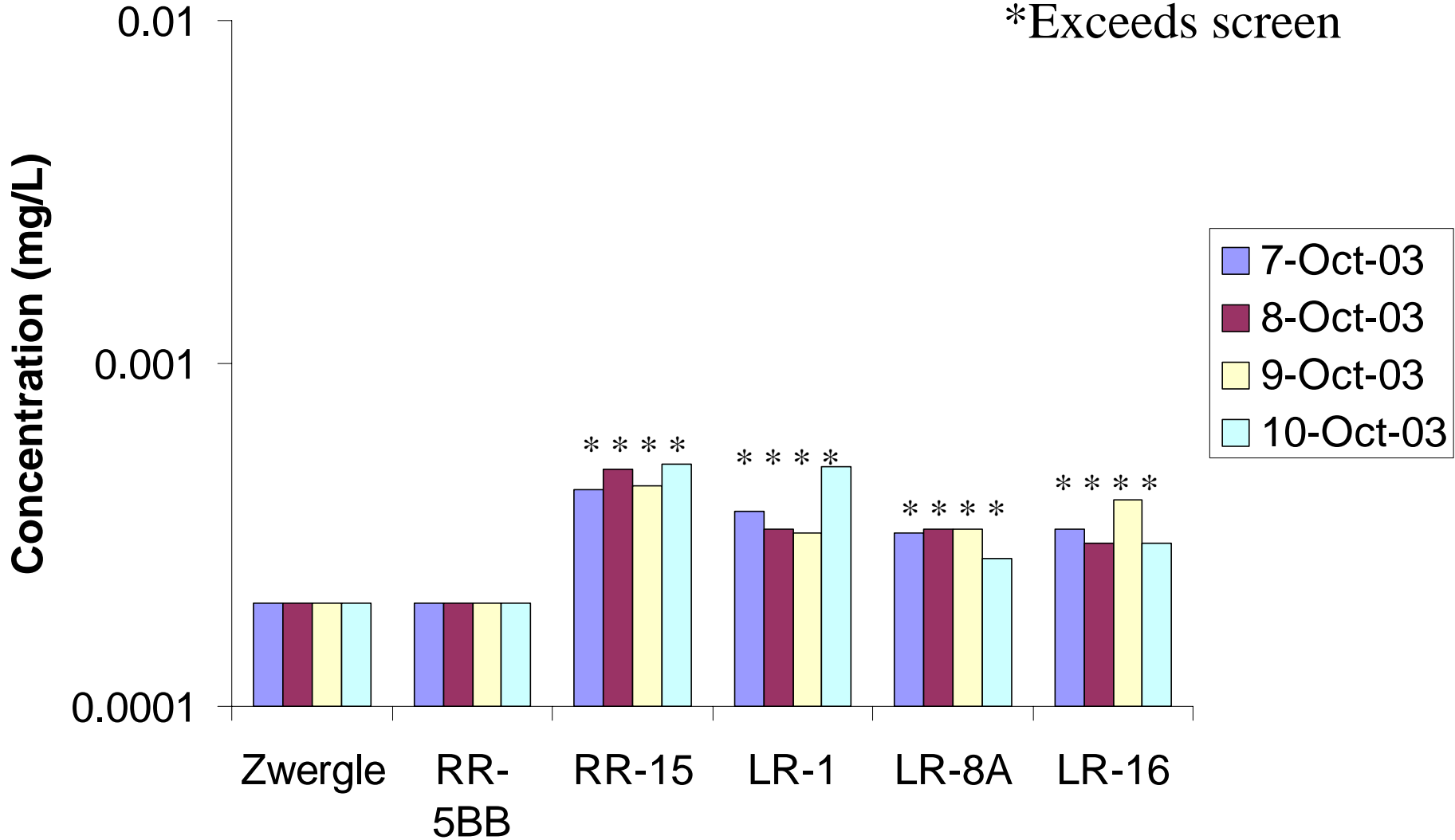
*Exceeds screen



Cadmium

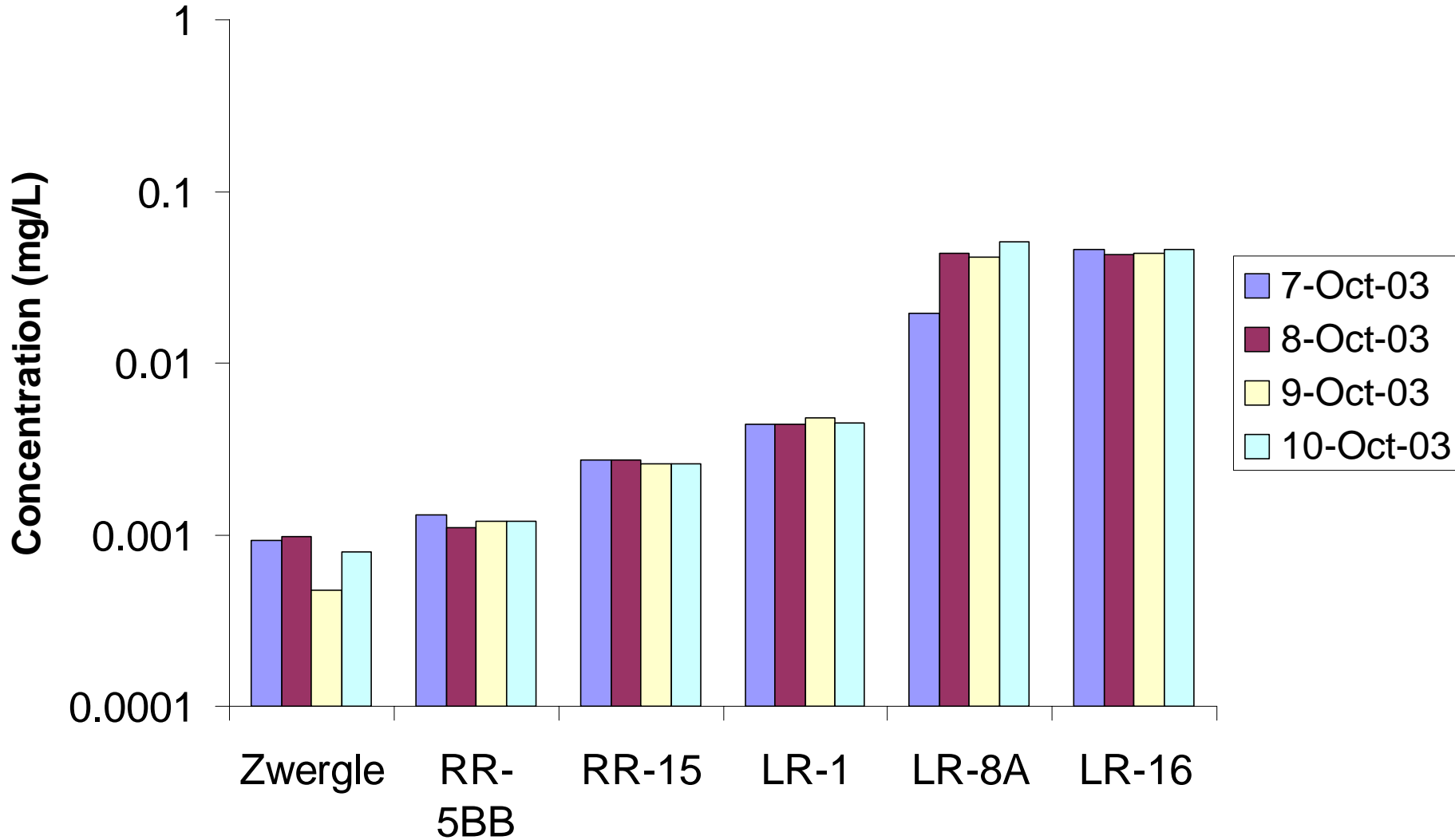
SLC=0.00025 mg/L

*Exceeds screen

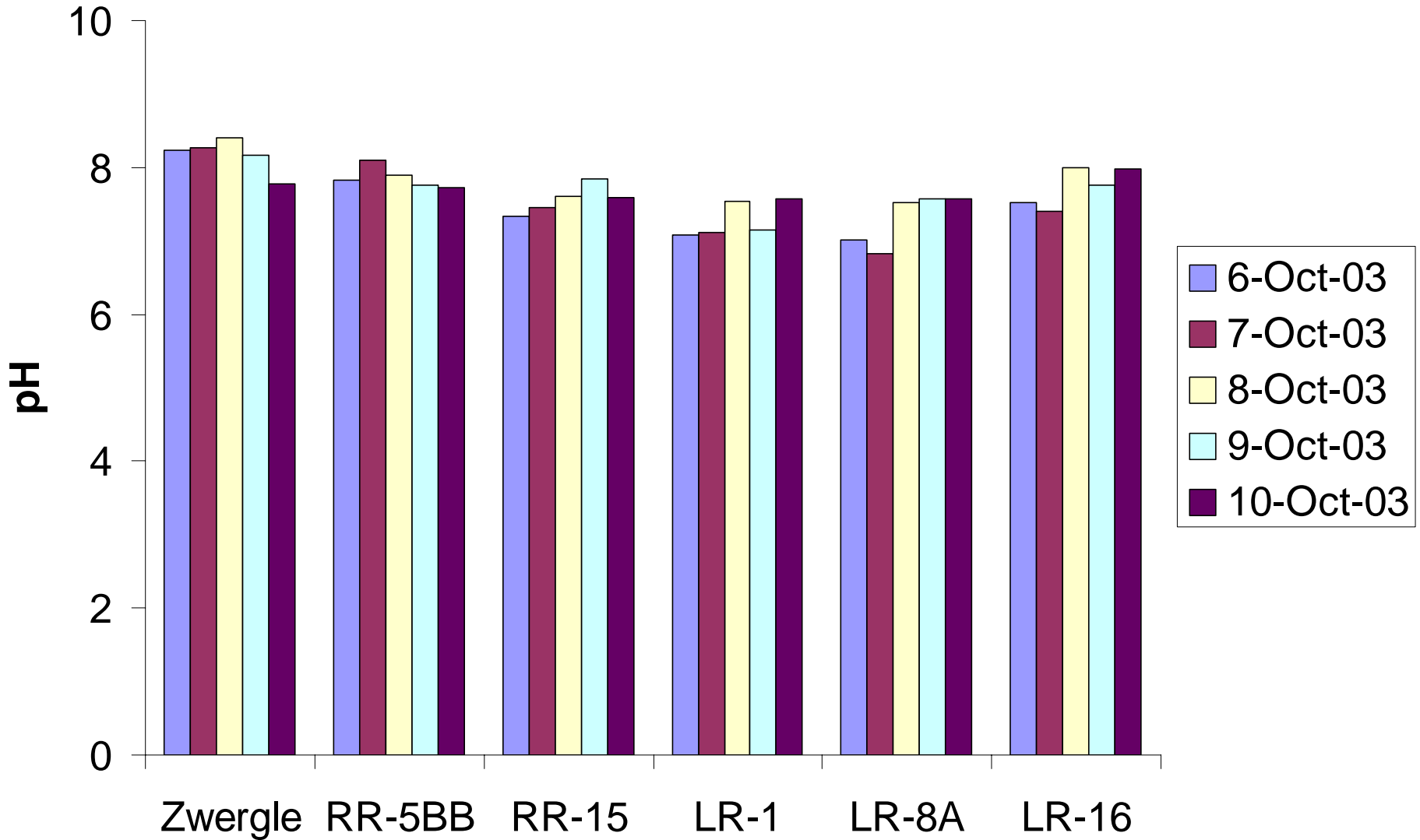


Molybdenum

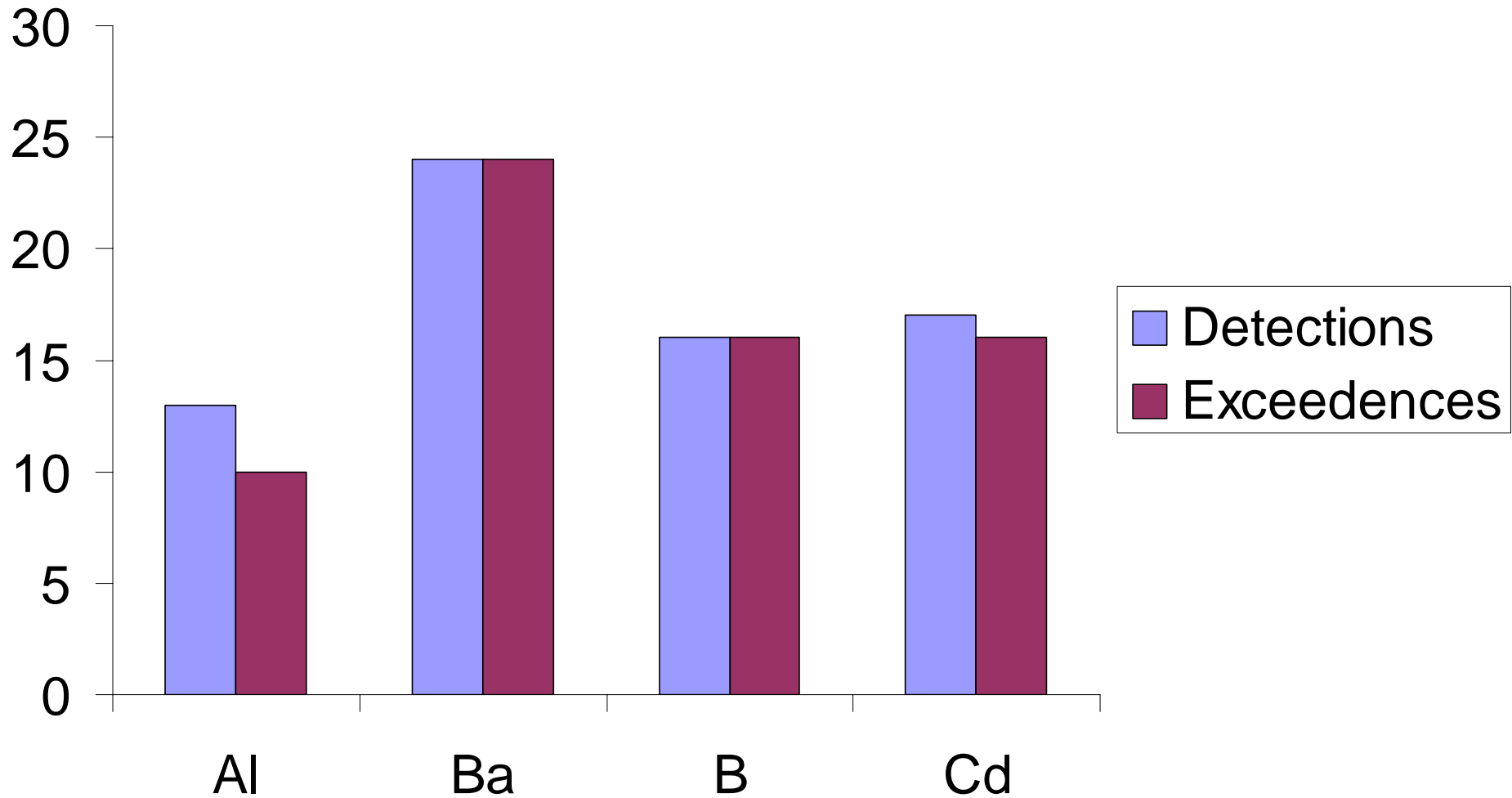
SLC= 2 mg/L



Surface Water pH

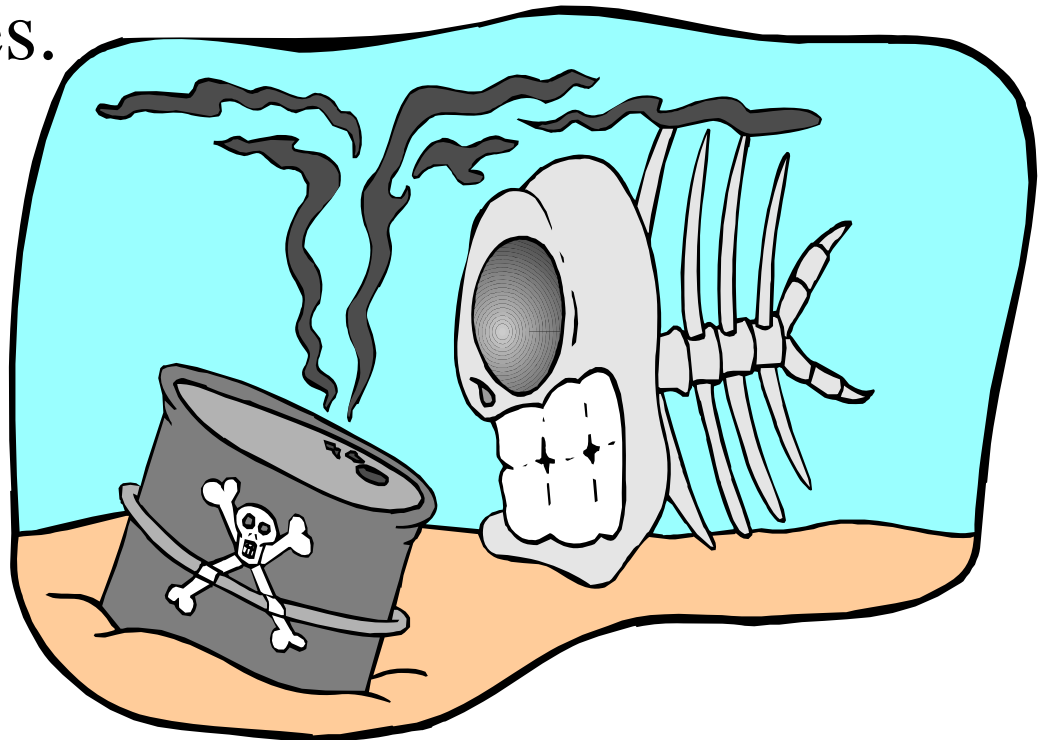


Detections vs. Exceedences (Surface Water)

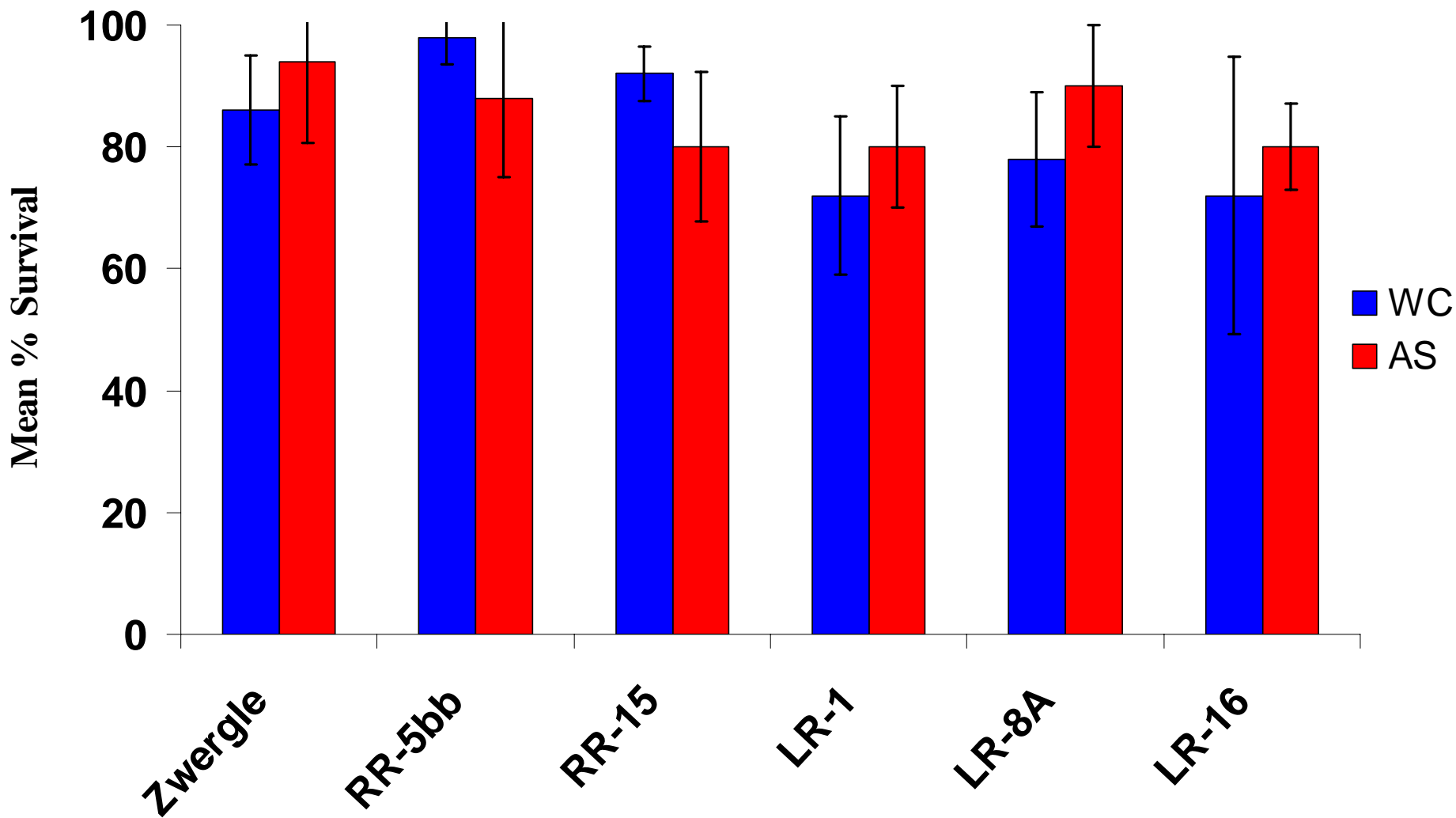


Can we correlate any exceedances with toxicity?

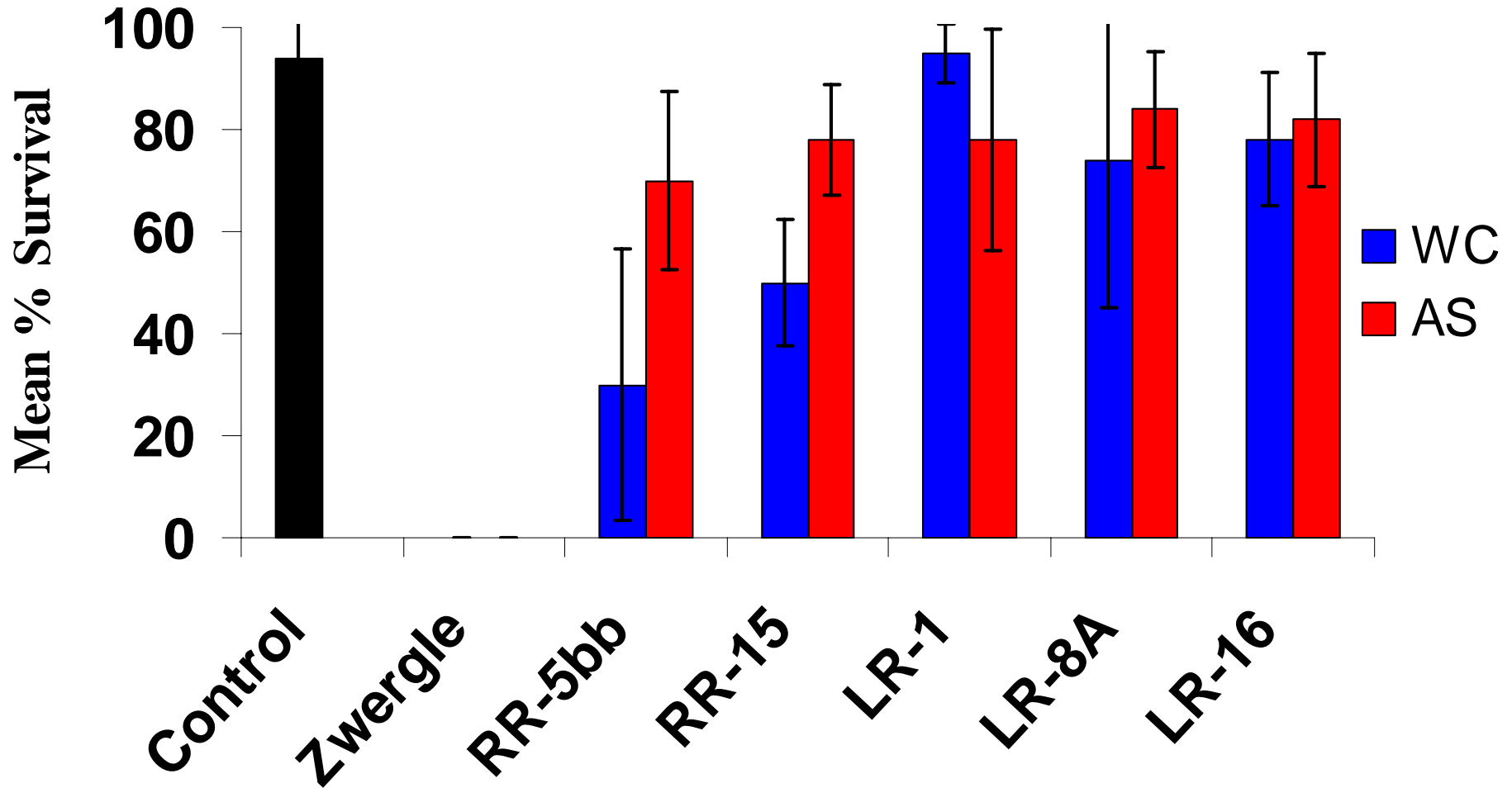
No. There was no acute toxicity and the mortality that was seen cannot be attributed to exceedances.



**Molycorp *In Situ* *Drunella* spp. 96-h Exposure
(Oct. 6-10, 2003)**



Molycorp *In Situ* *Hyalella azteca* 96-h Exposure (Oct. 6-10, 2003)

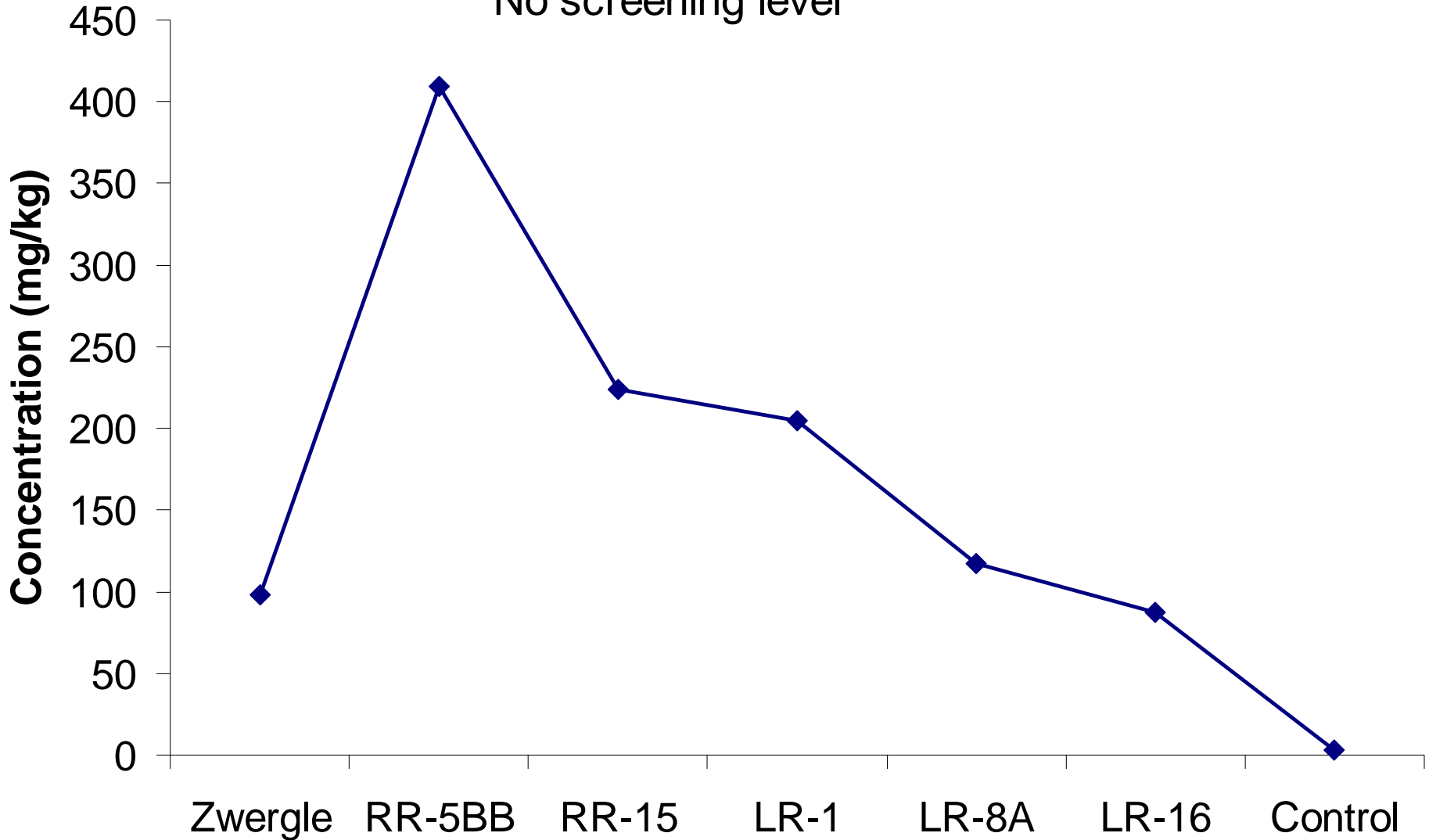


The background of the slide is a close-up photograph of a sediment surface. It shows a network of dark, irregular cracks that divide the surface into numerous small, roughly polygonal cells. The color of the sediment is a range of browns, from light tan to dark chocolate and near-black tones, suggesting varying moisture levels or mineral content. The overall texture is rough and granular.

Sediment Data

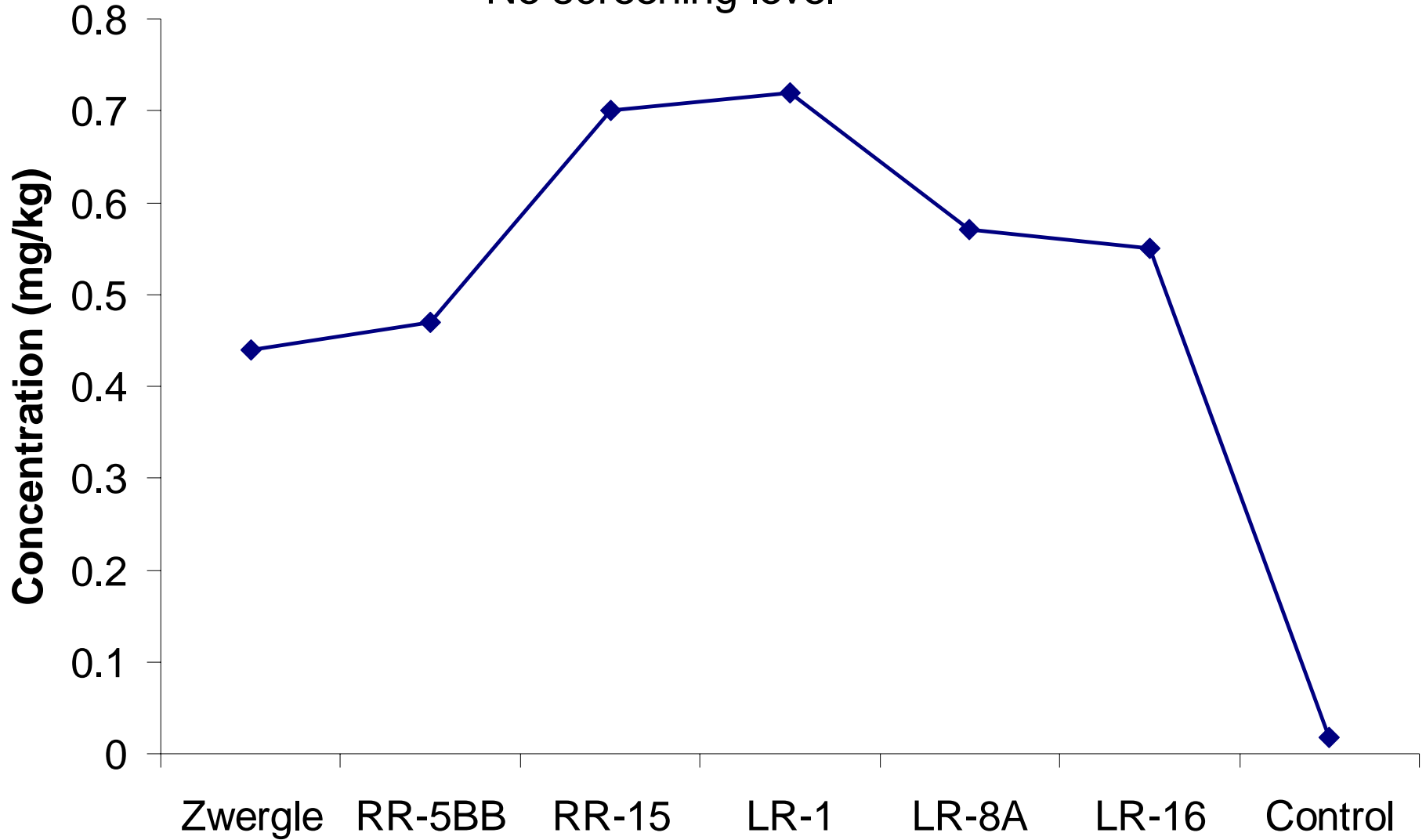
Barium in Sediments

No screening level

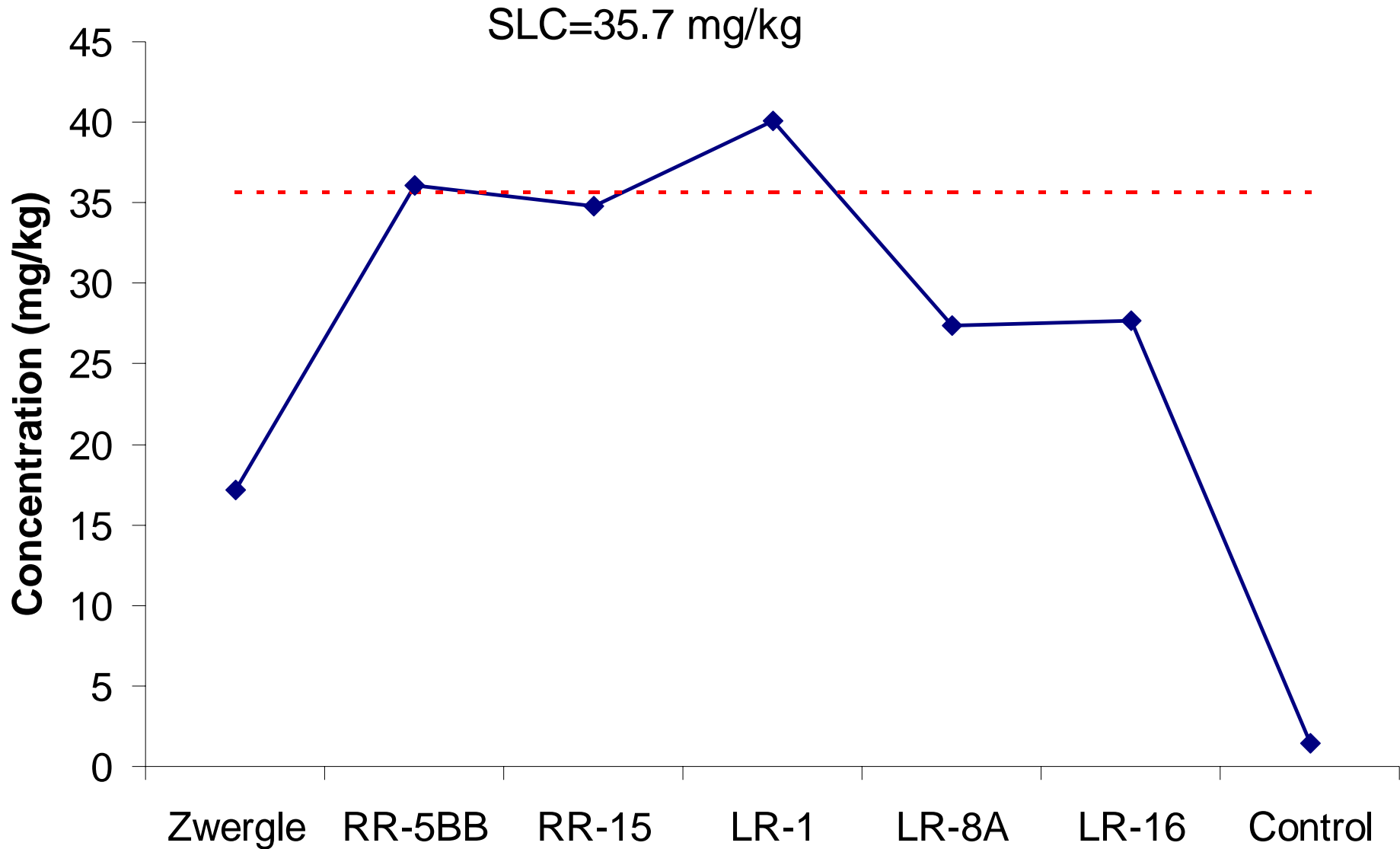


Beryllium in Sediments

No screening level

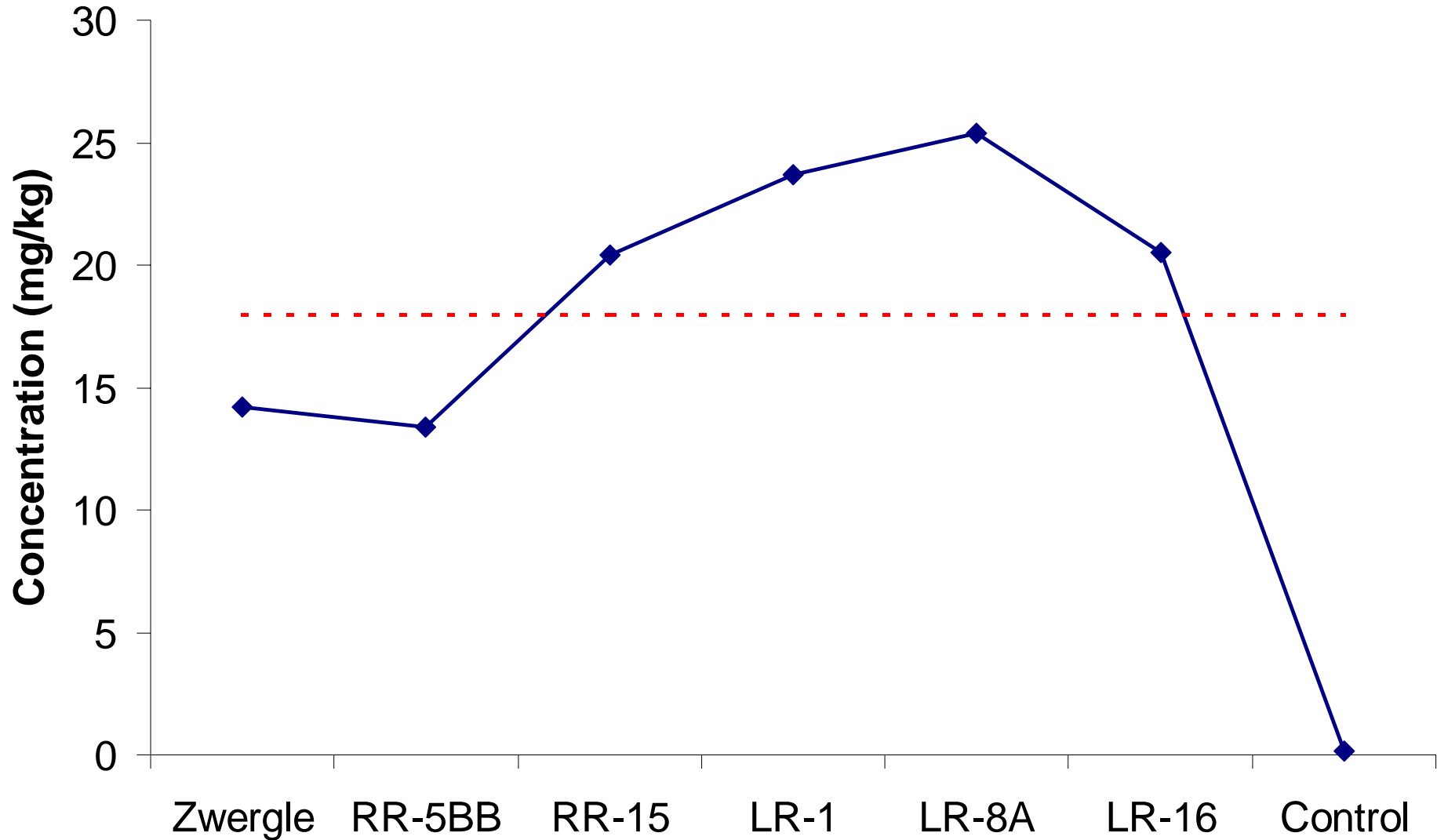


Copper in Sediments



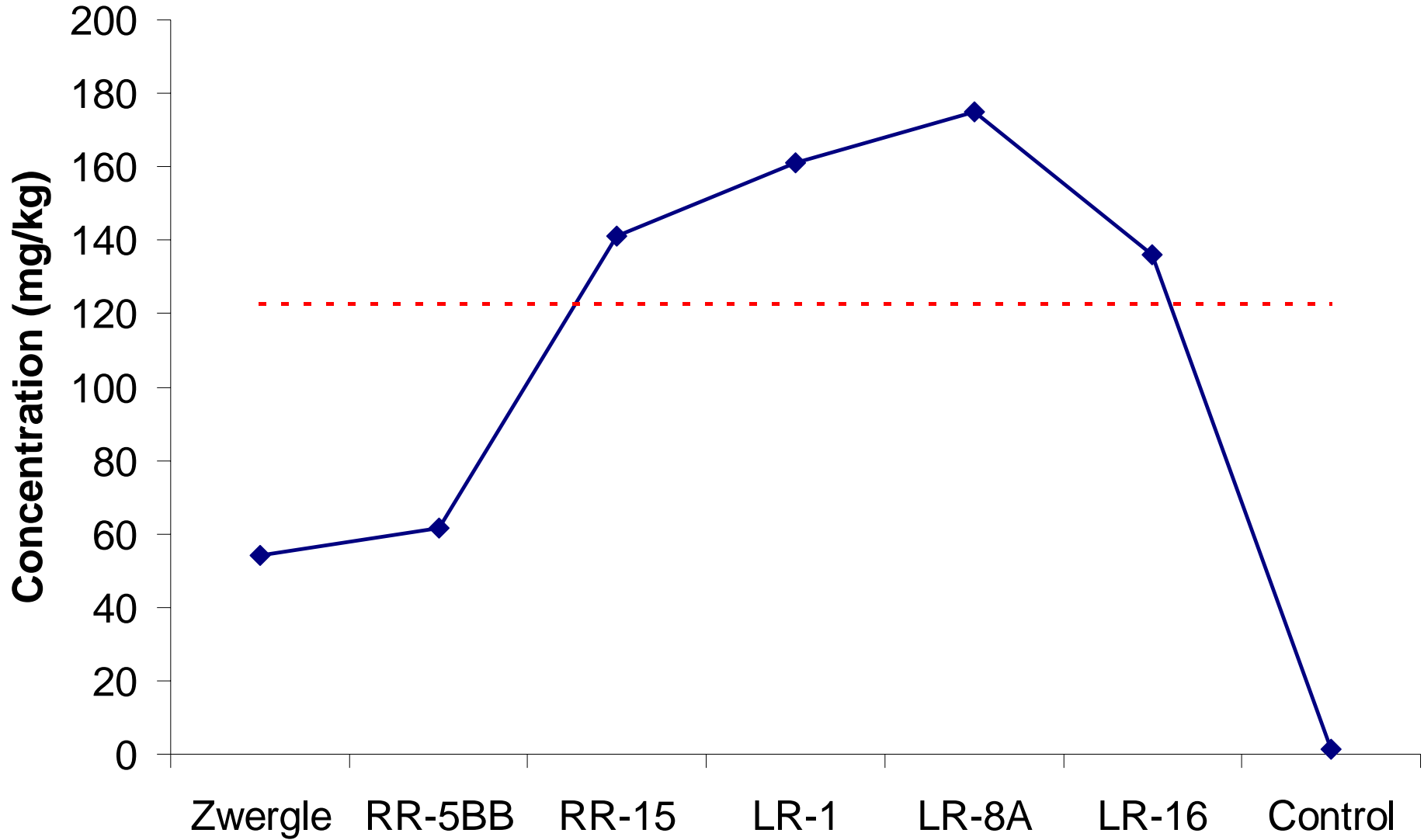
Nickel in Sediments

SLC=18 mg/kg



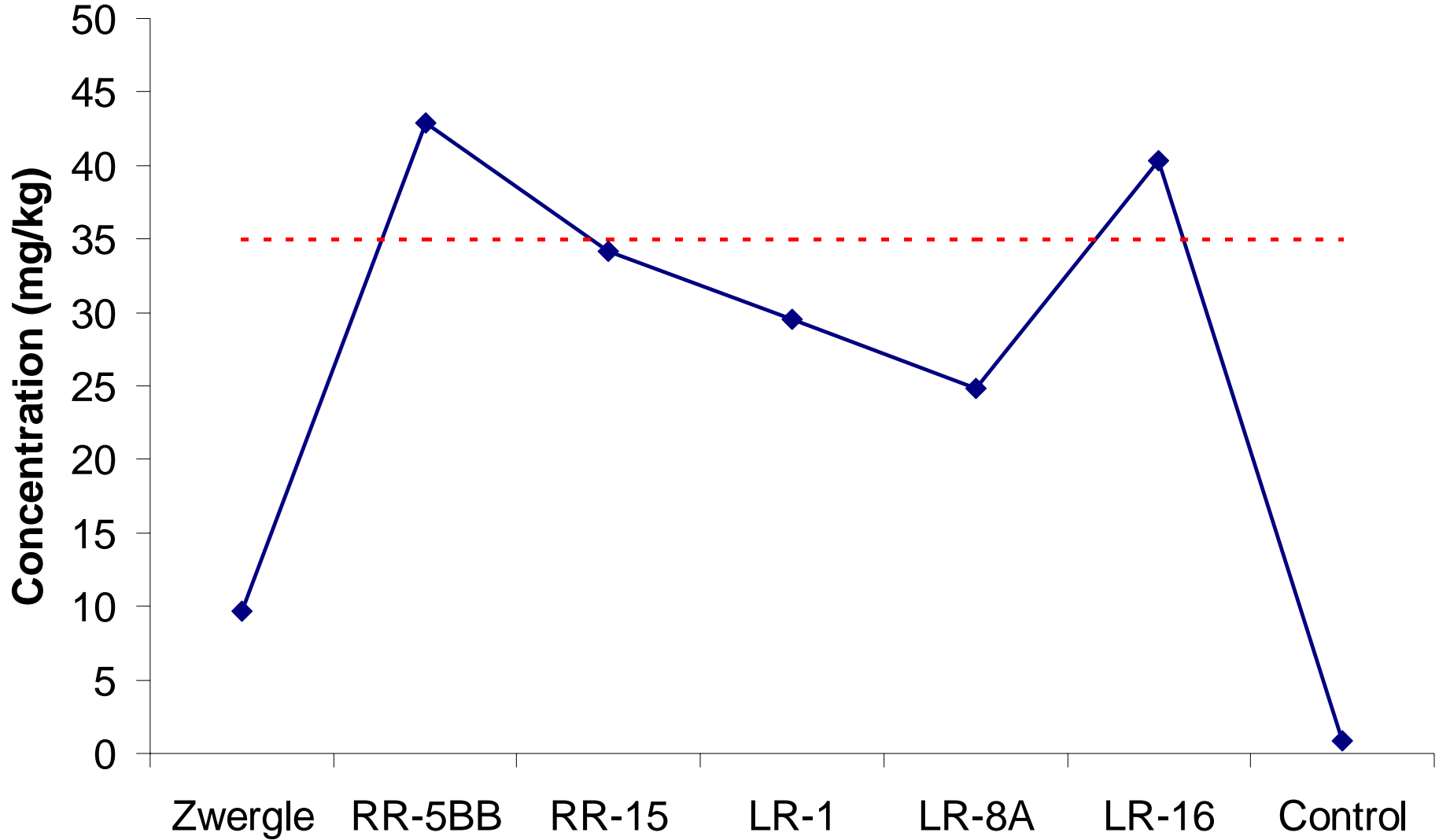
Zinc in Sediments

SLC=123 mg/kg



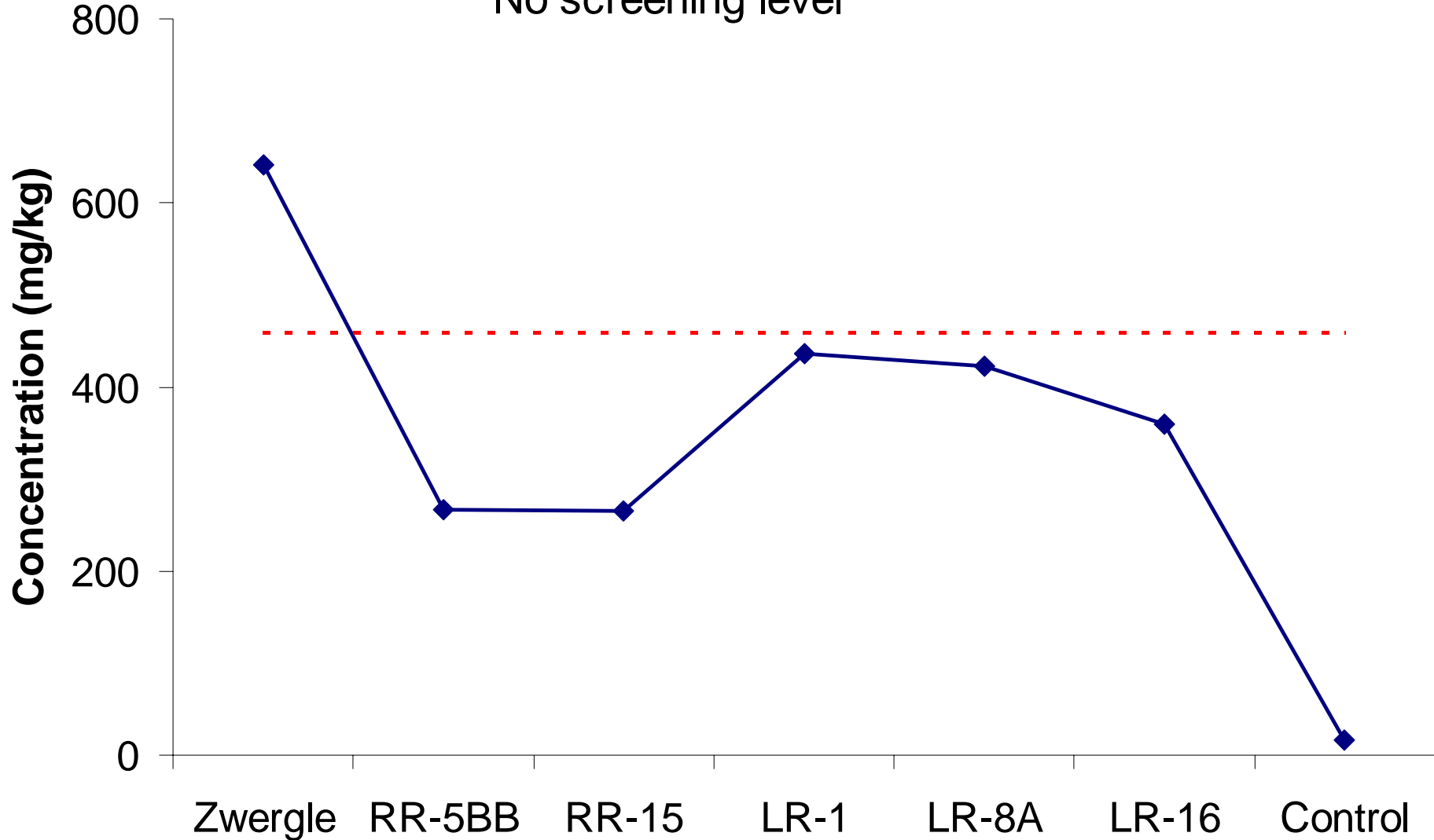
Lead in Sediments

SLC=35 mg/kg



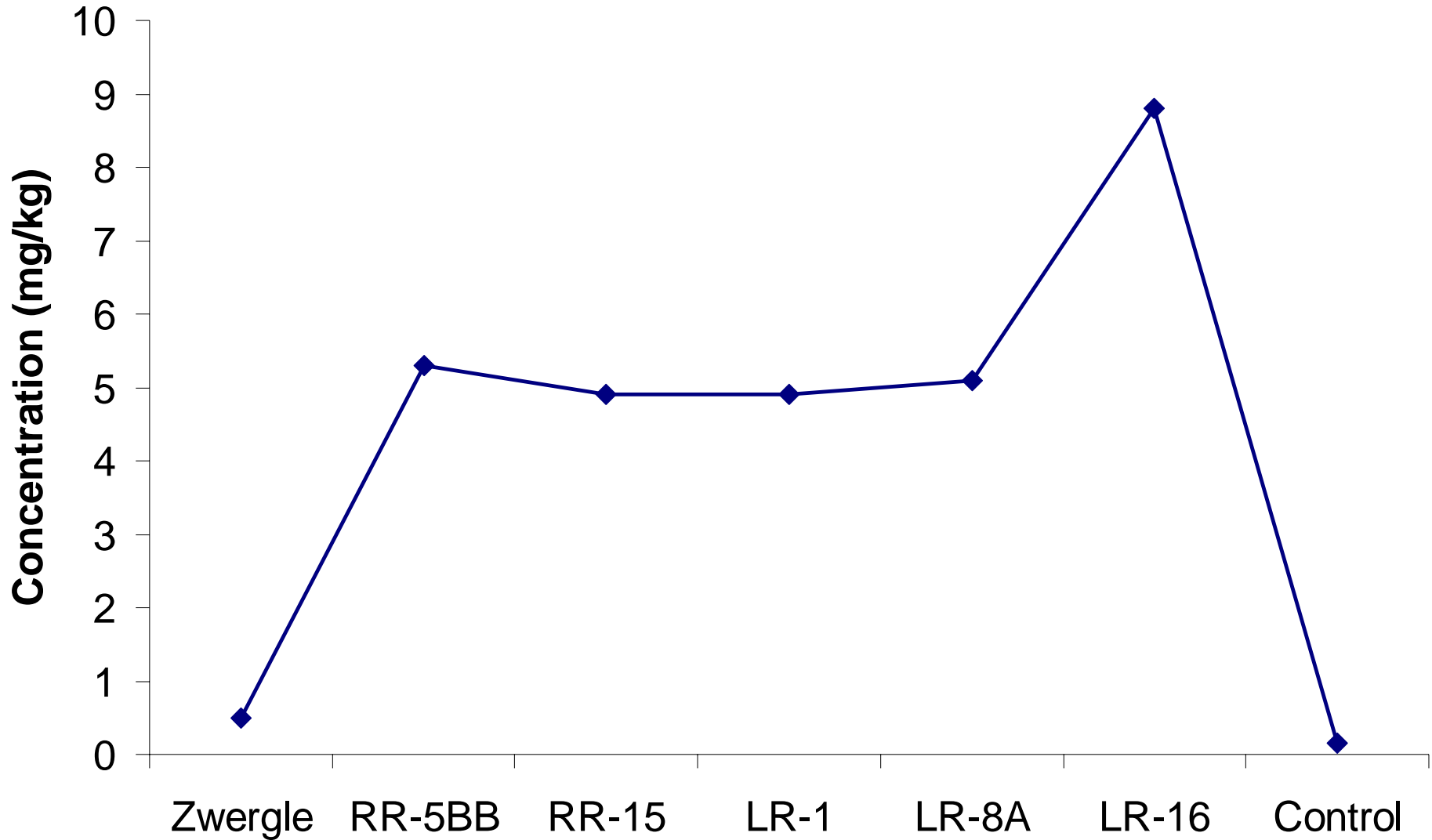
Manganese in Sediments

No screening level



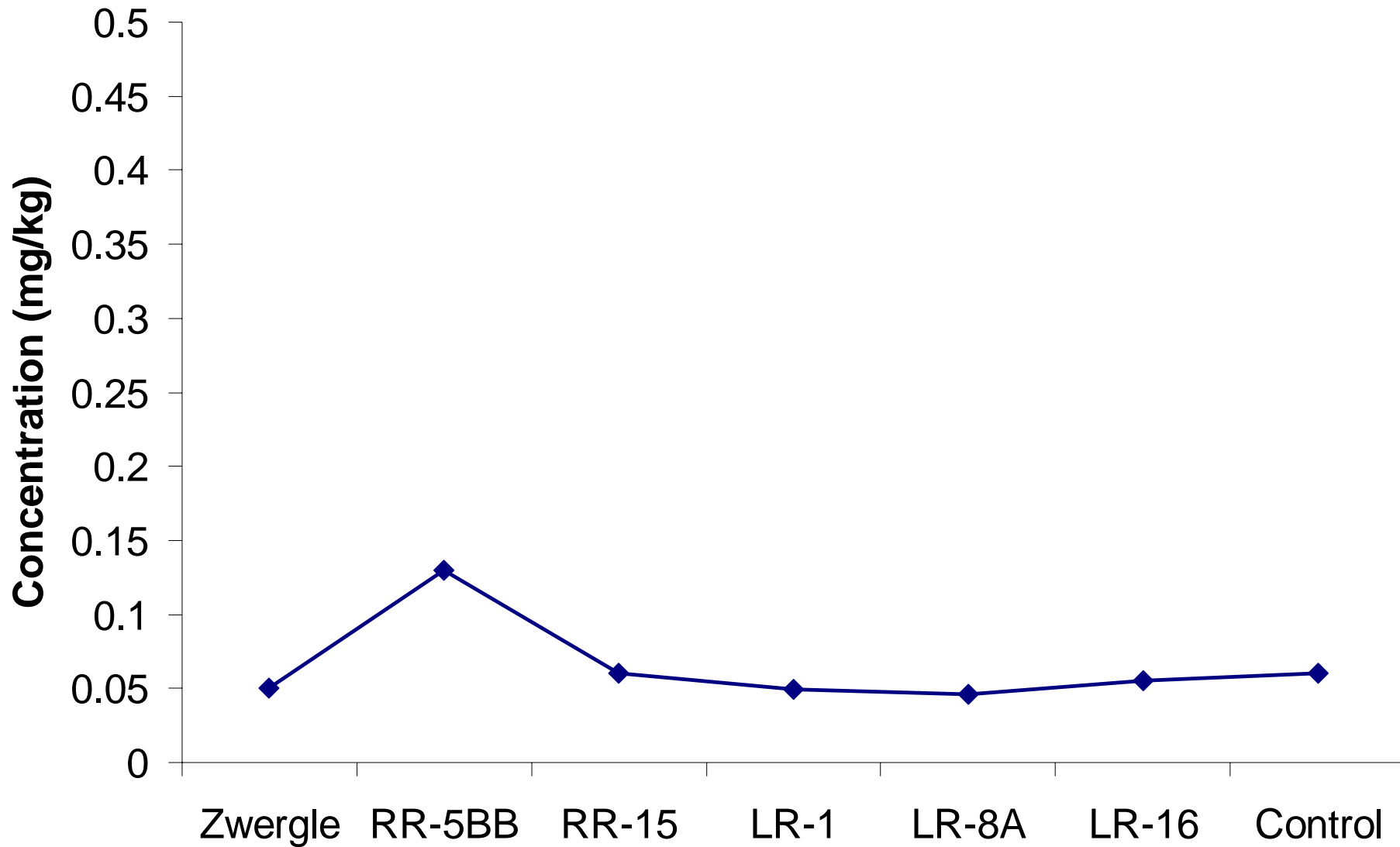
Molybdenum in Sediments

No screening level



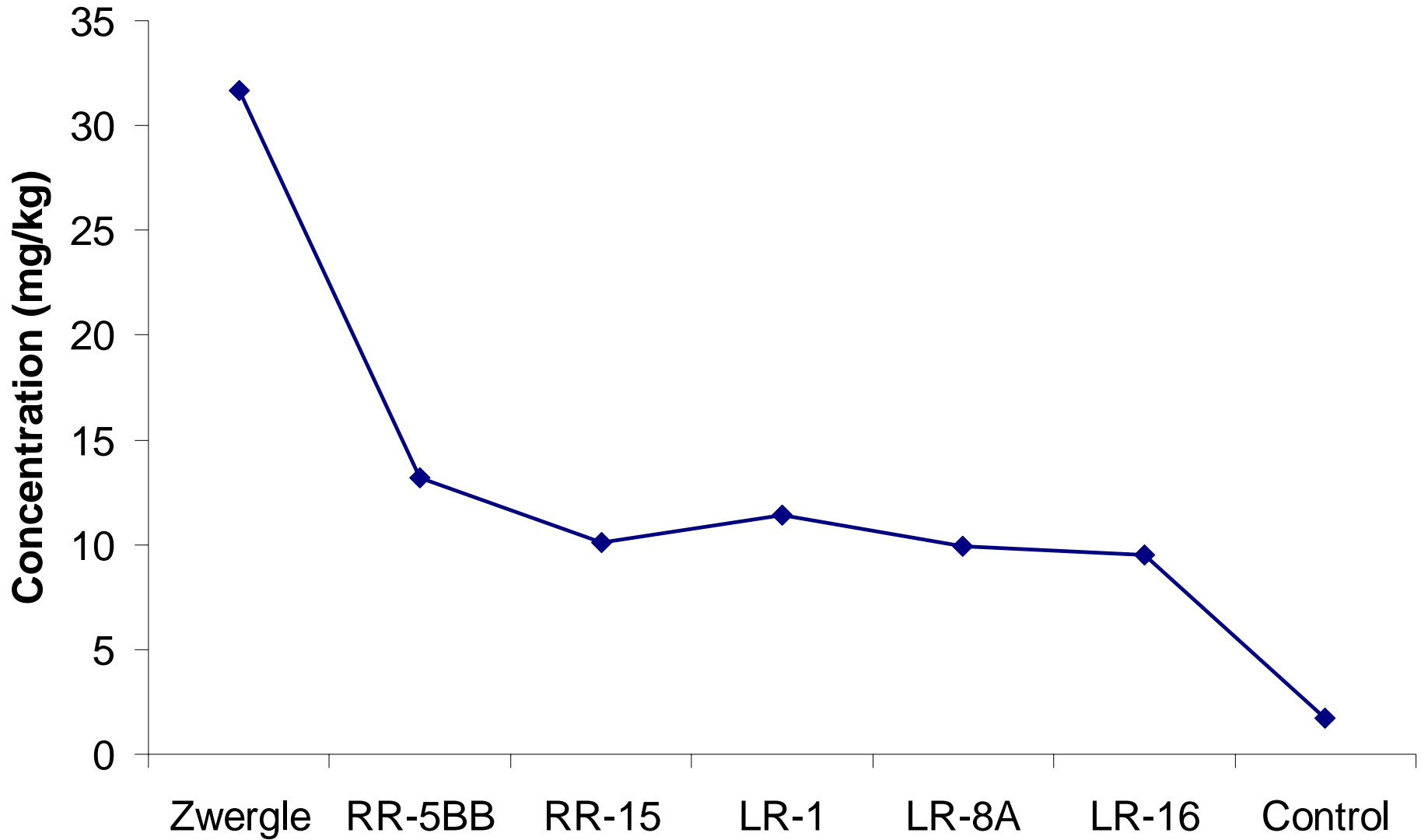
Thallium in Sediments

No screening level



Vanadium in Sediments

No screening level



Sediment pH

