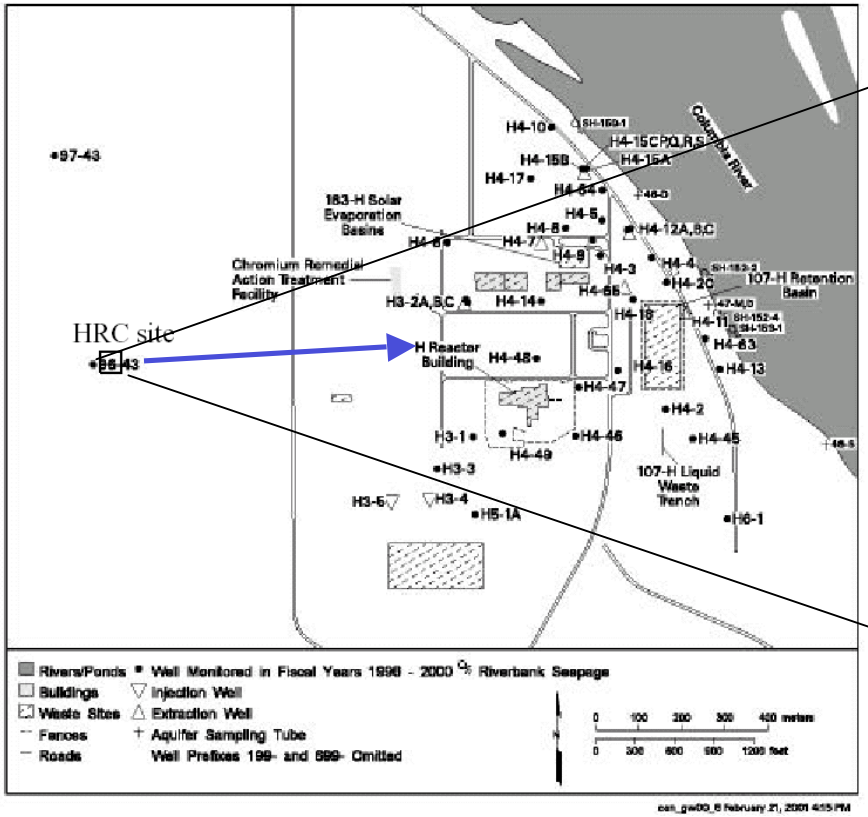
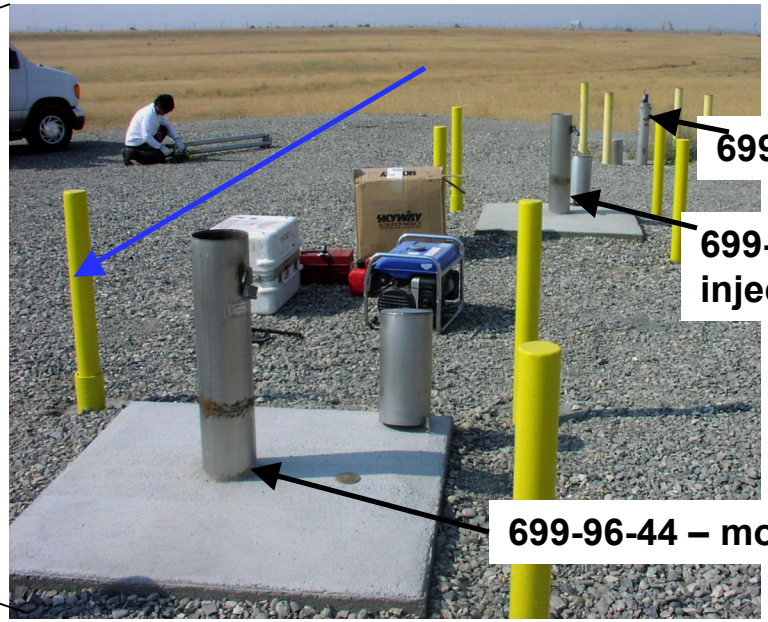
# Conceptual Model of Background Conditions at Hanford 100H:

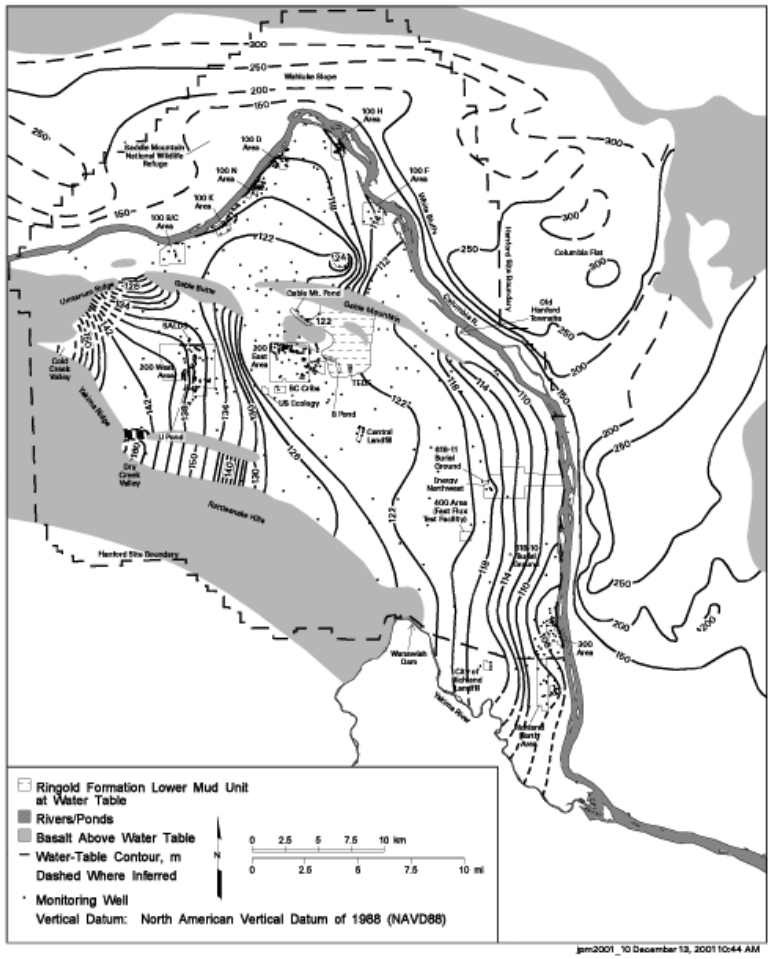
# Hydrogeology and Groundwater Chemistry

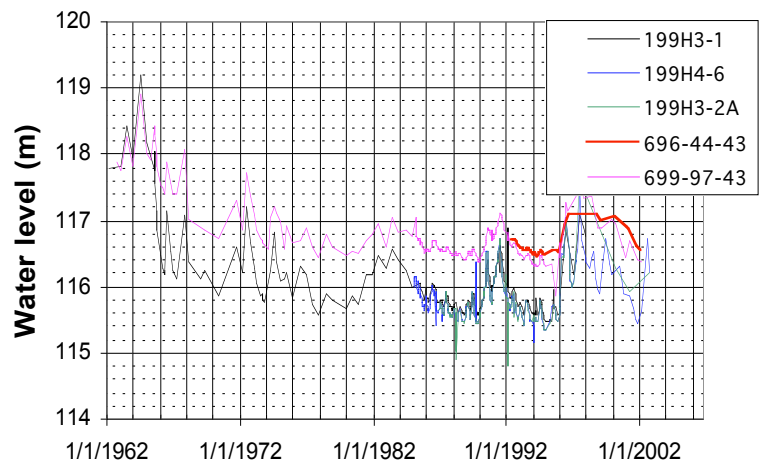
# Site Location



# Groundwater Level



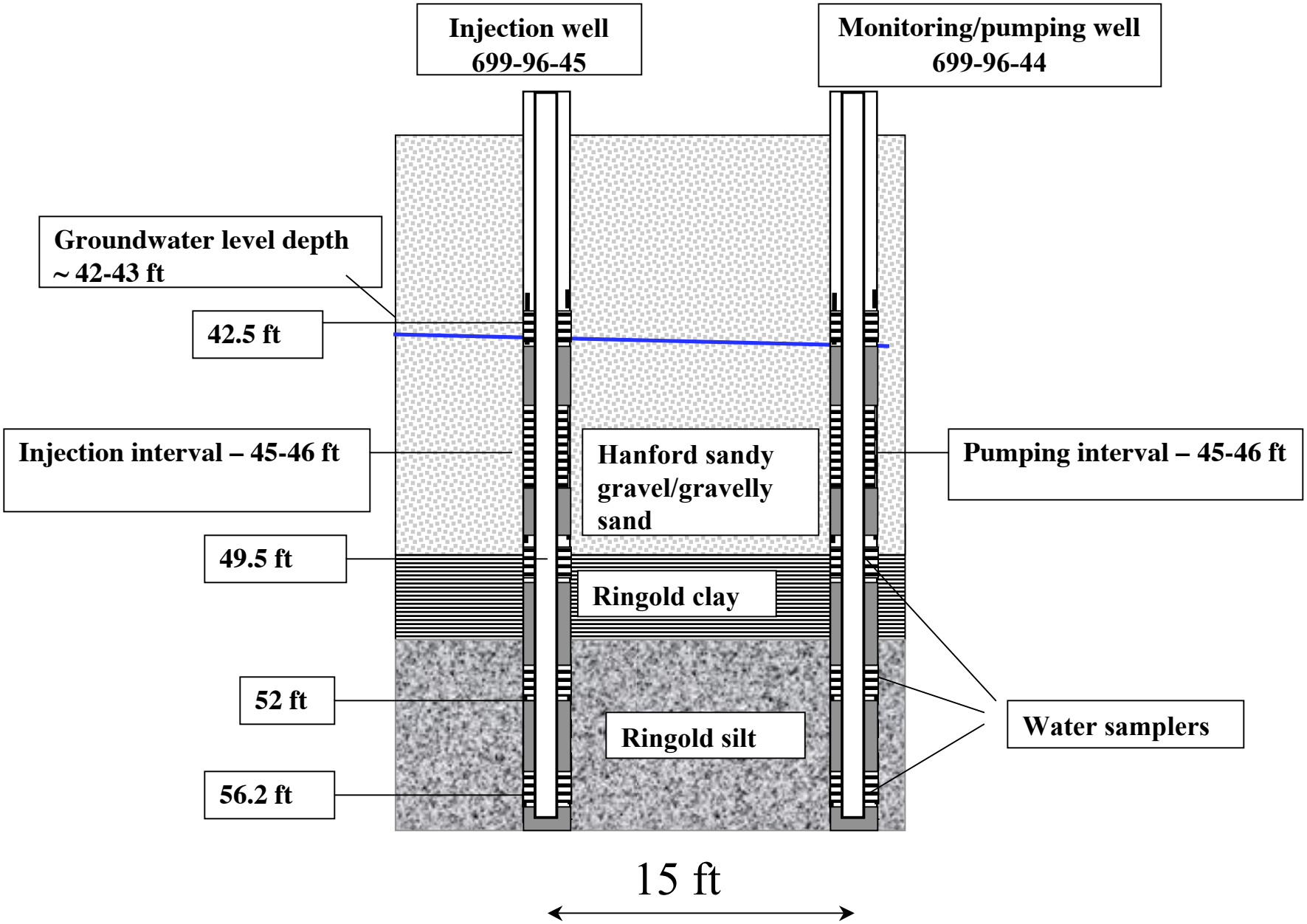



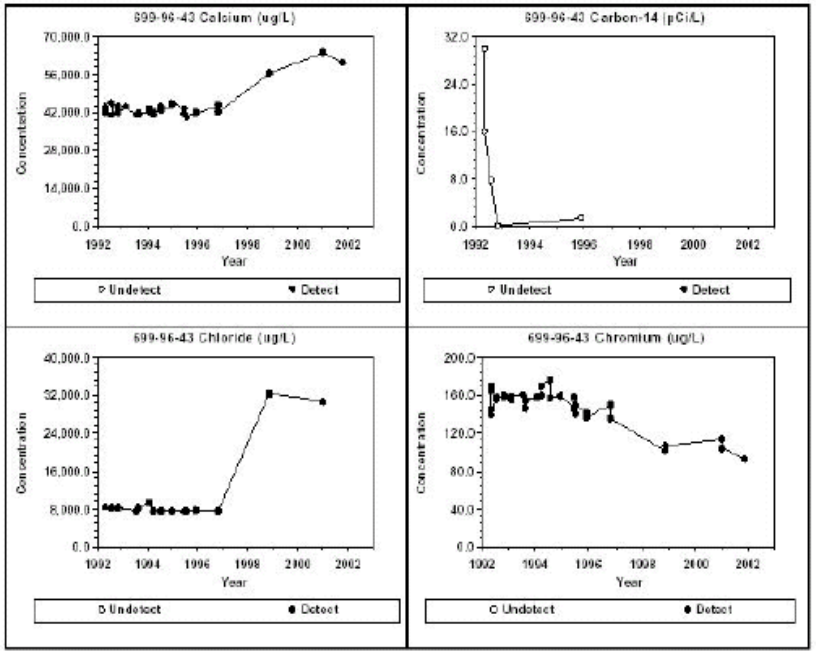

K = 0.5 - 46 m/day

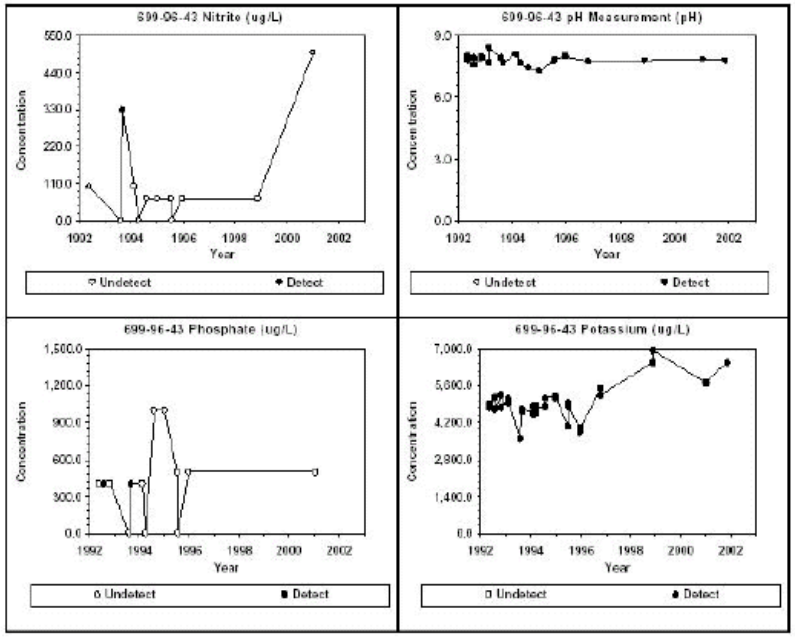
Effective porosity 0.1-0.25

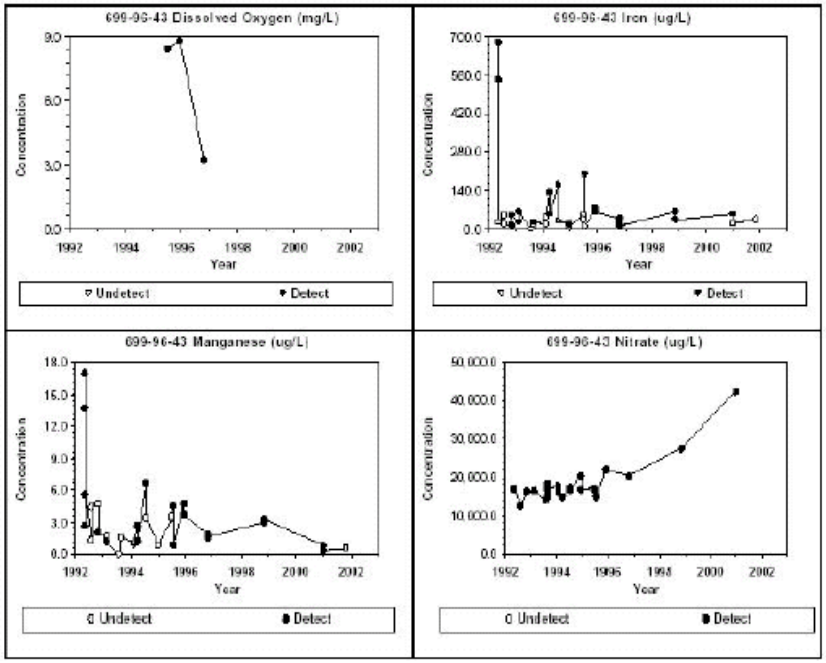
Hydraulic gradient ~0.001

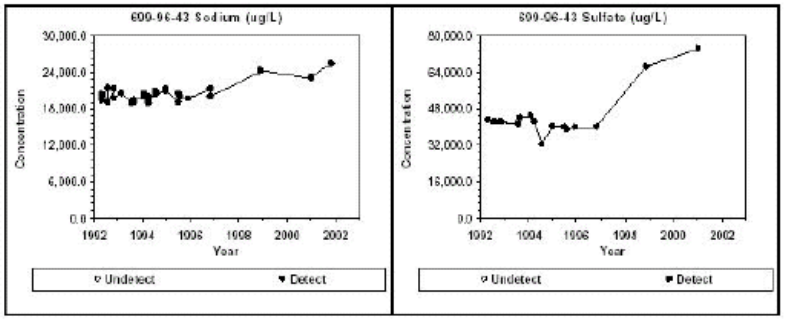
Actual velocity 0.002 - 0.2 m/day


Injection well
699-96-45
Monitoring/pumping well
699-96-44
Groundwater level depth
~ 42-43 ft
42.5 ft
Injection interval – 45-46 ft
Hanford sandy
gravel/gravelly
sand
Pumping interval – 45-46 ft
49.5 ft
Ringold clay
52 ft
Ringold silt
Water samplers
56.2 ft
15 ft

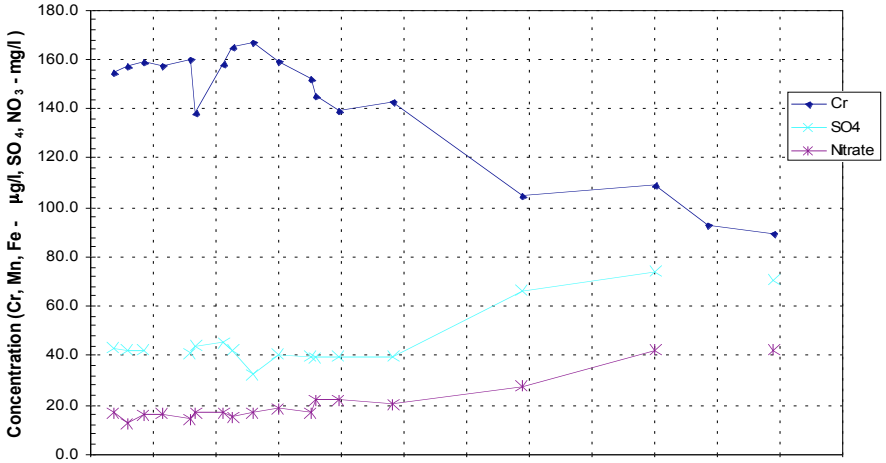

699-96-43 Calcium (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Carbon-14 (pCi/L)
Concentration
Year
Undetect
Detect
699-96-43 Chloride (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Chromium (ug/L)
Concentration
Year
Undetect
Detect


699-96-43 Nitrite (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 pH Measurement (pH)
Concentration
Year
Undetect
Detect
699-96-43 Phosphate (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Potassium (ug/L)
Concentration
Year
Undetect
Detect

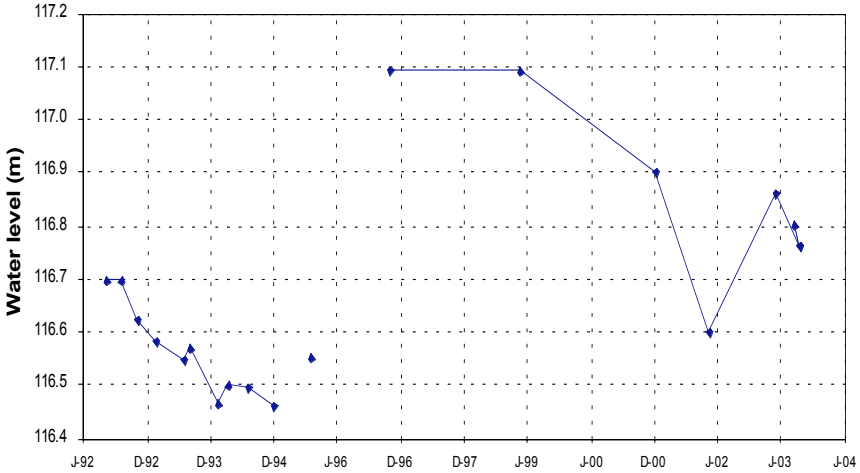

699-96-43 Dissolved Oxygen (mg/L)
Concentration
Year
Undetect
Detect
699-96-43 Iron (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Manganese (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Nitrate (ug/L)
Concentration
Year
Undetect
Detect

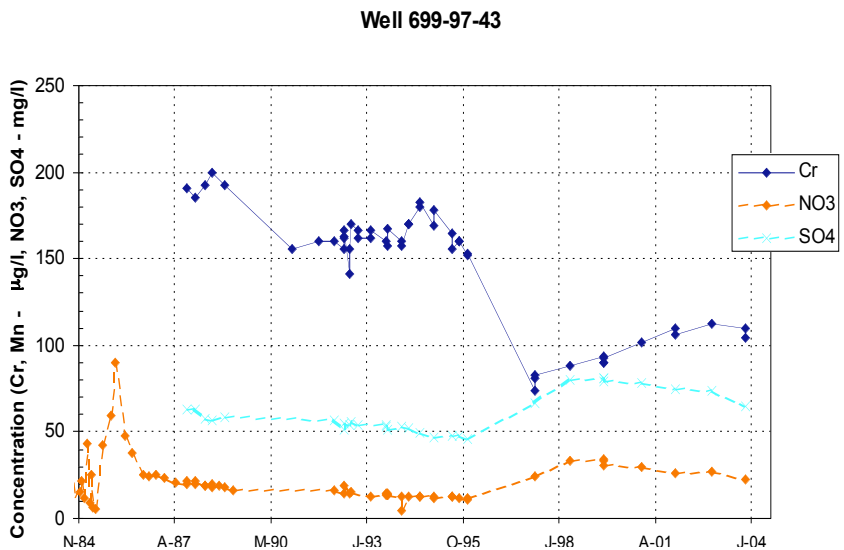

699-96-43 Sodium (ug/L)
Concentration
Year
Undetect
Detect
699-96-43 Sulfate (ug/L)
Concentration
Year
Undetect
Detect

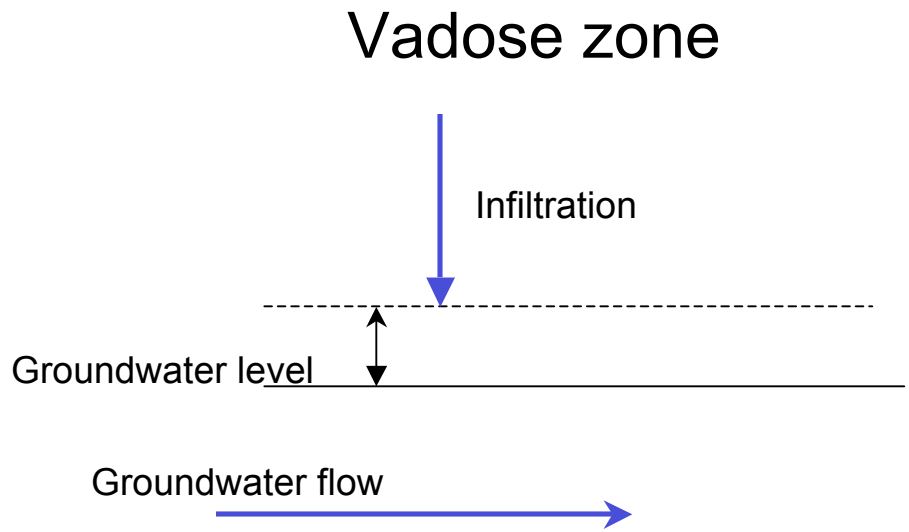
## Well 699-96-43

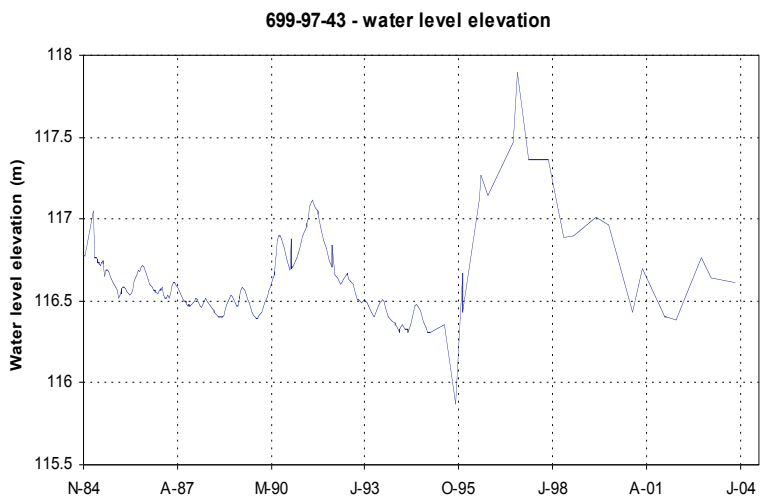



## Well 699-96-43 - water level





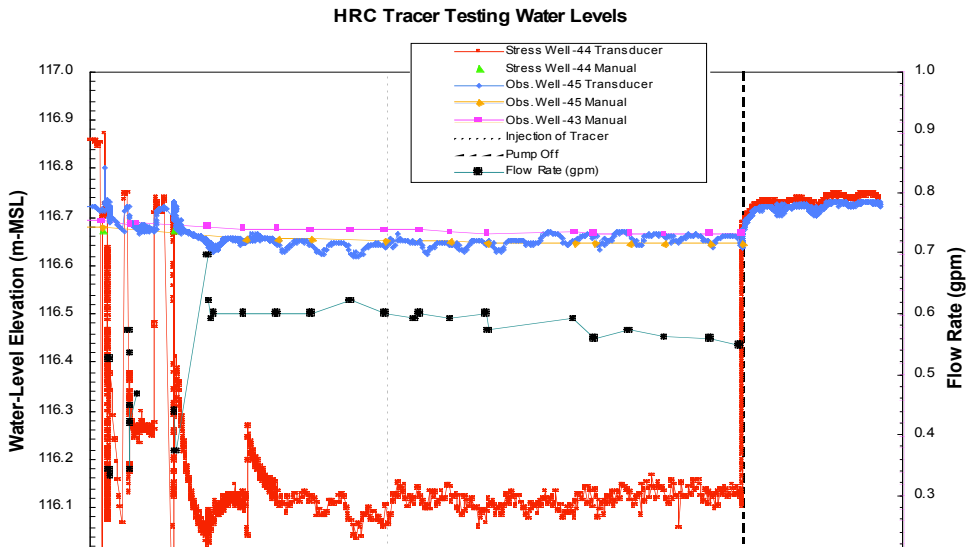



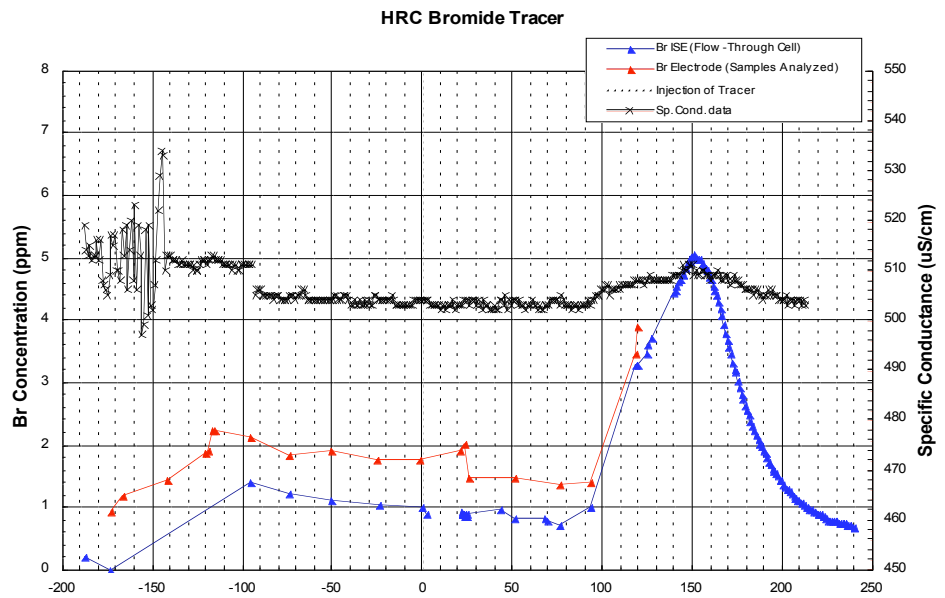




## Water Level Increase Causes:

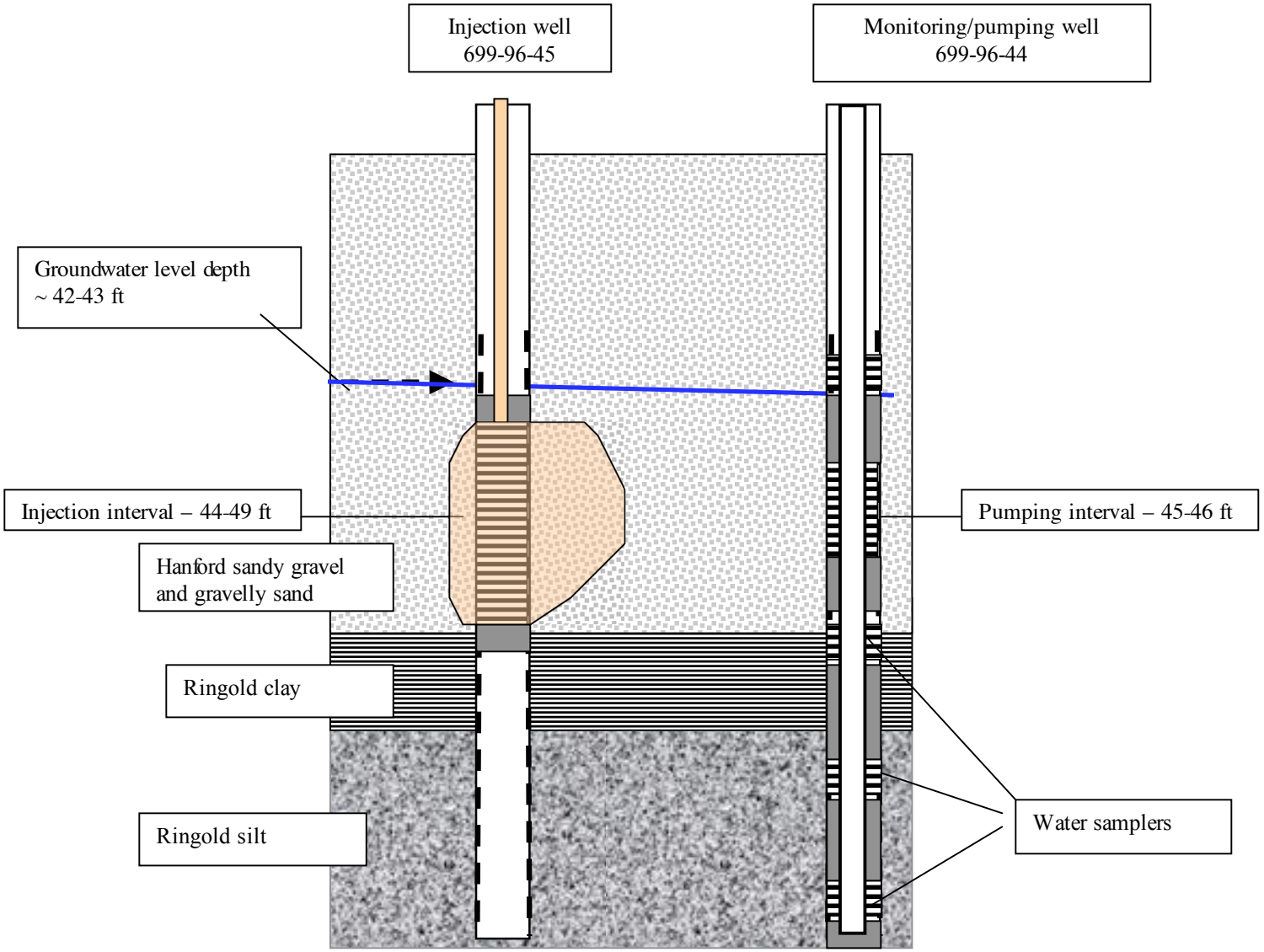
- Cr dilution in groundwater
- $NO_3^-$ and $SO_4^{2-}$ desorption from unsaturated soils/dissolution in groundwater

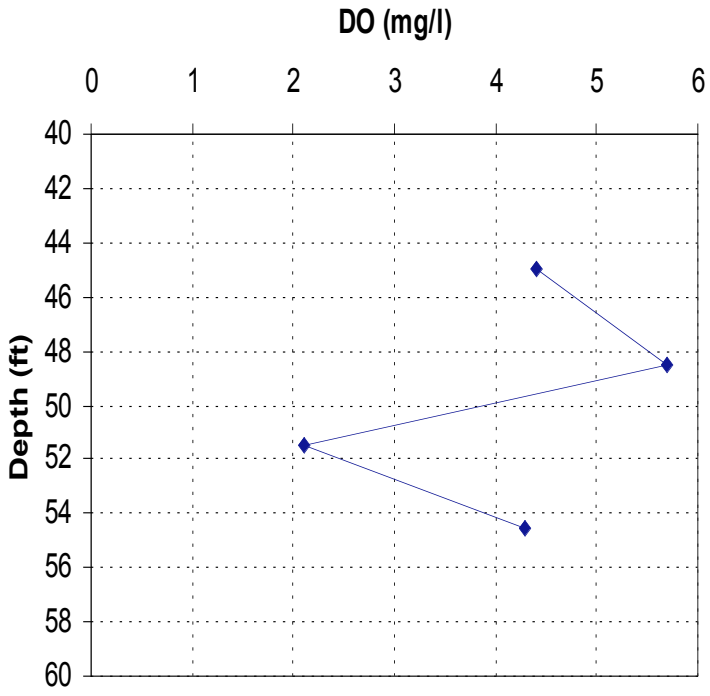
# Br-Tracer Test with Pumping

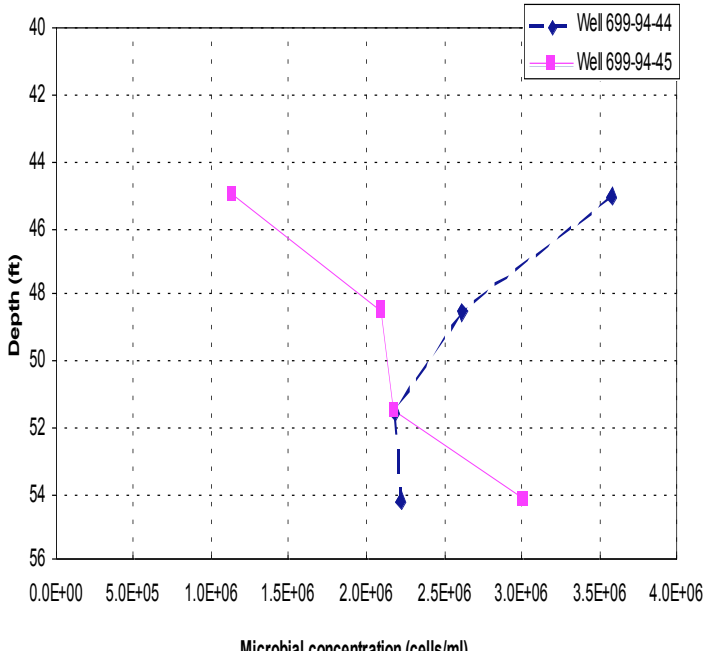


# HRC Injection




DO (mg/l)
0
1
2
3
4
5
6
Depth (ft)
40
42
44
46
48
50
52
54
56
58
60


Well 699-94-44
Well 699-94-45
Depth (ft)
40
42
44
46
48
50
52
54
56
0.0E+00
5.0E+05
1.0E+06
1.5E+06
2.0E+06
2.5E+06
3.0E+06
3.5E+06
4.0E+06