



Synopsis of Groundwater and Aquifer Tube Data

Presented to: 100-NR-2 OU – RI/FS Work
Plan Addendum Workshop

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Well and Aquifer Tube Activities

- Well 199-N-173 drilled to provide info on Total Petroleum Hydrocarbons (TPH) plume
- Well 199-N-165 drilled to replace 199-N-59 which is dry
- Wells 199-N-166, 199-N-167, 199-N-168, 199-N-169, 199-N-170, 199-N-171, and 199-N-172 drilled for Washington Closure Hanford (WCH) Bioventing Test/TPH Plume Investigation
- Wells 199-N-174, 199-N-175, 199-N-176, 199-N-177, 199-N-178, 199-N-179, 199-N-180, and 199-N-181 drilled for Infiltration Gallery Test to be performed by PNNL (later this year)
- Preventative maintenance and repair performed on all aquifer tubes along 100N shoreline

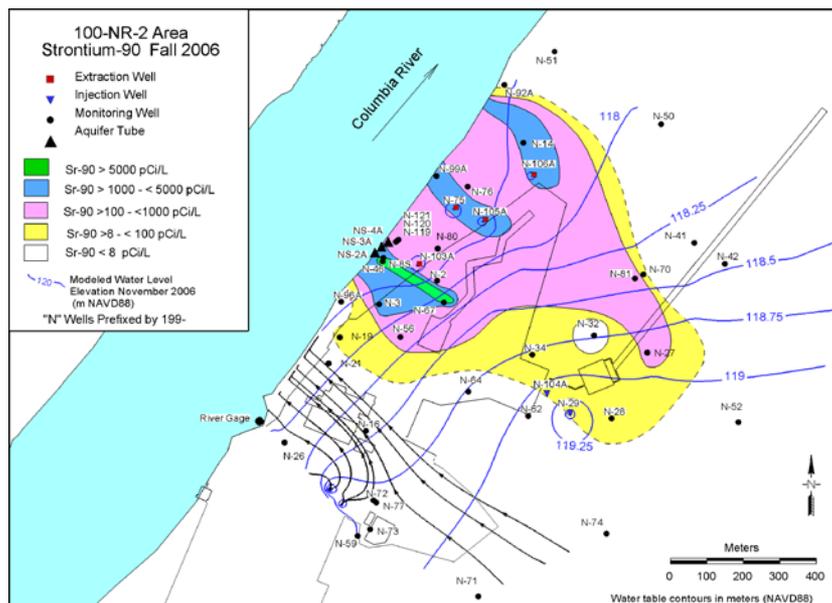
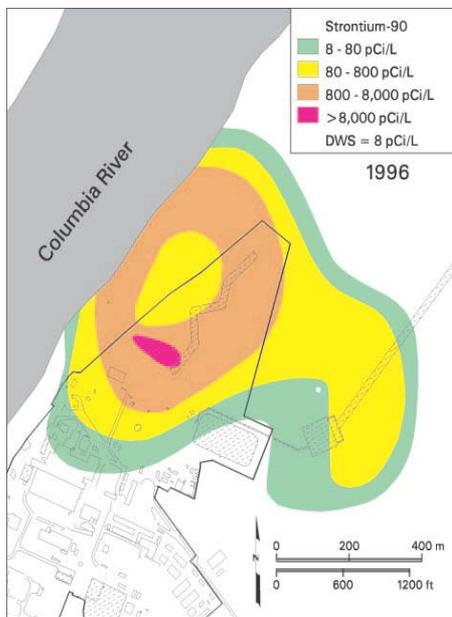
Groundwater Conditions - Plumes

- Plume configuration (plume map next slide)
 - Shape and extent of Sr-90 plume has changed little from conditions in 1996, prior to operation of 100N pump-and-treat system (P&T)
 - Higher concentration portions of plume generally moving towards river, however large sections appear to be static
 - Sr-90 concentration along Apatite permeable reactive barrier (PRB) decreasing, but Sr-90 concentrations remain much the same on Central Plateau

Strontium-90 Plume Maps

Sr-90 plume over time

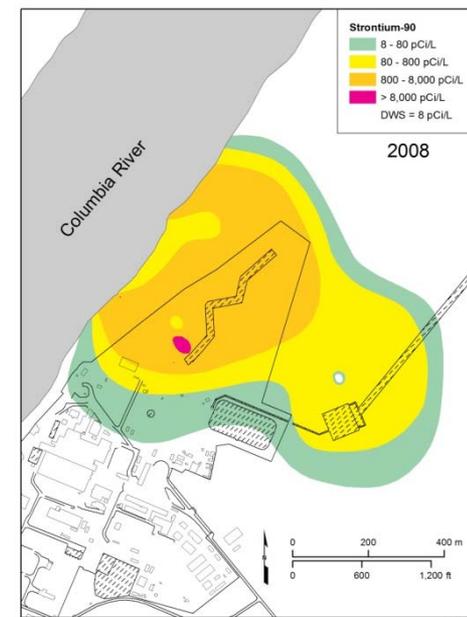
1996



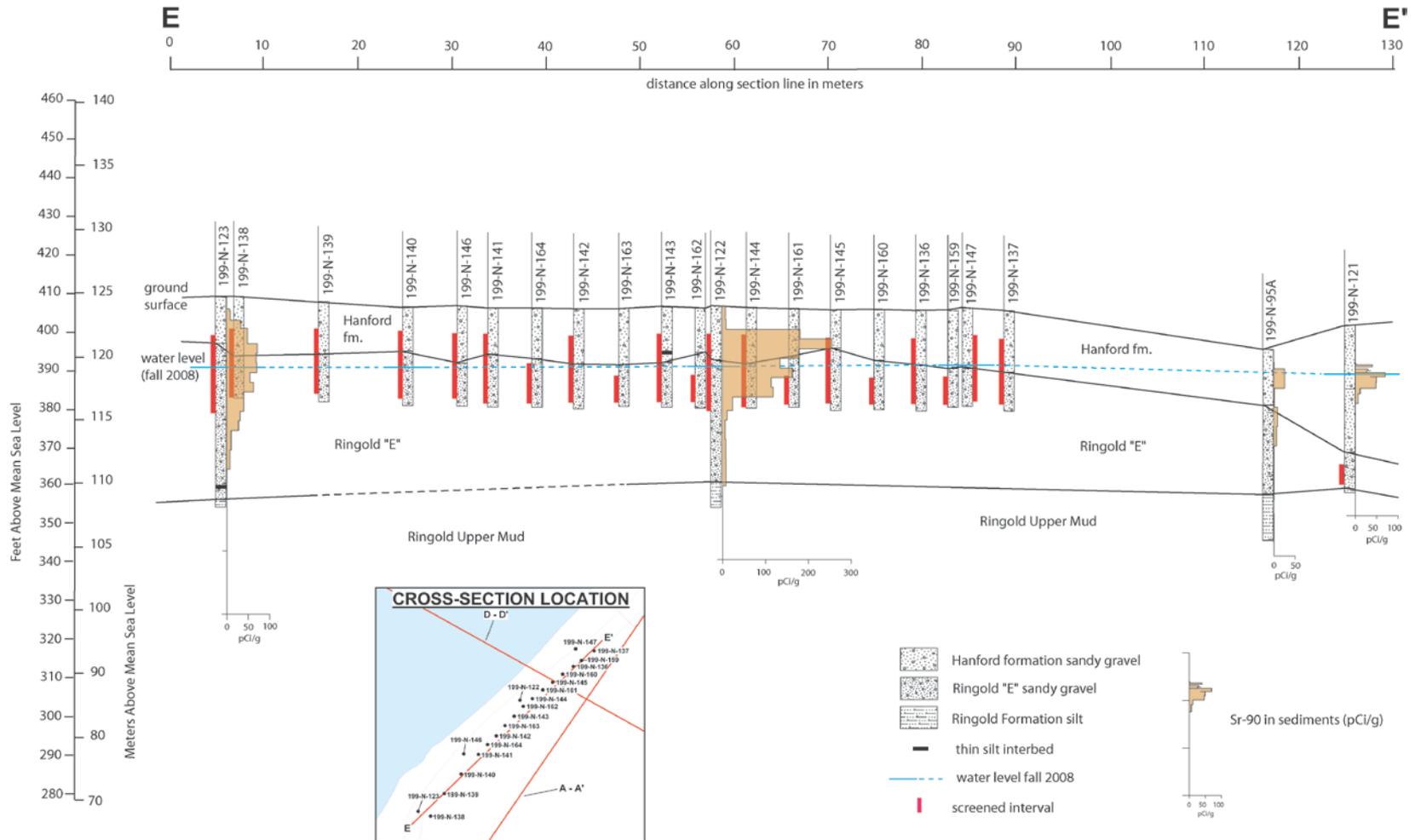
Fall 2006

Very little change over time,
especially since P&T placed in
cold standby

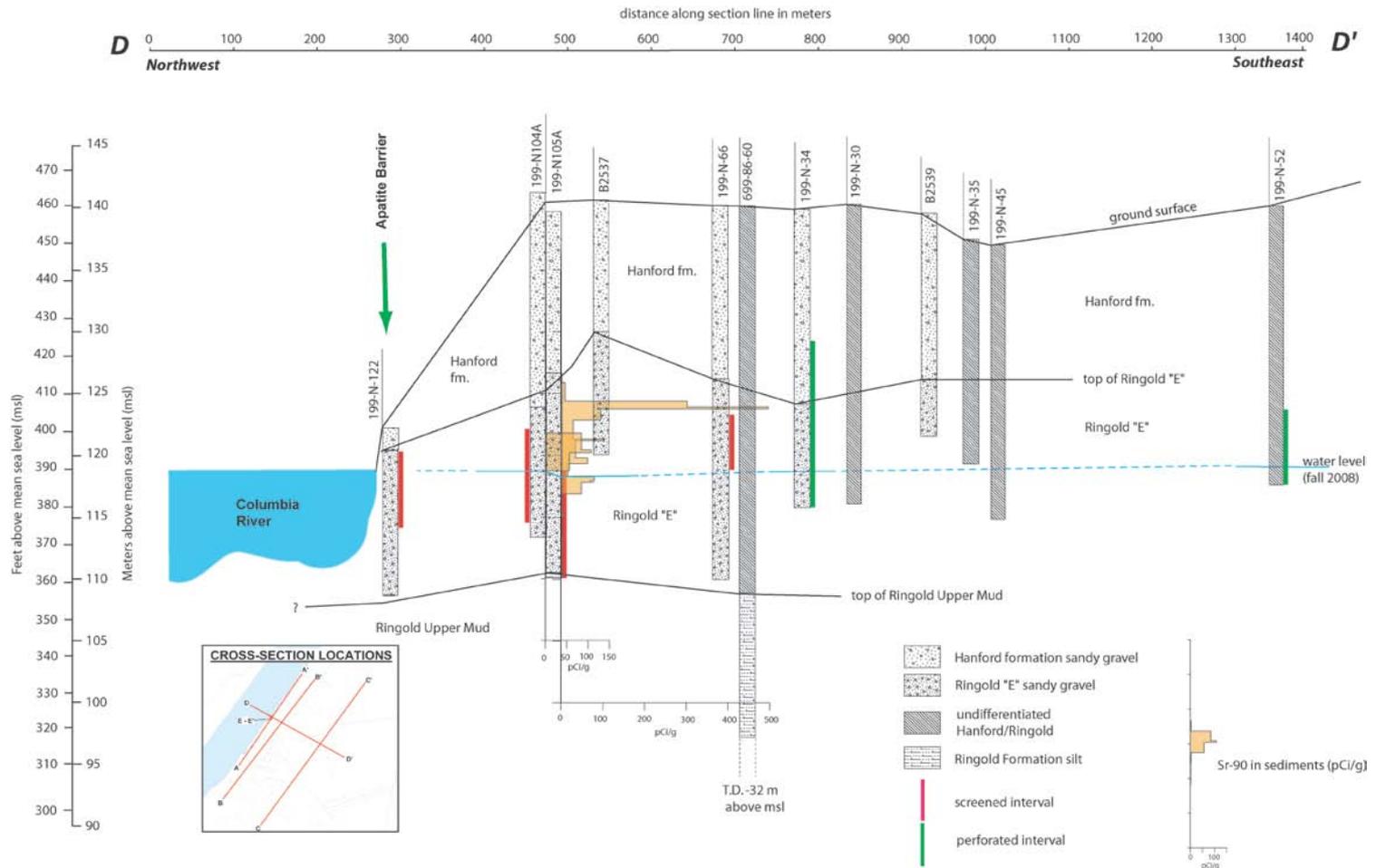
2008



Sr-90 Distribution - Apatite PRB Area

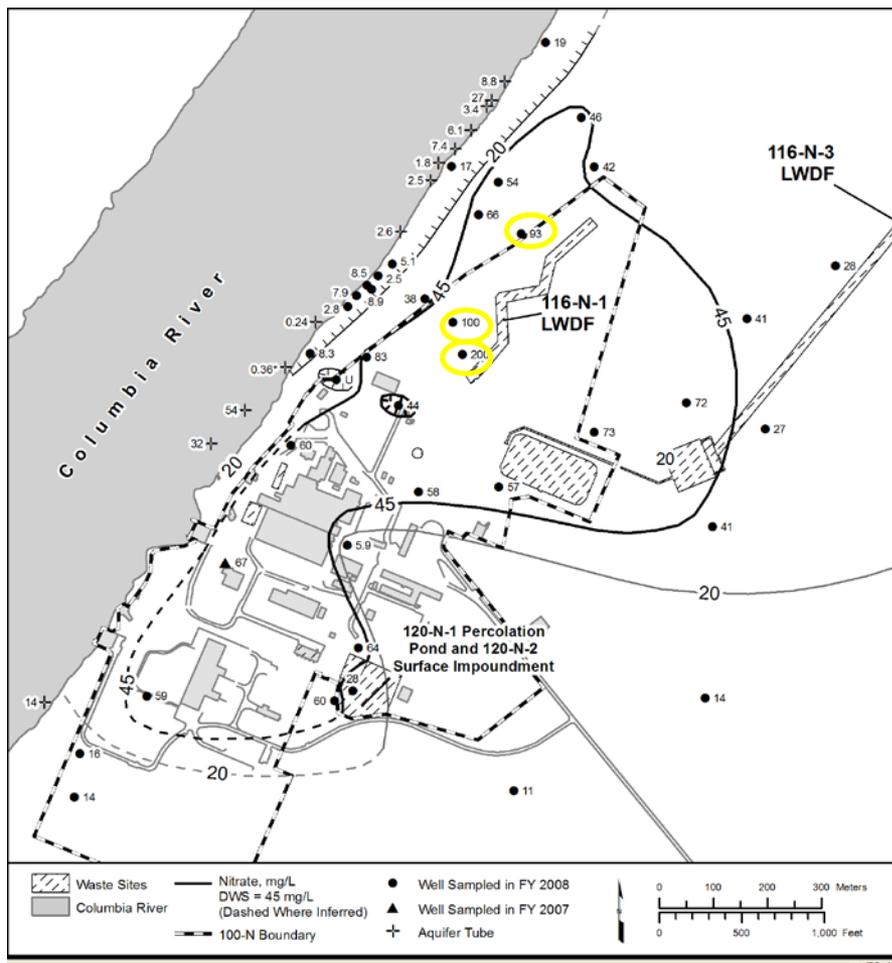


Sr-90 Distribution - Disposal Sources



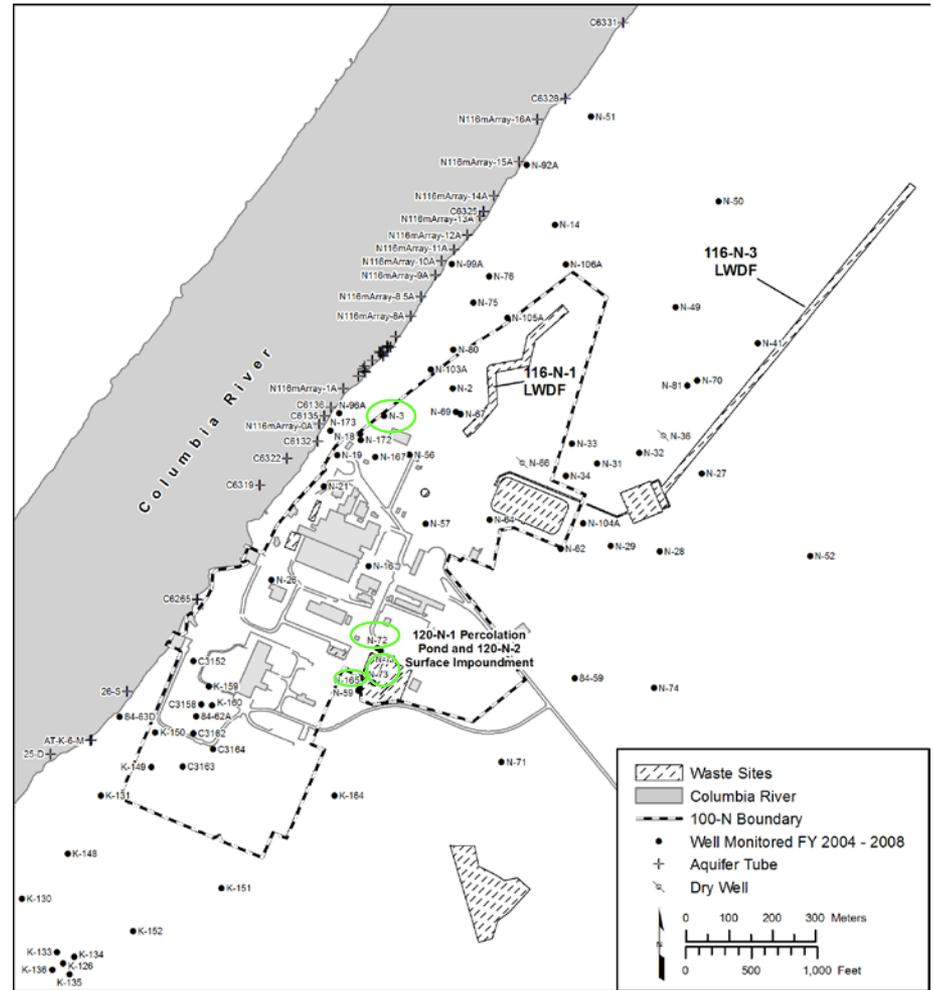
Contaminant Trends - Nitrate

- 24 of 45 wells sampled in 2009 had levels above regulatory limits (45 mg/L)
- Range from not detected (ND) to 400 mg/L
- Highest values in N-2, N-67, N-105A



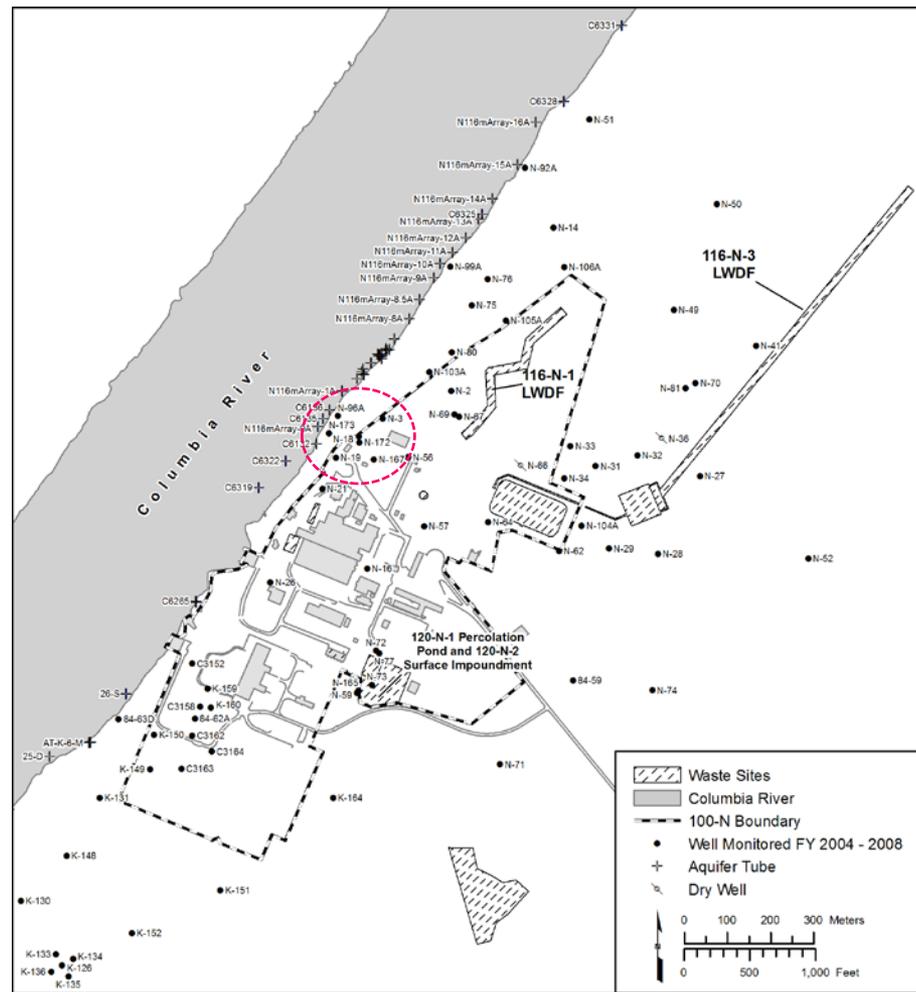
Contaminant Trends - Sulfate

- No wells exceeded the 250 mg/L secondary drinking water standard (DW Std)
- Range from ND to 208 mg/L
- Highest wells were N-3, N-72, N-73, and N-165



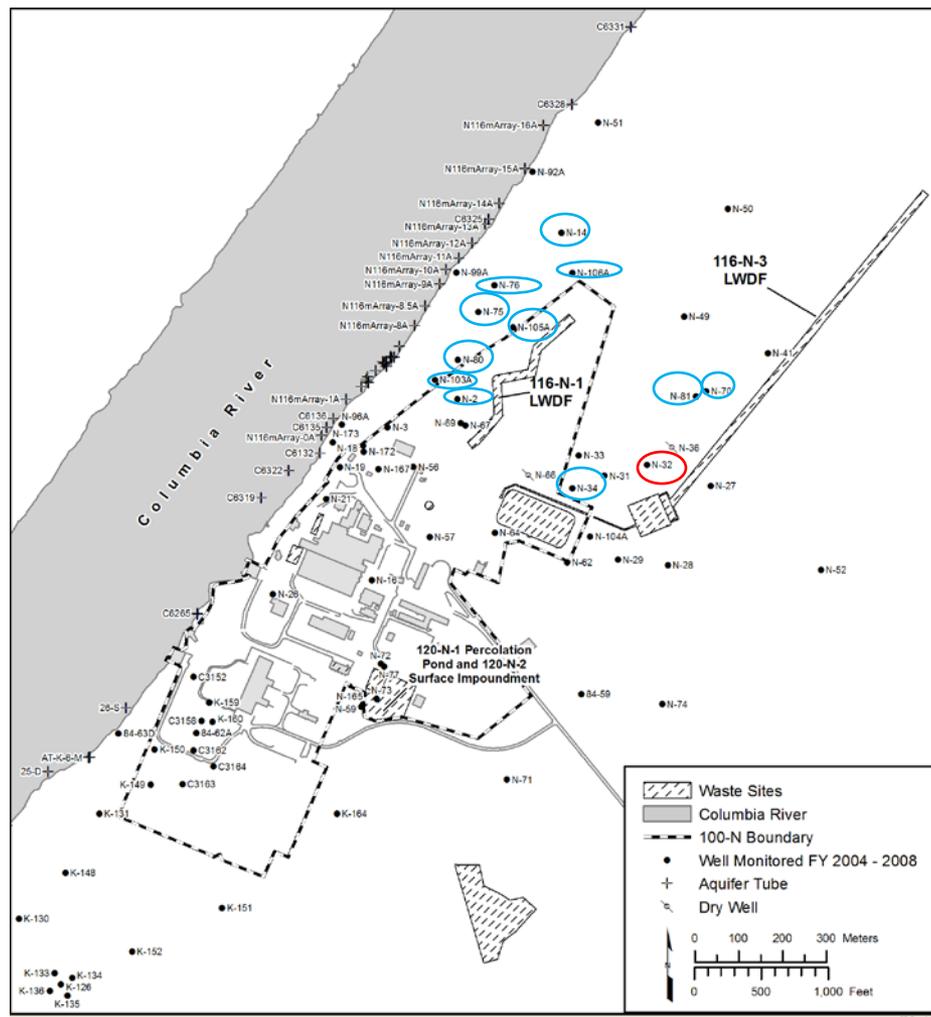
Contaminant Trends - TPH

- 4 of 45 wells sampled in 2009 had detectable levels of TPH-Diesel
- Range from 1900 to 16000 $\mu\text{g/L}$
- Detected in wells N-18, N-167, N-172, and N-173



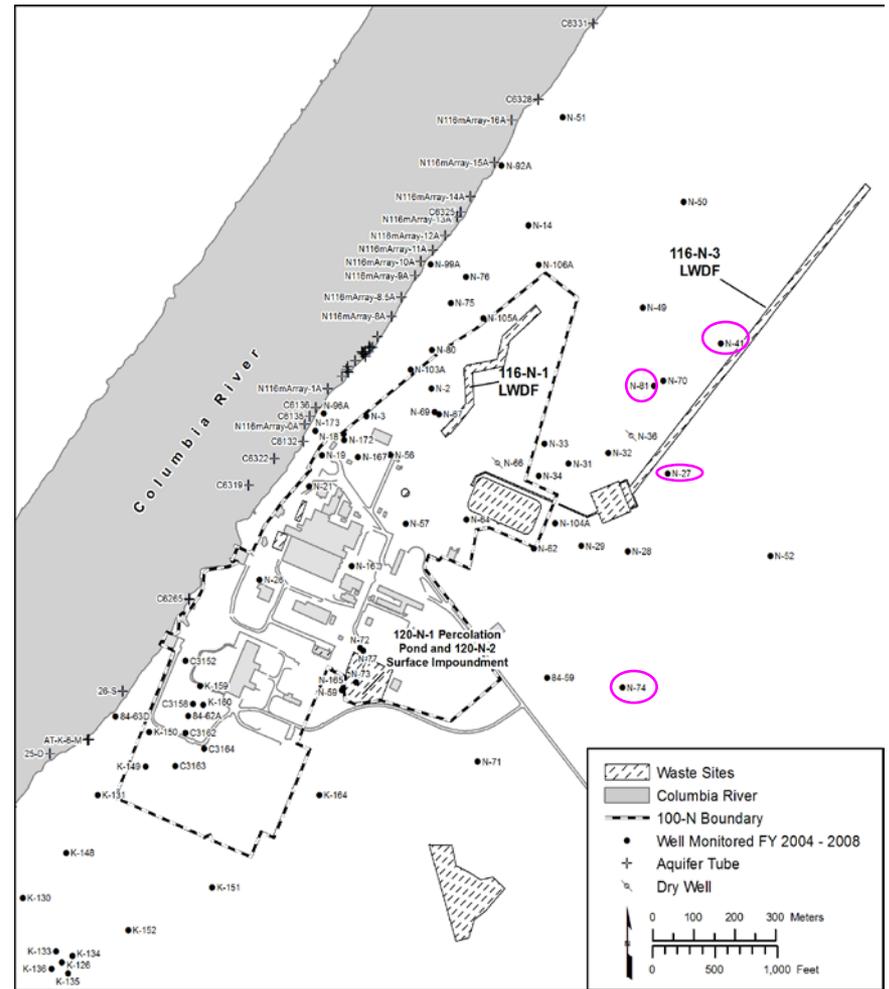
Contaminant Trends - Tritium

- One well, N-32, at DW Std of 20,000 pCi/L
- 29 of 45 wells sampled in 2009 had detectable levels of tritium; range from ND to 20,000 pCi/L
- Highest wells (>10,000 pCi/L): N-2, N-14, N-34, N-64, N-70, N-75, N-76, N-80, N-81, N-99A, N-103A, N-105A, N-106A



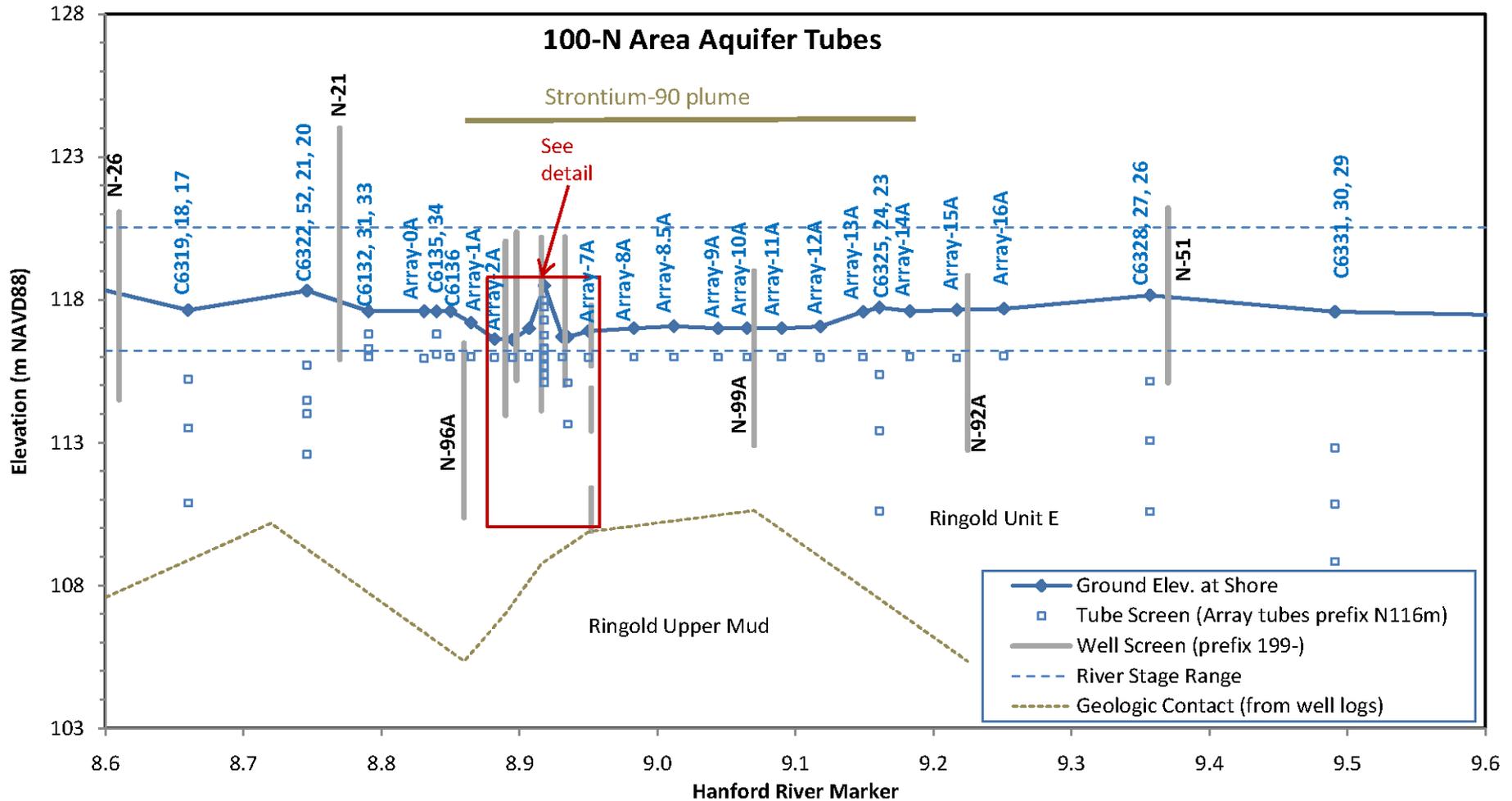
Contaminant Trends - Chromium

- One well – N-81 above DW Std of 100 $\mu\text{g/L}$; has known corrosion
- 6 filtered (F), 12 unfiltered (U) of 45 wells sampled in 2009 had detectable levels of Cr
- Range: ND to 169 F, 173 U
- Other highest F values: N-27 (15.1 B), N-41 (13.4 B), and N-74 (28 B)



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Aquifer Tubes - 100-N Shoreline



Aquifer Tubes - 100-N Apatite PRB

