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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10 HANFORD/INL PROJECT OFFICE
309 Bradley Boulevard, Suite 115
Richland, Washington 99352

September 5, 2008

Jim Hanson
100-KR-4 Project Manager
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

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EDMC

Re: U.S. Environmental Protection Agency (EPA) Approval of "Supplement to 100-HR-3 and 100-KR-4 Remedial Design Report and Remedial Action Work Plan for Expansion of 100-KR-4 Pump and Treat System"

Dear Mr. Hanson: *Jim*

The EPA has reviewed and approves the subject document, Revision 1, Decisional Draft, with the exception of section 5.4.1, first paragraph. That paragraph should be removed as part of any future revision, but the remainder of the document is approved. Justification for its removal is enclosed. Thank you for the many informative and productive meetings and discussions we have shared regarding this project. If you have any questions, please feel free to call me at 509-376-9884.

Sincerely,

Larry Gadbois

Larry Gadbois
100-K Area Project Manager

Enclosure

cc: Bob Raidl, Fluor Hanford
Administrative Record, 100-KR-4

Enclosure - Justification to Remove Section 5.4.1, First Paragraph

1) Page 5-10, section 5.4.1, 1st paragraph

For several significant reasons this paragraph should be removed. The second paragraph of this section adequately addresses the topic of when the remedial action should be terminated. The key reasons for removing the paragraph are presented below.

This section defines a procedure to determine when the system can be shut down and when it would need to be restarted. The document states that pumping of the extraction wells will continue as long as chromium concentrations remain above 22 ug/L. As written ("extraction wells" - plural), in a vague way it suggests that if any of the wells are above 22 ug/L then all the wells will continue to be pumped. In the past, DOE and EPA have supported the idea of a phased shutdown, well by well or area by area. EPA continues to support that approach.

Overall this paragraph misses the point that there are compliance and monitoring wells that are used to determine the effectiveness - and completion - of the remedial action. If one or some of the monitoring/compliance wells and/or aquifer tubes are above the RAO, but the extraction well is below, then perhaps the extraction point should be moved to the monitoring/compliance well, or continued extraction is needed to pull the plume to the extraction well, or...an appropriate situation specific decision is made.

An additional problem with the algorithm presented in this paragraph is that a single measure of < 22 ug/L would trigger shutdown. We have lots of experience at this site that shows us that sustained elevated river levels can dilute the extraction well below 22 ug/L but higher concentrations return when the river's dilution subsides. Another problem is measuring quarterly after the shutdown, determining the UCL, and basing restart on the UCL. Let me present a realistic scenario to illustrate this point. If an area is at 18 ug/L during low river (maximum GW influence) which persists for 6 months of the year, and for the other six months of high river height and aquifer dilution, the concentration is 5 ug/L, the UCL of four data points (18,18,5,5) would be higher than 22. Thus the decision logic presenting in this document would require restart of the extraction system. Under the second paragraph of section 5.4.1 EPA would consider this data represents a compliant situation and not require restart of the extraction system

The document states "data used to calculate an upper confidence interval using methodology described in WAC 173-340-720(8)(e)." That WAC section has nothing about UCL calculation. For ease of reference, here is WAC 173-340-720(8)(e):

(e) Monitoring wells and surface water compliance.

(i) The department may require or approve the use of upland monitoring wells located between the surface water and the source of contamination to establish compliance where a conditional point of compliance has been established under subsection (8)(d)(i) or (ii) of this section.

(ii) Where such monitoring wells are used, the department should consider an estimate of natural attenuation between the monitoring well and the point or points where ground water flows into the surface water in evaluating whether compliance has been achieved.

(iii) When evaluating how much, if any, natural attenuation will occur, the department shall consider site-specific factors including:

(A) Whether the ground water could reach the surface water in ways that would not provide for natural attenuation within the ground water flow system (such as short circuiting through high permeability zones, utility corridors or foundation drains); and

(B) Whether changes to the ground water chemistry due to natural attenuation processes would cause an exceedance of surface water or sediment quality standards.