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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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March 28, 1996

Mr. Paul F. X. Dunigan, Jr.
U.S. Department of Energy
P.O. Box 550, H4-83
Richland, WA 99352

Mr. K. Mike Thompson
U.S. Department of Energy
P.O. Box 550, H4-83
Richland, WA 99352

Dear Messrs. Dunigan and Thompson:

Enclosed are the Washington State Department of Ecology's (Ecology) comments on *An Analysis of Potential Impacts to the Groundwater Monitoring Networks in the Central Plateau*. Ecology believes this document does not fully meet the intent of Milestone M-15-81A. Specifically, the document does not include recommendations to "coordinate regulatory compliance decisions across RCRA & CERCLA Groundwater monitoring programs for the 200 Area Plateau."

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Ecology agrees with the recommendation to conduct a Data Quality Objective (DQO) workshop. The U.S. Department of Energy should initiate the DQO workshop by April 20, 1996. The DQO workshop should include representatives from each of the four monitoring projects, as well as the Environmental Protection Agency and Ecology. The goal of this workshop should be to create one groundwater monitoring program to meet the needs and regulatory requirements for the entire Hanford Site. The attached comments should be discussed during the DQO session.

If you have any questions, please contact me at (509)736-3015.

Sincerely,

Dib Goswami, Ph.D.
Hydrogeologist
Nuclear Waste Program

DG:mf

cc: Donna Wanek, USDOE
Paul Beaver, EPA
Dennis Faulk, EPA



**An Analysis of Potential Impacts to the Groundwater Monitoring Networks in the Central Plateau
Washington State Department of Ecology Comments**

GENERAL COMMENTS

This document emphasizes some of the changes which will occur due to pump and treat, the falling water table from ceasing discharges, and effects of discharges occurring in certain areas (W-049H specifically), but recommends groundwater gradient changes, as they affect RCRA compliance, be examined in another document. The gradient changes are all part of what should be evaluated in this report if it is to meet milestone M-15-81A. This milestone specifies a report which includes "... recommendations for actions for approval by Ecology and EPA, to coordinate regulatory compliance decisions across RCRA and CERCLA groundwater monitoring programs for the 200 Area Plateau." Changes in the groundwater gradients are an integral part of this evaluation and should have been included. It should be emphasized that if decisions are being made on the basis of only temporary conditions, and these conditions will stabilize as they were previously (i.e., gradients will return to what they were prior to pump-and-treats, W-049 operations, etc.), then it may not be necessary to modify monitoring systems around RCRA units. However, if gradients will change because of these various impacts to the groundwater on a more permanent basis, decisions may need to be taken to replace or modify the monitoring wells.

This document only examines the head-level related impacts to monitoring systems by the addition of man-made recharge. It does not examine the quality of the water being discharged. Will the additional water dilute or increase contaminants of concern? Will the additional water have a aqueous geochemistry which will mobilize contaminants in the vadose zone?

SPECIFIC COMMENTS

Section 1.1, Page 3, Second Paragraph: Add information updating the status of ZP-1 and UP-1, concerning the pilot scale pump and treats (GPM) and the present scales of pump and treats.

Section 1.2, Page 3, Fifth Paragraph: Will these activities impact the vertical head magnitudes and direction relationships between the upper unconfined aquifer and both the lower unconfined aquifer and confined aquifer? This aspect should be examined.

Section 1.2, Page 3, Sixth Paragraph: Raising the water level may be a concern. If any of the contaminant of concerns are LNAPLS, raising the water table past the screened zone would comprise the well's ability to detect lighter contaminants. Also, if a well exists to monitor the upper portion of the water table in order to provide detection of contaminants first reaching the water table - then if the top of screen is submerged below the top of water table, the well is not as effective.

Section 2.0, Page 14, Last Paragraph: This discussion centers on the potential impact of C-018H and pump-and-treat activities in BP-5, and why they have been excluded from this study. C-018H was considered to have little impact because of the low recharge of 150 gpm to the ground and the few monitoring wells in the area. One question to be asked is how close is well 699-48-77 to SALDS (C-018H), and is there any mounding associated with C-018H in the 200 West Area? The next question pertains to the following section in which the pump-and-treat for UP-1 is addressed, in which one injection well and one withdrawal well are operating at 40 to 50 gpm. Why is the UP-1 system addressed in this document and not the C-018H, which will operate up to 150 gpm? Is the geology so different (both are located in or adjacent to the 200 West Area)?

Section 2.1.2, Page 15, Last Sentence: The text should provide additional information concerning the required geologic formational properties and indicate how the Hanford formation meets these requirements. Also, the formations in the West Area are not identical to the East Area. These differences need to be identified in the discussion.

Section 2.1.2, Page 16, Second Paragraph: Why were these injection and withdrawal rates used? What is the justification for these rates?

Page 16, Sixth Paragraph: The text indicates fifteen wells impacted by the pump and treat at UP-1. The text should indicate the well numbers, their locations, and the programs utilizing these wells.

Section 2.2.3, Page 18: The assumption is that for the purpose of the report, less than five feet of water above the bottom of the well screen defines a potentially impacted well. What about a system of wells used for monitoring purposes? This gets back to the impact of gradient changes and overall trend evaluation. The impacts are evaluated in relation to individual wells. What is the effect on a grouping of wells? What about the effect of vertical gradient (i.e., the relation of the potentiometric surface to the falling water table) changes? This is mostly important where "windows" are observed in the 200 Area and aquifer intercommunication can occur. In this case, with dropping unconfined water levels, movement should be from the confined aquifer to the unconfined, and would result in potentially lower or diluted values in some wells. Has this been examined?

Section 2.3, Page 18: The text needs to update the information on W049H and B Pond.

Figure 2-2: Are these locations accurate to the latest plans? If not the modeling should be modified also.

Section 3.0, Page 29, First Sentence: The report should evaluate the inter-relationships of the groundwater monitoring networks.

Section 3.0, Page 29, Second Bullet: The full scale operation of the pump and treat at ZP-1 will impact the ability to perform RCRA monitoring at LLWMA-4. The statistical information will be invalid due to a reversal of gradient and potentially bringing contaminants under the unit from other areas. This statement is incorrect.

Section 3.0, Page 29, Fourth Bullet: According to Milestone M-15-81A, this bullet is incorrect. Assessment of the impacts to each monitoring program and its individual monitoring requirements are clearly within the scope of this document.

Section 4.0, Page 30, Recommendations: USDOE's recommendation of a creating a compliance evaluation should have been part of this document.