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AUG 13 1997

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Mr. Douglas R. Sherwood
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Dear Messrs. Alexander and Sherwood:

QUARTERLY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) GROUNDWATER MONITORING DATA FOR THE PERIOD JANUARY 1, 1997, THROUGH MARCH 31, 1997

- References:
- (1) M. J. Hartman, 1992, Results of Ground Water Quality Assessment Monitoring at the 1301-N Liquid Waste Disposal Facility and 1324-N/NA Facilities, WHC-SD-EN-EV-003, Rev. 1, Westinghouse Hanford Company, Richland, Washington
 - (2) M. J. Hartman and P. E. Dresel, editors, 1997, Hanford Site Groundwater Monitoring for Fiscal Year 1996, PNNL-1170, Pacific Northwest National Laboratory, Richland, Washington
 - (3) RL ltr. to S. M. Alexander, Ecology, and D. R. Sherwood, EPA, from M. J. Furman "Notification of Resampling for Total Organic Halogens (TOX) at Waste Management Area U-Tank Farm (WMA-U)," dtd. April 8, 1997
 - (4) RL ltr. to S. M. Alexander, Ecology, from M. J. Furman "Exceedance of Concentration Limits at the 316-5 Process Trenches - A Resource Conservation and Recovery Act (RCRA) Facility in a Final Status/Compliance Monitoring Program," dtd. June 16, 1997

This letter addresses the RCRA groundwater monitoring data for the quarter of January 1, 1997, through March 31, 1997.

The RCRA groundwater chemistry and water level data for the period January 1, through March 31, 1997, have been verified and evaluated. The data is publicly available in electronic form in the Hanford Environmental Information System (HEIS) database. The electronic availability of the data and the summary provided below fulfill the reporting requirements of WAC 173-303-400 (and by reference, 40 CFR 265.94).



Eighteen RCRA units were sampled during the reporting quarter (Attachment 1). These include 10 of the RCRA units monitored under indicator evaluation programs, 6 sites monitored under groundwater quality assessment programs, and 2 sites monitored under a final status compliance program.

Comparison to Concentration Limits

Contamination indicator parameter data (pH, conductivity, total organic halogen, and total organic carbon) from downgradient wells were compared to background values at sites monitored under interim-status, indicator evaluation requirements, as described in 40 CFR 265.93 for the 18 RCRA units.

1324-N/NA Facility: Conductivity at downgradient wells monitored for the 1324-N/NA site exceeded the critical mean. The current exceedances were expected and the data are in trend with previous conductivity measurements. Groundwater quality assessment monitoring conducted at the 1324-N/NA site indicated that the high conductivity is caused by the nonhazardous constituents sulfate and sodium (Reference 1). Because an assessment has already been completed and the high conductivity is caused by nonhazardous constituents, verification sampling and additional assessment monitoring will not be conducted.

100-D Pond Facility: One downgradient well at 100-D Ponds exceeded the critical range for pH. Since 1994, pH has increased in this well due to the presence of coal ash beneath the ponds (Reference 2). Because the pH exceedance is due to the coal ash, an assessment program is not necessary.

Waste Management Area (WMA) U: A statistically significant increase in total organic halide (TOX) concentration was observed in one downgradient well monitored for the Single Shell Tanks, WMA U. Verification sampling and assessment monitoring are not necessary because the source of elevated TOX is carbon tetrachloride from an upgradient source not WMA U (Reference 3).

183-H Solar Evaporation Basins: The 183-H Solar Evaporation Basins and the 300 Area Process Trenches, are monitored under final status programs (WAC 173-303-645). Results from samples taken in March 1997, at the 183-H Solar Evaporation Basins indicated that concentration limits were exceeded for chromium, nitrate, technetium-99, and uranium. The exceedances were expected. A RCRA corrective action plan is being prepared for the site.

300 Area Process Trenches: The 300 Area Process Trenches wells were sampled in December 1996, and January, February, and March 1997. Based on these sampling results, exceedances were noted for trichloroethene, uranium, and 1,2-cis-dichloroethene in some of the downgradient wells (Reference 4). These exceedances were anticipated. The groundwater monitoring plan will be updated from a compliance monitoring program to a corrective action program. Confirmation sampling is not necessary.

Results of statistical evaluations at all other indicator evaluation sites indicated that contamination indicator parameters in downgradient wells were below the critical mean values during the January through March 1997 quarter. Hence, there is no indication that these sites are impacting groundwater quality.

Significant Exceedances of Maximum Concentration Limits

An upward trend in technetium-99 is continuing in one downgradient RCRA monitoring well located at the southeast corner of the Single Shell Tanks, WMA S-SX.

Technetium-99 results in well 299-W33-41 in the Single Shell Tanks, WMA B-BX-BY rose from 506 pCi/L in November, 1996 to 5740 pCi/L in February 1997.

In the Single Shell Tanks, WMA A-AX, results for chromium and nickel have risen above the maximum contaminant levels for those constituents. The turbidity in the sample that showed the high results was approximately 20 NTUs.

Monitoring Changes

Based on extrapolated water level decline data, RCRA groundwater monitoring compliance at the Single Shell Tanks WMA T, WMA TX-TY, 216-S-10, and 216-U-12 Crib will be jeopardized due to network wells going dry in 1998. Three of these four facilities are currently in assessment for contaminant releases detected by the networks. RCRA groundwater compliance, as implemented through current monitoring plans, is jeopardized either because the facility will not have sufficient upgradient wells, the networks will have less than the total required minimum of four wells (one upgradient, three downgradient), or the network will not be sufficient to continue with the assessment. In addition to these facilities, wells are projected to go dry at 216-B-3-Pond, Liquid Effluent Retention Facility, Low Level Burial Grounds WMA 1 and WMA 4. Based on data from this reporting quarter, monitoring wells 299-W15-23 and 299-W15-24 will be removed from the Low Level Burial Grounds WMA 4 because water levels have dropped to the point that samples can no longer be collected from these wells. The WMA 4 facility will still be in compliance.

Quality Control

Results of the RCRA Quality Control (QC) program for the January through March 1997 quarter will be discussed in detail in the Annual Report for fiscal year 1997. Highlights are summarized in the attachment (Attachment 2). Quality control data that are not available in HEIS are available in electronic form upon request. The QC program indicated that with the exception of Total Organic Carbon (TOC), the data were acceptable for use in the statistical comparisons discussed above.

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Precision and accuracy concerns related to the laboratory analysis of TOC samples have been identified. Results from four sites indicated that TOC concentrations in several downgradient wells exceeded the upgradient/downgradient comparison value. The potentially affected sites are Single Shell Tanks, WMA U, Single Shell Tanks, WMA A-AX, Low Level Burial Grounds, WMA 4, and 1324-N/NA. An audit of the laboratory will be conducted in August 1997. Until the audit has been completed and the laboratory is achieving a satisfactory level of precision and accuracy when performing the TOC analysis, verification sampling for TOC will not be undertaken for the RCRA sites.

The information contained in this letter is submitted to the State of Washington Department of Ecology in accordance with WAC 173-303-400 and WAC 173-303-645. If you have questions about this quarterly data transmittal, please contact me at 373-9630.

Sincerely,



M. J. Furman, Project Manager
Groundwater Project

GWP:MJF

Attachments: As stated

cc w/attachs:
M. Hartman, PNNL
S. Leja, Ecology
S. Luttrell, PNNL
R. Smith, PNNL

Table 1. Status of RCRA Sites, January-March, 1997.		
Site	Sampled Jan-March, 1997	Statistical exceedance
Indicator Evaluation Sites [40 CFR 265.93(b)] (sampled semiannually)		
100-D Ponds	Yes	Yes
1301-N Facility	Yes	No
1325-N Facility	Yes	No
1324-N/NA Site	Yes	Yes
A-29 Ditch	No	Not applicable
A-36B Crib	No	Not applicable
A-10 Crib	No	Not applicable
B-63 Trench	No	Not applicable
S-10 Pond and Crib	No	Not applicable
LERF	No	Not applicable
LLBG WMA 1	No	Not applicable
LLBG WMA 2	No	Not applicable
LLBG WMA 3	Yes	No
LLBG WMA 4	Yes	Yes
SST WMA A-AX	Yes	Yes
SST WMA C	Yes	Yes
SST WMA U	Yes	Yes
NRDWL	Yes	No
Groundwater Quality Assessment Sites [40 CFR 265.93(d)] (sampled quarterly)		
Six sites ^a	X	Not required
Final Status Compliance Site (WAC 173-303-645)		
183-H Basins ^b	X	Yes
300 Area Process Trenches	X	Yes

LLBG = Low-Level Burial Grounds

SST = Single-Shell Tanks

WMA = Waste Management Area

^a B-Pond, U-12 Crib, SST WMA B-BX-BY, SST WMA S-SX,

SST WMA T, SST WMA TX-TY.

^bSampled semiannually with four independent samples (i.e., Sept-Oct-Nov-Dec; Mar-Apr-May-Jun). Statistical evaluations will be performed after data from all four independent samples received.

Quality Control Results, January through March, 1997

Completeness: Completeness of data is determined by dividing the number of results that have not been rejected or flagged as suspect because of associated QC concerns by the total number of results received during the quarter. Completeness is considered acceptable when at least 90% of results are accepted. A completeness of 90% was achieved during the January through March, 1997 quarter.

Field QC Data: Results of field duplicate pairs were evaluated to determine if they were within 20% relative percent difference. During the January through March, 1997 quarter, 13 of 382 duplicate results were out of limits. Field blanks were analyzed to check for contamination. Most of these were within acceptable limits, but 20% of the ICP metal blank results were outside of the limit used to evaluate blank results. The constituents that were most frequently higher than the limit of two times the method detection limit were barium, calcium, iron, magnesium, sodium, and zinc. High percentages of metal blanks out of limits have been observed for two quarters. Leaching from glass bottles was initially thought to be causing contamination; however the percentage of blanks out of limits remained high even after switching from glass to polyethylene bottles. Another possible explanation is that the analytical laboratory is producing false positives. The laboratory has been asked to reevaluate their method detection limits and/or determine the cause of contamination if, indeed contamination is occurring. The results reported for these constituents are much lower than the concentrations of these constituents naturally found in Hanford groundwater, so the potential effect on data use is negligible. Groundwater results that are associated with the high field blanks are flagged in the database.

Laboratory QC Data: During the January through March, 1997 quarter, PNNL sent blind samples to the laboratory in triplicate containing known concentrations of cyanide, chromium, nitrate, fluoride, carbon tetrachloride, chloroform, trichloroethene, cobalt-60, cesium-137, iodine-129, strontium-90, technetium-99, plutonium-239, uranium-238, and tritium. Laboratory accuracy and precision were acceptable for all but iodine-129, cyanide, and fluoride. One of the three iodine-129 results had a low recovery of only 53%. The other two results were acceptable, but the overall relative standard deviation was higher than expected at 29%. The recovery for one of the fluoride results was slightly high, but otherwise the fluoride results were acceptable. The recovery for one of the cyanide results was slightly low, but the other two results were within the acceptable range for cyanide results. A reporting error may have occurred with one of the trichloroethene results. The laboratory will be asked to correct that error. The laboratory will also be asked to recheck the results for the analyses that were out of limits. The total percentage of blind spike determinations that was within the control limits was 93%, which reflects acceptable performance.

The analytical laboratory participated in the U.S. Environmental Protection Agency performance evaluation program. Results from the water supply study conducted in March, 1997 showed that 89% of the results from the analytical laboratory were within acceptable limits. Results from the water pollution study conducted in May, 1997 showed that the analytical laboratory had

acceptable results 96% of the time. The laboratory has been asked to provide corrective action for the water supply and water pollution results that were out of limits. The laboratory has had orthophosphate results out of limits for three performance evaluation studies in a row. The proposed corrective action from the laboratory will be evaluated, but a new laboratory will be considered for anion analysis in the future.

The radiochemistry laboratory participate in the Environmental Radioactivity Laboratory Intercomparison program. Results for samples analyzed during the January through March, 1997 quarter were all acceptable.