



9513333.2858

009916 5

009916

Department of Energy

Richland Operations Office
P.O. Box 550
Richland, Washington 99352

FEB 09 1995

Mr. Steve M. Alexander
Perimeter Areas Section Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336-6018

Dear Mr. Alexander:

RESPONSE TO THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY GENERAL COMMENTS ON PRELIMINARY DETERMINATION OF CHROMIUM CONCENTRATION WITHIN PORE WATER, PERIPHYTON, AND CHINOOK SALMON EGGS AT THE HANFORD REACH SPAWNING AREA IN PROXIMITY TO 100-HR-3 OPERABLE UNIT, BHI-00156, REV. 0A, NOVEMBER 1994

40290

Attached are the U.S. Department of Energy, Richland Operations Office, responses to general comments of January 10, 1995, on the subject work. Should you have any questions or further comments on this matter, please contact Mr. Randy Brich at 376-9031.

Sincerely,

Julie K. Erickson
Julie K. Erickson, Director
River Sites Restoration Division

RSD:RHB

Attachment

cc w/attach:
S. J. Hope, BHI
W. W. Soper, Ecology



DOE RICHLAND OPERATIONS OFFICE RESPONSES TO
THE STATE OF WASHINGTON DEPARTMENT OF ECOLOGY'S (ECOLOGY'S)
GENERAL COMMENTS ON
PRELIMINARY DETERMINATION OF CHROMIUM CONCENTRATION
WITHIN PORE WATER, PERIPHYTON, AND CHINOOK SALMON EGGS
AT HANFORD REACH SPAWNING AREA IN PROXIMITY TO
100-HR-3 OPERABLE UNIT, BHI-00156, REV. 0A, NOVEMBER 1994

GENERAL COMMENTS

COMMENT: Ecology's position is the sampling effort has merit. It should be kept in mind, as the document title suggests, this work is a preliminary determination of chromium concentrations. Our concern is the data gathered will be defensible, i.e., there will be adequate QA/QC.

Response:

We understand that the results of this field investigation may require followup monitoring and are planning accordingly. We will coordinate with the Tri-Parties for the development of future work plans related to this task. The planning for this sampling effort recognized the dynamic nature of the interaction between contaminated groundwater underlying the Hanford Site and Columbia River water. Consequently, interpreting the analytical results from interstitial water samples will consider the variability likely to be introduced by daily river stage fluctuations and seasonal water table conditions. This sampling effort represents an important contribution to the objectives of Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Milestone M-30-05 (i.e., "to perform long-term evaluation of Columbia River and unconfined aquifer interaction").

Quality Assurance/Quality Control: Pursuant to the requirements of DOE/RL-90-28, REVISION 2, the following Criteria have been selectively invoked for this activity using a Graded Approach. The Criteria are controls described in the Bechtel Hanford, Inc. (BHI) Quality Management Plan (QMP).

The QMP has been prepared and is implemented in compliance with the DOE/BHI Contract DE-AC06-93RL12367 and DOE document DOE/RL-90-28, Revision 2, Environmental Restoration Quality System Program Requirements For The Hanford Site. Commensurate with the Program/Policies promulgated by the QMP, BHI will manage its work to assure Tri-Party Agreement requirements and other commitment documents and laws are satisfied in a timely manner.

The controls are implemented by qualified personnel as described in this Statement of Work and implemented via the U.S. Environmental Protection Agency (EPA) reviewed environmental investigation instructions (EIIs) contained within the BHI-EE-01 Environmental Investigations Procedures Manuals. Examples are listed below with each specified QMP Criterion.

BHI QMP (Part 2, Section C) Criteria:

Criterion 11 - Process Control - Work process with respect to sample collection shall be controlled to assure that they are accomplished by

qualified personnel (e.g., EII-1.7, Indoctrination, Training and Qualification).

Criterion 12 - Sample Control - Procedures which control the documenting and tracking of sample possession from collection through handling, preservation, shipment, transfer, storage analysis and disposition shall be implemented (e.g., EII 5.1 Chain of Custody/Sample Analysis Request).

Criterion 13 - Control of Measuring and Test Equipment - Tools, gauges, instruments, laboratory equipment, measuring and test equipment, and standards used in the collection/analysis of samples, described in this statement of work, shall be properly identified, controlled and maintained (e.g., EII 3.2 Calibration and Control of Monitoring Instruments).

Criterion 14 - Handling, Storage, Shipping and Disposal - Packaging, handling, storing, shipping and preserving of samples shall be accomplished in a manner that prevents damage and/or loss, minimizes deterioration, and provides for final disposal (e.g., EII 5.11 Sample Packaging and Shipping).

Criterion 15 - Field and Laboratory Inspection and Test Control - BHI procedures shall be used for the following:

- 1) inspecting or otherwise verifying operations for collecting/analyzing data (e.g., EII 1.12 Performance Audit),
- 2) controlling tests performed in the field/laboratory (e.g., BHI-EE-01, Section 5.0 Field Sampling EIIs), and
- 3) indication of inspection, test or operating status of items/samples (e.g., EII 1.5 Field Logbooks).

COMMENT: The document suggests near river wells will be sampled at the same time (page 2, section 1.2, and page 4, fifth paragraph), but there is no discussion about this matter. Which wells are going to be sampled, and when? Please provide more information on this, including sampling procedures.

Response:

Groundwater samples were collected in early December 1994, from the 183-H Solar Basins well network. Samples from other 100-H Area wells were obtained in late December 1994, as part of the 100-HR-3 operable unit semiannual sampling program. The hexavalent chromium travel time between the wells nearest the river and the nearshore river channel is probably on the order of months. Consequently, analytical results from well samples collected in December 1994, should suffice for comparisons with riverbed sediment interstitial water sample results collected in February 1995. However, travel time estimates through the zone of interaction between the aquifer and the river are uncertain, as a result of the fluctuating river stage.

Groundwater seepage observed along the riverbank might be more closely related to interstitial water in nearshore riverbed sediments. Riverbank seepage

samples will be collected along the Hanford Site shoreline adjacent to the interstitial water sampling localities. Seepage samples will be collected during low river stage and when the electrical conductivity of the seepage is significantly different from nearshore river water. Samples will be collected using a peristaltic pump, following procedures established earlier for riverbank seepage sampling (DOE Richland Operations Office 1992).

Groundwater seepage is also monitored hourly at two locations along the 100-H Area shoreline. Temperature/conductivity probes are buried in shoreline gravels and connected to data loggers. These stations have operated under the Tri-Party Agreement Milestone M-30-05 program for approximately the past year, and provide an excellent record of the water quality changes that occur in the riverbank as a result of the fluctuating river stage. They will continue to operate during this sampling effort.

COMMENT: Exactly which locations in the river are to be sampled? Ecology would like to see a more detailed sample location plan before field work occurs. Furthermore, Ecology requests the opportunity to be present during sampling.

Response:

A field pore water sampling method has been developed to ensure that the water sampled represents the water environment in which the salmon eggs develop and young salmon are exposed to during the first few months of life within the cobble on the river bottom. All efforts will be made to establish sample sites within salmon redds and within gravel/cobble substrates that appear to be suitable spawning habitat that would be selected by adult salmon. The ability to distinguish the boundary definition of a redd will depend on factors such as; (1) ambient light conditions at depth, (2) river turbidity at the time of the sampling event, and (3) the amount of algae growth that possibly recovered the substrate that was cleaned/turned over during nest excavation by the salmon.

Collection of pore water samples is currently scheduled to commence on February 9, 1995, and the State of Washington Department of Ecology (Ecology) has been notified that they are welcome to observe the activities.

COMMENT: Ecology would like to take some split samples. Since the holding time for chromium VI is 24 hours maximum, we strongly recommend conducting sampling during the first part of the week.

Response:

Collection of pore water samples is currently scheduled to commence on February 9, 1995. Strict splitting of samples will not be possible due to the size of the sample collection apparatus; however, approximately 10 discrete duplicate samples will be collected and custody transferred to Ecology at the sampling site.

COMMENT: Ecology recommends taking conductivity readings at each sample location in order to help determine if we are sampling groundwater, and not

- river water. More discussion is necessary on this subject, since conductivity values alone can be misleading or even false. What other methods will be used to determine if we are, in fact, sampling groundwater?

Response:

The dive team (samplers) will make every effort to implement some field screening for conductivity into the field investigation, if feasible. The present plan is to collect at least one syringe sample (140 ml) per transect for conductivity measurements to be measured with field instruments by the onsite sample technician.