Monitoring Program to Verify 303(d) Metals Listings for Selected Rivers and Creeks

Quality Assurance Project Plan - Addendum
Arsenic Sampling of Selected Washington Rivers

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January 6, 2002

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Approvals:

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The Washington State Department of Ecology (Ecology) placed seven rivers on the 1998 303(d) list for exceeding EPA National Toxics Rule (NTR) human health criteria for arsenic in the water column. Although the listing criteria are for inorganic arsenic, it has been the practice of Ecology's Water Quality Program to list based on total recoverable arsenic data.

Following completion of the Quality Assurance Project Plan (QAPP) *Monitoring Program to Verify 303(d) Metals Listings for Selected Rivers and Creeks* (Johnson, 2001a), the Ecology Environmental Assessment Program (EAP) decided to expand the monitoring to analyze total recoverable arsenic in the rivers listed below; that being the subject of this addendum. The Similkameen River is also listed for arsenic, but a Total Maximum Daily Load study has been completed for this river, thereby fulfilling 303(d) requirements (Johnson, 2001b).

1. Western Washington Arsenic Sampling Sites

Stillaguamish R. nr Silvana (303d listed)
NF Stillaguamish R. nr Darrington (background)
Cedar R. nr Landsburg (background)
Puyallup R. @ Meridian St. (303d listed)
Hoh R. @ DNR Campground (background)
Cowlitz R. @ Kelso (303d listed)
EF Lewis nr Dollar Corner (background)

2. Eastern Washington Arsenic Sampling Sites

Columbia R. @ Umatilla (303d listed)
Yakima R. @ Kiona (303d listed)
Yakima R. @ Cle Elum (background)
Wenatchee R. nr Leavenworth (background)
Methow R. @ Twisp (background)
Spokane R. @ Stateline Br. (303d listed)
Columbia R. @ Northport (303d listed)

Unlike other metals being analyzed in the monitoring program, the quality of the arsenic data is not in questioned. The NTR inorganic arsenic criteria are very low - 0.018 ug/L for consumption of water and organisms; 0.14 ug/L for organism consumption only. Since total recoverable arsenic normally exceeds 0.2 ug/L in local rivers, and since most of it is in inorganic form, the NTR criteria are likely to be exceeded in most cases. There was, however, a need for a consistent and comparable data set that would allow the Water Quality Program to determine the extent to which arsenic levels in 303(d) listed waterbodies are or are not different from background. This information may then be of use in determining the appropriateness of the listings.

The background sites being sampled, as indicated above, are either in the upper drainage of the listed waterbody or in a nearby river, selected based on best professional judgment. It was not practical to sample background sites that apply directly to the Spokane or Columbia rivers, because of the distance to their headwaters.

The arsenic samples are being collected at routine monitoring stations by the EAP Environmental Monitoring and Trends Section, once a month for a year, beginning in July 2001. The grab sampling method used by EMT is described in Hopkins (1996).

The detection limit for total recoverable arsenic is 0.2 ug/L. Analysis will be by ICP-MS following EPA Method 200.8. Inorganic arsenic is not being analyzed due to cost and for reasons mentioned above. EMT's routine water quality parameters are also being analyzed.

In other respects, the arsenic sampling effort shares the same data quality objectives; sampling design; field procedures; laboratory procedures; quality control; data review, verification, and validation; and data quality assessment described in the QAPP.

References:

Hopkins, B. 1996. Ambient Metals Project Proposal – Final Quality Assurance Project Plan. Washington State Dept. Ecology, Olympia, WA.

Johnson, A. 2001a. Monitoring Program to Verify 303(d) Metals Listings for Selected Rivers and Creeks: Quality Assurance Project Plan. Washington State Dept. Ecology, Olympia, WA.

Johnson, A. 2001b – draft. A Total Maximum Daily Load Evaluation for Arsenic in the Similkameen River. Washington State Dept. Ecology, Olympia, WA.