

CYANIDE ANALYSIS SUBCONTRACT
TO ERA LABORATORIES, INC.
FOR WATER SAMPLES FROM
BIRMINGHAM, ALABAMA

by

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WATER ANALYSIS REPORT

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Analysis was performed by methods approved by the U.S. Environmental Protection Agency.
All values are expressed as milligrams per liter unless stated otherwise.

Milligrams per Liter Total Cyanide

<u>Sample Date</u>	<u>Sta. 2A</u>	<u>Sta. 3</u>	<u>Sta. 5</u>	<u>Sta. 6</u>	<u>Sta. 7</u>
10/4/83	<0.02	0.05	0.04	0.03	<0.02
10/5/83	<0.02	0.03	0.05	0.03	0.03
10/6/83	<0.02	0.04	0.04	0.03	0.03
10/7/83	<0.02	0.03	0.05	0.03	0.02
10/8/83	<0.02	0.06	0.05	0.06	0.06
10/9/83	<0.02	0.09	0.07	0.04	<0.02
10/10/83	<0.02	0.07	0.07	0.04	0.03

QUALITY ASSURANCE: Because of the limited size of the samples (250 ml), duplicates and spiked samples could not be run. Instead, the following procedure was used:

After completing the distillation, the sample was left in the boiling flask. Standard cyanide solution was added in order to increase the concentration by 0.04 mg/L. The distillation procedure was then repeated. This procedure was performed with seven of the samples, using at least one from each sample location. The recovery ranged from 89.0% to 103.6%, with an average recovery of 98.0%. All determinations were made using the Barbituric Acid Colorimetric procedure.

ERA LABORATORIES, INC.

Robert D. Magnuson

RDM:sdm



METAL ANALYSES CONDUCTED BY UW-SUPERIOR

Acid-exchangeable metals - Samples are collected, immediately acidified to a pH 2 and analyzed directly by atomic absorption spectrophotometry (AA). The samples will typically have properties similar to drinking water and be particulate-free.

Frequently a comparison will be made between acid exchangeable metals and a more stringent digestion to determine matrix interferences from more polluted waters. If there is a good agreement between methods, the digestion could be dropped.

Dissolved metals - (EDA, 1979, Metals 4.1.1). An unacidified portion of the sample is filtered through a conditioned 0.45 μ m membrane filter. The filtrate is acidified and analyzed by AA without further treatment.

Acid extractable metals - (APHA, 1985, meth. 302B) - Metals that are lightly absorbed on particulate matter. An acidified sample (nitric acid, hydrochloric acid) is heated for 15 minutes on a steam bath, then filtered through a 0.45 μ m membrane filter. The volume is adjusted and the sample is analyzed by AA.

Total recoverable metals - (EPA, 1979, Metals 4.1.3). The sample is treated with nitric and hydrochloric acids and reduced in volume on a steam bath. The volume is restored and analyzed by AA.

Total metals - (EPA, 1979, Metals 4.1.3). A more stringent digestion to free inorganically and organically bound metals. An acidified sample is digested and refluxed with nitric acid followed by treatment by hydrochloric acid. The volume is restored and the sample is analyzed by AA.

Acid soluble metals - (EPA, 1985, p. 1). The sample is acidified to a specified pH (pH 1.5-2.0) and is filtered through a 0.45 μ m membrane filter. The sample is then analyzed by AA.

REFERENCES

Ambient Water Quality Criteria for Lead - 1984. EPA, 1985. p. 1-3.

Standard Methods for the Examination of Water and Wastewater. APHA. 16th ed.
1985.

Methods for Chemical Analysis of Water and Wastewater. EPA. March, 1979.