AMTEST

Metro Water Resources

Louise Koltzer

Date Received: 01/16/92
Date Reported: 02/03/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - DUPLICATE ANALYSIS

| ANALYTE/SAMPLE NOS. | DUPLICATE #1 (mg/l) | DUPLICATE #2 (mg/l) | RELATIVE PERCENT DIFFERENCE (%) |
|---|---|---|---|
| **Ortho - Phosphate** | | | |
| 92-A000753 | <0.005 | <0.005 | - |
| **Nitrate + Nitrite** | | | |
| 92-A000753 | 0.594 | 0.593 | 0.2 |
| **Total Phosphorus** | | | |
| 8881* | 0.024 | 0.024 | 0. |
| **Bioavailable Phosphorus** | | | |
| 92-A000753 | 0.026 | 0.022 | 17. |
| **Total Suspended Solids** | | | |
| 8837* | 57. | 60. | 5.6 |
| **Lead** | | | |
| 92-A000754 | <0.001 | <0.001 | - |
| **Copper** | | | |
| 8999* | 0.001 | 0.001 | 0. |

< = less than
*Denotes a non-Metro sample number.

AMTEST

Metro Water Resources

Louise Koltzer

Date Received: 01/16/92
Date Reported: 02/03/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - SPIKE RECOVERY DATA

| ANALYTE/SAMPLE NOS. | SPIKED ADDED (mg/l) | RECOVERY (%) |
|---|---|---|
| **Ortho - Phosphate** | | |
| 92-A000754 | 0.10 | 108. |
| **Total Phosphorus** | | |
| 8881* | 0.10 | 94. |
| **Bioavailable Phosphorus** | | |
| 92-A000754 | 0.10 | 84. |
| **Lead** | | |
| 92-A000755 | 0.050 | 100. |
| **Copper** | | |
| 8999* | 0.025 | 100. |

*Denotes a non-Metro sample number.

KF/pb

REPORTED BY Kathy Fugiel

AMTEST

AmTest Inc.

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14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

2/14/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer

Dear Louise Koltzer:

Enclosed please find the analytical data for your BIO/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

| CLIENT ID | MATRIX | AM TEST ID | TEST |
|---|---|---|---|
| 000 | water | 92-A001518 | BACT, CONV, MET, |
| 100 | water | 92-A001519 | BACT, CONV, MET, |
| DUP (Split of inflow) | water | 92-A001520 | BACT, CONV, MET, |
| BLK (D.W.) | water | 92-A001521 | BACT, CONV, MET, |
| 000, Dissolved Metals | water | 92-A001522 | MET, |
| 100, Dissolved Metals | water | 92-A001523 | MET, |
| DUP | water | 92-A001524 | MET, |
| BLK (D.W.) | water | 92-A001525 | MET, |

Your eight (8) samples were received at AM TEST on 1/24/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kathy Fugiel
Director of Inorganic Laboratory

cc: David Rundstrom

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

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Redmond, WA
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Fax: 206 883 3495

Tel: 206 885 1664

# ANALYSIS REPORT

Metro Water Resources
821 Second Avenue
MS81
Seattle, WA 98104
ATTENTION: Louise Koltzer
cc: David Rundstrom

Date Received: 01/24/92
Date Reported: 02/19/92
Date Revised: 03/06/92
Project Name: BIO/Metro/MLT 91

## WATER SAMPLES

| | |
|---|---|
| AM TEST Identification Number | 92-A001518 |
| Client Identification | 000 |
| Sampling Date | 01/23/92 |

| PARAMETERS | RESULTS | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 162. | | 1. |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.23 | | 0.01 |
| Total Oil & Grease (mg/l) | 2.9 | | 1.0 |
| Total Petroleum Hydrocarbon (mg/l) | <1. | | 1.0 |
| Bioavailable Phosphorus (mg/l) | 0.030 | | 0.005 |
| Ortho-Phosphate (mg/l) | <0.005 | | 0.005 |
| Total Phosphorus (mg/l) | 0.025 | | 0.005 |
| Total Suspended Solids (mg/l) | 130. | | 1.0 |
| Turbidity (NTU) | 51. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 1.3 | | 0.01 |
| Copper (mg/l) | 0.006 | | 0.001 |
| Iron (mg/l) | 1.5 | | 0.01 |
| Lead (mg/l) | 0.044 re-run value | | 0.001 |
| Zinc (mg/l) | 0.096 | | 0.002 |

< = less than
D.L. = Detection Limit

# ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/24/92
Date Reported: 3/ 6/92

## WATER SAMPLES

AM TEST Identification Number 92-A001519
Client Identification 100
Sampling Date 1/23/92

| PARAMETER | Result | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 44. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.24 | | 0.01 |
| Total Oil and Grease (mg/l) | < 1 | | 1.0 |
| Total Petroleum Hydrocarbon (mg/l) | < 1 | | 1.0 |
| Bioavailable Phosphorus | 0.006 | | 0.005 |
| Ortho-Phosphate (mg/l) | < 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | 0.015 | | 0.005 |
| Total Suspended Solids (mg/l) | 9.0 | | 1.0 |
| Turbidity (NTU) | 16. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 0.29 | | 0.01 |
| Copper (mg/l) | 0.002 | | 0.001 |
| Iron (mg/l) | 0.38 | | 0.01 |
| Lead (mg/l) | 0.005 | | 0.001 |
| Zinc (mg/l) | 0.013 | | 0.002 |

ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/24/92
Date Reported: 3/ 6/92

## WATER SAMPLES

| | |
|---|---|
| AM TEST Identification Number | 92-A001520 |
| Client Identification | DUP (OF INLET, 000) |
| Sampling Date | 1/23/92 |

| PARAMETER | Result | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 212. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.23 | | 0.01 |
| Bioavailable Phosphorus | 0.033 | | 0.005 |
| Ortho-Phosphate (mg/l) | < 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | 0.032 | | 0.005 |
| Total Suspended Solids (mg/l) | 110 | | 1.0 |
| Turbidity (NTU) | 47. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 1.2 | | 0.01 |
| Copper (mg/l) | 0.010 | | 0.001 |
| Iron (mg/l) | 1.3 | | 0.01 |
| Lead (mg/l) | 0.046 | re-run value | 0.001 |
| Zinc (mg/l) | 0.094 | | 0.002 |

# ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Koltzer

Date Received: 1/24/92
Date Reported: 3/ 6/92

## WATER SAMPLES

AM TEST Identification Number 92-A001521
Client Identification BLK
Sampling Date 1/23/92

| PARAMETER | Result | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | < 6 | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | < 0.01 | | 0.01 |
| Bioavailable Phosphorus | < 0.005 | | 0.005 |
| Ortho-Phosphate (mg/l) | < 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Total Suspended Solids (mg/l) | 2.0 | | 1.0 |
| Turbidity (NTU) | 0.32 | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | < 0.01 | | 0.01 |
| Copper (mg/l) | < 0.001 | | 0.001 |
| Iron (mg/l) | < 0.01 | | 0.01 |
| Lead (mg/l) | < 0.001 | | 0.001 |
| Zinc (mg/l) | < 0.002 | | 0.002 |

Reported by: Kristi Bischoffberger
Kathy Fugiel for KB

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Redmond, WA
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Tel: 206 885 1664

# ANALYSIS REPORT

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Koltzer
cc: David Rundstrom

Date Received: 1/24/92
Date Reported: 2/19/92

Project Name: BIO/Metro/MLT 91
Date Sampled: 1/23/92

| PARAMETER | UNITS | RESULT |
|---|---|---|
| **92-A001522** | | |
| **Client ID: 000, Dissolved Metals** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.20 |
| Copper | mg/l | 0.001 |
| Iron | mg/l | 0.04 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | < 0.002 |
| **92-A001523** | | |
| **Client ID: 100, Dissolved Metals** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.18 |
| Copper | mg/l | < 0.001 |
| Iron | mg/l | 0.04 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | < 0.002 |
| **92-A001524** | | |
| **Client ID: DUP** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.24 |
| Copper | mg/l | < 0.001 |
| Iron | mg/l | 0.06 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | < 0.002 |
| **92-A001525** | | |
| **Client ID: BLK** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | < 0.01 |
| Copper | mg/l | < 0.001 |
| Iron | mg/l | < 0.01 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | < 0.002 |

Reported by: _____
Kathy Fugiel

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98052

Fax: 206 883 3495

Tel: 206 885 1664

# METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A001518
CLIENT ID 000

| ANALYTE | METHOD | METHOD REFERENCE | DETECTION LIMIT | DATE ANALYZED |
|---|---|---|---|---|
| Fecal Coliforms | 9222D | SM | 1 | 1/24/92 |
| Nitrate + Nitrite | 353.2 | EPA | 0.010 | 1/29/92 |
| Total Oil and Grease | 413.2 | EPA | 1.0 | 2/ 5/92 |
| Petroleum Hydrocarbon-TPH | 418.1 | EPA | 1.0 | 2/ 5/92 |
| Bioavailable Phosphorus | | | | 1/29/92 |
| Ortho-Phosphate | 365.2 | EPA | 0.005 | 1/24/92 |
| Total Phosphorus | 365.2 | EPA | 0.005 | 1/28/92 |
| Total Suspended Solids | 160.2 | EPA | 1.0 | 1/30/92 |
| Turbidity | 180.1 | EPA | 0.01 | 1/27/92 |
| Aluminum | 200.7 | EPA | 0.01 | 1/31/92 |
| Copper | 220.2 | EPA | 0.001 | 2/ 3/92 |
| Iron | 200.7 | EPA | 0.01 | 1/31/92 |
| Lead | 239.2 | EPA | 0.001 | 1/31/92 |
| Zinc | 200.7 | EPA | 0.002 | 1/31/92 |
| Acid Dig. (Tot Metals) | 3010 | EPA | | 1/28/92 |

AMTEST

Metro Water Resources

Louise Koltzer

Date Received: 01/24/92
Date Reported: 02/19/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - DUPLICATE ANALYSIS

| ANALYTE/SAMPLE NOS. | | DUPLICATE #1 (mg/l) | DUPLICATE #2 (mg/l) | RELATIVE PERCENT DIFFERENCE (%) |
|---|---|---|---|---|
| Copper | 92-A001518 | 0.006 | 0.006 | 0. |
| Lead | 92-A001522 | 0.009 | 0.009 | 0. |
| Turbidity | 92-A001522 | 0.001 | 0.001 | 0. |
| Total Suspended Solids | 92-A001518 | 130. | 140. | 7.4 |
| Total Phosphate | 92-A001518 | 0.025 | 0.026 | 3.9 |
| Bioavailable Phosphorus | 92-A001518 | 0.030 | 0.035 | 15. |
| Ortho - Phosphate | 92-A001518 | <0.005 | <0.005 | - |
| Aluminum | 92-A001522 | 0.20 | 0.19 | 5.1 |
| Iron | 92-A001522 | 0.04 | 0.04 | 0. |
| Zinc | 92-A001522 | 0.029 | 0.027 | 7.1 |

< = less than

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Metro Water Resources

Louise Koltzer

Date Received: 01/24/92
Date Reported: 02/19/92
Project Name: Bio/Metro/MLT91

QUALITY CONTROL - SPIKE RECOVERY DATA

| ANALYTE/SAMPLE NOS. | | SPIKED ADDED (mg/l) | RECOVERY (%) |
|---|---|---|---|
| **Copper** | 92-A001519 | 0.025 | 112. |
| | 92-A001523 | 0.025 | 112. |
| **Lead** | 92-A001519 | 0.025 | 98. |
| | 92-A001523 | 0.025 | 97. |
| **Bioavailable Phosphorus** | 92-A001519 | 0.10 | 102. |
| **Total Phosphate** | 92-A001519 | 0.10 | 99. |
| **Ortho Phosphate** | 92-A001519 | 0.10 | 98. |
| **Aluminum** | 92-A001523 | 10. | 120. |
| **Iron** | 92-A001523 | 10. | 112. |
| **Zinc** | 92-A001523 | 1.0 | 116. |

REPORTED BY Kathy Fugiel

KF/pb

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14603 N.E. 87th St.
Redmond, WA
98052

Fax. 206 883 3495

Tel: 206 885 1664

5/11/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kulzer

Dear Louise Kulzer:

Enclosed please find the analytical data for your Bio/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

| CLIENT ID | MATRIX | AM TEST ID | TEST |
|---|---|---|---|
| F BLK | water | 92-A006543 | BACT, CONV, MET, |
| 000 | water | 92-A006544 | BACT, CONV, MET, |
| 100 | water | 92-A006545 | BACT, CONV, MET, |
| F BLK, Diss Met | water | 92-A006546 | MET, |
| 000, Diss Met | water | 92-A006547 | MET, |
| 100, Diss Met | water | 92-A006548 | MET, |

Your six (6) samples were received at AM TEST on 3/27/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kristi Bischofberger

Kristi Bischofberger
Am Test Inc.

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

# ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Original Date Reported: 4/29/92
Date Received: 3/27/92
Date Reported: 5/11/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kulzer
cc: David Rundstrom

Project Name: Bio/Metro/MLT 91

## WATER SAMPLES

AM TEST Identification Number 92-A006543
Client Identification F BLK
Sampling Date 3/25/92

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | < 6 | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.035 | | 0.01 |
| Bioavailable Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Ortho-Phosphate (mg/l) | < 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Total Suspended Solids (mg/l) | 1.0 | | 1.0 |
| Turbidity (NTU) | 0.57 | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 0.05 | | 0.01 |
| Copper (mg/l) | 0.001 | GF | 0.001 |
| Iron (mg/l) | 0.02 | | 0.01 |
| Lead (mg/l) | 0.001 | GF | 0.001 |
| Zinc (mg/l) | < 0.002 | | 0.002 |

# ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Kulzer

Date Received: 3/27/92
Date Reported: 5/11/92

## WATER SAMPLES

AM TEST Identification Number 92-A006544
Client Identification 000
Sampling Date 3/27/92

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 283. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.42 | | 0.01 |
| Bioavailable Phosphorus (mg/l) | 0.012 | | 0.005 |
| Ortho-Phosphate (mg/l) | 0.007 | | 0.005 |
| Total Phosphorus (mg/l) | 0.015 | | 0.005 |
| Total Suspended Solids (mg/l) | 150 | | 1.0 |
| Turbidity (NTU) | 36. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 1.7 | | 0.01 |
| Copper (mg/l) | 0.007 | | 0.001 |
| Iron (mg/l) | 1.9 | | 0.01 |
| Lead (mg/l) | 0.013 | GF | 0.001 |
| Zinc (mg/l) | 0.047 | | 0.002 |

# ANALYSIS REPORT AMTEST

Metro Water Resources
Louise Kulzer

Date Received: 3/27/92
Date Reported: 5/11/92

## WATER SAMPLES

AM TEST Identification Number 92-A006545
Client Identification 100
Sampling Date 3/27/92

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 100. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.49 | | 0.01 |
| Bioavailable Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Ortho-Phosphate (mg/l) | 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Total Suspended Solids (mg/l) | 140 | | 1.0 |
| Turbidity (NTU) | 17. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 3.7 | | 0.01 |
| Copper (mg/l) | 0.015 | GF | 0.001 |
| Iron (mg/l) | 4.6 | | 0.01 |
| Lead (mg/l) | 0.029 | GF | 0.001 |
| Zinc (mg/l) | 0.078 | | 0.002 |

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Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

# ANALYSIS REPORT

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Louise Kulzer

Date Received: 3/27/92
Date Reported: 5/11/92

Project Name: Bio/Metro/MLT 91
Date Sampled: 3/25/92

| PARAMETER | UNITS | RESULT |
|---|---|---|
| **92-A006546** | | |
| **Client ID: F BLK, Diss Met** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.03 |
| Copper | mg/l | < 0.001 GF |
| Iron | mg/l | < 0.01 |
| Lead | mg/l | < 0.001 GF |
| Zinc | mg/l | 0.021 ? total Zn < .002 From filter? |
| **92-A006547** | | |
| **Client ID: 000, Diss Met** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.04 |
| Copper | mg/l | < 0.001 GF |
| Iron | mg/l | 0.03 |
| Lead | mg/l | < 0.001 GF |
| Zinc | mg/l | 0.042 |
| **92-A006548** | | |
| **Client ID: 100, Diss Met** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.04 |
| Copper | mg/l | < 0.001 GF |
| Iron | mg/l | 0.05 |
| Lead | mg/l | < 0.001 GF |
| Zinc | mg/l | 0.024 |

Reported by: Kristi Bischofberger
Kristi Bischofberger

ANALYSIS REPORT AMTEST

Metro Water Resources

Louise Kulzer

Date Received: 03/27/92
Date Reported: 04/29/92
Date Revised: 05/11/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - DUPLICATE ANALYSIS

| ANALYTES/SAMPLE NOS. | | DUPLICATE #1 (mg/l) | DUPLICATE #2 (mg/l) | RELATIVE PERCENT DIFFERENCE (%) |
|---|---|---|---|---|
| **Ortho Phosphate** | 92-A006544 | 0.008 | 0.007 | 13. |
| **Turbidity** | 92-A006545 | 17. | 18. | 5.7 |
| **Total Suspended Solids** | 92-A006555 | 164. | 165. | 0.61 |
| **Nitrate + Nitrite Nitrogen** | 92-A006544 | 0.42 | 0.42 | 0. |
| **Copper** | 92-A006541 | 0.003 | 0.002 | 40. |
| **Iron** | 92-A006541 | 0.12 | 0.11 | 8.7 |
| **Lead** | 92-A006544 | 0.013 | 0.014 | 7.4 |
| **Bioavailable Phosphorus** | 92-A008287 | 0.033 | 0.032 | 3.1 |
| **Total Phosphorus** | 92-A006749 | 0.025 | 0.026 | 4.1 |

< = less than

ANALYSIS REPORT AMTEST

Metro Water Resources

Louise Kulzer

Date Received: 03/27/92
Date Reported: 04/29/92
Date Revised: 05/11/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - SPIKE RECOVERY DATA

| ANALYTES/SAMPLE NOS. | | SPIKED ADDED (mg/l) | RECOVERY (%) |
|---|---|---|---|
| **Ortho Phosphate** | 92-A006545 | 0.1 | 100. |
| **Nitrate + Nitrite Nitrogen** | 92-A006545 | 0.1 | 88. |
| **Lead** | 92-A006545 | 0.05 | 95. |
| **Zinc** | 92-A006542 | 1.0 | 101. |
| **Copper** | 92-A006542 | 1.0 | 98. |
| **Iron** | 92-A006542 | 5.0 | 100. |
| **Bioavailable Phosphorus** | 92-A008286 | 0.1 | 84. |
| **Total Phosphorus** | 92-A008286 | 0.1 | 100. |

REPORTED BY Kristi L. Bischofberger
Kristi L. Bischofberger

KLB/pb

AMTEST

AmTest Inc.

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Tel: 206 885 1664

# METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A006543
CLIENT ID F BLK

| ANALYTE | METHOD | METHOD REFERENCE | DETECTION LIMIT | DATE ANALYZED |
|---|---|---|---|---|
| Fecal Coliforms | 9222D | SM | 1 | 3/27/92 |
| Nitrate + Nitrite | 353.2 | EPA | 0.010 | 4/ 1/92 |
| Bioavailable Phosphorus | | | | 4/28/92 |
| Ortho-Phosphate | 365.2 | EPA | 0.005 | 3/27/92 |
| Total Phosphorus | 365.2 | EPA | 0.005 | 4/ 6/92 |
| Total Suspended Solids | 160.2 | EPA | 1.0 | 3/31/92 |
| Turbidity | 180.1 | EPA | 0.01 | 3/27/92 |
| Aluminum | 200.7 | EPA | 0.01 | 4/ 3/92 |
| Copper | 220.2 | EPA | 0.001 | 5/ 1/92 |
| Iron | 200.7 | EPA | 0.01 | 4/ 3/92 |
| Lead | 239.2 | EPA | 0.001 | 5/ 4/92 |
| Zinc | 200.7 | EPA | 0.002 | 4/ 3/92 |
| Acid Dig. (Tot Metals) | 3010 | EPA | | 3/30/92 |

FAXED 4-29 but w/o QAQC info

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax. 206 883 3495

Tel: 206 885 1664

4/29/92

RECEIVED
MAY 21 1992
SLUDGE

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention:

Dear ~~Peggy Leonard~~ Louise Kulzer:

Enclosed please find the analytical data for your BIO/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

| CLIENT ID | MATRIX | AM TEST ID | TEST |
|---|---|---|---|
| 000, 48th Ave Swale | water | 92-A008286 | BACT, CONV, MET, |
| 100, 48th Ave Swale | water | 92-A008287 | BACT, CONV, MET, |
| 000, 48th Ave. Swale, Dis | water | 92-A008288 | MET, |
| 100, 48th Ave. Swale, Dis | water | 92-A008289 | MET, |

Your four (4) samples were received at AM TEST on 4/17/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kristi Bischofberger
Am Test Inc.

cc: David Rundstrom

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

# ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention:
cc: David Rundstrom

Date Received: 4/17/92
Date Reported: 4/29/92

Project Name: BIO/Metro/MLT 91

## WATER SAMPLES

| | |
|---|---|
| AM TEST Identification Number | 92-A008286 |
| Client Identification | 000, 48th Ave Swale |
| Sampling Date | 4/17/92 |

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 94. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.031 | | 0.01 |
| Bioavailable Phosphorus | 0.190 | | 0.005 |
| Ortho-Phosphate (mg/l) | 0.022 | | 0.005 |
| Total Phosphorus (mg/l) | 0.16 | | 0.005 |
| Total Suspended Solids (mg/l) | 190 | | 1.0 |
| Turbidity (NTU) | 6.6 | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 3.2 | | 0.01 |
| Copper (mg/l) | 0.012 | | 0.001 |
| Iron (mg/l) | 3.1 | | 0.01 |
| Lead (mg/l) | 0.041 | | 0.001 |
| Zinc (mg/l) | 0.13 | | 0.002 |

# ANALYSIS REPORT AMTEST

Metro Water Resources

Date Received: 4/17/92
Date Reported: 4/29/92

## WATER SAMPLES

AM TEST Identification Number 92-A008287
Client Identification 100, 48th Ave Swale
Sampling Date 4/17/92

| PARAMETER | Result | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 150. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.059 | | 0.01 |
| Bioavailable Phosphorus | 0.033 | | 0.005 |
| Ortho-Phosphate (mg/l) | 0.013 | | 0.005 |
| Total Phosphorus (mg/l) | 0.13 | | 0.005 |
| Total Suspended Solids (mg/l) | 50. | | 1.0 |
| Turbidity (NTU) | 4.9 | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 2.0 | | 0.01 |
| Copper (mg/l) | 0.009 | | 0.001 |
| Iron (mg/l) | 2.1 | | 0.01 |
| Lead (mg/l) | 0.024 | | 0.001 |
| Zinc (mg/l) | 0.082 | | 0.002 |

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Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

# ANALYSIS REPORT

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention:
cc: David Rundstrom

Date Received: 4/17/92
Date Reported: 4/29/92

Project Name: BIO/Metro/MLT
Date Sampled: 4/17/92

| PARAMETER | UNITS | RESULT |
|---|---|---|
| **92-A008288** | | |
| **Client ID: 000, 48th Ave. Swale, Dis** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | < 0.01 |
| Copper | mg/l | 0.002 |
| Iron | mg/l | 0.02 |
| Lead | mg/l | 0.001 |
| Zinc | mg/l | 0.034 |
| **92-A008289** | | |
| **Client ID: 100, 48th Ave. Swale, Dis** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | < 0.01 |
| Copper | mg/l | 0.002 |
| Iron | mg/l | 0.03 |
| Lead | mg/l | 0.002 |
| Zinc | mg/l | 0.031 |

Reported by: Kristi Bischofberger
Kristi Bischofberger

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AmTest Inc.

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14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

# METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A008286
CLIENT ID 000, 48th Ave Swale

| ANALYTE | METHOD | METHOD REFERENCE | DETECTION LIMIT | DATE ANALYZED |
|---|---|---|---|---|
| Fecal Coliforms | 9222D | SM | 1 | 4/17/92 |
| Nitrate + Nitrite | 353.2 | EPA | 0.010 | 4/23/92 |
| Bioavailable Phosphorus | | | | 4/28/92 |
| Ortho-Phosphate | 365.2 | EPA | 0.005 | 4/17/92 |
| Total Phosphorus | 365.2 | EPA | 0.005 | 4/24/92 |
| Total Suspended Solids | 160.2 | EPA | 1.0 | 4/21/92 |
| Turbidity | 180.1 | EPA | 0.01 | 4/20/92 |
| Aluminum | 200.7 | EPA | 0.01 | 4/22/92 |
| Copper | 220.2 | EPA | 0.001 | 4/23/92 |
| Iron | 200.7 | EPA | 0.01 | 4/22/92 |
| Lead | 239.2 | EPA | 0.001 | 4/22/92 |
| Zinc | 200.7 | EPA | 0.002 | 4/22/92 |
| Acid Dig.(Tot Metals) | 3010 | EPA | | |

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98052

Fax: 206 883 3495

Tel: 206 885 1664

# METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A008288
CLIENT ID 000, 48th Ave. Swale, Dis

| ANALYTE | METHOD | METHOD REFERENCE | DETECTION LIMIT | DATE ANALYZED |
|---|---|---|---|---|
| Aluminum | 200.7 | EPA | 0.01 | 4/23/92 |
| Copper | 220.2 | EPA | 0.001 | 4/23/92 |
| Iron | 200.7 | EPA | 0.01 | 4/23/92 |
| Lead | 239.2 | EPA | 0.001 | 4/23/92 |
| Zinc | 200.7 | EPA | 0.002 | 4/23/92 |
| Acid Dig. (Diss Metals) | 3010 | EPA | | 4/21/92 |

ANALYSIS REPORT AMTEST

Metro Water Resources

Peggy Leonard

Date Received: 04/27/92
Date Reported: 04/29/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - DUPLICATE ANALYSIS

| ANALYTES/SAMPLE NOS. | | DUPLICATE #1 (mg/l) | DUPLICATE #2 (mg/l) | RELATIVE PERCENT DIFFERENCE (%) |
|---|---|---|---|---|
| Total Phosphate | 92-A008286 | 0.022 | 0.025 | 13. |
| Copper | 92-A008286 | 0.012 | 0.013 | 8.0 |
| Bioavailable Phosphorus | 92-A008287 | 0.033 | 0.032 | 3.1 |
| Lead | 92-A008288 | 0.001 | 0.001 | 0. |
| Total Suspended Solids | 92-A008287 | 50. | 52. | 3.92 |
| Turbidity | 92-A008353 | 2.7 | 2.7 | 0. |
| Nitrate + Nitrite Nitrogen | 92-A008131 | <0.01 | <0.01 | - |
| Total Phosphorus | 92-A008286 | 0.022 | 0.025 | 13. |
| Aluminum | 92-A007738 | 0.19 | 0.18 | 5.4 |
| Iron | 92-A007738 | 0.12 | 0.13 | 8.0 |
| Zinc | 92-A007738 | 0.49 | 0.48 | 2.1 |

< = less than

ANALYSIS REPORT AMTEST

Metro Water Resources

Peggy Leonard

Date Received: 04/27/92
Date Reported: 04/29/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - SPIKE RECOVERY DATA

| ANALYTES/SAMPLE NOS. | | SPIKED ADDED (mg/l) | RECOVERY (%) |
|---|---|---|---|
| **Bioavailable Phosphorus** | 92-A008286 | 0.1 | 84. |
| **Copper** | 92-A008287 | 0.025 | 100. |
| **Ortho Phosphate** | 92-A008287 | 0.1 | 78. |
| **Lead** | 92-A008289 | 0.05 | 98. |
| **Nitrate + Nitrite Nitrogen** | 92-A008132 | 0.25 | 95. |
| **Total Phosphorus** | 92-A008287 | 0.1 | 78. |
| **Iron** | 92-A008287 | 5.0 | 100. |
| **Zinc** | 92-A008287 | 1.0 | 103. |
| **Aluminum** | 92-A008287 | 10. | 100. |

REPORTED BY Kristi L. Bischofberger

KLB/pb

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AmTest Inc.

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14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

5/11/92

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Peggy Leonard

Dear Peggy Leonard:

Enclosed please find the analytical data for your BIO/Metro/MLT 91 project.

The following is a cross correlation of client and laboratory identification for your convenience.

| CLIENT ID | MATRIX | AM TEST ID | TEST |
|---|---|---|---|
| 000, 48th Ave Swale | water | 92-A009153 | BACT, CONV, MET, |
| 100, 48th Ave Swale | water | 92-A009154 | BACT, CONV, MET, |
| 000, 48th Ave Swale, diss | water | 92-A009155 | MET, |
| 100, 48th Ave Swale, diss | water | 92-A009156 | MET, |

Your four (4) samples were received at AM TEST on 4/29/92.

At the time of receipt, the samples were logged in and properly maintained prior to subsequent analyses.

The analytical procedures used in the laboratory are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,

Kristi Bischofberger

Kristi Bischofberger
Am Test Inc.

BACT = Bacteriological
CONV = Conventionals
MET = Metals
ORG = Organics

# ANALYSIS REPORT AMTEST

AmTest Inc.
Professional Analytical Services
14603 N.E. 87th St.
Redmond, WA 98052
Fax: 206 883 3495
Tel: 206 885 1664

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Peggy Leonard

Date Received: 4/29/92
Date Reported: 5/11/92

Project Name: BIO/Metro/MLT 91

## WATER SAMPLES

AM TEST Identification Number 92-A009153
Client Identification 000, 48th Ave Swale
Sampling Date 4/29/92

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 231. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.23 | | 0.01 |
| Bioavailable Phosphorus (mg/l) | < 0.005 | | 0.005 |
| Ortho-Phosphate (mg/l) | < 0.005 | | 0.005 |
| Total Phosphorus (mg/l) | 0.24 | | 0.005 |
| Total Suspended Solids (mg/l) | 150 | | 1.0 |
| Turbidity (NTU) | 49. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 2.6 | | 0.01 |
| Copper (mg/l) | 0.014 | | 0.001 |
| Iron (mg/l) | 3.5 | | 0.01 |
| Lead (mg/l) | 0.018 | | 0.001 |
| Zinc (mg/l) | 0.14 | | 0.002 |

# ANALYSIS REPORT AMTEST

Metro Water Resources
Peggy Leonard

Date Received: 4/29/92
Date Reported: 5/11/92

## WATER SAMPLES

AM TEST Identification Number 92-A009154
Client Identification 100, 48th Ave Swale
Sampling Date 4/29/92

| PARAMETER | RESULT | Q | D.L. |
|---|---|---|---|
| **Bacteriological** | | | |
| Fecal Coliforms (CFU/100 ml) | 83. | | 1 |
| **Conventionals** | | | |
| Nitrate + Nitrite Nitrogen (mg/l) | 0.25 | | 0.01 |
| Bioavailable Phosphorus (mg/l) | 0.045 | | 0.005 |
| Ortho-Phosphate (mg/l) | 0.035 | | 0.005 |
| Total Phosphorus (mg/l) | 0.18 | | 0.005 |
| Total Suspended Solids (mg/l) | 150 | | 1.0 |
| Turbidity (NTU) | 10. | | 0.01 |
| **Total Metals** | | | |
| Aluminum (mg/l) | 3.5 | | 0.01 |
| Copper (mg/l) | 0.018 | | 0.001 |
| Iron (mg/l) | 5.6 | | 0.01 |
| Lead (mg/l) | 0.023 | | 0.001 |
| Zinc (mg/l) | 0.11 | | 0.002 |

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Redmond, WA
98052

Fax. 206 883 3495

Tel: 206 885 1664

# ANALYSIS REPORT

Metro Water Resources
821 2nd Avenue
MS81
Seattle, WA 98104
Attention: Peggy Leonard

Date Received: 4/29/92
Date Reported: 5/11/92

Project Name: BIO/Metro/MLT 91
Date Sampled: 4/29/92

| PARAMETER | UNITS | RESULT |
|---|---|---|
| **92-A009155** | | |
| **Client ID: 000, 48th Ave Swale, diss** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.02 |
| Copper | mg/l | 0.002 |
| Iron | mg/l | 0.04 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | 0.019 |
| **92-A009156** | | |
| **Client ID: 100, 48th Ave Swale, diss** | | |
| DISSOLVED METALS | | |
| Aluminum | mg/l | 0.02 |
| Copper | mg/l | 0.002 |
| Iron | mg/l | 0.03 |
| Lead | mg/l | < 0.001 |
| Zinc | mg/l | 0.023 |

Reported by: Kristi Bischofberger
Kristi Bischofberger

AMTEST

AmTest Inc.

Professional
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14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

# METHODOLOGY REPORT

AM TEST IDENTIFICATION NUMBER 92-A009153
CLIENT ID 000, 48th Ave Swale

| ANALYTE | METHOD | METHOD REFERENCE | DETECTION LIMIT | DATE ANALYZED |
|---|---|---|---|---|
| Fecal Coliforms | 9222D | SM | 1 | 4/29/92 |
| Nitrate + Nitrite | 353.2 | EPA | 0.010 | 5/ 4/92 |
| Bioavailable Phosphorus | | | | 5/ 8/92 |
| Ortho-Phosphate | 365.2 | EPA | 0.005 | 4/30/92 ortho |
| Total Phosphorus | 365.2 | EPA | 0.005 | 5/ 8/92 |
| Total Suspended Solids | 160.2 | EPA | 1.0 | 5/ 5/92 |
| Turbidity | 180.1 | EPA | 0.01 | 4/29/92 |
| Aluminum | 200.7 | EPA | 0.01 | 5/ 4/92 |
| Copper | 220.2 | EPA | 0.001 | 5/ 8/92 |
| Iron | 200.7 | EPA | 0.01 | 5/ 4/92 |
| Lead | 239.2 | EPA | 0.001 | 5/ 4/92 |
| Zinc | 200.7 | EPA | 0.002 | 5/ 4/92 |
| Acid Dig.(Tot Metals) | 3010 | EPA | | 5/ 1/92 |

ANALYSIS REPORT AMTEST

Metro Water Resources

Peggy Leonard

Date Received: 04/29/92
Date Reported: 05/11/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - DUPLICATE ANALYSIS

| ANALYTES/SAMPLE NOS. | | DUPLICATE #1 (mg/l) | DUPLICATE #2 (mg/l) | RELATIVE PERCENT DIFFERENCE (%) |
|---|---|---|---|---|
| **Ortho Phosphate** | | | | |
| | 92-A009204 | 0.010 | 0.010 | 0. |
| **Total Suspended Solids** | | | | |
| | 92-A009154 | 152. | 157. | 3.2 |
| **Turbidity** | 92-A009102 | 0.35 | 0.35 | 0. |
| **Nitrate + Nitrite Nitrogen** | | | | |
| | 92-A009197 | 0.012 | 0.012 | 0. |
| **Lead** | 92-A009153 | 0.0180 | 0.0197 | 9.0 |
| | 92-A009155 | <0.001 | <0.001 | - |
| **Bioavailable Phosphorus** | | | | |
| | 92-A009153 | <0.005 | <0.005 | - |
| **Total Phosphorus** | | | | |
| | 92-A009206 | 0.045 | 0.049 | 8.5 |
| **Copper** | 92-A009153 | 0.014 | 0.017 | 19.4 |
| **Iron** | 92-A009153 | 3.5 | 3.5 | 0. |
| **Zinc** | 92-A009153 | 0.14 | 0.14 | 0. |
| **Aluminum** | 92-A009153 | 2.6 | 2.5 | 3.9 |

< = less than

ANALYSIS REPORT AMTEST

Metro Water Resources

Peggy Leonard

Date Received: 04/29/92
Date Reported: 05/11/92
Project Name: BIO/Metro/MLT 91

QUALITY CONTROL - SPIKE RECOVERY DATA

| ANALYTES/SAMPLE NOS. | | SPIKED ADDED (mg/l) | RECOVERY (%) |
|---|---|---|---|
| **Ortho Phosphate** | | | |
| | 92-A009205 | 0.1 | 97. |
| **Nitrate + Nitrite Nitrogen** | | | |
| | 92-A009198 | 0.1 | 98. |
| **Lead** | 92-A009154 | 0.05 | 108. |
| **Total Phosphorus** | | | |
| | 92-A009207 | 0.1 | 80. |
| **Copper** | 92-A009156 | 0.025 | 88. |
| **Aluminum** | 92-A009154 | 10. | 92. |
| **Iron** | 92-A009154 | 5.0 | 94. |
| **Zinc** | 92-A009154 | 1.0 | 97. |

KLB/pb

REPORTED BY Kristi L. Bischofberger
Kristi L. Bischofberger