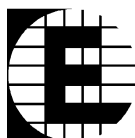


PORT OF AIRLIE MARINA DEVELOPMENT

## Appendix D Site Soil Analysis Data

***This page intentionally left blank.***



# EARTHTECH LABORATORIES

Geotechnical and Environmental  
Soils and Materials Testing

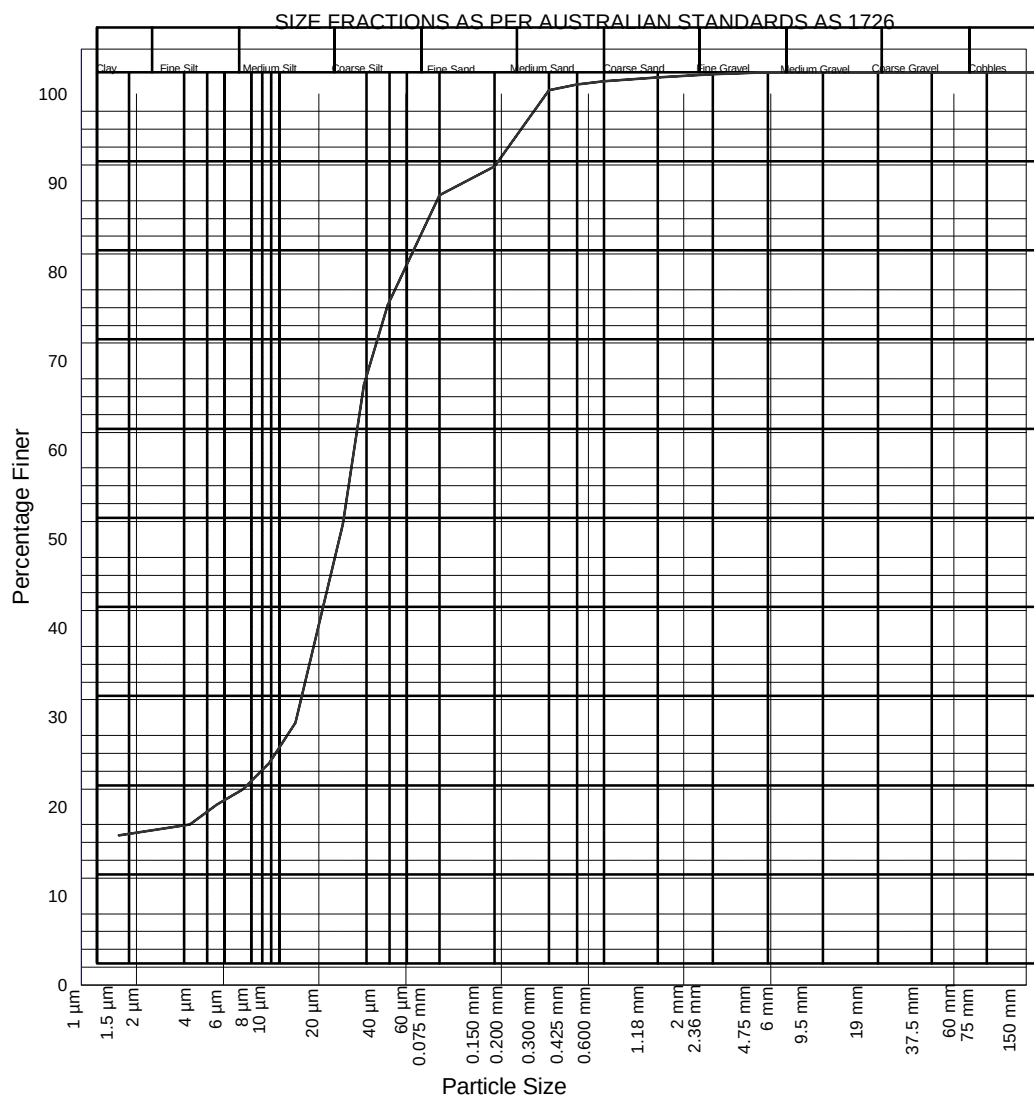
EARTHTECH  
CONSULTANTS  
(QLD) Pty Ltd  
ACN 010 826 561

1/51 Secam Street, Mansfield Qld  
P.O. Box 2034 Mansfield DC Qld 4122  
Phone: (07) 3343 3166 Fax: (07) 3849 4705  
Email: laboratories@earthtech.com.au  
Website: www.earthtech.com.au

## PARTICLE SIZE DISTRIBUTION BY HYDROMETER

|           |                               |                 |            |
|-----------|-------------------------------|-----------------|------------|
| Client :  | SKM                           | Report No. :    | R5222      |
| Address : | Level 8, 369 Ann St, Brisbane | Job No. :       | ME-2422    |
| Project : | Port of Airlie EIS            | Reg'n No. :     | L1455/02   |
| Location: | 1 (0.0 - 0.3 m)               | Senders No. :   | 1          |
|           |                               | Date Received : | 10/09/2002 |
|           |                               | Sampled By :    | Client     |

| Particle Size (mm)      | Percent Passing |
|-------------------------|-----------------|
| 150                     |                 |
| 75                      |                 |
| 37.5                    |                 |
| 19.0                    |                 |
| 9.5                     |                 |
| 4.75                    | 100.0           |
| 2.36                    | 99.7            |
| 1.18                    | 99.4            |
| 0.600                   | 98.9            |
| 0.425                   | 98.6            |
| 0.300                   | 98.0            |
| 0.150                   | 89.4            |
| 0.075                   | 86.2            |
| Particle Size (Microns) | Percent Passing |
| 39.1                    | 73.8            |
| 29.1                    | 64.9            |
| 22.3                    | 49.3            |
| 12.2                    | 27.0            |
| 8.8                     | 22.5            |
| 6.3                     | 19.5            |
| 4.5                     | 17.8            |
| 3.2                     | 15.6            |
| 1.3                     | 14.3            |



|                          |                                                              |                                 |           |
|--------------------------|--------------------------------------------------------------|---------------------------------|-----------|
| Pretreatment             | Tested as received                                           | Soil Particle Density (assumed) | 2.70      |
| Loss in Pretreatment (%) | -                                                            | Type of Hydrometer              | ASTM E100 |
| Method of Dispersion     | Mixer                                                        | pH Value                        | 8.3       |
| Material Description :   | Silty CLAY (CI) dark grey, shell fragments retained 2.36 mm. |                                 |           |
| Test Procedure :         | AS 1289 3.6.2, 3.6.3 (up to 24 hours), 4.3.1                 |                                 |           |
| Prepared by :            | Checked by :                                                 |                                 |           |

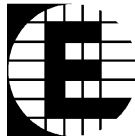
This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with the terms of registration. This document shall not be reproduced except in full without the prior approval of the laboratory.



1446

Authorised Signatory

R16b.3



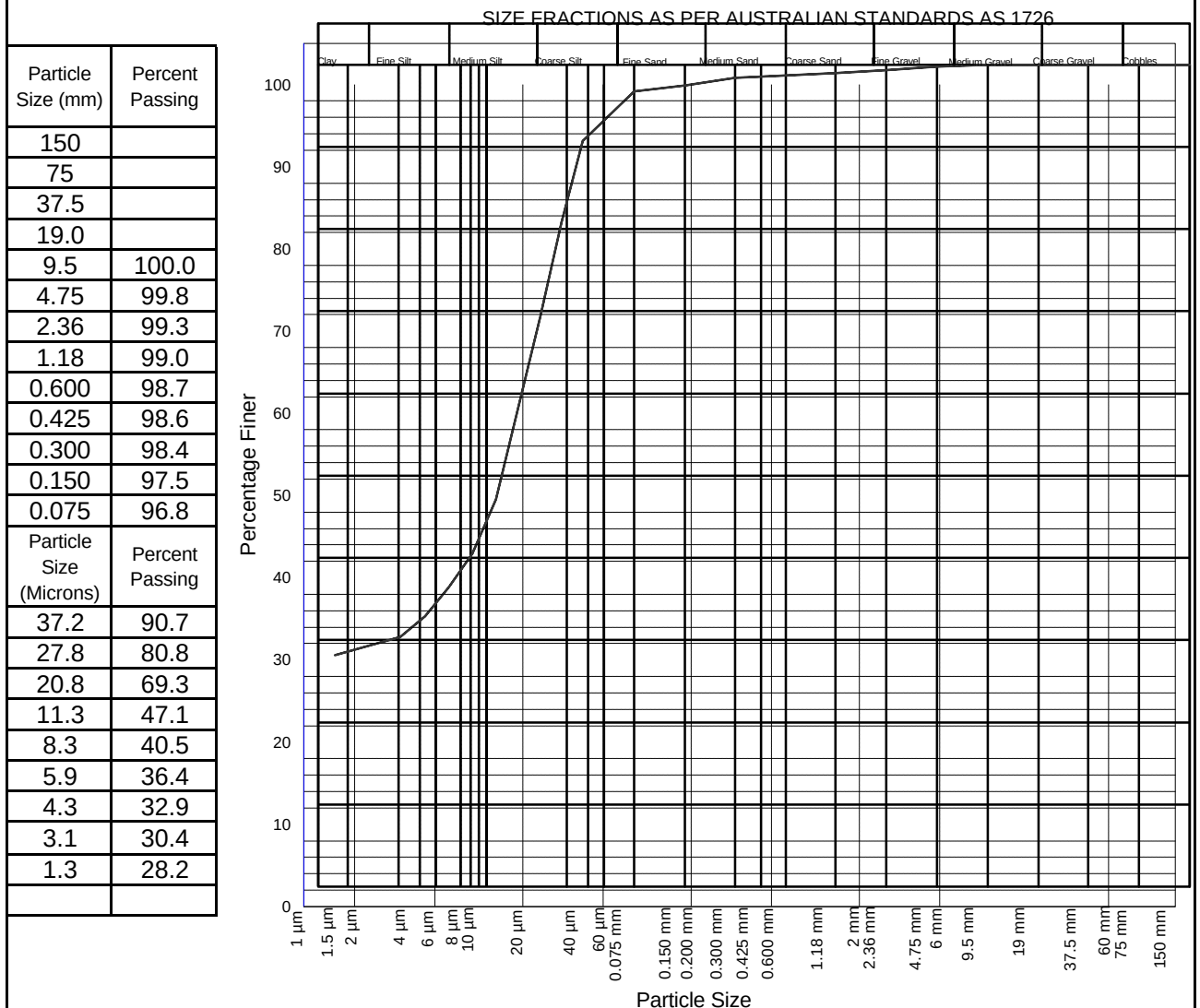
**EARTHTECH  
LABORATORIES**  
Geotechnical and Environmental  
Soils and Materials Testing

EARTHTECH  
CONSULTANTS  
(QLD) Pty Ltd  
ACN 010 826 561

1/51 Secam Street, Mansfield Qld  
P.O. Box 2034 Mansfield DC Qld 4122  
Phone: (07) 3343 3166 Fax: (07) 3849 4705  
Email: laboratories@earthtech.com.au  
Website: www.earthtech.com.au

## PARTICLE SIZE DISTRIBUTION BY HYDROMETER

|           |                               |                 |            |
|-----------|-------------------------------|-----------------|------------|
| Client :  | SKM                           | Report No. :    | R5222      |
| Address : | Level 8, 369 Ann St, Brisbane | Job No. :       | ME-2422    |
| Project : | Port of Airlie EIS            | Reg'n No. :     | L1456/02   |
| Location: | 2 (0.0 - 0.3 m)               | Senders No. :   | 2          |
|           |                               | Date Received : | 10/09/2002 |
|           |                               | Sampled By :    | Client     |



|                          |                                                                               |                                 |           |
|--------------------------|-------------------------------------------------------------------------------|---------------------------------|-----------|
| Pretreatment             | Tested as received                                                            | Soil Particle Density (assumed) | 2.70      |
| Loss in Pretreatment (%) | -                                                                             | Type of Hydrometer              | ASTM E100 |
| Method of Dispersion     | Mixer                                                                         | pH Value                        | 8.2       |
| Material Description :   | Silty CLAY (CI) dark grey, shell fragments to 2.36mm & trace clacareous fines |                                 |           |
| Test Procedure :         | AS 1289 3.6.2, 3.6.3 (up to 24 hours), 4.3.1                                  |                                 |           |
| Prepared by :            | Checked by :                                                                  |                                 |           |

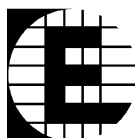
This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with the terms of registration. This document shall not be reproduced except in full without the prior approval of the laboratory.



1446

Authorised Signatory

R16b.3



**EARTHTECH  
LABORATORIES**

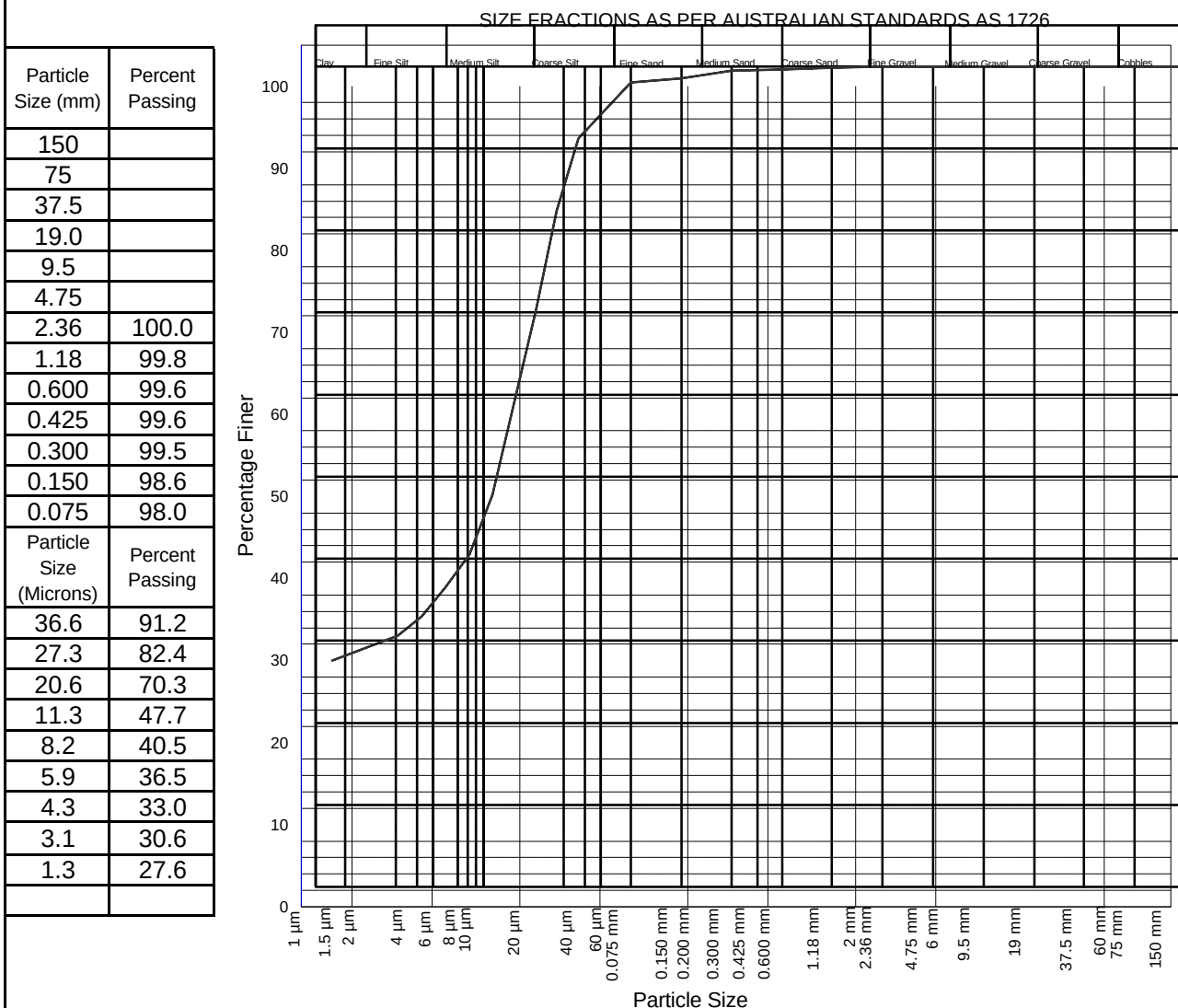
Geotechnical and Environmental  
Soils and Materials Testing

EARTHTECH  
CONSULTANTS  
(QLD) Pty Ltd  
ACN 010 826 561

1/51 Secam Street, Mansfield Qld  
P.O. Box 2034 Mansfield DC Qld 4122  
Phone: (07) 3343 3166 Fax: (07) 3849 4705  
Email: laboratories@earthtech.com.au  
Website: www.earthtech.com.au

## PARTICLE SIZE DISTRIBUTION BY HYDROMETER

|           |                               |                 |            |
|-----------|-------------------------------|-----------------|------------|
| Client :  | SKM                           | Report No. :    | R5222      |
| Address : | Level 8, 369 Ann St, Brisbane | Job No. :       | ME-2422    |
| Project : | Port of Airlie EIS            | Reg'n No. :     | L1457/02   |
| Location: | 3 (0.0 - 0.3 m)               | Senders No. :   | 3          |
|           |                               | Date Received : | 10/09/2002 |
|           |                               | Sampled By :    | Client     |



|                          |                                                                            |                                 |           |
|--------------------------|----------------------------------------------------------------------------|---------------------------------|-----------|
| Pretreatment             | Tested as received                                                         | Soil Particle Density (assumed) | 2.70      |
| Loss in Pretreatment (%) | -                                                                          | Type of Hydrometer              | ASTM E100 |
| Method of Dispersion     | Mixer                                                                      | pH Value                        | 8.2       |
| Material Description :   | Silty CLAY (CI) dark grey, some shell fragments & fine calcareous material |                                 |           |
| Test Procedure :         | AS 1289 3.6.2, 3.6.3 (up to 24 hours), 4.3.1                               |                                 |           |
| Prepared by :            | Checked by :                                                               |                                 |           |

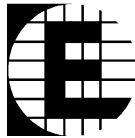
This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with the terms of registration. This document shall not be reproduced except in full without the prior approval of the laboratory.



1446

Authorised Signatory

R16b.3



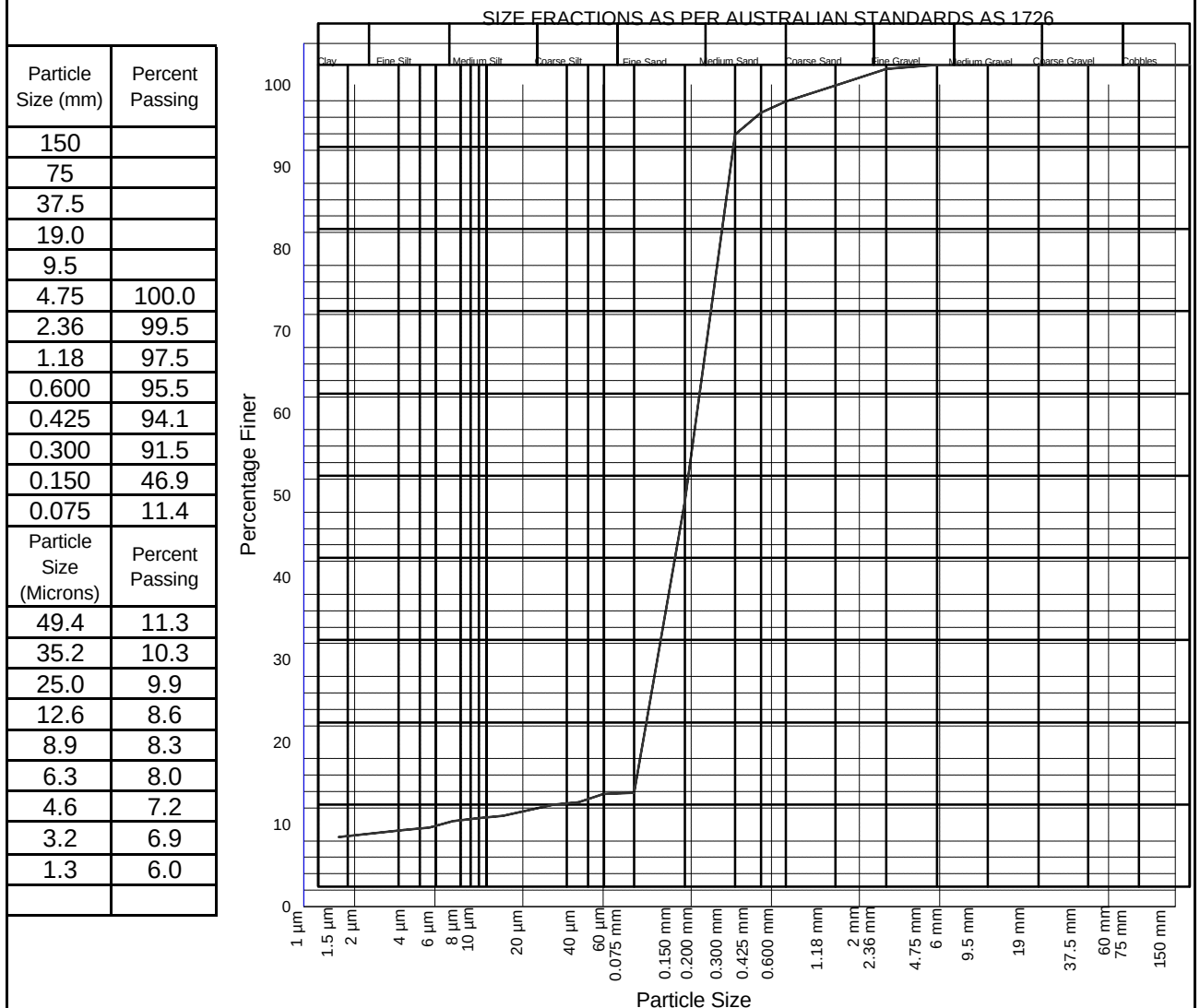
**EARTHTECH  
LABORATORIES**  
Geotechnical and Environmental  
Soils and Materials Testing

EARTHTECH  
CONSULTANTS  
(QLD) Pty Ltd  
ACN 010 826 561

1/51 Secam Street, Mansfield Qld  
P.O. Box 2034 Mansfield DC Qld 4122  
Phone: (07) 3343 3166 Fax: (07) 3849 4705  
Email: laboratories@earthtech.com.au  
Website: www.earthtech.com.au

## PARTICLE SIZE DISTRIBUTION BY HYDROMETER

|           |                               |                 |            |
|-----------|-------------------------------|-----------------|------------|
| Client :  | SKM                           | Report No. :    | R5222      |
| Address : | Level 8, 369 Ann St, Brisbane | Job No. :       | ME-2422    |
| Project : | Port of Airlie EIS            | Reg'n No. :     | L1458/02   |
| Location: | 5 (0.0 - 0.3 m)               | Senders No. :   | 5          |
|           |                               | Date Received : | 10/09/2002 |
|           |                               | Sampled By :    | Client     |



|                          |                                                                          |                                 |           |
|--------------------------|--------------------------------------------------------------------------|---------------------------------|-----------|
| Pretreatment             | Tested as received                                                       | Soil Particle Density (assumed) | 2.70      |
| Loss in Pretreatment (%) | -                                                                        | Type of Hydrometer              | ASTM E100 |
| Method of Dispersion     | Mixer                                                                    | pH Value                        | 8.0       |
| Material Description :   | Silty SAND (SM) dark grey, shell fragments & calcareous fines throughout |                                 |           |
| Test Procedure :         | AS 1289 3.6.2, 3.6.3 (up to 24 hours), 4.3.1                             |                                 |           |
| Prepared by :            | Checked by :                                                             |                                 |           |

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with the terms of registration. This document shall not be reproduced except in full without the prior approval of the laboratory.



1446

Authorised Signatory

R16b.3

PORT OF AIRLIE MARINA DEVELOPMENT

D.2 Certificate of Analysis

***This page intentionally left blank.***

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 0  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Results apply to sample(s) as submitted. Moisture content @ 103°C determined on the sludge residue previously dried at 40°C. Residue digested by USEPA method 200.2 (moderate) prior to determination of metals. Total organic carbon determined on dried and prepared sample by high temperature evolution. Results reported on a dry weight basis.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

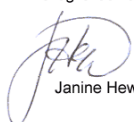
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 0  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|         |                                  |       |      | SAMPLE IDENTIFICATION |                     |                     |                     |            |  |  |  |  |  |
|---------|----------------------------------|-------|------|-----------------------|---------------------|---------------------|---------------------|------------|--|--|--|--|--|
|         |                                  |       |      | Laboratory I.D.       | 1                   | 2                   | 3                   | 4          |  |  |  |  |  |
|         |                                  |       |      | Date Sampled          | 07/09/2002          | 07/09/2002          | 07/09/2002          | 07/09/2002 |  |  |  |  |  |
| METHOD  | ANALYSIS DESCRIPTION             | UNIT  | LOR  | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |            |  |  |  |  |  |
| EA-055  | Moisture Content (dried @ 103°C) | %     | 0.1  | 0.9                   | 2.9                 | 2.7                 | 0.5                 |            |  |  |  |  |  |
| EG-005T | Silver - Total                   | mg/kg | 1    | <1                    | <1                  | <1                  | <1                  |            |  |  |  |  |  |
| EG-005T | Arsenic - Total                  | mg/kg | 1    | <1                    | 2                   | 1                   | 4                   |            |  |  |  |  |  |
| EG-005T | Cadmium - Total                  | mg/kg | 1    | <1                    | <1                  | <1                  | <1                  |            |  |  |  |  |  |
| EG-005T | Chromium - Total                 | mg/kg | 1    | 14                    | 18                  | 18                  | 22                  |            |  |  |  |  |  |
| EG-005T | Copper - Total                   | mg/kg | 1    | 6                     | 10                  | 10                  | 44                  |            |  |  |  |  |  |
| EG-005T | Nickel - Total                   | mg/kg | 1    | 8                     | 9                   | 10                  | 19                  |            |  |  |  |  |  |
| EG-005T | Lead - Total                     | mg/kg | 1    | 5                     | 7                   | 7                   | 35                  |            |  |  |  |  |  |
| EG-005T | Zinc - Total                     | mg/kg | 1    | 8                     | 15                  | 16                  | 76                  |            |  |  |  |  |  |
| EG-035T | Mercury - Total                  | mg/kg | 0.1  | <0.1                  | <0.1                | <0.1                | <0.1                |            |  |  |  |  |  |
| EP-005  | Total Organic Carbon             | %     | 0.04 | 0.46                  | 1.02                | 0.87                | 0.18                |            |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 0  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|         |                                  |       |      | SAMPLE IDENTIFICATION |                      |            |            |  |  |  |  |  |  |
|---------|----------------------------------|-------|------|-----------------------|----------------------|------------|------------|--|--|--|--|--|--|
|         |                                  |       |      | Laboratory I.D.       |                      | 200        | 201        |  |  |  |  |  |  |
|         |                                  |       |      | Date Sampled          |                      | 11/09/2002 | 11/09/2002 |  |  |  |  |  |  |
| METHOD  | ANALYSIS DESCRIPTION             | UNIT  | LOR  | Method<br>Blank 1     | Inorg 1<br>LCS % Rec |            |            |  |  |  |  |  |  |
|         |                                  |       |      | CHECKS AND SPIKES     |                      |            |            |  |  |  |  |  |  |
| EA-055  | Moisture Content (dried @ 103°C) | %     | 0.1  | ----                  | ----                 |            |            |  |  |  |  |  |  |
| EG-005T | Silver - Total                   | mg/kg | 1    | <1                    | ----                 |            |            |  |  |  |  |  |  |
| EG-005T | Arsenic - Total                  | mg/kg | 1    | <1                    | 101%                 |            |            |  |  |  |  |  |  |
| EG-005T | Cadmium - Total                  | mg/kg | 1    | <1                    | 98.0%                |            |            |  |  |  |  |  |  |
| EG-005T | Chromium - Total                 | mg/kg | 1    | <1                    | 100%                 |            |            |  |  |  |  |  |  |
| EG-005T | Copper - Total                   | mg/kg | 1    | <1                    | 104%                 |            |            |  |  |  |  |  |  |
| EG-005T | Nickel - Total                   | mg/kg | 1    | <1                    | 102%                 |            |            |  |  |  |  |  |  |
| EG-005T | Lead - Total                     | mg/kg | 1    | <1                    | 99.0%                |            |            |  |  |  |  |  |  |
| EG-005T | Zinc - Total                     | mg/kg | 1    | <1                    | 100%                 |            |            |  |  |  |  |  |  |
| EG-035T | Mercury - Total                  | mg/kg | 0.1  | <0.1                  | 99.0%                |            |            |  |  |  |  |  |  |
| EP-005  | Total Organic Carbon             | %     | 0.04 | <0.04                 | 105                  |            |            |  |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 1  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** ELUTRIATE  
**No. of SAMPLES:** 5

## COMMENTS

Results apply to sample(s) as submitted. Analysis in accordance with EPA-503/8-91/001-USEPA and Army Corps of Engineers (modified). Results reported are those determined on a 1:4 Sediment/Seawater elutriate. LOR for all samples raised x 20 due to the high amount of Sodium/Magnesium present. This report supersedes any previous preliminary reports of the same batch number.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

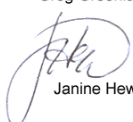
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 1  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|         |                      |      |        | SAMPLE IDENTIFICATION |              |              |              |              |   |  |  |  |  |
|---------|----------------------|------|--------|-----------------------|--------------|--------------|--------------|--------------|---|--|--|--|--|
|         |                      |      |        | Laboratory I.D.       | 5            | 6            | 7            | 8            | 9 |  |  |  |  |
|         |                      |      |        | Date Sampled          |              |              |              |              |   |  |  |  |  |
| METHOD  | ANALYSIS DESCRIPTION | UNIT | LOR    | Seawater Blank        | #1 Elutriate | #2 Elutriate | #3 Elutriate | #5 Elutriate |   |  |  |  |  |
| EG-020F | Silver - Filtered    | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |   |  |  |  |  |
| EG-020F | Arsenic - Filtered   | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |   |  |  |  |  |
| EG-020F | Cadmium - Filtered   | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |   |  |  |  |  |
| EG-020F | Chromium - Filtered  | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | 0.006        |   |  |  |  |  |
| EG-020F | Copper - Filtered    | mg/L | 0.005  | <0.020                | <0.020       | <0.020       | <0.020       | <0.020       |   |  |  |  |  |
| EG-020F | Nickel - Filtered    | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |   |  |  |  |  |
| EG-020F | Lead - Filtered      | mg/L | 0.005  | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |   |  |  |  |  |
| EG-020F | Zinc - Filtered      | mg/L | 0.005  | 0.022                 | 0.029        | 0.093        | 0.141        | 0.130        |   |  |  |  |  |
| EG-035F | Mercury - Filtered   | mg/L | 0.0001 | <0.0001               | <0.0001      | <0.0001      | <0.0001      | <0.0001      |   |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 1  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



| METHOD               |                     |      |        | SAMPLE IDENTIFICATION |                      |            |            |  |  |  |  |  |  |
|----------------------|---------------------|------|--------|-----------------------|----------------------|------------|------------|--|--|--|--|--|--|
|                      |                     |      |        | Laboratory I.D.       |                      | 200        | 201        |  |  |  |  |  |  |
|                      |                     |      |        | Date Sampled          |                      | 11/09/2002 | 11/09/2002 |  |  |  |  |  |  |
| ANALYSIS DESCRIPTION |                     | UNIT | LOR    | Method<br>Blank 1     | Inorg 1<br>LCS % Rec |            |            |  |  |  |  |  |  |
|                      |                     |      |        | CHECKS AND SPIKES     |                      |            |            |  |  |  |  |  |  |
| EG-020F              | Silver - Filtered   | mg/L | 0.005  | <0.005                | 90.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Arsenic - Filtered  | mg/L | 0.005  | <0.005                | 97.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Cadmium - Filtered  | mg/L | 0.005  | <0.005                | 97.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Chromium - Filtered | mg/L | 0.005  | <0.005                | 99.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Copper - Filtered   | mg/L | 0.005  | <0.005                | 100%                 |            |            |  |  |  |  |  |  |
| EG-020F              | Nickel - Filtered   | mg/L | 0.005  | <0.005                | 95.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Lead - Filtered     | mg/L | 0.005  | <0.005                | 96.0%                |            |            |  |  |  |  |  |  |
| EG-020F              | Zinc - Filtered     | mg/L | 0.005  | <0.005                | 103%                 |            |            |  |  |  |  |  |  |
| EG-035F              | Mercury - Filtered  | mg/L | 0.0001 | <0.0001               | 105%                 |            |            |  |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 2  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Results apply to sample(s) as submitted. Samples analysed on an as received basis. Results reported on a dry weight basis.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 2  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                     |         |     | SAMPLE IDENTIFICATION |                     |                     |                     |            |  |  |  |  |  |
|-------------------|-------------------------------------|---------|-----|-----------------------|---------------------|---------------------|---------------------|------------|--|--|--|--|--|
|                   |                                     |         |     | Laboratory I.D.       | 1                   | 2                   | 3                   | 4          |  |  |  |  |  |
|                   |                                     |         |     | Date Sampled          | 07/09/2002          | 07/09/2002          | 07/09/2002          | 07/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                | UNIT    | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |            |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)    | %       | 0.1 | 0.9                   | 2.9                 | 2.7                 | 0.5                 |            |  |  |  |  |  |
| <b>EP-090-SS</b>  | <b>ORGANOTIN COMPOUNDS</b>          |         |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-090-SS         | Monobutyltin                        | ugSn/kg | 0.5 | <0.5                  | <0.5                | <0.5                | 0.7                 |            |  |  |  |  |  |
| EP-090-SS         | Dibutyltin                          | ugSn/kg | 0.5 | <0.5                  | <0.5                | <0.5                | 4.7                 |            |  |  |  |  |  |
| EP-090-SS         | Tributyltin                         | ugSn/kg | 0.2 | 0.4                   | 0.5                 | 0.2                 | 12                  |            |  |  |  |  |  |
| <b>EP-090S-SS</b> | <b>ORGANOTIN COMPOUND SURROGATE</b> |         |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-090S-SS        | Tripropyltin                        | %       | 1   | 59                    | 56                  | 59                  | 39                  |            |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 2  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



| METHOD               |                                     |         |     | SAMPLE IDENTIFICATION |                      |                      |            |            |  |  |  |  |  |
|----------------------|-------------------------------------|---------|-----|-----------------------|----------------------|----------------------|------------|------------|--|--|--|--|--|
|                      |                                     |         |     | Laboratory I.D.       |                      | 200                  | 414        | 415        |  |  |  |  |  |
|                      |                                     |         |     | Date Sampled          |                      | 11/09/2002           | 11/09/2002 | 11/09/2002 |  |  |  |  |  |
| ANALYSIS DESCRIPTION |                                     | UNIT    | LOR | Method<br>Blank 1     | TBTS488<br>SCS % Rec | TBTS488<br>DCS % Rec |            |            |  |  |  |  |  |
|                      |                                     |         |     | CHECKS AND SPIKES     |                      |                      |            |            |  |  |  |  |  |
| EA-055               | Moisture Content (dried @ 103'C)    | %       | 0.1 | ----                  | ----                 | ----                 |            |            |  |  |  |  |  |
| <b>EP-090-SS</b>     | <b>ORGANOTIN COMPOUNDS</b>          |         |     |                       |                      |                      |            |            |  |  |  |  |  |
| EP-090-SS            | Monobutyltin                        | ugSn/kg | 0.5 | <0.5                  | 45.0%                | 51.0%                |            |            |  |  |  |  |  |
| EP-090-SS            | Dibutyltin                          | ugSn/kg | 0.5 | <0.5                  | 59.0%                | 61.0%                |            |            |  |  |  |  |  |
| EP-090-SS            | Tributyltin                         | ugSn/kg | 0.2 | <0.2                  | 101%                 | 94.0%                |            |            |  |  |  |  |  |
| <b>EP-090S-SS</b>    | <b>ORGANOTIN COMPOUND SURROGATE</b> |         |     |                       |                      |                      |            |            |  |  |  |  |  |
| EP-090S-SS           | Tripropyltin                        | %       | 1   | 102                   | 94                   | 88                   |            |            |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 3  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** ELUTRIATE  
**No. of SAMPLES:** 5

## COMMENTS

Results apply to sample(s) as submitted.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.  
All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

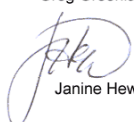
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## **LABORATORIES**

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai

Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 3  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                     |        |     | SAMPLE IDENTIFICATION |              |              |              |              |   |  |  |  |  |
|-------------------|-------------------------------------|--------|-----|-----------------------|--------------|--------------|--------------|--------------|---|--|--|--|--|
|                   |                                     |        |     | Laboratory I.D.       | 5            | 6            | 7            | 8            | 9 |  |  |  |  |
|                   |                                     |        |     | Date Sampled          |              |              |              |              |   |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                | UNIT   | LOR | Seawater Blank        | #1 Elutriate | #2 Elutriate | #3 Elutriate | #5 Elutriate |   |  |  |  |  |
| <b>EP-090-WS</b>  | <b>ORGANOTIN COMPOUNDS</b>          |        |     |                       |              |              |              |              |   |  |  |  |  |
| EP-090-WS         | Monobutyltin - Soluble              | ngSn/L | 5   | <5                    | <5           | <5           | <5           | <5           |   |  |  |  |  |
| EP-090-WS         | Dibutyltin - Soluble                | ngSn/L | 5   | <5                    | <5           | <5           | <5           | 16           |   |  |  |  |  |
| EP-090-WS         | Tributyltin - Soluble               | ngSn/L | 2   | <2                    | <2           | <2           | <2           | 15           |   |  |  |  |  |
| <b>EP-090S-WS</b> | <b>ORGANOTIN COMPOUND SURROGATE</b> |        |     |                       |              |              |              |              |   |  |  |  |  |
| EP-090S-WS        | Tripropyltin - Soluble              | %      | 1   | 90                    | 89           | 76           | 56           | 72           |   |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 3  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



| METHOD               |                              |        |     | SAMPLE IDENTIFICATION |                      |                      |     |     |  |  |  |  |  |
|----------------------|------------------------------|--------|-----|-----------------------|----------------------|----------------------|-----|-----|--|--|--|--|--|
|                      |                              |        |     | Laboratory I.D.       |                      | 200                  | 414 | 415 |  |  |  |  |  |
|                      |                              |        |     | Date Sampled          |                      |                      |     |     |  |  |  |  |  |
| ANALYSIS DESCRIPTION |                              | UNIT   | LOR | Method<br>Blank 1     | TBTW308<br>SCS % Rec | TBTW308<br>DCS % Rec |     |     |  |  |  |  |  |
|                      |                              |        |     | CHECKS AND SPIKES     |                      |                      |     |     |  |  |  |  |  |
| EP-090-WS            | ORGANOTIN COMPOUNDS          |        |     |                       |                      |                      |     |     |  |  |  |  |  |
| EP-090-WS            | Monobutyltin - Soluble       | ngSn/L | 5   | <5                    | 100%                 | 86.0%                |     |     |  |  |  |  |  |
| EP-090-WS            | Dibutyltin - Soluble         | ngSn/L | 5   | <5                    | 91.0%                | 100%                 |     |     |  |  |  |  |  |
| EP-090-WS            | Tributyltin - Soluble        | ngSn/L | 2   | <2                    | 83                   | 72                   |     |     |  |  |  |  |  |
| EP-090S-WS           | ORGANOTIN COMPOUND SURROGATE |        |     |                       |                      |                      |     |     |  |  |  |  |  |
| EP-090S-WS           | Tripropyltin - Soluble       | %      | 1   | 90                    | 88                   | 89                   |     |     |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 4  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 4  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                  |                 |     | SAMPLE IDENTIFICATION |                     |                     |                     |  |  |  |  |  |  |
|-------------------|----------------------------------|-----------------|-----|-----------------------|---------------------|---------------------|---------------------|--|--|--|--|--|--|
|                   |                                  | Laboratory I.D. |     | 1                     | 2                   | 3                   | 4                   |  |  |  |  |  |  |
|                   |                                  | Date Sampled    |     | 07/09/2002            | 07/09/2002          | 07/09/2002          | 07/09/2002          |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION             | UNIT            | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |  |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C) | %               | 0.1 | 0.9                   | 2.9                 | 2.7                 | 0.5                 |  |  |  |  |  |  |
| <b>EP-031A-SS</b> | <b>ORGANOCHLORINE PESTICIDES</b> |                 |     |                       |                     |                     |                     |  |  |  |  |  |  |
| EP-031A-SS        | Aldrin                           | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | BHC (alpha)                      | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | BHC (beta)                       | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | BHC (delta)                      | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | DDD                              | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | DDE                              | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | 2.1                 |  |  |  |  |  |  |
| EP-031A-SS        | DDT                              | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | DDT (total)                      | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | 2.1                 |  |  |  |  |  |  |
| EP-031A-SS        | Dieldrin                         | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan I                     | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan II                    | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan sulfate               | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan                       | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endrin                           | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | 3.8                 |  |  |  |  |  |  |
| EP-031A-SS        | Endrin aldehyde                  | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Endrin ketone                    | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Heptachlor                       | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Heptachlor epoxide               | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Hexachlorobenzene (HCB)          | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Lindane (BHC-gamma)              | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Methoxychlor                     | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Chlordane (cis)                  | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Chlordane (trans)                | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| EP-031A-SS        | Total Chlordane                  | ug/kg           | 0.5 | <0.5                  | <0.5                | <0.5                | <0.5                |  |  |  |  |  |  |
| <b>EP-031B-SS</b> | <b>POLYCHLORINATED BIPHENYLS</b> |                 |     |                       |                     |                     |                     |  |  |  |  |  |  |
| EP-031B-SS        | Total Polychlorinated biphenyls  | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1016                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1221                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1232                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1242                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1248                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1254                     | ug/kg           | 5   | <5                    | <5                  | <5                  | <5                  |  |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 4  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                           |       |     | SAMPLE IDENTIFICATION |                     |                     |                     |            |  |  |  |  |  |
|-------------------|-------------------------------------------|-------|-----|-----------------------|---------------------|---------------------|---------------------|------------|--|--|--|--|--|
|                   |                                           |       |     | Laboratory I.D.       | 1                   | 2                   | 3                   | 4          |  |  |  |  |  |
|                   |                                           |       |     | Date Sampled          | 07/09/2002          | 07/09/2002          | 07/09/2002          | 07/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                      | UNIT  | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |            |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1260                              | ug/kg | 5   | <5                    | <5                  | <5                  | <5                  |            |  |  |  |  |  |
| <b>EP-031S-SS</b> | <b>ORGANOCHLORINE PESTICIDE SURROGATE</b> |       |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-031S-SS        | Dibromo-DDE                               | %     | 1   | 78                    | 88                  | 88                  | 90                  |            |  |  |  |  |  |
| <b>EP-031T-SS</b> | <b>POLYCHLORINATED BIPHENYL SURROGATE</b> |       |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-031T-SS        | Decachlorobiphenyl                        | %     | 1   | 84                    | 90                  | 102                 | 118                 |            |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 4  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                  |                 |     | SAMPLE IDENTIFICATION |                          |                          |  |  |  |  |  |  |
|-------------------|----------------------------------|-----------------|-----|-----------------------|--------------------------|--------------------------|--|--|--|--|--|--|
|                   |                                  | Laboratory I.D. |     | 100                   | 101                      | 102                      |  |  |  |  |  |  |
|                   |                                  | Date Sampled    |     | 11/09/2002            | 11/09/2002               | 11/09/2002               |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION             | UNIT            | LOR | METHOD<br>BLANNK      | NEPO31AS70<br>& BS58_SCS | NEPO31AS70<br>& BS58_DCS |  |  |  |  |  |  |
|                   |                                  |                 |     | CHECKS AND SPIKES     |                          |                          |  |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C) | %               | 0.1 | ----                  | ----                     | ----                     |  |  |  |  |  |  |
| <b>EP-031A-SS</b> | <b>ORGANOCHLORINE PESTICIDES</b> |                 |     |                       |                          |                          |  |  |  |  |  |  |
| EP-031A-SS        | Aldrin                           | ug/kg           | 0.5 | <0.5                  | 80.0%                    | 70.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | BHC (alpha)                      | ug/kg           | 0.5 | <0.5                  | 86.0%                    | 81.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | BHC (beta)                       | ug/kg           | 0.5 | <0.5                  | 77.0%                    | 75.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | BHC (delta)                      | ug/kg           | 0.5 | <0.5                  | 77.0%                    | 81.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | DDD                              | ug/kg           | 0.5 | <0.5                  | 75.0%                    | 75.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | DDE                              | ug/kg           | 0.5 | <0.5                  | 82.0%                    | 77.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | DDT                              | ug/kg           | 0.5 | <0.5                  | 50.0%                    | 45.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | DDT (total)                      | ug/kg           | 0.5 | <0.5                  | ----                     | ----                     |  |  |  |  |  |  |
| EP-031A-SS        | Dieldrin                         | ug/kg           | 0.5 | <0.5                  | 98.0%                    | 93.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan I                     | ug/kg           | 0.5 | <0.5                  | 84.0%                    | 81.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan II                    | ug/kg           | 0.5 | <0.5                  | 88.0%                    | 97.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan sulfate               | ug/kg           | 0.5 | <0.5                  | 100%                     | 95.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endosulfan                       | ug/kg           | 0.5 | <0.5                  | ----                     | ----                     |  |  |  |  |  |  |
| EP-031A-SS        | Endrin                           | ug/kg           | 0.5 | <0.5                  | 65.0%                    | 60.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endrin aldehyde                  | ug/kg           | 0.5 | <0.5                  | 95.0%                    | 89.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Endrin ketone                    | ug/kg           | 0.5 | <0.5                  | 112%                     | 105%                     |  |  |  |  |  |  |
| EP-031A-SS        | Heptachlor                       | ug/kg           | 0.5 | <0.5                  | 99.0%                    | 97.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Heptachlor epoxide               | ug/kg           | 0.5 | <0.5                  | 81.0%                    | 80.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Hexachlorobenzene (HCB)          | ug/kg           | 0.5 | <0.5                  | 86.0%                    | 81.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Lindane (BHC-gamma)              | ug/kg           | 0.5 | <0.5                  | 77.0%                    | 73.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Methoxychlor                     | ug/kg           | 0.5 | <0.5                  | 98.0%                    | 95.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Chlordane (cis)                  | ug/kg           | 0.5 | <0.5                  | 91.0%                    | 88.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Chlordane (trans)                | ug/kg           | 0.5 | <0.5                  | 91.0%                    | 87.0%                    |  |  |  |  |  |  |
| EP-031A-SS        | Total Chlordane                  | ug/kg           | 0.5 | <0.5                  | ----                     | ----                     |  |  |  |  |  |  |
| <b>EP-031B-SS</b> | <b>POLYCHLORINATED BIPHENYLS</b> |                 |     |                       |                          |                          |  |  |  |  |  |  |
| EP-031B-SS        | Total Polychlorinated biphenyls  | ug/kg           | 5   | <5                    | 81.3%                    | 82.5%                    |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1016                     | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1221                     | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1232                     | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1242                     | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 4  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                           |                 |     | SAMPLE IDENTIFICATION |                          |                          |  |  |  |  |  |  |  |
|-------------------|-------------------------------------------|-----------------|-----|-----------------------|--------------------------|--------------------------|--|--|--|--|--|--|--|
|                   |                                           | Laboratory I.D. |     | 100                   | 101                      | 102                      |  |  |  |  |  |  |  |
|                   |                                           | Date Sampled    |     | 11/09/2002            | 11/09/2002               | 11/09/2002               |  |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                      | UNIT            | LOR | METHOD<br>BLANNK      | NEPO31AS70<br>& BS58_SCS | NEPO31AS70<br>& BS58_DCS |  |  |  |  |  |  |  |
|                   |                                           |                 |     | CHECKS AND SPIKES     |                          |                          |  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1248                              | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1254                              | ug/kg           | 5   | <5                    | 81.3%                    | 82.5%                    |  |  |  |  |  |  |  |
| EP-031B-SS        | Aroclor 1260                              | ug/kg           | 5   | <5                    | ----                     | ----                     |  |  |  |  |  |  |  |
| <b>EP-031S-SS</b> | <b>ORGANOCHLORINE PESTICIDE SURROGATE</b> |                 |     |                       |                          |                          |  |  |  |  |  |  |  |
| EP-031S-SS        | Dibromo-DDE                               | %               | 1   | 107                   | 99                       | 104                      |  |  |  |  |  |  |  |
| <b>EP-031T-SS</b> | <b>POLYCHLORINATED BIPHENYL SURROGATE</b> |                 |     |                       |                          |                          |  |  |  |  |  |  |  |
| EP-031T-SS        | Decachlorobiphenyl                        | %               | 1   | 71                    | 73                       | 71                       |  |  |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 5  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 5  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                             |       |     | SAMPLE IDENTIFICATION |                     |                     |                     |            |            |  |  |  |  |
|-------------------|---------------------------------------------|-------|-----|-----------------------|---------------------|---------------------|---------------------|------------|------------|--|--|--|--|
|                   |                                             |       |     | Laboratory I.D.       |                     | 1                   | 2                   | 3          | 4          |  |  |  |  |
|                   |                                             |       |     | Date Sampled          |                     | 07/09/2002          | 07/09/2002          | 07/09/2002 | 07/09/2002 |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                        | UNIT  | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |            |            |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)            | %     | 0.1 | 0.9                   | 2.9                 | 2.7                 | 0.5                 |            |            |  |  |  |  |
| <b>EP-030A-SS</b> | <b>ORGANOPHOSPHORUS PESTICIDES</b>          |       |     |                       |                     |                     |                     |            |            |  |  |  |  |
| EP-030A-SS        | Bromophos ethyl                             | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Carbofenthion                               | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Chlorfenvinphos (E)                         | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Chlorfenvinphos (Z)                         | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Chlorpyrifos                                | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Chlorpyrifos methyl                         | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Demeton S-methyl                            | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Diazinon                                    | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Dichlorvos                                  | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Dimethoate                                  | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Ethion                                      | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Fenamiphos                                  | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Fenthion                                    | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Malathion                                   | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Methyl azinphos                             | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Monocrotophos                               | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Parathion                                   | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Parathion methyl                            | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Pirimiphos ethyl                            | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| EP-030A-SS        | Prothiophos                                 | ug/kg | 10  | <10                   | <10                 | <10                 | <10                 |            |            |  |  |  |  |
| <b>EP-030S-SS</b> | <b>ORGANOPHOSPHORUS PESTICIDE SURROGATE</b> |       |     |                       |                     |                     |                     |            |            |  |  |  |  |
| EP-030S-SS        | DEF                                         | %     | 1   | 128                   | 93                  | 104                 | 91                  |            |            |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 5  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                             |       |     | SAMPLE IDENTIFICATION |               |               |            |            |  |  |  |  |  |
|-------------------|---------------------------------------------|-------|-----|-----------------------|---------------|---------------|------------|------------|--|--|--|--|--|
|                   |                                             |       |     | Laboratory I.D.       |               | 100           | 101        | 102        |  |  |  |  |  |
|                   |                                             |       |     | Date Sampled          |               | 11/09/2002    | 11/09/2002 | 11/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                        | UNIT  | LOR | METHOD BLANK          | NEPO30S41 SCS | NEPO30S41 DCS |            |            |  |  |  |  |  |
|                   |                                             |       |     | CHECKS AND SPIKES     |               |               |            |            |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)            | %     | 0.1 | ----                  | ----          | ----          |            |            |  |  |  |  |  |
| <b>EP-030A-SS</b> | <b>ORGANOPHOSPHORUS PESTICIDES</b>          |       |     |                       |               |               |            |            |  |  |  |  |  |
| EP-030A-SS        | Bromophos ethyl                             | ug/kg | 10  | <10                   | 80.2%         | 78.6%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Carbofenthion                               | ug/kg | 10  | <10                   | 97.8%         | 95.3%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Chlorfenvinphos (E)                         | ug/kg | 10  | <10                   | 67.0%         | 68.0%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Chlorfenvinphos (Z)                         | ug/kg | 10  | <10                   | 68.2%         | 69.6%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Chlorpyrifos                                | ug/kg | 10  | <10                   | 90.8%         | 89.8%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Chlorpyrifos methyl                         | ug/kg | 10  | <10                   | 19.7%         | 15.0%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Demeton S-methyl                            | ug/kg | 10  | <10                   | 76.4%         | 71.8%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Diazinon                                    | ug/kg | 10  | <10                   | 78.1%         | 73.6%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Dichlorvos                                  | ug/kg | 10  | <10                   | 87.5%         | 84.9%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Dimethoate                                  | ug/kg | 10  | <10                   | 76.2%         | 74.9%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Ethion                                      | ug/kg | 10  | <10                   | 93.3%         | 88.0%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Fenamiphos                                  | ug/kg | 10  | <10                   | 83.7%         | 86.5%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Fenthion                                    | ug/kg | 10  | <10                   | 82.5%         | 79.1%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Malathion                                   | ug/kg | 10  | <10                   | 98.2%         | 94.9%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Methyl azinphos                             | ug/kg | 10  | <10                   | 68.3%         | 78.4%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Monocrotophos                               | ug/kg | 10  | <10                   | 84.4%         | 98.3%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Parathion                                   | ug/kg | 10  | <10                   | 99.2%         | 98.3%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Parathion methyl                            | ug/kg | 10  | <10                   | 93.3%         | 89.2%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Pirimiphos ethyl                            | ug/kg | 10  | <10                   | 81.1%         | 78.9%         |            |            |  |  |  |  |  |
| EP-030A-SS        | Prothiophos                                 | ug/kg | 10  | <10                   | 89.0%         | 86.9%         |            |            |  |  |  |  |  |
| <b>EP-030S-SS</b> | <b>ORGANOPHOSPHORUS PESTICIDE SURROGATE</b> |       |     |                       |               |               |            |            |  |  |  |  |  |
| EP-030S-SS        | DEF                                         | %     | 1   | 73                    | 85            | 80            |            |            |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 6  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Samples analysed on an as received basis. Results reported on a dry weight basis. Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

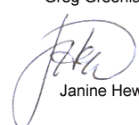
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 6  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                         |                 |     | SAMPLE IDENTIFICATION |                     |                     |                     |  |  |  |  |  |  |
|-------------------|-----------------------------------------|-----------------|-----|-----------------------|---------------------|---------------------|---------------------|--|--|--|--|--|--|
|                   |                                         | Laboratory I.D. |     | 1                     | 2                   | 3                   | 4                   |  |  |  |  |  |  |
|                   |                                         | Date Sampled    |     | 07/09/2002            | 07/09/2002          | 07/09/2002          | 07/09/2002          |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                    | UNIT            | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |  |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)        | %               | 0.1 | 0.9                   | 2.9                 | 2.7                 | 0.5                 |  |  |  |  |  |  |
| <b>EP-032B-SS</b> | <b>POLYNUCLEAR AROMATICS</b>            |                 |     |                       |                     |                     |                     |  |  |  |  |  |  |
| EP-032B-SS        | 2-Methylcholanthrene                    | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | 2-Methylnaphthalene                     | ug/kg           | 10  | <10                   | <10                 | <10                 | 29                  |  |  |  |  |  |  |
| EP-032B-SS        | 7.12-Dimethylbenz(a)anthracene          | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Acenaphthene                            | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Acenaphthylene                          | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Anthracene                              | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Benz(a)anthracene                       | ug/kg           | 10  | <10                   | <10                 | <10                 | 111                 |  |  |  |  |  |  |
| EP-032B-SS        | Benzo(a)pyrene                          | ug/kg           | 10  | <10                   | <10                 | <10                 | 201                 |  |  |  |  |  |  |
| EP-032B-SS        | Benzo(b)fluoranthene                    | ug/kg           | 10  | <10                   | <10                 | <10                 | 205                 |  |  |  |  |  |  |
| EP-032B-SS        | Benzo(e)pyrene                          | ug/kg           | 10  | <10                   | <10                 | <10                 | 64                  |  |  |  |  |  |  |
| EP-032B-SS        | Benzo(g,h,i)perylene                    | ug/kg           | 10  | <10                   | <10                 | <10                 | 84                  |  |  |  |  |  |  |
| EP-032B-SS        | Benzo(k)fluoranthene                    | ug/kg           | 10  | <10                   | <10                 | <10                 | 157                 |  |  |  |  |  |  |
| EP-032B-SS        | Chrysene                                | ug/kg           | 10  | <10                   | <10                 | <10                 | 97                  |  |  |  |  |  |  |
| EP-032B-SS        | Coronene                                | ug/kg           | 10  | <10                   | <10                 | <10                 | 15                  |  |  |  |  |  |  |
| EP-032B-SS        | Dibenz(a,h)anthracene                   | ug/kg           | 10  | <10                   | <10                 | <10                 | 27                  |  |  |  |  |  |  |
| EP-032B-SS        | Fluoranthene                            | ug/kg           | 10  | 11                    | 14                  | <10                 | 129                 |  |  |  |  |  |  |
| EP-032B-SS        | Fluorene                                | ug/kg           | 10  | <10                   | <10                 | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Indeno(1,2,3-cd)pyrene                  | ug/kg           | 10  | <10                   | <10                 | <10                 | 78                  |  |  |  |  |  |  |
| EP-032B-SS        | N-2-Fluorenyl acetamide                 | ug/kg           | 100 | <100                  | <100                | <100                | <100                |  |  |  |  |  |  |
| EP-032B-SS        | Naphthalene                             | ug/kg           | 10  | <10                   | 32                  | <10                 | <10                 |  |  |  |  |  |  |
| EP-032B-SS        | Perylene                                | ug/kg           | 10  | <10                   | <10                 | <10                 | 57                  |  |  |  |  |  |  |
| EP-032B-SS        | Phenanthrene                            | ug/kg           | 10  | <10                   | <10                 | <10                 | 34                  |  |  |  |  |  |  |
| EP-032B-SS        | Pyrene                                  | ug/kg           | 10  | 11                    | 14                  | <10                 | 193                 |  |  |  |  |  |  |
| <b>EP-032T-SS</b> | <b>POLYNUCLEAR AROMATICS SURROGATES</b> |                 |     |                       |                     |                     |                     |  |  |  |  |  |  |
| EP-032T-SS        | 2-Fluorobiphenyl                        | %               | 1   | 109                   | 112                 | 107                 | 97                  |  |  |  |  |  |  |
| EP-032T-SS        | Anthracene-d10                          | %               | 1   | 95                    | 104                 | 93                  | 89                  |  |  |  |  |  |  |
| EP-032T-SS        | 4-Terphenyl-d14                         | %               | 1   | 103                   | 107                 | 95                  | 88                  |  |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 6  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                         |       |     | SAMPLE IDENTIFICATION |               |               |            |            |  |  |  |  |
|-------------------|-----------------------------------------|-------|-----|-----------------------|---------------|---------------|------------|------------|--|--|--|--|
|                   |                                         |       |     | Laboratory I.D.       |               | 100           | 101        | 102        |  |  |  |  |
|                   |                                         |       |     | Date Sampled          |               | 11/09/2002    | 11/09/2002 | 11/09/2002 |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                    | UNIT  | LOR | METHOD BLANK          | NEPO32S63 SCS | NEPO32S63 DCS |            |            |  |  |  |  |
|                   |                                         |       |     | CHECKS AND SPIKES     |               |               |            |            |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)        | %     | 0.1 | ----                  | ----          | ----          |            |            |  |  |  |  |
| <b>EP-032B-SS</b> | <b>POLYNUCLEAR AROMATICS</b>            |       |     |                       |               |               |            |            |  |  |  |  |
| EP-032B-SS        | 2-Methylcholanthrene                    | ug/kg | 10  | <10                   | 109%          | 96.4%         |            |            |  |  |  |  |
| EP-032B-SS        | 2-Methylnaphthalene                     | ug/kg | 10  | <10                   | 94.7%         | 109%          |            |            |  |  |  |  |
| EP-032B-SS        | 7.12-Dimethylbenz(a)anthracene          | ug/kg | 10  | <10                   | 132%          | 108%          |            |            |  |  |  |  |
| EP-032B-SS        | Acenaphthene                            | ug/kg | 10  | <10                   | 110%          | 116%          |            |            |  |  |  |  |
| EP-032B-SS        | Acenaphthylene                          | ug/kg | 10  | <10                   | 106%          | 116%          |            |            |  |  |  |  |
| EP-032B-SS        | Anthracene                              | ug/kg | 10  | <10                   | 95.9%         | 111%          |            |            |  |  |  |  |
| EP-032B-SS        | Benz(a)anthracene                       | ug/kg | 10  | <10                   | 117%          | 108%          |            |            |  |  |  |  |
| EP-032B-SS        | Benzo(a)pyrene                          | ug/kg | 10  | <10                   | 108%          | 105%          |            |            |  |  |  |  |
| EP-032B-SS        | Benzo(b)fluoranthene                    | ug/kg | 10  | <10                   | 110%          | 106%          |            |            |  |  |  |  |
| EP-032B-SS        | Benzo(e)pyrene                          | ug/kg | 10  | <10                   | 88.2%         | 86.2%         |            |            |  |  |  |  |
| EP-032B-SS        | Benzo(g,h,i)perylene                    | ug/kg | 10  | <10                   | 102%          | 92.3%         |            |            |  |  |  |  |
| EP-032B-SS        | Benzo(k)fluoranthene                    | ug/kg | 10  | <10                   | 103%          | 103%          |            |            |  |  |  |  |
| EP-032B-SS        | Chrysene                                | ug/kg | 10  | <10                   | 104%          | 103%          |            |            |  |  |  |  |
| EP-032B-SS        | Coronene                                | ug/kg | 10  | <10                   | 111%          | 109%          |            |            |  |  |  |  |
| EP-032B-SS        | Dibenz(a,h)anthracene                   | ug/kg | 10  | <10                   | 119%          | 104%          |            |            |  |  |  |  |
| EP-032B-SS        | Fluoranthene                            | ug/kg | 10  | <10                   | 102%          | 110%          |            |            |  |  |  |  |
| EP-032B-SS        | Fluorene                                | ug/kg | 10  | <10                   | 104%          | 99.1%         |            |            |  |  |  |  |
| EP-032B-SS        | Indeno(1,2,3-cd)pyrene                  | ug/kg | 10  | <10                   | 116%          | 106%          |            |            |  |  |  |  |
| EP-032B-SS        | N-2-Fluorenyl acetamide                 | ug/kg | 100 | <100                  | 723%          | 589%          |            |            |  |  |  |  |
| EP-032B-SS        | Naphthalene                             | ug/kg | 10  | <10                   | 99.5%         | 111%          |            |            |  |  |  |  |
| EP-032B-SS        | Perylene                                | ug/kg | 10  | <10                   | 92.0%         | 107%          |            |            |  |  |  |  |
| EP-032B-SS        | Phenanthrene                            | ug/kg | 10  | <10                   | 95.6%         | 101%          |            |            |  |  |  |  |
| EP-032B-SS        | Pyrene                                  | ug/kg | 10  | <10                   | 107%          | 101%          |            |            |  |  |  |  |
| <b>EP-032T-SS</b> | <b>POLYNUCLEAR AROMATICS SURROGATES</b> |       |     |                       |               |               |            |            |  |  |  |  |
| EP-032T-SS        | 2-Fluorobiphenyl                        | %     | 1   | 101                   | 116           | 110           |            |            |  |  |  |  |
| EP-032T-SS        | Anthracene-d10                          | %     | 1   | 114                   | 99            | 112           |            |            |  |  |  |  |
| EP-032T-SS        | 4-Terphenyl-d14                         | %     | 1   | 112                   | 112           | 101           |            |            |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 7  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** ELUTRIATE  
**No. of SAMPLES:** 5

## COMMENTS

Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.  
All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

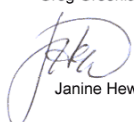
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## **LABORATORIES**

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 7  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                           |                 |       | SAMPLE IDENTIFICATION |              |              |              |              |  |  |  |  |  |
|-------------------|-------------------------------------------|-----------------|-------|-----------------------|--------------|--------------|--------------|--------------|--|--|--|--|--|
|                   |                                           | Laboratory I.D. |       | 5                     | 6            | 7            | 8            | 9            |  |  |  |  |  |
|                   |                                           | Date Sampled    |       |                       |              |              |              |              |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                      | UNIT            | LOR   | Seawater Blank        | #1 Elutriate | #2 Elutriate | #3 Elutriate | #5 Elutriate |  |  |  |  |  |
| <b>EP-031A-WS</b> | <b>ORGANOCHLORINE PESTICIDES</b>          |                 |       |                       |              |              |              |              |  |  |  |  |  |
| EP-031A-WS        | Aldrin                                    | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | BHC (alpha)                               | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | BHC (beta)                                | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | BHC (delta)                               | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | DDD                                       | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | DDE                                       | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | DDT                                       | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | DDT (total)                               | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Dieldrin                                  | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endosulfan I                              | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endosulfan II                             | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endosulfan sulfate                        | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endosulfan                                | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endrin                                    | ug/L            | 0.01  | <0.01                 | <0.01        | 0.05         | 0.05         | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endrin aldehyde                           | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Endrin ketone                             | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Heptachlor                                | ug/L            | 0.005 | <0.005                | <0.005       | <0.005       | <0.005       | <0.005       |  |  |  |  |  |
| EP-031A-WS        | Heptachlor epoxide                        | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Hexachlorobenzene (HCB)                   | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Lindane (BHC-gamma)                       | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Methoxychlor                              | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Chlordane (cis)                           | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Chlordane (trans)                         | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| EP-031A-WS        | Total Chlordane                           | ug/L            | 0.01  | <0.01                 | <0.01        | <0.01        | <0.01        | <0.01        |  |  |  |  |  |
| <b>EP-031B-WS</b> | <b>POLYCHLORINATED BIPHENYLS</b>          |                 |       |                       |              |              |              |              |  |  |  |  |  |
| EP-031B-WS        | Total Polychlorinated biphenyls           | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1016                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1221                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1232                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1242                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1248                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1254                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1260                              | ug/L            | 0.1   | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| <b>EP-031S-WS</b> | <b>ORGANOCHLORINE PESTICIDE SURROGATE</b> |                 |       |                       |              |              |              |              |  |  |  |  |  |

Batch: EB48848  
Sub Batch: 7  
Date of Issue: 15/11/2002  
Client: EARTHTECH CONSULTANTS (Q) P/L  
Client Reference: ME2422

CERTIFICATE OF ANALYSIS



|            |                                    |      |     | SAMPLE IDENTIFICATION |                 |                 |                 |                 |   |  |  |  |  |
|------------|------------------------------------|------|-----|-----------------------|-----------------|-----------------|-----------------|-----------------|---|--|--|--|--|
|            |                                    |      |     | Laboratory I.D.       | 5               | 6               | 7               | 8               | 9 |  |  |  |  |
|            |                                    |      |     | Date Sampled          |                 |                 |                 |                 |   |  |  |  |  |
| METHOD     | ANALYSIS DESCRIPTION               | UNIT | LOR | Seawater<br>Blank     | #1<br>Elutriate | #2<br>Elutriate | #3<br>Elutriate | #5<br>Elutriate |   |  |  |  |  |
| EP-031S-WS | Dibromo-DDE                        | %    | 1   | 57                    | 67              | 82              | 75              | 55              |   |  |  |  |  |
| EP-031T-WS | POLYCHLORINATED BIPHENYL SURROGATE |      |     |                       |                 |                 |                 |                 |   |  |  |  |  |
| EP-031T-WS | Decachlorobiphenyl                 | %    | 1   | 71                    | 81              | 101             | 89              | 66              |   |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 7  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                  |                 |       | SAMPLE IDENTIFICATION |                          |                          |  |  |  |  |  |  |  |
|-------------------|----------------------------------|-----------------|-------|-----------------------|--------------------------|--------------------------|--|--|--|--|--|--|--|
|                   |                                  | Laboratory I.D. |       | 100                   | 101                      | 102                      |  |  |  |  |  |  |  |
|                   |                                  | Date Sampled    |       | 11/09/2002            | 11/09/2002               | 11/09/2002               |  |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION             | UNIT            | LOR   | METHOD<br>BLANK       | EP031AW163<br>& BW88_SCS | EP031AW163<br>& BW88_DCS |  |  |  |  |  |  |  |
|                   |                                  |                 |       | CHECKS AND SPIKES     |                          |                          |  |  |  |  |  |  |  |
| <b>EP-031A-WS</b> | <b>ORGANOCHLORINE PESTICIDES</b> |                 |       |                       |                          |                          |  |  |  |  |  |  |  |
| EP-031A-WS        | Aldrin                           | ug/L            | 0.01  | <0.01                 | 87.0%                    | 85.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | BHC (alpha)                      | ug/L            | 0.01  | <0.01                 | 64.0%                    | 65.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | BHC (beta)                       | ug/L            | 0.01  | <0.01                 | 84.0%                    | 84.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | BHC (delta)                      | ug/L            | 0.01  | <0.01                 | 78.0%                    | 84.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | DDD                              | ug/L            | 0.01  | <0.01                 | 65.0%                    | 65.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | DDE                              | ug/L            | 0.01  | <0.01                 | 81.0%                    | 79.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | DDT                              | ug/L            | 0.01  | <0.01                 | 44.0%                    | 45.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | DDT (total)                      | ug/L            | 0.01  | <0.01                 | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031A-WS        | Dieldrin                         | ug/L            | 0.01  | <0.01                 | 89.0%                    | 86.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endosulfan I                     | ug/L            | 0.01  | <0.01                 | 76.0%                    | 82.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endosulfan II                    | ug/L            | 0.01  | <0.01                 | 89.0%                    | 87.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endosulfan sulfate               | ug/L            | 0.01  | <0.01                 | 94.0%                    | 97.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endosulfan                       | ug/L            | 0.01  | <0.01                 | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031A-WS        | Endrin                           | ug/L            | 0.01  | <0.01                 | 59.0%                    | 53.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endrin aldehyde                  | ug/L            | 0.01  | <0.01                 | 87.0%                    | 80.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Endrin ketone                    | ug/L            | 0.01  | <0.01                 | 127%                     | 128%                     |  |  |  |  |  |  |  |
| EP-031A-WS        | Heptachlor                       | ug/L            | 0.005 | <0.005                | 85.0%                    | 82.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Heptachlor epoxide               | ug/L            | 0.01  | <0.01                 | 79.0%                    | 79.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Hexachlorobenzene (HCB)          | ug/L            | 0.01  | <0.01                 | 62.0%                    | 63.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Lindane (BHC-gamma)              | ug/L            | 0.01  | <0.01                 | 78.0%                    | 79.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Methoxychlor                     | ug/L            | 0.01  | <0.01                 | 97.0%                    | 94.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Chlordane (cis)                  | ug/L            | 0.01  | <0.01                 | 83.0%                    | 82.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Chlordane (trans)                | ug/L            | 0.01  | <0.01                 | 83.0%                    | 82.0%                    |  |  |  |  |  |  |  |
| EP-031A-WS        | Total Chlordane                  | ug/L            | 0.01  | <0.01                 | ----                     | ----                     |  |  |  |  |  |  |  |
| <b>EP-031B-WS</b> | <b>POLYCHLORINATED BIPHENYLS</b> |                 |       |                       |                          |                          |  |  |  |  |  |  |  |
| EP-031B-WS        | Total Polychlorinated biphenyls  | ug/L            | 0.1   | <0.1                  | 78.0%                    | 84.8%                    |  |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1016                     | ug/L            | 0.1   | <0.1                  | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1221                     | ug/L            | 0.1   | <0.1                  | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1232                     | ug/L            | 0.1   | <0.1                  | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1242                     | ug/L            | 0.1   | <0.1                  | ----                     | ----                     |  |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1248                     | ug/L            | 0.1   | <0.1                  | ----                     | ----                     |  |  |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 7  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                           |      |     | SAMPLE IDENTIFICATION |                          |                          |            |  |  |  |  |  |  |
|-------------------|-------------------------------------------|------|-----|-----------------------|--------------------------|--------------------------|------------|--|--|--|--|--|--|
|                   |                                           |      |     | Laboratory I.D.       | 100                      | 101                      | 102        |  |  |  |  |  |  |
|                   |                                           |      |     | Date Sampled          | 11/09/2002               | 11/09/2002               | 11/09/2002 |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                      | UNIT | LOR | METHOD<br>BLANK       | EP031AW163<br>& BW88_SCS | EP031AW163<br>& BW88_DCS |            |  |  |  |  |  |  |
|                   |                                           |      |     | CHECKS AND SPIKES     |                          |                          |            |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1254                              | ug/L | 0.1 | <0.1                  | 78.0%                    | 84.8%                    |            |  |  |  |  |  |  |
| EP-031B-WS        | Aroclor 1260                              | ug/L | 0.1 | <0.1                  | ----                     | ----                     |            |  |  |  |  |  |  |
| <b>EP-031S-WS</b> | <b>ORGANOCHLORINE PESTICIDE SURROGATE</b> |      |     |                       |                          |                          |            |  |  |  |  |  |  |
| EP-031S-WS        | Dibromo-DDE                               | %    | 1   | 81                    | 88                       | 85                       |            |  |  |  |  |  |  |
| <b>EP-031T-WS</b> | <b>POLYCHLORINATED BIPHENYL SURROGATE</b> |      |     |                       |                          |                          |            |  |  |  |  |  |  |
| EP-031T-WS        | Decachlorobiphenyl                        | %    | 1   | 74                    | 81                       | 67                       |            |  |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:** P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 8  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** ELUTRIATE  
**No. of SAMPLES:** 5

## COMMENTS

Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.  
All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

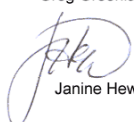
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## **LABORATORIES**

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 8  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                             |      |      | SAMPLE IDENTIFICATION |              |              |              |              |   |  |  |  |  |
|-------------------|---------------------------------------------|------|------|-----------------------|--------------|--------------|--------------|--------------|---|--|--|--|--|
|                   |                                             |      |      | Laboratory I.D.       | 5            | 6            | 7            | 8            | 9 |  |  |  |  |
|                   |                                             |      |      | Date Sampled          |              |              |              |              |   |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                        | UNIT | LOR  | Seawater Blank        | #1 Elutriate | #2 Elutriate | #3 Elutriate | #5 Elutriate |   |  |  |  |  |
| <b>EP-030A-WS</b> | <b>ORGANOPHOSPHORUS PESTICIDES</b>          |      |      |                       |              |              |              |              |   |  |  |  |  |
| EP-030A-WS        | Bromophos ethyl                             | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Carbofenthion                               | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Chlorfenvinphos (E)                         | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Chlorfenvinphos (Z)                         | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Chlorpyrifos                                | ug/L | 0.05 | <0.05                 | <0.05        | <0.05        | <0.05        | <0.05        |   |  |  |  |  |
| EP-030A-WS        | Chlorpyrifos methyl                         | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Demeton S-methyl                            | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Diazinon                                    | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Dichlorvos                                  | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Dimethoate                                  | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Ethion                                      | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Fenamiphos                                  | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Fenthion                                    | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Malathion                                   | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Methyl azinphos                             | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Monocrotophos                               | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Parathion                                   | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Parathion methyl                            | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Pirimiphos ethyl                            | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| EP-030A-WS        | Prothiophos                                 | ug/L | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |   |  |  |  |  |
| <b>EP-030S-WS</b> | <b>ORGANOPHOSPHORUS PESTICIDE SURROGATE</b> |      |      |                       |              |              |              |              |   |  |  |  |  |
| EP-030S-WS        | DEF                                         | %    | 1    | 13                    | 101          | 124          | 62           | 77           |   |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 8  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                             |      |      | SAMPLE IDENTIFICATION |                |                |            |  |  |  |  |  |  |
|-------------------|---------------------------------------------|------|------|-----------------------|----------------|----------------|------------|--|--|--|--|--|--|
|                   |                                             |      |      | Laboratory I.D.       | 100            | 101            | 102        |  |  |  |  |  |  |
|                   |                                             |      |      | Date Sampled          | 11/09/2002     | 11/09/2002     | 11/09/2002 |  |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                        | UNIT | LOR  | METHOD BLANK          | NEPO30W153 SCS | NEPO30W153 DCS |            |  |  |  |  |  |  |
|                   |                                             |      |      | CHECKS AND SPIKES     |                |                |            |  |  |  |  |  |  |
| <b>EP-030A-WS</b> | <b>ORGANOPHOSPHORUS PESTICIDES</b>          |      |      |                       |                |                |            |  |  |  |  |  |  |
| EP-030A-WS        | Bromophos ethyl                             | ug/L | 0.1  | <0.1                  | 77.9%          | 73.2%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Carbofenthion                               | ug/L | 0.1  | <0.1                  | 78.9%          | 77.3%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Chlorfenvinphos (E)                         | ug/L | 0.1  | <0.1                  | 78.0%          | 64.0%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Chlorfenvinphos (Z)                         | ug/L | 0.1  | <0.1                  | 66.7%          | 63.6%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Chlorpyrifos                                | ug/L | 0.05 | <0.05                 | 111%           | 108%           |            |  |  |  |  |  |  |
| EP-030A-WS        | Chlorpyrifos methyl                         | ug/L | 0.1  | <0.1                  | 86.2%          | 71.7%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Demeton S-methyl                            | ug/L | 0.1  | <0.1                  | 76.4%          | 85.5%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Diazinon                                    | ug/L | 0.1  | <0.1                  | 117%           | 110%           |            |  |  |  |  |  |  |
| EP-030A-WS        | Dichlorvos                                  | ug/L | 0.1  | <0.1                  | 70.3%          | 49.6%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Dimethoate                                  | ug/L | 0.1  | <0.1                  | 97.3%          | 96.7%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Ethion                                      | ug/L | 0.1  | <0.1                  | 72.9%          | 70.6%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Fenamiphos                                  | ug/L | 0.1  | <0.1                  | 62.2%          | 62.8%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Fenthion                                    | ug/L | 0.1  | <0.1                  | 92.0%          | 86.0%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Malathion                                   | ug/L | 0.1  | <0.1                  | 79.9%          | 76.2%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Methyl azinphos                             | ug/L | 0.1  | <0.1                  | 73.7%          | 64.4%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Monocrotophos                               | ug/L | 0.1  | <0.1                  | 82.3%          | 94.8%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Parathion                                   | ug/L | 0.1  | <0.1                  | 109%           | 103%           |            |  |  |  |  |  |  |
| EP-030A-WS        | Parathion methyl                            | ug/L | 0.1  | <0.1                  | 125%           | 118%           |            |  |  |  |  |  |  |
| EP-030A-WS        | Pirimiphos ethyl                            | ug/L | 0.1  | <0.1                  | 53.9%          | 61.7%          |            |  |  |  |  |  |  |
| EP-030A-WS        | Prothiophos                                 | ug/L | 0.1  | <0.1                  | 78.8%          | 73.3%          |            |  |  |  |  |  |  |
| <b>EP-030S-WS</b> | <b>ORGANOPHOSPHORUS PESTICIDE SURROGATE</b> |      |      |                       |                |                |            |  |  |  |  |  |  |
| EP-030S-WS        | DEF                                         | %    | 1    | 97                    | 84             | 88             |            |  |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:**  
P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 9  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** ELUTRIATE  
**No. of SAMPLES:** 5

## COMMENTS

Analysis conducted by ALS Sydney, NATA Accreditation No. 10918.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number.  
All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

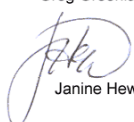
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## **LABORATORIES**

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 9  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                         |                 |      | SAMPLE IDENTIFICATION |              |              |              |              |  |  |  |  |  |
|-------------------|-----------------------------------------|-----------------|------|-----------------------|--------------|--------------|--------------|--------------|--|--|--|--|--|
|                   |                                         | Laboratory I.D. |      | 5                     | 6            | 7            | 8            | 9            |  |  |  |  |  |
|                   |                                         | Date Sampled    |      |                       |              |              |              |              |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                    | UNIT            | LOR  | Seawater Blank        | #1 Elutriate | #2 Elutriate | #3 Elutriate | #5 Elutriate |  |  |  |  |  |
| <b>EP-032B-WS</b> | <b>POLYNUCLEAR AROMATICS</b>            |                 |      |                       |              |              |              |              |  |  |  |  |  |
| EP-032B-WS        | 2-Methylcholanthrene                    | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | 2-Methylnaphthalene                     | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | 7.12-Dimethylbenz(a)anthracene          | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Acenaphthene                            | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Acenaphthylene                          | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Anthracene                              | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Benz(a)anthracene                       | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Benzo(a)pyrene                          | ug/L            | 0.05 | <0.05                 | <0.05        | <0.05        | <0.05        | <0.05        |  |  |  |  |  |
| EP-032B-WS        | Benzo(b)fluoranthene                    | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Benzo(e)pyrene                          | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Benzo(g,h,i)perylene                    | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Benzo(k)fluoranthene                    | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Chrysene                                | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Coronene                                | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Dibenz(a,h)anthracene                   | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Fluoranthene                            | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Fluorene                                | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Indeno(1,2,3-cd)pyrene                  | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | N-2-Fluorenyl acetamide                 | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Naphthalene                             | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Perylene                                | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Phenanthrene                            | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| EP-032B-WS        | Pyrene                                  | ug/L            | 0.1  | <0.1                  | <0.1         | <0.1         | <0.1         | <0.1         |  |  |  |  |  |
| <b>EP-032T-WS</b> | <b>POLYNUCLEAR AROMATICS SURROGATES</b> |                 |      |                       |              |              |              |              |  |  |  |  |  |
| EP-032T-WS        | 2-Fluorobiphenyl                        | %               | 1    | 83                    | 74           | 82           | 63           | 91           |  |  |  |  |  |
| EP-032T-WS        | Anthracene-d10                          | %               | 1    | 103                   | 106          | 104          | 112          | 106          |  |  |  |  |  |
| EP-032T-WS        | 4-Terphenyl-d14                         | %               | 1    | 115                   | 112          | 110          | 83           | 120          |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 9  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                         |      |      | SAMPLE IDENTIFICATION |                |                |            |            |  |  |  |  |  |
|-------------------|-----------------------------------------|------|------|-----------------------|----------------|----------------|------------|------------|--|--|--|--|--|
|                   |                                         |      |      | Laboratory I.D.       |                | 100            | 101        | 102        |  |  |  |  |  |
|                   |                                         |      |      | Date Sampled          |                | 11/09/2002     | 11/09/2002 | 11/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                    | UNIT | LOR  | METHOD BLANK          | NEPO32W113 SCS | NEPO32W113 DCS |            |            |  |  |  |  |  |
|                   |                                         |      |      | CHECKS AND SPIKES     |                |                |            |            |  |  |  |  |  |
| <b>EP-032B-WS</b> | <b>POLYNUCLEAR AROMATICS</b>            |      |      |                       |                |                |            |            |  |  |  |  |  |
| EP-032B-WS        | 2-Methylcholanthrene                    | ug/L | 0.1  | <0.1                  | 91.5%          | 86.7%          |            |            |  |  |  |  |  |
| EP-032B-WS        | 2-Methylnaphthalene                     | ug/L | 0.1  | <0.1                  | 85.6%          | 80.5%          |            |            |  |  |  |  |  |
| EP-032B-WS        | 7.12-Dimethylbenz(a)anthracene          | ug/L | 0.1  | <0.1                  | 59.4%          | 54.4%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Acenaphthene                            | ug/L | 0.1  | <0.1                  | 93.8%          | 88.3%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Acenaphthylene                          | ug/L | 0.1  | <0.1                  | 96.7%          | 89.9%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Anthracene                              | ug/L | 0.1  | <0.1                  | 94.2%          | 88.9%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benz(a)anthracene                       | ug/L | 0.1  | <0.1                  | 101%           | 94.7%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benzo(a)pyrene                          | ug/L | 0.05 | <0.05                 | 99.8%          | 95.9%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benzo(b)fluoranthene                    | ug/L | 0.1  | <0.1                  | 83.6%          | 85.3%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benzo(e)pyrene                          | ug/L | 0.1  | <0.1                  | 96.8%          | 94.4%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benzo(g,h,i)perylene                    | ug/L | 0.1  | <0.1                  | 95.8%          | 93.5%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Benzo(k)fluoranthene                    | ug/L | 0.1  | <0.1                  | 96.9%          | 110%           |            |            |  |  |  |  |  |
| EP-032B-WS        | Chrysene                                | ug/L | 0.1  | <0.1                  | 98.6%          | 97.5%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Coronene                                | ug/L | 0.1  | <0.1                  | 93.9%          | 92.8%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Dibenz(a,h)anthracene                   | ug/L | 0.1  | <0.1                  | 98.1%          | 95.1%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Fluoranthene                            | ug/L | 0.1  | <0.1                  | 94.0%          | 91.9%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Fluorene                                | ug/L | 0.1  | <0.1                  | 97.4%          | 93.3%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Indeno(1,2,3-cd)pyrene                  | ug/L | 0.1  | <0.1                  | 96.7%          | 94.0%          |            |            |  |  |  |  |  |
| EP-032B-WS        | N-2-Fluorenyl acetamide                 | ug/L | 0.1  | <0.1                  | 744%           | 604%           |            |            |  |  |  |  |  |
| EP-032B-WS        | Naphthalene                             | ug/L | 0.1  | <0.1                  | 86.8%          | 83.6%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Perylene                                | ug/L | 0.1  | <0.1                  | 98.6%          | 95.4%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Phenanthrene                            | ug/L | 0.1  | <0.1                  | 96.2%          | 92.2%          |            |            |  |  |  |  |  |
| EP-032B-WS        | Pyrene                                  | ug/L | 0.1  | <0.1                  | 95.0%          | 92.3%          |            |            |  |  |  |  |  |
| <b>EP-032T-WS</b> | <b>POLYNUCLEAR AROMATICS SURROGATES</b> |      |      |                       |                |                |            |            |  |  |  |  |  |
| EP-032T-WS        | 2-Fluorobiphenyl                        | %    | 1    | 98                    | 94             | 85             |            |            |  |  |  |  |  |
| EP-032T-WS        | Anthracene-d10                          | %    | 1    | 113                   | 105            | 96             |            |            |  |  |  |  |  |
| EP-032T-WS        | 4-Terphenyl-d14                         | %    | 1    | 111                   | 99             | 92             |            |            |  |  |  |  |  |

# CERTIFICATE OF ANALYSIS

**ALS Environmental**



**CONTACT:** MR H PARSONS  
**CLIENT:** EARTHTECH CONSULTANTS (Q) P/L  
**ADDRESS:** P O BOX 2034  
MANSFIELD QLD 4122  
**ORDER No.:** 3729  
**PROJECT:** ME2422

**Batch:** EB48848  
**Sub Batch:** 10  
**LABORATORY:** BRISBANE  
**DATE RECEIVED:** 11/09/2002  
**DATE COMPLETED:** 25/09/2002  
**SAMPLE TYPE:** SOIL  
**No. of SAMPLES:** 4

## COMMENTS

Results apply to sample(s) as submitted. Samples analysed on an as received basis. Results reported on a dry weight basis. Low surrogate recoveries due to clay sample matrix.

## NOTES

This is the Final Report and supersedes any preliminary reports with this batch number. All pages of this report have been checked and approved for release.

## ISSUING LABORATORY: BRISBANE

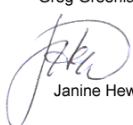
**Address**  
32 Shand Street  
Stafford QLD 4053  
Australia

**Phone:** 61-7-3243 7222  
**Fax:** 61-7-3243 7254  
**Email:** geoff.lecornu@alsenviro.com

No. 825

**Signatory**

  
Greg Greenland

  
Janine Hew

  
Peta Sullivan

## LABORATORIES

### **AUSTRALASIA**

Brisbane  
Melbourne  
Sydney  
Newcastle  
Mumbai  
Hong Kong  
Singapore  
Kuala Lumpur  
Auckland  
Bogor

### **AMERICAS**

Vancouver  
Santiago  
Antofagasta  
Lima

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.



**Batch:** EB48848  
**Sub Batch:** 10  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# CERTIFICATE OF ANALYSIS



|                   |                                              |       |     | SAMPLE IDENTIFICATION |                     |                     |                     |            |  |  |  |  |  |
|-------------------|----------------------------------------------|-------|-----|-----------------------|---------------------|---------------------|---------------------|------------|--|--|--|--|--|
|                   |                                              |       |     | Laboratory I.D.       | 1                   | 2                   | 3                   | 4          |  |  |  |  |  |
|                   |                                              |       |     | Date Sampled          | 07/09/2002          | 07/09/2002          | 07/09/2002          | 07/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                         | UNIT  | LOR | L1455/2 #1<br>0-0.3   | L1456/2 #2<br>0-0.3 | L1457/2 #3<br>0-0.3 | L1458/2 #5<br>0-0.3 |            |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)             | %     | 0.1 | 0.9                   | 2.9                 | 2.7                 | 0.5                 |            |  |  |  |  |  |
| <b>EP-071-SS</b>  | <b>TOTAL PETROLEUM HYDROCARBONS</b>          |       |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-071-SS         | C6 - C9 Fraction                             | mg/kg | 2   | <2                    | <2                  | <2                  | <2                  |            |  |  |  |  |  |
| EP-071-SS         | C10 - C14 Fraction                           | mg/kg | 50  | <50                   | <50                 | <50                 | <50                 |            |  |  |  |  |  |
| EP-071-SS         | C15 - C28 Fraction                           | mg/kg | 100 | <100                  | <100                | <100                | <100                |            |  |  |  |  |  |
| EP-071-SS         | C29 - C36 Fraction                           | mg/kg | 100 | <100                  | <100                | <100                | <100                |            |  |  |  |  |  |
| <b>EP-080S-SS</b> | <b>VOLATILE TPH/BTEX COMPOUND SURROGATES</b> |       |     |                       |                     |                     |                     |            |  |  |  |  |  |
| EP-080S-SS        | 1,2-Dichloroethane-D4                        | %     | 1   | 48                    | 42                  | 58                  | 58                  |            |  |  |  |  |  |
| EP-080S-SS        | Toluene-D8                                   | %     | 1   | 64                    | 55                  | 78                  | 72                  |            |  |  |  |  |  |
| EP-080S-SS        | 4-Bromofluorobenzene                         | %     | 1   | 48                    | 39                  | 56                  | 53                  |            |  |  |  |  |  |

**Batch:** EB48848  
**Sub Batch:** 10  
**Date of Issue:** 15/11/2002  
**Client:** EARTHTECH CONSULTANTS (Q) P/L  
**Client Reference:** ME2422

# QUALITY CONTROL REPORT



|                   |                                              |       |     | SAMPLE IDENTIFICATION |                       |                       |            |            |  |  |  |  |  |
|-------------------|----------------------------------------------|-------|-----|-----------------------|-----------------------|-----------------------|------------|------------|--|--|--|--|--|
|                   |                                              |       |     | Laboratory I.D.       |                       | 200                   | 402        | 403        |  |  |  |  |  |
|                   |                                              |       |     | Date Sampled          |                       | 11/09/2002            | 11/09/2002 | 11/09/2002 |  |  |  |  |  |
| METHOD            | ANALYSIS DESCRIPTION                         | UNIT  | LOR | Method<br>Blank 1     | TPHT3671<br>SCS % Rec | TPHT3671<br>DCS % Rec |            |            |  |  |  |  |  |
|                   |                                              |       |     | CHECKS AND SPIKES     |                       |                       |            |            |  |  |  |  |  |
| EA-055            | Moisture Content (dried @ 103°C)             | %     | 0.1 | ----                  | ----                  | ----                  |            |            |  |  |  |  |  |
| <b>EP-071-SS</b>  | <b>TOTAL PETROLEUM HYDROCARBONS</b>          |       |     |                       |                       |                       |            |            |  |  |  |  |  |
| EP-071-SS         | C6 - C9 Fraction                             | mg/kg | 2   | <2                    | 98.6%                 | 89.4%                 |            |            |  |  |  |  |  |
| EP-071-SS         | C10 - C14 Fraction                           | mg/kg | 50  | <50                   | 115%                  | 115%                  |            |            |  |  |  |  |  |
| EP-071-SS         | C15 - C28 Fraction                           | mg/kg | 100 | <100                  | 96.4%                 | 96.8%                 |            |            |  |  |  |  |  |
| EP-071-SS         | C29 - C36 Fraction                           | mg/kg | 100 | <100                  | ----                  | ----                  |            |            |  |  |  |  |  |
| <b>EP-080S-SS</b> | <b>VOLATILE TPH/BTEX COMPOUND SURROGATES</b> |       |     |                       |                       |                       |            |            |  |  |  |  |  |
| EP-080S-SS        | 1,2-Dichloroethane-D4                        | %     | 1   | 114                   | 101                   | 111                   |            |            |  |  |  |  |  |
| EP-080S-SS        | Toluene-D8                                   | %     | 1   | 99                    | 98                    | 96                    |            |            |  |  |  |  |  |
| EP-080S-SS        | 4-Bromofluorobenzene                         | %     | 1   | 96                    | 102                   | 107                   |            |            |  |  |  |  |  |

***This page intentionally left blank.***

PORT OF AIRLIE MARINA DEVELOPMENT

D.3 Quality Control Report

***This page intentionally left blank.***



## ORGANICS QUALITY CONTROL REPORT

**BATCH No.EB48848**

**DATE BATCH RECEIVED : 11/09/02**

**CLIENT : EARTHTECH**

**DATE BATCH COMPLETED : 24/09/02**

**Where applicable, internal standards are added to sample extracts prior to instrumental analysis.**

**Absolute peak areas and retention times fall within the criteria specified in the individual methods.**

| Method Code | Test          | Matrix | Method Reference  |             | QC Lot Number | Date Samples Extracted | Date Samples Analysed |
|-------------|---------------|--------|-------------------|-------------|---------------|------------------------|-----------------------|
|             |               |        | Extraction        | Analysis    |               |                        |                       |
| EP-071      | TPH-Volatile  | Soil   | USEPA 5030 A      | USEPA 8260A | VOCS3716      | 18/09/02               | 18/09/02              |
|             | -Semivolatile | Soil   | Tumbler           | USEPA 8015A | TPHT3716      | 19/09/02               | 19/09/02              |
| EP-090      | Organotin     | Soil   | Leach/Sep. Funnel | In-house    | TBTS488       | 17/09/02               | 18/09/02              |
|             |               | Water  | Sep. Funnel       | In-house    | TBTW308       | 17/09/02               | 17/09/02              |

# BATCH QUALITY CONTROL

## ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

QC Lot No. : VOCS3716  
MATRIX : Soil

ANALYST: SHANE JIMMINK

### Volatile Components

| COMPOUND | Level Of  | Blank | Spike | SPIKE RESULTS |       |      |     | Control Limits |      |     |
|----------|-----------|-------|-------|---------------|-------|------|-----|----------------|------|-----|
|          | Reporting | Conc  | Conc  | SCS           | DCS   | Av.  | RPD | Recovery       |      | RPD |
|          | (LOR)     |       |       | Conc          | Conc  | Rec. |     | (%)            |      |     |
|          | mg/kg     | mg/kg | mg/kg | mg/kg         | mg/kg | %    | %   | Low            | High | %   |
| C6-C9    | 2.0       | <LOR  | 20    | 19.7          | 17.9  | 94   | 10  | 91             | 111  | 20  |

### COMMENTS :

- 1) The control limits are based on ALS laboratory statistical data. (Method QWI-ORG/06)
- 2) \* : Recovery or RPD falls outside of the recommended control limits.

## BATCH QUALITY CONTROL

### ALS EP-071 : Total Petroleum Hydrocarbons by Fractions

Matrix : Soil

Analyst : J. Boden

QC Lot : TPHT3716

#### Semivolatile Components

| COMPOUND | Level Of  | Blank | Spike | Spike Results |       |      |     | Control Limits |      |     |
|----------|-----------|-------|-------|---------------|-------|------|-----|----------------|------|-----|
|          | Reporting | Conc. | Conc. | SCS           | DCS   | Av.  | RPD | Recovery       |      | RPD |
|          | (LOR)     |       |       | Conc.         | Conc. | Rec. |     | %              |      |     |
|          | mg/kg     | mg/kg | mg/kg | mg/kg         | mg/kg | %    | %   | Low            | High | %   |
| C10-C14  | 50        | <LOR  | 300   | 296           | 300   | 99   | 1   | 80             | 130  | 20  |
| C15-C28  | 100       | <LOR  | 560   | 604           | 612   | 109  | 1   | 75             | 115  | 20  |
| C29-C36  | 50        | <LOR  | N/A   | N/A           | N/A   | N/A  | N/A | 60             | 120  | 20  |

#### COMMENTS:

- 1) The control limits are based on ALS laboratory statistical data (Method QWI-ORG/07).
- 2) \* : Recovery or RPD falls outside the recommended control limit.

# BATCH QUALITY CONTROL

## ALS EP-090 : ORGANOTINS

QC LOT No. : TBTS488

ANALYST: T. Devantier

MATRIX: Sediment

| COMPOUND                  | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |     | Control Limits |      |     |
|---------------------------|---------------|----------------|------------------|-------------|-----------------|-----|----------------|------|-----|
|                           |               |                | SCS<br>Conc      | DCS<br>Conc | Average<br>Rec. | RPD | Rec.           |      | RPD |
|                           | ug Sn/kg      | ug Sn/kg       | ug Sn/kg         | ug Sn/kg    | %               | %   | Low            | High | %   |
| <b>Surrogate Recovery</b> |               |                |                  |             |                 |     |                |      |     |
| Tripropyltin              | 25.4          | 25             | 23.6             | 22.0        | 95              | 1   | 70             | 120  | 20  |
| <b>Target Compounds</b>   |               |                |                  |             |                 |     |                |      |     |
| Monobutyltin              | <0.5          | 25             | 11.4             | 12.8        | 48              | 12  | 20             | 130  | 50  |
| Dibutyltin                | <0.5          | 25             | 14.9             | 15.2        | 60              | 2   | 40             | 90   | 35  |
| Tributyltin               | <0.2          | 25             | 25.3             | 23.5        | 98              | 7   | 60             | 120  | 20  |

### COMMENTS:

1) \* : Recovery or RPD falls outside of the recommended control limits.

# BATCH QUALITY CONTROL

## ALS EP-090 : ORGANOTINS

QC LOT No. : TBTW308 TEST CODE: EP090A, Soluble Organotin  
 MATRIX: Saline Water ANALYST: J Boden

| COMPOUND                  | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |     | Control Limits |      |     |
|---------------------------|---------------|----------------|------------------|-------------|-----------------|-----|----------------|------|-----|
|                           |               |                | SCS<br>Conc      | DCS<br>Conc | Average<br>Rec. | RPD | Rec.           |      | RPD |
|                           | ng Sn/L       | ng Sn/L        | ng Sn/L          | ng Sn/L     | %               | %   | Low            | High | %   |
| <b>Surrogate Recovery</b> |               |                |                  |             |                 |     |                |      |     |
| Tripropyltin              | 1324          | 1470           | 1294             | 1306        | 89              | 1   | 80             | 115  | 20  |
| <b>Target Compounds</b>   |               |                |                  |             |                 |     |                |      |     |
| Monobutyltin              | <2            | 735            | 735              | 632         | 93              | 15  | 55             | 115  | 35  |
| Dibutyltin                | <2            | 735            | 668              | 735         | 95              | 10  | 55             | 115  | 35  |
| Tributyltin               | <2            | 735            | 612              | 526         | 77 *            | 15  | 80             | 115  | 20  |

### COMMENTS:

1) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                    |           |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|--------------------|-----------|----------------|------|--------|
| ALS EP-030: Organophosphorus Pesticides                      |               |                |                  |             |                    |           |                |      |        |
| QC LOT No. :                                                 |               | NEP030S-41     |                  |             | ANALYST N. MAHABIR |           |                |      |        |
| MATRIX:                                                      |               | Soils          |                  |             |                    |           |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                    |           | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec.    | RPD       | Rec.           |      | RPD    |
|                                                              | ug/kg         | ug/kg          | %                |             | %                  | %         | Low            | High | %      |
| EP-030A : OP Pesticides                                      |               |                |                  |             |                    |           |                |      |        |
| Bromophos ethyl                                              | <5.0          | 50.0           | 80.2             | 78.6        | 79.4               | 2.02      | 53.5           | 121  | 0 - 20 |
| Carbofenthion                                                | <5.0          | 50.0           | 97.8             | 95.3        | 96.6               | 2.59      | 0              | 126  | 0 - 20 |
| Chlorfenvinphos (E)                                          | <5.0          | 5.0            | 67               | 68          | 67.5               | 1.48      | 46.3           | 104  | 0 - 20 |
| Chlorfenvinphos (Z)                                          | <5.0          | 50.0           | 68.2             | 69.6        | 68.9               | 2.03      | 46.6           | 122  | 0 - 20 |
| Chlorpyrifos                                                 | <5.0          | 50.0           | 90.8             | 89.8        | 90.3               | 1.11      | 44.6           | 130  | 0 - 20 |
| Chlorpyrifos methyl                                          | <5.0          | 50.0           | 19.7             | 15          | 17.4    *          | 27.1    * | 49.1           | 119  | 0 - 20 |
| Demeton S-methyl                                             | <5.0          | 50.0           | 76.4             | 71.8        | 74.1               | 6.21      | 0              | 151  | 0 - 20 |
| Diazinon                                                     | <5.0          | 50.0           | 78.1             | 73.6        | 75.9               | 5.93      | 38.1           | 144  | 0 - 20 |
| Dichlorvos                                                   | <5.0          | 50.0           | 87.5             | 84.9        | 86.2               | 3.02      | 37.1           | 129  | 0 - 20 |
| Dimethoate                                                   | <5.0          | 50.0           | 76.2             | 74.9        | 75.6               | 1.72      | 27.3           | 125  | 0 - 20 |
| Ethion                                                       | <5.0          | 50.0           | 93.3             | 88          | 90.7               | 5.85      | 28.5           | 137  | 0 - 20 |
| Fenamiphos                                                   | <5.0          | 50.0           | 83.7             | 86.5        | 85.1               | 3.29      | 45.7           | 118  | 0 - 20 |
| Fenthion                                                     | <5.0          | 50.0           | 82.5             | 79.1        | 80.8               | 4.21      | 0              | 131  | 0 - 20 |
| Malathion                                                    | <5.0          | 50.0           | 98.2             | 94.9        | 96.6               | 3.42      | 37.8           | 123  | 0 - 20 |
| Methyl azinphos                                              | <5.0          | 50.0           | 68.3             | 78.4        | 73.4               | 13.8      | 0              | 108  | 0 - 20 |
| Monocrotophos                                                | <5.0          | 50.0           | 84.4             | 98.3        | 91.4               | 15.2      | 0              | 125  | 1 - 20 |
| Parathion                                                    | <5.0          | 50.0           | 99.2             | 98.3        | 98.8               | 0.91      | 43.8           | 136  | 0 - 20 |
| Parathion methyl                                             | <5.0          | 50.0           | 93.3             | 89.2        | 91.3               | 4.49      | 40             | 125  | 0 - 20 |
| Pirimiphos ethyl                                             | <5.0          | 50.0           | 81.1             | 78.9        | 80                 | 2.75      | 43.8           | 136  | 0 - 20 |
| Prothiophos                                                  | <5.0          | 50.0           | 89               | 86.9        | 88                 | 2.39      | 42.4           | 134  | 0 - 20 |
| EP-030S : OP Surrogate                                       |               |                |                  |             |                    |           |                |      |        |
| DEF                                                          | 72.6%         | 1.0            | 85.3             | 80.3        | 82.8               | 6.04      | 43.3           | 116  | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.



## ORGANICS QUALITY CONTROL REPORT

**BATCH NO:** EB48848

**DATE BATCH RECEIVED:** 17/09/02

**CLIENT:** ALS Brisbane

**DATE BATCH COMPLETED:** 25/09/02

### PROJECT:

| Method Code | Test        | Matrix | Method Reference |             | QC Lot Number | Date Samples Extracted | Date Samples Analysed |
|-------------|-------------|--------|------------------|-------------|---------------|------------------------|-----------------------|
|             |             |        | Extraction       | Analysis    |               |                        |                       |
| EP-030      | OP Pest.    | Soil   | Tumbler          | USEPA 8141A | NEP030S-41    | 18/09/02               | 21/09/02              |
| EP-030      | OP Pest.    | Water  | USEPA 3510B      | USEPA 8141A | NEP030W-153   | 18/09/02               | 21/09/02              |
| EP-031      | OC Pest.    | Soil   | Tumbler          | USEPA 8081A | NEP031AS-70   | 18/09/02               | 21/09/02              |
| EP-031      | OC Pest.    | Water  | USEPA 3510B      | USEPA 8081A | NEP031AW-163  | 18/09/02               | 22/09/02              |
| EP-031      | PCB         | Soil   | Tumbler          | USEPA 8082  | NEP031BS-58   | 18/09/02               | 21/09/02              |
| EP-031      | PCB         | Water  | USEPA 3510B      | USEPA 8082  | NEP031BW-88   | 18/09/02               | 22/09/02              |
| EP-032      | PAH/Phenols | Soil   | Tumbler          | USEPA 8270C | NEP032S-63    | 18/09/02               | 20/09/02              |
| EP-032      | PAH/Phenols | Water  | USEPA 3510B      | USEPA 8270C | NEP032W-113   | 20/09/02               | 21/09/02              |

Where applicable, internal standards are added to sample extracts prior to instrumental analysis. Absolute peak areas and retention times fall within the criteria specified in the individual methods. Continuing Calibration (CC) standards are run at the frequency of 1 in every 20 samples.

Abbreviations: SV = semivolatile, V = volatile

\*: In-house methods

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                    |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|--------------------|----------------|------|--------|
| ALS EP-031A: Organochlorine Pesticides                       |               |                |                  |             |                 |                    |                |      |        |
| QC LOT No. :                                                 |               |                | NEP031AS-70      |             |                 | ANALYST N. MAHABIR |                |      |        |
| MATRIX:                                                      |               | Soils          |                  |             |                 |                    |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                    | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD                | Rec.           |      | RPD    |
|                                                              | ug/kg         | ug/kg          | %                |             | %               | %                  | Low            | High | %      |
| EP-031A : OC Pesticides                                      |               |                |                  |             |                 |                    |                |      |        |
| Aldrin                                                       | <0.25         | 5.0            | 80               | 70          | 75              | 13.3               | 5.41           | 135  | 0 - 20 |
| BHC (alpha)                                                  | <0.25         | 5.0            | 86               | 81          | 83.5            | 5.99               | 3              | 153  | 0 - 20 |
| BHC (beta)                                                   | <0.25         | 5.0            | 77               | 75          | 76              | 2.63               | 0              | 164  | 0 - 20 |
| BHC (delta)                                                  | <0.25         | 5.0            | 77               | 81          | 79              | 5.06               | 3.81           | 159  | 0 - 20 |
| DDD                                                          | <0.25         | 5.0            | 75               | 75          | 75              | 0                  | 7.24           | 157  | 0 - 20 |
| DDE                                                          | <0.25         | 5.0            | 82               | 77          | 79.5            | 6.29               | 14.5           | 143  | 0 - 20 |
| DDT                                                          | <0.25         | 5.0            | 50               | 45          | 47.5            | 10.5               | 7.78           | 185  | 0 - 20 |
| Dieldrin                                                     | <0.25         | 5.0            | 98               | 93          | 95.5            | 5.24               | 7              | 150  | 0 - 20 |
| Endosulfan I                                                 | <0.25         | 5.0            | 84               | 81          | 82.5            | 3.64               | 12.4           | 144  | 0 - 20 |
| Endosulfan II                                                | <0.25         | 5.0            | 88               | 97          | 92.5            | 9.73               | 19.2           | 142  | 0 - 20 |
| Endosulfan sulfate                                           | <0.25         | 5.0            | 100              | 95          | 97.5            | 5.13               | 34.9           | 166  | 0 - 20 |
| Endrin                                                       | <0.25         | 5.0            | 65               | 60          | 62.5            | 8                  | 18.7           | 198  | 0 - 20 |
| Endrin aldehyde                                              | <0.25         | 5.0            | 95               | 89          | 92              | 6.52               | 9.74           | 121  | 0 - 20 |
| Endrin Ketone                                                | <0.25         | 5.0            | 112              | 105         | 109             | 6.45               | 38.2           | 159  | 0 - 20 |
| Heptachlor                                                   | <0.25         | 5.0            | 99               | 97          | 98              | 2.04               | 4.23           | 176  | 0 - 20 |
| Heptachlor epoxide                                           | <0.25         | 5.0            | 81               | 80          | 80.5            | 1.24               | 5.77           | 152  | 1 - 20 |
| Hexachlorobenzene (HCB)                                      | <0.25         | 5.0            | 86               | 81          | 83.5            | 5.99               | 0              | 140  | 0 - 20 |
| Lindane (BHC - Gamma)                                        | <0.25         | 5.0            | 77               | 73          | 75              | 5.33               | 5.68           | 175  | 0 - 20 |
| Methoxychlor                                                 | <0.25         | 5.0            | 98               | 95          | 96.5            | 3.11               | 28.8           | 170  | 0 - 20 |
| Chlordane (cis)                                              | <0.25         | 5.0            | 91               | 88          | 89.5            | 3.35               | 4.08           | 146  | 0 - 20 |
| Chlordane (trans)                                            | <0.25         | 5.0            | 91               | 87          | 89              | 4.49               | 11.6           | 137  | 0 - 20 |
| EP-031S : OC Surrogate                                       |               |                |                  |             |                 |                    |                |      |        |
| Dibromo-DDE                                                  | 107%          | 5.0            | 99               | 104         | 102             | 4.93               | 36.4           | 141  | 0 - 20 |

**COMMENTS:**

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                    |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|--------------------|----------------|------|--------|
| ALS EP-030: Organophosphorus Pesticides                      |               |                |                  |             |                 |                    |                |      |        |
| QC LOT No. :                                                 |               | NEP030W-153    |                  |             |                 | ANALYST N. MAHABIR |                |      |        |
| MATRIX:                                                      |               | Waters         |                  |             |                 |                    |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                    | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD                | Rec.           |      | RPD    |
|                                                              | ug/L          | ug/L           | %                |             | %               | %                  | Low            | High | %      |
| EP-030A : OP Pesticides                                      |               |                |                  |             |                 |                    |                |      |        |
| Bromophos ethyl                                              | <0.1          | 1.0            | 77.9             | 73.2        | 75.6            | 6.22               | 42             | 121  | 0 - 20 |
| Carbofenthion                                                | <0.1          | 1.0            | 78.9             | 77.3        | 78.1            | 2.05               | 32.9           | 124  | 0 - 20 |
| Chlorfenvinphos (E)                                          | <0.1          | 0.1            | 78               | 64          | 71              | 19.7               | 38.2           | 119  | 0 - 20 |
| Chlorfenvinphos (Z)                                          | <0.1          | 1.0            | 66.7             | 63.6        | 65.2            | 4.76               | 42.2           | 115  | 0 - 20 |
| Chlorpyrifos                                                 | <0.05         | 1.0            | 111              | 108         | 110             | 2.74               | 43.4           | 114  | 0 - 20 |
| Chlorpyrifos methyl                                          | <0.1          | 1.0            | 86.2             | 71.7        | 79              | 18.4               | 45.5           | 121  | 0 - 20 |
| Demeton S-methyl                                             | <0.1          | 1.0            | 76.4             | 85.5        | 81              | 11.2               | 31.2           | 133  | 0 - 20 |
| Diazinon                                                     | <0.1          | 1.0            | 117              | 110         | 114             | 6.17               | 57.4           | 117  | 0 - 20 |
| Dichlorvos                                                   | <0.1          | 1.0            | 70.3             | 49.6        | 60              | 34.5 *             | 38.6           | 138  | 0 - 20 |
| Dimethoate                                                   | <0.1          | 1.0            | 97.3             | 96.7        | 97              | 0.62               | 39.1           | 119  | 0 - 20 |
| Ethion                                                       | <0.1          | 1.0            | 72.9             | 70.6        | 71.8            | 3.21               | 37.8           | 116  | 0 - 20 |
| Fenamiphos                                                   | <0.1          | 1.0            | 62.2             | 62.8        | 62.5            | 0.96               | 33.6           | 117  | 0 - 20 |
| Fenthion                                                     | <0.1          | 1.0            | 92               | 86          | 89              | 6.74               | 41.6           | 121  | 0 - 20 |
| Malathion                                                    | <0.1          | 1.0            | 79.9             | 76.2        | 78.1            | 4.74               | 45.6           | 119  | 0 - 20 |
| Methyl azinphos                                              | <0.1          | 1.0            | 73.7             | 64.4        | 69.1            | 13.5               | 40.2           | 113  | 0 - 20 |
| Monocrotophos                                                | <0.1          | 1.0            | 82.3             | 94.8        | 88.6            | 14.1               | 0              | 98.1 | 1 - 20 |
| Parathion                                                    | <0.1          | 1.0            | 109              | 103         | 106             | 5.66               | 47.5           | 122  | 0 - 20 |
| Parathion methyl                                             | <0.1          | 1.0            | 125              | 118         | 122             | 5.76               | 53.4           | 129  | 0 - 20 |
| Pirimiphos ethyl                                             | <0.1          | 1.0            | 53.9             | 61.7        | 57.8            | 13.5               | 39.9           | 123  | 0 - 20 |
| Prothiophos                                                  | <0.1          | 1.0            | 78.8             | 73.3        | 76.1            | 7.23               | 38.6           | 114  | 0 - 20 |
| EP-030S : OP Surrogate                                       |               |                |                  |             |                 |                    |                |      |        |
| DEF                                                          | 96.6%         | 1.0            | 84.2             | 87.9        | 86.1            | 4.3                | 52.8           | 116  | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |                 |                |                  |             |                 |                    |                |      |        |
|--------------------------------------------------------------|-----------------|----------------|------------------|-------------|-----------------|--------------------|----------------|------|--------|
| ALS EP-031B: Polychlorinated Biphenyls                       |                 |                |                  |             |                 |                    |                |      |        |
| OC QC LOT No. :                                              |                 | NEP031BS-58    |                  |             |                 | ANALYST N. MAHABIR |                |      |        |
| MATRIX:                                                      |                 | Soils          |                  |             |                 |                    |                |      |        |
| COMPOUND                                                     | Blank<br>Conc   | Spike<br>Level | SPIKE QC RESULTS |             |                 |                    | Control Limits |      |        |
|                                                              |                 |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD                | Rec.           |      | RPD    |
|                                                              | ug/kg           | ug/kg          | %                |             | %               | %                  | Low            | High | %      |
|                                                              | EP-031B : PCB'S |                |                  |             |                 |                    |                |      |        |
| Aroclor 1254                                                 | <2.5            | 50.0           | 81.3             | 82.5        | 81.9            | 1.47               | 58.8           | 116  | 0 - 20 |
| EP-031T : PCB Surrogate                                      |                 |                |                  |             |                 |                    |                |      |        |
| Decachlorobiphenyl                                           | 71%             | 5.0            | 73               | 71          | 72              | 2.78               | 58.7           | 123  | 0 - 20 |

- COMMENTS:
- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
  - 2) The control limits on RPD (relative percent deviation) are fixed.
  - 3) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                    |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|--------------------|----------------|------|--------|
| ALS EP-031A: Organochlorine Pesticides                       |               |                |                  |             |                 |                    |                |      |        |
| QC LOT No. :                                                 |               | NEP031AW-163   |                  |             |                 | ANALYST N. MAHABIR |                |      |        |
| MATRIX:                                                      |               | Waters         |                  |             |                 |                    |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                    | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD                | Rec.           |      | RPD    |
|                                                              | ug/L          | ug/L           | %                |             | %               | %                  | Low            | High | %      |
| EP-031A : OC Pesticides                                      |               |                |                  |             |                 |                    |                |      |        |
| Aldrin                                                       | <0.01         | 0.1            | 87               | 85          | 86              | 2.33               | 0              | 132  | 0 - 20 |
| BHC (alpha)                                                  | <0.01         | 0.1            | 64               | 65          | 64.5            | 1.55               | 0              | 160  | 0 - 20 |
| BHC (beta)                                                   | <0.01         | 0.1            | 84               | 84          | 84              | 0                  | 0              | 159  | 0 - 20 |
| BHC (delta)                                                  | <0.01         | 0.1            | 78               | 84          | 81              | 7.41               | 0              | 183  | 0 - 20 |
| DDD                                                          | <0.01         | 0.1            | 65               | 65          | 65              | 0                  | 1.44           | 159  | 0 - 20 |
| DDE                                                          | <0.01         | 0.1            | 81               | 79          | 80              | 2.5                | 5.22           | 144  | 0 - 20 |
| DDT                                                          | <0.01         | 0.1            | 44               | 45          | 44.5            | 2.25               | 33.3           | 154  | 0 - 20 |
| Dieldrin                                                     | <0.01         | 0.1            | 89               | 86          | 87.5            | 3.43               | 0              | 173  | 0 - 20 |
| Endosulfan I                                                 | <0.01         | 0.1            | 76               | 82          | 79              | 7.59               | 0              | 156  | 0 - 20 |
| Endosulfan II                                                | <0.01         | 0.1            | 89               | 87          | 88              | 2.27               | 21.3           | 129  | 0 - 20 |
| Endosulfan sulfate                                           | <0.01         | 0.1            | 94               | 97          | 95.5            | 3.14               | 2.57           | 198  | 0 - 20 |
| Endrin                                                       | <0.01         | 0.1            | 59               | 53          | 56              | 10.7               | 3.48           | 170  | 0 - 20 |
| Endrin aldehyde                                              | <0.01         | 0.1            | 87               | 80          | 83.5            | 8.38               | 3.52           | 116  | 0 - 20 |
| Endrin Ketone                                                | <0.01         | 0.1            | 127              | 128         | 128             | 0.78               | 0              | 175  | 0 - 20 |
| Heptachlor                                                   | <0.005        | 0.1            | 85               | 82          | 83.5            | 3.59               | 3.11           | 167  | 0 - 20 |
| Heptachlor epoxide                                           | <0.01         | 0.1            | 79               | 79          | 79              | 0                  | 0              | 147  | 1 - 20 |
| Hexachlorobenzene (HCB)                                      | <0.01         | 0.1            | 62               | 63          | 62.5            | 1.6                | 0              | 125  | 0 - 20 |
| Lindane (BHC - Gamma)                                        | <0.01         | 0.1            | 78               | 79          | 78.5            | 1.27               | 0              | 170  | 0 - 20 |
| Methoxychlor                                                 | <0.01         | 0.1            | 97               | 94          | 95.5            | 3.14               | 43.6           | 127  | 0 - 20 |
| Chlordane (cis)                                              | <0.01         | 0.1            | 83               | 82          | 82.5            | 1.21               | 0              | 156  | 0 - 20 |
| Chlordane (trans)                                            | <0.01         | 0.1            | 83               | 82          | 82.5            | 1.21               | 0              | 168  | 0 - 20 |
| EP-031S : OC Surrogate                                       |               |                |                  |             |                 |                    |                |      |        |
| Dibromo-DDE                                                  | 81%           | 0.1            | 88               | 85          | 86.5            | 3.47               | 0              | 163  | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                   |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|-------------------|----------------|------|--------|
| ALS EP-032 : PAH's & Phenolic Compounds                      |               |                |                  |             |                 |                   |                |      |        |
| QC LOT No. :                                                 |               | NEP032S-63     |                  |             |                 | ANALYST R. AYOUBI |                |      |        |
| MATRIX:                                                      |               | Soils          |                  |             |                 |                   |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                   | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD               | Rec.           |      | RPD    |
|                                                              | ug/kg         | ug/kg          | %                |             | %               | %                 | Low            | High | %      |
| EP-032A-SS : PHENOLS                                         |               |                |                  |             |                 |                   |                |      |        |
| 2-Chlorophenol                                               | <5.0          | 100.0          | 103              | 100         | 102             | 2.96              | 22.6           | 130  | 0 - 20 |
| 4-Chloro-3-Methylphenol                                      | <5.0          | 100.0          | 122              | 108         | 115             | 12.2              | 41.7           | 125  | 0 - 20 |
| m-Cresol                                                     | <5.0          | 100.0          | 93.4             | 103         | 98.2            | 9.78              | 25.2           | 123  | 0 - 20 |
| o-Cresol                                                     | <5.0          | 100.0          | 82.3             | 93          | 87.7            | 12.2              | 24.9           | 121  | 0 - 20 |
| p-Cresol                                                     | <5.0          | 100.0          | 101              | 93.9        | 97.5            | 7.29              | 12.5           | 137  | 0 - 20 |
| 2,4-Dichlorophenol                                           | <5.0          | 100.0          | 94.2             | 80.8        | 87.5            | 15.3              | 25.4           | 124  | 0 - 20 |
| 2,6-Dichlorophenol                                           | <5.0          | 100.0          | 75.7             | 66.9        | 71.3            | 12.3              | 33             | 126  | 0 - 20 |
| 2,4-Dimethylphenol                                           | <5.0          | 100.0          | 114              | 101         | 108             | 12.1              | 0              | 127  | 0 - 20 |
| Hexachlorophene                                              | <5.0          | 100.0          | 86.2             | 89.1        | 87.7            | 3.31              | 10.4           | 138  | 0 - 20 |
| 2-Nitrophenol                                                | <50.0         | 100.0          | 27.7             | 16.1        | 21.9            | 53 *              | 16.8           | 165  | 0 - 20 |
| 4-Nitrophenol                                                | <50.0         | 100.0          | 79               | 68          | 73.5            | 15                | 31.3           | 146  | 0 - 20 |
| Pentachlorophenol                                            | <5.0          | 100.0          | 42               | 43          | 42.5            | 2.35              | 27.9           | 121  | 0 - 20 |
| Phenol                                                       | <5.0          | 100.0          | 73.8             | 85.8        | 79.8            | 15                | 0              | 142  | 0 - 20 |
| Tetrachlorophenol                                            | <5.0          | 100.0          | 32.1             | 26.8        | 29.5            | 18                | 20.9           | 114  | 0 - 20 |
| 2,4,5-Trichlorophenol                                        | <5.0          | 100.0          | 60.6             | 59.1        | 59.9            | 2.51              | 31.7           | 119  | 0 - 20 |
| 2,4,6-Trichlorophenol                                        | <5.0          | 100.0          | 38.7             | 39.2        | 39              | 1.28              | 30.3           | 122  | 0 - 20 |
| EP-032B-SS : POLYNUCLEAR AROMATIC HYDROCARBONS               |               |                |                  |             |                 |                   |                |      |        |
| 2-Methylcholanthrene                                         | <5.0          | 100.0          | 109              | 96.4        | 103             | 12.3              | 21.5           | 129  | 0 - 20 |
| 2-Methylnaphthalene                                          | <5.0          | 100.0          | 94.7             | 109         | 102             | 14                | 39.7           | 130  | 0 - 20 |
| 7,12-Dimethylbenz(a)anthracene                               | <5.0          | 100.0          | 131              | 108         | 120             | 19.2              | 7.9            | 158  | 0 - 20 |
| Acenaphthene                                                 | <5.0          | 100.0          | 110              | 116         | 113             | 5.31              | 37.9           | 127  | 0 - 20 |
| Acenaphthylene                                               | <5.0          | 100.0          | 106              | 115         | 111             | 8.14              | 34.8           | 122  | 0 - 20 |
| Anthracene                                                   | <5.0          | 100.0          | 95.9             | 111         | 103             | 14.6              | 43.8           | 124  | 0 - 20 |
| Benz(a)anthracene                                            | <5.0          | 100.0          | 117              | 108         | 113             | 8                 | 48             | 124  | 0 - 20 |
| Benzo(a)pyrene                                               | <5.0          | 100.0          | 108              | 105         | 107             | 2.82              | 44.2           | 123  | 0 - 20 |
| Benzo(b)fluoranthene                                         | <5.0          | 100.0          | 110              | 106         | 108             | 3.7               | 43.2           | 129  | 0 - 20 |
| Benzo(e)pyrene                                               | <5.0          | 100.0          | 88.2             | 86.2        | 87.2            | 2.29              | 46.3           | 130  | 0 - 20 |
| Benzo(g,h,i)perylene                                         | <5.0          | 100.0          | 102              | 92.3        | 97.2            | 9.98              | 43.4           | 129  | 0 - 20 |
| Chrysene                                                     | <5.0          | 100.0          | 104              | 103         | 104             | 0.97              | 54.6           | 122  | 0 - 20 |
| Coronene                                                     | <5.0          | 100.0          | 111              | 109         | 110             | 1.82              | 33.1           | 134  | 0 - 20 |
| Dibenz(a,h)anthracene                                        | <5.0          | 100.0          | 119              | 104         | 112             | 13.5              | 45.5           | 129  | 0 - 20 |



| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                   |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|-------------------|----------------|------|--------|
| ALS EP-032 : PAH's & Phenolic Compounds                      |               |                |                  |             |                 |                   |                |      |        |
| QC LOT No. :                                                 |               | NEP032W-113    |                  |             |                 | ANALYST R. AYOUBI |                |      |        |
| MATRIX:                                                      |               | Waters         |                  |             |                 |                   |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                   | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD               | Rec.           |      | RPD    |
|                                                              | ug/L          | ug/L           | %                |             | %               | %                 | Low            | High | %      |
| EP-032A-WS : PHENOLS                                         |               |                |                  |             |                 |                   |                |      |        |
| 2-Chlorophenol                                               | <0.05         | 2.0            | 103              | 99.1        | 101             | 3.86              | 59             | 125  | 0 - 20 |
| 4-Chloro-3-Methylphenol                                      | <0.05         | 2.0            | 94.3             | 87.9        | 91.1            | 7.03              | 61.7           | 120  | 0 - 20 |
| m-Cresol                                                     | <0.1          | 2.0            | 103              | 109         | 106 *           | 5.66              | 51.4           | 104  | 0 - 20 |
| o-Cresol                                                     | <0.1          | 2.0            | 108              | 114         | 111             | 5.41              | 58.9           | 113  | 0 - 20 |
| p-Cresol                                                     | <0.1          | 2.0            | 119              | 121         | 120 *           | 1.67              | 51.6           | 112  | 0 - 20 |
| 2,4-Dichlorophenol                                           | <0.1          | 2.0            | 112              | 106         | 109             | 5.5               | 60.8           | 121  | 0 - 20 |
| 2,6-Dichlorophenol                                           | <0.1          | 2.0            | 106              | 96.3        | 101             | 9.59              | 60.3           | 121  | 0 - 20 |
| 2,4-Dimethylphenol                                           | <0.1          | 2.0            | 91.3             | 86.4        | 88.9            | 5.51              | 55.4           | 129  | 0 - 20 |
| Hexachlorophene                                              | <0.1          | 2.0            | 85.6             | 77.7        | 81.7            | 9.68              | 30.7           | 133  | 0 - 20 |
| 2-Nitrophenol                                                | <1.0          | 2.0            | 97.1             | 84.7        | 90.9            | 13.6              | 25.3           | 203  | 0 - 20 |
| 4-Nitrophenol                                                | <1.0          | 2.0            | 97.9             | 81.5        | 89.7            | 18.3              | 22.8           | 135  | 0 - 20 |
| Pentachlorophenol                                            | <0.05         | 2.0            | 88               | 96.9        | 92.5            | 9.63              | 6.56           | 165  | 0 - 20 |
| Phenol                                                       | <0.1          | 2.0            | 63.2             | 64.7        | 64              | 2.35              | 27.1           | 74.5 | 0 - 20 |
| Tetrachlorophenol                                            | <0.1          | 2.0            | 93.2             | 96.4        | 94.8            | 3.38              | 19.8           | 138  | 0 - 20 |
| 2,4,5-Trichlorophenol                                        | <0.1          | 2.0            | 101              | 99.2        | 100             | 1.8               | 46             | 124  | 0 - 20 |
| 2,4,6-Trichlorophenol                                        | <0.1          | 2.0            | 96.9             | 92.9        | 94.9            | 4.21              | 45.9           | 126  | 0 - 20 |
| EP-032B-WS : POLYNUCLEAR AROMATIC HYDROCARBONS               |               |                |                  |             |                 |                   |                |      |        |
| 2-Methylcholanthrene                                         | <0.1          | 2.0            | 91.5             | 86.7        | 89.1            | 5.39              | 59.4           | 115  | 0 - 20 |
| 2-Methylnaphthalene                                          | <0.1          | 2.0            | 85.6             | 80.5        | 83.1            | 6.14              | 46.1           | 120  | 0 - 20 |
| 7,12-Dimethylbenz(a)anthracene                               | <0.1          | 2.0            | 59.4             | 54.4        | 56.9            | 8.79              | 21.2           | 135  | 0 - 20 |
| Acenaphthene                                                 | <0.1          | 2.0            | 93.8             | 88.3        | 91.1            | 6.04              | 62             | 114  | 0 - 20 |
| Acenaphthylene                                               | <0.1          | 2.0            | 96.7             | 89.9        | 93.3            | 7.29              | 61.2           | 119  | 0 - 20 |
| Anthracene                                                   | <0.1          | 2.0            | 94.2             | 88.9        | 91.6            | 5.79              | 67.9           | 116  | 0 - 20 |
| Benz(a)anthracene                                            | <0.1          | 2.0            | 101              | 94.7        | 97.9            | 6.44              | 67.4           | 122  | 0 - 20 |
| Benzo(a)pyrene                                               | <0.05         | 2.0            | 99.8             | 95.9        | 97.9            | 3.99              | 72.4           | 114  | 0 - 20 |
| Benzo(b)fluoranthene                                         | <0.1          | 2.0            | 83.6             | 85.3        | 84.5            | 2.01              | 69.2           | 119  | 0 - 20 |
| Benzo(e)pyrene                                               | <0.1          | 2.0            | 96.8             | 94.4        | 95.6            | 2.51              | 71.3           | 119  | 0 - 20 |
| Benzo(g,h,i)perylene                                         | <0.1          | 2.0            | 95.8             | 93.5        | 94.7            | 2.43              | 48.8           | 133  | 0 - 20 |
| Chrysene                                                     | <0.1          | 2.0            | 98.6             | 97.5        | 98.1            | 1.12              | 70.4           | 118  | 0 - 20 |
| Coronene                                                     | <0.1          | 2.0            | 93.9             | 92.8        | 93.4            | 1.18              | 28.6           | 138  | 0 - 20 |
| Dibenz(a,h)anthracene                                        | <0.1          | 2.0            | 98.1             | 95.1        | 96.6            | 3.11              | 59.7           | 122  | 0 - 20 |

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                   |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|-------------------|----------------|------|--------|
| ALS EP-032 : PAH's & Phenolic Compounds                      |               |                |                  |             |                 |                   |                |      |        |
| QC LOT No. :                                                 |               | NEP032S-63     |                  |             |                 | ANALYST R. AYOUBI |                |      |        |
| MATRIX:                                                      |               | Soils          |                  |             |                 |                   |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                   | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD               | Rec.           |      | RPD    |
|                                                              | ug/kg         | ug/kg          | %                |             | %               | %                 | Low            | High | %      |
| Fluoranthene                                                 | <5.0          | 100.0          | 102              | 110         | 106             | 7.55              | 52.5           | 125  | 0 - 20 |
| Fluorene                                                     | <5.0          | 100.0          | 104              | 99.1        | 102             | 4.83              | 44.9           | 121  | 0 - 20 |
| Indeno(1,2,3,cd)pyrene                                       | <5.0          | 100.0          | 116              | 106         | 111             | 9.01              | 40.6           | 132  | 0 - 20 |
| N-2-Fluorenyl acetamide                                      | <50.0         | 100.0          | 723              | 589         | 656 *           | 20.4 *            | 28             | 152  | 0 - 20 |
| Naphthalene                                                  | <5.0          | 100.0          | 99.5             | 111         | 105             | 10.9              | 34.4           | 130  | 0 - 20 |
| Perylene                                                     | <5.0          | 100.0          | 92               | 107         | 99.5            | 15.1              | 38.1           | 124  | 0 - 20 |
| Phenanthrene                                                 | <5.0          | 100.0          | 95.6             | 101         | 98.3            | 5.49              | 44.8           | 124  | 0 - 20 |
| Pyrene                                                       | <5.0          | 100.0          | 107              | 101         | 104             | 5.77              | 51             | 129  | 0 - 20 |
| EP-032C-SS : Chlorinated Naphthalenes                        |               |                |                  |             |                 |                   |                |      |        |
| 1-Chloronaphthalene                                          | <5.0          | 100.0          | 93.2             | 90.6        | 91.9            | 2.83              | 42.7           | 130  | 0 - 20 |
| 2-Chloronaphthalene                                          | <5.0          | 100.0          | 114              | 104         | 109             | 9.17              | 41.3           | 132  | 0 - 20 |
| Trichloronaphthalene                                         | <5.0          | 100.0          | 105              | 108         | 107             | 2.82              | 46.7           | 122  | 0 - 20 |
| Tetrachloronaphthalene                                       | <5.0          | 100.0          | 107              | 108         | 108             | 0.93              | 45.4           | 121  | 0 - 20 |
| EP-032S-SS : ACID EXTRACTABLE SURROGATES                     |               |                |                  |             |                 |                   |                |      |        |
| 2-Fluorophenol                                               | 96.1%         | 100.0          | 76.6             | 88.9        | 82.8            | 14.9              | 18.9           | 144  | 0 - 20 |
| Phenol-d6                                                    | 92.8%         | 100.0          | 81               | 95.3        | 88.2            | 16.2              | 31.8           | 136  | 0 - 20 |
| 2-Chlorophenol-d4                                            | 99.5%         | 100.0          | 110              | 109         | 110             | 0.91              | 25.5           | 128  | 0 - 20 |
| 2,4,6-Tribromophenol                                         | 108%          | 100.0          | 68.9             | 48.5        | 58.7            | 34.8 *            | 30.7           | 117  | 0 - 20 |
| EP-032T-SS: BASE/NEUTRAL EXTRACTABLE SURROGATES              |               |                |                  |             |                 |                   |                |      |        |
| 2-Fluorobiphenyl                                             | 101%          | 100.0          | 116              | 110         | 113             | 5.31              | 47.4           | 128  | 0 - 20 |
| Anthracene-d10                                               | 114%          | 100.0          | 99               | 112         | 106             | 12.3              | 50.9           | 125  | 0 - 20 |
| 4-Terphenyl-d4                                               | 112%          | 100.0          | 112              | 101         | 107             | 10.3              | 54.7           | 132  | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.

| BATCH    QUALITY    CONTROL    --    CONTROL SPIKE/DUPLICATE |               |                |                  |             |                 |                   |                |      |        |
|--------------------------------------------------------------|---------------|----------------|------------------|-------------|-----------------|-------------------|----------------|------|--------|
| ALS EP-032 : PAH's & Phenolic Compounds                      |               |                |                  |             |                 |                   |                |      |        |
| QC LOT No. :                                                 |               | NEP032W-113    |                  |             |                 | ANALYST R. AYOUBI |                |      |        |
| MATRIX:                                                      |               | Waters         |                  |             |                 |                   |                |      |        |
| COMPOUND                                                     | Blank<br>Conc | Spike<br>Level | SPIKE QC RESULTS |             |                 |                   | Control Limits |      |        |
|                                                              |               |                | SCS<br>Rec.      | DCS<br>Rec. | Average<br>Rec. | RPD               | Rec.           |      | RPD    |
|                                                              | ug/L          | ug/L           | %                |             | %               | %                 | Low            | High | %      |
| Fluoranthene                                                 | <0.1          | 2.0            | 94               | 91.9        | 93              | 2.26              | 64.9           | 121  | 0 - 20 |
| Fluorene                                                     | <0.1          | 2.0            | 97.4             | 93.3        | 95.4            | 4.3               | 63.2           | 118  | 0 - 20 |
| Indeno(1,2,3,cd)pyrene                                       | <0.1          | 2.0            | 96.7             | 94          | 95.4            | 2.83              | 57.1           | 123  | 0 - 20 |
| N-2-Fluorenyl acetamide                                      | <0.1          | 2.0            | 744              | 604         | 674 *           | 20.8 *            | 28.7           | 212  | 0 - 20 |
| Naphthalene                                                  | <0.1          | 2.0            | 86.8             | 83.6        | 85.2            | 3.76              | 53.4           | 115  | 0 - 20 |
| Perylene                                                     | <0.1          | 2.0            | 98.6             | 95.4        | 97              | 3.3               | 71.4           | 118  | 0 - 20 |
| Phenanthrene                                                 | <0.1          | 2.0            | 96.2             | 92.2        | 94.2            | 4.25              | 66.6           | 120  | 0 - 20 |
| Pyrene                                                       | <0.1          | 2.0            | 95               | 92.3        | 93.7            | 2.88              | 70.3           | 117  | 0 - 20 |
| EP-032C-WS : Chlorinated Naphthalenes                        |               |                |                  |             |                 |                   |                |      |        |
| 1-Chloronaphthalene                                          | <0.1          | 2.0            | 86.8             | 80.8        | 83.8            | 7.16              | 54.9           | 111  | 0 - 20 |
| 2-Chloronaphthalene                                          | <0.1          | 2.0            | 86.7             | 82.6        | 84.7            | 4.84              | 47.1           | 124  | 0 - 20 |
| Trichloronaphthalene                                         | <0.1          | 2.0            | 96.6             | 90.3        | 93.5            | 6.74              | 61.5           | 120  | 0 - 20 |
| Tetrachloronaphthalene                                       | <0.1          | 2.0            | 94.3             | 89.5        | 91.9            | 5.22              | 69.1           | 116  | 0 - 20 |
| EP-032S-WS : ACID EXTRACTABLE SURROGATES                     |               |                |                  |             |                 |                   |                |      |        |
| 2-Fluorophenol                                               | 98.1%         | 2.0            | 103              | 101         | 102 *           | 1.96              | 39.6           | 99.3 | 0 - 20 |
| Phenol-d6                                                    | 60.9%         | 2.0            | 63.1             | 62.1        | 62.6            | 1.6               | 27             | 71.6 | 0 - 20 |
| 2-Chlorophenol-d4                                            | 113%          | 2.0            | 111              | 103         | 107             | 7.48              | 60.1           | 131  | 0 - 20 |
| 2,4,6-Tribromophenol                                         | 118%          | 2.0            | 112              | 100         | 106             | 11.3              | 44.7           | 128  | 0 - 20 |
| EP-032T-WS: BASE/NEUTRAL EXTRACTABLE SURROGATES              |               |                |                  |             |                 |                   |                |      |        |
| 2-Fluorobiphenyl                                             | 97.9%         | 2.0            | 93.8             | 85          | 89.4            | 9.84              | 54             | 122  | 0 - 20 |
| Anthracene-d10                                               | 113%          | 2.0            | 105              | 96.3        | 101             | 8.64              | 64.2           | 122  | 0 - 20 |
| 4-Terphenyl-d4                                               | 111%          | 2.0            | 99.2             | 91.7        | 95.5            | 7.86              | 56.2           | 131  | 0 - 20 |

COMMENTS:

- 1) The recovery control limits are based on ALS laboratory statistical data. (Method QWI-ORG/07)
- 2) The control limits on RPD (relative percent deviation) are fixed.
- 3) \* : Recovery or RPD falls outside of the recommended control limits.

PORT OF AIRLIE MARINA DEVELOPMENT

D.4 Additional ASS Data

***This page intentionally left blank.***

12<sup>th</sup> November 2002

Mr Peter Marshall  
c/- Windward Airlie Beach Pty Ltd  
PO Box 7108  
BRISBANE Qld 4001

**RE: Results of Additional ASS Sampling & Testing - Port of Airlie Project**

**Introduction**

This factual report details the undertakings and findings of a sampling and laboratory testing program undertaken at the site of a proposed Marina development at Airlie Beach in North Queensland. The work was commissioned the developers (Windward Airlie Beach), in response to an Information Request by the Department of Natural Resources and Mines (DNR & M).

The work undertaken forms part of a full program of sampling and testing recommended to meet the requirements a 'full QASSIT Investigation'. However, the borehole records and laboratory test results included herein may be used in conjunction with the findings of a more detailed Acid Sulfate Soils (ASS) investigation which is planned for a later date, subject Development Approval for the project.

**Scope**

At the request of the DNR & M, five boreholes were drilled below the water line at selected locations within the proposed area of disturbance for the project (although four were planned, time permitted the drilling of a fifth hole). Locations were selected from among thirty-seven chosen at an earlier date to be representative of the project area and which will be included in the detailed ASS investigation mentioned above.

Holocene sediments and underlying Pleistocene clays were sampled and screened for the presence of potential acidity using the pHox test method and a representative number of samples were dispatched for quantitative analysis by POCAS test method.

Sampling and testing was based on current state government (QASSIT) guidelines for ASS investigations. Sediment samples were taken at 0.25m intervals throughout the entire depth of sediment profiles recovered. Samples were screened using the pHox test method.

### **Fieldwork**

Holocene sediments and underlying Pleistocene clays were sampled as a continuous cores using a 50mm diameter vibro-core rig positioned on a small barge. The continuous core samples were stored in sealed 'cylindrical plastic tubes/bags'. All samples were refrigerated until laboratory testing could be undertaken. Sub-samples from each core were screening, and in total seventy-four samples were tested.

Borehole locations were determined by use of a hand held GPS unit with reference to a permanent benchmark on the shore. Eastings and Northings co-ordinates are included on individual Borehole Records attached at Appendix A. The boreholes selected for sampling at this time are shown in red, on the ASS Site Assessment Plan (Drawing No 6.1) attached.

### **Laboratory Testing**

The laboratory testing program outlined below was carried out to assess whether acid sulphate soil conditions existed at the locations investigated. These tests were carried out in accordance with currently recognised standards, where applicable.

#### **Screening**

Screening of 74 samples was carried out using the pHox test method. Results indicated that most of the samples did not appear to be ASS/PASS soils (ie. pHox values in the range 6.7 - 8.6). Only one sample, from BH19 at a depth of 2.5m returned a positive result (pHox value of 2.2). Significant amounts of shell fragments and very fine calcareous matter (most likely weathered coral debris) were present in almost all of the samples. The inherent buffering capacity of this material is the likely reason for such high pHox values throughout.

#### **Quantitative Analysis**

Twenty-four representative samples were selected to undergo quantitative laboratory analysis. Samples chosen included the one positive screening test result and samples from the bottom of each core (ie. underlying Pleistocene / residual material).

Test results indicate that the acidity present in the samples is somewhat variable, the highest being a POS of 1.5%, in a sample from BH12 at 2.5-2.75m depth. All samples tested (except for the positive screening test result from BH19 at 2.75-3.0m depth) indicated negligible levels of potential acidity and actual acidity (ie. <1 mole/tonne). All potential acidity appears to have been adequately buffered by the calcium carbonate present.

Samples tested were prepared over a 600µm sieve, and coarse shell fragments removed prior to POCAS testing. However, very significant quantities of Calcium Carbonate remain. On average the percentage of Calcium Carbonate present in the samples tested is more than ten times the percent POS, indicating adequate natural buffering capacity.

Results of pHox screening tests and POCAS tests are presented in Appendix B

Yours faithfully

**EARTHTECH CONSULTANTS**

**HENRY PARSONS**  
Senior Soil Scientist

**DAVID STARR**  
Principal Engineer

***This page intentionally left blank.***

## **DRAWINGS**

***This page intentionally left blank.***

**NOTE:**

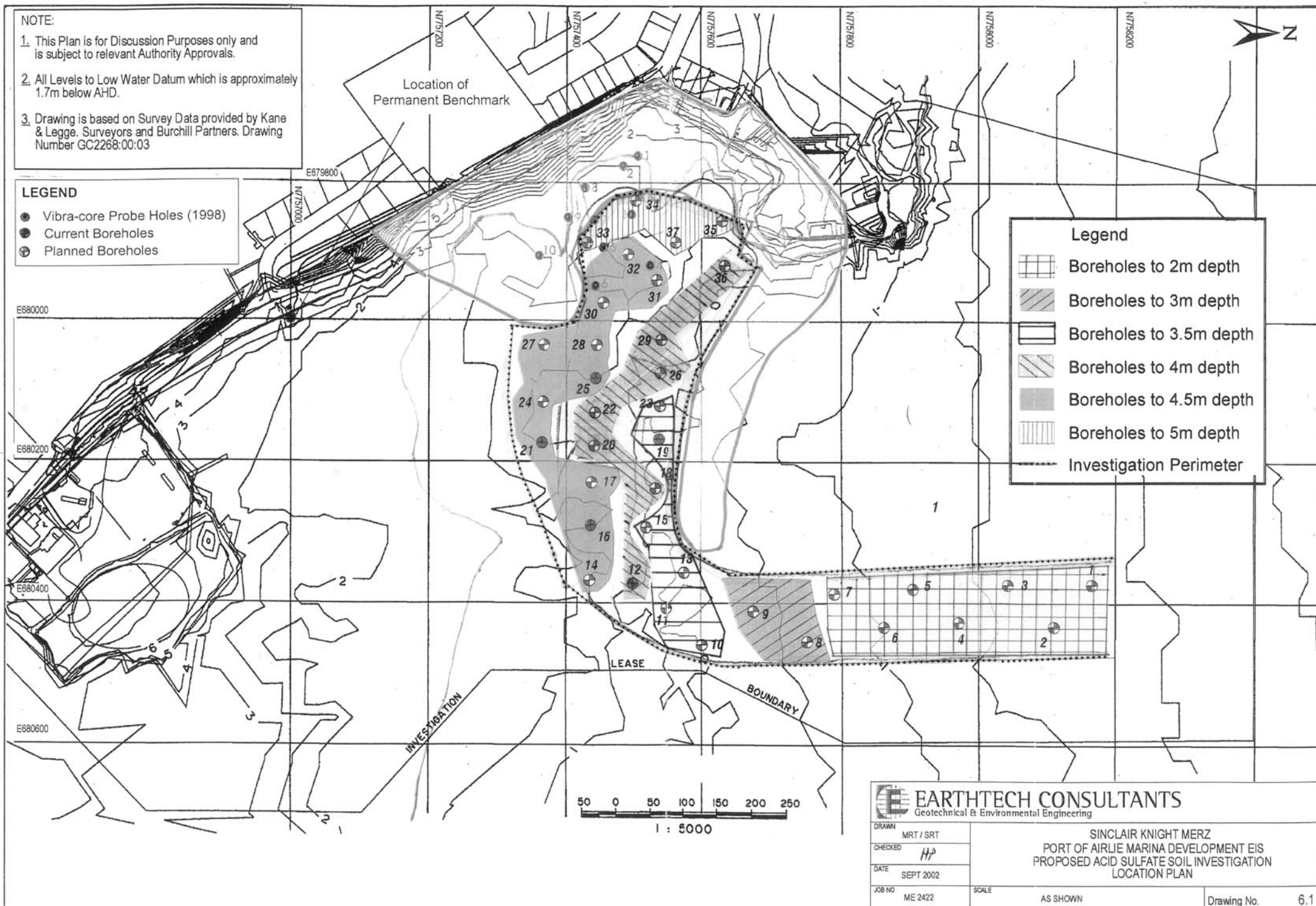
1. This Plan is for Discussion Purposes only and is subject to relevant Authority Approvals.
2. All Levels to Low Water Datum which is approximately 1.7m below AHD.
3. Drawing is based on Survey Data provided by Kane & Legge, Surveyors and Burchill Partners. Drawing Number GC2268:00:03

**LEGEND**

- Vibra-core Probe Holes (1998)
- Current Boreholes
- ⊕ Planned Boreholes

**Legend**

- Boreholes to 2m depth
- Boreholes to 3m depth
- Boreholes to 3.5m depth
- Boreholes to 4m depth
- Boreholes to 4.5m depth
- Boreholes to 5m depth
- Investigation Perimeter



**EARTHTECH CONSULTANTS**  
Geotechnical & Environmental Engineering

DRAWN  
MRT / SRT  
CHECKED  
HP  
DATE  
SEPT 2002  
JOB NO  
ME 2422

SINCLAIR KNIGHT MERZ  
PORT OF AIRLIE MARINA DEVELOPMENT EIS  
PROPOSED ACID SULFATE SOIL INVESTIGATION  
LOCATION PLAN

SCALE  
AS SHOWN

Drawing No. 6.1

***This page intentionally left blank.***

**APPENDIX A**

**Borehole Records**

***This page intentionally left blank.***



Client: SINCLAIR KNIGHT MERZ  
Project: PORT OF AIRLIE (PRELIMINARY ASS)  
Location:

Job N°: ME2422/1

Date: 25/10/02

Drill Rig: Vibro 50

Bore Size: 45-50mm

RL Surface: -1.2m AHD

Logged By: HP

Operator: T Bray-White

Drilling Fluid: None Used

Ch/Coords: N7757495 E680375

| Depth (m) | Drill Method | Strata Change (m) | Soil/Rock Description & Classification (Australian Standard 1726-1993)                                                                           | Sample Type | Sample/Test Depth (m) | Test Results/Field Records |
|-----------|--------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|----------------------------|
| 0.5       | V            | 1.0               | <b>Silty SAND (SM)</b> , loose, fine grained, dark grey, many shell fragments, and fine calcareous material through out, wet. [Recent Alluvium]. | D           | 0.0-0.25              |                            |
|           |              |                   |                                                                                                                                                  | D           | 0.25-0.5              |                            |
|           |              |                   |                                                                                                                                                  | D           | 0.5-0.75              |                            |
| 1.0       |              |                   |                                                                                                                                                  | D           | 0.75-1.0              |                            |
| 1.5       |              | 3.0               | <b>Silty CLAY (CI/CH)</b> , soft, medium to high plasticity, grey, some fine shells & calcareous material, wet. [Holocene].                      | D           | 1.0-1.25              |                            |
|           |              |                   |                                                                                                                                                  | D           | 1.25-1.5              |                            |
|           |              |                   |                                                                                                                                                  | D           | 1.5-1.75              |                            |
| 2.0       |              |                   |                                                                                                                                                  | D           | 1.75-2.0              |                            |
|           |              |                   |                                                                                                                                                  | D           | 2.0-2.25              |                            |
| 2.5       |              |                   |                                                                                                                                                  | D           | 2.25-2.5              |                            |
|           |              |                   |                                                                                                                                                  | D           | 2.5-2.75              |                            |
| 3.0       |              |                   |                                                                                                                                                  | D           | 2.75-3.0              |                            |
|           |              |                   | - becoming soft to firm                                                                                                                          | D           | 3.0-3.25              |                            |
| 3.5       |              |                   |                                                                                                                                                  | D           | 3.25-3.5              |                            |
|           |              | 3.75              | <b>CLAY (CH)</b> , firm, high plasticity, dark grey, wet.                                                                                        | D           | 3.5-3.75              |                            |
| 4.0       |              | 4.0               | <b>Clayey SAND (SC)</b> , medium dense, fine grained, dark grey, some shells, wet.                                                               | D           | 3.75-4.0              |                            |
|           |              | 4.25              | <b>Sandy CLAY (CH)</b> , soft, high plasticity, medium sand, dark grey, wet.                                                                     | D           | 4.0-4.25              |                            |
| 4.5       |              | 4.75              | <b>CLAY (CH)</b> , firm to stiff, high plasticity, dark grey, moist to wet.                                                                      | D           | 4.25-4.5              |                            |
|           |              |                   | <b>CLAY (CH)</b> , stiff to very stiff, high plasticity, dark grey, moist. [Pleistocene ?]                                                       | D           | 4.5-4.75              |                            |
| 5.0       |              |                   |                                                                                                                                                  | D           | 4.75-5.0              |                            |

**Legend:**  
U50 - Undisturbed 50mm diam. tube sample  
D - Disturbed sample  
B - Bulk sample  
PP - Pocket Penetrometer test result, kPa  
SPT - Standard Penetration Test  
\* - Inferred SPT 'N' value  
VS - Vane Shear test result, kPa  
DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration)

V - Vibro-coring  
TC - Tungsten carbide bit augering  
B - Blade bit washboring  
R - Rock roller bit washboring  
C - NMLC coring  
REC - Core Recovery (%)  
RQD - Rock Quality Designation

**Water Table Observations:**

First Noted: +1.5m  
(ie. under water)

Prepared by:

JS

Checked By:



|                |                                  |                           |                             |
|----------------|----------------------------------|---------------------------|-----------------------------|
| Client:        | SINCLAIR KNIGHT MERZ             | Job N°:                   | ME2422/1                    |
| Project:       | PORT OF AIRLIE (PRELIMINARY ASS) |                           |                             |
| Location:      |                                  |                           |                             |
| Date: 25/10/02 | Drill Rig: Vibro 50              | Bore Size: 45-50mm        | RL Surface: -1.2m AHD       |
| Logged By: HP  | Operator: T Bray-White           | Drilling Fluid: None Used | Ch/Coords: N7757495 E680375 |

| Depth (m) | Drill Method | Strata Change (m) | Soil/Rock Description & Classification (Australian Standard 1726-1993)                        | Sample Type | Sample/Test Depth (m) | Test Results/Field Records |
|-----------|--------------|-------------------|-----------------------------------------------------------------------------------------------|-------------|-----------------------|----------------------------|
|           | V            | 5.1               | CLAY (CH), stiff to very stiff, high plasticity, dark grey, moist. [Pleistocene ?]            | D           | 5.0-5.25              |                            |
|           |              | 5.25              | CLAY (CH), stiff to very stiff, high plasticity, light grey, trace sand, moist. [Pleistocene] |             |                       |                            |
| 5.5       |              |                   | BOREHOLE TERMINATED AT 5.25m - Refusal on Very Stiff Soil                                     |             |                       |                            |
| 6.0       |              |                   |                                                                                               |             |                       |                            |
| 6.5       |              |                   |                                                                                               |             |                       |                            |
| 7.0       |              |                   |                                                                                               |             |                       |                            |
| 7.5       |              |                   |                                                                                               |             |                       |                            |
| 8.0       |              |                   |                                                                                               |             |                       |                            |
| 8.5       |              |                   |                                                                                               |             |                       |                            |
| 9.0       |              |                   |                                                                                               |             |                       |                            |
| 9.5       |              |                   |                                                                                               |             |                       |                            |
| 10.0      |              |                   |                                                                                               |             |                       |                            |

|         |                                                                        |                                    |                                      |             |
|---------|------------------------------------------------------------------------|------------------------------------|--------------------------------------|-------------|
| Legend: | U50 - Undisturbed 50mm diam. tube sample                               | V - Vibro-coring                   | Water Table Observations:            |             |
|         | D - Disturbed sample                                                   | TC - Tungsten carbide bit augering | First Noted: -1.5m (ie. under water) |             |
|         | B - Bulk sample                                                        | B - Blade bit washboring           | Prepared by: JS                      | Checked By: |
|         | PP - Pocket Penetrometer test result, kPa                              | R - Rock roller bit washboring     |                                      |             |
|         | SPT - Standard Penetration Test                                        | C - NMLC coring                    |                                      |             |
|         | * - Inferred SPT 'N' value                                             | REC - Core Recovery (%)            |                                      |             |
|         | VS - Vane Shear test result, kPa                                       | RQD - Rock Quality Designation     |                                      |             |
|         | DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration) |                                    |                                      |             |



Client: SINCLAIR KNIGHT MERZ  
Project: PORT OF AIRLIE (PRELIMINARY ASS)  
Location:

Job N°: ME2422/1

Date: 25/10/02

Drill Rig: Vibro 50

Bore Size: 45-50mm

RL Surface: -0.7m AHD

Logged By: HP

Operator: T Bray-White

Drilling Fluid: None Used

Ch/Coords: N7757435 E680290

| Depth (m) | Drill Method | Strata Change (m) | Soil/Rock Description & Classification (Australian Standard 1726-1993)                                                               | Sample Type                                                                              | Sample/Test Depth (m) | Test Results/Field Records |          |
|-----------|--------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------|----------------------------|----------|
| 0.5       | V            | 0.25              | <b>Sandy CLAY (CI/CH)</b> , very soft, medium to high plasticity, dark grey, fine calcareous material, wet. [Recent Alluvium].       | D                                                                                        | 0.0-0.25              |                            |          |
|           |              |                   | <b>Sandy SILT (ML/SM)</b> , very soft, low plasticity, fine sand, dark grey, shells & fine calcareous material, wet.                 | D                                                                                        | 0.25-0.5              |                            |          |
|           |              | 0.75              |                                                                                                                                      | D                                                                                        | 0.5-0.75              |                            |          |
| 1.0       |              |                   | <b>Silty CLAY (CI/CH)</b> , soft, medium to high plasticity, grey, shell fragments, some organics to 1.25m, wet. [Holocene].         | D                                                                                        | 0.75-1.0              |                            |          |
|           |              | 1.5               |                                                                                                                                      |                                                                                          | D                     |                            | 1.0-1.25 |
|           |              |                   |                                                                                                                                      |                                                                                          | D                     |                            | 1.25-1.5 |
| 2.0       |              |                   |                                                                                                                                      |                                                                                          | D                     |                            | 1.5-1.75 |
|           |              |                   |                                                                                                                                      | D                                                                                        | 1.75-2.0              |                            |          |
|           |              | 2.0               | - shell content increasing significantly                                                                                             | D                                                                                        | 2.0-2.25              |                            |          |
| 2.5       |              | 2.25              | ' - as before                                                                                                                        | D                                                                                        | 2.25-2.5              |                            |          |
|           |              |                   |                                                                                                                                      | D                                                                                        | 2.5-2.75              |                            |          |
|           |              |                   |                                                                                                                                      | D                                                                                        | 2.75-3.0              |                            |          |
| 3.0       |              | 3.0               |                                                                                                                                      | D                                                                                        | 3.0-3.25              |                            |          |
| 3.5       |              |                   | <b>Silty CLAY (CH)</b> , firm, high plasticity, dark grey, shell fragments and fine calcareous material, wet.                        | D                                                                                        | 3.25-3.5              |                            |          |
|           |              | 3.75              |                                                                                                                                      | D                                                                                        | 3.5-3.75              |                            |          |
|           |              | 4.0               | 4.0                                                                                                                                  | <b>Sandy CLAY (SC)</b> , loose, coarse grained, medium plasticity fines, dark grey. wet. | D                     |                            | 3.75-4.0 |
|           |              |                   | <b>CLAY (CH)</b> , stiff to very stiff, high plasticity, dark grey, shell fragments and calcareous material, moist. [Pleistocene ?]. | D                                                                                        | 4.0-4.25              |                            |          |
| 4.5       |              |                   | 4.25                                                                                                                                 | - becoming very stiff, blueish grey mottled grey, less shells.                           | D                     |                            | 4.25-4.5 |
|           |              | 4.75              |                                                                                                                                      | D                                                                                        | 4.5-4.75              |                            |          |
|           |              | 4.9               | - becoming, dark grey, calcareous material throughout. [Pleistocene].                                                                | D                                                                                        | 4.75-4.90             |                            |          |
| 5.0       |              |                   |                                                                                                                                      | <b>BOREHOLE TERMINATED AT 4.9m - Refusal on Very Stiff Soil.</b>                         |                       |                            |          |

**Legend:**  
U50 - Undisturbed 50mm diam. tube sample  
D - Disturbed sample  
B - Bulk sample  
PP - Pocket Penetrometer test result, kPa  
SPT - Standard Penetration Test  
\* - Inferred SPT 'N' value  
VS - Vane Shear test result, kPa  
DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration)

V - Vibro-coring  
TC - Tungsten carbide bit augering  
B - Blade bit washboring  
R - Rock roller bit washboring  
C - NMLC coring  
REC - Core Recovery (%)  
RQD - Rock Quality Designation

**Water Table Observations:**

First Noted: +1.0m  
(ie. under water)

Prepared by:

JS

Checked By:



|                |                                  |                           |                             |
|----------------|----------------------------------|---------------------------|-----------------------------|
| Client:        | SINCLAIR KNIGHT MERZ             | Job N°:                   | ME2422/1                    |
| Project:       | PORT OF AIRLIE (PRELIMINARY ASS) |                           |                             |
| Location:      |                                  |                           |                             |
| Date: 25/10/02 | Drill Rig: Vibro 50              | Bore Size: 45-50mm        | RL Surface: -1.8m AHD       |
| Logged By: HP  | Operator: T Bray-White           | Drilling Fluid: None Used | Ch/Coords: N7757535 E680170 |

| Depth (m) | Drill Method | Strata Change (m) | Soil/Rock Description & Classification (Australian Standard 1726-1993)                                                                      | Sample Type | Sample/Test Depth (m) | Test Results/Field Records |
|-----------|--------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|----------------------------|
| 0.5       | V            | 0.5               | <b>Silty SAND (SM)</b> , loose, fine grained, grey, many shell fragments, and fine calcareous material through out, wet. [Recent Alluvium]. | D           | 0.0-0.25              |                            |
|           |              |                   |                                                                                                                                             | D           | 0.25-0.5              |                            |
| 1.0       |              | 1.0               | - tending to (SC-CI), fine grained sand                                                                                                     | D           | 0.5-0.75              |                            |
|           |              |                   |                                                                                                                                             | D           | 0.75-1.0              |                            |
| 1.5       |              | 1.5               | <b>Silty CLAY (CI/CH)</b> , very soft, medium to high plasticity, grey, some fine sand, shells & fine calcareous material, wet. [Holocene]. | D           | 1.0-1.25              |                            |
|           |              |                   |                                                                                                                                             | D           | 1.25-1.5              |                            |
|           |              |                   | - no shells                                                                                                                                 | D           | 1.5-1.75              |                            |
| 2.0       |              | 1.75              | - as before                                                                                                                                 | D           | 1.75-2.0              |                            |
|           |              |                   |                                                                                                                                             | D           | 2.0-2.25              |                            |
| 2.5       |              | 2.25              | - becoming, firm                                                                                                                            | D           | 2.25-2.5              |                            |
|           |              |                   |                                                                                                                                             | D           | 2.5-2.75              |                            |
| 3.0       |              | 3.0               | <b>Silty CLAY (CI)</b> , firm, medium plasticity, some organics & structure, dark grey, moist to wet. [Pleistocene ?].                      | D           | 2.75-3.0              |                            |
|           |              | 3.2               | <b>Sandy CLAY (CH)</b> , very stiff, medium plasticity, light grey and brown, structure evident, moist. [Pleistocene].                      | D           | 3.0-3.25              |                            |
| 3.5       |              |                   | <b>BOREHOLE TERMINATED AT 3.2m - Refusal on Very Stiff Soil</b>                                                                             |             |                       |                            |
| 4.0       |              |                   |                                                                                                                                             |             |                       |                            |
| 4.5       |              |                   |                                                                                                                                             |             |                       |                            |
| 5.0       |              |                   |                                                                                                                                             |             |                       |                            |

|         |                                                                        |                                    |                                                                      |             |
|---------|------------------------------------------------------------------------|------------------------------------|----------------------------------------------------------------------|-------------|
| Legend: | U50 - Undisturbed 50mm diam. tube sample                               | V - Vibro-coring                   | Water Table Observations:<br>First Noted: +1.0m<br>(ie. under water) |             |
|         | D - Disturbed sample                                                   | TC - Tungsten carbide bit augering |                                                                      |             |
|         | B - Bulk sample                                                        | B - Blade bit washboring           | Prepared by:<br><br>JS                                               | Checked By: |
|         | PP - Pocket Penetrometer test result, kPa                              | R - Rock roller bit washboring     |                                                                      |             |
|         | SPT - Standard Penetration Test                                        | C - NMLC coring                    |                                                                      |             |
|         | * - Inferred SPT 'N' value                                             | REC - Core Recovery (%)            |                                                                      |             |
|         | VS - Vane Shear test result, kPa                                       | RQD - Rock Quality Designation     | S02.5                                                                |             |
|         | DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration) |                                    |                                                                      |             |



|                |                                  |                           |                             |
|----------------|----------------------------------|---------------------------|-----------------------------|
| Client:        | SINCLAIR KNIGHT MERZ             | Job N°:                   | ME2422/1                    |
| Project:       | PORT OF AIRLIE (PRELIMINARY ASS) |                           |                             |
| Location:      |                                  |                           |                             |
| Date: 25/10/02 | Drill Rig: Vibro 50              | Bore Size: 45-50mm        | RL Surface: -0.7m AHD       |
| Logged By: HP  | Operator: T Bray-White           | Drilling Fluid: None Used | Ch/Coords: N7757165 E680180 |

| Depth (m) | Drill Method | Strata Change (m)                                                | Soil/Rock Description & Classification (Australian Standard 1726-1993)                                          | Sample Type | Sample/Test Depth (m) | Test Results/Field Records |
|-----------|--------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-------------|-----------------------|----------------------------|
| 0.5       | V            | 0.25                                                             | <b>CLAY (CH)</b> , very soft, high plasticity, grey, some fine grained sand, shell fragments, wet. [Holocene].  | D           | 0.0-0.25              |                            |
|           |              |                                                                  | <b>Clayey SAND (SC)</b> , loose, fine to medium, grey, shells through out, wet.                                 | D           | 0.25-0.5              |                            |
|           |              | 0.5                                                              | -some layers of dark brown organic silt.                                                                        | D           | 0.5-0.75              |                            |
| 1.0       |              | 0.75                                                             | <b>Silty CLAY (CI/CL)</b> , soft, low to medium plasticity, grey, shell fragments and calcareous material, wet. | D           | 0.75-1.0              |                            |
|           |              |                                                                  |                                                                                                                 | D           | 1.0-1.25              |                            |
|           |              | 1.25                                                             | <b>Silty CLAY (CH)</b> , soft, high plasticity, grey, some shell fragments and calcareous material, wet.        | D           | 1.25-1.5              |                            |
| 1.5       |              |                                                                  |                                                                                                                 | D           | 1.5-1.75              |                            |
|           |              | 1.8                                                              | - some sand                                                                                                     | D           | 1.75-2.0              |                            |
|           |              | 2.25                                                             | - stiff, dark grey silty lumps (inclusions). [Pleistocene ?].                                                   | D           | 2.0-2.25              |                            |
| 2.0       |              |                                                                  |                                                                                                                 | D           | 2.25-2.5              |                            |
|           |              | 2.5                                                              | <b>Sandy CLAY (CI)</b> , stiff, medium plasticity, light brown, some fine gravel, moist. [Residual Soil].       | D           | 2.5-2.75              |                            |
|           |              | 2.65                                                             |                                                                                                                 |             |                       |                            |
| 3.0       |              | <b>BOREHOLE TERMINATED AT 2.65m - Refusal on Very Stiff Soil</b> |                                                                                                                 |             |                       |                            |
| 3.5       |              |                                                                  |                                                                                                                 |             |                       |                            |
| 4.0       |              |                                                                  |                                                                                                                 |             |                       |                            |
| 4.5       |              |                                                                  |                                                                                                                 |             |                       |                            |
| 5.0       |              |                                                                  |                                                                                                                 |             |                       |                            |

|                |                                                                        |                                    |                                                                             |
|----------------|------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------|
| <b>Legend:</b> | U50 - Undisturbed 50mm diam. tube sample                               | V - Vibro-coring                   | <b>Water Table Observations:</b><br>First Noted: +1.0m<br>(ie. under water) |
|                | D - Disturbed sample                                                   | TC - Tungsten carbide bit augering |                                                                             |
|                | B - Bulk sample                                                        | B - Blade bit washboring           |                                                                             |
|                | PP - Pocket Penetrometer test result, kPa                              | R - Rock roller bit washboring     |                                                                             |
|                | SPT - Standard Penetration Test                                        | C - NMLC coring                    |                                                                             |
|                | * - Inferred SPT 'N' value                                             | REC - Core Recovery (%)            |                                                                             |
|                | VS - Vane Shear test result, kPa                                       | RQD - Rock Quality Designation     |                                                                             |
|                | DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration) |                                    |                                                                             |

|              |    |             |       |
|--------------|----|-------------|-------|
| Prepared by: | JS | Checked By: |       |
|              |    |             | S02.5 |



|                |                                  |                           |                             |
|----------------|----------------------------------|---------------------------|-----------------------------|
| Client:        | SINCLAIR KNIGHT MERZ             | Job N°:                   | ME2422/1                    |
| Project:       | PORT OF AIRLIE (PRELIMINARY ASS) |                           |                             |
| Location:      |                                  |                           |                             |
| Date: 25/10/02 | Drill Rig: Vibro 50              | Bore Size: 45-50mm        | RL Surface: -0.7m AHD       |
| Logged By: HP  | Operator: T Bray-White           | Drilling Fluid: None Used | Ch/Coords: N7757440 E680085 |

| Depth (m)                                                                                        | Drill Method | Strata Change (m) | Soil/Rock Description & Classification (Australian Standard 1726-1993)                                                             | Sample Type | Sample/Test Depth (m) | Test Results/Field Records |
|--------------------------------------------------------------------------------------------------|--------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------|----------------------------|
| 0.5<br><br><br><br><br><br><br>1.0<br><br><br><br><br><br><br>1.5<br><br><br><br><br><br><br>2.0 | V            | 0.0               | <b>CORAL DEBRIS TO 0.25m</b>                                                                                                       | -           | not sampled           |                            |
|                                                                                                  |              | 0.25              |                                                                                                                                    |             |                       |                            |
|                                                                                                  |              | 0.5               | <b>Sandy CLAY (CH)</b> , very soft, high plasticity, dark grey, some organics to 0.25m, fine calcareous material, wet. [Holocene]. | D           | 0.25-0.5              |                            |
|                                                                                                  |              |                   |                                                                                                                                    |             |                       |                            |
|                                                                                                  |              | 1.25              | <b>Clayey/Silty SAND (SC/SM)</b> , loose, fine to medium, grey, shells through out, wet.                                           | D           | 0.5-0.75              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 0.75-1.0              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 1.0-1.25              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 1.25-1.5              |                            |
| 2.0                                                                                              |              | 2.25              | <b>Silty CLAY (CI/MI)</b> , firm to stiff, medium plasticity, grey, shells & fine calcareous material through out, wet.            | D           | 1.5-1.75              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 1.75-2.0              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 2.0-2.25              |                            |
|                                                                                                  |              |                   |                                                                                                                                    | D           | 2.25-2.45             |                            |
| 2.5                                                                                              |              | 2.45              | <b>Silty CLAY (CH)</b> , very stiff - hard, high plasticity, dark grey, moist. [Pleistocene].                                      | D           |                       |                            |
| 2.5                                                                                              |              |                   | <b>BOREHOLE TERMINATED AT 2.45m - Refusal on Very Stiff Soil</b>                                                                   |             |                       |                            |
| 3.0                                                                                              |              |                   |                                                                                                                                    |             |                       |                            |
| 3.5                                                                                              |              |                   |                                                                                                                                    |             |                       |                            |
| 4.0                                                                                              |              |                   |                                                                                                                                    |             |                       |                            |
| 4.5                                                                                              |              |                   |                                                                                                                                    |             |                       |                            |
| 5.0                                                                                              |              |                   |                                                                                                                                    |             |                       |                            |

|                |                                                                        |                                    |                                                                             |
|----------------|------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------|
| <b>Legend:</b> | U50 - Undisturbed 50mm diam. tube sample                               | V - Vibro-coring                   | <b>Water Table Observations:</b><br>First Noted: +1.0m<br>(ie. under water) |
|                | D - Disturbed sample                                                   | TC - Tungsten carbide bit augering |                                                                             |
|                | B - Bulk sample                                                        | B - Blade bit washboring           |                                                                             |
|                | PP - Pocket Penetrometer test result, kPa                              | R - Rock roller bit washboring     |                                                                             |
|                | SPT - Standard Penetration Test                                        | C - NMLC coring                    |                                                                             |
|                | * - Inferred SPT 'N' value                                             | REC - Core Recovery (%)            |                                                                             |
|                | VS - Vane Shear test result, kPa                                       | RQD - Rock Quality Designation     |                                                                             |
|                | DCP - Dynamic Cone Penetrometer test results (blows/100mm penetration) |                                    |                                                                             |
|                |                                                                        |                                    | <b>Prepared by:</b> JS                                                      |
|                |                                                                        |                                    | <b>Checked By:</b>                                                          |

## **APPENDIX B**

### **Laboratory Test Results**

***This page intentionally left blank.***



# EARTHTECH LABORATORIES

Geotechnical & Environmental  
Soils and Materials Testing

EARTHTECH | 1/51 Secam Street, Mansfield Qld  
CONSULTANTS P.O. Box 2034 Mansfield DC Qld 4122  
(QLD) Pty Ltd Phone: (07) 3343 3166 Fax: (07) 3849 4705  
CAN 010 826 561 Email: [laboratories@earthtech.com.au](mailto:laboratories@earthtech.com.au)  
Website: [www.earthtech.com.au](http://www.earthtech.com.au)

|            |                                             |                |            |
|------------|---------------------------------------------|----------------|------------|
| Client :   | SKM                                         | Sampled By :   | Earthtech  |
| Project :  | Preliminary ASS Assessment – Port of Airlie | Job No :       | ME 2422/01 |
| Location : | Boat haven - Airlie Beach, North Queensland | Date Sampled : | 25/10/02   |

| pHox SCREENING TEST RESULTS |     |      |              |                 |     |      |              |
|-----------------------------|-----|------|--------------|-----------------|-----|------|--------------|
| Location                    | pHw | pHox | Indication   | Location        | pHw | pHox | Indication   |
| BH12 0.0-0.25 m             | 8.5 | 6.9  | Nil ASS/PASS | BH12 2.75-3.0 m | 8.3 | 7.0  | Nil ASS/PASS |
| BH12 0.25-0.5 m             | 8.6 | 6.9  | Nil ASS/PASS | BH12 3.0-3.25 m | 8.8 | 7.2  | Nil ASS/PASS |
| BH12 0.5-0.75 m             | 8.7 | 6.9  | Nil ASS/PASS | BH12 3.25-3.5 m | 8.7 | 7.2  | Nil ASS/PASS |
| BH12 0.75-1.0 m             | 8.5 | 6.9  | Nil ASS/PASS | BH12 3.5-3.75 m | 8.9 | 6.9  | Nil ASS/PASS |
| BH12 1.0-1.25m              | 8.4 | 6.9  | Nil ASS/PASS | BH12 3.75-4.0 m | 8.8 | 7.1  | Nil ASS/PASS |
| BH12 1.25-1.5 m             | 8.4 | 6.9  | Nil ASS/PASS | BH12 4.0-4.25 m | 8.8 | 8.0  | Nil ASS/PASS |
| BH12 1.5-1.75 m             | 8.5 | 7.2  | Nil ASS/PASS | BH12 4.25-4.5 m | 8.7 | 8.2  | Nil ASS/PASS |
| BH12 1.75-2.0 m             | 8.5 | 7.4  | Nil ASS/PASS | BH12 4.5-4.75 m | 9.0 | 8.1  | Nil ASS/PASS |
| BH12 2.0-2.25 m             | 8.4 | 7.3  | Nil ASS/PASS | BH12 4.75-5.0 m | 9.1 | 8.6  | Nil ASS/PASS |
| BH12 2.25-2.5 m             | 8.6 | 7.0  | Nil ASS/PASS | BH12 5.0-5.25 m | 9.0 | 8.3  | Nil ASS/PASS |
| BH12 2.5-2.75 m             | 8.6 | 7.1  | Nil ASS/PASS |                 |     |      |              |

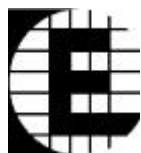
| POCAS TEST RESULTS |                      |                  |                                                   |                                      |                                      |            |                               |                  |                                   |
|--------------------|----------------------|------------------|---------------------------------------------------|--------------------------------------|--------------------------------------|------------|-------------------------------|------------------|-----------------------------------|
| Reg'n No.          | Location             | Description      | Action Criteria*<br>(moles H <sup>+</sup> /tonne) | TAA<br>(moles H <sup>+</sup> /tonne) | TPA<br>(moles H <sup>+</sup> /tonne) | POS<br>(%) | Shell<br>> 425 $\mu$ m<br>(%) | Fine Ca**<br>(%) | Lime Rate<br>(kg/m <sup>3</sup> ) |
| L1717/02           | BH12<br>0.25 - 0.5 m | Loamy Sand [LS]  | >37                                               | <1                                   | <1                                   | 0.16       | 16                            | 18.0             | nil                               |
| L1718/02           | BH12<br>0.75 - 10 m  | Loamy Sand [LS]  | >37                                               | <1                                   | <1                                   | 0.19       | 2                             | 16.0             | nil                               |
| L1719/02           | BH12<br>1.25 - 1.5 m | Medium Clay [MC] | >62                                               | <1                                   | <1                                   | 0.38       | 8                             | 19.0             | nil                               |
| L1720/02           | BH12<br>2.5 - 2.75 m | Medium Clay [MC] | >62                                               | <1                                   | <1                                   | 1.50       | 8                             | 17.0             | nil                               |
| L1721/02           | BH12<br>3.0 - 3.25 m | Medium Clay [MC] | >62                                               | <1                                   | <1                                   | 0.66       | 6                             | 14.0             | nil                               |
| L1722/02           | BH12<br>3.5 - 3.75 m | Medium Clay [MC] | >62                                               | <1                                   | <1                                   | 0.65       | 3                             | 13.0             | nil                               |
| L1723/02           | BH12<br>4.0 - 4.25 m | Medium Clay [MC] | >62                                               | <1                                   | <1                                   | 0.06       | nil                           | 15.0             | nil                               |
| L1724/02           | BH12<br>4.5 - 4.75 m | Heavy Clay [HC]  | >62                                               | <1                                   | <1                                   | 0.01       | nil                           | 15.0             | nil                               |
| L1725/02           | BH12<br>5.0 - 5.25 m | Heavy Clay [HC]  | >62                                               | <1                                   | <1                                   | <0.01      | nil                           | 14.0             | nil                               |

Remarks: TPA – Total Potential Acidity. TAA – Total Actual Acidity. POS – Percent Oxidisable Sulfur.  
Liming rates are based on a FOS of 1.5 & an assumed bulk density of 1.8 tonne/m<sup>3</sup>.  
\* due to the scale of disturbance 'Action Criteria' has been reduced to 18 moles H<sup>+</sup>/tonne.  
\*\* Ca indicates nett CaCO<sub>3</sub> from material finer than 425 $\mu$ m (not including coarse shell fraction).

Test Procedures : pHox – "ASS Screening Test" (rapid oxidation with Hydrogen Peroxide) - EARTHTECH  
POCAS (Method 21) - Simmonds & Bristow.

|             |     |            |  |
|-------------|-----|------------|--|
| Prepared by | H P | Checked by |  |
|-------------|-----|------------|--|



# EARTHTECH LABORATORIES

Geotechnical & Environmental  
Soils and Materials Testing

EARTHTECH | 1/51 Secam Street, Mansfield Qld  
CONSULTANTS P.O. Box 2034 Mansfield DC Qld 4122  
(QLD) Pty Ltd Phone: (07) 3343 3166 Fax: (07) 3849 4705  
CAN 010 826 561 Email: [laboratories@earthtech.com.au](mailto:laboratories@earthtech.com.au)  
Website: [www.earthtech.com.au](http://www.earthtech.com.au)

Client : SKM  
Project : Preliminary ASS Assessment – Port of Airlie  
Location : Boat haven - Airlie Beach, North Queensland

Sampled By : Earthtech  
Job No : ME 2422/01  
Date Sampled : 25/10/02

## pHox SCREENING TEST RESULTS

| Location        | pHw | pHox | Indication   | Location        | pHw | pHox | Indication   |
|-----------------|-----|------|--------------|-----------------|-----|------|--------------|
| BH16 0.0-0.25 m | 8.8 | 7.0  | Nil ASS/PASS | BH16 2.5-2.75 m | 8.9 | 6.9  | Nil ASS/PASS |
| BH16 0.25-0.5 m | 8.8 | 6.9  | Nil ASS/PASS | BH16 2.75-3.0 m | 8.9 | 6.8  | Nil ASS/PASS |
| BH16 0.5-0.75 m | 9.0 | 7.0  | Nil ASS/PASS | BH16 3.0-3.25 m | 8.8 | 6.6  | Nil ASS/PASS |
| BH16 0.75-1.0 m | 8.8 | 6.9  | Nil ASS/PASS | BH16 3.25-3.5 m | 9.0 | 6.5  | Nil ASS/PASS |
| BH16 1.0-1.25 m | 8.9 | 7.0  | Nil ASS/PASS | BH16 3.5-3.75 m | 9.2 | 6.5  | Nil ASS/PASS |
| BH16 1.25-1.5 m | 9.0 | 7.0  | Nil ASS/PASS | BH16 3.75-4.0 m | 9.3 | 6.7  | Nil ASS/PASS |
| BH16 1.5-1.75 m | 8.9 | 6.8  | Nil ASS/PASS | BH16 4.0-4.25 m | 9.1 | 8.4  | Nil ASS/PASS |
| BH16 1.75-2.0 m | 9.0 | 6.7  | Nil ASS/PASS | BH16 4.25-4.5 m | 9.1 | 7.8  | Nil ASS/PASS |
| BH16 2.0-2.25 m | 9.0 | 6.7  | Nil ASS/PASS | BH16 4.5-4.75 m | 8.9 | 7.3  | Nil ASS/PASS |
| BH16 2.25-2.5 m | 9.0 | 6.7  | Nil ASS/PASS | BH16 4.75-4.9 m | 9.0 | 7.8  | Nil ASS/PASS |

## POCAS TEST RESULTS

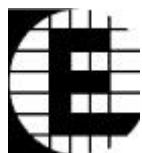
| Reg'n No. | Location             | Description      | Action Criteria *<br>(moles H <sup>+</sup> /tonne) | TAA<br>(moles H <sup>+</sup> /tonne) | TPA<br>(moles H <sup>+</sup> /tonne) | POS (%) | Shell > 425? m (%) | Fine Ca** (%) | Lime Rate (kg/m <sup>3</sup> ) |
|-----------|----------------------|------------------|----------------------------------------------------|--------------------------------------|--------------------------------------|---------|--------------------|---------------|--------------------------------|
| L1726/02  | BH16<br>0.25 - 0.5 m | Silt Loam [ZL]   | >37                                                | <1                                   | <1                                   | 0.19    | 5                  | 16.0          | nil                            |
| L1727/02  | BH16<br>2.0 - 2.25 m | Medium Clay [MC] | >62                                                | <1                                   | <1                                   | 0.67    | 17                 | 17.0          | nil                            |
| L1728/02  | BH16<br>3.25 - 3.5 m | Heavy Clay [HC]  | >62                                                | <1                                   | <1                                   | 1.1     | <2                 | 7.8           | nil                            |
| L1729/02  | BH16<br>3.75 - 4.0 m | Clayey Sand [CS] | >37                                                | <1                                   | <1                                   | 0.21    | 5                  | 9.9           | nil                            |
| L1730/02  | BH16<br>4.5 - 4.75 m | Heavy Clay [HC]  | >62                                                | <1                                   | <1                                   | <0.01   | <2                 | 3.5           | nil                            |

Remarks: TPA – Total Potential Acidity. TAA – Total Actual Acidity. POS – Percent Oxidisable Sulfur.  
Liming rates are based on a FOS of 1.5 & an assumed bulk density of 1.8 tonne/m<sup>3</sup>.  
\* due to the scale of disturbance 'Action Criteria' has been reduced to 18 moles H<sup>+</sup>/tonne.  
\*\* Ca indicates nett CaCO<sub>3</sub> from material finer than 425?m (not including the coarse shell fraction).

Test Procedures : pHox – “ASS Screening Test” (rapid oxidation with Hydrogen Peroxide) - EARTHTECH  
POCAS (Method 21) - Simmons & Bristow.

Prepared by H P

Checked by



# EARTHTECH LABORATORIES

Geotechnical & Environmental  
Soils and Materials Testing

EARTHTECH | 1/51 Secam Street, Mansfield Qld  
CONSULTANTS P.O. Box 2034 Mansfield DC Qld 4122  
(QLD) Pty Ltd Phone: (07) 3343 3166 Fax: (07) 3849 4705  
CAN 010 826 561 Email: [laboratories@earthtech.com.au](mailto:laboratories@earthtech.com.au)  
Website: [www.earthtech.com.au](http://www.earthtech.com.au)

|            |                                             |                |            |
|------------|---------------------------------------------|----------------|------------|
| Client :   | SKM                                         | Sampled By :   | Earthtech  |
| Project :  | Preliminary ASS Assessment – Port of Airlie | Job No :       | ME 2422/01 |
| Location : | Boat haven - Airlie Beach, North Queensland | Date Sampled : | 25/10/02   |

## pHox SCREENING TEST RESULTS

| Location        | pHw | pHox | Indication   | Location        | pHw | pHox | Indication   |
|-----------------|-----|------|--------------|-----------------|-----|------|--------------|
| BH19 0.0-0.25 m | 8.8 | 7.0  | Nil ASS/PASS | BH19 1.5-1.75 m | 8.9 | 6.9  | Nil ASS/PASS |
| BH19 0.25-0.5 m | 8.8 | 7.1  | Nil ASS/PASS | BH19 1.75-2.0 m | 9.0 | 7.0  | Nil ASS/PASS |
| BH19 0.5-0.75 m | 8.9 | 7.1  | Nil ASS/PASS | BH19 2.0-2.25 m | 9.0 | 6.9  | Nil ASS/PASS |
| BH19 0.75-1.0 m | 8.9 | 7.0  | Nil ASS/PASS | BH19 2.25-2.5 m | 9.1 | 6.9  | Nil ASS/PASS |
| BH19 1.0-1.25 m | 8.9 | 7.0  | Nil ASS/PASS | BH19 2.5-2.75 m | 9.0 | 6.9  | Nil ASS/PASS |
| BH19 1.25-1.5 m | 8.9 | 7.0  | Nil ASS/PASS | BH19 2.75-3.0 m | 9.1 | 2.2  | PASS         |
|                 |     |      |              | BH19 3.0-3.20 m | 9.4 | 8.2  | Nil ASS/PASS |

## POCAS TEST RESULTS

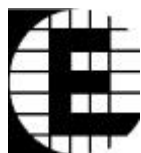
| Reg'n No. | Location             | Description      | Action Criteria *<br>(moles H <sup>+</sup> /tonne) | TAA<br>(moles H <sup>+</sup> /tonne) | TPA<br>(moles H <sup>+</sup> /tonne) | POS<br>(%) | Shell<br>> 425?m<br>(%) | Fine<br>Ca**<br>(%) | Lime<br>Rate<br>(kg/m <sup>3</sup> ) |
|-----------|----------------------|------------------|----------------------------------------------------|--------------------------------------|--------------------------------------|------------|-------------------------|---------------------|--------------------------------------|
| L1731/02  | BH19<br>0.75 - 1.0 m | Medium Clay [MC] | >37                                                | <1                                   | <1                                   | 0.20       | 6                       | 17.0                | nil                                  |
| L1732/02  | BH19<br>2.25 - 2.5 m | Heavy Clay [HC]  | >62                                                | <1                                   | <1                                   | 0.50       | 25                      | 13.0                | nil                                  |
| L1733/02  | BH19<br>2.75 - 3.0 m | Heavy Clay [HC]  | >62                                                | <1                                   | <b>320</b>                           | 1.2        | nil                     | 2.3                 | 44.0                                 |
| L1734/02  | BH19<br>3.0 - 3.25 m | Heavy Clay [HC]  | >62                                                | <1                                   | <1                                   | 0.1        | nil                     | 6.1                 | nil                                  |

Remarks: TPA – Total Potential Acidity. TAA – Total Actual Acidity. POS – Percent Oxidisable Sulfur.  
Liming rates are based on a FOS of 1.5 & an assumed bulk density of 1.8 tonne/m<sup>3</sup>.  
\* due to the scale of disturbance 'Action Criteria' has been reduced to 18 moles H<sup>+</sup>/tonne.  
\*\* Ca indicates nett CaCO<sub>3</sub> from material finer than 425?m (not including the coarse shell fraction).

Test Procedures : pHox – “ASS Screening Test” (rapid oxidation with Hydrogen Peroxide) - EARTHTECH  
POCAS (Method 21) - Simmons & Bristow.

Prepared by H P

Checked by



# EARTHTECH LABORATORIES

Geotechnical & Environmental  
Soils and Materials Testing

EARTHTECH | 1/51 Secam Street, Mansfield Qld  
CONSULTANTS P.O. Box 2034 Mansfield DC Qld 4122  
(QLD) Pty Ltd Phone: (07) 3343 3166 Fax: (07) 3849 4705  
CAN 010 826 561 Email: [laboratories@earthtech.com.au](mailto:laboratories@earthtech.com.au)  
Website: [www.earthtech.com.au](http://www.earthtech.com.au)

|            |                                             |                |            |
|------------|---------------------------------------------|----------------|------------|
| Client :   | SKM                                         | Sampled By :   | Earthtech  |
| Project :  | Preliminary ASS Assessment – Port of Airlie | Job No :       | ME 2422/01 |
| Location : | Boat haven - Airlie Beach, North Queensland | Date Sampled : | 25/10/02   |

## pHox SCREENING TEST RESULTS

| Location        | pHw | pHox | Indication   | Location          | pHw                       | pHox | Indication   |
|-----------------|-----|------|--------------|-------------------|---------------------------|------|--------------|
| BH21 0.0-0.25 m | 8.8 | 7.1  | Nil ASS/PASS | BH25 0.0-0.25 m   | Coral Debris - not tested |      |              |
| BH21 0.25-0.5 m | 8.7 | 6.9  | Nil ASS/PASS | BH25 0.25-0.5 m   | 8.9                       | 6.9  | Nil ASS/PASS |
| BH21 0.5-0.75 m | 8.7 | 6.7  | Nil ASS/PASS | BH25 0.5-0.75 m   | 8.8                       | 6.9  | Nil ASS/PASS |
| BH21 0.75-1.0 m | 8.8 | 6.8  | Nil ASS/PASS | BH25 0.75-1.0 m   | 8.9                       | 6.9  | Nil ASS/PASS |
| BH21 1.0-1.25 m | 8.5 | 6.7  | Nil ASS/PASS | BH25 1.0-1.25 m   | 8.9                       | 7.0  | Nil ASS/PASS |
| BH21 1.25-1.5 m | 8.8 | 7.0  | Nil ASS/PASS | BH25 1.25-1.5 m   | 9.0                       | 7.1  | Nil ASS/PASS |
| BH21 1.5-1.75 m | 8.7 | 6.9  | Nil ASS/PASS | BH25 1.5-1.75 m   | 9.0                       | 7.3  | Nil ASS/PASS |
| BH21 1.75-2.0 m | 8.8 | 6.8  | Nil ASS/PASS | BH25 1.75-2.0 m   | 8.9                       | 7.0  | Nil ASS/PASS |
| BH21 2.0-2.25 m | 8.9 | 6.8  | Nil ASS/PASS | BH25 2.0-2.25 m   | 8.9                       | 7.0  | Nil ASS/PASS |
| BH21 2.25-2.5 m | 9.0 | 7.8  | Nil ASS/PASS | BH25 2.25 - 2.4 m | 9.5                       | 8.6  | Nil ASS/PASS |
| BH21 2.5-2.75 m | 8.5 | 7.5  | Nil ASS/PASS |                   |                           |      |              |

## POCAS TEST RESULTS

| Reg'n No. | Location             | Description      | Action Criteria<br>(moles H <sup>+</sup> /tonne) | TAA<br>(moles H <sup>+</sup> /tonne) | TPA<br>(moles H <sup>+</sup> /tonne) | POS<br>(%) | Shell<br>> 425?m<br>(%) | Fine<br>Ca**<br>(%) | Lime<br>Rate<br>(kg/m <sup>3</sup> ) |
|-----------|----------------------|------------------|--------------------------------------------------|--------------------------------------|--------------------------------------|------------|-------------------------|---------------------|--------------------------------------|
| L1735/02  | BH21<br>0.0 - 0.25 m | Medium Clay [MC] | >62                                              | <1                                   | <1                                   | 0.20       | 5                       | 25.0                | nil                                  |
| L1736/02  | BH21<br>0.5 - 0.75 m | Clayey Sand [CS] | >37                                              | <1                                   | <1                                   | 0.35       | 4                       | 16.0                | nil                                  |
| L1737/02  | BH21<br>1.0 - 1.25 m | Clayey Sand [CS] | >37                                              | <1                                   | <1                                   | 0.32       | 14                      | 14.0                | nil                                  |
| L1738/02  | BH21<br>2.5 - 2.75 m | Heavy Clay [HC]  | >62                                              | <1                                   | <1                                   | <0.01      | <2                      | 20.0                | nil                                  |
| L1739/02  | BH25<br>0.5 - 0.75 m | Medium Clay [MC] | >62                                              | <1                                   | <1                                   | 0.15       | 9                       | 20.0                | nil                                  |
| L1740/02  | BH25<br>1.75 - 2.0 m | Heavy Clay [HC]  | >62                                              | <1                                   | <1                                   | 0.35       | 15                      | 16.0                | nil                                  |

Remarks: TPA – Total Potential Acidity. TAA – Total Actual Acidity. POS – Percent Oxidisable Sulfur.  
Liming rates are based on a FOS of 1.5 & an assumed bulk density of 1.8 tonne/m<sup>3</sup>.  
\* due to the scale of disturbance 'Action Criteria' has been reduced to 18 moles H<sup>+</sup>/tonne.  
\*\* Ca indicates nett CaCO<sub>3</sub> from material finer than 425?m (not including the coarse shell fraction).

Test Procedures : pHox – "ASS Screening Test" (rapid oxidation with Hydrogen Peroxide) - EARTHTECH  
POCAS (Method 21) - Simmons & Bristow.

|             |     |            |
|-------------|-----|------------|
| Prepared by | H P | Checked by |
|-------------|-----|------------|



# Simmonds & Bristow

Established 1965

ABN 33 010 252 418

Pty Ltd

Attention : Mr Henry Parsons  
Client : Earthtech Laboratories Pty Ltd  
PO Box 2034  
MANSFIELD DC  
QLD

Client Order No. : 3738  
Batch Reference No. : 56230

P/O Box 3160  
30 Shottory St  
Yeronga, Qld 4104

Ph. : (07)38487699  
Fax : (07)38923345

4122

|                                      |       | Analytical Results       |                          |                            |                            |                            |                            |                            | Page : 1 Of 4 |
|--------------------------------------|-------|--------------------------|--------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|---------------|
| Sample Reference                     |       | 220742                   | 220743                   | 220744                     | 220745                     | 220746                     | 220747                     | 220748                     |               |
| Sample Name                          |       | BH12 .25-05L -<br>1717/2 | BH12 .75-1.0L-<br>1718/2 | BH12 1.25-1.5-<br>L 1719/2 | BH12 2.5-2.75-<br>L 1720/2 | BH12 3.0-3.25-<br>L 1721/2 | BH12 .35-3.7-<br>5L 1722/2 | BH12 4.0-4.25-<br>L 1723/2 |               |
| Date Collected                       |       | 29/10/2002               | 29/10/2002               | 29/10/2002                 | 29/10/2002                 | 29/10/2002                 | 29/10/2002                 | 29/10/2002                 |               |
| Date Received                        |       | 31/10/2002               | 31/10/2002               | 31/10/2002                 | 31/10/2002                 | 31/10/2002                 | 31/10/2002                 | 31/10/2002                 |               |
| Date Tested                          |       |                          |                          |                            |                            |                            |                            |                            |               |
| Analyte                              | Units |                          |                          |                            |                            |                            |                            |                            |               |
| SC125.01 pH(KCl) 21A                 |       | 7.8                      | 7.9                      | 7.8                        | 7.9                        | 8.0                        | 8.0                        | 8.0                        |               |
| SC125.02 pH(OX) 21B                  |       | 7.5                      | 7.6                      | 7.6                        | 7.5                        | 7.6                        | 7.6                        | 7.7                        |               |
| SC125.05 S(KCl%) 21Cf                |       | 0.05                     | 0.05                     | 0.07                       | 0.07                       | 0.04                       | 0.07                       | < 0.01                     |               |
| SC125.06 S(p%) 21Df                  |       | 0.21                     | 0.24                     | 0.45                       | 1.5                        | 0.70                       | 0.72                       | 0.06                       |               |
| SC125.07 S(POS%) 21Ef                |       | 0.16                     | 0.19                     | 0.38                       | 1.5                        | 0.66                       | 0.65                       | 0.06                       |               |
| SC125.13 NT(CaCO3%) 19A1             |       | 18.                      | 16.                      | 19.                        | 17.                        | 14.                        | 13.                        | 14.                        |               |
| SC125.08 TAA (mol H+/tonne) 21F      |       | < 1.                     | < 1.                     | < 1.                       | < 1.                       | < 1.                       | < 1.                       | < 1.                       |               |
| SC125.09 TPA (mol H+/tonne) 21G      |       | < 1.                     | < 1.                     | < 1.                       | < 1.                       | < 1.                       | < 1.                       | < 1.                       |               |
| SC125.10 TSA (mol H+/tonne) 21H      |       | < 1.                     | < 1.                     | < 1.                       | < 1.                       | < 1.                       | < 1.                       | < 1.                       |               |
| SC125.11 S(TPA%) 21K                 |       | < 0.01                   | < 0.01                   | < 0.01                     | < 0.01                     | < 0.01                     | < 0.01                     | < 0.01                     |               |
| SC125.12 S(TSA%) 21L                 |       | < 0.01                   | < 0.01                   | < 0.01                     | < 0.01                     | < 0.01                     | < 0.01                     | < 0.01                     |               |
| SC120.55 Weight Ag Lime to Neut. TAA | kg/T  | < 0.1                    | < 0.1                    | < 0.1                      | < 0.1                      | < 0.1                      | < 0.1                      | < 0.1                      |               |
| SC120.54 Weight Ag Lime to Neut. TSA | kg/T  | < 0.1                    | < 0.1                    | < 0.1                      | < 0.1                      | < 0.1                      | < 0.1                      | < 0.1                      |               |
| * SP100.2 Soil Texture               |       | Fine.                    | Fine.                    | Fine.                      | Fine.                      | Fine.                      | Fine.                      | Fine.                      |               |

Note : \* All tests covered by NATA accreditation except where marked  
For a NATA endorsed certificate please contact us on 1800 620 690

Date : 8/11/2002

Authorised for release :

Dated :

Protecting your people, profits and our environment



# Simmonds & Bristow

Established 1965

ABN 33 010 252 418

Pty Ltd

Attention : Mr Henry Parsons  
Client : Earthtech Laboratories Pty Ltd  
PO Box 2034  
MANSFIELD DC  
QLD

Client Order No. : 3738  
Batch Reference No. : 56230

P/O Box 3160  
30 Shottery St  
Yeronga, Qld 4104

Ph. : (07)38487699  
Fax : (07)38923345

4122

|                                      |       | Analytical Results     |                        |                        |                        |                        |                        |                       | Page : 2 Of 4 |
|--------------------------------------|-------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|---------------|
| Sample Reference                     |       | 220749                 | 220750                 | 220752                 | 220753                 | 220754                 | 220755                 | 220756                |               |
| Sample Name                          |       | BH12 4.5-4.75-L 1724/2 | BH12 5.0-5.25-L 1725/2 | BH16 2.0-2.25-L 1727/2 | BH16 3.25-3.5-L 1728/2 | BH16 3.75-4.0-L 1729/2 | BH16 5.0-5.2-5L 1730/2 | BH19 .75-1.0-L 1731/2 |               |
| Date Collected                       |       | 29/10/2002             | 29/10/2002             | 29/10/2002             | 29/10/2002             | 29/10/2002             | 29/10/2002             | 29/10/2002            |               |
| Date Received                        |       | 31/10/2002             | 31/10/2002             | 31/10/2002             | 31/10/2002             | 31/10/2002             | 31/10/2002             | 31/10/2002            |               |
| Date Tested                          |       |                        |                        |                        |                        |                        |                        |                       |               |
| Analyte                              | Units |                        |                        |                        |                        |                        |                        |                       |               |
| SC125.01 pH(KCl) 21A                 |       | 8.0                    | 7.9                    | 8.0                    | 8.1                    | 8.0                    | 7.9                    | 7.8                   |               |
| SC125.02 pH(OX) 21B                  |       | 7.8                    | 7.9                    | 7.6                    | 7.5                    | 7.6                    | 7.9                    | 7.8                   |               |
| SC125.05 S(KCl%) 21Cf                |       | < 0.01                 | < 0.01                 | 0.02                   | 0.05                   | 0.02                   | < 0.01                 | 0.06                  |               |
| SC125.06 S(p%) 21Df                  |       | 0.01                   | < 0.01                 | 0.70                   | 1.2                    | 0.23                   | < 0.01                 | 0.26                  |               |
| SC125.07 S(POS%) 21Ef                |       | 0.01                   | < 0.01                 | 0.67                   | 1.1                    | 0.21                   | < 0.01                 | 0.20                  |               |
| SC125.13 NT(CaCO3%) 19A1             |       | 15.                    | 14.                    | 17.                    | 7.8                    | 9.9                    | 3.5                    | 17.                   |               |
| SC125.08 TAA (mol H+/tonne) 21F      |       | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                  |               |
| SC125.09 TPA (mol H+/tonne) 21G      |       | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                  |               |
| SC125.10 TSA (mol H+/tonne) 21H      |       | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                   | < 1.                  |               |
| SC125.11 S(TPA%) 21K                 |       | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                |               |
| SC125.12 S(TSA%) 21L                 |       | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                 | < 0.01                |               |
| SC120.55 Weight Ag Lime to Neut. TAA | kg/T  | < 0.1                  | < 1.1                  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                 |               |
| SC120.54 Weight Ag Lime to Neut. TSA | kg/T  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                  | < 0.1                 |               |
| * SP100.2 Soil Texture               |       | Fine.                  | Fine.                  | Fine.                  | Fine.                  | Fine.                  | Fine.                  | Fine.                 |               |

Note : \* All tests covered by NATA accreditation except where marked  
For a NATA endorsed certificate please contact us on 1800 620 690

Date : 8/11/2002

Authorised for release :

Dated :

Protecting your people, profits and our environment



# Simmonds & Bristow

Established 1965

ABN 33 010 252 418

Pty Ltd

Attention : Mr Henry Parsons  
Client : Earthtech Laboratories Pty Ltd  
PO Box 2034  
MANSFIELD DC  
QLD

Client Order No. : 3738  
Batch Reference No. : 56230

P/O Box 3160  
30 Shottery St  
Yeronga, Qld 4104

Ph. : (07)38487699  
Fax : (07)38923345

4122

|                                      |       | Analytical Results     |                       |                        |                     |                        |                        |                        | Page : 3 Of 4 |  |
|--------------------------------------|-------|------------------------|-----------------------|------------------------|---------------------|------------------------|------------------------|------------------------|---------------|--|
| Sample Reference                     |       | 220757                 | 220758                | 220759                 | 220760              | 220761                 | 220762                 | 220763                 |               |  |
| Sample Name                          |       | BH19 2.25-2.5-L 1732/2 | BH19 2.75-3.0L 1733/2 | BH19 3.0-3.2-5L 1734/2 | BH21 0-0.25L-1735/2 | BH21 0.5-0.7-5L 1736/2 | BH21 1.0-1.2-5L 1737/2 | BH21 2.5-2.7-5L 1738/2 |               |  |
| Date Collected                       |       | 29/10/2002             | 29/10/2002            | 29/10/2002             | 29/10/2002          | 29/10/2002             | 29/10/2002             | 29/10/2002             |               |  |
| Date Received                        |       | 31/10/2002             | 31/10/2002            | 31/10/2002             | 31/10/2002          | 31/10/2002             | 31/10/2002             | 31/10/2002             |               |  |
| Date Tested                          |       |                        |                       |                        |                     |                        |                        |                        |               |  |
| Analyte                              | Units |                        |                       |                        |                     |                        |                        |                        |               |  |
| SC125.01 pH(KCl) 21A                 |       | 8.0                    | 8.0                   | 7.9                    | 7.9                 | 7.9                    | 8.0                    | 7.8                    |               |  |
| SC125.02 pH(OX) 21B                  |       | 7.5                    | 2.8                   | 7.5                    | 7.6                 | 7.6                    | 7.6                    | 7.6                    |               |  |
| SC125.05 S(KCl%) 21Cf                |       | 0.06                   | 0.06                  | < 0.01                 | 0.05                | 0.02                   | 0.03                   | < 0.01                 |               |  |
| SC125.06 S(p%) 21Df                  |       | 0.56                   | 1.2                   | 0.01                   | 0.25                | 0.37                   | 0.35                   | 0.01                   |               |  |
| SC125.07 S(POS%) 21Ef                |       | 0.50                   | 1.2                   | 0.01                   | 0.20                | 0.35                   | 0.32                   | < 0.01                 |               |  |
| SC125.13 NT(CaCO3%) 19A1             |       | 13.                    | 2.3                   | 6.1                    | 25.                 | 16.                    | 14.                    | 20.                    |               |  |
| SC125.08 TAA (mol H+/tonne) 21F      |       | < 1.                   | < 1.                  | < 1.                   | < 1.                | < 1.                   | < 1.                   | < 1.                   |               |  |
| SC125.09 TPA (mol H+/tonne) 21G      |       | < 1.                   | 320.                  | < 1.                   | < 1.                | < 1.                   | < 1.                   | < 1.                   |               |  |
| SC125.10 TSA (mol H+/tonne) 21H      |       | < 1.                   | 320.                  | < 1.                   | < 1.                | < 1.                   | < 1.                   | < 1.                   |               |  |
| SC125.11 S(TPA%) 21K                 |       | < 0.01                 | 0.51                  | < 0.01                 | < 0.01              | < 0.01                 | < 0.01                 | < 0.01                 |               |  |
| SC125.12 S(TSA%) 21L                 |       | < 0.01                 | 0.51                  | < 0.01                 | < 0.01              | < 0.01                 | < 0.01                 | < 0.01                 |               |  |
| SC120.55 Weight Ag Lime to Neut. TAA | kg/T  | < 0.1                  | < 0.1                 | < 0.1                  | < 0.1               | < 0.1                  | < 0.1                  | < 0.1                  |               |  |
| SC120.54 Weight Ag Lime to Neut. TSA | kg/T  | < 0.1                  | 16.                   | < 0.1                  | < 0.1               | < 0.1                  | < 0.1                  | < 0.1                  |               |  |
| * SP100.2 Soil Texture               |       | Fine.                  | Fine.                 | Fine.                  | Fine.               | Fine.                  | Fine.                  | Fine.                  |               |  |

Note : \* All tests covered by NATA accreditation except where marked  
For a NATA endorsed certificate please contact us on 1800 620 690

Date : 8/11/2002

Authorised for release :

Dated :

Protecting your people, profits and our environment



# Simmonds & Bristow

Established 1965

ABN 33 010 252 418

Pty Ltd

Attention : Mr Henry Parsons  
Client : Earthtech Laboratories Pty Ltd  
PO Box 2034  
MANSFIELD DC  
QLD

Client Order No. : 3738  
Batch Reference No. : 56230

P/O Box 3160  
30 Shottery St  
Yeronga, Qld 4104

Ph. : (07)38487699  
Fax : (07)38923345

4122

Page : 4 Of 4

| Analytical Results                   |       |                        |                       |                        |  |  |  |  |
|--------------------------------------|-------|------------------------|-----------------------|------------------------|--|--|--|--|
| Sample Reference                     |       | 220764                 | 220765                | 220840                 |  |  |  |  |
| Sample Name                          |       | BH25 0.5-0.7-5L 1739/2 | BH25 1.75-2-0L 1740/2 | BH16 0.25-0.5-0 1726/2 |  |  |  |  |
| Date Collected                       |       | 29/10/2002             | 29/10/2002            | 29/10/2002             |  |  |  |  |
| Date Received                        |       | 31/10/2002             | 31/10/2002            | 31/10/2002             |  |  |  |  |
| Date Tested                          |       |                        |                       |                        |  |  |  |  |
| Analyte                              | Units |                        |                       |                        |  |  |  |  |
| SC125.01 pH(KCl) 21A                 |       | 7.9                    | 7.9                   | 7.9                    |  |  |  |  |
| SC125.02 pH(OX) 21B                  |       | 7.6                    | 7.6                   | 7.8                    |  |  |  |  |
| SC125.05 S(KCl%) 21Cf                |       | 0.06                   | 0.06                  | 0.02                   |  |  |  |  |
| SC125.06 S(p%) 21Df                  |       | 0.21                   | 0.41                  | 0.21                   |  |  |  |  |
| SC125.07 S(POS%) 21Ef                |       | 0.15                   | 0.35                  | 0.19                   |  |  |  |  |
| SC125.13 NT(CaCO3%) 19A1             |       | 20.                    | 16.                   | 17.                    |  |  |  |  |
| SC125.08 TAA (mol H+/tonne) 21F      |       | < 1.                   | < 1.                  | < 1.                   |  |  |  |  |
| SC125.09 TPA (mol H+/tonne) 21G      |       | < 1.                   | < 1.                  | < 1.                   |  |  |  |  |
| SC125.10 TSA (mol H+/tonne) 21H      |       | < 1.                   | < 1.                  | < 1.                   |  |  |  |  |
| SC125.11 S(TPA%) 21K                 |       | < 0.01                 | < 0.01                | < 0.01                 |  |  |  |  |
| SC125.12 S(TSA%) 21L                 |       | < 0.01                 | < 0.01                | < 0.01                 |  |  |  |  |
| SC120.55 Weight Ag Lime to Neut. TAA | kg/T  | < 0.1                  | < 0.1                 | < 0.1                  |  |  |  |  |
| SC120.54 Weight Ag Lime to Neut. TSA | kg/T  | < 0.1                  | < 0.1                 | < 0.1                  |  |  |  |  |
| * SP100.2 Soil Texture               |       | Fine.                  | Fine.                 | Fine.                  |  |  |  |  |

\* Confirmation of results faxed on: 7/11/2002

Note : \* All tests covered by NATA accreditation except where marked  
For a NATA endorsed certificate please contact us on 1800 620 690

Date : 8/11/2002

Authorised for release :

Dated :

Protecting your people, profits and our environment