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# Marine Sediment Monitoring Programme: 2005 results

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# Marine Sediment Monitoring Programme – 2005 Results

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# 1 Executive Summary

The Auckland Regional Council (ARC) operates a long-term marine sediment monitoring programme in the Auckland Region. On each survey occasion surface sediment (0-20mm depth) is collected from each of 27 sites by the ARC and delivered to NIWA for analysis. There have been five surveys conducted, in 1998, 1999, 2000, 2003 and 2005. This report presents the results of the 2005 survey.

The concentrations of metals, zinc (Zn), copper (Cu) and lead (Pb) were measured by cold dilute 2M hydrochloric acid extraction on the silt <63 μm fraction and also by hot strong acid digestion on the <500 μm fraction. Total organic carbon (TOC), polycyclic aromatic hydrocarbons (PAHs) and particle size distributions were determined on the <500 μm fraction.

The results from the 2005 survey are compared with those from the four previous surveys for each parameter measured. There are several sites that exceed the Auckland Regional Council's environmental response criteria for both trace metals and PAHs. Where no local criteria exist for particular contaminants, comparisons are made with ANZECC ISQG trigger values.

A general trend of increasing trace metal concentration in Auckland estuarine sediments has occurred since monitoring began in 1998. However, four of the most highly contaminated sites have shown a reduction in zinc and copper concentration (<63 μm) in the 2005 samples when compared with the 2003 survey results. Further surveys will continue to assess this trend.

Concentrations of arsenic (As), cadmium (Cd), mercury (Hg), antimony (Sb) and tin (Sn) were measured in the <500 μm fraction for the first time in 2005. Eight sites exceeded the ISQG-low trigger values for mercury and this compound should be included in future monitoring studies. The other metals analysed were below ISQG-low trigger values.

Polycyclic aromatic hydrocarbons (PAHs) were anaylsed in 2005 and compared to 2001 sediment concentrations. Motions and Meola were the sites most contaminated with total PAHs and both have shown an increasing trend in total PAH concentrations since 1999. Two other sites, Whau (U) and Oakley were above the environmental response criteria red value for high molecular weight PAHs. However, the general trend across all sites for total PAH concentrations was no marked change since monitoring began in 1998.

# 2 Introduction

Since 1998, the Auckland Regional Council (ARC) has monitored the concentrations of urban-derived chemicals in surficial sediments at 27 sites in estuaries and the coastal zone of the Auckland region. There have been four previous surveys in 1998, 1999, 2001, 2003 (Williamson et al. 1998; Mills et al. 2000; Hawken et al. 2002; Timperley and Mathieson, 2002; Reed and Webster, 2004).

For the 2005 survey described in this report, sediments were collected by the ARC and delivered to NIWA for analysis. Three replicates from each site (a total of 81 samples) were analysed for zinc (Zn), copper (Cu) and lead (Pb) in the <63 μm fraction. The three replicates were also freeze dried and combined after seiving through a 500 μm mesh prior to analysis of total zinc, total copper and total lead (a total of 27 samples). In adddition to previous studies the following metals were also analysed: arsenic (As), cadmium (Cd), mercury (Hg), antimony (Sb) and tin (Sn). Freeze dried samples were also analysed for total organic carbon (TOC), polycyclic aromatic hydrocarbons (PAHs) and particle size distribution. Organochlorine pesticides and polychlorinated biphenyl compounds were not analysed in the 2005 survey.

This report presents the results for the samples collected in 2005. A comparison of this data with those for the samples collected in 1998, 1999, 2001 and 2003 is also presented. The report also adds to the data set outlining the rate of change in metal concentration for the 27 sites sampled, continuing the data presented by Reed & Webster (2004).

# 3 Analytical procedures

## 3.1 Methodologies

The sample preparation and analytical procedures used for samples taken in 2005 were the same as those used for the 2003 survey (Reed & Webster, 2004). Trace metals were analysed by inductively coupled plasma-mass spectroscopy (ICP-MS) after cold dilute 2M HCl extraction of <63 μm sediment fraction and hot acid digestion of <500 μm fraction. The concentrations of polycyclic aromatic hydrocarbons were measured by gas chromatography-mass selective detection in selected ion mode (GC-MS-SIM) in extracts of the total (<500 μm) freeze dried sediment fractions. Particle size distributions were determined with a Galai WCIS l00 particle size analyser. TOC was measured by an Elemental Combustion Analyser. A detailed description of analytical methodologies used are presented in Appendix 1.

## 3.2 Detection Limits

The detection limits for the sediment metal concentrations determined by ICP-MS were Cu = 0.01 mg $kg^{-1}$, Zn = 0.02 mg $kg^{-1}$ and Pb = 0.002 mg $kg^{-1}$ when measured in cold dilute 2M HCl extracts, and Cu = 0.2 mg $kg^{-1}$, Zn = 0.4 mg $kg^{-1}$, Pb = 0.04 mg $kg^{-1}$, As = 0.2 mg $kg^{-1}$, Cd = 0.01 mg $kg^{-1}$, Hg = 0.01 mg $kg^{-1}$, Sb = 0.04 mg $kg^{-1}$ and Sn = 0.1 mg $kg^{-1}$ when measured in hot acid digests. Detection limits were approximately 0.1-0.3 ng $g^{-1}$ dry weight for most PAH compounds with the exception of naphthalene, fluoranthene and pyrene (1.03 ng $g^{-1}$).The limit of detection (LOD) for analysis of TOC is 0.05 g 100 $g^{-1}$ dry weight. There is no detection limit in the analysis of particle size.

## 3.3 Concentration units

Concentrations of trace metals are expressed as mg $kg^{-1}$. Polycyclic aromatic hydrocarbons (PAHs) are adjusted for total organic carbon content and are presented as μg $kg^{-1}$ OC normalised. Total Organic Carbon concentrations (TOC) are given in g 100 $g^{-1}$ dry weight (equivalent to %). Particle size data is expressed as a percentage.

# 4 RESULTS

## 4.1 2005 Trace Metal Concentrations

The results for zinc, copper, and lead from the 1998, 1999, 2001, 2003 and 2005 surveys are presented in Figures 1 to 6, respectively. The sites are ranked according to the 2005 concentrations.

Tin, arsenic, cadmium, mercury and antimony were all measured in 2005 samples. The previous studies have not analysed for these compounds so the data are presented as a single year in Figures 7 to 11, respectively. Quality assurance (QA) data are shown in Appendix 1. All metal results are given in tabulated form in Appendix 2. Total organic carbon concentrations are shown in Appendix 3. Individual metal results are shown in Appendix 4.

### 4.1.1 Zinc

The Whau (U) estuary recorded the highest zinc concentration in the <63 μm fraction, followed by Pakuranga (U), Whau Wairau, Tamaki (U), Motions and Meola. Each of these sites showed a decrease in zinc concentration when compared to the 2003 data, with the exception of Pakarunga (U) which continued to increase.

Anns Creek and Oakley sites continued to show an increase in zinc concentration with increases of 15 and 9%, respectively since 2003. Several sites that were not sampled since 1999, namely Vaughans, Awaruku and Browns Bay, showed a marked decrease in zinc concentration. Sites at Cheltenham, Pukaki, Mangere, and Te Tokaroa similarly showed a decrease in zinc concentration. The remaining sites sampled in 2005 showed only negligable increasing or decreasing zinc concentrations.

The highest zinc concentrations in the total (<500 μm) sediment fraction was recorded at Motions. This was followed by Whau (U) which showed a decrease from the 2003 concentration, corresponding with the decrease seen in the <63 μm fraction at this site. Meola sediment measured the third highest total zinc concentration followed by Pakarunga (U), the latter site had increased zinc concentration by 20% from the concentration recorded in 2003.

In summary, there are ten sites in 2005 that have total zinc concentrations that exceed the ARC Red environmental response criteria of >150 mg $kg^{-1}$. A total of 15 sites have zinc concentrations that lie below the ARC Green environmental response criteria of <124 mg $kg^{-1}$. Two sites, Pakarunga (L) and Mangere, have total zinc concentrations at the ERC-Amber and both have shown a decreasing trend in zinc concentration since 2001.

### 4.1.2 Copper

Highest copper concentrations recorded in 2005 were measured in the <63 μm fraction at the same seven sites as those in 2003. In general, however, most of the sites showed a decrease in copper concentration in the <63 μm sediment fraction with the exception of Meola and Anns Creek. These sites showed a continuous increase in copper concentration since 2001. Again, the sites that were not sampled since 1999, namely Vaughans, Awaruku and Browns Bay, showed a marked decrease in copper concentration, as have Cheltenham, Pukaki, Mangere and Te Tokaroa.

In summary, four sites exceeded the ARC Red environmental response criteria of > 34 mg $kg^{-1}$ for total copper concentration. Total copper concentrations at Motions and Pakuranga (U) increased and both sites are now categorised as being above the red ERC value. Henderson and Anns Creek showed a reduction in total copper concentraion to the amber ERC value. Thirteen sites were below the ARC green ERC value (<19 mg $kg^{-1}$).

### 4.1.3 Lead

Highest lead concentrations in the <63um sediment fraction were measured at Motions and Meola, this was an increase of 9% and 10%, respectively, from the 2003 data. The Whau Wairau sediments showed the third highest lead concentrations although this was a slight decrease from 2003. Whau (U) lead concentration was the fourth highest concentration measured, although this site showed a 19% decrease in lead concentration since 2003, as seen with both zinc and copper concentrations at this site. Hobson had a 35% increase in lead concentration after showing a decreasing trend since 2001.

For total lead concentrations in <500 μm sediment fractions, Motions showed a 36% increase in lead concentration since 2003 and was the highest concentration measured of all sites. All other sites in the top seven showed either a decrease or were similar to other years sampled. Total lead concentration in the Whau Wairau, Meola, Oakley and Whau (L) generally showed a decreasing trend as seen at these sites since 1999.

In summary, three sites have concentrations above the ERC red value (>50 mg $kg^{-1}$), this is lower than in 2003 (there were previosuly five sites above the ERC red value in 2003). Seven sites are at the ERC amber value, interestingly five of these sites showed a consistent decreasing trend in lead concentration since 1999. Pakarunga (U), however, has increasing total lead concentration and has moved from below the ERC green value in 2001 (< 30 mg $kg^{-1}$), to the ERC amber value and now ranks 7$^{th}$ on the list of highest total lead concentration.

### 4.1.4 Other Metals

For the first time five extra metal compounds were analysed from each of the 27 sample sites. These included arsenic, cadmium, mercury, antimony and tin. At all sites concentrations of cadmiuim, arsenic and antimony were below the ISGQ-Low ANZECC 2000 guidelines. At 8 sites concentrations of mercury were above the ISGQ-Low guidelines (0.15 mg $kg^{-1}$ dry wt). Motions and Meola ranked in the top three highest concentrations for each of tin, cadmium, mercury and antimony indicating heavy metal contamination at these sites.

**Figure 1.**

Zinc concentrations (mg kg dry wt) in the silt fractions (<63 μm) extracted with cold 2M HCl of samples from 1998, 1999, 2001, 2003 and 2005. Values are means ± standard error.

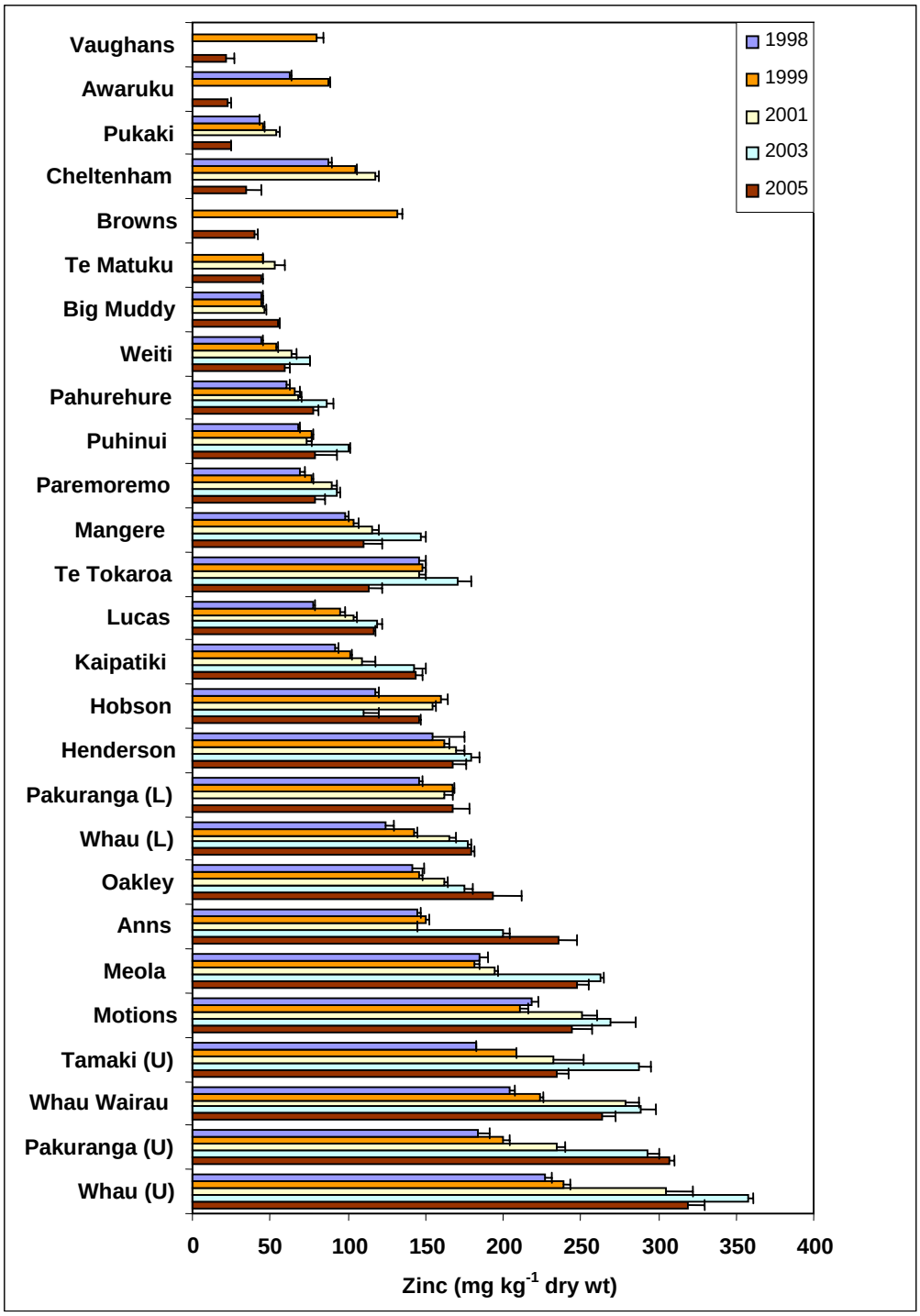
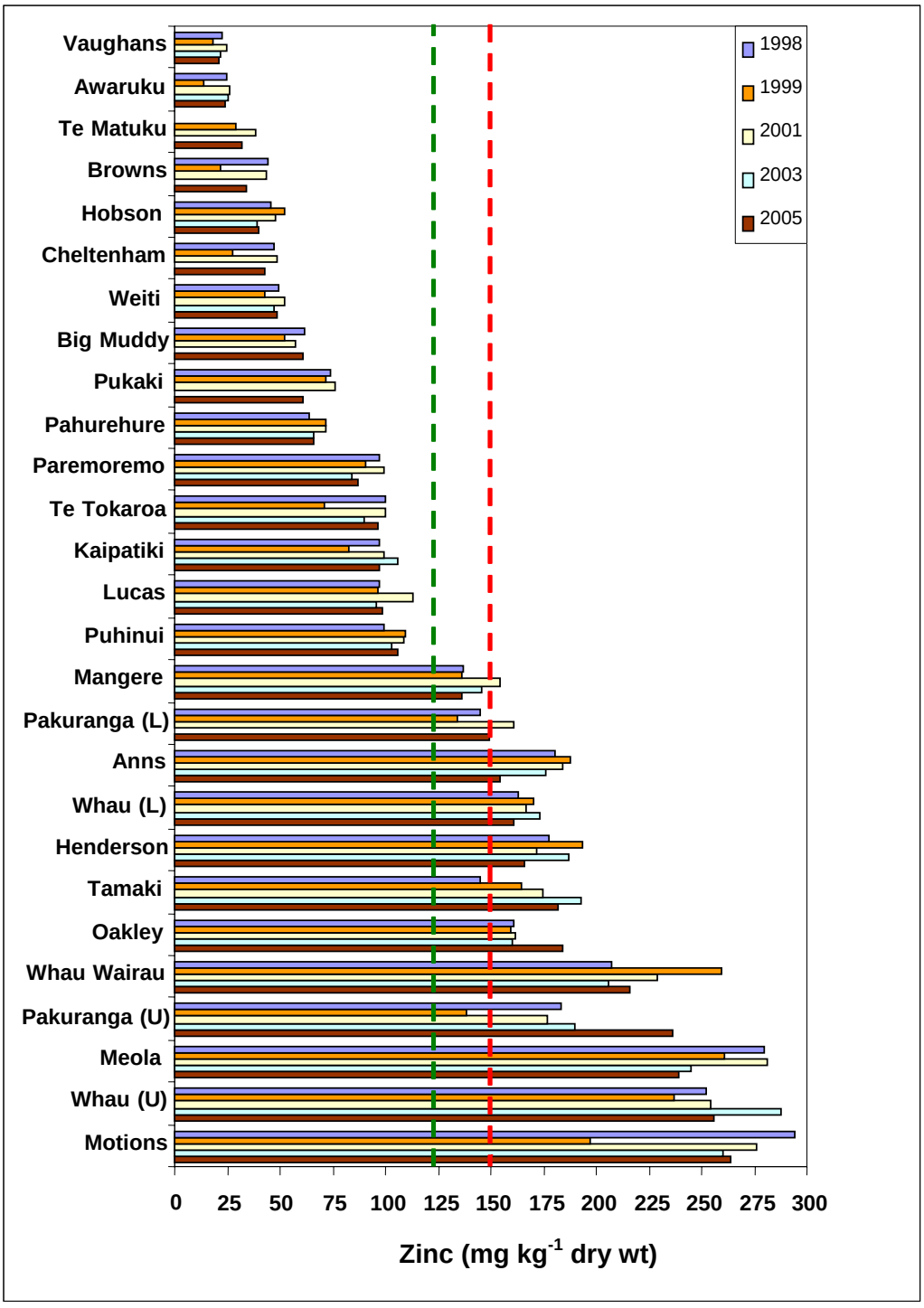


**Figure 2.**

Zinc concentrations (mg kg dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 1998, 1999, 2001, 2003 and 2005.




ERC Green = <124 mg kg dry wt

ERC Red = >150 mg kg dry wt

**Figure 3.**

Copper concentrations (mg kg dry wt) in the silt fractions (<63 μm) extracted with cold 2M HCl of samples from 1998, 1999, 2001, 2003 and 2005. Values are means ± standard error.

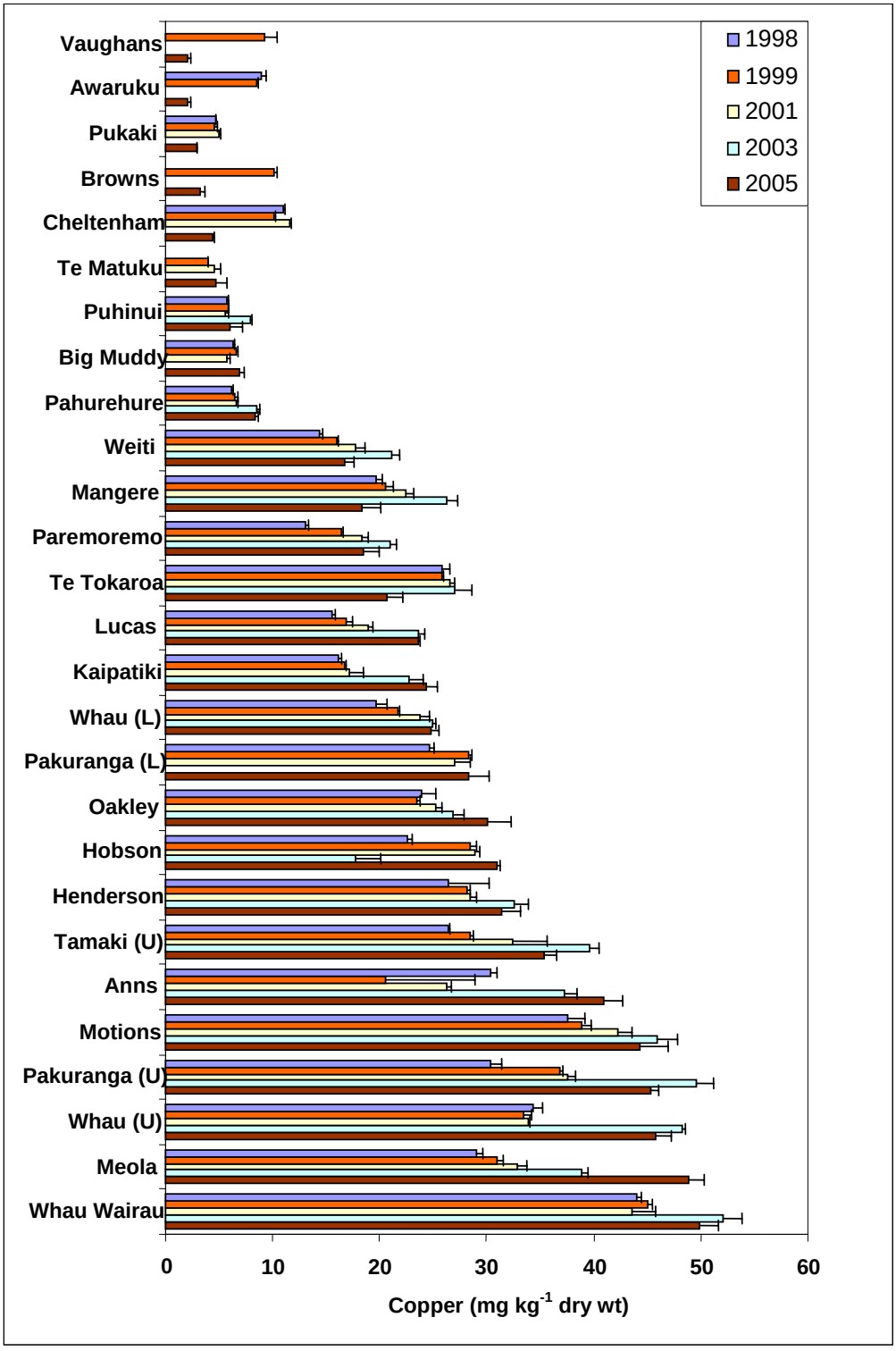
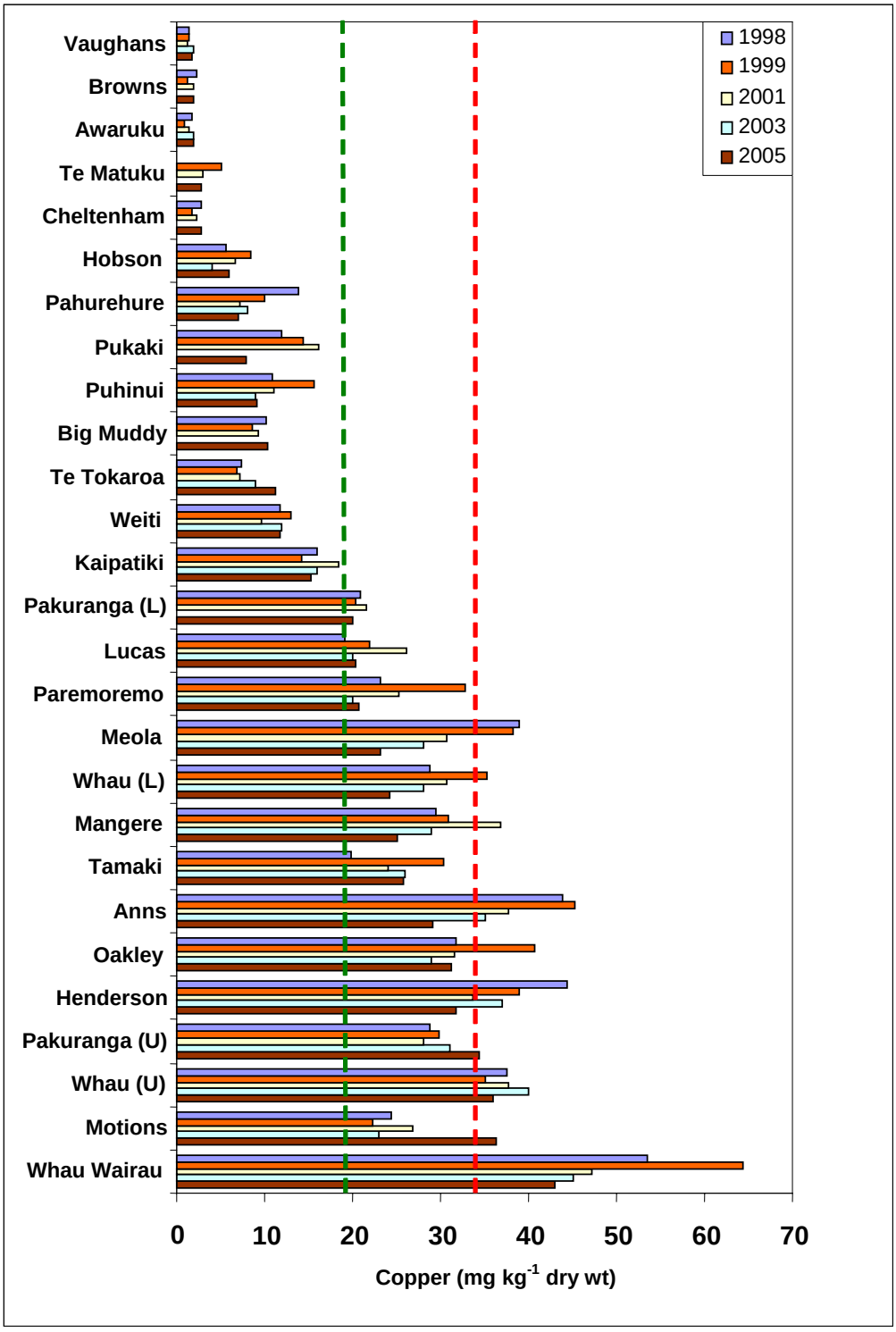


**Figure 4.**

Copper concentrations (mg kg dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 1998, 1999, 2001, 2003 and 2005.




ERC Green = <19 mg kg dry wt

ERC Red = >34 mg kg dry wt

**Figure 5.**

Lead concentrations (mg kg$^{-1}$ dry wt) in the silt fractions (<63 μm) extracted with cold 2M HCl of samples from 1998, 1999, 2001, 2003 and 2005. Values are means ± standard error.

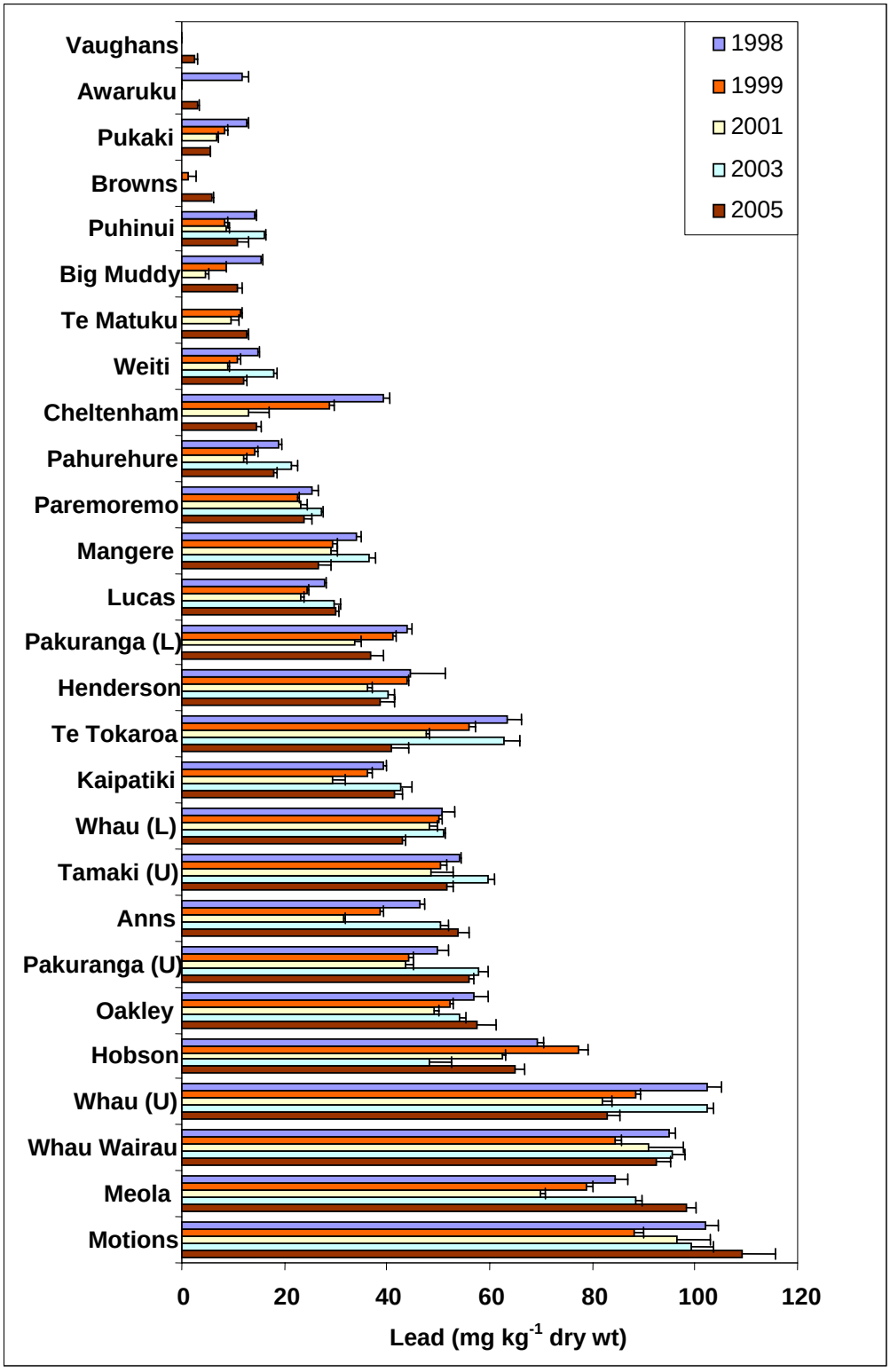
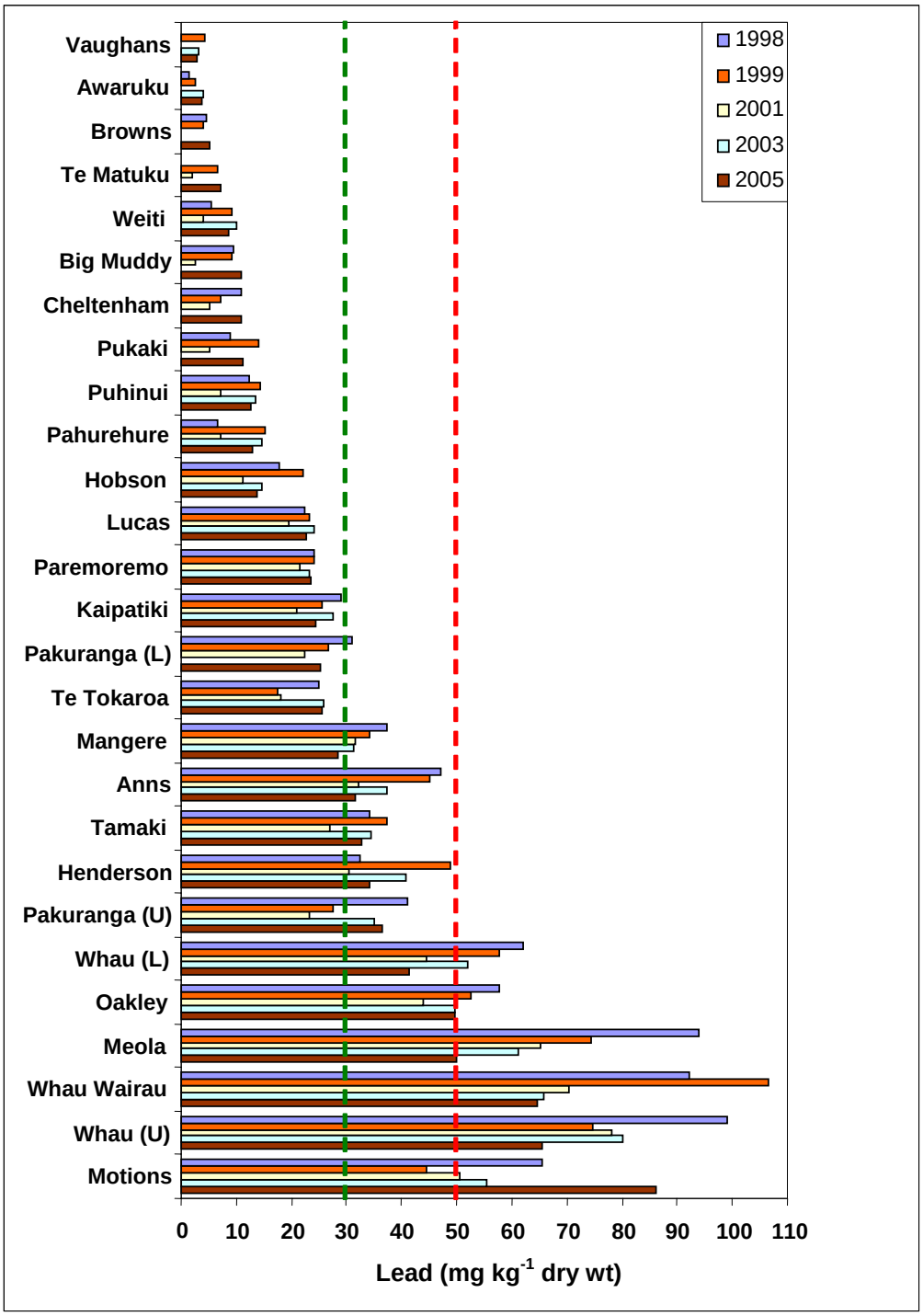


**Figure 6.**

Lead concentrations (mg kg$^{-1}$ dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 1998, 1999, 2001, 2003 and 2005.

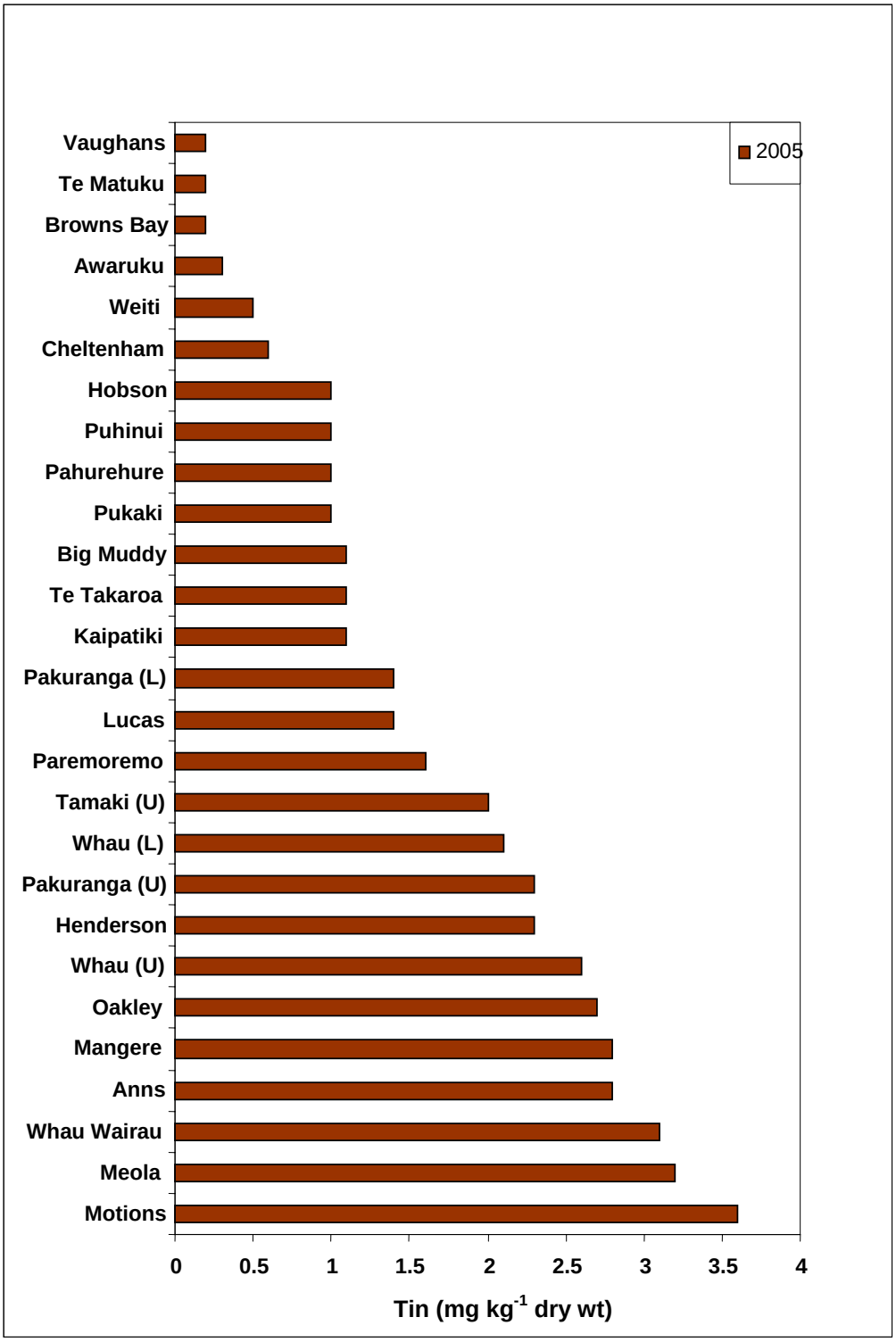



ERC Green = <30 mg kg$^{-1}$ dry wt

ERC Red = >50 mg kg$^{-1}$ dry wt

**Figure 7.**

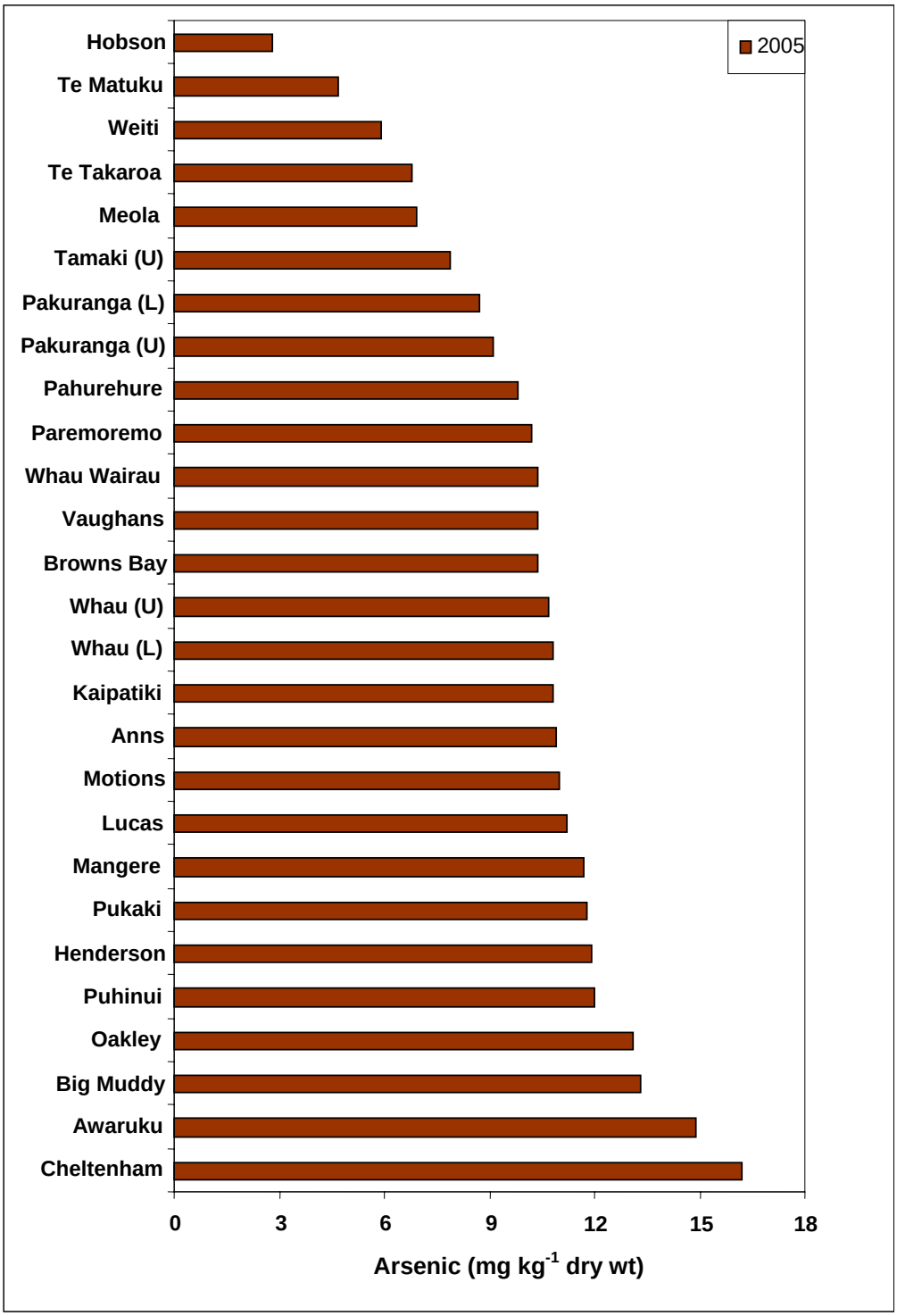
Tin concentrations (mg kg· dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 2005.




* No ERC, ISQG-Low values for Tin.

Figure 8.

Arsenic concentrations (mg kg$^{-1}$ dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 2005.

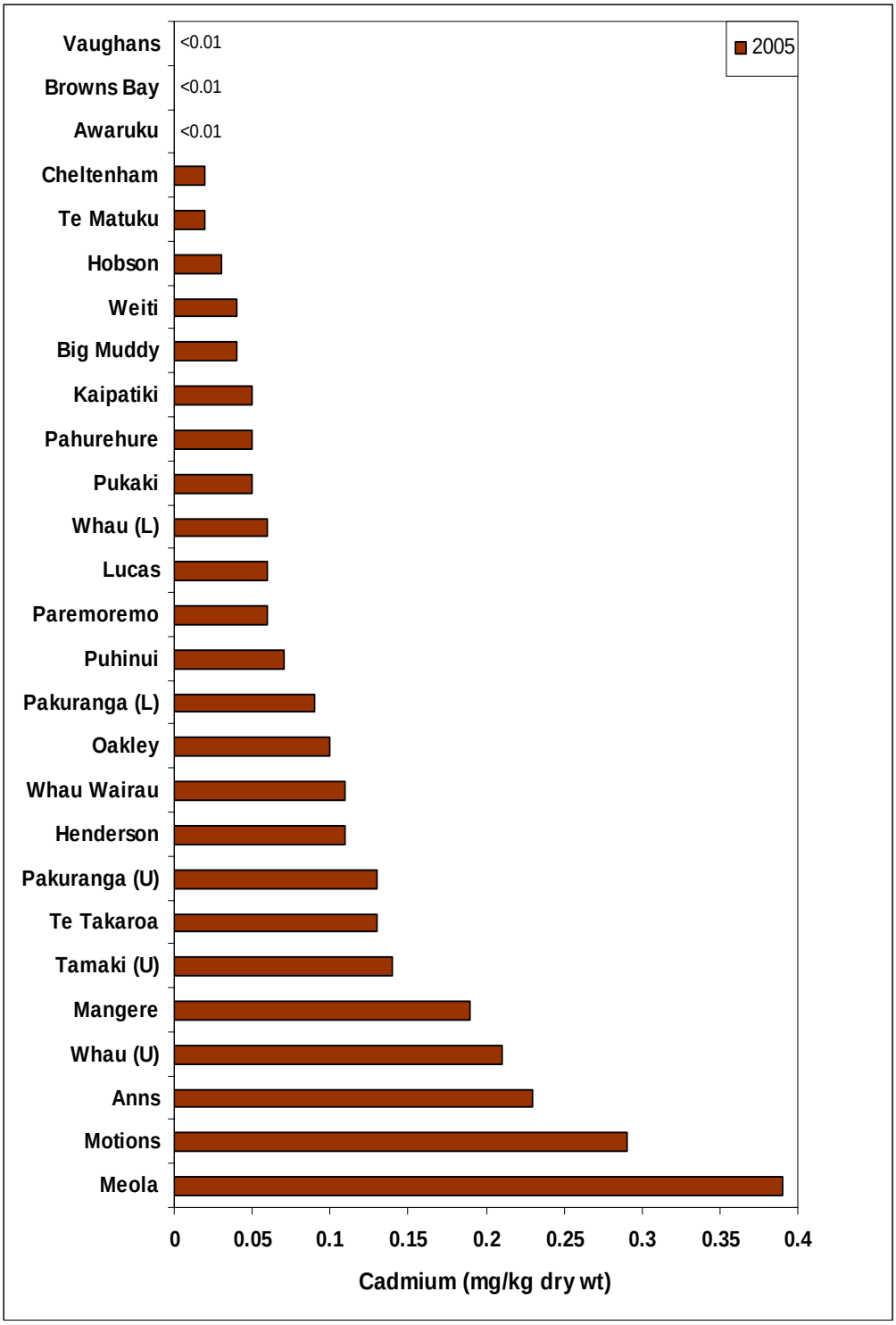



No ERC values for Arsenic.

ISQG-Low = 20 mg kg$^{-1}$ dry wt; ISQG-High = 70 mg kg$^{-1}$ dry wt.

Figure 9.

Cadmium concentrations (mg kg$^{-1}$ dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 2005.

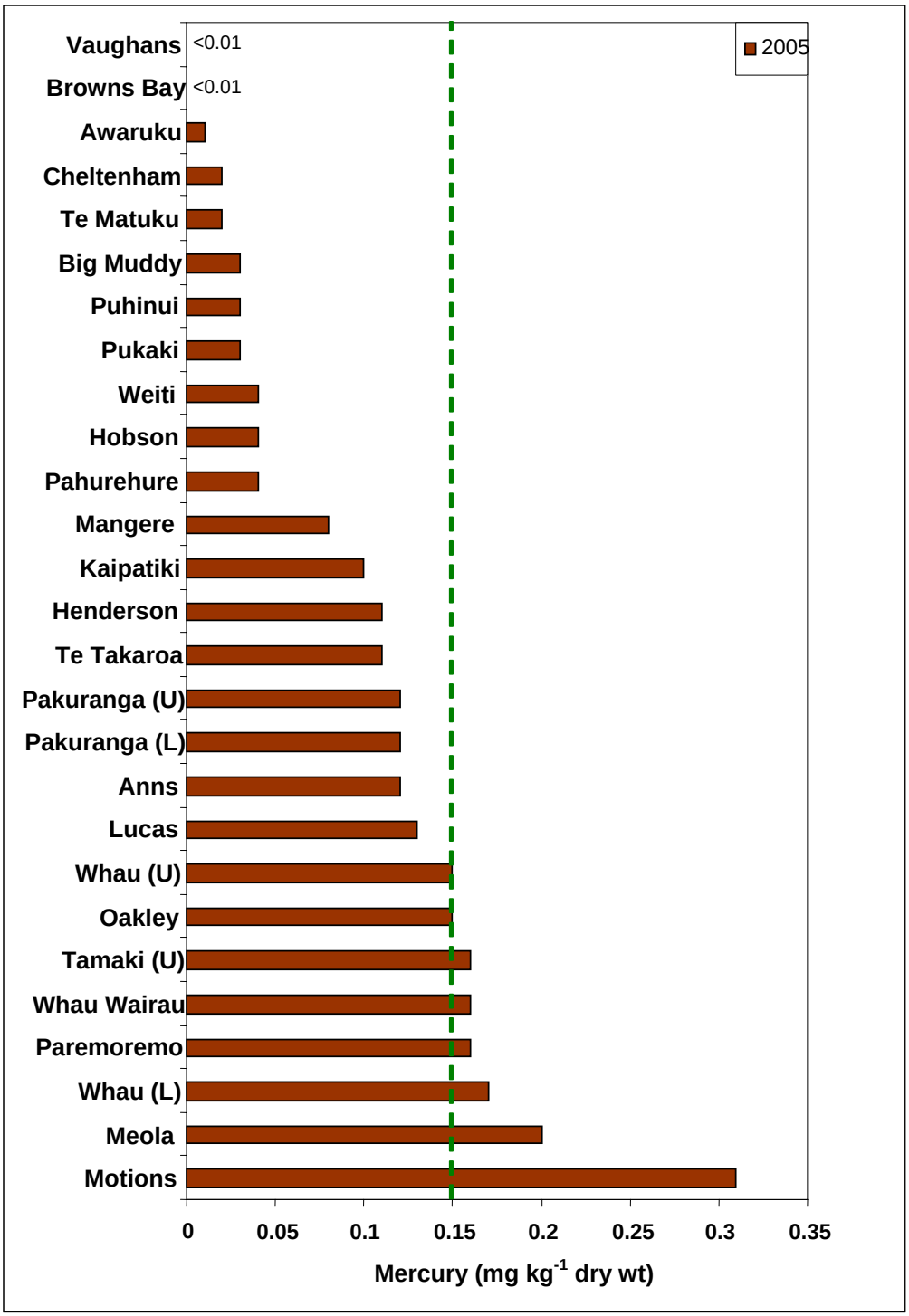



No ERC values for Cadmium.

ISGQ-Low = 1.5 mg kg$^{-1}$ dry wt; ISGQ-High = 10 mg kg$^{-1}$ dry wt.

Figure 10.

Mercury concentrations (mg kg$^{-1}$ dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 2005.



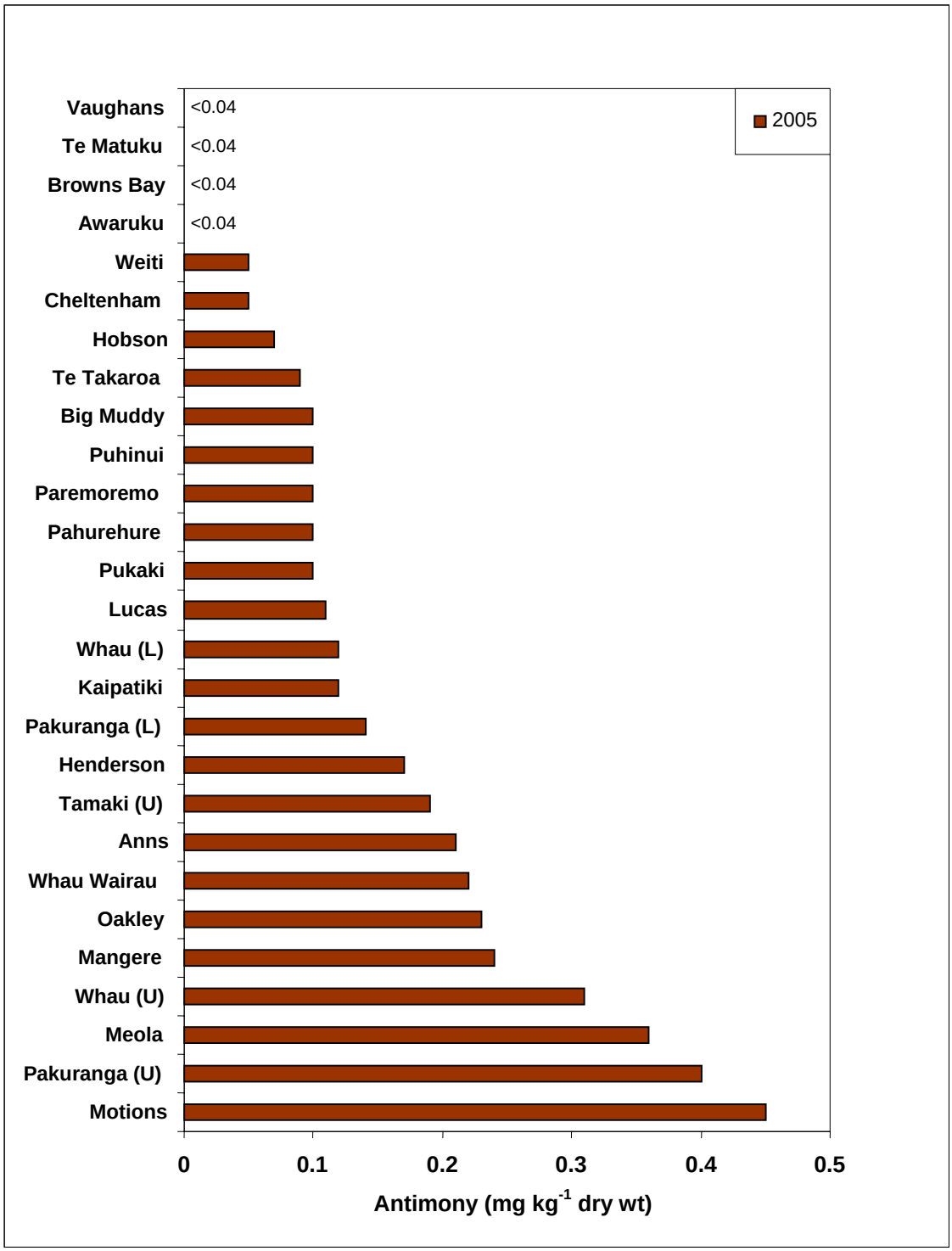

—— ISGQ-Low = 0.15 mg kg$^{-1}$ dry wt

ISGQ-High = 1 mg kg$^{-1}$ dry wt.

No ERC values for Mercury.

Figure 11.

Antimony concentrations (mg kg⁻ dry wt) in total sediment (<500 μm) digested with hot concentrated acid in samples from 2005.




No ERC values for Antimony.

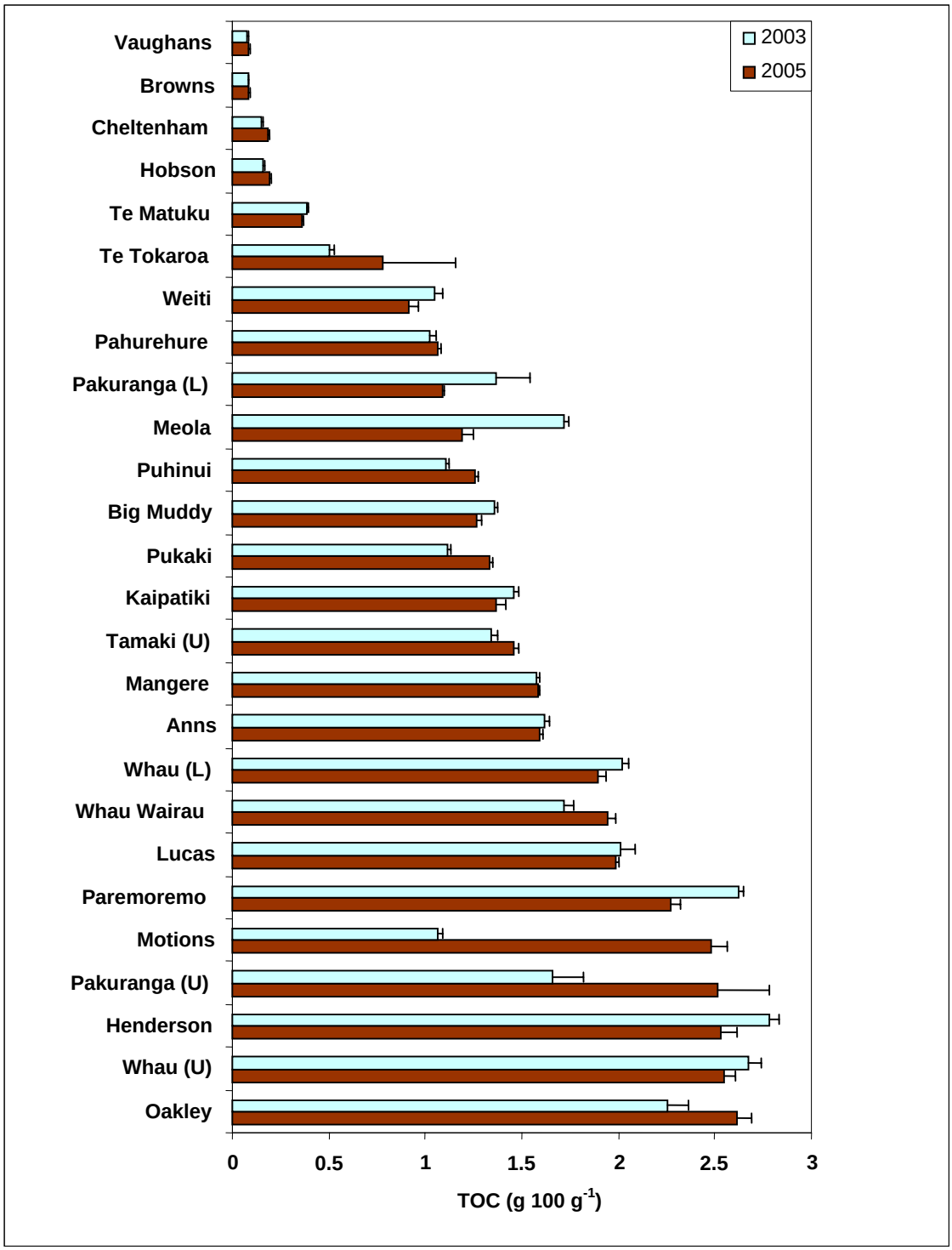
ISGQ-Low = 2 mg kg⁻ dry wt; ISGQ-High = 25 mg kg⁻ dry wt.

## 4.2 Total organic carbon

TOC was measured for the second time in the long term monitoring survey, having been previously measured in 2003. Figure 12 shows the results obtained in 2003 and 2005. Oakley had the highest concentration of TOC in 2005 and most sites had similar concentrations to 2003. There were a few exceptions, namely, Motions and Pakuranga (U) which had a 130% and 50% increase in TOC compared to 2003. All TOC results are shown in Appendix 3.

Figure 12.

Total Organic Carbon in total sediment (<500 μm) in 2005 samples. Values are means ± standard error of means.



## 4.3 Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAHs) were analysed for the first time since the 2001 monitoring study by Hawken et al. (2002). A total of 24 polycyclic aromatic hydrocarbons were analysed, encompassing a range of low to high molecular weights. Data presented for comparison with previous monitoring studies have not been normalised for organic carbon as TOC was not measured prior to 2003 (Figure 13).

Total PAH data was normailsed to 1% total organic carbon. High molecular weight PAHs (HMW-PAHs) and low molecular weight PAHs (LMW-PAHs) were compared with the ARC environmental response criteria and ANZECC sediment quality guidelines (Tables 1 and 2). Quality assurance (QA) data are shown in Appendix 1. All PAH results are given in tabulated form in Appendix 4.

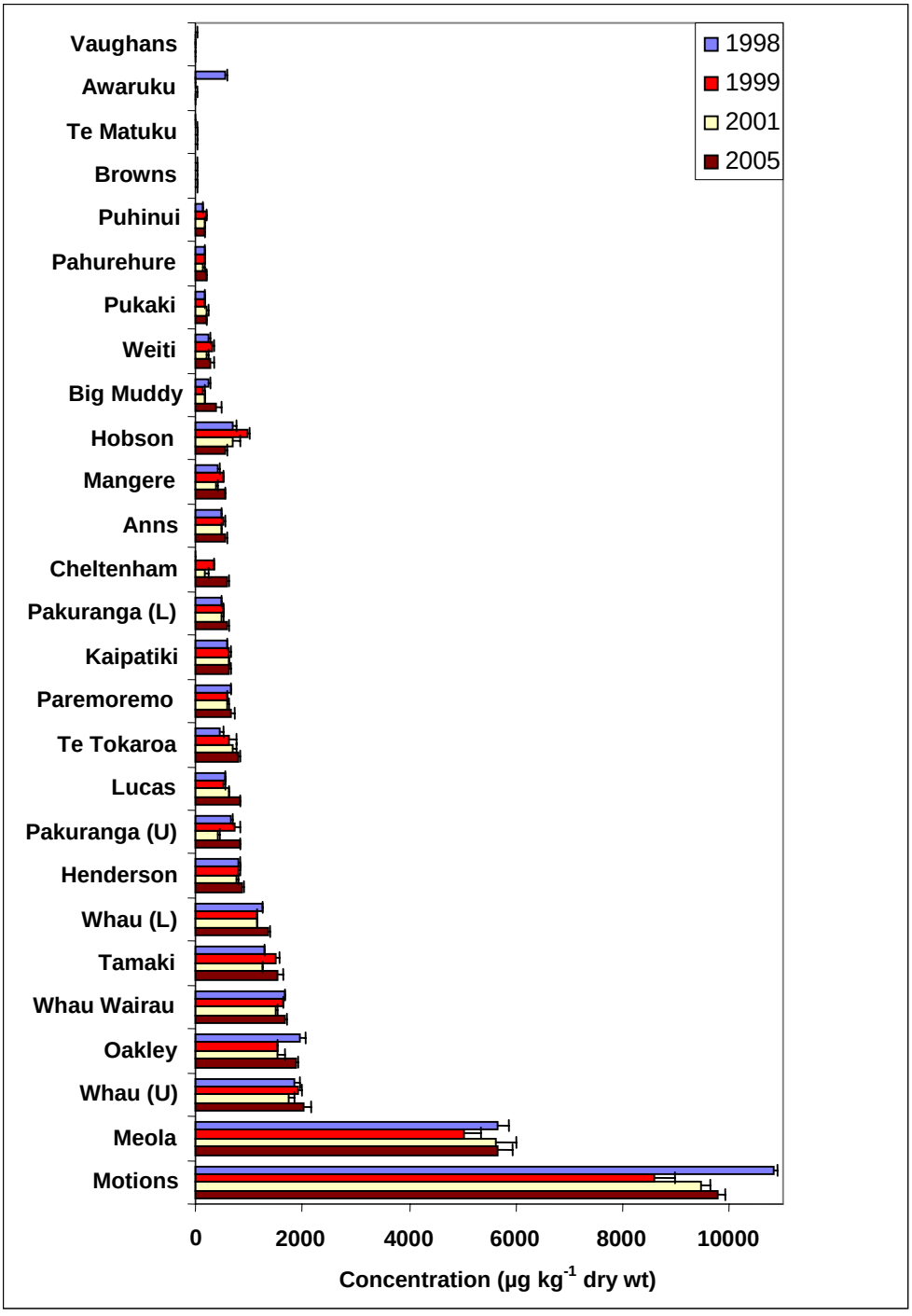
PAHs were detected at all sites sampled. Two sites have concentrations of total PAHs that exceed those measured at other sites sampled, these are Motions and Meola. Concentrations at both these sites have shown an increasing trend since 1999, however they have not reached concentrations previously measured. All other sites have total PAH concentrations at similar concentrations as those measured in 1998.

At four sites, high molecular weight PAHs are above the ERC red value. These are Motions, Meola, Whau (U) and Oakley. Seven sites have PAH concentrations above the ERC amber value and these include Whau Wairau, Whau (L), Tamaki (U), Henderson, Pakuranga (U), Lucas and Paremoremo.

At three sites, Motions, Meola and the Whau (U), low molecular weight PAHs exceed the ISQG-low trigger values ( ANZECC, 2000). All other sites are below the ISQG-low trigger value for low molecular weight PAHs.

**Figure 13.**

Total polycyclic aromatic hydrocarbon (PAH) concentrations (µg kg⁻ dry wt) in total sediment (<500 µm) samples from 1999, 2001 and 2005. Values are means ± standard error.




Note: Data has not been normalised to 1% organic carbon.

**Table. 1**

Concentrations (mg kg$^{-1}$ dry wt) of high molecular weight polycyclic aromatic hydrocarbons (HMW-PAH) in total sediment (<500 μm) in samples from 2005. Values are means ± standard error. Data has been normalised to 1% organic carbon.

| Site | HMW-PAH* | S.E. |
|---|---|---|
| Motions | 12.74 | 0.34 |
| Meola | 3.31 | 0.20 |
| Whau (U) | 2.36 | 0.19 |
| Oakley | 2.32 | 0.07 |
| Whau Wairau | 1.59 | 0.03 |
| Whau (L) | 1.21 | 0.03 |
| Tamaki | 1.10 | 0.07 |
| Henderson | 1.06 | 0.03 |
| Pakuranga (U) | 0.90 | 0.04 |
| Lucas | 0.81 | 0.02 |
| Paremoremo | 0.72 | 0.07 |
| Kaipatiki | 0.39 | 0.03 |
| Anns | 0.39 | 0.01 |
| Mangere | 0.39 | 0.01 |
| Pakuranga (L) | 0.28 | 0.03 |
| Te Tokaroa | 0.30 | 0.02 |
| Big Muddy | 0.24 | 0.07 |
| Hobson | 0.05 | 0.007 |
| Cheltenham | 0.06 | 0.002 |
| Weiti | 0.12 | 0.035 |
| Pukaki | 0.11 | 0.018 |
| Pahurehure | 0.08 | 0.008 |
| Puhinui | 0.08 | 0.003 |
| Te Matuku | 0.002 | 0.0002 |
| Browns | 0.0008 | 0.0002 |
| Awaruku | 0.0004 | 0.00001 |
| Vaughans | 0.0003 | 0.00002 |

* High molecular weight PAHs are the sum of concentrations of benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene and pyrene.

** Sites above red line exceed ERC Red zone (>1.7 mg kg$^{-1}$ dry wt, OC normailsed) , sites above yellow line fall within the ERC Amber zone (0.66-1.7 mg kg$^{-1}$ dry wt, OC normailsed) and sites above green line fall within the ERC green zone(<0.66 mg kg$^{-1}$ dry wt, OC normailsed).

**Table.2**

Concentrations(mg kg dry wt) of low molecular weight polycyclic aromatic hydrocarbons (LMW-PAH) in total sediment (<500 μm) in samples from 2005. Values are means ± standard error. Data has been normalised to 1% organic carbon.

| Site | LMW-PAH* | SE |
|---|---|---|
| Motions | 2894 | 136 |
| Meola | 661 | 101 |
| Whau (U) | 608 | 50 |
| Oakley | 527 | 37 |
| Whau Wairau | 339 | 13 |
| Whau (L) | 277 | 12 |
| Henderson | 265 | 23 |
| Tamaki | 231 | 17 |
| Pakuranga (U) | 206 | 11 |
| Lucas | 179 | 7 |
| Paremoremo | 172 | 19 |
| Anns | 110 | 5 |
| Mangere | 107 | 7 |
| Kaipatiki | 100 | 8 |
| Big Muddy | 72 | 14 |
| Te Tokaroa | 66 | 7 |
| Pakuranga (L) | 57 | 6 |
| Pukaki | 38 | 3 |
| Weiti | 35 | 15 |
| Pahurehure | 27 | 4 |
| Puhinui | 27 | 1 |
| Hobson | 11 | 3 |
| Cheltenham | 10 | 1 |
| Te Matuku | 2 | 0 |
| Browns | 0.3 | 0 |
| Awaruku | 0.2 | 0 |
| Vaughans | 0.2 | 0 |

* Low molecular weight PAHs are the sum of concentrations of acenaphthene, acenaphthalene, anthracene, fluorene, 2-methylnaphthalene, naphthalene and phenanthrene.

** Sites above red line exceed ISQG-Low for low molecular weight PAHs (>552 μg $kg^{-1}$ dry wt, OC normailsed).

## 4.4 Particle size distributions

Particles size distributions in the sediment samples (<500 μm fraction) in terms of surface area and volume are presented in Tables 3 - 6. Sediment particle size were analysed initially in the 0-300 μm size range. For samples with a proportion of their particle size greater than 300μm, these were re-analysed for area and volume between 2-600 μm. Surface area is relevant to the surface adsorption capacity of the sediments for chemical contaminants whereas volume is proportional to the mass and weight of the sediment fractions. Particle size results for individual samples are presented in Appendix 4.

Table 3.

Percentage contributions to surface area based on Udden-Wentworth particle size fractions (in range 0 – 300 μm). Values (%) are means. Sites listed in order of decreasing fine sand contribution.

| | clay | very fine silt | fine silt | medium silt | coarse silt | very fine sand | fine sand | medium sand |
|---|---|---|---|---|---|---|---|---|
| **Site** | **0μm-** | **3.9-** | **7.8-** | **15.6-** | **31.3-** | **62.5-** | **125-** | **250-300** |
| **Weiti** | 5 | 3 | 5 | 6 | 13 | 42 | 26 | 0 |
| **Kaipatiki Creek** | 10 | 5 | 6 | 7 | 12 | 26 | 34 | 1 |
| **Lucas** | 26 | 11 | 12 | 13 | 18 | 14 | 6 | 0 |
| **Paremoremo** | 30 | 14 | 15 | 14 | 16 | 9 | 1 | 0 |
| **Henderson** | 21 | 8 | 10 | 9 | 13 | 25 | 14 | 0 |
| **Whau (U)** | 13 | 5 | 7 | 6 | 13 | 34 | 22 | 0 |
| **Whau (L)** | 24 | 11 | 13 | 15 | 24 | 13 | 0 | 0 |
| **Whau (Wairau)** | 13 | 7 | 8 | 7 | 14 | 30 | 22 | 0 |
| **Oakley** | 26 | 10 | 12 | 11 | 17 | 18 | 6 | 0 |
| **Meola** | 6 | 3 | 3 | 3 | 9 | 36 | 39 | 1 |
| **Te Tokaroa** | 4 | 2 | 2 | 2 | 6 | 33 | 49 | 2 |
| **Motions** | 16 | 6 | 7 | 6 | 11 | 31 | 23 | 0 |
| **Hobson Bay** | 1 | 0 | 0 | 1 | 9 | 45 | 43 | 0 |
| **Tamaki** | 21 | 8 | 8 | 5 | 12 | 23 | 23 | 0 |
| **Pakuranga (U)** | 17 | 7 | 6 | 5 | 14 | 23 | 28 | 0 |
| **Pakuranga (L)** | 9 | 3 | 4 | 4 | 14 | 36 | 28 | 0 |
| **Big Muddy** | 21 | 11 | 11 | 13 | 16 | 19 | 8 | 0 |
| **Anns** | 32 | 15 | 17 | 16 | 17 | 2 | 0 | 0 |
| **Mangere** | 25 | 12 | 15 | 19 | 23 | 5 | 0 | 0 |
| **Pukaki** | 19 | 10 | 11 | 18 | 27 | 12 | 4 | 0 |
| **Puhinui** | 14 | 7 | 10 | 17 | 31 | 16 | 6 | 0 |
| **Pahurehure** | 11 | 6 | 8 | 8 | 11 | 25 | 30 | 0 |
| **Te Matuku** | 1 | 0 | 1 | 1 | 5 | 27 | 61 | 3 |
| **Cheltenham** | 1 | 0 | 1 | 1 | 4 | 33 | 58 | 2 |
| **Browns Bay** | 0 | 0 | 0 | 0 | 2 | 28 | 68 | 1 |
| **Awaruku** | 1 | 0 | 1 | 1 | 3 | 32 | 61 | 1 |
| **Vaughans** | 0 | 0 | 0 | 0 | 2 | 25 | 68 | 3 |

**Table 4.**

Percentage contributions to surface area based on Udden-Wentworth particle size fractions (in range 2 – 600 μm). Re-analysed samples for inclusion of particle size greater than 300μm. Values (%) are means. Sites listed in order of decreasing fine sand contribution.

| | clay | very fine silt | fine silt | medium silt | coarse silt | very fine sand | fine sand | medium sand | coarse sand |
|---|---|---|---|---|---|---|---|---|---|
| Site | 2μm- | 3.9- | 7.8- | 15.6- | 31.3- | 62.5- | 125- | 250-500 | 500-600 |
| Weiti | 1 | 3 | 6 | 7 | 12 | 39 | 32 | 1 | 0 |
| Kaipatiki Creek | 2 | 5 | 6 | 8 | 15 | 24 | 37 | 3 | 0 |
| Lucas | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Paremoremo | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Henderson | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Whau (U) | 2 | 6 | 8 | 6 | 13 | 33 | 30 | 1 | 0 |
| Whau (L) | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Whau (Wairau) | 2 | 6 | 10 | 8 | 14 | 32 | 27 | 1 | 0 |
| Oakley | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Meola | 1 | 2 | 3 | 3 | 8 | 35 | 46 | 2 | 0 |
| Te Tokaroa | 1 | 1 | 2 | 2 | 6 | 32 | 53 | 2 | 0 |
| Motions | 2 | 6 | 9 | 9 | 13 | 30 | 30 | 2 | 0 |
| Hobson Bay | 0 | 0 | 0 | 1 | 8 | 39 | 48 | 3 | 0 |
| Tamaki | 2 | 4 | 6 | 5 | 15 | 29 | 39 | 1 | 0 |
| Pakuranga (U) | 3 | 8 | 9 | 8 | 13 | 25 | 32 | 2 | 0 |
| Pakuranga (L) | 1 | 3 | 5 | 5 | 15 | 35 | 35 | 1 | 0 |
| Big Muddy | 2 | 5 | 10 | 14 | 23 | 27 | 16 | 1 | 0 |
| Anns | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Mangere | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Pukaki | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Puhinui | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Pahurehure | 2 | 5 | 9 | 8 | 10 | 25 | 40 | 1 | 0 |
| Te Matuku | 0 | 1 | 1 | 1 | 5 | 27 | 60 | 6 | 0 |
| Cheltenham | 0 | 0 | 0 | 1 | 3 | 24 | 63 | 9 | 0 |
| Browns Bay | 0 | 0 | 0 | 0 | 2 | 19 | 71 | 8 | 0 |
| Awaruku | 0 | 0 | 0 | 1 | 3 | 27 | 61 | 8 | 0 |
| Vaughans | 0 | 0 | 0 | 0 | 2 | 22 | 68 | 7 | 0 |

n/a = Sample not analysed for particle size 2-600 μm as no proportion of their particle size greater than 300 μm.

**Table 5.**

Percentage contributions to sediment volume based on Udden-Wentworth particle size fractions (in range 0 – 300 μm). Values (%) are means. Sites listed in order of decreasing fine sand contribution.

| | clay | very fine silt | fine silt | medium silt | coarse silt | very fine sand | fine sand | medium sand |
|---|---|---|---|---|---|---|---|---|
| Site | 0μm- | 3.9- | 7.8- | 15.6- | 31.3- | 62.5- | 125- | 250-300 |
| Weiti | 0.1 | 0.2 | 0.6 | 1.6 | 7.4 | 45.0 | 45.0 | 0.0 |
| Kaipatiki Creek | 0.2 | 0.3 | 0.7 | 1.6 | 6.3 | 26.8 | 61.0 | 3.1 |
| Lucas | 1.5 | 1.9 | 4.3 | 9.2 | 25.8 | 33.7 | 23.6 | 0.0 |
| Paremoremo | 2.6 | 3.7 | 7.8 | 14.4 | 31.2 | 32.8 | 7.4 | 0.0 |
| Henderson | 0.7 | 0.8 | 2.0 | 3.8 | 11.5 | 42.4 | 38.7 | 0.0 |
| Whau (U) | 0.3 | 0.4 | 1.2 | 1.8 | 8.3 | 42.6 | 45.5 | 0.0 |
| Whau (L) | 1.5 | 2.2 | 5.3 | 11.9 | 40.3 | 37.8 | 0.9 | 0.0 |
| Whau (Wairau) | 0.4 | 0.6 | 1.4 | 2.3 | 9.7 | 39.5 | 46.3 | 0.0 |
| Oakley | 1.3 | 1.6 | 3.9 | 6.6 | 23.5 | 42.0 | 21.2 | 0.0 |
| Meola | 0.1 | 0.2 | 0.4 | 0.8 | 4.1 | 33.7 | 59.5 | 1.2 |
| Te Tokaroa | 0.1 | 0.1 | 0.2 | 0.4 | 2.8 | 26.9 | 66.1 | 3.5 |
| Motions | 0.4 | 0.4 | 1.1 | 1.9 | 7.4 | 39.6 | 49.2 | 0.0 |
| Hobson Bay | 0.0 | 0.0 | 0.0 | 0.2 | 4.0 | 36.6 | 58.4 | 0.8 |
| Tamaki | 0.8 | 0.9 | 1.6 | 2.1 | 8.7 | 33.1 | 52.9 | 0.1 |
| Pakuranga (U) | 0.5 | 0.6 | 1.1 | 1.9 | 9.4 | 28.6 | 57.8 | 0.0 |
| Pakuranga (L) | 0.2 | 0.2 | 0.5 | 1.1 | 8.1 | 38.3 | 50.5 | 1.1 |
| Big Muddy | 1.3 | 1.7 | 3.9 | 8.5 | 19.7 | 39.4 | 25.6 | 0.0 |
| Anns | 3.9 | 5.3 | 11.8 | 22.6 | 46.2 | 10.3 | 0.0 | 0.0 |
| Mangere | 2.3 | 3.0 | 8.0 | 20.0 | 48.7 | 17.9 | 0.0 | 0.0 |
| Pukaki | 1.2 | 1.7 | 4.2 | 12.7 | 38.5 | 26.5 | 15.3 | 0.0 |
| Puhinui | 0.6 | 1.0 | 2.9 | 9.5 | 34.6 | 31.3 | 20.1 | 0.0 |
| Pahurehure | 0.3 | 0.4 | 1.1 | 2.2 | 6.7 | 30.0 | 58.9 | 0.3 |
| Te Matuku | 0.0 | 0.0 | 0.1 | 0.2 | 1.7 | 18.2 | 73.7 | 6.2 |
| Cheltenham | 0.0 | 0.0 | 0.0 | 0.1 | 1.6 | 23.5 | 70.6 | 4.2 |
| Browns Bay | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 19.1 | 77.3 | 2.7 |
| Awaruku | 0.0 | 0.0 | 0.0 | 0.1 | 1.2 | 23.5 | 73.3 | 1.9 |
| Vaughans | 0.0 | 0.0 | 0.0 | 0.1 | 0.8 | 17.1 | 76.2 | 5.9 |

**Table 6.**

Percentage contributions to sediment volume based on Udden-Wentworth particle size fractions (in range 2 – 600 μm). Re-analysed samples for inclusion of particle size greater than 300μm. Values (%) are means. Sites listed in order of decreasing fine sand contribution.

| | clay | very fine silt | fine silt | medium silt | coarse silt | very fine sand | fine sand | medium sand | coarse sand |
|---|---|---|---|---|---|---|---|---|---|
| Site | 2μm- | 3.9- | 7.8- | 15.6- | 31.3- | 62.5- | 125- | 250-500 | 500-600 |
| Weiti | 0 | 0 | 1 | 1 | 6 | 37 | 52 | 2 | 0 |
| Kaipatiki Creek | 0 | 0 | 1 | 2 | 7 | 21 | 60 | 9 | 0 |
| Lucas | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Paremoremo | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Henderson | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Whau (U) | 0 | 0 | 1 | 1 | 7 | 34 | 53 | 4 | 0 |
| Whau (L) | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Whau (Wairau) | 0 | 0 | 1 | 2 | 8 | 35 | 50 | 3 | 0 |
| Oakley | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Meola | 0 | 0 | 0 | 1 | 3 | 28 | 63 | 4 | 0 |
| Te Tokaroa | 0 | 0 | 0 | 0 | 2 | 25 | 67 | 5 | 0 |
| Motions | 0 | 0 | 1 | 2 | 7 | 30 | 53 | 7 | 0 |
| Hobson Bay | 0 | 0 | 0 | 0 | 3 | 28 | 62 | 7 | 0 |
| Tamaki | 0 | 0 | 1 | 1 | 7 | 26 | 61 | 3 | 0 |
| Pakuranga (U) | 0 | 1 | 1 | 2 | 7 | 26 | 58 | 5 | 0 |
| Pakuranga (L) | 0 | 0 | 1 | 1 | 7 | 32 | 55 | 4 | 0 |
| Big Muddy | 0 | 0 | 2 | 5 | 16 | 35 | 39 | 4 | 0 |
| Anns | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Mangere | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Pukaki | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Puhinui | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Pahurehure | 0 | 0 | 1 | 2 | 4 | 24 | 65 | 4 | 0 |
| Te Matuku | 0 | 0 | 0 | 0 | 2 | 17 | 69 | 11 | 0 |
| Cheltenham | 0 | 0 | 0 | 0 | 1 | 14 | 69 | 15 | 0 |
| Browns Bay | 0 | 0 | 0 | 0 | 1 | 12 | 74 | 13 | 0 |
| Awaruku | 0 | 0 | 0 | 0 | 1 | 18 | 66 | 15 | 0 |
| Vaughans | 0 | 0 | 0 | 0 | 1 | 14 | 73 | 13 | 0 |

n/a = Sample not analysed for particle size 2-600 μm as no proportion of their particle size greater than 300 μm.

## 4.5 Trends over time for metal concentrations

Trends in metal concentrations (<63 μm fraction) at the 27 sites in the programme over the period 1998 to 2003 have been described previously (Timperley and Mathieson, 2002; Reed & Webster, 2004). These trends have been revised to include the 2005 results and are presented in Figures 14 - 16 for zinc, copper and lead, respectively.

Zinc

In 2005, zinc concentrations in the <63 μm sediment fraction at fourteen sites were lower than previously measured in 2003. Eight sites in 2005 measured higher zinc concentrations in the same size fraction in 2003. Pakuranga (U), Oakley and Anns Creek were the only sites that have shown continued increases in zinc concentrations since sampling began in 1999. Future sampling under this monitoring programme will be able to determine whether the lower zinc concentrations measured in 2005 continues in the forthcoming years.

For the first time since 1999, zinc concentrations in the <63 μm sediment fraction were measured at the Awaruku, Vaughans and Browns Bay sites. At each of these sites zinc concentartions have decreased markedly in that time. Five sites, including Big muddy, Te Matuku, Cheltenham, Pukaki and Pakuranga (L) were sampled for the first time since 2001. Zinc concentrations at Big muddy have increased slightly since that time. Te Matuku and Pakuranga (L) have continued to show similar concentrations to those found in 2001, while Pukaki and Cheltenham have markedly decreased concentrations of zinc.

Copper

The trends for copper concentration in the <63 μm fraction are very similar to those for zinc. The majority of sites sampled in 2005 have either remained similar to previous years or have lower concentrations than those measured in 2003. There are seven sites within Auckland estuarine sediments that show an increasing concentration of copper.

Sites that have not been sampled in recent surveys, for example, Cheltenham, Awaruku, Pukaki, Vaughans and Browns Bay show substantially lower copper concentrations than previous sampling in either 1999 or 2001.

Lead

The results for the period 1998 to 2001 show a general decreasing trend in lead concentrations, however for the 2003 and 2005 samples, lead concentrations show similar or slight increasing trends at some sites. For example, lead concentrations have increased at Meola, Motions, Hobson, Big Muddy and Anns Creek.

At three sites, Pukaki, Cheltenham and Awaruku, lead concentrations decreased since initially being sampled in 1999 and 2001. The remainder of sites show a levelling off in lead concentrations. Continual monitoring of these sites will show whether this trend continues over the longer term trend.

**Figure 14.**

Zinc concentrations (mg kg-1) in the <63 µm sediment fractions at individual sites since monitoring began in 1998. Regression line, regression equation and $R^2$ values are displayed for each site, and sites with statistically significant trends are marked with an asterisk. Reference lines indicate sediment quality guideline values for threshold and probable effects.

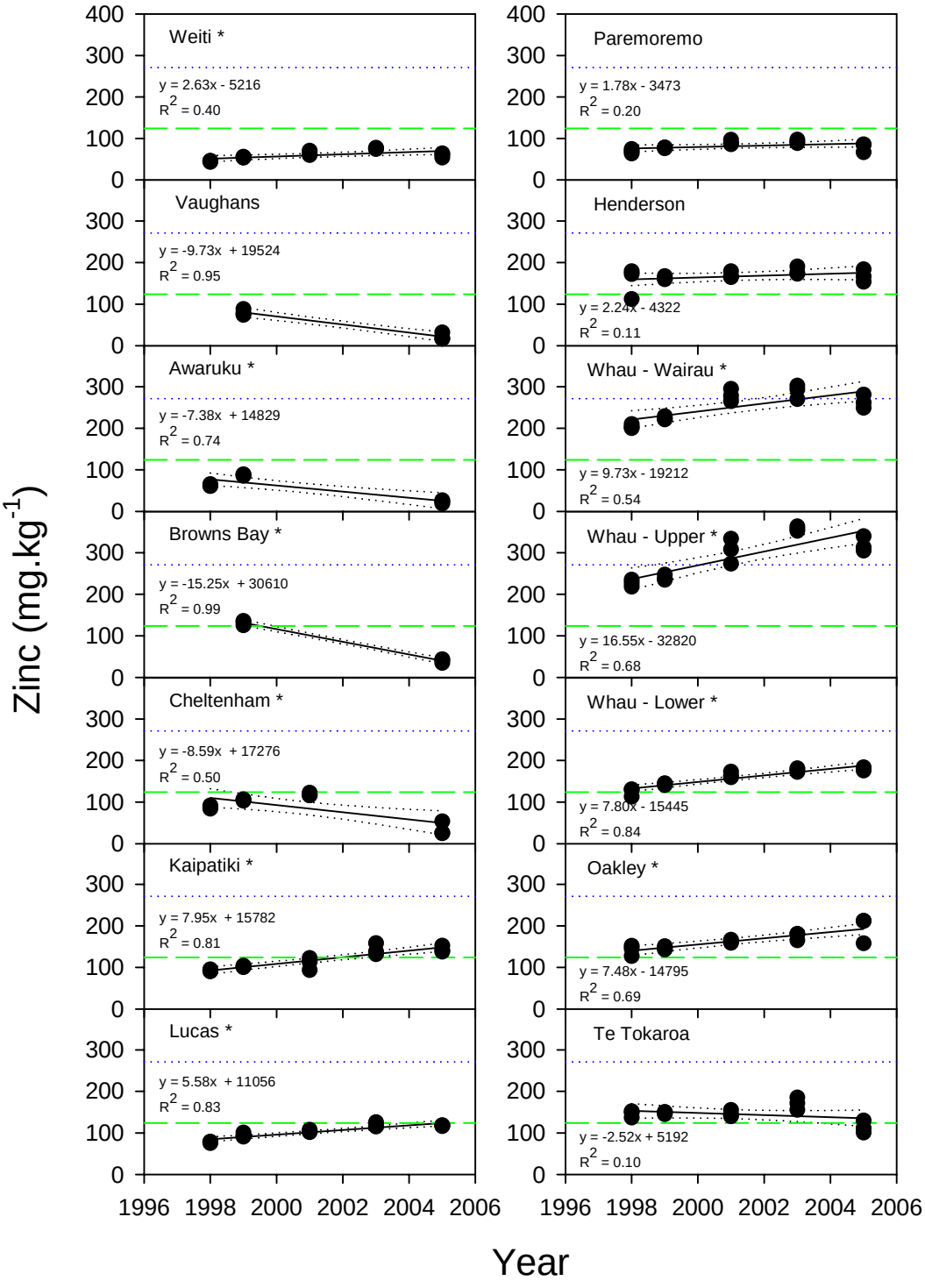


**Figure 14.** (Continued)

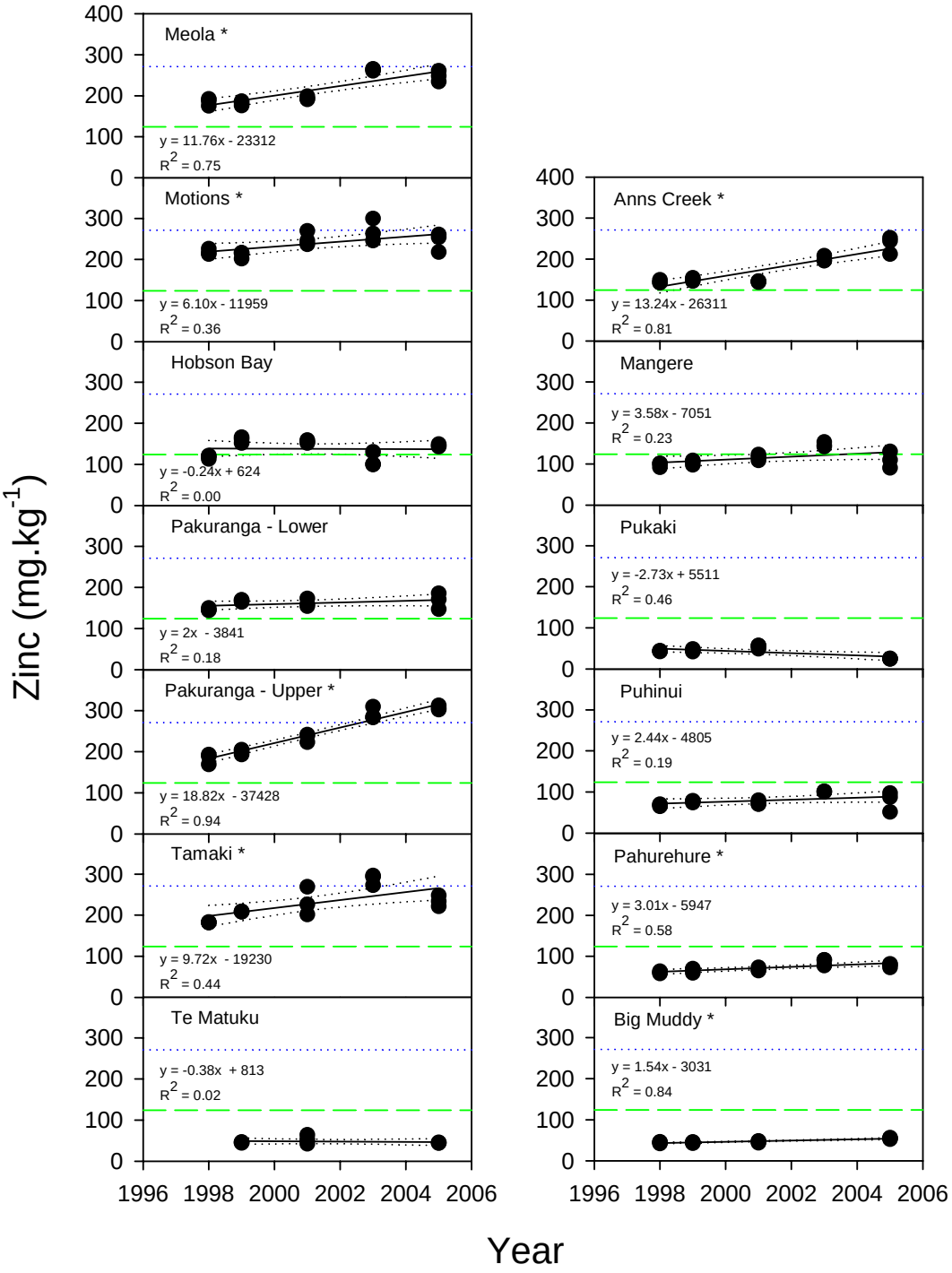


**Figure 15.**

Copper concentrations (mg kg) in the <63 µm sediment fractions at individual sites since monitoring began in 1998. Regression line, regression equation and $R^2$ values are displayed for each site, and sites with statistically significant trends are marked with an asterisk. Reference lines indicate sediment quality guideline values for threshold and probable effects.

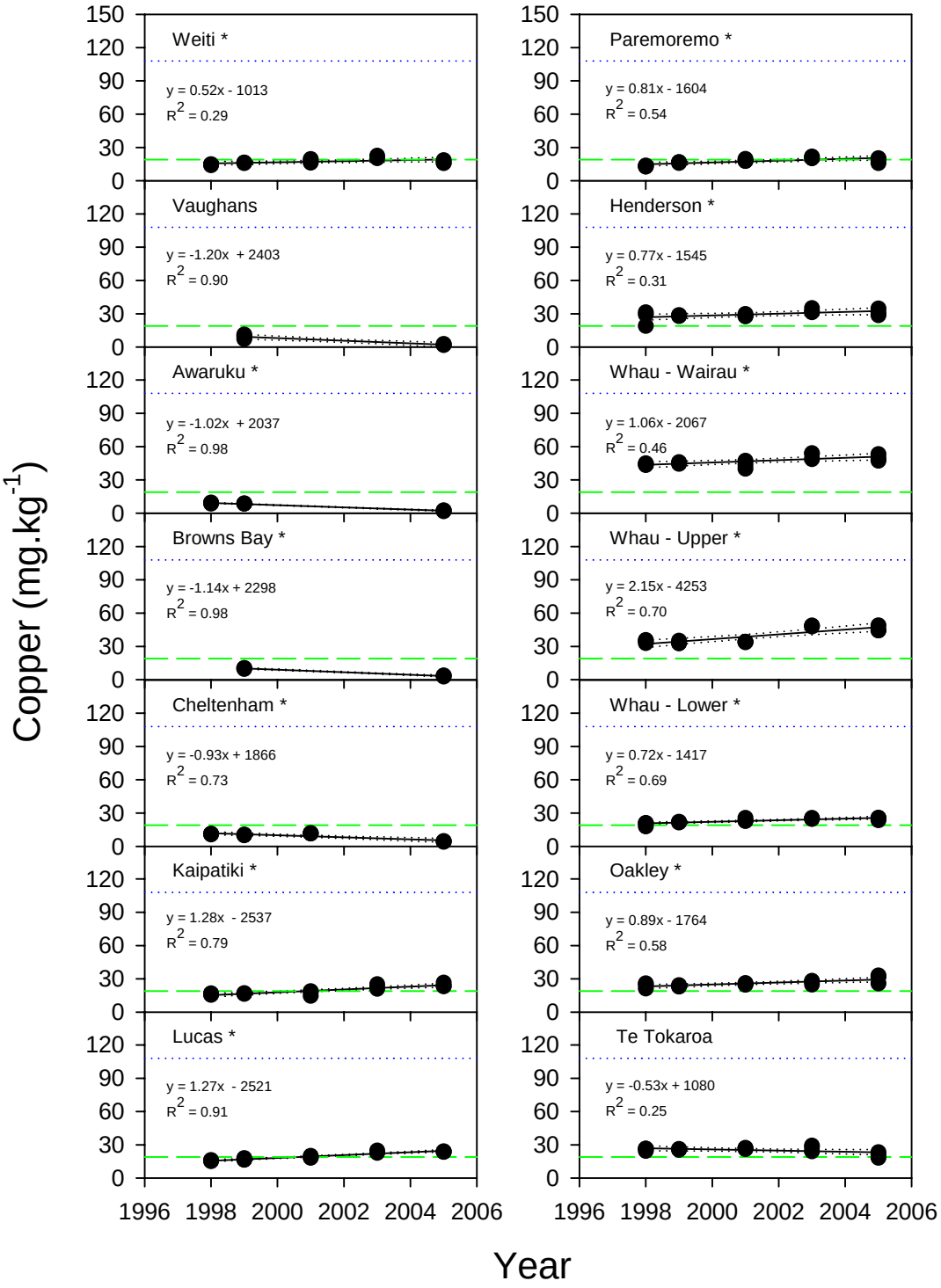


**Figure 15.** (Continued)

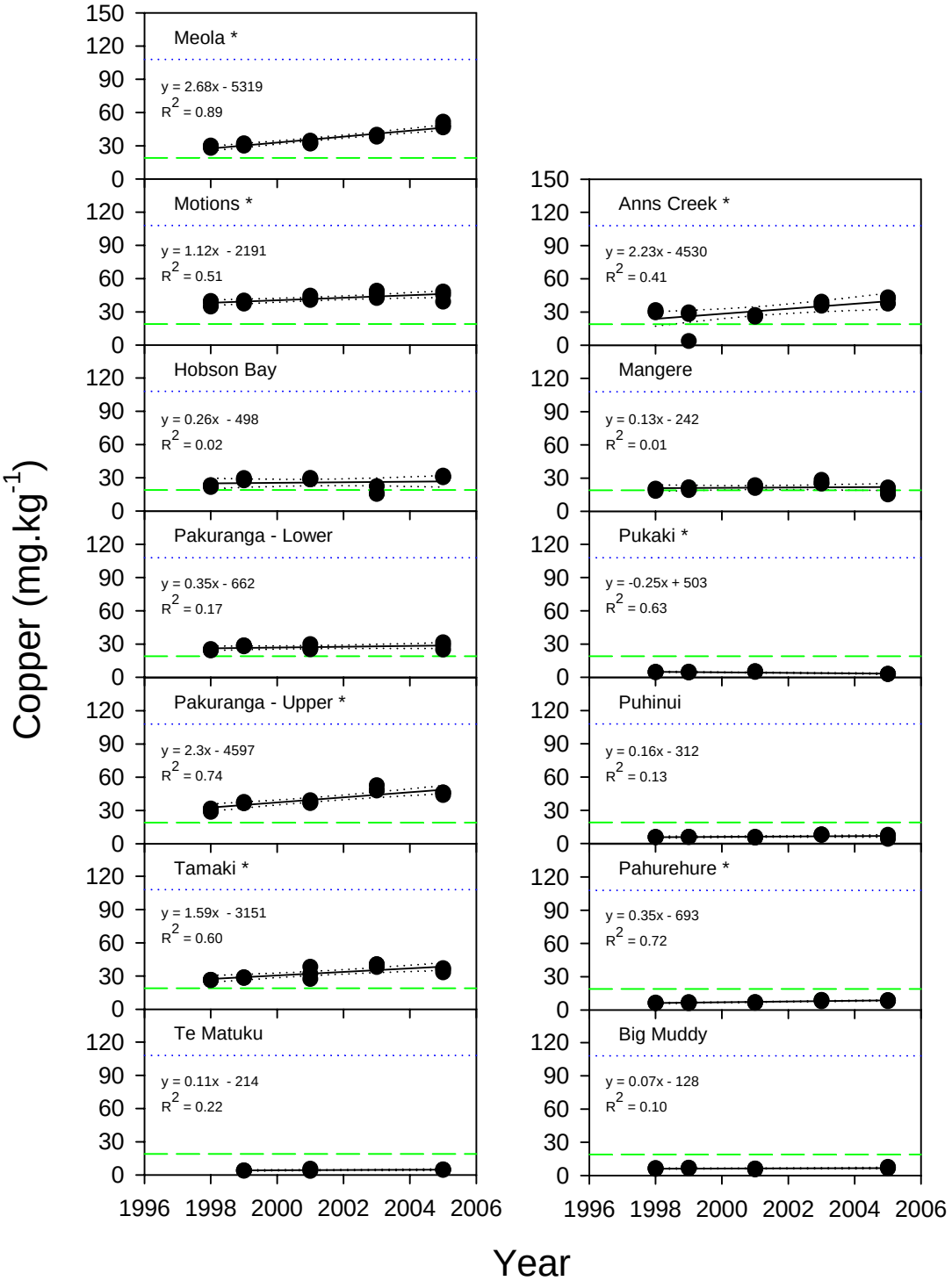


**Figure 16.**

Lead concentrations (mg kg-1) in the <63 µm sediment fractions at individual sites since monitoring began in 1998. Regression line, regression equation and $R^2$ values are displayed for each site, and sites with statistically significant trends are marked with an asterisk. Reference lines indicate sediment quality guideline values for threshold and probable effects.

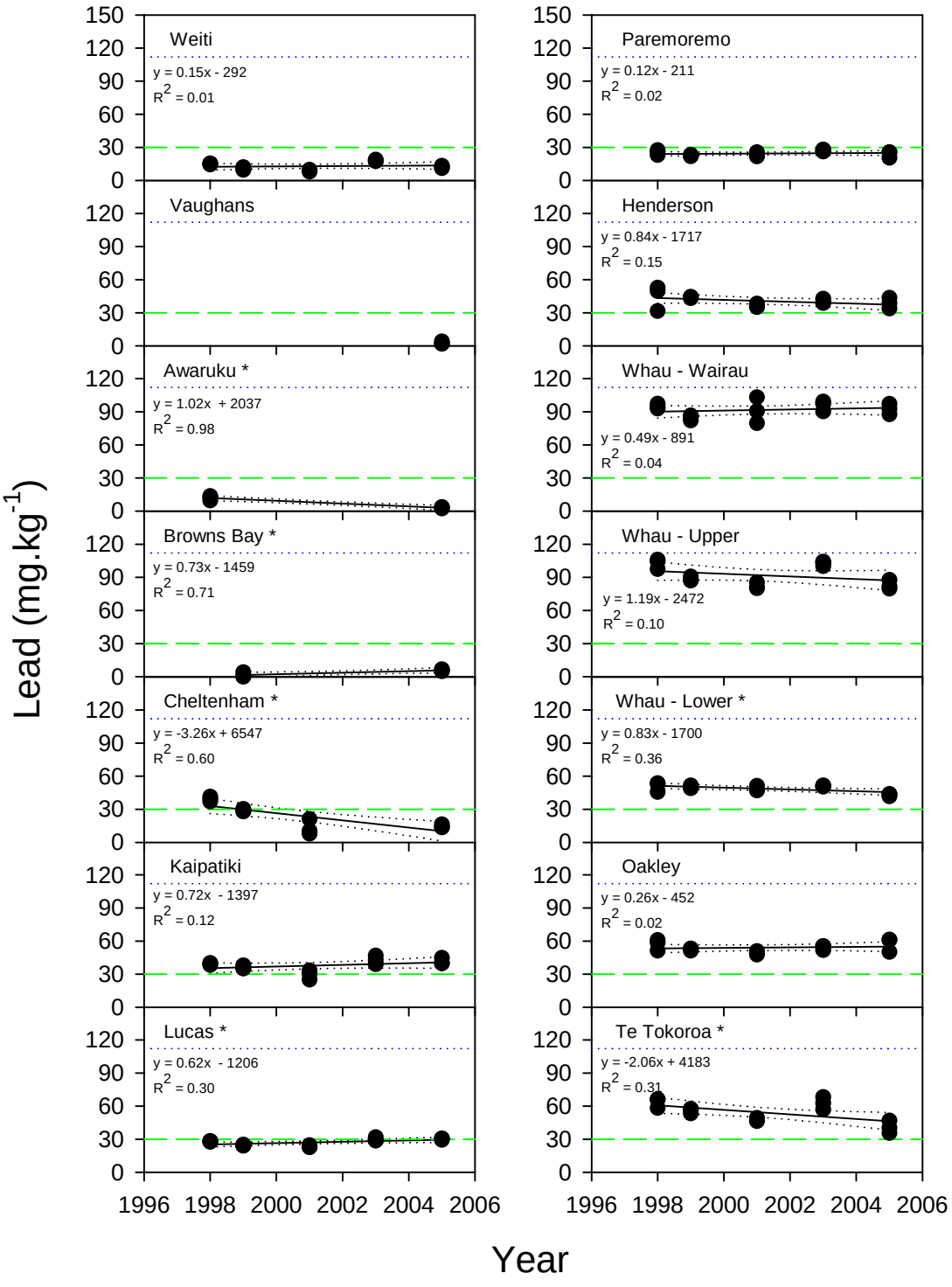
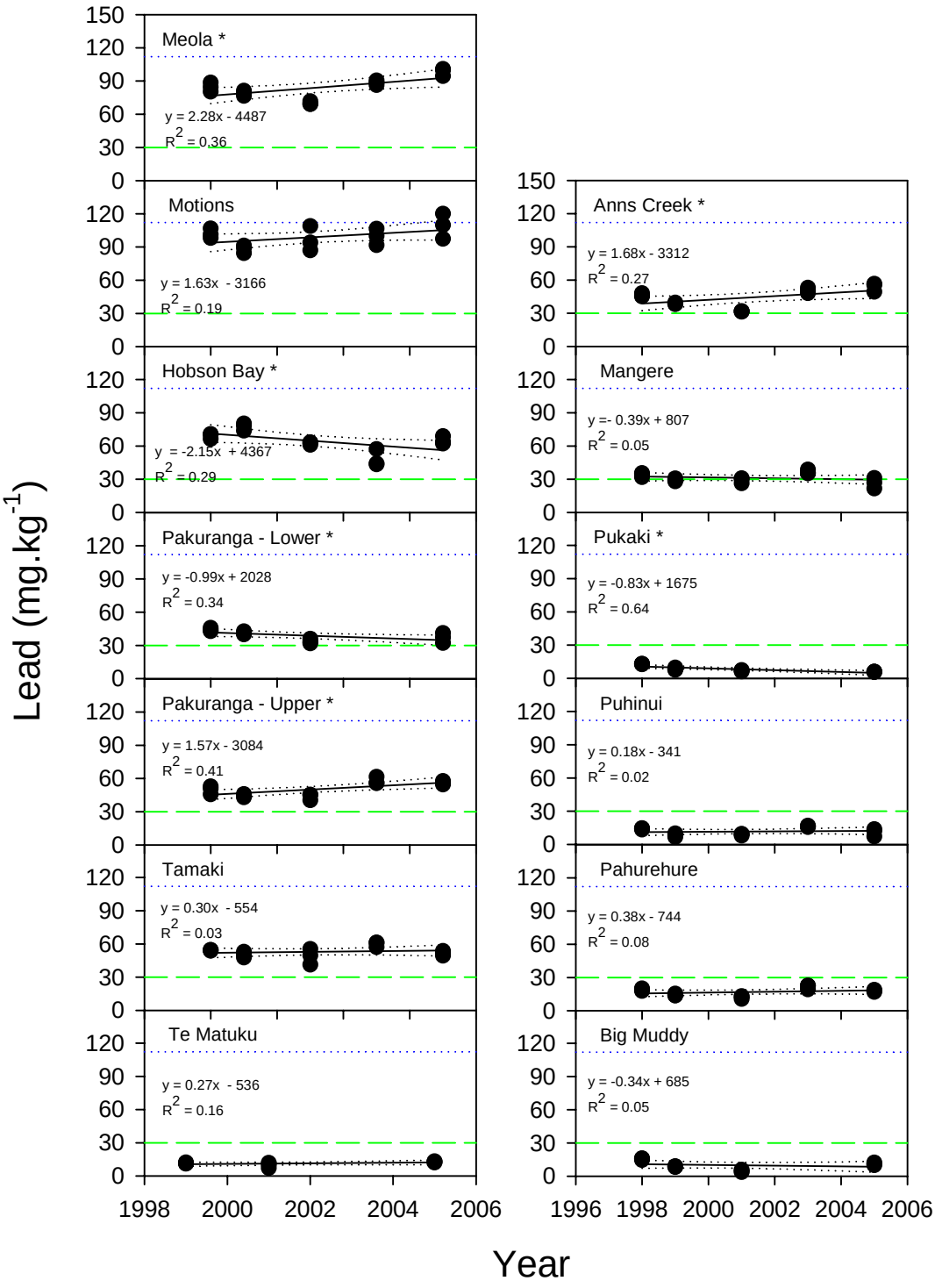


**Figure 16.** (Continued)



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# Appendix 1

## Analytical Procedures and Quality Assurance

### Metals

Sediment samples for weak-acid extraction were prepared by wet-sieving approximately 60 mL of sample through a 63 μm plastic mesh with 300 mL of deionised water. The filtrate was centrifuged at 3000 rpm for 20 minutes before the supernatant liquid was decanted. Approximately 2.5 g of sediment residue was placed in 50 mL polypropylene centrifuge tubes. Separate samples were dried at 60 °C overnight for moisture-content determination. To each tube 40 mL of 2M HCl was added to extract the reactive fraction of metals. The tubes were placed on their sides on a shaking table at 100 rpm for 24 hours. Samples were then centrifuged at 3000 rpm for 15 minutes and the supernatant was decanted into new tubes for analysis. The extracts were analysed for zinc, copper and lead by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS). Concentrations of metals were corrected for moisture content and expressed as metal content $\mu g\ g^{-1}$ dry wt.

Sediment samples for hot acid digestion were freeze-dried and sieved through 500 μm mesh. Composite samples of approximately 1g were prepared from the 3 replicates of each site. These were digested for 3 hours at 100 °C in 10 mL of 3:1 HCl:$HNO_3$. A further 5 mL of concentrated $HNO_3$ was added to each tube and the digestions continued for another hour (or until the digests cleared and the remaining grains appeared clean). The samples were then cooled, diluted to 50 mL and centrifuged at 2500 rpm for 10 minutes to remove the remaining debris. The extracts were decanted into clean tubes and analysed for zinc, copper and lead by Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS) as described above.

Calculations were based on standard calibrations with acidic working standards prepared from commercially-available stock solutions. QA assessment of the calibrations was carried out by analysing QC standards made up from appropriate metal salts.

To assess analytical performance, 5 samples collected and analysed in 1999 were re-analysed in 2001 and have now been re-analysed in 2005. The results are given in Tables 7 and 8 and show the variability over time of the analytical procedure. These replicate results for the 1999 samples are compared with the results for samples collected in 1999 (obviously the same results), 2001 and 2005 in Figure 17 for the sediment silt fraction (<63μm) and in Figure 18 for total sediment (<500 μm fraction). Estimates of the error (± Standard Error of Means) are shown.

**Table 7. Metal concentrations (mg $kg^{-1}$) in sediment silt fractions (<63 μm 2M HCl extraction) of 1999 samples analysed in 1999, 2001, 2003 and 2005.**

| Site | Sample OA65/** | Zinc | | | | Copper | | | | Lead | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 |
| Meola | 79-81 | 206.6 | 201.8 | 176.9 | 186.5 | 33.2 | 33.6 | 31.5 | 32.0 | 78.9 | 82.1 | 70.0 | 81.1 |
| Motions | 76-78 | 213.2 | 233.2 | 196.7 | 201.6 | 38.4 | 40.7 | 38.3 | 37.2 | 84.7 | 88.6 | 76.6 | 84.4 |
| Whau (U) | 70-72 | 248.0 | 229.5 | 245.5 | 236.4 | 35.9 | 31.2 | 34.8 | 32.6 | 68.1 | 80.4 | 86.5 | 87.5 |
| Tamaki | 52-54 | 242.1 | 227.5 | 211.7 | 209.1 | 21.5 | 30.7 | 28.3 | 28.6 | 33.4 | 53.4 | 47.9 | 52.8 |
| Te Matuku | 55-57 | 57.7 | 62.2 | 48.0 | 45.3 | 5.5 | 5.8 | 4.0 | 4.0 | 14.8 | 13.9 | 10.1 | 11.2 |

Note: 2003 and 2005 data is determined on 2001 historical sample due to 1999 sample being exhausted from previous studies

**Table 8. Metal concentrations (mg $kg^{-1}$) in total sediment (<500 μm hot acid digestion) of 1999 samples analysed in 1999, 2001, 2003 and 2005.**

| Site | Sample OA65/** | Zinc | | | | Copper | | | | Lead | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 |
| Meola | 79-81 | 240.0 | 280.0 | 306.4 | 261.0 | 29.3 | 38.0 | 35.6 | 38.3 | 60.2 | 75.8 | 80.2 | 74.4 |
| Motions | 76-78 | 253.0 | 259.0 | 212.8 | 197.1 | 24.9 | 26.0 | 25.8 | 22.3 | 51.9 | 54.5 | 55.3 | 44.5 |
| Whau (U) | 70-72 | 273.0 | 247.0 | 238.1 | 237.2 | 39.8 | 41.0 | 37.6 | 35.1 | 82.6 | 78.4 | 80.4 | 74.7 |
| Tamaki | 52-54 | 188.0 | 179.0 | 148.1 | 164.7 | 27.1 | 30.0 | 33.2 | 30.3 | 34.8 | 34.9 | 41.0 | 37.4 |
| Te Matuku | 55-57 | 33.4 | 35 | 31 | 29.3 | 3.1 | 5.0 | 7.1 | 5.1 | 7.5 | 2.9 | 8.5 | 6.7 |

Note: 2003 and 2005 data is determined on 2001 historical sample due to 1999 sample being exhausted from previous studies.

**Figure 17.**

Extractable metal concentrations measured in a) samples collected from 5 sites in 1999, 2001, 2003 and 2005 (actual values), and b) from repeated analysis in 1999, 2001, 2003 and 2005 of the same samples collected from 5 sites in 1999. Metals were extracted by weak acid digestion of the <63 µm sediment fraction.

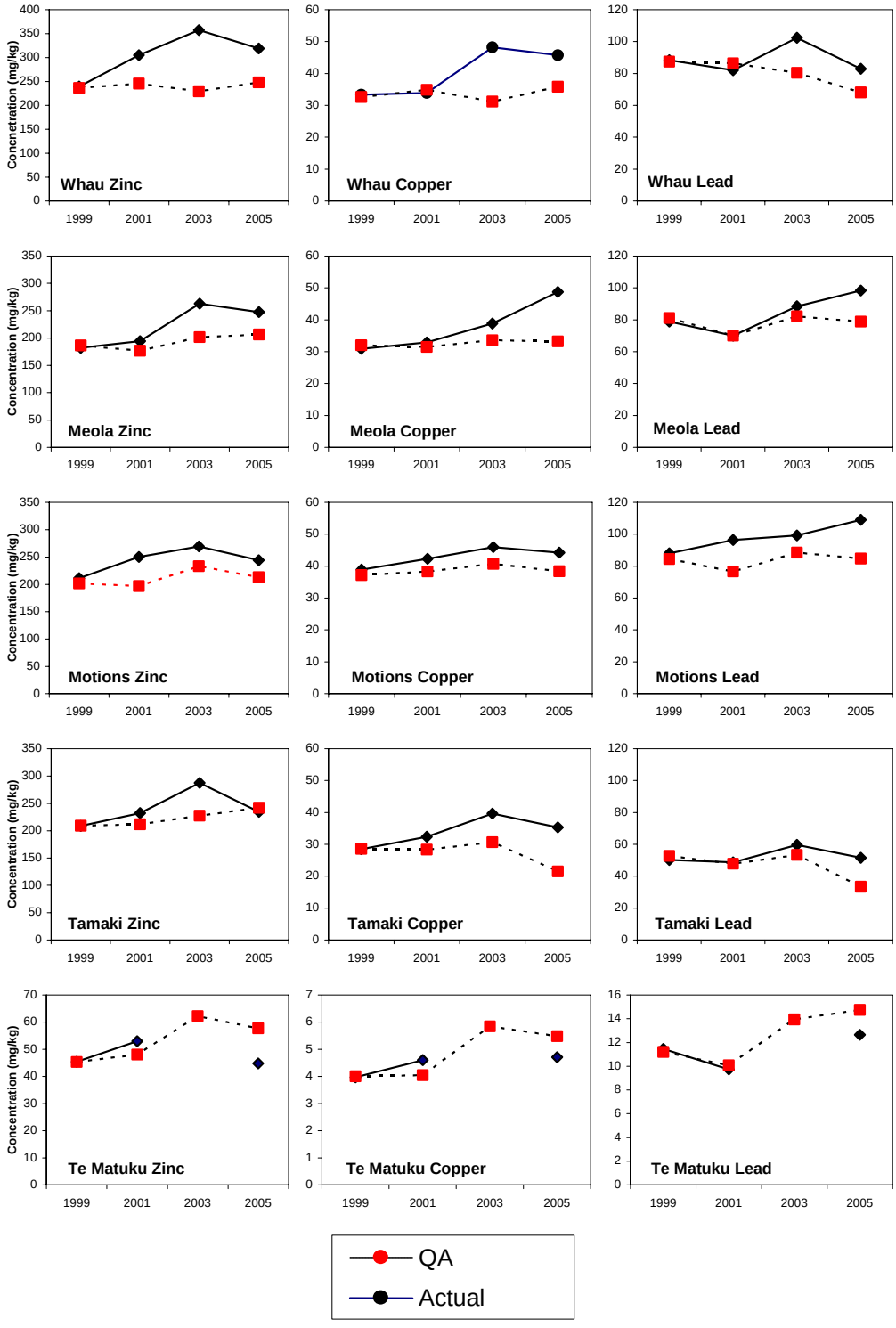
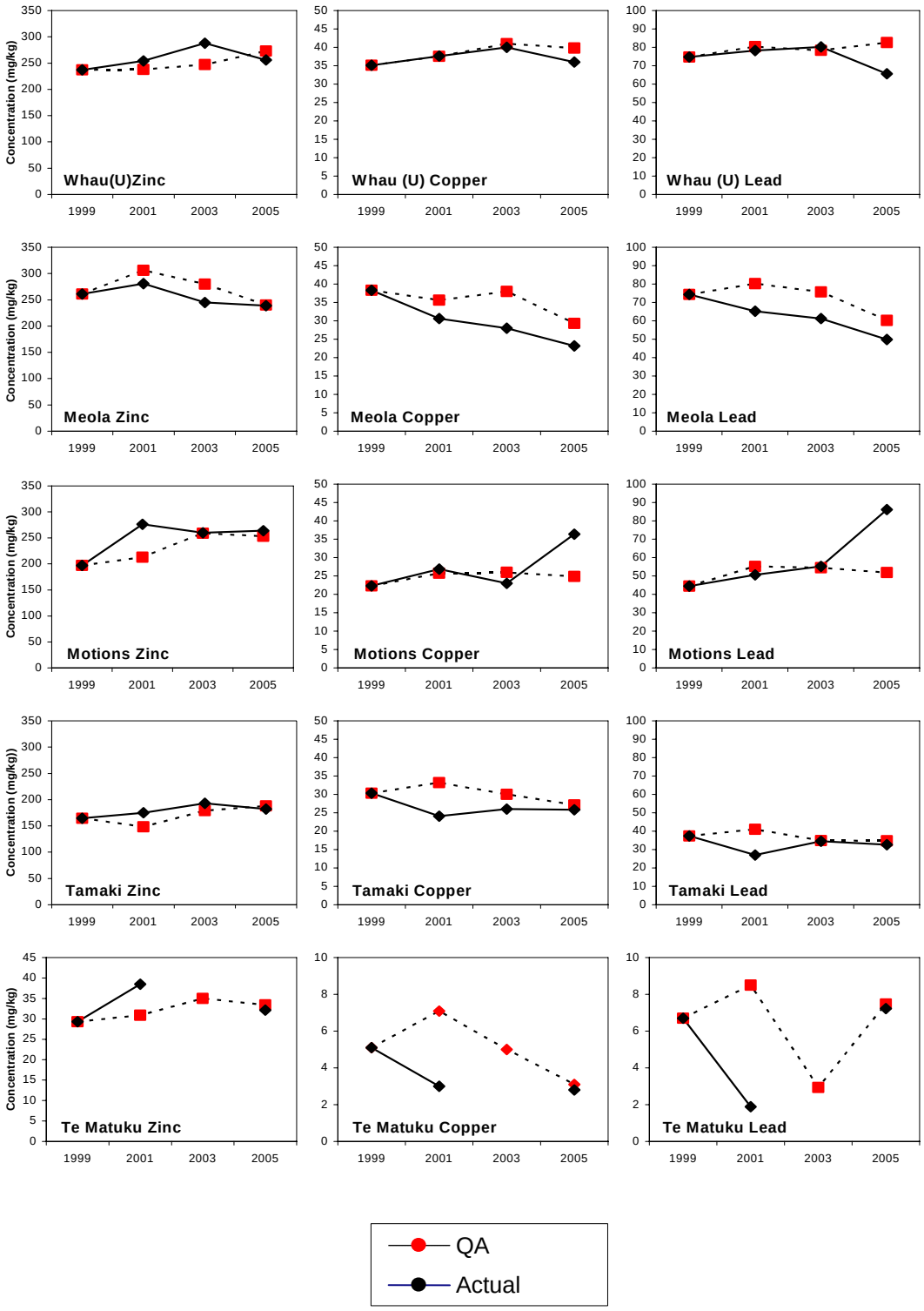


**Figure 18.**

Total metal concentrations measured in a) samples collected from 5 sites in 1999, 2001, 2003 and 2005 (actual values), and b) from repeated analysis in 1999, 2001 and 2005 of the same samples collected from 5 sites in 1999. Metals were extracted by hot acid digestion of the <500 µm sediment fraction.



## Total Organic Carbon

Samples were prepared for analysis by freeze-drying and sieving through a 500 μm plastic mesh. TOC was determined using an Elementor Combustion Analyser.

## Polycyclic Aromatic Hydrocarbon (PAH) analysis

Sediments were homogenised, freeze-dried and sieved (<500 μm). Sub-samples were spiked with deuterated PAH surrogates and extracted by Accelerated Solvent Extraction (ASE). The extracts were cleaned up by silica/alumina column chromatography. Internal standards were added to all extracts before analysis to monitor surrogate recoveries. Quantitative analysis of PAHs was carried out by capillary gas chromatography using mass selective detection in selected ion mode (GC-MS-SIM). Concentrations were calculated on a freeze-dry weight basis and were corrected for surrogate recovery. Detection limits were approximately 0.1-0.3 ng $g^{-1}$ dry wt for most compounds with the exception of naphthalene, fluoranthene and pyrene (1.0 ng $g^{-1}$).

To assess the analytical performance, 5 samples from the 2001 surveys were re-analysed. The results are provided in Table 9. A standard reference material (SRM1941a) from National Institute of Standards and Technology was also analysed to assess the precision of the PAH analysis (Table 2). In addition, three replicate samples from Tamaki and Mangere Inlet were analysed twice (Table 2). Surrogate recoveries were also monitored, as summarised in Table 3.

**Table 9.**

Total PAH concentration (μg kg dry wt.) for historical samples analysed in 2001 and reanalysed in 2005.

| | | Year analysed | |
|---|---|---|---|
| **Site** | **OA65/**** | **2001** | **2005** |
| **Motions** | **76** | **9480** | **8530** |
| **Meola** | **79** | **5616** | **4880** |
| **Whau Creek (U)** | **70** | **1245** | **1747** |
| **Upper Tamaki** | **52** | **1734** | **1368** |
| **Te Matuku Bay** | **55** | **23** | **25.7** |

**Table 10.**

Analysis of total PAH (ng g) in <500 μm 2005 Tamaki and Mangere Inlet sediment replicates.

| Site | OA109/** | Original Result | Repeat Result |
|---|---|---|---|
| **Tamaki** | **31** | **1663** | **1581** |
| **Tamaki** | **32** | **1582** | **1735** |
| **Tamaki** | **33** | **1385** | **1535** |
| **Mangere Inlet** | **10** | **549** | **583** |
| **Mangere Inlet** | **11** | **587** | **564** |
| **Mangere Inlet** | **12** | **535** | **594** |
| **SRM1941a** | | **8114** | **8225** |

## Particle size analysis

Sediments were freeze-dried, sieved (<500 μm), dispersed in hydrogen peroxide solution to destroy organic matter and analysed on a Galai laser analyser in the 0-300 μm mode. Samples were also analysed in the 2-600 μm mode if they contained a significant volume of particles greater than 300 μm. To assess the analytical performance, 5 samples from the 1999 survey were re-analysed in the 0-300 μm mode. The results are shown in Tables 11 and 12.

**Table 11.**

Distribution of surface area (%) for five samples collected in 1999 and 2001 and analysed in 1999, 2001, 2003 and 2005.

| Size | Tamaki | | | | Te Matuku | | | | Whau (U) | | | | Motions | | | | Meola | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fraction (μm) | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 |
| 0.0 - 3.9 | 13 | 22 | 2 | 18 | 7 | 2 | 0 | 3 | 14 | 30 | 0 | 16 | 8 | 9 | 1 | 8 | 14 | 24 | 1 | 15 |
| 3.9 - 7.8 | 6 | 9 | 0 | 9 | 3 | 1 | 0 | 1 | 7 | 12 | 0 | 9 | 3 | 4 | 0 | 3 | 7 | 11 | 1 | 8 |
| 7.8 - 15.6 | 8 | 6 | 1 | 11 | 5 | 1 | 0 | 1 | 11 | 10 | 2 | 9 | 5 | 3 | 1 | 2 | 7 | 9 | 1 | 9 |
| 15.6 - 31.3 | 8 | 4 | 1 | 7 | 6 | 1 | 1 | 1 | 14 | 7 | 4 | 8 | 6 | 3 | 2 | 3 | 6 | 6 | 3 | 6 |
| 31.3 -62.5 | 20 | 10 | 9 | 8 | 17 | 6 | 7 | 6 | 30 | 11 | 21 | 13 | 15 | 8 | 9 | 8 | 17 | 8 | 9 | 7 |
| 62.5 -125 | 28 | 22 | 45 | 27 | 43 | 23 | 34 | 30 | 22 | 21 | 49 | 28 | 47 | 39 | 47 | 39 | 36 | 24 | 43 | 31 |
| 125 - 250 | 18 | 28 | 43 | 21 | 19 | 62 | 57 | 57 | 2 | 9 | 23 | 18 | 16 | 34 | 40 | 37 | 14 | 19 | 41 | 24 |
| 250 - 300 | 0 | 0 | 0 | 0 | 0.0 | 2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Note: 2003 and 2005 data is deterimined on 2001 historical sample due 1999 sample exhausted from previous studies.

**Table 12.**

Distribution of volume (%) for five samples collected in 1999 and analysed in 1999, 2001, 2003 and 2005.

| Size | Tamaki | | | | Te Matuku | | | | Whau (U) | | | | Motions | | | | Meola | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fraction (μm) | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 | 2005 | 2003 | 2001 | 1999 |
| 0.0 - 3.9 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 3.9 - 7.8 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 7.8 - 15.6 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 1 |
| 15.6 - 31.3 | 3 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 8 | 4 | 1 | 3 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 2 |
| 31.3 -62.5 | 15 | 6 | 4 | 6 | 11 | 2 | 3 | 2 | 37 | 12 | 11 | 10 | 10 | 4 | 4 | 4 | 13 | 6 | 4 | 5 |
| 62.5 -125 | 40 | 29 | 37 | 39 | 50 | 16 | 25 | 22 | 45 | 44 | 48 | 41 | 58 | 39 | 39 | 37 | 50 | 38 | 36 | 40 |
| 125 - 250 | 40 | 61 | 59 | 50 | 37 | 77 | 70 | 73 | 6 | 34 | 39 | 43 | 29 | 55 | 56 | 58 | 33 | 51 | 59 | 51 |
| 250 - 300 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |

Note: 2003 and 2005 data is deterimined on 2001 historical sample due 1999 samplebe exhausted in previous studies.

# Appendix 2

Concentrations of metals in samples from 1998, 1999, 2001, 2003 and 2005 survey.

**Table 13.** Total concentrations (mg kg$^{-1}$, <500 µm, hot acid digest) of zinc, copper and lead.

| | ZINC | | | | | COPPER | | | | | LEAD | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Site** | 2005 | 2003 | 2001 | 1999 | 1998 | 2005 | 2003 | 2001 | 1999 | 1998 | 2005 | 2003 | 2001 | 1999 | 1998 |
| **Motions** | **264.0** | **260.0** | **276.1** | **197.1** | **294.0** | **36.4** | **23.0** | **26.9** | **22.3** | **24.4** | **86.1** | **55.3** | **50.7** | **44.5** | **65.5** |
| **Whau (U)** | **256.0** | **288.0** | **254.2** | **237.2** | **252.0** | **36** | **40.0** | **37.6** | **35.1** | **37.5** | **65.6** | **80.2** | **78.3** | **74.7** | **99.0** |
| **Meola** | **239.0** | **245.0** | **280.9** | **261.0** | **280.0** | **23.2** | **28.0** | **30.6** | **38.3** | **38.9** | **49.9** | **61.2** | **65.3** | **74.4** | **94.0** |
| **Pakuranga (U)** | **236.0** | **190.0** | **176.6** | **138.1** | **183.0** | **34.4** | **31.0** | **28.1** | **29.8** | **28.8** | **36.4** | **34.9** | **23.4** | **27.5** | **41.0** |
| **Whau Wairau** | **216.0** | **206.0** | **229.0** | **259.6** | **207.0** | **42.9** | **45.0** | **47.3** | **64.4** | **53.5** | **64.6** | **65.8** | **70.4** | **106.6** | **92.3** |
| **Oakley** | **184.0** | **160.0** | **161.8** | **159.1** | **161.0** | **31.3** | **29.0** | **31.6** | **40.7** | **31.8** | **49.6** | **49.6** | **44.1** | **52.5** | **57.6** |
| **Tamaki** | **182.0** | **193.0** | **175.0** | **164.7** | **145.0** | **25.8** | **26.0** | **24.1** | **30.3** | **19.8** | **32.6** | **34.5** | **27.1** | **37.4** | **34.2** |
| **Henderson** | **166.0** | **187.0** | **171.8** | **193.8** | **177.5** | **31.7** | **37.0** | **33.6** | **38.9** | **44.3** | **34.3** | **40.8** | **30.5** | **48.7** | **32.5** |
| **Whau (L)** | **161.0** | **173.0** | **166.9** | **170.0** | **163.0** | **24.2** | **28.0** | **30.7** | **35.2** | **28.8** | **41.3** | **52.1** | **44.5** | **57.7** | **62.0** |
| **Anns** | **154.0** | **176.0** | **183.9** | **188.0** | **180.5** | **29.1** | **35.0** | **37.8** | **45.3** | **43.8** | **31.5** | **37.3** | **32.1** | **45.0** | **47.1** |
| **Pakuranga (L)** | **149.0** | **ns** | **160.9** | **134.2** | **145.0** | **20** | **ns** | **21.6** | **20.4** | **20.9** | **25.4** | **ns** | **22.4** | **26.7** | **30.9** |
| **Mangere** | **136.0** | **146.0** | **154.6** | **136.5** | **137.0** | **25.1** | **29.0** | **36.8** | **30.8** | **29.4** | **28.3** | **31.2** | **31.5** | **34.3** | **37.4** |
| **Puhinui** | **106.0** | **103.0** | **108.6** | **109.4** | **99.0** | **9.2** | **9.0** | **11.0** | **15.7** | **10.8** | **12.5** | **13.4** | **7.2** | **14.4** | **12.4** |
| **Lucas** | **98.8** | **96.0** | **113.1** | **96.6** | **96.9** | **20.3** | **20.0** | **26.2** | **21.9** | **19.1** | **22.7** | **24.0** | **19.4** | **23.3** | **22.3** |
| **Kaipatiki** | **96.9** | **106.0** | **99.5** | **82.5** | **96.9** | **15.3** | **16.0** | **18.4** | **14.2** | **16.0** | **24.5** | **27.7** | **20.9** | **25.6** | **29.0** |
| **Te Tokaroa** | **96.4** | **90.0** | **99.9** | **71.2** | **100.0** | **11.2** | **9.0** | **7.1** | **6.9** | **7.3** | **25.5** | **25.8** | **18.0** | **17.6** | **24.9** |
| **Paremoremo** | **86.6** | **84.0** | **99.4** | **90.9** | **96.9** | **20.7** | **20.0** | **25.3** | **32.8** | **23.1** | **23.5** | **23.4** | **21.6** | **24.2** | **24.0** |
| **Pahurehure** | **66.1** | **66.0** | **72.0** | **71.7** | **64.0** | **7** | **8.0** | **7.3** | **10.0** | **13.8** | **13** | **14.6** | **7.1** | **15.2** | **6.5** |
| **Pukaki** | **61.2** | **ns** | **76.1** | **72.0** | **74.0** | **7.9** | **ns** | **16.2** | **14.3** | **11.9** | **11.1** | **ns** | **5.2** | **14.2** | **9.0** |
| **Big Muddy** | **61.1** | **ns** | **57.2** | **52.4** | **61.5** | **10.3** | **ns** | **9.2** | **8.6** | **10.1** | **10.8** | **ns** | **2.4** | **9.1** | **9.6** |
| **Weiti** | **48.7** | **47.0** | **52.2** | **42.5** | **49.0** | **11.8** | **12.0** | **9.7** | **13.0** | **11.8** | **8.69** | **10.1** | **3.9** | **9.2** | **5.4** |
| **Cheltenham** | **42.4** | **ns** | **48.7** | **27.3** | **47.2** | **2.8** | **ns** | **2.2** | **1.7** | **2.8** | **10.9** | **ns** | **5.1** | **7.2** | **11.0** |
| **Hobson** | **39.5** | **39.0** | **47.5** | **52.4** | **46.0** | **6** | **4.0** | **6.6** | **8.4** | **5.6** | **13.7** | **14.6** | **11.1** | **22.1** | **17.8** |
| **Browns** | **34.0** | **ns** | **43.2** | **22.1** | **43.9** | **1.9** | **ns** | **2.0** | **1.3** | **2.3** | **5.28** | **ns** | **0.0** | **3.9** | **4.6** |
| **Te Matuku** | **32.1** | **ns** | **38.5** | **29.3** | **ns** | **2.8** | **ns** | **3.0** | **5.1** | **ns** | **7.22** | **ns** | **1.9** | **6.7** | **ns** |
| **Awaruku** | **23.7** | **25.0** | **26.4** | **13.6** | **24.4** | **2.0** | **2.0** | **1.5** | **0.9** | **1.7** | **3.66** | **4.0** | **0.0** | **2.5** | **1.3** |
| **Vaughans** | **21.2** | **22.0** | **24.7** | **18.0** | **22.5** | **1.7** | **2.0** | **1.2** | **1.4** | **1.4** | **2.94** | **3.1** | **0.0** | **4.2** | **0.0** |

ns = not sampled

**Table 14.**

Arsenic, tin, cadmium, mercury and antimony concentrations (mg kg⁻¹ <500 µm, hot acid digest) from 2005 samples.

| Site | Arsenic<br>mg kg$^{-1}$ dw | Tin<br>mg kg$^{-1}$ dw | Cadmium<br>mg kg$^{-1}$ dw | Mercury<br>mg kg$^{-1}$ dw | Antimony<br>mg kg$^{-1}$ dw |
|---|---|---|---|---|---|
| Cheltenham | 16.2 | 0.6 | 0.02 | 0.02 | 0.05 |
| Awaruku | 14.9 | 0.3 | < 0.01 | 0.01 | < 0.04 |
| Big Muddy | 13.3 | 1.1 | 0.04 | 0.03 | 0.10 |
| Oakley | 13.1 | 2.7 | 0.1 | 0.15 | 0.23 |
| Puhinui | 12 | 1 | 0.07 | 0.03 | 0.10 |
| Henderson | 11.9 | 2.3 | 0.11 | 0.11 | 0.17 |
| Pukaki | 11.8 | 1 | 0.05 | 0.03 | 0.10 |
| Mangere | 11.7 | 2.8 | 0.19 | 0.08 | 0.24 |
| Lucas | 11.2 | 1.4 | 0.06 | 0.13 | 0.11 |
| Motions | 11 | 3.6 | 0.29 | 0.31 | 0.45 |
| Anns | 10.9 | 2.8 | 0.23 | 0.12 | 0.21 |
| Kaipatiki | 10.8 | 1.1 | 0.05 | 0.10 | 0.12 |
| Whau (L) | 10.8 | 2.1 | 0.06 | 0.17 | 0.12 |
| Whau (U) | 10.7 | 2.6 | 0.21 | 0.15 | 0.31 |
| Whau Wairau | 10.4 | 3.1 | 0.11 | 0.16 | 0.22 |
| Browns Bay | 10.4 | 0.2 | < 0.01 | < 0.01 | < 0.04 |
| Vaughans | 10.4 | 0.2 | < 0.01 | < 0.01 | < 0.04 |
| Paremoremo | 10.2 | 1.6 | 0.06 | 0.16 | 0.10 |
| Pahurehure | 9.8 | 1 | 0.05 | 0.04 | 0.10 |
| Pakuranga (U) | 9.1 | 2.3 | 0.13 | 0.12 | 0.40 |
| Pakuranga (L) | 8.7 | 1.4 | 0.09 | 0.12 | 0.14 |
| Tamaki (U) | 7.9 | 2 | 0.14 | 0.16 | 0.19 |
| Meola | 6.9 | 3.2 | 0.39 | 0.20 | 0.36 |
| Te Takaroa | 6.8 | 1.1 | 0.13 | 0.11 | 0.09 |
| Weiti | 5.9 | 0.5 | 0.04 | 0.04 | 0.05 |
| Te Matuku | 4.7 | 0.2 | 0.02 | 0.02 | < 0.04 |
| Hobson | 2.8 | 1 | 0.03 | 0.04 | 0.07 |

**Table 15.**

Zinc concentrations (mg kg, means, standard error of means, 2M HCl extractable) in silt (<63 μm) in 2005, 2003, 2001, 1999 and 1998. Listed in order of decreasing 2005 concentration.

| Site | 2005 | | 2003 | | 2001 | | 1999 | | 1998 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | μg/g | SE | μg/g | SE | μg/g | SE | μg/g | SE | μg/g | SE |
| Whau (U) | 318.93 | 10.52 | 357.7 | 3.0 | 305.0 | 17.5 | 239.4 | 4.0 | 226.7 | 4.9 |
| Pakuranga (U) | 306.95 | 3.00 | 292.5 | 8.4 | 234.5 | 5.7 | 200.4 | 3.6 | 183.7 | 7.4 |
| Whau Wairau | 263.77 | 9.19 | 288.6 | 9.7 | 279.2 | 8.5 | 224.1 | 2.3 | 204.3 | 3.0 |
| Tamaki (U) | 234.44 | 7.70 | 287.3 | 7.4 | 232.2 | 19.7 | 208.7 | 0.2 | 182.3 | 0.3 |
| Motions | 244.23 | 13.36 | 269.5 | 15.7 | 250.4 | 9.9 | 211.1 | 4.8 | 218.3 | 3.9 |
| Meola | 247.84 | 7.54 | 263.1 | 1.4 | 194.2 | 2.4 | 181.8 | 3.2 | 184.7 | 5.1 |
| Anns | 235.82 | 12.10 | 199.9 | 4.0 | 144.7 | 0.7 | 150.0 | 2.3 | 144.7 | 2.2 |
| Oakley | 193.81 | 17.97 | 175.3 | 5.2 | 162.5 | 2.3 | 146.4 | 2.2 | 141.3 | 7.5 |
| Whau (L) | 179.67 | 2.18 | 177.1 | 2.6 | 165.2 | 4.0 | 143.1 | 1.3 | 124.3 | 5.7 |
| Pakuranga (L) | 167.64 | 11.26 | ns | ns | 162.0 | 5.7 | 167.5 | 1.5 | 146.3 | 1.9 |
| Henderson | 167.61 | 8.69 | 179.0 | 5.6 | 170.1 | 4.5 | 162.6 | 2.3 | 154.3 | 21.3 |
| Hobson | 145.83 | 1.71 | 109.9 | 10.1 | 155.0 | 2.0 | 159.7 | 4.1 | 118.0 | 2.5 |
| Kaipatiki | 143.50 | 4.47 | 142.7 | 8.1 | 109.6 | 8.5 | 101.9 | 1.2 | 92.3 | 1.4 |
| Lucas | 117.28 | 0.61 | 119.3 | 3.2 | 103.8 | 1.7 | 95.0 | 3.0 | 77.4 | 1.1 |
| Te Tokoroa | 113.83 | 8.35 | 170.6 | 8.6 | 146.2 | 4.6 | 148.1 | 1.7 | 146.0 | 4.6 |
| Mangere | 110.26 | 11.48 | 147.0 | 3.4 | 116.2 | 4.0 | 104.2 | 3.1 | 98.0 | 3.0 |
| Paremoremo | 78.91 | 6.12 | 92.5 | 2.5 | 90.0 | 3.4 | 77.0 | 0.7 | 68.9 | 3.2 |
| Puhinui | 78.60 | 14.01 | 100.8 | 0.4 | 73.7 | 2.9 | 76.6 | 1.4 | 67.8 | 1.5 |
| Pahurehure | 78.00 | 2.57 | 86.6 | 4.6 | 68.5 | 2.3 | 65.8 | 3.1 | 61.0 | 1.4 |
| Weiti | 59.32 | 2.96 | 75.5 | 0.7 | 64.1 | 3.2 | 54.3 | 0.6 | 44.5 | 0.9 |
| Big Muddy | 54.64 | 1.06 | ns | ns | 46.3 | 1.2 | 44.4 | 0.8 | 44.3 | 1.2 |
| Te Matuku | 44.78 | 0.48 | ns | ns | 53.0 | 6.2 | 45.4 | 0.5 | ns | ns |
| Browns | 39.92 | 2.71 | ns | ns | ns | ns | 131.4 | 3.2 | ns | ns |
| Cheltenham | 34.67 | 9.37 | ns | ns | 118.2 | 2.1 | 104.8 | 1.0 | 87.4 | 2.2 |
| Pukaki | 24.77 | 0.34 | ns | ns | 53.9 | 2.5 | 45.1 | 1.9 | 43.1 | 0.5 |
| Awaruku | 23.07 | 2.23 | ns | ns | ns | ns | 87.1 | 1.0 | 62.4 | 1.6 |
| Vaughans | 21.67 | 5.01 | ns | ns | ns | ns | 80.0 | 4.2 | ns | ns |

ns = not sampled

**Table 16.**

Copper concentrations (mg kg$^{-1}$, means, standard error of means, 2M HCl extractable) in silt (<63 μm) in 2005, 2003, 2001, 1999 and 1998. Listed in order of decreasing 2005 concentration.

| Site | 2005 | | 2003 | | 2001 | | 1999 | | 1998 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | µg/g | SE | µg/g | SE | µg/g | SE | µg/g | SE | µg/g | SE |
| Whau Wairau | 49.84 | 1.76 | 52.0 | 1.7 | 43.6 | 2.1 | 45.0 | 0.5 | 44.0 | 0.5 |
| Meola | 48.78 | 1.52 | 38.9 | 0.5 | 32.9 | 0.8 | 30.9 | 0.6 | 29.1 | 0.6 |
| Whau (U) | 45.77 | 1.50 | 48.2 | 0.3 | 33.9 | 0.1 | 33.4 | 0.8 | 34.4 | 0.8 |
| Pakuranga (U) | 45.36 | 0.75 | 49.6 | 1.5 | 37.5 | 0.8 | 36.8 | 0.3 | 30.4 | 1.0 |
| Motions | 44.24 | 2.70 | 46.0 | 1.9 | 42.3 | 1.2 | 38.9 | 0.9 | 37.6 | 1.5 |
| Anns | 40.89 | 1.78 | 37.3 | 1.1 | 26.3 | 0.4 | 20.5 | 8.4 | 30.4 | 0.6 |
| Tamaki (U) | 35.33 | 1.15 | 39.7 | 0.8 | 32.4 | 3.2 | 28.5 | 0.2 | 26.4 | 0.1 |
| Henderson | 31.36 | 1.79 | 32.6 | 1.2 | 28.4 | 0.6 | 28.2 | 0.3 | 26.4 | 3.8 |
| Hobson | 30.90 | 0.42 | 17.7 | 2.3 | 28.9 | 0.5 | 28.5 | 0.6 | 22.6 | 0.5 |
| Oakley | 30.03 | 2.26 | 26.8 | 1.0 | 25.3 | 0.5 | 23.4 | 0.4 | 23.9 | 1.4 |
| Pakuranga (L) | 28.38 | 1.89 | ns | ns | 27.0 | 1.4 | 28.4 | 0.3 | 24.7 | 0.4 |
| Whau (L) | 24.84 | 0.71 | 24.9 | 0.3 | 23.7 | 0.9 | 21.7 | 0.2 | 19.7 | 1.0 |
| Kaipatiki | 24.37 | 1.03 | 22.8 | 1.2 | 17.2 | 1.3 | 16.7 | 0.2 | 16.1 | 0.4 |
| Lucas | 23.69 | 0.12 | 23.6 | 0.6 | 18.9 | 0.5 | 16.9 | 0.5 | 15.6 | 0.3 |
| Te Tokoroa | 20.68 | 1.45 | 27.1 | 1.6 | 26.6 | 0.4 | 25.8 | 0.2 | 25.8 | 0.7 |
| Paremoremo | 18.52 | 1.39 | 21.0 | 0.5 | 18.3 | 0.6 | 16.4 | 0.2 | 13.1 | 0.3 |
| Mangere | 18.27 | 1.80 | 26.3 | 1.0 | 22.4 | 0.8 | 20.5 | 0.7 | 19.6 | 0.6 |
| Weiti | 16.75 | 0.85 | 21.1 | 0.7 | 17.7 | 1.0 | 16.0 | 0.1 | 14.4 | 0.3 |
| Pahurehure | 8.31 | 0.29 | 8.5 | 0.4 | 6.6 | 0.2 | 6.5 | 0.3 | 6.2 | 0.1 |
| Big Muddy | 6.92 | 0.39 | ns | ns | 5.7 | 0.3 | 6.6 | 0.2 | 6.3 | 0.2 |
| Puhinui | 6.09 | 1.10 | 7.9 | 0.2 | 5.6 | 0.2 | 5.8 | 0.1 | 5.7 | 0.1 |
| Te Matuku | 4.70 | 1.08 | ns | ns | 4.6 | 0.6 | 4.0 | 0.0 | ns | ns |
| Cheltenham | 4.33 | 0.19 | ns | ns | 11.6 | 0.1 | 10.1 | 0.1 | 11.0 | 0.2 |
| Browns | 3.30 | 0.33 | ns | ns | ns | ns | 10.2 | 0.3 | ns | ns |
| Pukaki | 2.90 | 0.02 | ns | ns | 5.0 | 0.2 | 4.6 | 0.2 | 4.6 | 0.1 |
| Awaruku | 2.09 | 0.24 | ns | ns | ns | ns | 8.5 | 0.1 | 9.0 | 0.3 |
| Vaughans | 2.02 | 0.30 | ns | ns | ns | ns | 9.2 | 1.2 | ns | ns |

ns = not sampled

**Table 17.**

Lead concentrations (mg kg⁻, means, standard error of means, 2M HCl extractable) in silt (<63 μm) in 2005, 2003, 2001, 1999 and 1998. Listed in order of decreasing 2005 concentration.

| Site | 2005 | | 2003 | | 2001 | | 1999 | | 1998 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | μg/g | SE | μg/g | SE | μg/g | SE | μg/g | SE | μg/g | SE |
| Motions | 109.04 | 6.55 | 99.3 | 4.3 | 96.5 | 6.5 | 88.1 | 2.0 | 102.0 | 2.5 |
| Meola | 98.37 | 1.96 | 88.5 | 1.2 | 70.0 | 0.8 | 78.9 | 1.3 | 84.5 | 2.4 |
| Whau Wairau | 92.50 | 2.71 | 95.5 | 2.7 | 91.0 | 6.8 | 84.4 | 1.3 | 94.8 | 1.3 |
| Whau (U) | 83.02 | 2.38 | 102.5 | 1.3 | 82.1 | 1.7 | 88.4 | 1.1 | 102.5 | 2.6 |
| Hobson | 64.89 | 2.01 | 48.2 | 4.5 | 62.4 | 0.7 | 77.3 | 1.9 | 69.2 | 1.4 |
| Oakley | 57.43 | 3.70 | 54.0 | 1.2 | 49.2 | 0.9 | 52.4 | 0.6 | 56.9 | 2.9 |
| Pakuranga (U) | 56.01 | 0.94 | 57.7 | 1.9 | 43.5 | 1.6 | 44.3 | 0.9 | 49.8 | 2.1 |
| Anns | 53.74 | 2.25 | 50.4 | 1.4 | 31.6 | 0.2 | 38.8 | 0.4 | 46.3 | 0.9 |
| Tamaki (U) | 51.60 | 1.26 | 59.7 | 1.3 | 48.7 | 4.1 | 50.3 | 1.5 | 54.1 | 0.2 |
| Whau (L) | 42.94 | 0.67 | 50.9 | 0.3 | 48.4 | 1.3 | 50.0 | 0.8 | 50.7 | 2.6 |
| Kaipatiki | 41.47 | 1.64 | 42.7 | 2.2 | 29.4 | 2.5 | 36.1 | 0.9 | 39.3 | 0.5 |
| Te Tokoroa | 40.84 | 3.26 | 62.6 | 3.3 | 47.5 | 0.9 | 55.9 | 1.3 | 63.5 | 2.6 |
| Henderson | 38.57 | 2.78 | 40.1 | 1.2 | 36.3 | 0.9 | 43.8 | 0.3 | 44.6 | 6.6 |
| Pakuranga (L) | 36.71 | 2.62 | ns | ns | 33.6 | 1.2 | 41.0 | 0.8 | 44.1 | 0.9 |
| Lucas | 30.11 | 0.37 | 29.8 | 1.0 | 23.3 | 0.5 | 24.5 | 0.3 | 27.9 | 0.3 |
| Mangere | 26.45 | 2.76 | 36.5 | 1.1 | 29.0 | 1.4 | 29.4 | 0.8 | 33.9 | 1.1 |
| Paremoremo | 23.83 | 1.65 | 27.1 | 0.5 | 23.2 | 1.2 | 22.5 | 0.4 | 25.4 | 1.3 |
| Pahurehure | 17.93 | 0.56 | 21.4 | 1.2 | 12.0 | 0.7 | 14.2 | 0.6 | 18.9 | 0.6 |
| Cheltenham | 14.50 | 0.84 | ns | ns | 13.1 | 4.1 | 28.9 | 0.7 | 39.3 | 1.3 |
| Weiti | 12.03 | 0.63 | 18.0 | 0.4 | 8.9 | 0.5 | 10.8 | 0.7 | 14.9 | 0.3 |
| Te Matuku | 12.65 | 0.29 | ns | ns | 9.7 | 1.4 | 11.5 | 0.4 | ns | ns |
| Big Muddy | 10.96 | 0.69 | ns | ns | 4.5 | 0.6 | 8.6 | 0.2 | 15.4 | 0.5 |
| Puhinui | 10.93 | 1.96 | 16.2 | 0.3 | 8.8 | 0.5 | 8.2 | 0.9 | 14.1 | 0.3 |
| Browns | 5.76 | 0.55 | ns | ns | ns | ns | 1.4 | 1.3 | ns | ns |
| Pukaki | 5.66 | 0.01 | ns | ns | 6.7 | 0.4 | 8.3 | 0.6 | 12.8 | 0.2 |
| Awaruku | 2.99 | 0.38 | ns | ns | ns | ns | 0.0 | 0.0 | 11.8 | 1.2 |
| Vaughans | 2.51 | 0.67 | ns | ns | ns | ns | 0.0 | 0.0 | ns | ns |

ns = not sampled

# Appendix 3

Total organic carbon concentrations in 2005 and 2003.

**Table 18.**

Total Organic Carbon concentrations (g 100 g$^{-1}$ dw, means and standard error of mean) for samples collected in 2005 and 2003. Listed in order of decreasing TOC (2005) concentrations.

| Site | 2005 | | 2003 | |
|---|---|---|---|---|
| | g 100 g$^{-1}$ dw | SE | g 100 g$^{-1}$ dw | SE |
| Oakley | 2.61 | 0.08 | 2.26 | 0.10 |
| Whau (U) | 2.54 | 0.06 | 2.67 | 0.06 |
| Henderson | 2.53 | 0.09 | 2.78 | 0.05 |
| Pakuranga (U) | 2.51 | 0.27 | 1.66 | 0.16 |
| Motions | 2.48 | 0.09 | 1.07 | 0.02 |
| Paremoremo | 2.27 | 0.05 | 2.63 | 0.02 |
| Lucas | 1.98 | 0.02 | 2.01 | 0.07 |
| Whau Wairau | 1.94 | 0.04 | 1.72 | 0.05 |
| Whau (L) | 1.90 | 0.04 | 2.02 | 0.03 |
| Anns | 1.59 | 0.02 | 1.61 | 0.03 |
| Mangere | 1.59 | 0.01 | 1.57 | 0.02 |
| Tamaki (U) | 1.46 | 0.02 | 1.34 | 0.04 |
| Kaipatiki | 1.36 | 0.05 | 1.46 | 0.02 |
| Pukaki | 1.33 | 0.02 | 1.11 | 0.02 |
| Big Muddy | 1.27 | 0.02 | 1.36 | 0.02 |
| Puhinui | 1.26 | 0.02 | 1.11 | 0.02 |
| Meola | 1.19 | 0.05 | 1.72 | 0.03 |
| Pakuranga (L) | 1.09 | 0.01 | 1.37 | 0.17 |
| Pahurehure | 1.07 | 0.01 | 1.02 | 0.03 |
| Weiti | 0.91 | 0.06 | 1.05 | 0.04 |
| Te Tokoroa | 0.78 | 0.38 | 0.51 | 0.02 |
| Te Matuku | 0.36 | 0.01 | 0.38 | 0.01 |
| Hobson | 0.19 | 0.01 | 0.16 | 0.01 |
| Cheltenham | 0.19 | 0.01 | 0.15 | 0.003 |
| Browns | 0.09 | 0.01 | 0.08 | 0.003 |
| Vaughans | 0.09 | 0.00 | 0.08 | 0.003 |
| Awaruku | 0.09 | 0.00 | 0.10 | 0.01 |

# Appendix 4

Individual sample results: Metals

**Table 19.**

Metal concentrations in silt fraction (2M HCl extraction)

| Sample Code | Site Name | Rep | Zinc mg $kg^{-1}$ dw | Copper mg $kg^{-1}$ dw | Lead mg $kg^{-1}$ dw |
|---|---|---|---|---|---|
| 1/08/2005 | Vaughans | 1 | 31.69 | 2.61 | 3.84 |
| 1/08/2005 | | 2 | 16.77 | 1.75 | 1.85 |
| 1/08/2005 | | 3 | 16.56 | 1.69 | 1.83 |
| 1/08/2005 | Awaruku | 1 | 26.73 | 2.40 | 3.53 |
| 1/08/2005 | | 2 | 23.45 | 2.27 | 3.18 |
| 1/08/2005 | | 3 | 19.02 | 1.61 | 2.26 |
| 1/09/2005 | Browns | 1 | 34.68 | 2.63 | 4.74 |
| 1/09/2005 | | 2 | 43.73 | 3.62 | 6.62 |
| 1/09/2005 | | 3 | 41.34 | 3.65 | 5.93 |
| 3/08/2005 | Big Muddy | 1 | 54.98 | 6.87 | 10.83 |
| 3/08/2005 | | 2 | 56.28 | 6.28 | 9.83 |
| 3/08/2005 | | 3 | 52.66 | 7.62 | 12.22 |
| 31/08/2005 | Te Matuku | 1 | 45.66 | 4.88 | 13.12 |
| 31/08/2005 | | 2 | 44.67 | 4.61 | 12.71 |
| 31/08/2005 | | 3 | 44.02 | 4.62 | 12.12 |
| 16/08/2005 | Pukaki | 1 | 25.17 | 2.91 | 5.64 |
| 16/08/2005 | | 2 | 24.10 | 2.86 | 5.66 |
| 16/08/2005 | | 3 | 25.04 | 2.92 | 5.68 |
| 1/09/2005 | Cheltenham | 1 | 25.74 | 4.24 | 13.53 |
| 1/09/2005 | | 2 | 53.40 | 4.70 | 16.19 |
| 1/09/2005 | | 3 | 24.86 | 4.05 | 13.79 |
| 2/08/2005 | Pakuranga (L) | 1 | 170.66 | 28.73 | 37.05 |
| 2/08/2005 | | 2 | 185.47 | 31.46 | 41.07 |
| 2/08/2005 | | 3 | 146.80 | 24.96 | 32.00 |
| 2/08/2005 | Pakuranga (U) | 1 | 306.32 | 43.86 | 54.39 |
| 2/08/2005 | | 2 | 312.43 | 46.13 | 57.66 |
| 2/08/2005 | | 3 | 302.10 | 46.10 | 56.00 |
| 1/08/2005 | Weiti | 1 | 60.82 | 15.71 | 11.09 |
| 1/08/2005 | | 2 | 63.53 | 18.43 | 13.23 |
| 1/08/2005 | | 3 | 53.60 | 16.12 | 11.77 |
| 29/08/2005 | Pahurehure | 1 | 81.40 | 8.77 | 18.81 |
| 29/08/2005 | | 2 | 72.96 | 7.78 | 16.89 |
| 29/08/2005 | | 3 | 79.62 | 8.38 | 18.10 |
| 16/08/2005 | Paremoremo | 1 | 85.10 | 19.61 | 25.37 |
| 16/08/2005 | | 2 | 66.67 | 15.76 | 20.53 |
| 16/08/2005 | | 3 | 84.95 | 20.19 | 25.60 |
| 29/08/2005 | Puhinui | 1 | 51.17 | 3.96 | 7.14 |

**Table19.** (Continued)

| Sample Code | Site Name | Rep | Zinc mg $kg^{-1}$ dw | Copper mg $kg^{-1}$ dw | Lead mg $kg^{-1}$ dw |
|---|---|---|---|---|---|
| 29/08/2005 | | 2 | 87.33 | 6.67 | 11.97 |
| 29/08/2005 | | 3 | 97.30 | 7.63 | 13.70 |
| 5/08/2005 | Hobson | 1 | 143.09 | 30.57 | 63.74 |
| 5/08/2005 | | 2 | 148.96 | 31.73 | 68.80 |
| 5/08/2005 | | 3 | 145.44 | 30.41 | 62.14 |
| 15/08/2005 | Lucas | 1 | 117.71 | 23.62 | 30.55 |
| 15/08/2005 | | 2 | 118.04 | 23.92 | 30.39 |
| 15/08/2005 | | 3 | 116.08 | 23.53 | 29.37 |
| 15/08/2005 | Kaipatiki | 1 | 152.23 | 26.43 | 44.75 |
| 15/08/2005 | | 2 | 137.50 | 23.27 | 39.84 |
| 15/08/2005 | | 3 | 140.77 | 23.40 | 39.82 |
| 2/08/2005 | Mangere | 1 | 130.44 | 21.35 | 31.02 |
| 2/08/2005 | | 2 | 90.69 | 15.11 | 21.50 |
| 2/08/2005 | | 3 | 109.67 | 18.33 | 26.83 |
| 5/08/2005 | Oakley | 1 | 212.05 | 33.04 | 61.08 |
| 5/08/2005 | | 2 | 157.88 | 25.62 | 50.03 |
| 5/08/2005 | | 3 | 211.52 | 31.45 | 61.17 |
| 6/08/2005 | Whau (L) | 1 | 175.93 | 25.69 | 41.63 |
| 7/08/2005 | | 2 | 179.59 | 23.43 | 43.38 |
| 8/08/2005 | | 3 | 183.49 | 25.40 | 43.81 |
| 5/08/2005 | Whau (U) | 1 | 312.79 | 44.32 | 81.80 |
| 5/08/2005 | | 2 | 339.43 | 48.76 | 87.62 |
| 5/08/2005 | | 3 | 304.56 | 44.21 | 79.65 |
| 3/08/2005 | Whau Wairau | 1 | 280.62 | 53.14 | 97.11 |
| 3/08/2005 | | 2 | 249.00 | 47.12 | 87.72 |
| 3/08/2005 | | 3 | 261.70 | 49.25 | 92.66 |
| 3/08/2005 | Henderson | 1 | 166.27 | 30.92 | 38.49 |
| 3/08/2005 | | 2 | 153.28 | 28.49 | 33.79 |
| 3/08/2005 | | 3 | 183.29 | 34.65 | 43.42 |
| 16/08/2005 | Anns | 1 | 251.29 | 43.20 | 56.57 |
| 16/08/2005 | | 2 | 211.96 | 37.38 | 49.29 |
| 16/08/2005 | | 3 | 244.20 | 42.09 | 55.36 |
| 19/08/2005 | Meola | 1 | 234.55 | 46.41 | 94.49 |
| 19/08/2005 | | 2 | 248.33 | 48.33 | 100.83 |
| 19/08/2005 | | 3 | 260.65 | 51.61 | 99.78 |
| 19/08/2005 | Te Tokoroa | 1 | 129.35 | 23.19 | 46.79 |
| 19/08/2005 | | 2 | 100.75 | 18.15 | 35.58 |
| 19/08/2005 | | 3 | 111.40 | 20.68 | 40.14 |
| 19/08/2005 | Motions | 1 | 260.69 | 48.28 | 120.00 |
| 19/08/2005 | | 2 | 217.78 | 39.11 | 97.33 |
| 19/08/2005 | | 3 | 254.22 | 45.33 | 109.78 |
| 2/08/2005 | Tamaki (U) | 1 | 248.11 | 35.93 | 53.51 |
| 2/08/2005 | | 2 | 233.75 | 36.97 | 52.08 |
| 2/08/2005 | | 3 | 221.45 | 33.11 | 49.21 |

**Table 20**

Individual PAH results in <500 μm fractions.

| | Weiti | | | Browns Bay | | | Kaipatiki | | |
|---|---|---|---|---|---|---|---|---|---|
| OA109/** | 46 | 47 | 48 | 19 | 20 | 21 | 55 | 56 | 57 |
| PAHs (ng $g^{-1}$) | | | | | | | | | |
| naphthalene | 3.0 | 5.4 | 3.9 | 1.1 | 1.0 | 1.0 | 9.7 | 10.5 | 11.2 |
| 2-methylnaphthalene | 2.0 | 2.8 | 2.1 | 0.5 | 0.4 | 0.6 | 7.0 | 7.2 | 7.4 |
| 1-methylnaphthalene | 1.3 | 1.5 | 1.2 | 0.2 | <0.2 | 0.2 | 4.4 | 4.5 | 4.5 |
| biphenyl | 0.9 | 1.4 | 1.2 | 0.2 | 0.2 | 0.2 | 2.3 | 2.8 | 2.6 |
| 2,6-dimethylnaphthalene | 5.1 | 6.1 | 4.5 | 0.3 | 0.4 | 0.4 | 10.5 | 14.7 | 15.6 |
| acenaphthylene | 1.5 | 2.4 | 1.3 | <0.1 | <0.1 | <0.1 | 7.0 | 10.3 | 9.6 |
| acenaphthene | 3.1 | 0.8 | 0.3 | <0.1 | <0.1 | <0.1 | 1.6 | 2.1 | 1.5 |
| 2,3,5-trimethylnaphthalene | 1.2 | 1.5 | 1.1 | 0.1 | 0.1 | 0.1 | 2.6 | 3.3 | 2.6 |
| fluorene | 4.0 | 1.4 | 0.9 | 0.1 | 0.2 | 0.2 | 2.6 | 3.4 | 2.7 |
| phenanthrene | 38.5 | 16.2 | 5.7 | 0.6 | 2.1 | 0.8 | 29.4 | 39.2 | 36.2 |
| anthracene | 13.0 | 4.5 | 1.5 | 0.1 | 0.3 | 0.2 | 6.0 | 9.1 | 7.2 |
| 1-methylphenanthrene | 4.4 | 4.6 | 1.8 | 0.3 | 0.5 | 0.3 | 5.9 | 8.3 | 6.7 |
| fluoranthene | 55.3 | 40.4 | 13.7 | 1.9 | 4.2 | 2.4 | 66.8 | 90.8 | 81.2 |
| pyrene | 52.1 | 46.3 | 17.7 | 1.9 | 4.2 | 2.5 | 74.6 | 101 | 88.8 |
| benz[a]anthracene | 20.6 | 16.8 | 6.6 | 0.7 | 1.8 | 1.1 | 29.1 | 39.5 | 33.7 |
| chrysene | 21.0 | 19.3 | 8.0 | 0.9 | 2.1 | 1.4 | 37.2 | 48.4 | 42.6 |
| benzo[b]fluoranthene | 27.4 | 26.5 | 13.8 | 1.9 | 2.8 | 2.4 | 33.4 | 39.1 | 37.1 |
| benzo[k]fluoranthene | 17.4 | 16.6 | 7.6 | 1.0 | 2.0 | 1.6 | 29.9 | 36.5 | 32.4 |
| benzo[e]pyrene | 19.6 | 20.4 | 10.3 | 1.4 | 2.1 | 1.8 | 24.9 | 29.2 | 27.3 |
| benzo[a]pyrene | 32.5 | 31.2 | 13.7 | 0.9 | 1.5 | 1.5 | 30.5 | 37.2 | 33.5 |
| perylene | 17.8 | 20.0 | 17.2 | 5.3 | 5.1 | 5.5 | 36.8 | 39.6 | 36.0 |
| indeno[123-cd]pyrene | 21.4 | 22.7 | 11.7 | 1.1 | 1.6 | 1.5 | 39.6 | 46.2 | 43.5 |
| dibenz[ah]anthracene | 4.9 | 5.1 | 2.5 | <0.3 | <0.3 | <0.3 | 8.9 | 10.8 | 10.0 |
| benzo[ghi]perylene | 21.2 | 23.5 | 13.4 | 1.5 | 1.4 | 1.7 | 43.9 | 50.9 | 48.0 |
| Total PAH | 389 | 337 | 162 | 22 | 34 | 27 | 545 | 684 | 622 |

**Table 20.** (Continued)

| | Lucas | | | Paremoremo | | | Henderson | | |
|---|---|---|---|---|---|---|---|---|---|
| **OA109/**** | **4** | **5** | **6** | **49** | **50** | **51** | **52** | **53** | **54** |
| **PAHs (ng $g^{-1}$ )** | | | | | | | | | |
| **naphthalene** | 13.7 | 13.4 | 14.4 | 15.9 | 11.6 | 8.6 | 15.6 | 14.7 | 13.6 |
| **2-methylnaphthalene** | 7.4 | 7.4 | 7.4 | 7.9 | 7.4 | 7.7 | 9.3 | 8.2 | 7.5 |
| **1-methylnaphthalene** | 4.6 | 4.5 | 4.6 | 4.8 | 4.6 | 5.0 | 5.1 | 4.6 | 4.5 |
| **biphenyl** | 2.5 | 2.5 | 2.6 | 2.6 | 3.1 | 3.6 | 3.7 | 3.7 | 3.2 |
| **2,6-dimethylnaphthalene** | 16.3 | 14.3 | 17.7 | 15.7 | 13.0 | 12.1 | 21.2 | 19.1 | 12.6 |
| **acenaphthylene** | 7.7 | 7.4 | 7.7 | 7.0 | 8.7 | 12.6 | 12.2 | 10.4 | 10.6 |
| **acenaphthene** | 1.7 | 2.0 | 2.2 | 1.9 | 1.4 | 1.4 | 2.1 | 2.3 | 4.0 |
| **2,3,5-trimethylnaphthalene** | 3.2 | 3.5 | 3.5 | 2.2 | 1.9 | 1.6 | 3.0 | 3.5 | 3.2 |
| **fluorene** | 3.3 | 3.4 | 3.5 | 3.2 | 3.0 | 2.7 | 4.0 | 4.1 | 5.6 |
| **phenanthrene** | 42.3 | 46.0 | 50.4 | 41.2 | 32.7 | 30.4 | 46.3 | 47.1 | 63.6 |
| **anthracene** | 9.2 | 9.2 | 10.7 | 8.9 | 7.4 | 6.0 | 10.4 | 10.5 | 12.9 |
| **1-methylphenanthrene** | 8.3 | 8.5 | 9.4 | 8.8 | 7.6 | 7.0 | 9.0 | 8.9 | 9.2 |
| **fluoranthene** | 107.6 | 104.7 | 115.6 | 98.3 | 81.0 | 70.8 | 108 | 116 | 125 |
| **pyrene** | 121.0 | 118.3 | 128.6 | 112.9 | 92.6 | 80.8 | 122 | 131 | 137 |
| **benz[a]anthracene** | 45.1 | 43.7 | 47.6 | 41.3 | 33.8 | 28.3 | 47.4 | 50.8 | 52.8 |
| **chrysene** | 57.1 | 56.3 | 59.3 | 53.2 | 43.2 | 36.5 | 61.4 | 65.2 | 66.1 |
| **benzo[b]fluoranthene** | 67.4 | 67.3 | 66.1 | 61.4 | 54.8 | 42.7 | 52.2 | 54.5 | 52.4 |
| **benzo[k]fluoranthene** | 40.6 | 37.4 | 40.5 | 36.6 | 28.8 | 25.2 | 42.5 | 41.6 | 44.2 |
| **benzo[e]pyrene** | 46.8 | 44.9 | 45.1 | 42.0 | 35.1 | 29.3 | 36.3 | 36.8 | 36.5 |
| **benzo[a]pyrene** | 65.5 | 62.4 | 64.3 | 58.8 | 48.3 | 41.3 | 42.5 | 42.4 | 44.4 |
| **perylene** | 47.3 | 43.8 | 47.7 | 48.8 | 43.8 | 34.3 | 62.9 | 63.2 | 59.2 |
| **indeno[123-cd]pyrene** | 51.8 | 49.1 | 51.9 | 49.0 | 40.0 | 33.0 | 58.3 | 63.0 | 60.7 |
| **dibenz[ah]anthracene** | 10.6 | 10.5 | 11.0 | 10.2 | 8.2 | 6.8 | 14.4 | 15.4 | 14.5 |
| **benzo[ghi]perylene** | 49.6 | 47.3 | 49.1 | 43.9 | 36.2 | 30.9 | 68.4 | 72.7 | 69.7 |
| **Total PAH** | 831 | 808 | 861 | 777 | 648 | 559 | 858 | 889 | 913 |

**Table 20.** (Continued)

| | Whau (Upper) | | | Whau (Lower) | | | Whau Wairau | | |
|---|---|---|---|---|---|---|---|---|---|
| **OA109/**** | **61** | **62** | **63** | **58** | **59** | **60** | **64** | **65** | **66** |
| **PAHs (ng $g^{-1}$ )** | | | | | | | | | |
| **naphthalene** | 36.0 | 23.4 | 25.9 | 17.7 | 19.8 | 19.3 | 18.9 | 20.8 | 18.9 |
| **2-methylnaphthalene** | 18.7 | 18.1 | 16.9 | 12.4 | 12.7 | 13.0 | 11.7 | 12.7 | 12.3 |
| **1-methylnaphthalene** | 12.4 | 12.6 | 9.7 | 8.1 | 8.5 | 8.8 | 6.7 | 7.6 | 6.9 |
| **biphenyl** | 9.5 | 7.7 | 9.1 | 3.7 | 4.1 | 4.4 | 5.9 | 6.5 | 5.0 |
| **2,6-dimethylnaphthalene** | 24.0 | 23.9 | 24.2 | 18.2 | 21.8 | 24.9 | 14.6 | 18.7 | 14.2 |
| **acenaphthylene** | 19.3 | 25.7 | 20.8 | 15.5 | 15.8 | 12.4 | 30.4 | 32.9 | 25.9 |
| **acenaphthene** | 12.0 | 5.3 | 8.9 | 3.8 | 4.6 | 3.9 | 3.9 | 3.9 | 3.9 |
| **2,3,5-trimethylnaphthalene** | 6.4 | 5.8 | 6.5 | 8.8 | 8.4 | 9.1 | 4.6 | 4.6 | 4.6 |
| **fluorene** | 17.9 | 9.0 | 12.5 | 9.1 | 9.2 | 8.2 | 8.0 | 8.3 | 7.7 |
| **phenanthrene** | 135 | 121 | 116 | 73.8 | 75.8 | 64.8 | 84.5 | 84.9 | 76.9 |
| **anthracene** | 29.4 | 18.5 | 27.3 | 16.3 | 16.3 | 14.4 | 18.8 | 20.6 | 18.0 |
| **1-methylphenanthrene** | 24.5 | 21.2 | 25.8 | 14.3 | 14.6 | 14.3 | 17.0 | 18.5 | 16.9 |
| **fluoranthene** | 278 | 227 | 291 | 186 | 174 | 168 | 223 | 228 | 214 |
| **pyrene** | 290 | 234 | 303 | 192 | 185 | 180 | 246 | 252 | 237 |
| **benz[a]anthracene** | 101 | 75.2 | 114 | 64.8 | 62.1 | 61.0 | 85.8 | 88.6 | 83.8 |
| **chrysene** | 133 | 106 | 142 | 80.9 | 78.2 | 76.1 | 113 | 111 | 106 |
| **benzo[b]fluoranthene** | 167 | 135 | 168 | 117 | 110 | 103 | 142 | 141 | 137 |
| **benzo[k]fluoranthene** | 130 | 99 | 130 | 81.1 | 82.8 | 83.9 | 108 | 111 | 100 |
| **benzo[e]pyrene** | 126 | 95 | 124 | 80.1 | 78.3 | 76.5 | 103 | 104 | 96 |
| **benzo[a]pyrene** | 142 | 122 | 147 | 120 | 117 | 109 | 125 | 140 | 126 |
| **perylene** | 98.8 | 99.5 | 139.4 | 66.6 | 67.3 | 61.8 | 73.4 | 73.1 | 70.8 |
| **indeno[123-cd]pyrene** | 141 | 102 | 144 | 91.1 | 89.2 | 90.6 | 113 | 109 | 100 |
| **dibenz[ah]anthracene** | 29.7 | 20.5 | 30.4 | 19.2 | 19.3 | 19.8 | 25.1 | 24.3 | 22.7 |
| **benzo[ghi]perylene** | 152 | 109 | 153 | 107 | 103 | 105 | 128 | 122 | 110 |
| **Total PAH** | 2134 | 1715 | 2189 | 1407 | 1379 | 1332 | 1711 | 1744 | 1614 |

**Table 20.** (Continued)

| | Oakley | | | Meola Creek | | | Te Tokaroa | | |
|---|---|---|---|---|---|---|---|---|---|
| **OA109/**** | **7** | **8** | **9** | **67** | **68** | **69** | **79** | **80** | **81** |
| **PAHs (ng $g^{-1}$ )** | | | | | | | | | |
| **naphthalene** | 22.8 | 24.8 | 22.6 | 52.4 | 47.2 | 45.8 | 8.9 | 10.6 | 9.4 |
| **2-methylnaphthalene** | 12.2 | 13.6 | 12.4 | 20.9 | 19.8 | 25.1 | 4.5 | 6.2 | 5.2 |
| **1-methylnaphthalene** | 7.5 | 8.3 | 7.4 | 12.0 | 10.7 | 17.2 | 2.5 | 3.7 | 3.0 |
| **biphenyl** | 5.1 | 5.4 | 4.5 | 10.9 | 11.7 | 11.8 | 1.7 | 2.2 | 1.8 |
| **2,6-dimethylnaphthalene** | 17.9 | 20.0 | 17.9 | 19.2 | 18.1 | 28.3 | 7.7 | 21.5 | 17.1 |
| **acenaphthylene** | 20.8 | 21.3 | 18.2 | 46.7 | 55.0 | 82.8 | 9.0 | 13.9 | 10.7 |
| **acenaphthene** | 6.0 | 8.5 | 5.4 | 14.5 | 10.5 | 25.9 | 1.5 | 2.0 | 2.3 |
| **2,3,5-trimethylnaphthalene** | 5.7 | 4.8 | 5.1 | 5.7 | 6.8 | 8.6 | 0.9 | 0.9 | 0.9 |
| **fluorene** | 10.6 | 13.7 | 9.5 | 16.9 | 18.2 | 31.9 | 2.5 | 4.2 | 3.7 |
| **phenanthrene** | 104 | 118 | 88 | 284 | 269 | 430 | 35.0 | 52.7 | 44.3 |
| **anthracene** | 24.7 | 26.4 | 22.1 | 41.3 | 51.7 | 72.0 | 7.1 | 10.5 | 8.6 |
| **1-methylphenanthrene** | 20.2 | 22.3 | 18.6 | 44.4 | 46.6 | 49.1 | 5.8 | 7.6 | 6.5 |
| **fluoranthene** | 247 | 260 | 224 | 678 | 764 | 785 | 93.0 | 121 | 106 |
| **pyrene** | 259 | 270 | 237 | 742 | 841 | 829 | 105 | 132 | 118 |
| **benz[a]anthracene** | 94.4 | 97.2 | 87.0 | 306 | 389 | 336 | 41.0 | 50.6 | 44.4 |
| **chrysene** | 119 | 123 | 111 | 391 | 478 | 411 | 52.3 | 61.9 | 56.2 |
| **benzo[b]fluoranthene** | 159 | 161 | 148 | 393 | 479 | 398 | 48.4 | 56.8 | 52.3 |
| **benzo[k]fluoranthene** | 113 | 119 | 110 | 360 | 438 | 348 | 43.7 | 47.2 | 44.2 |
| **benzo[e]pyrene** | 114 | 117 | 109 | 336 | 408 | 327 | 35.7 | 40.2 | 37.2 |
| **benzo[a]pyrene** | 151 | 153 | 153 | 297 | 429 | 416 | 45.8 | 46.1 | 43.2 |
| **perylene** | 76.9 | 78.2 | 73.3 | 143 | 186 | 144 | 27.8 | 26.2 | 25.5 |
| **indeno[123-cd]pyrene** | 122 | 128 | 112 | 446 | 523 | 377 | 54.3 | 75.2 | 69.5 |
| **dibenz[ah]anthracene** | 27.7 | 28.6 | 25.2 | 76.2 | 92.7 | 65.4 | 11.9 | 17.5 | 16.2 |
| **benzo[ghi]perylene** | 144 | 149 | 131 | 469 | 542 | 387 | 56.6 | 76.5 | 70.6 |
| **Total PAH** | 1885 | 1970 | 1753 | 5205 | 6134 | 5652 | 703 | 887 | 797 |

**Table 20.** (Continued)

| | Motions Creek | | | Hobson Bay | | | Tamaki | | |
|---|---|---|---|---|---|---|---|---|---|
| OA109/** | 76 | 77 | 78 | 1 | 2 | 3 | 31 | 32 | 33 |
| PAHs (ng $g^{-1}$ ) | | | | | | | | | |
| naphthalene | 68.1 | 69.9 | 68.3 | 5.3 | 5.4 | 5.2 | 11.4 | 12.7 | 10.8 |
| 2-methylnaphthalene | 22.0 | 32.0 | 29.1 | 2.5 | 2.4 | 2.3 | 6.2 | 6.0 | 6.0 |
| 1-methylnaphthalene | 15.0 | 22.1 | 17.8 | 1.2 | 1.7 | 1.3 | 3.9 | 3.2 | 3.4 |
| biphenyl | 11.2 | 14.7 | 13.5 | 1.1 | 1.1 | 1.0 | 3.3 | 3.2 | 3.1 |
| 2,6-dimethylnaphthalene | 17.3 | 34.4 | 25.7 | 3.0 | 3.3 | 3.1 | 11.0 | 10.2 | 9.6 |
| acenaphthylene | 94.8 | 98.9 | 120.7 | 6.2 | 9.4 | 6.4 | 10.9 | 10.0 | 9.8 |
| acenaphthene | 36.4 | 43.4 | 27.2 | 0.7 | 3.0 | 1.0 | 8.9 | 7.8 | 6.3 |
| 2,3,5-trimethylnaphthalene | 11.0 | 13.1 | 9.6 | 0.7 | 1.2 | 0.8 | 3.3 | 3.2 | 3.1 |
| fluorene | 55.3 | 54.6 | 59.7 | 1.4 | 4.0 | 1.8 | 13.3 | 11.5 | 9.2 |
| phenanthrene | 792 | 684 | 782 | 20.5 | 53.4 | 25.9 | 105 | 97 | 80 |
| anthracene | 118 | 125 | 118 | 3.4 | 7.3 | 4.3 | 15.5 | 20.4 | 16.8 |
| 1-methylphenanthrene | 97.5 | 91.1 | 85.1 | 3.1 | 5.9 | 3.9 | 18.3 | 17.4 | 15.4 |
| fluoranthene | 1503 | 1367 | 1481 | 61.6 | 102 | 70.2 | 239 | 232 | 202 |
| pyrene | 1576 | 1446 | 1516 | 66.5 | 108 | 75.6 | 230 | 225 | 199 |
| benz[a]anthracene | 630 | 595 | 576 | 25.9 | 38.0 | 29.1 | 89.0 | 86.8 | 74.3 |
| chrysene | 762 | 700 | 693 | 35.0 | 49.1 | 38.4 | 113 | 103 | 90 |
| benzo[b]fluoranthene | 670 | 669 | 647 | 26.9 | 36.1 | 28.5 | 141 | 134 | 116 |
| benzo[k]fluoranthene | 638 | 575 | 587 | 25.1 | 33.4 | 28.2 | 112 | 98 | 88 |
| benzo[e]pyrene | 560 | 535 | 525 | 18.8 | 26.1 | 21.1 | 96.3 | 87.7 | 77.7 |
| benzo[a]pyrene | 704 | 759 | 751 | 18.4 | 31.6 | 20.5 | 81.4 | 119.6 | 104.5 |
| perylene | 227 | 223 | 216 | 13.4 | 15.6 | 12.3 | 71.3 | 70.3 | 64.4 |
| indeno[123-cd]pyrene | 665 | 622 | 628 | 61.2 | 49.5 | 55.2 | 118 | 96 | 85 |
| dibenz[ah]anthracene | 122 | 117 | 109 | 12.3 | 10.8 | 12.1 | 26.8 | 22.8 | 19.6 |
| benzo[ghi]perylene | 662 | 634 | 626 | 62.0 | 51.4 | 55.7 | 135 | 102 | 91 |
| Total PAH | 10056 | 9525 | 9714 | 476 | 649 | 504 | 1663 | 1582 | 1385 |

**Table 20.** (Continued)

| | Pakuranga (Upper) | | | Pakuranga (Lower) | | | Big Muddy Creek | | |
|---|---|---|---|---|---|---|---|---|---|
| **OA109/**** | **34** | **35** | **36** | **16** | **17** | **18** | **40** | **41** | **42** |
| **PAHs (ng $g^{-1}$ )** | | | | | | | | | |
| **naphthalene** | **13.3** | **17.1** | **15.9** | **7.0** | **8.0** | **8.5** | **10.0** | **9.5** | **12.0** |
| **2-methylnaphthalene** | **7.5** | **10.0** | **8.2** | **4.9** | **4.3** | **4.8** | **5.4** | **5.1** | **5.1** |
| **1-methylnaphthalene** | **3.4** | **4.4** | **3.6** | **2.6** | **2.1** | **2.2** | **3.3** | **2.8** | **2.7** |
| **biphenyl** | **3.2** | **4.8** | **3.6** | **3.1** | **1.9** | **2.0** | **2.6** | **2.7** | **2.6** |
| **2,6-dimethylnaphthalene** | **13.6** | **19.4** | **15.5** | **11.8** | **9.2** | **9.6** | **10.6** | **12.5** | **11.5** |
| **acenaphthylene** | **7.1** | **9.0** | **7.8** | **7.8** | **4.3** | **4.5** | **2.5** | **3.0** | **5.1** |
| **acenaphthene** | **1.4** | **1.4** | **1.5** | **0.9** | **1.4** | **1.1** | **2.6** | **0.6** | **0.7** |
| **2,3,5-trimethylnaphthalene** | **3.8** | **4.9** | **4.1** | **2.3** | **2.5** | **2.7** | **1.7** | **1.6** | **1.9** |
| **fluorene** | **3.7** | **4.7** | **3.8** | **2.2** | **2.7** | **2.4** | **4.3** | **1.9** | **2.4** |
| **phenanthrene** | **33.7** | **38.7** | **38.0** | **21.0** | **30.1** | **24.6** | **35.6** | **14.7** | **30.5** |
| **anthracene** | **7.2** | **7.7** | **7.7** | **4.5** | **7.2** | **5.7** | **9.1** | **3.5** | **6.5** |
| **1-methylphenanthrene** | **10.6** | **12.8** | **12.0** | **6.1** | **7.1** | **6.7** | **4.7** | **3.0** | **5.6** |
| **fluoranthene** | **97.3** | **85.7** | **86.7** | **52.8** | **76.4** | **65.9** | **57.8** | **27.6** | **81.4** |
| **pyrene** | **119** | **116** | **113** | **65.0** | **89.1** | **79.7** | **56.3** | **25.5** | **82.0** |
| **benz[a]anthracene** | **48.5** | **36.7** | **38.8** | **19.3** | **28.8** | **24.7** | **22.8** | **11.3** | **34.1** |
| **chrysene** | **66.0** | **57.7** | **57.6** | **26.9** | **37.8** | **33.1** | **24.7** | **13.2** | **36.4** |
| **benzo[b]fluoranthene** | **56.0** | **50.3** | **47.7** | **48.6** | **61.9** | **56.4** | **23.1** | **14.1** | **33.4** |
| **benzo[k]fluoranthene** | **45.6** | **38.1** | **38.2** | **25.6** | **34.7** | **30.8** | **19.6** | **10.7** | **27.8** |
| **benzo[e]pyrene** | **37.2** | **34.5** | **32.5** | **33.1** | **41.3** | **37.4** | **18.6** | **10.5** | **26.8** |
| **benzo[a]pyrene** | **42.5** | **33.5** | **33.9** | **41.3** | **54.2** | **48.4** | **25.6** | **12.8** | **38.8** |
| **perylene** | **91.2** | **141** | **105** | **83.6** | **63.7** | **60.9** | **36.1** | **31.9** | **37.2** |
| **indeno[123-cd]pyrene** | **59.0** | **52.6** | **51.0** | **35.9** | **44.5** | **40.7** | **20.0** | **11.1** | **28.6** |
| **dibenz[ah]anthracene** | **14.3** | **11.7** | **12.2** | **7.1** | **9.5** | **8.6** | **3.0** | **1.8** | **5.1** |
| **benzo[ghi]perylene** | **65.7** | **63.2** | **63.2** | **35.4** | **43.2** | **40.3** | **18.2** | **9.2** | **27.1** |
| **Total PAH** | **851** | **856** | **801** | **549** | **666** | **602** | **418** | **240** | **545** |

**Table 20.** (Continued)

| | Anns Creek | | | Mangere | | | Pukaki | | |
|---|---|---|---|---|---|---|---|---|---|
| OA109/** | 28 | 29 | 30 | 10 | 11 | 12 | 43 | 44 | 45 |
| PAHs (ng $g^{-1}$ ) | | | | | | | | | |
| naphthalene | 18.0 | 15.3 | 15.2 | 13.8 | 15.5 | 14.8 | 7.4 | 7.5 | 7.9 |
| 2-methylnaphthalene | 9.0 | 8.3 | 7.4 | 7.0 | 7.7 | 7.3 | 3.6 | 5.0 | 3.9 |
| 1-methylnaphthalene | 4.2 | 3.8 | 3.5 | 3.3 | 3.8 | 3.5 | 1.9 | 2.7 | 2.1 |
| biphenyl | 4.5 | 4.4 | 3.8 | 4.1 | 4.1 | 3.9 | 1.8 | 2.7 | 1.9 |
| 2,6-dimethylnaphthalene | 16.8 | 14.8 | 12.2 | 11.9 | 13.8 | 12.9 | 7.9 | 11.0 | 9.6 |
| acenaphthylene | 5.6 | 5.2 | 5.0 | 4.7 | 5.3 | 5.4 | 1.8 | 2.8 | 1.5 |
| acenaphthene | 1.3 | 1.2 | 1.2 | 0.9 | 1.5 | 1.1 | 0.5 | 0.4 | 0.3 |
| 2,3,5-trimethylnaphthalene | 2.6 | 2.5 | 1.8 | 2.1 | 2.7 | 2.3 | 1.2 | 0.9 | 1.1 |
| fluorene | 3.2 | 3.0 | 3.0 | 2.6 | 3.5 | 2.6 | 1.4 | 1.3 | 1.2 |
| phenanthrene | 30.1 | 26.7 | 27.3 | 27.8 | 33.8 | 25.9 | 13.2 | 10.3 | 9.1 |
| anthracene | 7.7 | 6.9 | 6.7 | 6.9 | 7.9 | 6.7 | 3.0 | 2.3 | 2.1 |
| 1-methylphenanthrene | 7.2 | 6.4 | 6.3 | 6.8 | 7.1 | 6.3 | 3.0 | 2.3 | 2.3 |
| fluoranthene | 67.5 | 60.3 | 61.1 | 64.0 | 70.6 | 62.1 | 29.4 | 22.2 | 19.4 |
| pyrene | 86.1 | 77.5 | 78.3 | 77.0 | 83.7 | 76.0 | 28.1 | 21.1 | 18.2 |
| benz[a]anthracene | 28.6 | 25.5 | 26.6 | 23.0 | 25.0 | 22.8 | 15.7 | 8.6 | 6.6 |
| chrysene | 37.6 | 34.0 | 34.8 | 30.4 | 32.2 | 29.3 | 17.1 | 10.8 | 8.8 |
| benzo[b]fluoranthene | 49.5 | 42.0 | 44.1 | 43.9 | 47.2 | 44.0 | 18.1 | 11.8 | 9.8 |
| benzo[k]fluoranthene | 24.9 | 24.6 | 26.2 | 25.6 | 26.0 | 25.1 | 13.9 | 9.7 | 7.9 |
| benzo[e]pyrene | 32.1 | 29.6 | 29.8 | 30.7 | 31.8 | 30.5 | 12.5 | 8.7 | 7.0 |
| benzo[a]pyrene | 38.0 | 34.0 | 34.0 | 38.1 | 40.4 | 38.9 | 14.2 | 10.8 | 8.0 |
| perylene | 47.1 | 44.1 | 44.4 | 47.2 | 45.8 | 40.6 | 20.5 | 18.1 | 18.8 |
| indeno[123-cd]pyrene | 34.8 | 32.8 | 35.3 | 35.5 | 35.5 | 33.1 | 12.9 | 11.1 | 8.7 |
| dibenz[ah]anthracene | 6.4 | 5.7 | 6.2 | 6.2 | 6.3 | 6.1 | 2.0 | 1.5 | 1.1 |
| benzo[ghi]perylene | 37.4 | 34.7 | 35.4 | 35.6 | 35.7 | 33.8 | 12.5 | 10.4 | 8.1 |
| Total PAH | 600 | 543 | 550 | 549 | 587 | 535 | 244 | 194 | 165 |

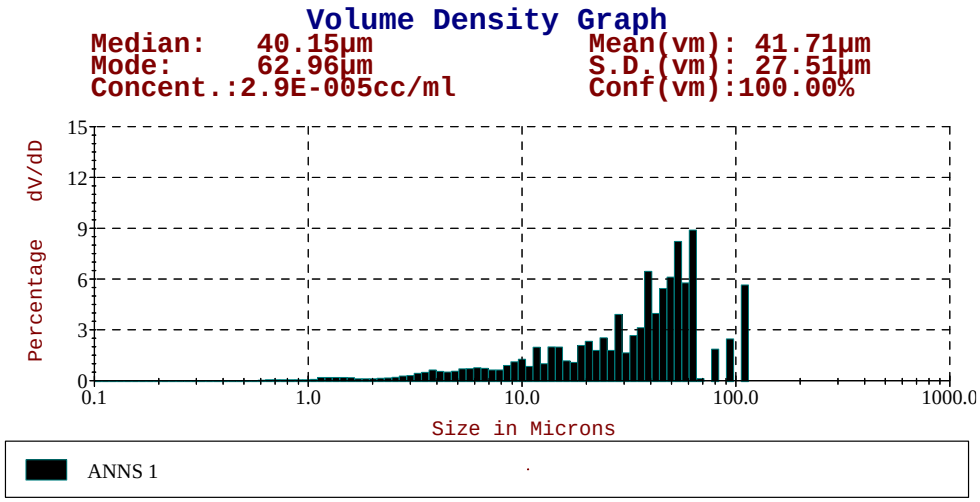
**Table 20.** (Continued)

| | Puhinui | | | Pahurehure | | | Cheltenham | | |
|---|---|---|---|---|---|---|---|---|---|
| OA109/** | 13 | 14 | 15 | 73 | 74 | 75 | 70 | 71 | 72 |
| PAHs (ng $g^{-1}$ ) | | | | | | | | | |
| naphthalene | 6.1 | 5.4 | 5.4 | 5.2 | 6.5 | 4.5 | 2.0 | 2.3 | 2.4 |
| 2-methylnaphthalene | 3.2 | 3.1 | 3.2 | 2.7 | 3.2 | 5.3 | 1.0 | 1.3 | 1.2 |
| 1-methylnaphthalene | 1.7 | 1.8 | 1.7 | 1.4 | 1.6 | 2.8 | 0.7 | 0.8 | 0.7 |
| biphenyl | 1.2 | 1.4 | 1.4 | 1.4 | 1.4 | 0.6 | 0.5 | 0.7 | 0.6 |
| 2,6-dimethylnaphthalene | 5.0 | 4.0 | 4.5 | 6.7 | 7.5 | 3.2 | 2.4 | 3.7 | 2.9 |
| acenaphthylene | 1.4 | 2.1 | 1.5 | 2.2 | 1.7 | 0.8 | 4.6 | 4.7 | 5.4 |
| acenaphthene | 0.5 | 0.4 | 0.4 | 0.7 | 0.5 | 0.4 | 1.0 | 0.7 | 0.8 |
| 2,3,5-trimethylnaphthalene | 0.9 | 1.0 | 0.9 | 0.9 | 1.0 | 0.5 | 1.4 | 1.0 | 1.1 |
| fluorene | 1.0 | 1.0 | 1.0 | 1.4 | 1.3 | 1.1 | 1.6 | 1.2 | 1.3 |
| phenanthrene | 8.0 | 8.5 | 7.8 | 12.9 | 9.6 | 9.2 | 42.5 | 28.8 | 34.1 |
| anthracene | 1.6 | 1.6 | 1.4 | 2.4 | 2.1 | 1.8 | 8.2 | 5.1 | 6.5 |
| 1-methylphenanthrene | 2.2 | 2.1 | 2.0 | 2.7 | 2.2 | 2.0 | 10.8 | 8.8 | 9.4 |
| fluoranthene | 18.6 | 19.1 | 17.1 | 26.4 | 20.4 | 18.2 | 89.0 | 79.1 | 86.4 |
| pyrene | 21.1 | 21.3 | 19.2 | 25.3 | 20.9 | 19.4 | 92.5 | 86.2 | 93.8 |
| benz[a]anthracene | 6.9 | 7.3 | 6.0 | 9.8 | 8.2 | 7.9 | 31.4 | 31.1 | 33.3 |
| chrysene | 9.7 | 9.9 | 8.7 | 12.3 | 10.2 | 10.5 | 36.1 | 35.7 | 38.7 |
| benzo[b]fluoranthene | 11.1 | 11.8 | 10.2 | 13.5 | 12.0 | 18.4 | 50.4 | 50.1 | 54.4 |
| benzo[k]fluoranthene | 8.6 | 10.0 | 7.6 | 11.1 | 9.6 | 10.2 | 32.6 | 33.7 | 35.6 |
| benzo[e]pyrene | 8.9 | 9.4 | 8.0 | 10.1 | 8.7 | 13.3 | 36.6 | 38.3 | 41.0 |
| benzo[a]pyrene | 8.5 | 9.9 | 7.7 | 11.9 | 10.4 | 16.1 | 60.7 | 61.9 | 66.3 |
| perylene | 13.3 | 14.0 | 13.4 | 17.8 | 17.4 | 21.5 | 12.6 | 13.2 | 13.5 |
| indeno[123-cd]pyrene | 9.3 | 11.2 | 8.9 | 12.2 | 11.1 | 15.6 | 39.3 | 41.1 | 41.9 |
| dibenz[ah]anthracene | 1.4 | 1.6 | 1.3 | 1.9 | 1.8 | 2.7 | 9.5 | 10.0 | 10.5 |
| benzo[ghi]perylene | 10.3 | 12.2 | 10.0 | 12.6 | 12.0 | 16.6 | 38.0 | 41.1 | 41.6 |
| Total PAH | 160 | 170 | 149 | 205 | 181 | 203 | 605 | 581 | 624 |

**Table 20.** (Continued)

| | Awaruku Stream | | | Vaughan Stream | | | Te Matuku Bay | | |
|---|---|---|---|---|---|---|---|---|---|
| **OA109/**** | **22** | **23** | **24** | **25** | **26** | **27** | **37** | **38** | **39** |
| **PAHs (ng $g^{-1}$ )** | | | | | | | | | |
| **naphthalene** | **0.9** | **0.7** | **0.9** | **<1.0** | **<1.0** | **1.0** | **2.2** | **2.2** | **1.6** |
| **2-methylnaphthalene** | **0.4** | **0.4** | **0.6** | **0.8** | **0.6** | **0.6** | **1.1** | **0.9** | **0.8** |
| **1-methylnaphthalene** | **0.2** | **0.2** | **0.3** | **0.3** | **0.3** | **0.2** | **0.6** | **0.4** | **0.4** |
| **biphenyl** | **<0.2** | **<0.2** | **0.4** | **0.3** | **0.3** | **0.2** | **0.6** | **0.4** | **0.4** |
| **2,6-dimethylnaphthalene** | **0.3** | **0.3** | **0.4** | **0.7** | **0.8** | **0.6** | **2.3** | **2.9** | **1.4** |
| **acenaphthylene** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **0.3** | **0.2** | **0.2** |
| **acenaphthene** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** | **<0.1** |
| **2,3,5-trimethylnaphthalene** | **<0.1** | **<0.1** | **<0.1** | **0.1** | **0.1** | **0.1** | **0.2** | **0.2** | **0.6** |
| **fluorene** | **0.1** | **0.1** | **0.1** | **0.2** | **0.2** | **0.1** | **0.2** | **0.2** | **0.5** |
| **phenanthrene** | **0.9** | **0.9** | **0.8** | **0.6** | **0.5** | **0.5** | **1.0** | **1.1** | **1.6** |
| **anthracene** | **0.1** | **0.1** | **<0.1** | **0.1** | **<0.1** | **<0.1** | **0.2** | **0.2** | **0.2** |
| **1-methylphenanthrene** | **0.2** | **0.2** | **0.2** | **<0.2** | **<0.2** | **<0.2** | **0.3** | **0.3** | **0.3** |
| **fluoranthene** | **1.8** | **1.8** | **1.9** | **1.2** | **1.3** | **1.0** | **2.5** | **2.2** | **2.0** |
| **pyrene** | **1.3** | **1.3** | **1.3** | **<1.0** | **1.0** | **<1.0** | **2.2** | **1.9** | **1.8** |
| **benz[a]anthracene** | **0.4** | **0.4** | **0.5** | **0.3** | **0.4** | **0.3** | **1.0** | **0.6** | **0.5** |
| **chrysene** | **0.7** | **0.6** | **0.7** | **0.5** | **0.6** | **0.4** | **1.2** | **1.0** | **0.8** |
| **benzo[b]fluoranthene** | **1.0** | **1.1** | **1.2** | **1.2** | **1.2** | **1.1** | **1.4** | **1.4** | **1.0** |
| **benzo[k]fluoranthene** | **0.6** | **0.6** | **0.5** | **0.6** | **0.6** | **0.4** | **1.1** | **1.0** | **0.8** |
| **benzo[e]pyrene** | **0.7** | **0.8** | **0.8** | **0.8** | **0.8** | **0.7** | **1.0** | **0.9** | **0.7** |
| **benzo[a]pyrene** | **0.4** | **0.5** | **<0.3** | **0.6** | **0.6** | **0.4** | **1.1** | **0.9** | **0.8** |
| **perylene** | **2.1** | **3.3** | **3.0** | **4.4** | **3.7** | **3.5** | **1.2** | **1.3** | **0.9** |
| **indeno[123-cd]pyrene** | **0.5** | **0.7** | **0.6** | **0.8** | **0.8** | **0.7** | **1.8** | **2.2** | **1.1** |
| **dibenz[ah]anthracene** | **<0.3** | **<0.3** | **<0.3** | **<0.3** | **<0.3** | **<0.3** | **<0.3** | **<0.3** | **<0.3** |
| **benzo[ghi]perylene** | **0.7** | **1.0** | **0.5** | **1.0** | **1.0** | **0.9** | **0.6** | **0.7** | **0.9** |
| **Total PAH** | **13.5** | **15.0** | **14.8** | **14.5** | **14.7** | **12.7** | **24.1** | **23.2** | **19.2** |

Volume Distribution: Sample **16/8/05 Anns 1** low (0-300 μm).



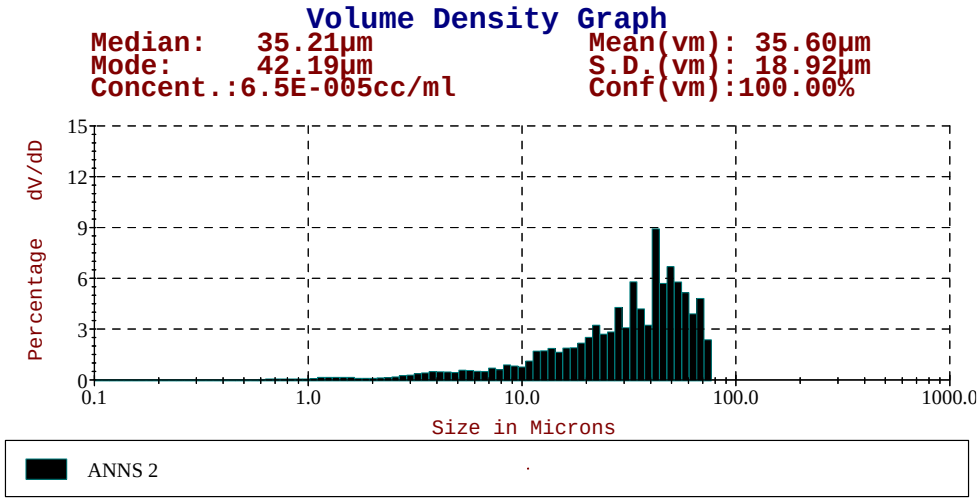

Area Ranges Table: **16/8/05 Anns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 32.89 | 32.89 | 67.11 |
| 3.9-7.8 | 16.20 | 49.09 | 50.91 |
| 7.8-15.6 | 17.14 | 66.23 | 33.77 |
| 15.6-31.3 | 13.52 | 79.75 | 20.25 |
| 31.3-62.5 | 17.69 | 97.44 | 2.56 |
| 62.5-125.0 | 2.56 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Anns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 3.75 | 3.75 | 96.25 |
| 3.9-7.8 | 5.22 | 8.97 | 91.03 |
| 7.8-15.6 | 11.45 | 20.42 | 79.58 |
| 15.6-31.3 | 18.01 | 38.43 | 61.57 |
| 31.3-62.5 | 48.28 | 86.71 | 13.29 |
| 62.5-125.0 | 13.29 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **16/8/05 Anns 2** low (0-300 µm).



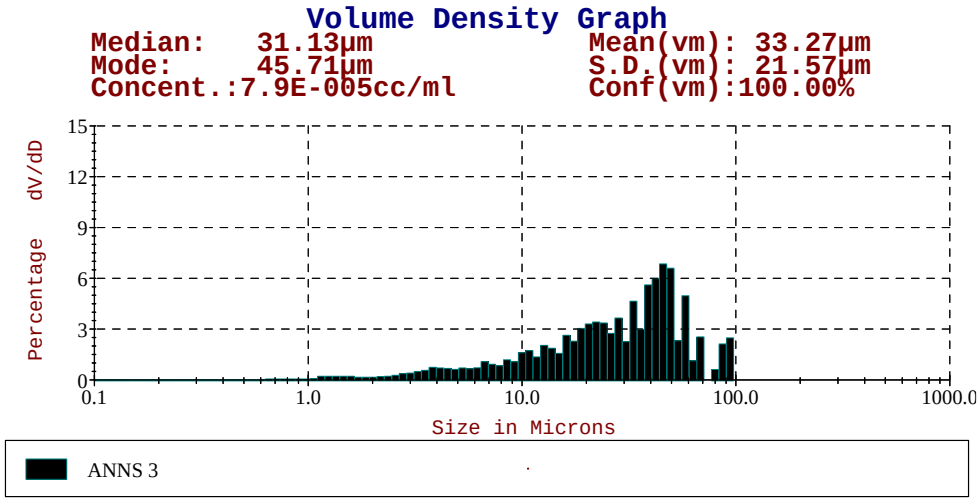

Area Ranges Table: **16/8/05 Anns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 29.71 | 29.71 | 70.29 |
| 3.9-7.8 | 13.70 | 43.42 | 56.58 |
| 7.8-15.6 | 16.50 | 59.91 | 40.09 |
| 15.6-31.3 | 18.24 | 78.16 | 21.84 |
| 31.3-62.5 | 19.69 | 97.84 | 2.16 |
| 62.5-125.0 | 2.16 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Anns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 3.22 | 3.22 | 96.78 |
| 3.9-7.8 | 4.32 | 7.55 | 92.46 |
| 7.8-15.6 | 10.89 | 18.44 | 81.57 |
| 15.6-31.3 | 23.56 | 41.99 | 58.01 |
| 31.3-62.5 | 49.47 | 91.46 | 8.54 |
| 62.5-125.0 | 8.54 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **16/8/05 Anns 3** low (0-300 µm).



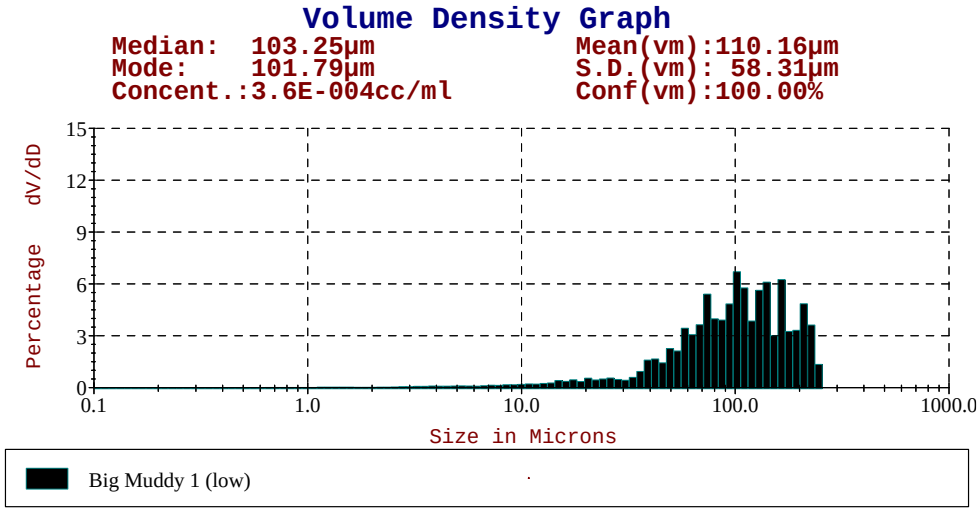

Area Ranges Table: **16/8/05 Anns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 33.93 | 33.93 | 66.07 |
| 3.9-7.8 | 16.38 | 50.32 | 49.68 |
| 7.8-15.6 | 16.90 | 67.22 | 32.78 |
| 15.6-31.3 | 17.36 | 84.57 | 15.43 |
| 31.3-62.5 | 13.74 | 98.31 | 1.69 |
| 62.5-125.0 | 1.69 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Anns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 4.63 | 4.63 | 95.37 |
| 3.9-7.8 | 6.26 | 10.89 | 89.11 |
| 7.8-15.6 | 13.07 | 23.96 | 76.04 |
| 15.6-31.3 | 26.15 | 50.10 | 49.90 |
| 31.3-62.5 | 40.87 | 90.97 | 9.03 |
| 62.5-125.0 | 9.03 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Big Muddy 1** low (0-300 μm).



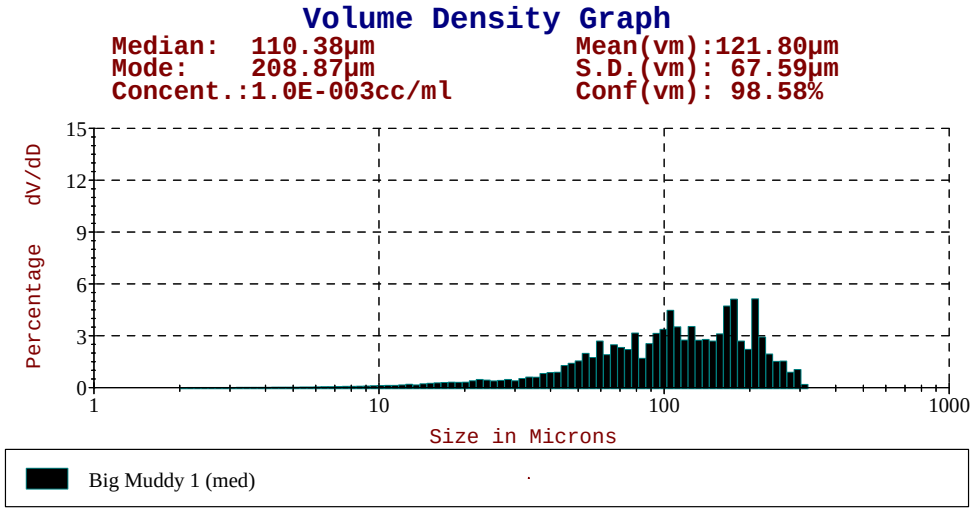

Area Ranges Table: **3/8/05 Big Muddy 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 15.90 | 15.90 | 84.10 |
| 3.9-7.8 | 8.26 | 24.16 | 75.84 |
| 7.8-15.6 | 9.38 | 33.54 | 66.46 |
| 15.6-31.3 | 10.03 | 43.57 | 56.43 |
| 31.3-62.5 | 18.71 | 62.28 | 37.72 |
| 62.5-125.0 | 25.36 | 87.64 | 12.36 |
| 125.0-250.0 | 12.36 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Big Muddy 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.58 | 0.58 | 99.42 |
| 3.9-7.8 | 0.82 | 1.40 | 98.61 |
| 7.8-15.6 | 1.91 | 3.30 | 96.70 |
| 15.6-31.3 | 3.90 | 7.20 | 92.80 |
| 31.3-62.5 | 15.87 | 23.07 | 76.93 |
| 62.5-125.0 | 40.17 | 63.24 | 36.76 |
| 125.0-250.0 | 36.76 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Big Muddy 1** medium (2-600 μm).



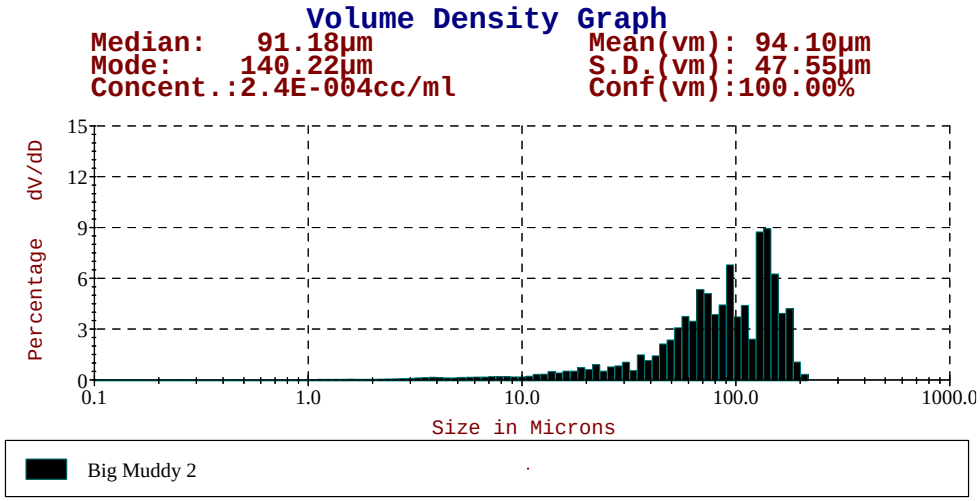

Area Ranges Table: **3/8/05 Big Muddy 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.37 | 2.37 | 97.63 |
| 3.9-7.8 | 5.23 | 7.60 | 92.40 |
| 7.8-15.6 | 10.39 | 17.99 | 82.01 |
| 15.6-31.3 | 14.36 | 32.35 | 67.65 |
| 31.3-62.5 | 23.19 | 55.54 | 44.46 |
| 62.5-125.0 | 27.40 | 82.94 | 17.06 |
| 125.0-250.0 | 16.07 | 99.01 | 0.99 |
| 250.0-500.0 | 0.99 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Big Muddy 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.10 | 0.10 | 99.90 |
| 3.9-7.8 | 0.43 | 0.54 | 99.46 |
| 7.8-15.6 | 1.71 | 2.24 | 97.76 |
| 15.6-31.3 | 4.53 | 6.77 | 93.23 |
| 31.3-62.5 | 15.59 | 22.36 | 77.64 |
| 62.5-125.0 | 34.71 | 57.07 | 42.93 |
| 125.0-250.0 | 39.06 | 96.14 | 3.86 |
| 250.0-500.0 | 3.86 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Big Muddy 2** low (0-300 μm).



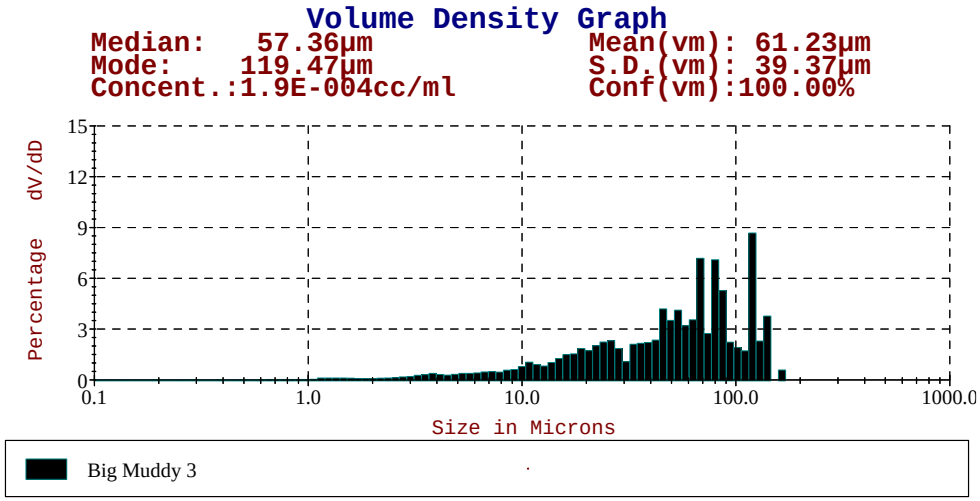

Area Ranges Table: **3/8/05 Big Muddy 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 20.63 | 20.63 | 79.37 |
| 3.9-7.8 | 10.09 | 30.72 | 69.28 |
| 7.8-15.6 | 9.38 | 40.10 | 59.90 |
| 15.6-31.3 | 12.55 | 52.65 | 47.35 |
| 31.3-62.5 | 16.73 | 69.38 | 30.62 |
| 62.5-125.0 | 20.32 | 89.71 | 10.29 |
| 125.0-250.0 | 10.30 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Big Muddy 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.97 | 0.97 | 99.03 |
| 3.9-7.8 | 1.24 | 2.21 | 97.79 |
| 7.8-15.6 | 2.39 | 4.60 | 95.40 |
| 15.6-31.3 | 6.22 | 10.83 | 89.17 |
| 31.3-62.5 | 17.72 | 28.55 | 71.45 |
| 62.5-125.0 | 38.20 | 66.75 | 33.25 |
| 125.0-250.0 | 33.25 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Big Muddy 3** low (0-300 μm).



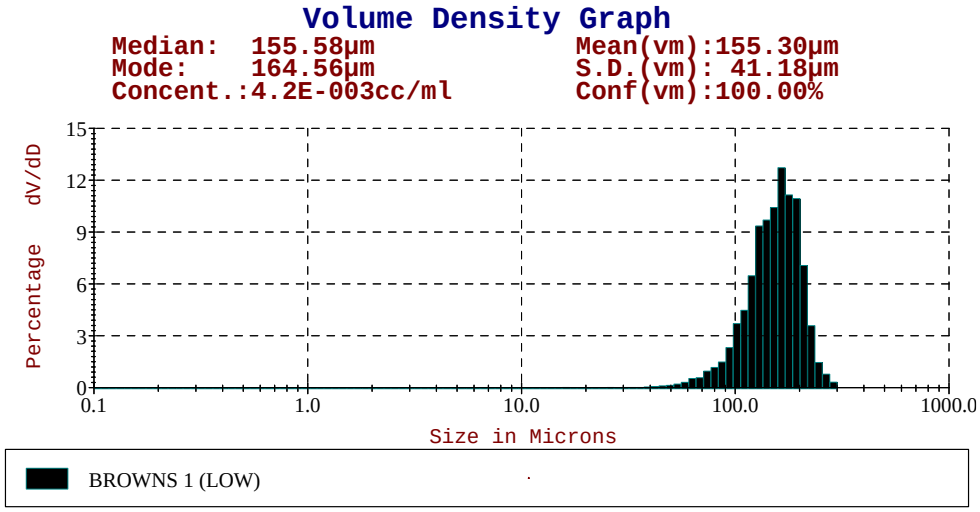

Area Ranges Table: **3/8/05 Big Muddy 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 27.08 | 27.08 | 72.92 |
| 3.9-7.8 | 13.71 | 40.79 | 59.21 |
| 7.8-15.6 | 15.67 | 56.46 | 43.54 |
| 15.6-31.3 | 17.23 | 73.69 | 26.31 |
| 31.3-62.5 | 13.79 | 87.48 | 12.52 |
| 62.5-125.0 | 11.34 | 98.82 | 1.18 |
| 125.0-250.0 | 1.18 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Big Muddy 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.29 | 2.29 | 97.71 |
| 3.9-7.8 | 3.16 | 5.45 | 94.56 |
| 7.8-15.6 | 7.32 | 12.77 | 87.23 |
| 15.6-31.3 | 15.38 | 28.15 | 71.85 |
| 31.3-62.5 | 25.45 | 53.60 | 46.40 |
| 62.5-125.0 | 39.69 | 93.29 | 6.71 |
| 125.0-250.0 | 6.71 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 1** low (0-300 μm).



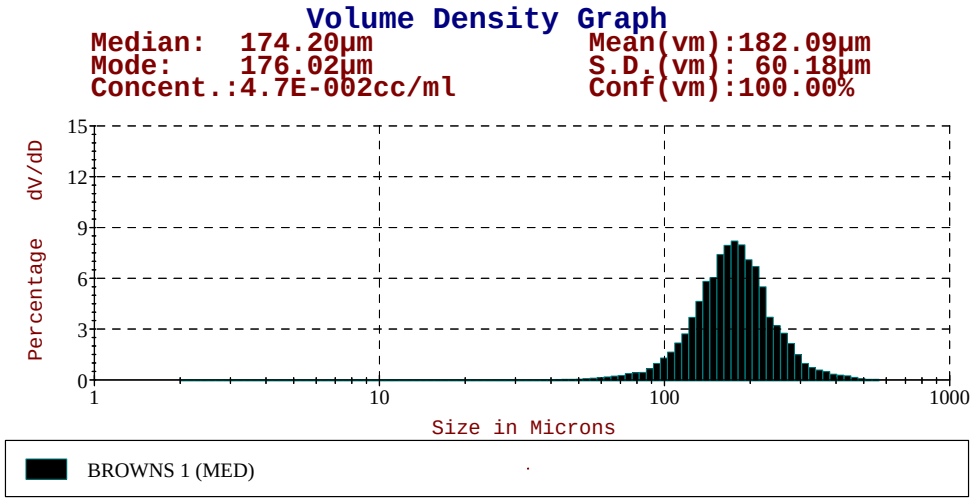

Area Ranges Table: **1/9/05 Browns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.12 | 0.12 | 99.88 |
| 3.9-7.8 | 0.05 | 0.17 | 99.83 |
| 7.8-15.6 | 0.14 | 0.31 | 99.69 |
| 15.6-31.3 | 0.21 | 0.51 | 99.49 |
| 31.3-62.5 | 2.74 | 3.25 | 96.75 |
| 62.5-125.0 | 30.99 | 34.24 | 65.76 |
| 125.0-250.0 | 65.09 | 99.33 | 0.67 |
| 250.0-300.0 | 0.67 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.00 | 0.00 | 100.00 |
| 7.8-15.6 | 0.01 | 0.02 | 99.98 |
| 15.6-31.3 | 0.03 | 0.05 | 99.95 |
| 31.3-62.5 | 1.01 | 1.06 | 98.94 |
| 62.5-125.0 | 21.97 | 23.03 | 76.97 |
| 125.0-250.0 | 75.71 | 98.74 | 1.26 |
| 250.0-300.0 | 1.27 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 1** medium (2-600 µm).



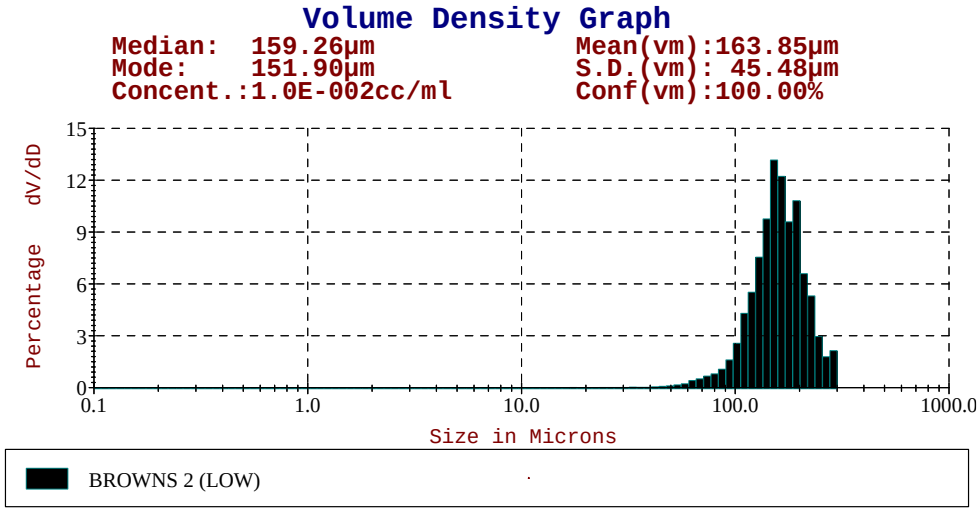

Area Ranges Table: **1/9/05 Browns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.04 | 0.04 | 99.96 |
| 7.8-15.6 | 0.07 | 0.11 | 99.89 |
| 15.6-31.3 | 0.16 | 0.27 | 99.73 |
| 31.3-62.5 | 1.70 | 1.97 | 98.03 |
| 62.5-125.0 | 20.87 | 22.84 | 77.16 |
| 125.0-250.0 | 70.84 | 93.68 | 6.32 |
| 250.0-500.0 | 6.30 | 99.98 | 0.02 |
| 500.0-600.0 | 0.02 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.00 | 0.00 | 100.00 |
| 7.8-15.6 | 0.01 | 0.01 | 99.99 |
| 15.6-31.3 | 0.02 | 0.03 | 99.97 |
| 31.3-62.5 | 0.55 | 0.58 | 99.43 |
| 62.5-125.0 | 13.10 | 13.67 | 86.33 |
| 125.0-250.0 | 74.93 | 88.60 | 11.40 |
| 250.0-500.0 | 11.32 | 99.93 | 0.07 |
| 500.0-600.0 | 0.08 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 2** low (0-300 μm).



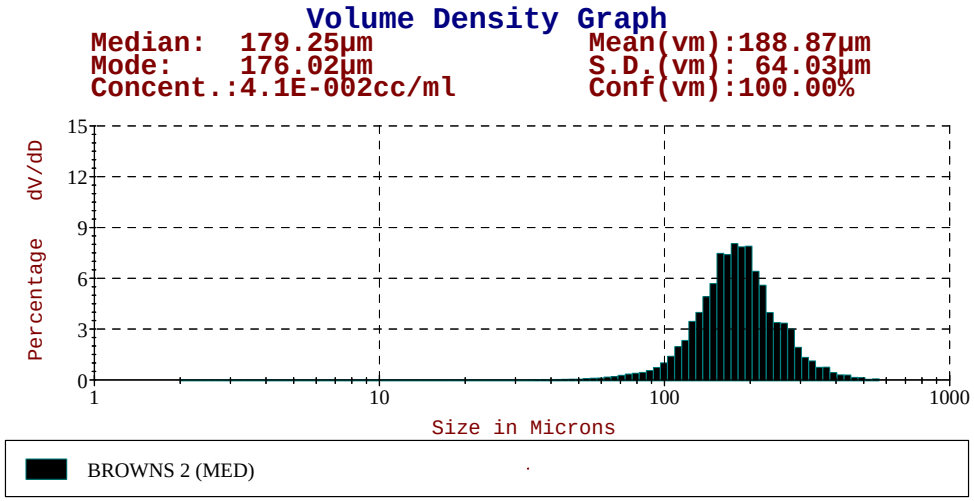

Area Ranges Table: **1/9/05 Browns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.27 | 0.27 | 99.73 |
| 3.9-7.8 | 0.15 | 0.42 | 99.58 |
| 7.8-15.6 | 0.13 | 0.54 | 99.46 |
| 15.6-31.3 | 0.32 | 0.86 | 99.14 |
| 31.3-62.5 | 2.37 | 3.23 | 96.77 |
| 62.5-125.0 | 25.70 | 28.93 | 71.07 |
| 125.0-250.0 | 68.67 | 97.61 | 2.39 |
| 250.0-300.0 | 2.40 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.01 | 0.02 | 99.98 |
| 15.6-31.3 | 0.05 | 0.07 | 99.93 |
| 31.3-62.5 | 0.82 | 0.89 | 99.11 |
| 62.5-125.0 | 17.63 | 18.52 | 81.48 |
| 125.0-250.0 | 77.11 | 95.63 | 4.37 |
| 250.0-300.0 | 4.37 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 2** medium (2-600 µm).



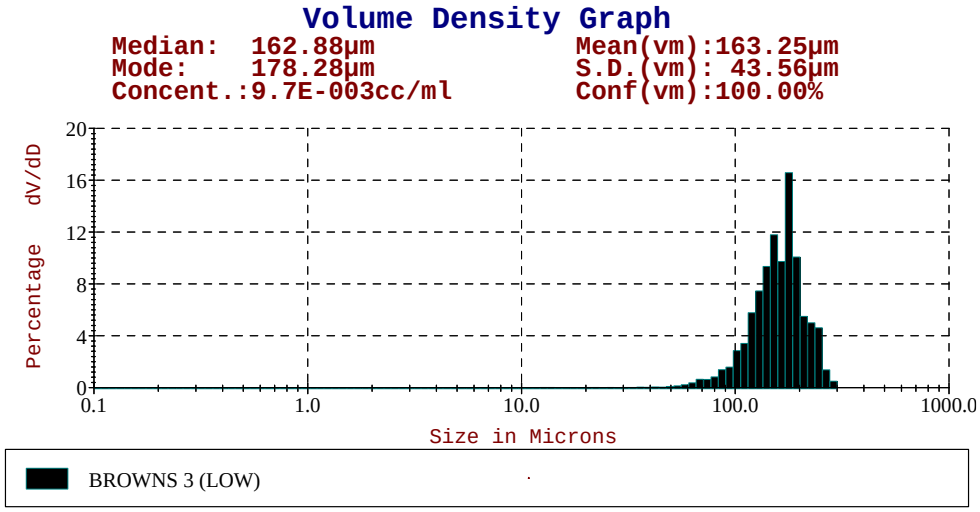

Area Ranges Table: **1/9/05 Browns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.03 | 0.03 | 99.97 |
| 3.9-7.8 | 0.13 | 0.16 | 99.84 |
| 7.8-15.6 | 0.17 | 0.33 | 99.67 |
| 15.6-31.3 | 0.25 | 0.58 | 99.42 |
| 31.3-62.5 | 1.79 | 2.37 | 97.63 |
| 62.5-125.0 | 18.75 | 21.12 | 78.88 |
| 125.0-250.0 | 70.57 | 91.70 | 8.30 |
| 250.0-500.0 | 8.26 | 99.96 | 0.04 |
| 500.0-600.0 | 0.04 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 100.00 |
| 7.8-15.6 | 0.01 | 0.02 | 99.98 |
| 15.6-31.3 | 0.04 | 0.05 | 99.95 |
| 31.3-62.5 | 0.55 | 0.60 | 99.40 |
| 62.5-125.0 | 11.43 | 12.03 | 87.97 |
| 125.0-250.0 | 73.31 | 85.34 | 14.66 |
| 250.0-500.0 | 14.54 | 99.88 | 0.12 |
| 500.0-600.0 | 0.12 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 3** low (0-300 μm).



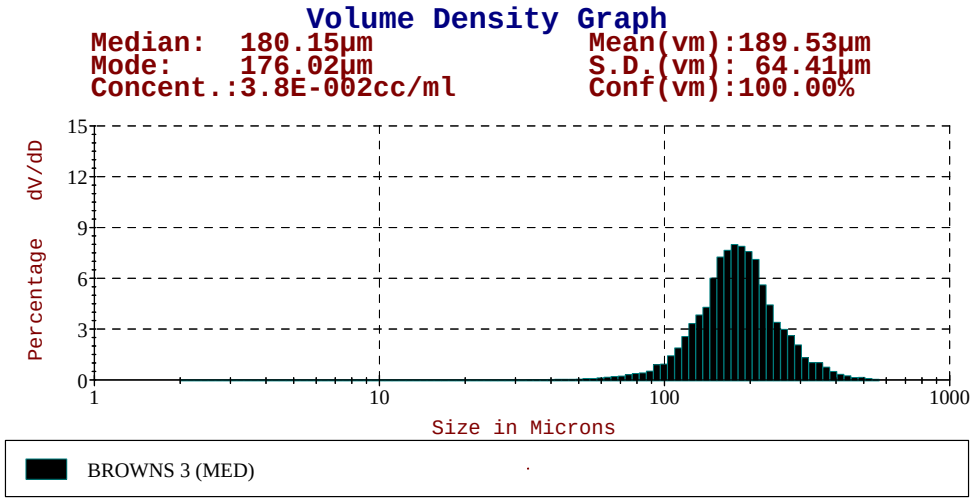

Area Ranges Table: **1/9/05 Browns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.34 | 0.34 | 99.66 |
| 3.9-7.8 | 0.18 | 0.52 | 99.48 |
| 7.8-15.6 | 0.30 | 0.82 | 99.18 |
| 15.6-31.3 | 0.31 | 1.13 | 98.87 |
| 31.3-62.5 | 2.00 | 3.13 | 96.87 |
| 62.5-125.0 | 26.16 | 29.29 | 70.71 |
| 125.0-250.0 | 69.36 | 98.65 | 1.35 |
| 250.0-300.0 | 1.35 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.04 | 99.96 |
| 15.6-31.3 | 0.05 | 0.08 | 99.92 |
| 31.3-62.5 | 0.69 | 0.77 | 99.23 |
| 62.5-125.0 | 17.84 | 18.61 | 81.39 |
| 125.0-250.0 | 78.98 | 97.59 | 2.41 |
| 250.0-300.0 | 2.41 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Browns 3** medium (2-600 µm).



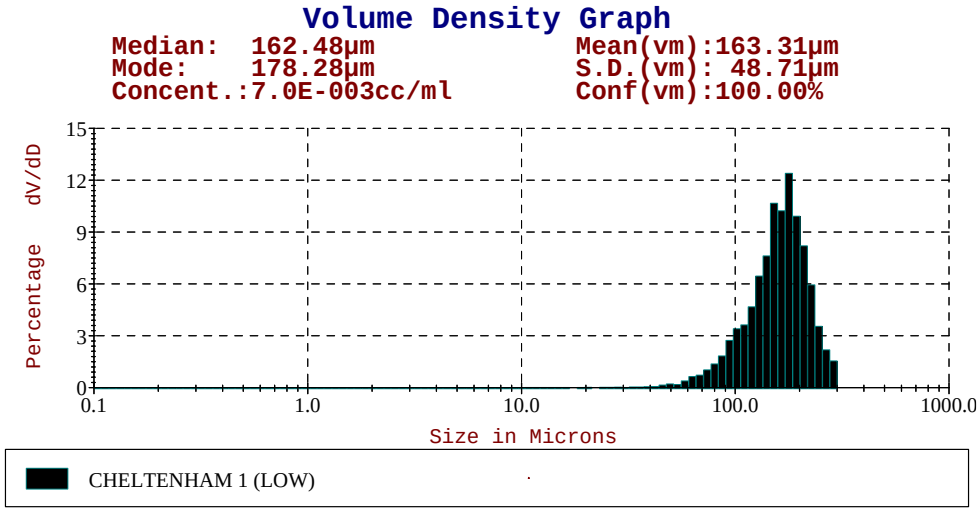

Area Ranges Table: **1/9/05 Browns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.03 | 0.03 | 99.97 |
| 3.9-7.8 | 0.11 | 0.14 | 99.86 |
| 7.8-15.6 | 0.24 | 0.38 | 99.62 |
| 15.6-31.3 | 0.33 | 0.71 | 99.29 |
| 31.3-62.5 | 1.82 | 2.53 | 97.47 |
| 62.5-125.0 | 18.75 | 21.28 | 78.72 |
| 125.0-250.0 | 70.56 | 91.84 | 8.16 |
| 250.0-500.0 | 8.12 | 99.96 | 0.04 |
| 500.0-600.0 | 0.04 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Browns 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.00 | 0.00 | 100.00 |
| 7.8-15.6 | 0.02 | 0.02 | 99.98 |
| 15.6-31.3 | 0.05 | 0.07 | 99.93 |
| 31.3-62.5 | 0.55 | 0.62 | 99.38 |
| 62.5-125.0 | 11.45 | 12.06 | 87.94 |
| 125.0-250.0 | 73.47 | 85.53 | 14.47 |
| 250.0-500.0 | 14.34 | 99.87 | 0.13 |
| 500.0-600.0 | 0.13 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Cheltenham 1** low (0-300 μm).



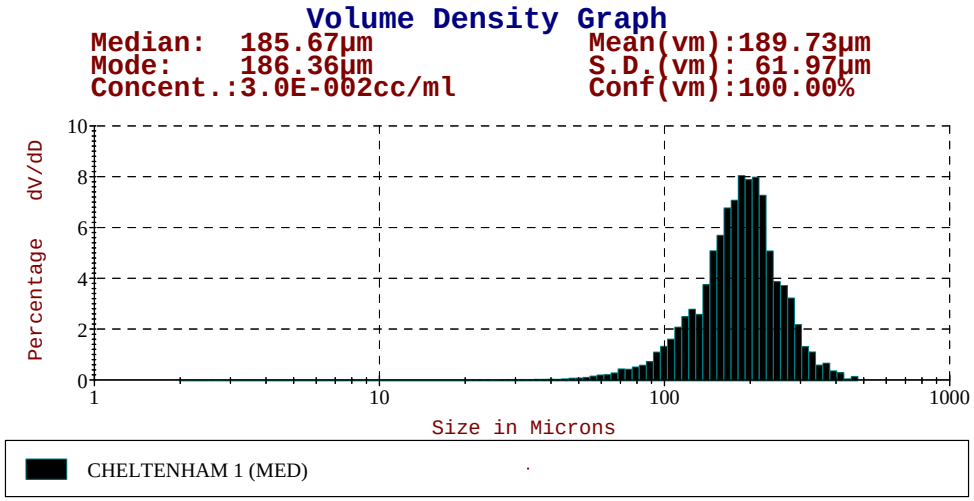

Area Ranges Table: **1/9/05 Cheltenham 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.97 | 0.97 | 99.03 |
| 3.9-7.8 | 0.51 | 1.48 | 98.52 |
| 7.8-15.6 | 0.61 | 2.09 | 97.91 |
| 15.6-31.3 | 0.60 | 2.69 | 97.32 |
| 31.3-62.5 | 3.86 | 6.54 | 93.46 |
| 62.5-125.0 | 29.11 | 35.66 | 64.34 |
| 125.0-250.0 | 61.77 | 97.42 | 2.58 |
| 250.0-300.0 | 2.58 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.02 | 0.03 | 99.97 |
| 7.8-15.6 | 0.05 | 0.08 | 99.92 |
| 15.6-31.3 | 0.10 | 0.18 | 99.82 |
| 31.3-62.5 | 1.40 | 1.58 | 98.42 |
| 62.5-125.0 | 19.92 | 21.49 | 78.51 |
| 125.0-250.0 | 73.71 | 95.21 | 4.79 |
| 250.0-300.0 | 4.80 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Cheltenham 1** medium (2-600 μm).



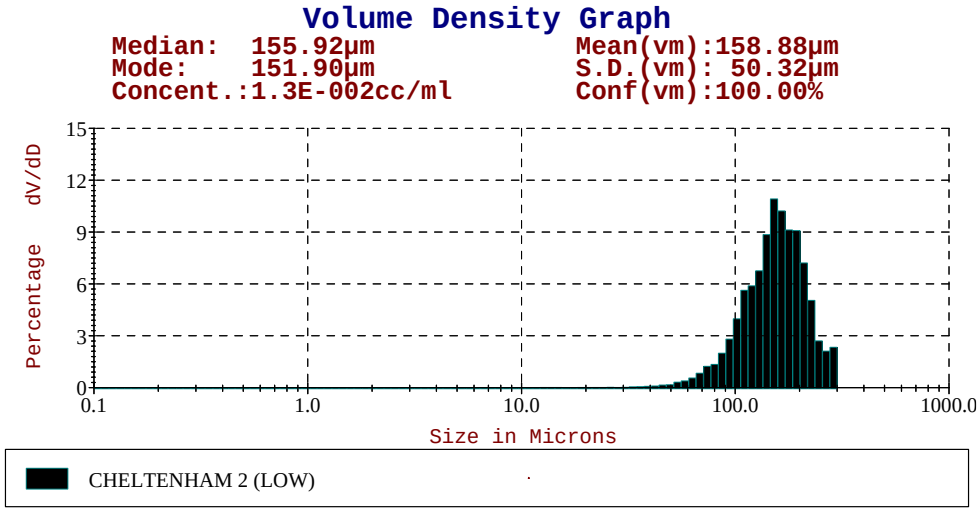

Area Ranges Table: **1/9/05 Cheltenham 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.29 | 0.36 | 99.64 |
| 7.8-15.6 | 0.48 | 0.84 | 99.16 |
| 15.6-31.3 | 0.63 | 1.47 | 98.53 |
| 31.3-62.5 | 2.67 | 4.13 | 95.87 |
| 62.5-125.0 | 21.66 | 25.79 | 74.21 |
| 125.0-250.0 | 65.74 | 91.53 | 8.47 |
| 250.0-500.0 | 8.47 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.03 | 0.05 | 99.96 |
| 15.6-31.3 | 0.09 | 0.13 | 99.87 |
| 31.3-62.5 | 0.82 | 0.95 | 99.05 |
| 62.5-125.0 | 13.02 | 13.98 | 86.03 |
| 125.0-250.0 | 71.23 | 85.21 | 14.79 |
| 250.0-500.0 | 14.79 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Cheltenham 2** low (0-300 μm).



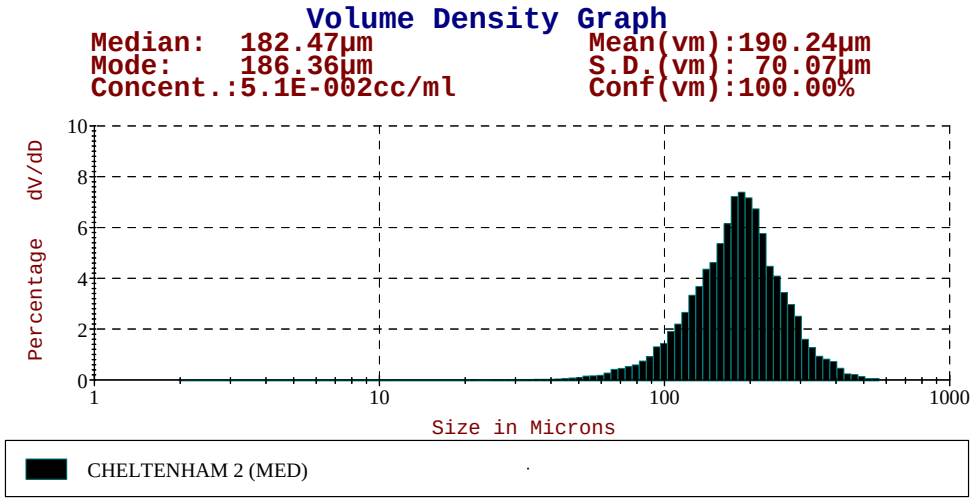

Area Ranges Table: **1/9/05 Cheltenham 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.56 | 0.56 | 99.44 |
| 3.9-7.8 | 0.25 | 0.81 | 99.19 |
| 7.8-15.6 | 0.39 | 1.20 | 98.80 |
| 15.6-31.3 | 0.49 | 1.70 | 98.31 |
| 31.3-62.5 | 4.14 | 5.84 | 94.16 |
| 62.5-125.0 | 34.64 | 40.47 | 59.53 |
| 125.0-250.0 | 57.00 | 97.47 | 2.53 |
| 250.0-300.0 | 2.53 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.03 | 0.05 | 99.95 |
| 15.6-31.3 | 0.09 | 0.14 | 99.86 |
| 31.3-62.5 | 1.51 | 1.64 | 98.36 |
| 62.5-125.0 | 24.66 | 26.30 | 73.70 |
| 125.0-250.0 | 68.73 | 95.03 | 4.97 |
| 250.0-300.0 | 4.97 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Cheltenham 2** medium (2-600 μm).




Area Ranges Table: **1/9/05 Cheltenham 2**

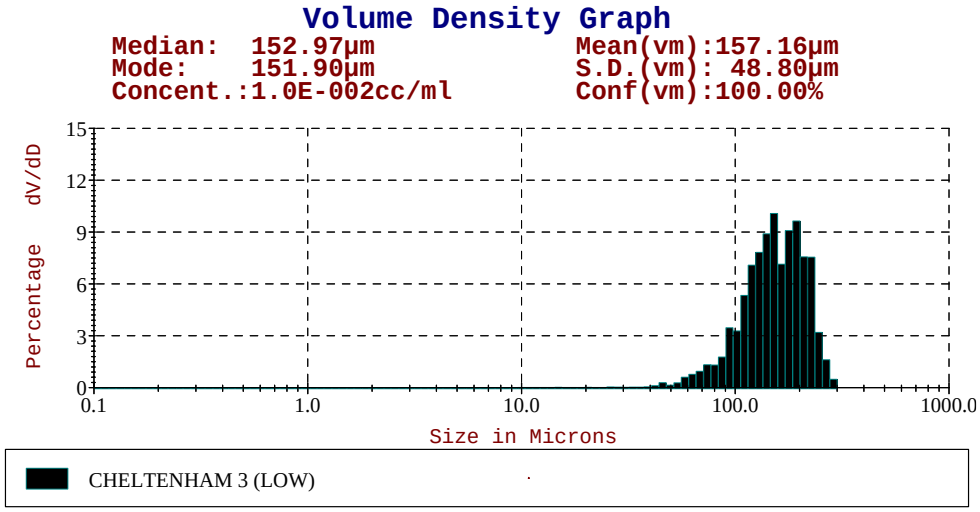
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.21 | 0.25 | 99.75 |
| 7.8-15.6 | 0.32 | 0.58 | 99.42 |
| 15.6-31.3 | 0.50 | 1.07 | 98.93 |
| 31.3-62.5 | 2.97 | 4.05 | 95.95 |
| 62.5-125.0 | 24.43 | 28.48 | 71.52 |
| 125.0-250.0 | 62.29 | 90.77 | 9.23 |
| 250.0-500.0 | 9.20 | 99.97 | 0.03 |
| 500.0-600.0 | 0.03 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.03 | 99.97 |
| 15.6-31.3 | 0.07 | 0.10 | 99.90 |
| 31.3-62.5 | 0.93 | 1.03 | 98.97 |
| 62.5-125.0 | 14.78 | 15.81 | 84.19 |
| 125.0-250.0 | 67.34 | 83.15 | 16.85 |
| 250.0-500.0 | 16.75 | 99.90 | 0.10 |
| 500.0-600.0 | 0.10 | 100.00 | 0.00 |

## Particle Size

Volume Distribution: Sample **1/9/05 Cheltenham 3** low (0-300 μm).



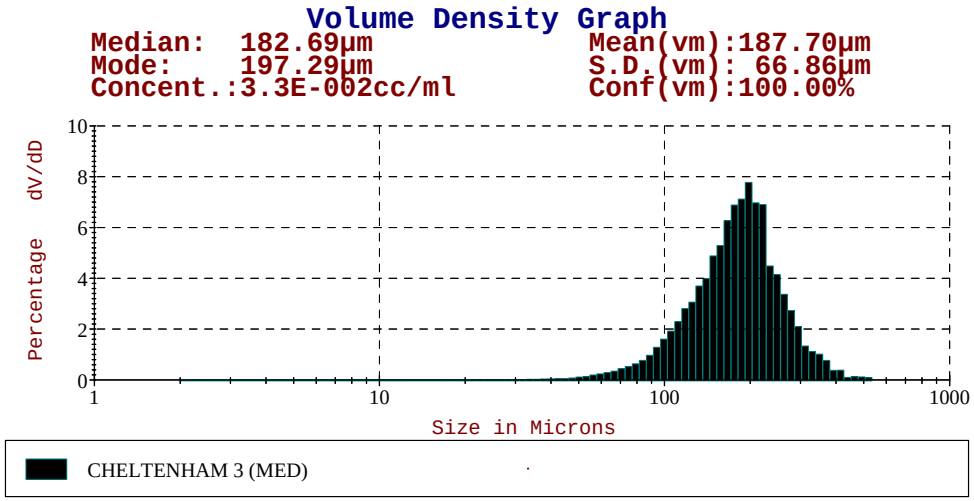

Area Ranges Table: **1/9/05 Cheltenham 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.70 | 0.70 | 99.30 |
| 3.9-7.8 | 0.34 | 1.04 | 98.96 |
| 7.8-15.6 | 0.58 | 1.62 | 98.38 |
| 15.6-31.3 | 0.72 | 2.34 | 97.66 |
| 31.3-62.5 | 4.63 | 6.97 | 93.03 |
| 62.5-125.0 | 35.54 | 42.51 | 57.49 |
| 125.0-250.0 | 56.08 | 98.59 | 1.41 |
| 250.0-300.0 | 1.41 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.05 | 0.07 | 99.93 |
| 15.6-31.3 | 0.13 | 0.20 | 99.80 |
| 31.3-62.5 | 1.75 | 1.95 | 98.05 |
| 62.5-125.0 | 25.82 | 27.77 | 72.23 |
| 125.0-250.0 | 69.50 | 97.27 | 2.73 |
| 250.0-300.0 | 2.73 | 100.00 | 0.00 |

Volume Distribution: Sample **1/9/05 Cheltenham 3** medium (2-600 μm).



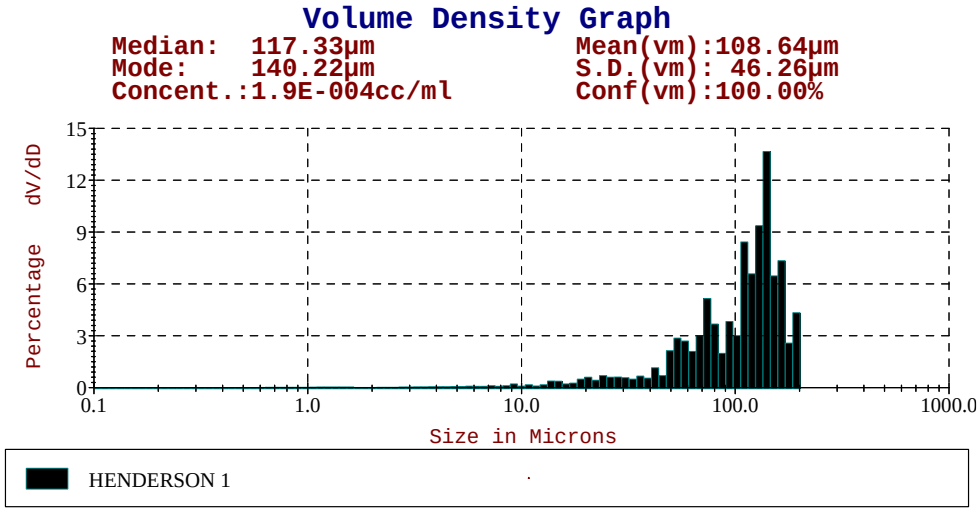

Area Ranges Table: **1/9/05 Cheltenham 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.09 | 0.09 | 99.91 |
| 3.9-7.8 | 0.31 | 0.40 | 99.60 |
| 7.8-15.6 | 0.41 | 0.82 | 99.18 |
| 15.6-31.3 | 0.62 | 1.44 | 98.56 |
| 31.3-62.5 | 3.37 | 4.81 | 95.19 |
| 62.5-125.0 | 24.75 | 29.56 | 70.44 |
| 125.0-250.0 | 62.33 | 91.89 | 8.11 |
| 250.0-500.0 | 8.09 | 99.97 | 0.03 |
| 500.0-600.0 | 0.03 | 100.00 | 0.00 |

Volume Ranges Table: **1/9/05 Cheltenham 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.03 | 0.04 | 99.96 |
| 15.6-31.3 | 0.09 | 0.13 | 99.87 |
| 31.3-62.5 | 1.06 | 1.19 | 98.81 |
| 62.5-125.0 | 15.19 | 16.38 | 83.62 |
| 125.0-250.0 | 68.76 | 85.14 | 14.86 |
| 250.0-500.0 | 14.77 | 99.91 | 0.09 |
| 500.0-600.0 | 0.09 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Henderson 1** low (0-300 μm).



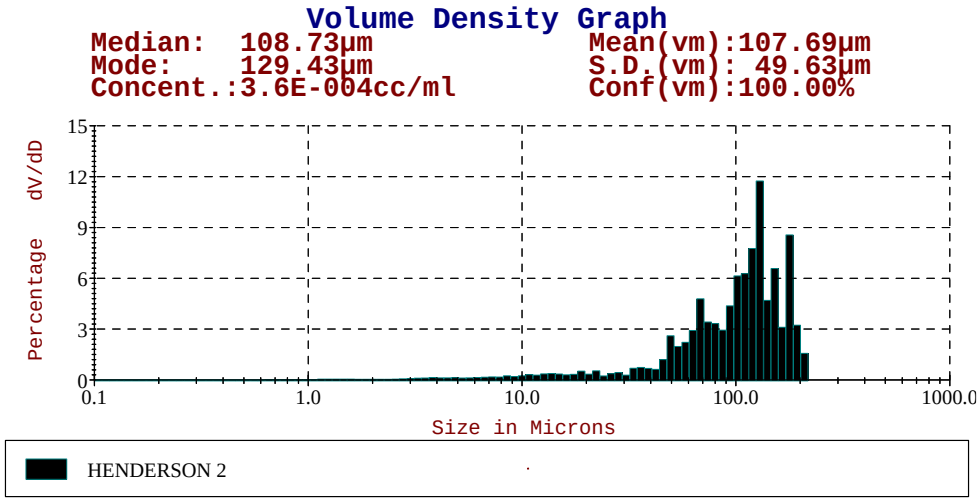

Area Ranges Table: **3/8/05 Henderson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 20.13 | 20.13 | 79.87 |
| 3.9-7.8 | 5.94 | 26.07 | 73.93 |
| 7.8-15.6 | 7.94 | 34.01 | 65.99 |
| 15.6-31.3 | 10.56 | 44.57 | 55.43 |
| 31.3-62.5 | 14.68 | 59.24 | 40.76 |
| 62.5-125.0 | 23.96 | 83.20 | 16.80 |
| 125.0-250.0 | 16.80 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Henderson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.52 | 0.52 | 99.48 |
| 3.9-7.8 | 0.58 | 1.10 | 98.90 |
| 7.8-15.6 | 1.61 | 2.71 | 97.29 |
| 15.6-31.3 | 4.13 | 6.84 | 93.16 |
| 31.3-62.5 | 12.17 | 19.00 | 81.00 |
| 62.5-125.0 | 37.91 | 56.91 | 43.09 |
| 125.0-250.0 | 43.09 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Henderson 2** low (0-300 μm).



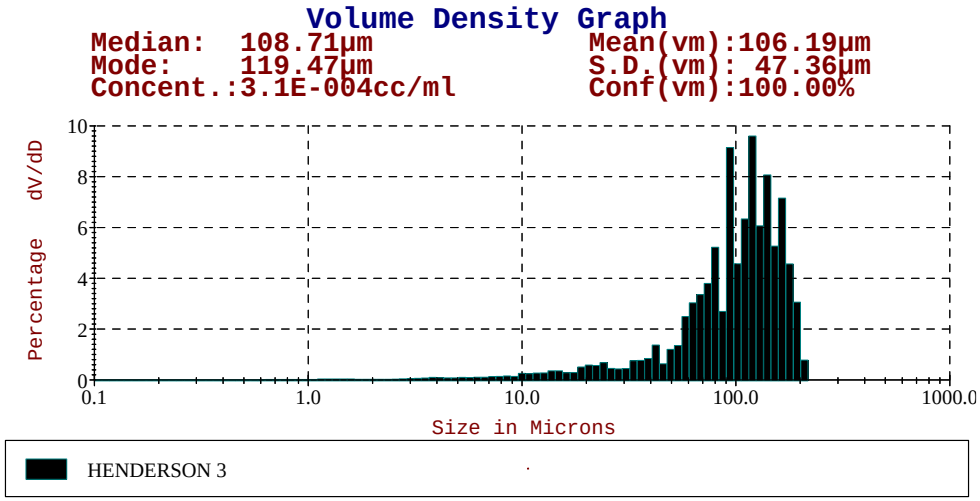

Area Ranges Table: **3/8/05 Henderson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 23.30 | 23.30 | 76.70 |
| 3.9-7.8 | 10.01 | 33.31 | 66.69 |
| 7.8-15.6 | 10.93 | 44.24 | 55.76 |
| 15.6-31.3 | 7.38 | 51.62 | 48.38 |
| 31.3-62.5 | 12.54 | 64.15 | 35.85 |
| 62.5-125.0 | 23.02 | 87.18 | 12.82 |
| 125.0-250.0 | 12.82 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Henderson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.88 | 0.88 | 99.12 |
| 3.9-7.8 | 1.10 | 1.98 | 98.02 |
| 7.8-15.6 | 2.44 | 4.42 | 95.58 |
| 15.6-31.3 | 3.15 | 7.57 | 92.43 |
| 31.3-62.5 | 11.91 | 19.47 | 80.53 |
| 62.5-125.0 | 41.56 | 61.04 | 38.96 |
| 125.0-250.0 | 38.97 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Henderson 3** low (0-300 μm).



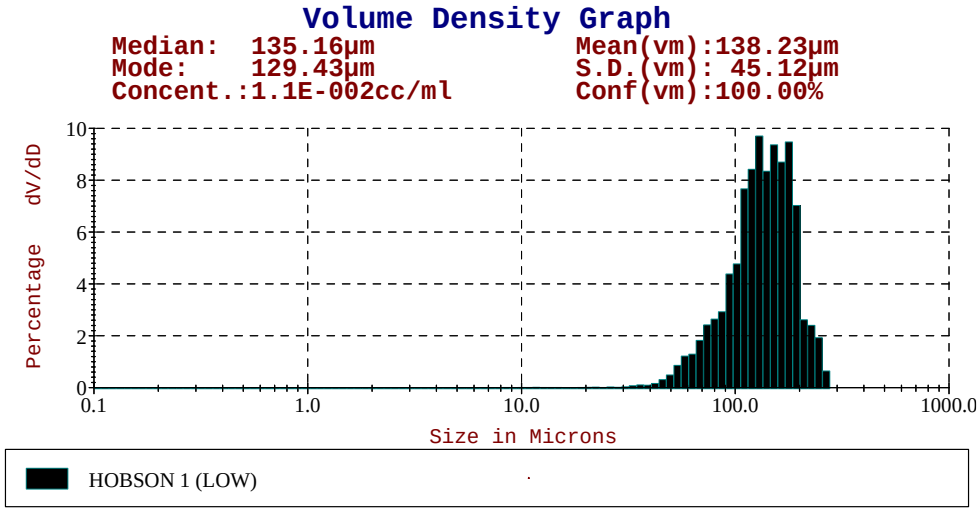

Area Ranges Table: **3/8/05 Henderson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 19.59 | 19.59 | 80.41 |
| 3.9-7.8 | 7.89 | 27.47 | 72.53 |
| 7.8-15.6 | 10.00 | 37.47 | 62.53 |
| 15.6-31.3 | 10.07 | 47.54 | 52.46 |
| 31.3-62.5 | 12.10 | 59.64 | 40.36 |
| 62.5-125.0 | 28.36 | 88.00 | 12.00 |
| 125.0-250.0 | 12.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Henderson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.63 | 0.63 | 99.37 |
| 3.9-7.8 | 0.80 | 1.43 | 98.57 |
| 7.8-15.6 | 2.09 | 3.52 | 96.48 |
| 15.6-31.3 | 4.08 | 7.61 | 92.39 |
| 31.3-62.5 | 10.41 | 18.01 | 81.99 |
| 62.5-125.0 | 47.84 | 65.85 | 34.15 |
| 125.0-250.0 | 34.15 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 1** low (0-300 μm).



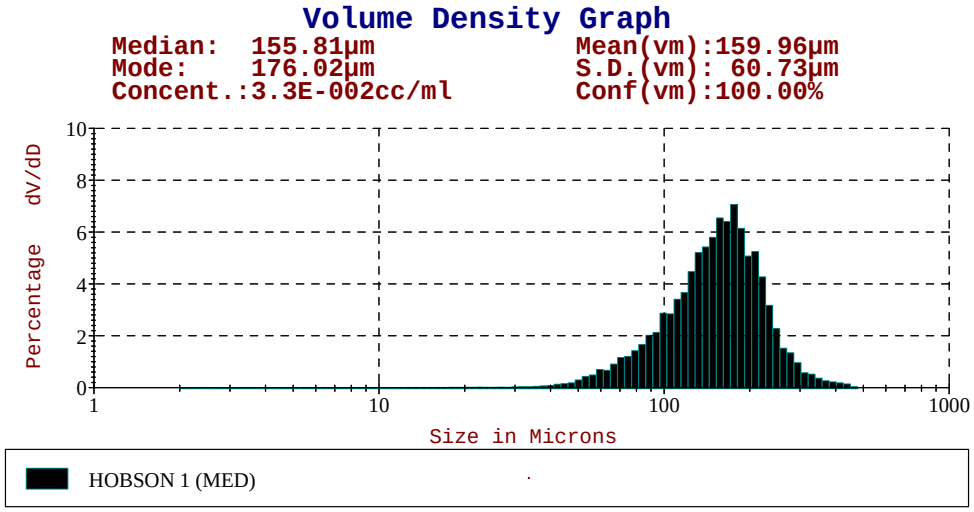

Area Ranges Table: **5/8/05 Hobson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.55 | 0.55 | 99.45 |
| 3.9-7.8 | 0.24 | 0.79 | 99.21 |
| 7.8-15.6 | 0.52 | 1.31 | 98.69 |
| 15.6-31.3 | 0.54 | 1.85 | 98.15 |
| 31.3-62.5 | 8.55 | 10.40 | 89.60 |
| 62.5-125.0 | 45.18 | 55.58 | 44.42 |
| 125.0-250.0 | 43.83 | 99.41 | 0.59 |
| 250.0-300.0 | 0.59 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.05 | 0.07 | 99.93 |
| 15.6-31.3 | 0.11 | 0.18 | 99.82 |
| 31.3-62.5 | 3.70 | 3.88 | 96.13 |
| 62.5-125.0 | 36.26 | 40.13 | 59.87 |
| 125.0-250.0 | 58.61 | 98.74 | 1.26 |
| 250.0-300.0 | 1.26 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 1** medium (2-600 μm).



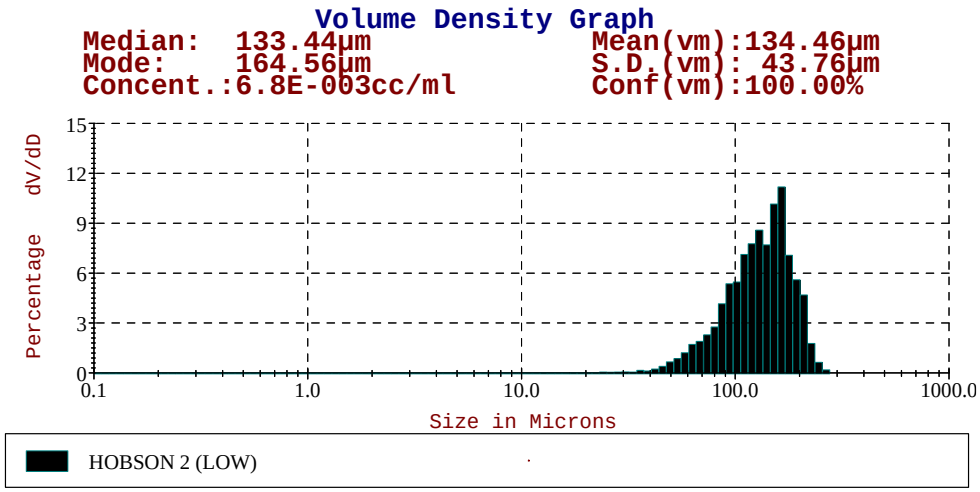

Area Ranges Table: **5/8/05 Hobson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.06 | 0.06 | 99.94 |
| 3.9-7.8 | 0.22 | 0.28 | 99.72 |
| 7.8-15.6 | 0.41 | 0.69 | 99.31 |
| 15.6-31.3 | 0.97 | 1.67 | 98.33 |
| 31.3-62.5 | 7.46 | 9.13 | 90.87 |
| 62.5-125.0 | 36.81 | 45.93 | 54.07 |
| 125.0-250.0 | 50.95 | 96.89 | 3.11 |
| 250.0-500.0 | 3.11 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.04 | 0.05 | 99.95 |
| 15.6-31.3 | 0.17 | 0.21 | 99.79 |
| 31.3-62.5 | 2.86 | 3.08 | 96.93 |
| 62.5-125.0 | 26.10 | 29.17 | 70.83 |
| 125.0-250.0 | 64.06 | 93.23 | 6.77 |
| 250.0-500.0 | 6.77 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 2** low (0-300 μm).



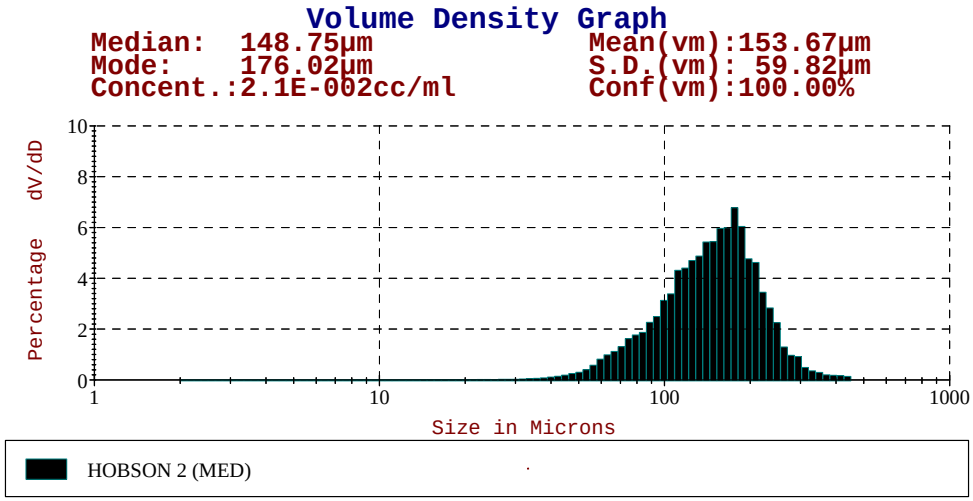

Area Ranges Table: **5/8/05 Hobson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.09 | 1.09 | 98.91 |
| 3.9-7.8 | 0.29 | 1.38 | 98.62 |
| 7.8-15.6 | 0.39 | 1.77 | 98.24 |
| 15.6-31.3 | 1.07 | 2.83 | 97.17 |
| 31.3-62.5 | 9.51 | 12.34 | 87.66 |
| 62.5-125.0 | 46.90 | 59.24 | 40.76 |
| 125.0-250.0 | 40.62 | 99.86 | 0.14 |
| 250.0-300.0 | 0.14 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.01 | 0.03 | 99.97 |
| 7.8-15.6 | 0.04 | 0.07 | 99.93 |
| 15.6-31.3 | 0.23 | 0.29 | 99.71 |
| 31.3-62.5 | 4.25 | 4.55 | 95.45 |
| 62.5-125.0 | 38.66 | 43.21 | 56.79 |
| 125.0-250.0 | 56.49 | 99.69 | 0.31 |
| 250.0-300.0 | 0.31 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 2** medium (2-600 µm).



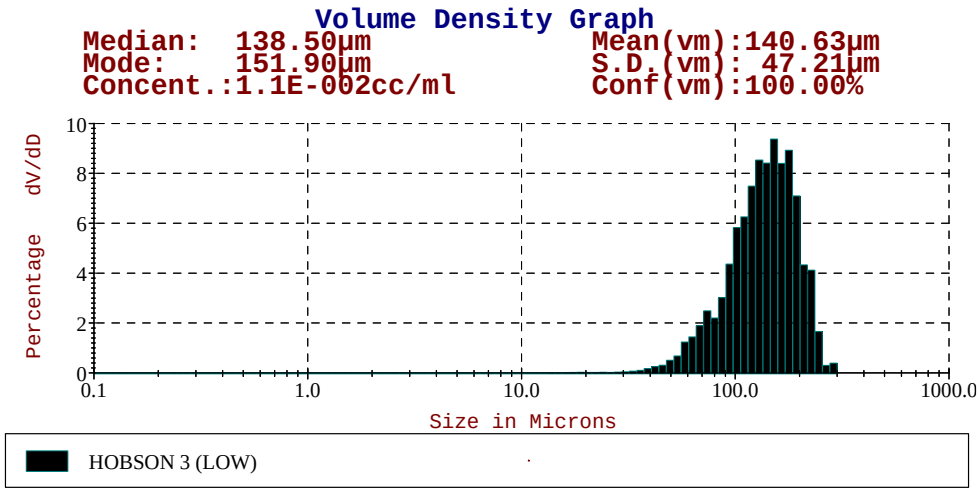

Area Ranges Table: **5/8/05 Hobson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.11 | 0.11 | 99.89 |
| 3.9-7.8 | 0.28 | 0.39 | 99.61 |
| 7.8-15.6 | 0.51 | 0.89 | 99.11 |
| 15.6-31.3 | 0.93 | 1.83 | 98.18 |
| 31.3-62.5 | 8.29 | 10.11 | 89.89 |
| 62.5-125.0 | 41.67 | 51.78 | 48.22 |
| 125.0-250.0 | 45.59 | 97.37 | 2.63 |
| 250.0-500.0 | 2.63 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.02 | 99.99 |
| 7.8-15.6 | 0.05 | 0.06 | 99.94 |
| 15.6-31.3 | 0.17 | 0.23 | 99.77 |
| 31.3-62.5 | 3.32 | 3.55 | 96.45 |
| 62.5-125.0 | 30.82 | 34.37 | 65.63 |
| 125.0-250.0 | 59.71 | 94.08 | 5.92 |
| 250.0-500.0 | 5.92 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 3** low (0-300 μm).



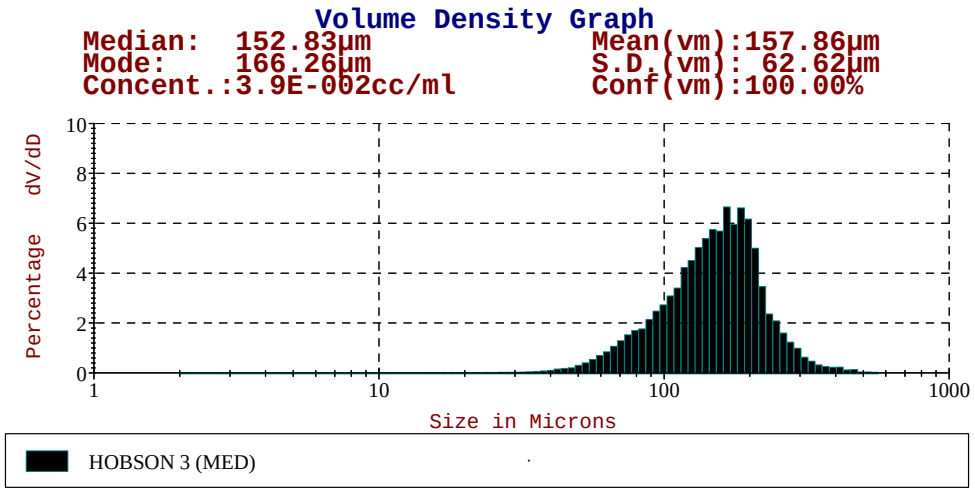

Area Ranges Table: **5/8/05 Hobson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.40 | 0.40 | 99.60 |
| 3.9-7.8 | 0.22 | 0.62 | 99.39 |
| 7.8-15.6 | 0.40 | 1.01 | 98.99 |
| 15.6-31.3 | 0.89 | 1.91 | 98.09 |
| 31.3-62.5 | 9.20 | 11.11 | 88.89 |
| 62.5-125.0 | 44.14 | 55.25 | 44.75 |
| 125.0-250.0 | 44.33 | 99.58 | 0.42 |
| 250.0-300.0 | 0.42 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.04 | 0.06 | 99.94 |
| 15.6-31.3 | 0.17 | 0.23 | 99.78 |
| 31.3-62.5 | 3.92 | 4.15 | 95.85 |
| 62.5-125.0 | 34.92 | 39.07 | 60.93 |
| 125.0-250.0 | 60.00 | 99.07 | 0.93 |
| 250.0-300.0 | 0.93 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Hobson 3** medium (2-600 µm).



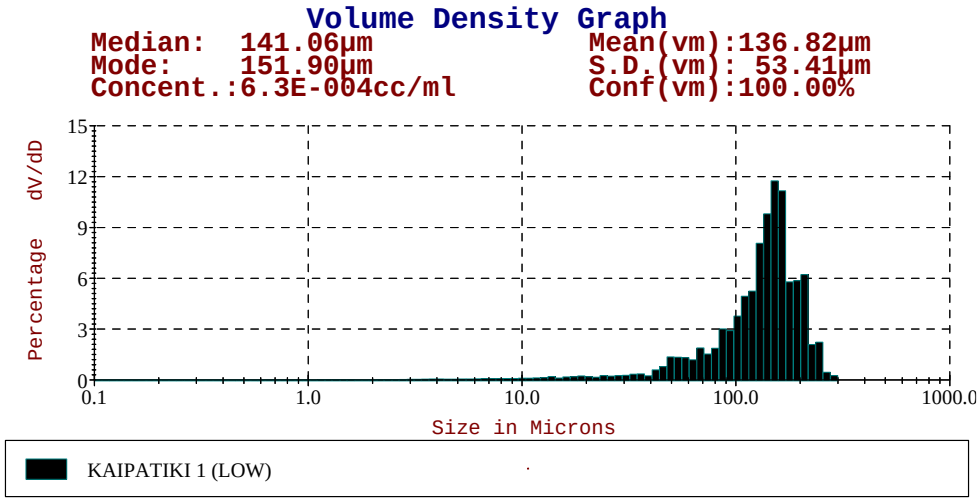

Area Ranges Table: **5/8/05 Hobson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.06 | 0.06 | 99.94 |
| 3.9-7.8 | 0.19 | 0.24 | 99.76 |
| 7.8-15.6 | 0.46 | 0.70 | 99.30 |
| 15.6-31.3 | 0.86 | 1.55 | 98.45 |
| 31.3-62.5 | 7.79 | 9.35 | 90.65 |
| 62.5-125.0 | 39.23 | 48.57 | 51.43 |
| 125.0-250.0 | 48.32 | 96.89 | 3.11 |
| 250.0-500.0 | 3.09 | 99.98 | 0.02 |
| 500.0-600.0 | 0.02 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Hobson 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.04 | 0.05 | 99.95 |
| 15.6-31.3 | 0.15 | 0.20 | 99.80 |
| 31.3-62.5 | 3.04 | 3.24 | 96.76 |
| 62.5-125.0 | 28.12 | 31.36 | 68.64 |
| 125.0-250.0 | 61.69 | 93.04 | 6.96 |
| 250.0-500.0 | 6.89 | 99.94 | 0.06 |
| 500.0-600.0 | 0.07 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 1** low (0-300 μm).



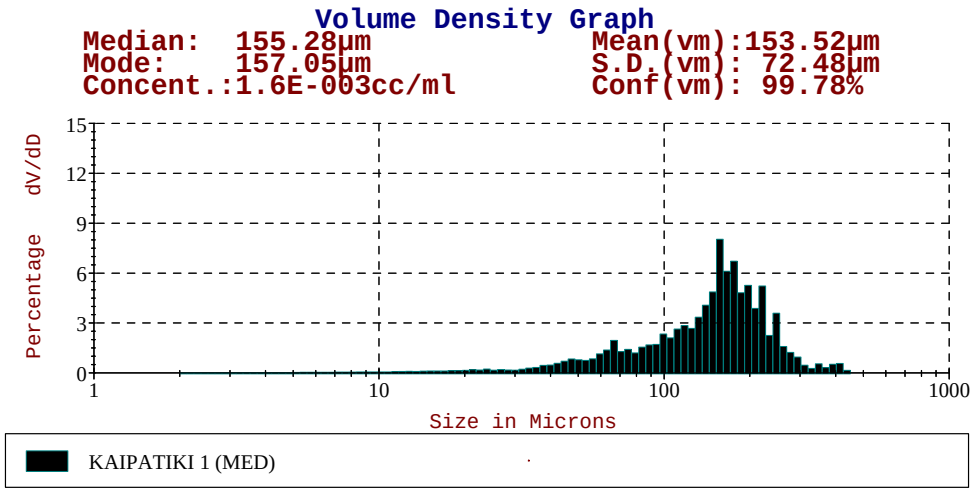

Area Ranges Table: **15/8/05 Kaipatiki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 12.93 | 12.93 | 87.07 |
| 3.9-7.8 | 6.88 | 19.81 | 80.19 |
| 7.8-15.6 | 6.82 | 26.63 | 73.37 |
| 15.6-31.3 | 6.82 | 33.45 | 66.55 |
| 31.3-62.5 | 11.10 | 44.54 | 55.46 |
| 62.5-125.0 | 23.99 | 68.53 | 31.47 |
| 125.0-250.0 | 31.11 | 99.64 | 0.36 |
| 250.0-300.0 | 0.36 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.31 | 0.31 | 99.69 |
| 3.9-7.8 | 0.46 | 0.78 | 99.22 |
| 7.8-15.6 | 0.94 | 1.71 | 98.29 |
| 15.6-31.3 | 1.83 | 3.54 | 96.46 |
| 31.3-62.5 | 6.39 | 9.92 | 90.08 |
| 62.5-125.0 | 27.48 | 37.40 | 62.60 |
| 125.0-250.0 | 61.44 | 98.84 | 1.16 |
| 250.0-300.0 | 1.16 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 1** medium (2-600 μm).



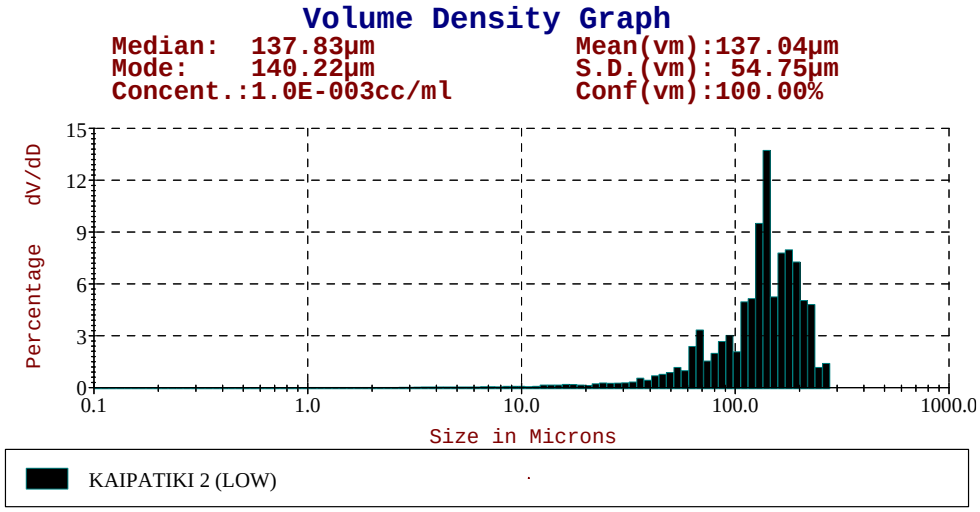

Area Ranges Table: **15/8/05 Kaipatiki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.32 | 2.32 | 97.68 |
| 3.9-7.8 | 5.55 | 7.87 | 92.13 |
| 7.8-15.6 | 7.23 | 15.10 | 84.90 |
| 15.6-31.3 | 8.47 | 23.57 | 76.43 |
| 31.3-62.5 | 16.20 | 39.76 | 60.24 |
| 62.5-125.0 | 24.55 | 64.32 | 35.68 |
| 125.0-250.0 | 33.17 | 97.49 | 2.51 |
| 250.0-500.0 | 2.51 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.08 | 0.08 | 99.93 |
| 3.9-7.8 | 0.33 | 0.41 | 99.59 |
| 7.8-15.6 | 0.84 | 1.25 | 98.75 |
| 15.6-31.3 | 1.93 | 3.18 | 96.82 |
| 31.3-62.5 | 7.85 | 11.04 | 88.96 |
| 62.5-125.0 | 22.79 | 33.83 | 66.17 |
| 125.0-250.0 | 58.51 | 92.34 | 7.66 |
| 250.0-500.0 | 7.66 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 2** low (0-300 μm).



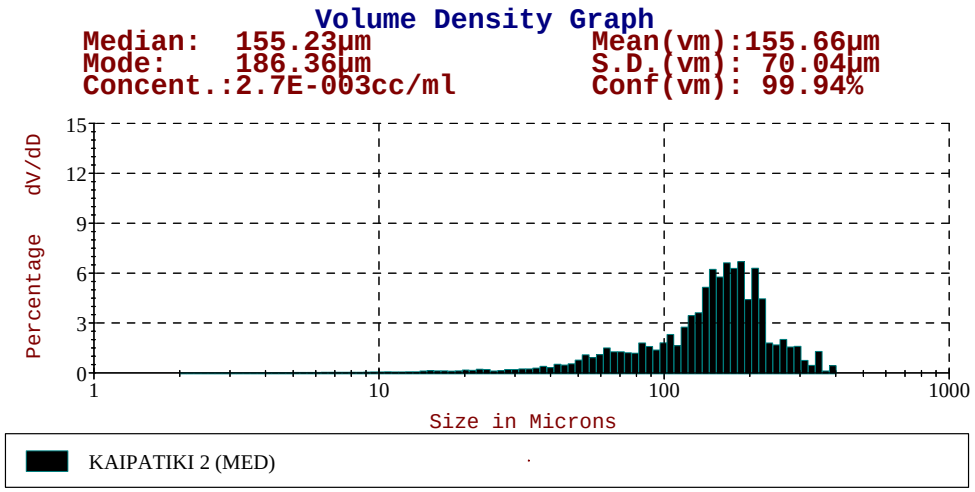

Area Ranges Table: **15/8/05 Kaipatiki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 9.70 | 9.70 | 90.30 |
| 3.9-7.8 | 5.05 | 14.76 | 85.24 |
| 7.8-15.6 | 6.05 | 20.81 | 79.19 |
| 15.6-31.3 | 6.92 | 27.73 | 72.27 |
| 31.3-62.5 | 12.97 | 40.70 | 59.30 |
| 62.5-125.0 | 25.42 | 66.12 | 33.88 |
| 125.0-250.0 | 33.27 | 99.39 | 0.61 |
| 250.0-300.0 | 0.61 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.22 | 0.22 | 99.78 |
| 3.9-7.8 | 0.32 | 0.54 | 99.46 |
| 7.8-15.6 | 0.80 | 1.34 | 98.66 |
| 15.6-31.3 | 1.78 | 3.12 | 96.88 |
| 31.3-62.5 | 7.12 | 10.23 | 89.77 |
| 62.5-125.0 | 26.67 | 36.90 | 63.10 |
| 125.0-250.0 | 61.31 | 98.21 | 1.79 |
| 250.0-300.0 | 1.79 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 2** medium (2-600 μm).



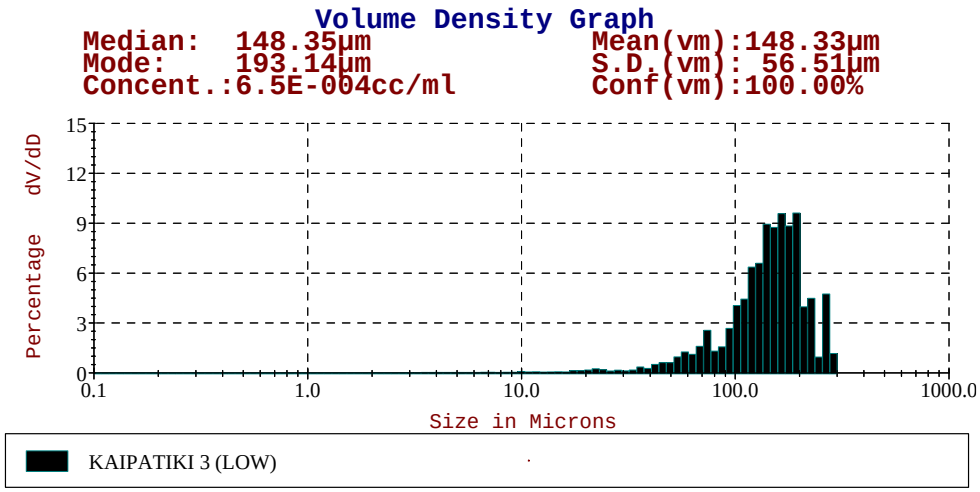

Area Ranges Table: **15/8/05 Kaipatiki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.60 | 1.60 | 98.40 |
| 3.9-7.8 | 4.57 | 6.17 | 93.83 |
| 7.8-15.6 | 6.71 | 12.87 | 87.13 |
| 15.6-31.3 | 8.64 | 21.51 | 78.49 |
| 31.3-62.5 | 15.75 | 37.26 | 62.74 |
| 62.5-125.0 | 23.37 | 60.63 | 39.37 |
| 125.0-250.0 | 36.47 | 97.10 | 2.90 |
| 250.0-500.0 | 2.90 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.26 | 0.31 | 99.69 |
| 7.8-15.6 | 0.76 | 1.06 | 98.94 |
| 15.6-31.3 | 1.88 | 2.94 | 97.06 |
| 31.3-62.5 | 7.41 | 10.35 | 89.65 |
| 62.5-125.0 | 20.75 | 31.11 | 68.89 |
| 125.0-250.0 | 60.54 | 91.65 | 8.35 |
| 250.0-500.0 | 8.35 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 3** low (0-300μ m).



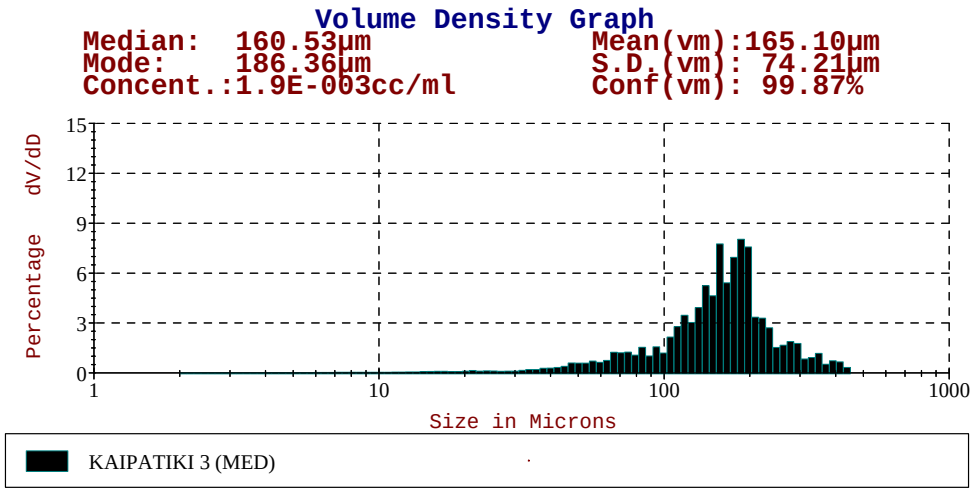

Area Ranges Table: **15/8/05 Kaipatiki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 7.12 | 7.12 | 92.88 |
| 3.9-7.8 | 3.42 | 10.54 | 89.46 |
| 7.8-15.6 | 3.88 | 14.42 | 85.58 |
| 15.6-31.3 | 5.89 | 20.31 | 79.69 |
| 31.3-62.5 | 11.22 | 31.53 | 68.47 |
| 62.5-125.0 | 28.23 | 59.76 | 40.24 |
| 125.0-250.0 | 37.74 | 97.50 | 2.50 |
| 250.0-300.0 | 2.50 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.13 | 0.13 | 99.87 |
| 3.9-7.8 | 0.18 | 0.31 | 99.69 |
| 7.8-15.6 | 0.42 | 0.73 | 99.27 |
| 15.6-31.3 | 1.26 | 1.99 | 98.01 |
| 31.3-62.5 | 5.28 | 7.27 | 92.73 |
| 62.5-125.0 | 26.19 | 33.46 | 66.54 |
| 125.0-250.0 | 60.15 | 93.62 | 6.38 |
| 250.0-300.0 | 6.39 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Kaipatiki 3** medium (2-600 μm).



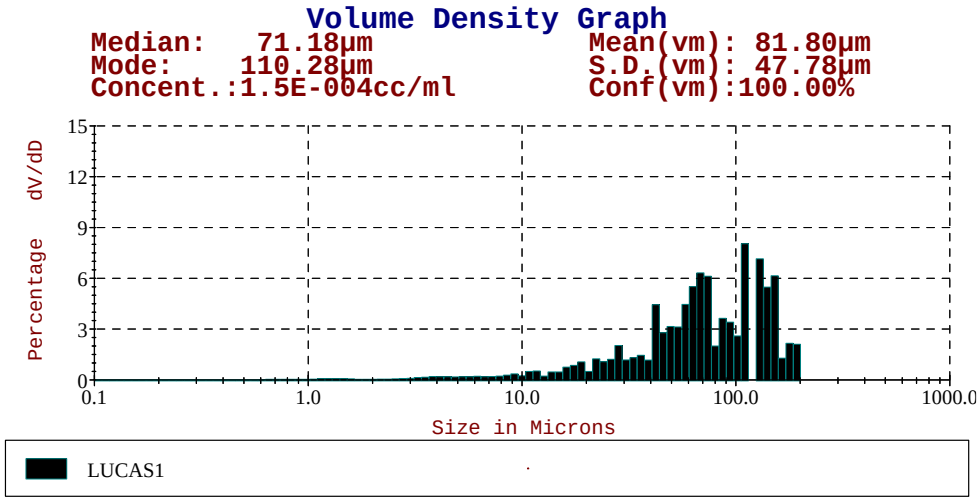

Area Ranges Table: **15/8/05 Kaipatiki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.51 | 1.51 | 98.49 |
| 3.9-7.8 | 4.35 | 5.86 | 94.14 |
| 7.8-15.6 | 5.53 | 11.39 | 88.61 |
| 15.6-31.3 | 6.24 | 17.63 | 82.37 |
| 31.3-62.5 | 12.35 | 29.98 | 70.02 |
| 62.5-125.0 | 24.70 | 54.67 | 45.33 |
| 125.0-250.0 | 41.25 | 95.93 | 4.07 |
| 250.0-500.0 | 4.07 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Kaipatiki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.04 | 0.04 | 99.96 |
| 3.9-7.8 | 0.23 | 0.27 | 99.73 |
| 7.8-15.6 | 0.56 | 0.83 | 99.17 |
| 15.6-31.3 | 1.20 | 2.03 | 97.97 |
| 31.3-62.5 | 5.14 | 7.16 | 92.84 |
| 62.5-125.0 | 20.19 | 27.35 | 72.65 |
| 125.0-250.0 | 61.65 | 89.00 | 11.00 |
| 250.0-500.0 | 11.00 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Lucas 1** low (0-300µ m).



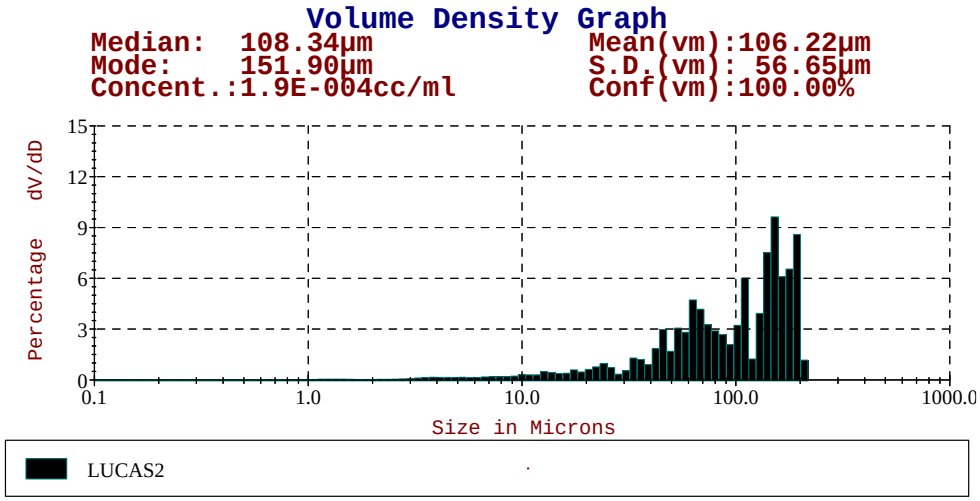

Area Ranges Table: **15/8/05 Lucas 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 26.67 | 26.67 | 73.33 |
| 3.9-7.8 | 9.82 | 36.49 | 63.51 |
| 7.8-15.6 | 9.90 | 46.38 | 53.62 |
| 15.6-31.3 | 14.60 | 60.98 | 39.02 |
| 31.3-62.5 | 18.80 | 79.78 | 20.22 |
| 62.5-125.0 | 14.48 | 94.26 | 5.74 |
| 125.0-250.0 | 5.74 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Lucas 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.29 | 1.29 | 98.71 |
| 3.9-7.8 | 1.54 | 2.83 | 97.17 |
| 7.8-15.6 | 3.19 | 6.02 | 93.98 |
| 15.6-31.3 | 9.52 | 15.54 | 84.46 |
| 31.3-62.5 | 25.47 | 41.01 | 58.99 |
| 62.5-125.0 | 34.51 | 75.52 | 24.48 |
| 125.0-250.0 | 24.48 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Lucas 2** low (0-300 μm).



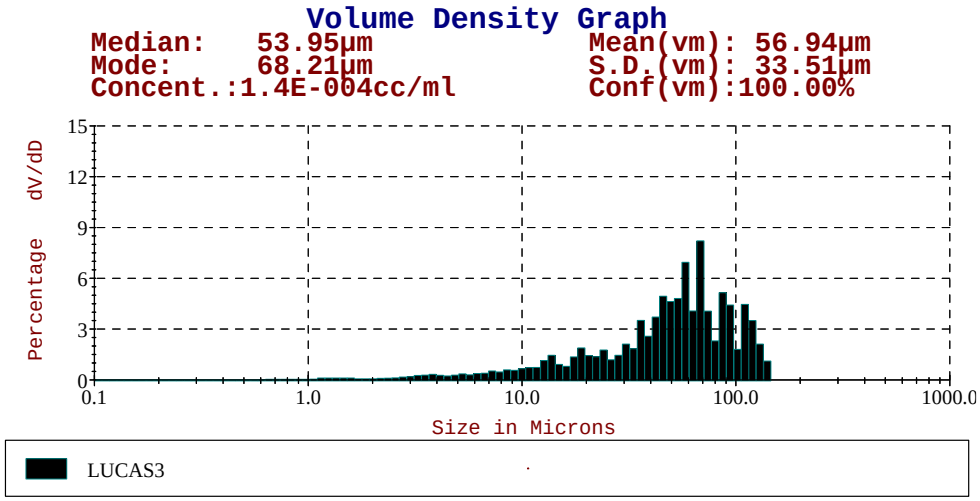

Area Ranges Table: **15/8/05 Lucas 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 22.27 | 22.27 | 77.73 |
| 3.9-7.8 | 10.51 | 32.78 | 67.22 |
| 7.8-15.6 | 10.85 | 43.63 | 56.37 |
| 15.6-31.3 | 10.90 | 54.53 | 45.47 |
| 31.3-62.5 | 17.24 | 71.78 | 28.22 |
| 62.5-125.0 | 15.79 | 87.57 | 12.43 |
| 125.0-250.0 | 12.43 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Lucas 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.91 | 0.91 | 99.09 |
| 3.9-7.8 | 1.26 | 2.17 | 97.83 |
| 7.8-15.6 | 2.70 | 4.87 | 95.13 |
| 15.6-31.3 | 5.21 | 10.09 | 89.91 |
| 31.3-62.5 | 17.60 | 27.69 | 72.31 |
| 62.5-125.0 | 29.15 | 56.84 | 43.16 |
| 125.0-250.0 | 43.16 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **15/8/05 Lucas 3** low (0-300 μm).



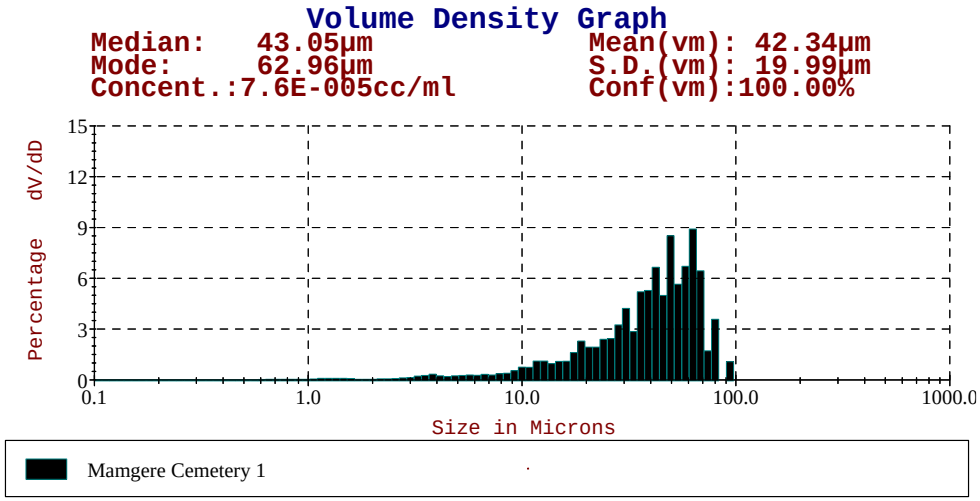

Area Ranges Table: **15/8/05 Lucas 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 28.79 | 28.79 | 71.21 |
| 3.9-7.8 | 12.28 | 41.07 | 58.93 |
| 7.8-15.6 | 14.94 | 56.01 | 43.99 |
| 15.6-31.3 | 14.18 | 70.19 | 29.81 |
| 31.3-62.5 | 18.21 | 88.41 | 11.59 |
| 62.5-125.0 | 11.00 | 99.40 | 0.60 |
| 125.0-250.0 | 0.60 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **15/8/05 Lucas 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.23 | 2.23 | 97.77 |
| 3.9-7.8 | 2.86 | 5.10 | 94.90 |
| 7.8-15.6 | 7.02 | 12.11 | 87.89 |
| 15.6-31.3 | 12.96 | 25.07 | 74.93 |
| 31.3-62.5 | 34.33 | 59.40 | 40.60 |
| 62.5-125.0 | 37.35 | 96.75 | 3.25 |
| 125.0-250.0 | 3.25 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Mangere Cemetery 1** low (0-300 μm).



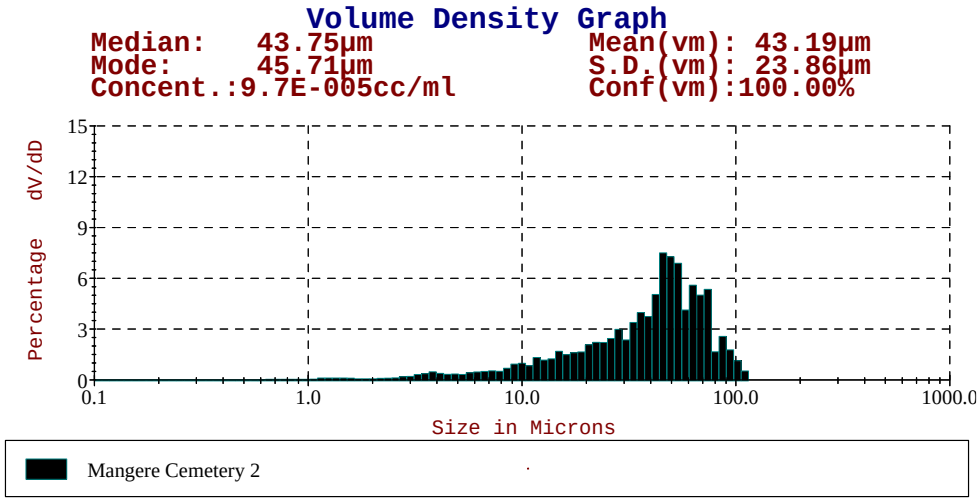

Area Ranges Table: **2/8/05 Mangere Cemetery 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 23.78 | 23.78 | 76.22 |
| 3.9-7.8 | 9.27 | 33.05 | 66.95 |
| 7.8-15.6 | 14.17 | 47.22 | 52.78 |
| 15.6-31.3 | 20.52 | 67.73 | 32.27 |
| 31.3-62.5 | 27.29 | 95.02 | 4.98 |
| 62.5-125.0 | 4.98 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Mangere Cemetery 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.87 | 1.87 | 98.13 |
| 3.9-7.8 | 2.20 | 4.07 | 95.93 |
| 7.8-15.6 | 6.98 | 11.05 | 88.95 |
| 15.6-31.3 | 20.25 | 31.30 | 68.70 |
| 31.3-62.5 | 53.56 | 84.86 | 15.14 |
| 62.5-125.0 | 15.14 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Mangere Cemetery 2** low (0-300 μm).



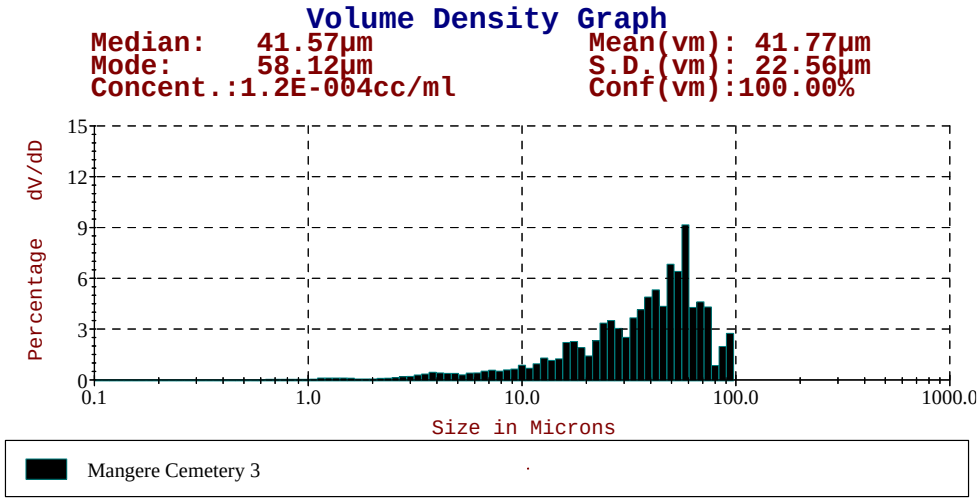

Area Ranges Table: **2/8/05 Mangere Cemetery 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 26.21 | 26.21 | 73.79 |
| 3.9-7.8 | 12.78 | 38.99 | 61.01 |
| 7.8-15.6 | 17.05 | 56.03 | 43.97 |
| 15.6-31.3 | 16.91 | 72.95 | 27.05 |
| 31.3-62.5 | 21.48 | 94.43 | 5.57 |
| 62.5-125.0 | 5.57 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Mangere Cemetery 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.51 | 2.51 | 97.49 |
| 3.9-7.8 | 3.40 | 5.91 | 94.09 |
| 7.8-15.6 | 9.30 | 15.21 | 84.79 |
| 15.6-31.3 | 18.15 | 33.36 | 66.64 |
| 31.3-62.5 | 46.38 | 79.74 | 20.26 |
| 62.5-125.0 | 20.26 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Mangere Cemetery 3** low (0-300 μm).



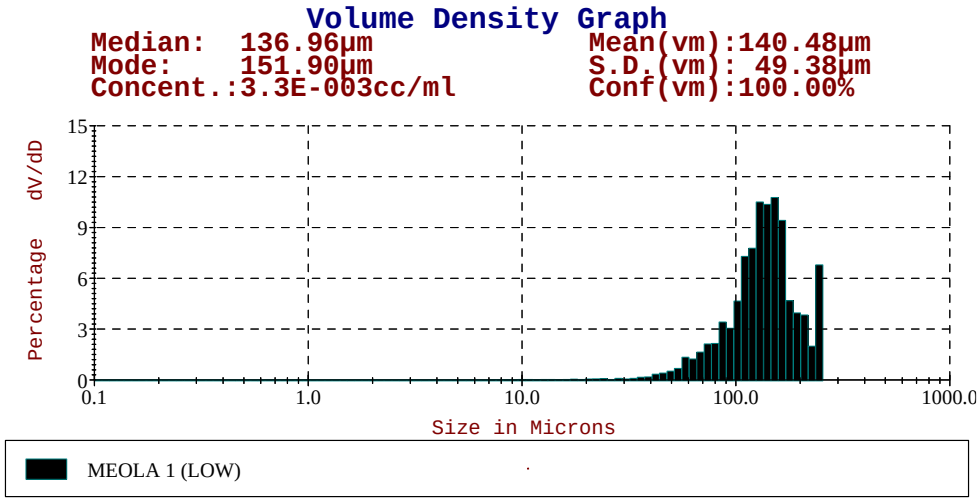

Area Ranges Table: **2/8/05 Mangere Cemetery 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 25.04 | 25.04 | 74.96 |
| 3.9-7.8 | 13.25 | 38.29 | 61.71 |
| 7.8-15.6 | 14.40 | 52.68 | 47.32 |
| 15.6-31.3 | 20.53 | 73.22 | 26.78 |
| 31.3-62.5 | 21.59 | 94.80 | 5.20 |
| 62.5-125.0 | 5.20 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Mangere Cemetery 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.40 | 2.40 | 97.60 |
| 3.9-7.8 | 3.49 | 5.89 | 94.11 |
| 7.8-15.6 | 7.84 | 13.73 | 86.27 |
| 15.6-31.3 | 21.74 | 35.47 | 64.53 |
| 31.3-62.5 | 46.28 | 81.74 | 18.26 |
| 62.5-125.0 | 18.26 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 1** low (0-300 μm).



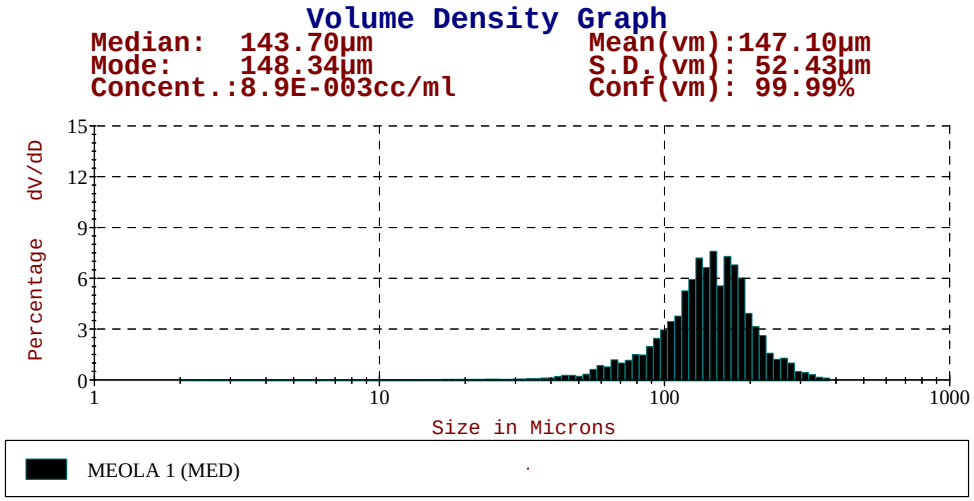

Area Ranges Table: **19/8/05 Meola 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.65 | 2.65 | 97.35 |
| 3.9-7.8 | 1.05 | 3.70 | 96.30 |
| 7.8-15.6 | 1.56 | 5.26 | 94.74 |
| 15.6-31.3 | 2.15 | 7.41 | 92.59 |
| 31.3-62.5 | 9.75 | 17.16 | 82.84 |
| 62.5-125.0 | 39.40 | 56.56 | 43.44 |
| 125.0-250.0 | 42.23 | 98.79 | 1.21 |
| 250.0-300.0 | 1.21 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.04 | 0.04 | 99.96 |
| 3.9-7.8 | 0.05 | 0.09 | 99.91 |
| 7.8-15.6 | 0.15 | 0.24 | 99.76 |
| 15.6-31.3 | 0.43 | 0.67 | 99.33 |
| 31.3-62.5 | 4.32 | 4.99 | 95.01 |
| 62.5-125.0 | 33.42 | 38.41 | 61.59 |
| 125.0-250.0 | 58.96 | 97.36 | 2.64 |
| 250.0-300.0 | 2.64 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 1** medium (2-600 μm).



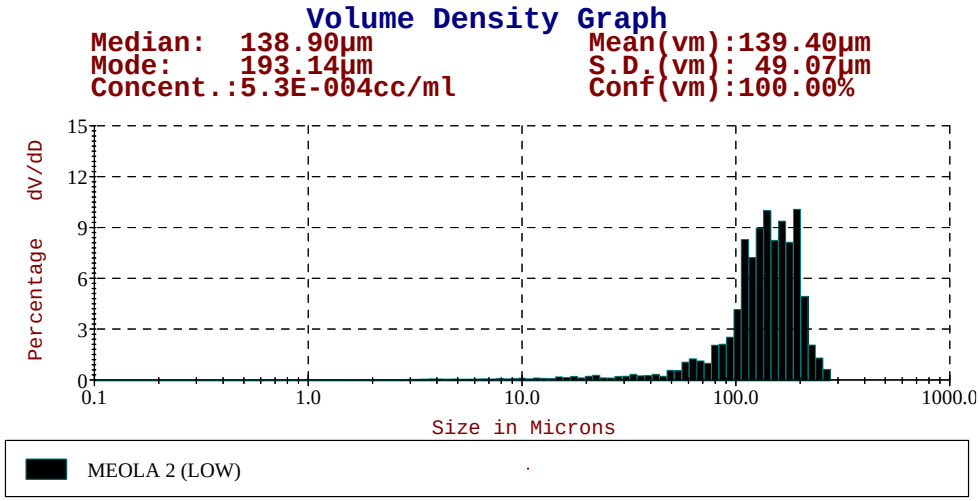

Area Ranges Table: **19/8/05 Meola 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.37 | 0.37 | 99.64 |
| 3.9-7.8 | 1.00 | 1.37 | 98.63 |
| 7.8-15.6 | 1.78 | 3.14 | 96.86 |
| 15.6-31.3 | 2.38 | 5.52 | 94.48 |
| 31.3-62.5 | 8.15 | 13.67 | 86.33 |
| 62.5-125.0 | 37.81 | 51.48 | 48.52 |
| 125.0-250.0 | 46.72 | 98.20 | 1.80 |
| 250.0-500.0 | 1.80 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.05 | 0.06 | 99.94 |
| 7.8-15.6 | 0.17 | 0.23 | 99.77 |
| 15.6-31.3 | 0.44 | 0.66 | 99.34 |
| 31.3-62.5 | 3.34 | 4.01 | 95.99 |
| 62.5-125.0 | 30.03 | 34.03 | 65.96 |
| 125.0-250.0 | 61.80 | 95.83 | 4.17 |
| 250.0-500.0 | 4.17 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 2** low (0-300 μm).



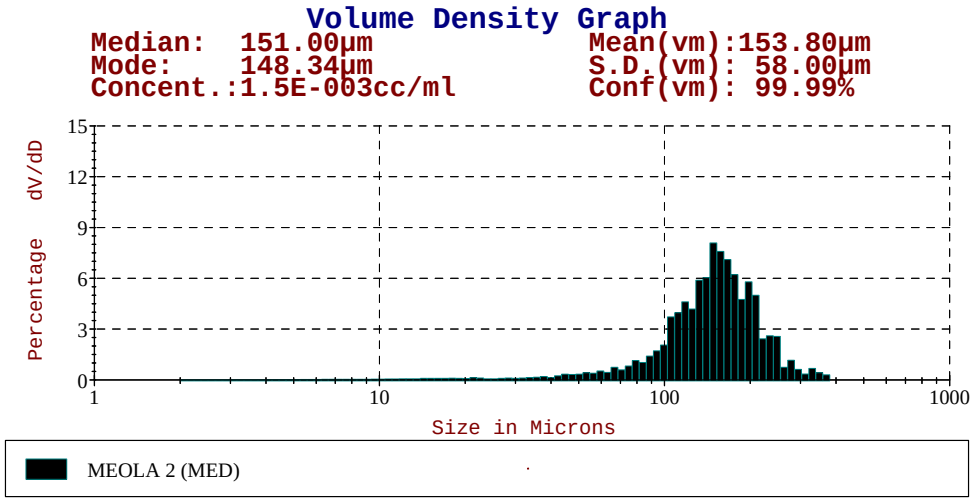

Area Ranges Table: **19/8/05 Meola 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 13.51 | 13.51 | 86.49 |
| 3.9-7.8 | 6.80 | 20.31 | 79.69 |
| 7.8-15.6 | 6.05 | 26.35 | 73.65 |
| 15.6-31.3 | 6.06 | 32.41 | 67.59 |
| 31.3-62.5 | 6.95 | 39.36 | 60.64 |
| 62.5-125.0 | 26.34 | 65.71 | 34.29 |
| 125.0-250.0 | 33.93 | 99.64 | 0.36 |
| 250.0-300.0 | 0.36 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.32 | 0.32 | 99.68 |
| 3.9-7.8 | 0.43 | 0.74 | 99.26 |
| 7.8-15.6 | 0.78 | 1.53 | 98.47 |
| 15.6-31.3 | 1.50 | 3.03 | 96.97 |
| 31.3-62.5 | 3.72 | 6.75 | 93.25 |
| 62.5-125.0 | 29.52 | 36.27 | 63.73 |
| 125.0-250.0 | 62.67 | 98.94 | 1.06 |
| 250.0-300.0 | 1.06 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 2** medium (2-600 μm).



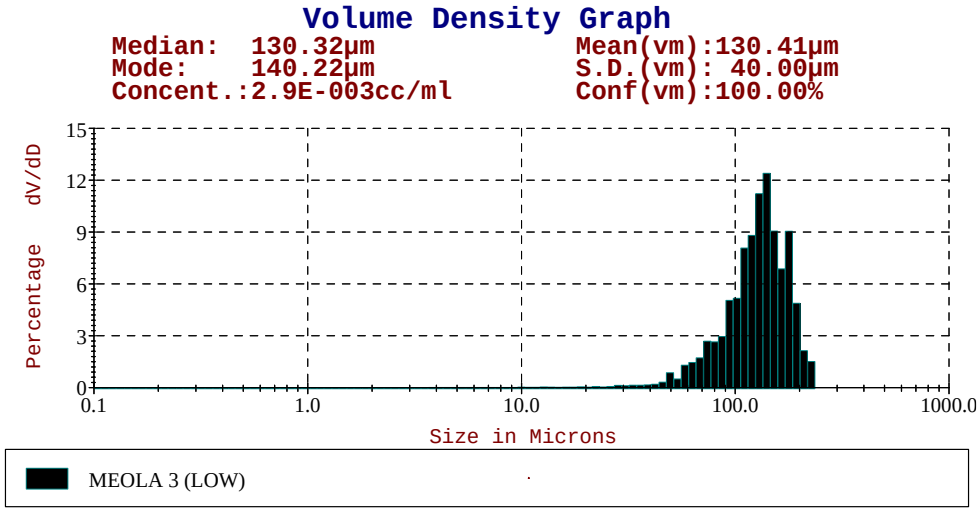

Area Ranges Table: **19/8/05 Meola 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.66 | 1.66 | 98.34 |
| 3.9-7.8 | 4.57 | 6.23 | 93.77 |
| 7.8-15.6 | 6.42 | 12.65 | 87.35 |
| 15.6-31.3 | 5.63 | 18.28 | 81.72 |
| 31.3-62.5 | 8.21 | 26.49 | 73.51 |
| 62.5-125.0 | 26.85 | 53.33 | 46.67 |
| 125.0-250.0 | 44.65 | 97.98 | 2.02 |
| 250.0-500.0 | 2.02 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.24 | 0.29 | 99.71 |
| 7.8-15.6 | 0.66 | 0.94 | 99.06 |
| 15.6-31.3 | 1.08 | 2.03 | 97.97 |
| 31.3-62.5 | 3.46 | 5.48 | 94.52 |
| 62.5-125.0 | 23.61 | 29.09 | 70.91 |
| 125.0-250.0 | 65.73 | 94.82 | 5.18 |
| 250.0-500.0 | 5.18 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 3** low (0-300 µm).



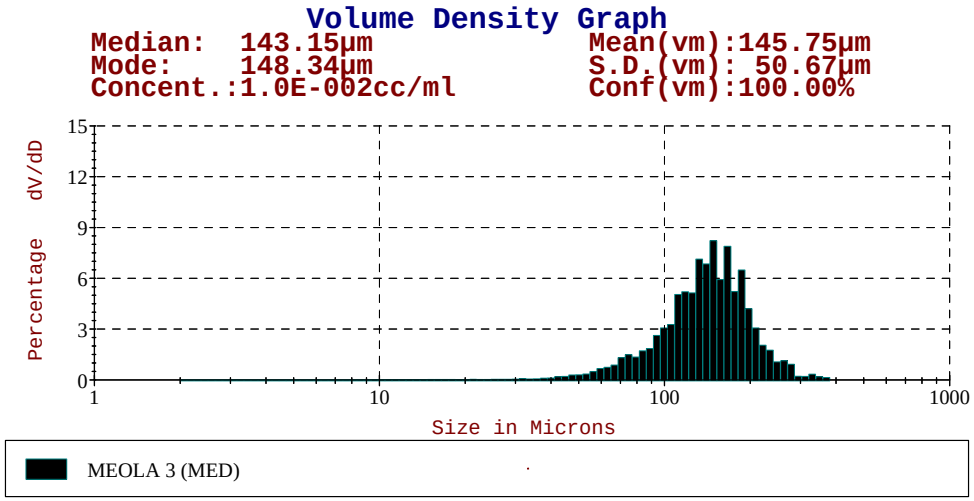

Area Ranges Table: **19/8/05 Meola 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.11 | 2.11 | 97.89 |
| 3.9-7.8 | 0.99 | 3.10 | 96.90 |
| 7.8-15.6 | 1.53 | 4.63 | 95.37 |
| 15.6-31.3 | 2.14 | 6.77 | 93.23 |
| 31.3-62.5 | 9.44 | 16.21 | 83.79 |
| 62.5-125.0 | 43.25 | 59.45 | 40.55 |
| 125.0-250.0 | 40.55 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.03 | 0.03 | 99.97 |
| 3.9-7.8 | 0.05 | 0.08 | 99.92 |
| 7.8-15.6 | 0.16 | 0.24 | 99.76 |
| 15.6-31.3 | 0.47 | 0.71 | 99.29 |
| 31.3-62.5 | 4.38 | 5.09 | 94.91 |
| 62.5-125.0 | 38.01 | 43.11 | 56.89 |
| 125.0-250.0 | 56.90 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola 3** medium (2-600 μm).



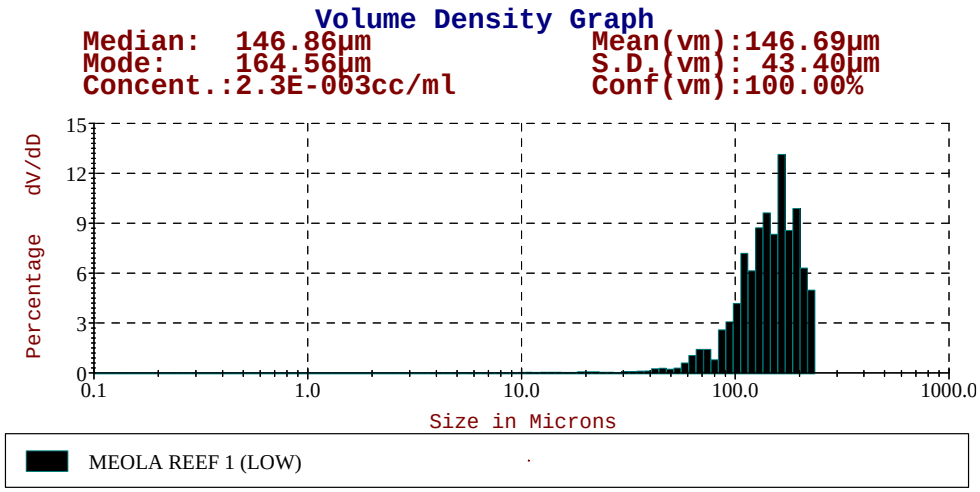

Area Ranges Table: **19/8/05 Meola 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.23 | 0.23 | 99.77 |
| 3.9-7.8 | 0.74 | 0.97 | 99.03 |
| 7.8-15.6 | 1.46 | 2.43 | 97.57 |
| 15.6-31.3 | 1.84 | 4.27 | 95.74 |
| 31.3-62.5 | 7.65 | 11.91 | 88.09 |
| 62.5-125.0 | 39.16 | 51.07 | 48.93 |
| 125.0-250.0 | 47.42 | 98.49 | 1.51 |
| 250.0-500.0 | 1.51 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.04 | 0.04 | 99.96 |
| 7.8-15.6 | 0.14 | 0.18 | 99.82 |
| 15.6-31.3 | 0.34 | 0.52 | 99.48 |
| 31.3-62.5 | 3.12 | 3.64 | 96.36 |
| 62.5-125.0 | 30.84 | 34.48 | 65.52 |
| 125.0-250.0 | 62.07 | 96.54 | 3.46 |
| 250.0-500.0 | 3.46 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 1** low (0-300 μm).



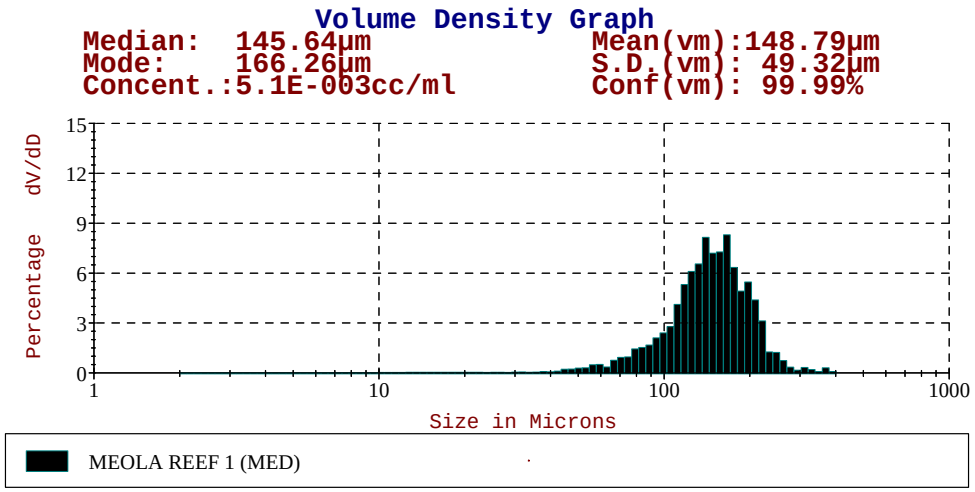

Area Ranges Table: **19/8/05 Meola Reef 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 4.61 | 4.61 | 95.39 |
| 3.9-7.8 | 1.99 | 6.60 | 93.40 |
| 7.8-15.6 | 2.26 | 8.86 | 91.14 |
| 15.6-31.3 | 2.05 | 10.91 | 89.09 |
| 31.3-62.5 | 5.51 | 16.41 | 83.59 |
| 62.5-125.0 | 34.23 | 50.64 | 49.36 |
| 125.0-250.0 | 49.36 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.09 | 0.16 | 99.84 |
| 7.8-15.6 | 0.22 | 0.38 | 99.62 |
| 15.6-31.3 | 0.38 | 0.75 | 99.25 |
| 31.3-62.5 | 2.29 | 3.05 | 96.95 |
| 62.5-125.0 | 28.49 | 31.53 | 68.47 |
| 125.0-250.0 | 68.47 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 1** medium (2-600 μm).



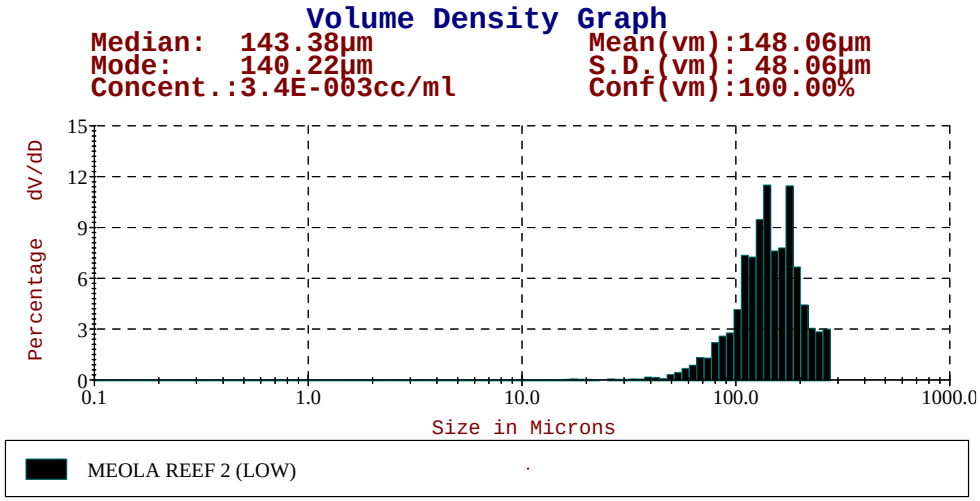

Area Ranges Table: **19/8/05 Meola Reef 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.68 | 0.68 | 99.32 |
| 3.9-7.8 | 1.79 | 2.47 | 97.53 |
| 7.8-15.6 | 2.81 | 5.28 | 94.72 |
| 15.6-31.3 | 2.31 | 7.59 | 92.41 |
| 31.3-62.5 | 6.23 | 13.82 | 86.18 |
| 62.5-125.0 | 34.38 | 48.20 | 51.80 |
| 125.0-250.0 | 50.70 | 98.90 | 1.10 |
| 250.0-500.0 | 1.10 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.09 | 0.10 | 99.90 |
| 7.8-15.6 | 0.26 | 0.36 | 99.64 |
| 15.6-31.3 | 0.40 | 0.77 | 99.23 |
| 31.3-62.5 | 2.54 | 3.31 | 96.69 |
| 62.5-125.0 | 27.51 | 30.82 | 69.18 |
| 125.0-250.0 | 66.61 | 97.43 | 2.57 |
| 250.0-500.0 | 2.57 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 2** low (0-300 μm).



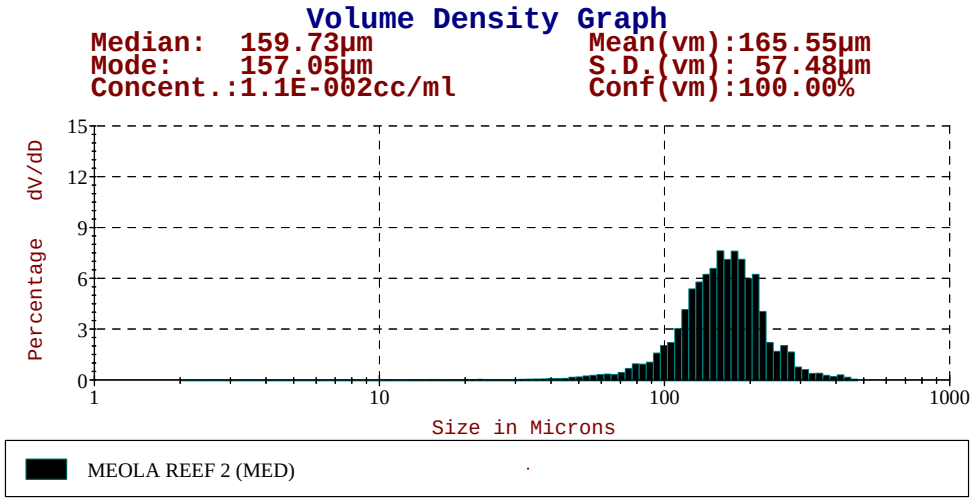

Area Ranges Table: **19/8/05 Meola Reef 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.70 | 1.70 | 98.30 |
| 3.9-7.8 | 0.69 | 2.39 | 97.61 |
| 7.8-15.6 | 1.13 | 3.53 | 96.47 |
| 15.6-31.3 | 1.69 | 5.22 | 94.78 |
| 31.3-62.5 | 5.66 | 10.87 | 89.13 |
| 62.5-125.0 | 37.79 | 48.67 | 51.33 |
| 125.0-250.0 | 49.61 | 98.28 | 1.72 |
| 250.0-300.0 | 1.72 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.03 | 0.05 | 99.95 |
| 7.8-15.6 | 0.10 | 0.15 | 99.85 |
| 15.6-31.3 | 0.29 | 0.44 | 99.56 |
| 31.3-62.5 | 2.29 | 2.72 | 97.28 |
| 62.5-125.0 | 29.66 | 32.39 | 67.61 |
| 125.0-250.0 | 64.03 | 96.42 | 3.58 |
| 250.0-300.0 | 3.58 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 2** medium (2-600 μm).



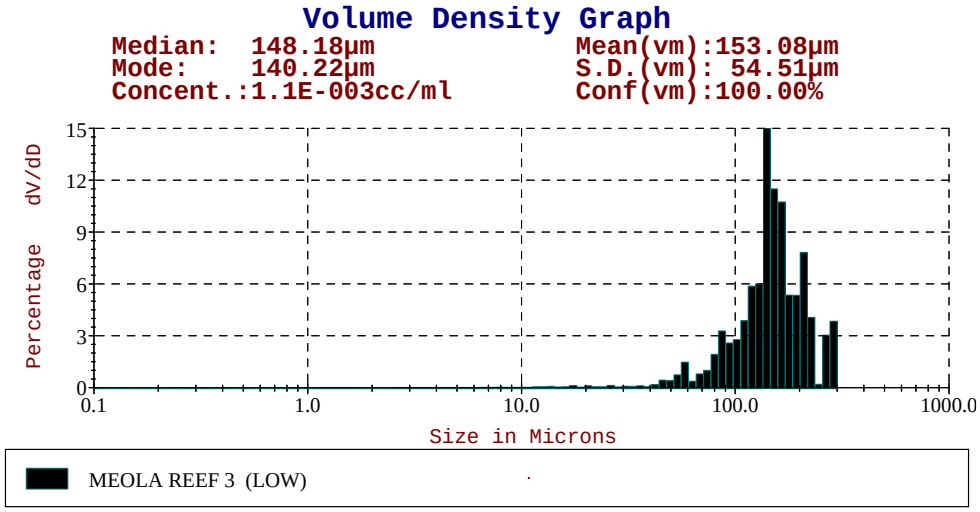

Area Ranges Table: **19/8/05 Meola Reef 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.23 | 0.23 | 99.77 |
| 3.9-7.8 | 0.65 | 0.88 | 99.12 |
| 7.8-15.6 | 1.36 | 2.24 | 97.76 |
| 15.6-31.3 | 1.55 | 3.78 | 96.22 |
| 31.3-62.5 | 4.93 | 8.71 | 91.29 |
| 62.5-125.0 | 28.64 | 37.35 | 62.65 |
| 125.0-250.0 | 59.12 | 96.48 | 3.52 |
| 250.0-500.0 | 3.53 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 100.00 |
| 3.9-7.8 | 0.03 | 0.03 | 99.97 |
| 7.8-15.6 | 0.11 | 0.15 | 99.86 |
| 15.6-31.3 | 0.24 | 0.39 | 99.61 |
| 31.3-62.5 | 1.73 | 2.12 | 97.89 |
| 62.5-125.0 | 20.50 | 22.61 | 77.39 |
| 125.0-250.0 | 70.10 | 92.71 | 7.29 |
| 250.0-500.0 | 7.29 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 3** low (0-300 μm).



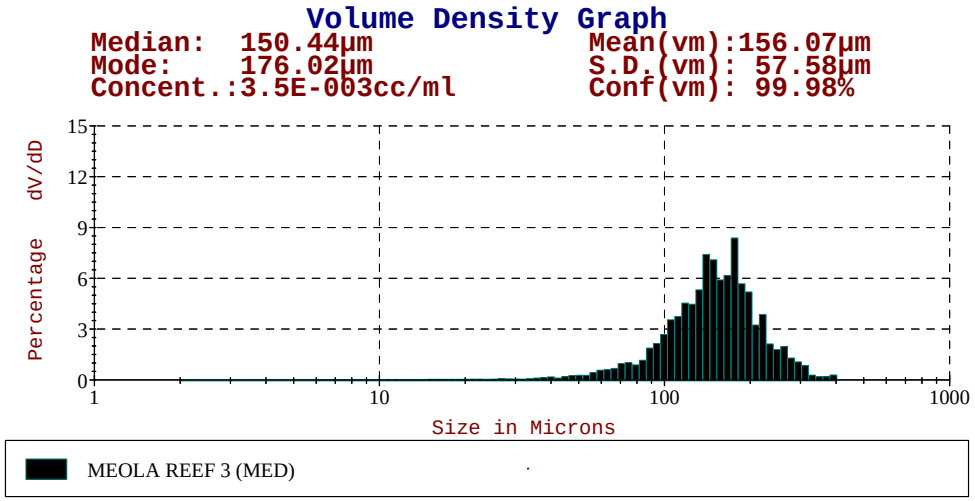

Area Ranges Table: **19/8/05 Meola Reef 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 6.45 | 6.45 | 93.55 |
| 3.9-7.8 | 2.12 | 8.57 | 91.43 |
| 7.8-15.6 | 3.02 | 11.59 | 88.41 |
| 15.6-31.3 | 3.31 | 14.90 | 85.10 |
| 31.3-62.5 | 8.25 | 23.15 | 76.85 |
| 62.5-125.0 | 26.81 | 49.96 | 50.04 |
| 125.0-250.0 | 47.12 | 97.09 | 2.91 |
| 250.0-300.0 | 2.91 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.10 | 0.10 | 99.90 |
| 3.9-7.8 | 0.11 | 0.20 | 99.80 |
| 7.8-15.6 | 0.31 | 0.50 | 99.50 |
| 15.6-31.3 | 0.62 | 1.13 | 98.87 |
| 31.3-62.5 | 3.68 | 4.81 | 95.19 |
| 62.5-125.0 | 22.51 | 27.32 | 72.68 |
| 125.0-250.0 | 65.79 | 93.11 | 6.89 |
| 250.0-300.0 | 6.89 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Meola Reef 3** medium (2-600 μm).



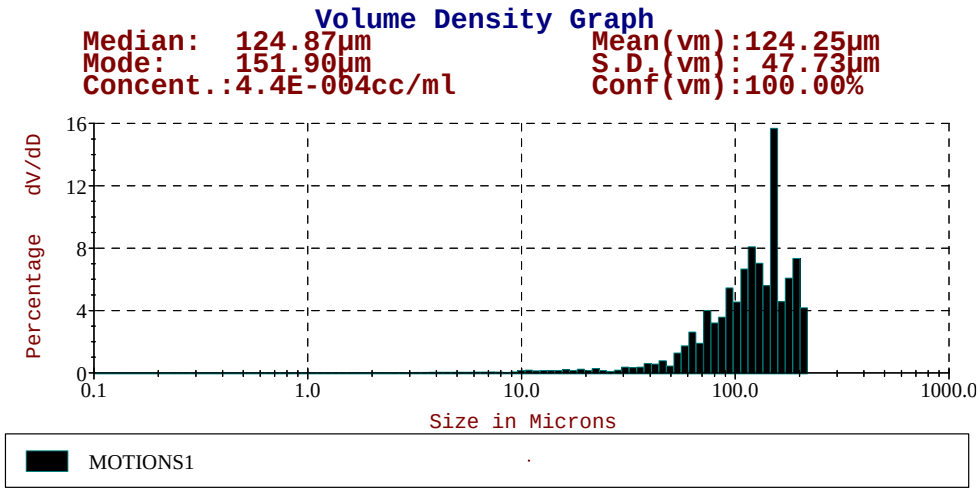

Area Ranges Table: **19/8/05 Meola Reef 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.70 | 0.70 | 99.30 |
| 3.9-7.8 | 1.83 | 2.52 | 97.48 |
| 7.8-15.6 | 2.52 | 5.04 | 94.96 |
| 15.6-31.3 | 3.03 | 8.07 | 91.93 |
| 31.3-62.5 | 7.26 | 15.32 | 84.68 |
| 62.5-125.0 | 32.85 | 48.17 | 51.83 |
| 125.0-250.0 | 48.99 | 97.17 | 2.83 |
| 250.0-500.0 | 2.84 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Meola Reef 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.09 | 0.10 | 99.90 |
| 7.8-15.6 | 0.23 | 0.33 | 99.67 |
| 15.6-31.3 | 0.54 | 0.87 | 99.13 |
| 31.3-62.5 | 2.83 | 3.70 | 96.30 |
| 62.5-125.0 | 25.52 | 29.22 | 70.78 |
| 125.0-250.0 | 64.34 | 93.55 | 6.45 |
| 250.0-500.0 | 6.45 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Motions 1** low (0-300 µm).



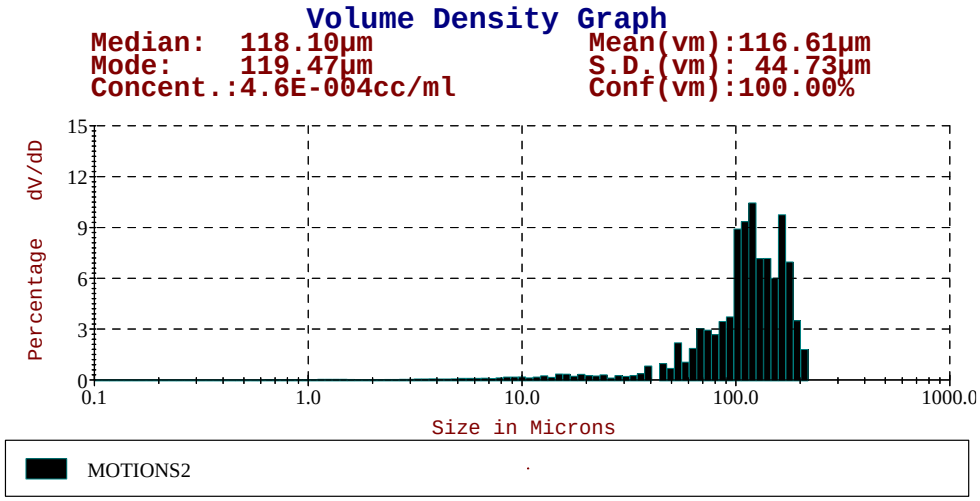

Area Ranges Table: **19/8/05 Motions 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 14.19 | 14.19 | 85.81 |
| 3.9-7.8 | 4.63 | 18.82 | 81.18 |
| 7.8-15.6 | 6.71 | 25.53 | 74.47 |
| 15.6-31.3 | 5.91 | 31.44 | 68.56 |
| 31.3-62.5 | 11.29 | 42.73 | 57.27 |
| 62.5-125.0 | 33.18 | 75.91 | 24.09 |
| 125.0-250.0 | 24.10 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Motions 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.28 | 0.28 | 99.72 |
| 3.9-7.8 | 0.34 | 0.61 | 99.39 |
| 7.8-15.6 | 1.00 | 1.61 | 98.39 |
| 15.6-31.3 | 1.66 | 3.27 | 96.73 |
| 31.3-62.5 | 7.07 | 10.34 | 89.66 |
| 62.5-125.0 | 39.85 | 50.19 | 49.81 |
| 125.0-250.0 | 49.81 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Motions 2** low (0-300 μm).



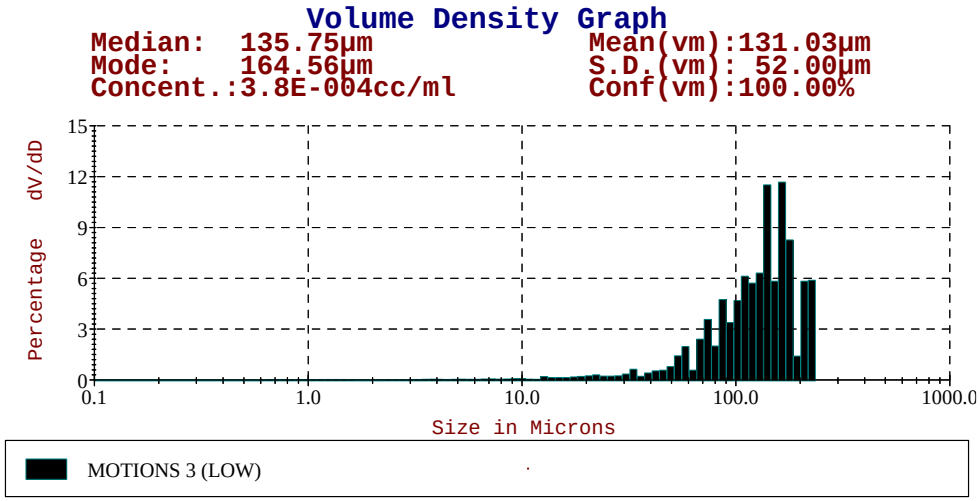

Area Ranges Table: **19/8/05 Motions 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 18.12 | 18.12 | 81.88 |
| 3.9-7.8 | 7.50 | 25.62 | 74.38 |
| 7.8-15.6 | 9.29 | 34.91 | 65.10 |
| 15.6-31.3 | 6.52 | 41.43 | 58.57 |
| 31.3-62.5 | 10.33 | 51.75 | 48.25 |
| 62.5-125.0 | 30.57 | 82.33 | 17.67 |
| 125.0-250.0 | 17.68 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Motions 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.49 | 0.49 | 99.51 |
| 3.9-7.8 | 0.64 | 1.13 | 98.87 |
| 7.8-15.6 | 1.60 | 2.74 | 97.26 |
| 15.6-31.3 | 2.10 | 4.83 | 95.17 |
| 31.3-62.5 | 7.82 | 12.65 | 87.35 |
| 62.5-125.0 | 45.56 | 58.22 | 41.78 |
| 125.0-250.0 | 41.78 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Motions 3** low (0-300 μm).



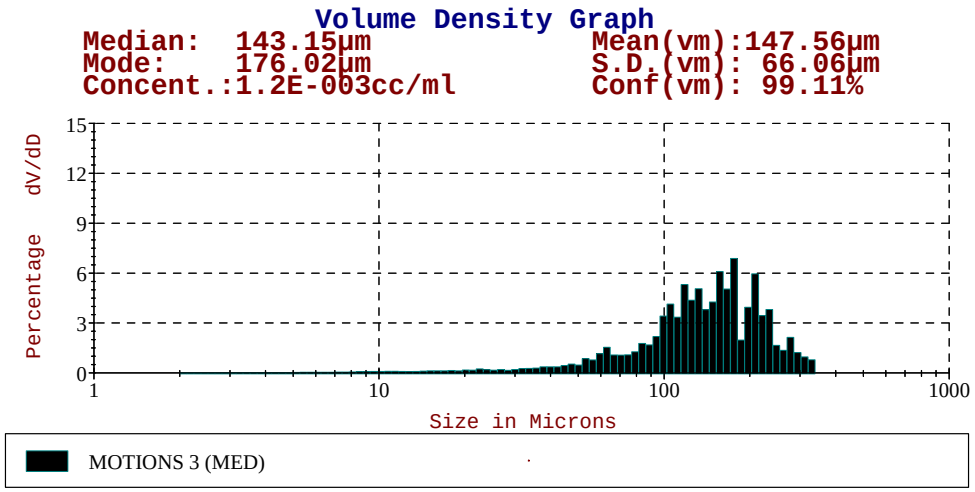

Area Ranges Table: **19/8/05 Motions 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 15.75 | 15.75 | 84.25 |
| 3.9-7.8 | 4.74 | 20.48 | 79.52 |
| 7.8-15.6 | 5.40 | 25.88 | 74.12 |
| 15.6-31.3 | 6.96 | 32.84 | 67.16 |
| 31.3-62.5 | 11.79 | 44.64 | 55.36 |
| 62.5-125.0 | 28.25 | 72.89 | 27.11 |
| 125.0-250.0 | 27.11 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Motions 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.30 | 0.30 | 99.70 |
| 3.9-7.8 | 0.34 | 0.64 | 99.36 |
| 7.8-15.6 | 0.79 | 1.43 | 98.57 |
| 15.6-31.3 | 1.97 | 3.40 | 96.60 |
| 31.3-62.5 | 7.18 | 10.58 | 89.42 |
| 62.5-125.0 | 33.46 | 44.03 | 55.97 |
| 125.0-250.0 | 55.97 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **19/8/05 Motions 3** medium (2-600 μm).



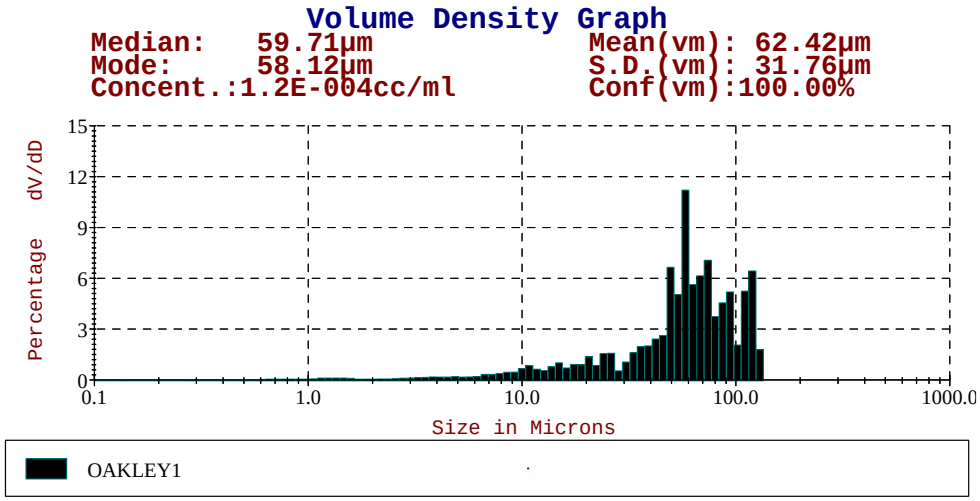

Area Ranges Table: **19/8/05 Motions 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.18 | 2.18 | 97.82 |
| 3.9-7.8 | 5.59 | 7.77 | 92.24 |
| 7.8-15.6 | 8.53 | 16.29 | 83.71 |
| 15.6-31.3 | 8.55 | 24.84 | 75.16 |
| 31.3-62.5 | 13.11 | 37.95 | 62.05 |
| 62.5-125.0 | 29.99 | 67.93 | 32.07 |
| 125.0-250.0 | 29.59 | 97.52 | 2.48 |
| 250.0-500.0 | 2.48 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **19/8/05 Motions 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.34 | 0.41 | 99.59 |
| 7.8-15.6 | 0.99 | 1.40 | 98.60 |
| 15.6-31.3 | 1.99 | 3.39 | 96.61 |
| 31.3-62.5 | 6.55 | 9.94 | 90.06 |
| 62.5-125.0 | 30.23 | 40.17 | 59.83 |
| 125.0-250.0 | 52.55 | 92.71 | 7.29 |
| 250.0-500.0 | 7.29 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Oakley 1** low (0-300 μm).



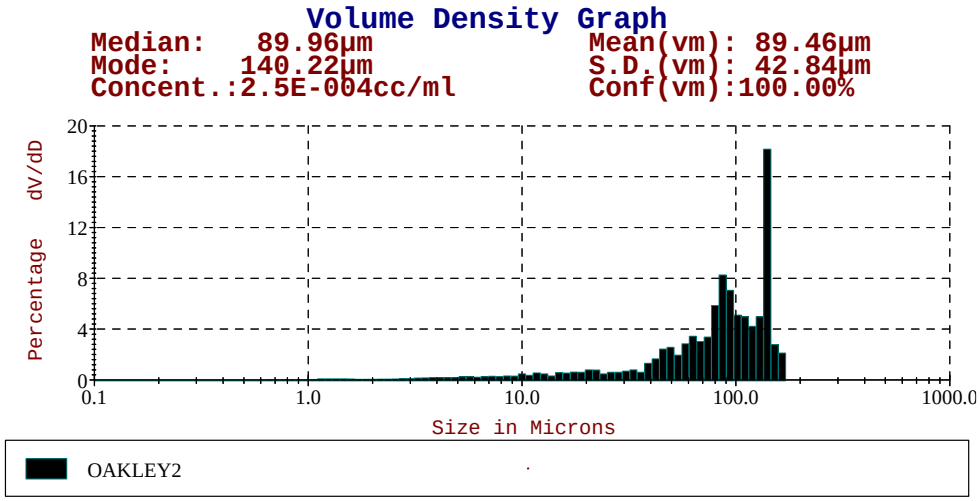

Area Ranges Table: **5/8/05 Oakley 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 28.11 | 28.11 | 71.89 |
| 3.9-7.8 | 9.11 | 37.22 | 62.78 |
| 7.8-15.6 | 14.11 | 51.33 | 48.67 |
| 15.6-31.3 | 11.93 | 63.25 | 36.75 |
| 31.3-62.5 | 20.72 | 83.97 | 16.03 |
| 62.5-125.0 | 16.03 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Oakley 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.53 | 1.53 | 98.47 |
| 3.9-7.8 | 1.81 | 3.34 | 96.66 |
| 7.8-15.6 | 5.52 | 8.86 | 91.14 |
| 15.6-31.3 | 9.11 | 17.97 | 82.03 |
| 31.3-62.5 | 34.94 | 52.92 | 47.08 |
| 62.5-125.0 | 47.09 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Oakley 2** low (0-300 μm).



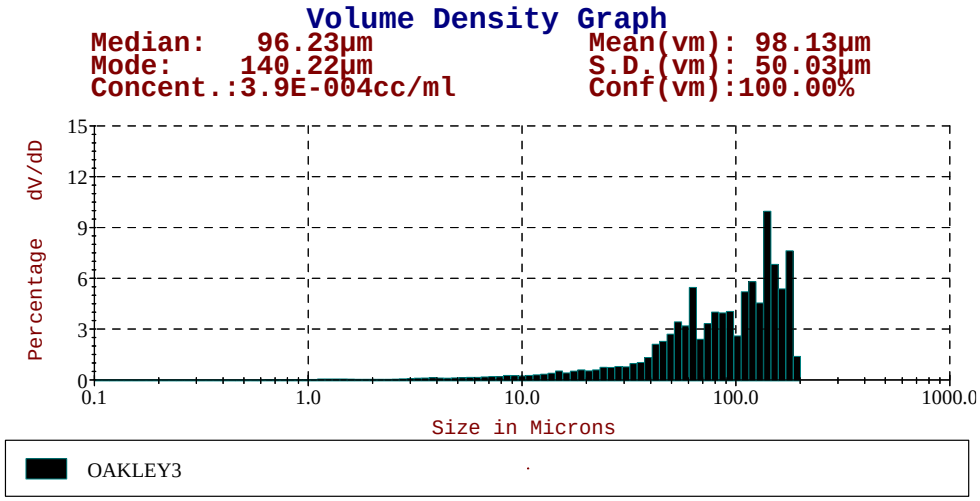

Area Ranges Table: **5/8/05 Oakley 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 28.21 | 28.21 | 71.79 |
| 3.9-7.8 | 12.05 | 40.26 | 59.74 |
| 7.8-15.6 | 11.67 | 51.93 | 48.07 |
| 15.6-31.3 | 9.26 | 61.19 | 38.81 |
| 31.3-62.5 | 12.68 | 73.86 | 26.14 |
| 62.5-125.0 | 18.59 | 92.45 | 7.55 |
| 125.0-250.0 | 7.55 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Oakley 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.36 | 1.36 | 98.64 |
| 3.9-7.8 | 1.79 | 3.15 | 96.85 |
| 7.8-15.6 | 3.47 | 6.62 | 93.38 |
| 15.6-31.3 | 5.32 | 11.94 | 88.06 |
| 31.3-62.5 | 16.00 | 27.94 | 72.06 |
| 62.5-125.0 | 43.88 | 71.81 | 28.19 |
| 125.0-250.0 | 28.19 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **5/8/05 Oakley 3** low (0-300 μm).



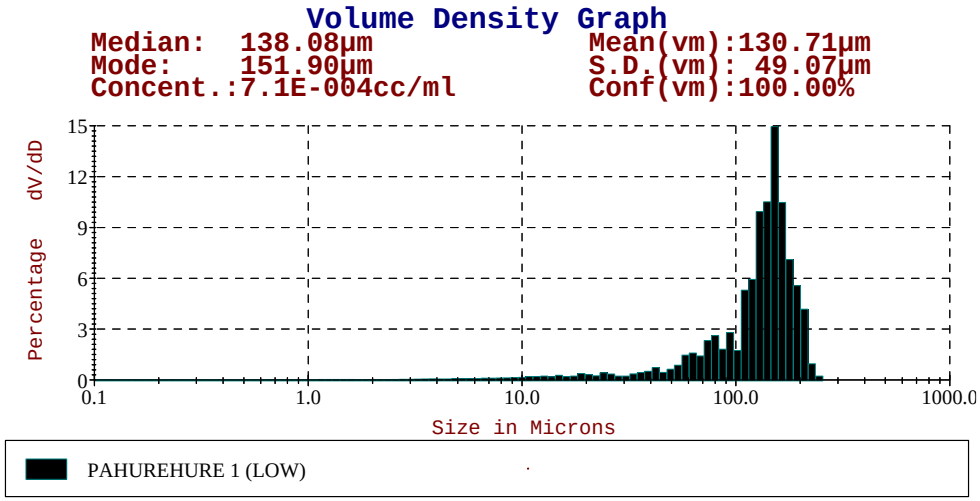

Area Ranges Table: **5/8/05 Oakley 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 21.97 | 21.97 | 78.03 |
| 3.9-7.8 | 9.25 | 31.21 | 68.79 |
| 7.8-15.6 | 10.62 | 41.83 | 58.17 |
| 15.6-31.3 | 10.92 | 52.76 | 47.24 |
| 31.3-62.5 | 18.70 | 71.45 | 28.55 |
| 62.5-125.0 | 17.96 | 89.41 | 10.59 |
| 125.0-250.0 | 10.59 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **5/8/05 Oakley 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.90 | 0.90 | 99.10 |
| 3.9-7.8 | 1.15 | 2.05 | 97.95 |
| 7.8-15.6 | 2.65 | 4.70 | 95.30 |
| 15.6-31.3 | 5.39 | 10.09 | 89.91 |
| 31.3-62.5 | 19.65 | 29.74 | 70.26 |
| 62.5-125.0 | 34.99 | 64.73 | 35.27 |
| 125.0-250.0 | 35.27 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 1** low (0-300 μm).



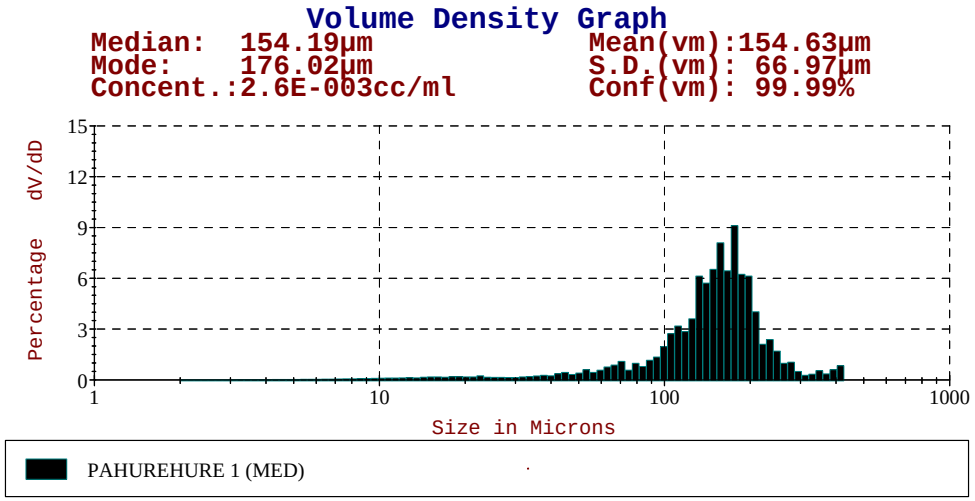

Area Ranges Table: **29/8/05 Pahurehure 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 15.42 | 15.42 | 84.58 |
| 3.9-7.8 | 7.92 | 23.34 | 76.66 |
| 7.8-15.6 | 9.78 | 33.12 | 66.88 |
| 15.6-31.3 | 8.23 | 41.36 | 58.64 |
| 31.3-62.5 | 9.73 | 51.09 | 48.91 |
| 62.5-125.0 | 19.66 | 70.75 | 29.25 |
| 125.0-250.0 | 29.26 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.40 | 0.40 | 99.60 |
| 3.9-7.8 | 0.61 | 1.01 | 98.99 |
| 7.8-15.6 | 1.52 | 2.53 | 97.47 |
| 15.6-31.3 | 2.46 | 5.00 | 95.00 |
| 31.3-62.5 | 6.41 | 11.41 | 88.59 |
| 62.5-125.0 | 25.48 | 36.89 | 63.11 |
| 125.0-250.0 | 63.11 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 1** medium (2-600 μm).



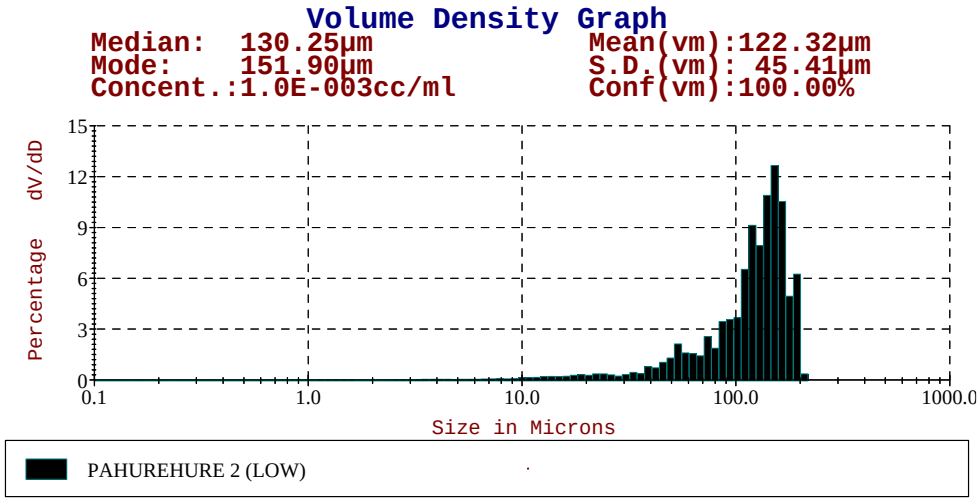

Area Ranges Table: **29/8/05 Pahurehure 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.43 | 2.43 | 97.57 |
| 3.9-7.8 | 6.51 | 8.94 | 91.06 |
| 7.8-15.6 | 11.35 | 20.28 | 79.72 |
| 15.6-31.3 | 9.24 | 29.52 | 70.48 |
| 31.3-62.5 | 9.57 | 39.09 | 60.91 |
| 62.5-125.0 | 20.08 | 59.17 | 40.83 |
| 125.0-250.0 | 38.98 | 98.15 | 1.85 |
| 250.0-500.0 | 1.85 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.08 | 0.08 | 99.92 |
| 3.9-7.8 | 0.39 | 0.47 | 99.53 |
| 7.8-15.6 | 1.32 | 1.79 | 98.21 |
| 15.6-31.3 | 2.01 | 3.80 | 96.20 |
| 31.3-62.5 | 4.58 | 8.38 | 91.62 |
| 62.5-125.0 | 19.71 | 28.09 | 71.92 |
| 125.0-250.0 | 66.04 | 94.13 | 5.87 |
| 250.0-500.0 | 5.88 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 2** low (0-300 μm).



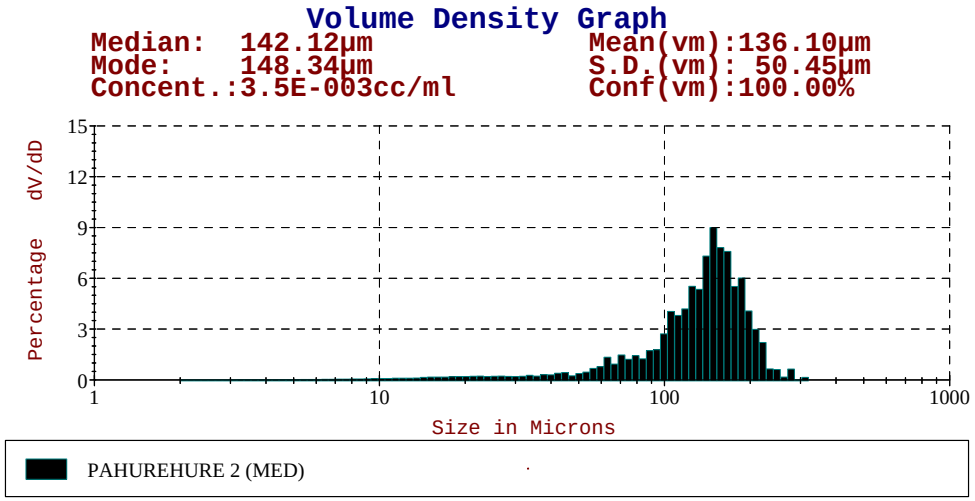

Area Ranges Table: **29/8/05 Pahurehure 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 10.11 | 10.11 | 89.89 |
| 3.9-7.8 | 4.56 | 14.67 | 85.33 |
| 7.8-15.6 | 7.89 | 22.56 | 77.44 |
| 15.6-31.3 | 8.98 | 31.53 | 68.47 |
| 31.3-62.5 | 14.48 | 46.02 | 53.98 |
| 62.5-125.0 | 27.11 | 73.13 | 26.87 |
| 125.0-250.0 | 26.87 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.24 | 0.24 | 99.76 |
| 3.9-7.8 | 0.34 | 0.57 | 99.43 |
| 7.8-15.6 | 1.18 | 1.75 | 98.25 |
| 15.6-31.3 | 2.52 | 4.27 | 95.73 |
| 31.3-62.5 | 8.90 | 13.17 | 86.83 |
| 62.5-125.0 | 33.69 | 46.86 | 53.14 |
| 125.0-250.0 | 53.14 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 2** medium (2-600 μm).



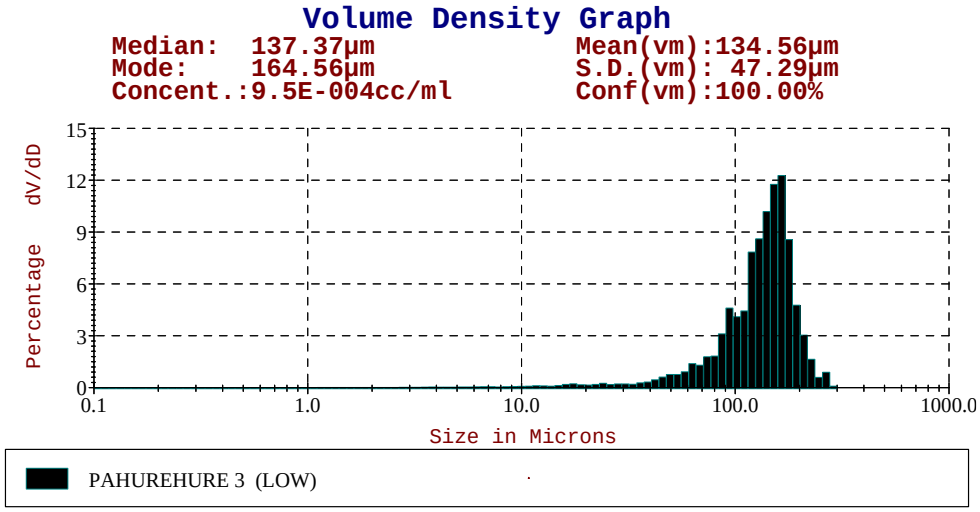

Area Ranges Table: **29/8/05 Pahurehure 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.55 | 1.55 | 98.45 |
| 3.9-7.8 | 4.50 | 6.05 | 93.95 |
| 7.8-15.6 | 9.09 | 15.14 | 84.86 |
| 15.6-31.3 | 10.31 | 25.45 | 74.55 |
| 31.3-62.5 | 10.00 | 35.45 | 64.55 |
| 62.5-125.0 | 27.63 | 63.08 | 36.92 |
| 125.0-250.0 | 36.44 | 99.53 | 0.47 |
| 250.0-500.0 | 0.48 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.28 | 0.34 | 99.67 |
| 7.8-15.6 | 1.12 | 1.46 | 98.54 |
| 15.6-31.3 | 2.40 | 3.86 | 96.14 |
| 31.3-62.5 | 4.96 | 8.81 | 91.19 |
| 62.5-125.0 | 27.96 | 36.78 | 63.22 |
| 125.0-250.0 | 61.86 | 98.64 | 1.36 |
| 250.0-500.0 | 1.36 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 3** low (0-300 μm).



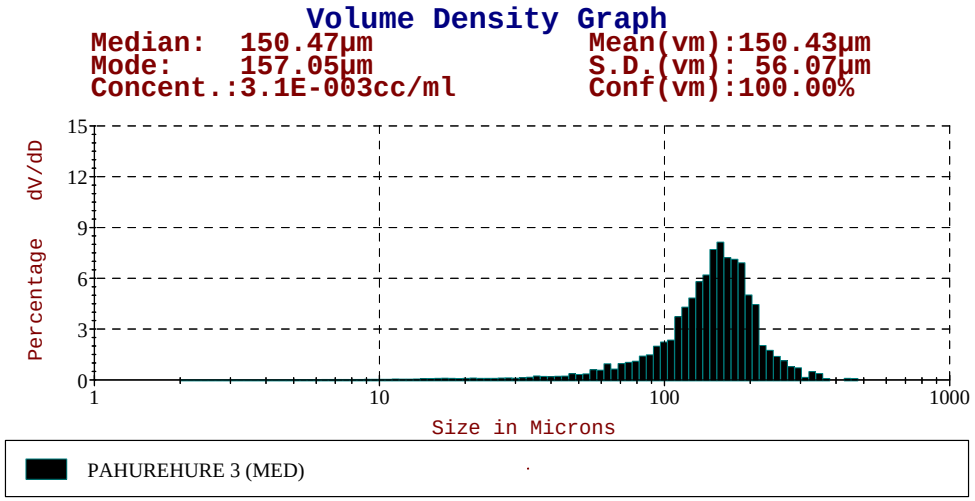

Area Ranges Table: **29/8/05 Pahurehure 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 8.84 | 8.84 | 91.16 |
| 3.9-7.8 | 4.68 | 13.53 | 86.47 |
| 7.8-15.6 | 5.73 | 19.25 | 80.75 |
| 15.6-31.3 | 6.92 | 26.17 | 73.83 |
| 31.3-62.5 | 9.32 | 35.48 | 64.52 |
| 62.5-125.0 | 29.18 | 64.66 | 35.34 |
| 125.0-250.0 | 35.00 | 99.66 | 0.34 |
| 250.0-300.0 | 0.34 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.18 | 0.18 | 99.82 |
| 3.9-7.8 | 0.29 | 0.47 | 99.53 |
| 7.8-15.6 | 0.72 | 1.19 | 98.81 |
| 15.6-31.3 | 1.65 | 2.84 | 97.17 |
| 31.3-62.5 | 4.89 | 7.72 | 92.28 |
| 62.5-125.0 | 30.82 | 38.54 | 61.46 |
| 125.0-250.0 | 60.49 | 99.03 | 0.97 |
| 250.0-300.0 | 0.97 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Pahurehure 3** medium (2-600 μm).



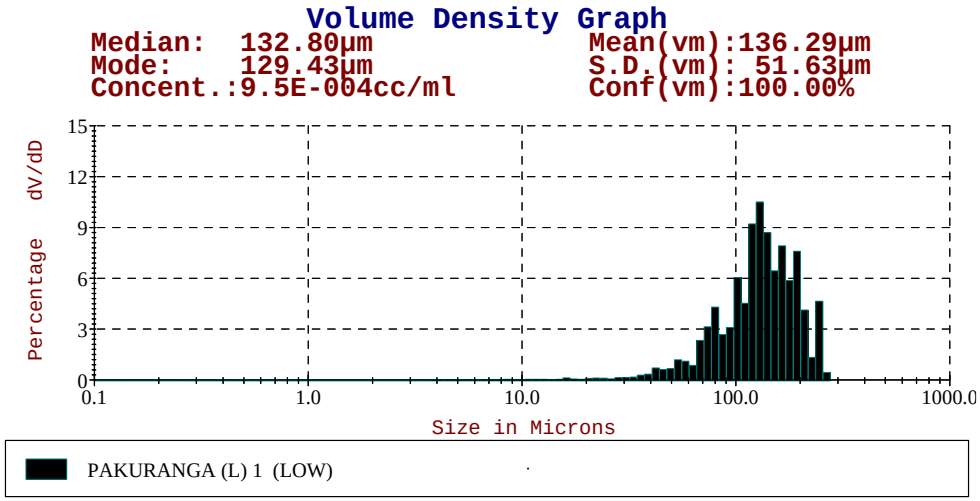

Area Ranges Table: **29/8/05 Pahurehure 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.22 | 1.22 | 98.79 |
| 3.9-7.8 | 3.22 | 4.43 | 95.57 |
| 7.8-15.6 | 5.32 | 9.75 | 90.25 |
| 15.6-31.3 | 5.94 | 15.69 | 84.31 |
| 31.3-62.5 | 9.26 | 24.95 | 75.05 |
| 62.5-125.0 | 27.45 | 52.40 | 47.60 |
| 125.0-250.0 | 45.89 | 98.29 | 1.71 |
| 250.0-500.0 | 1.71 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Pahurehure 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.03 | 0.03 | 99.97 |
| 3.9-7.8 | 0.17 | 0.20 | 99.80 |
| 7.8-15.6 | 0.54 | 0.75 | 99.25 |
| 15.6-31.3 | 1.15 | 1.90 | 98.10 |
| 31.3-62.5 | 3.93 | 5.83 | 94.18 |
| 62.5-125.0 | 23.43 | 29.26 | 70.74 |
| 125.0-250.0 | 66.39 | 95.65 | 4.35 |
| 250.0-500.0 | 4.35 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 1** low (0-300 μm).



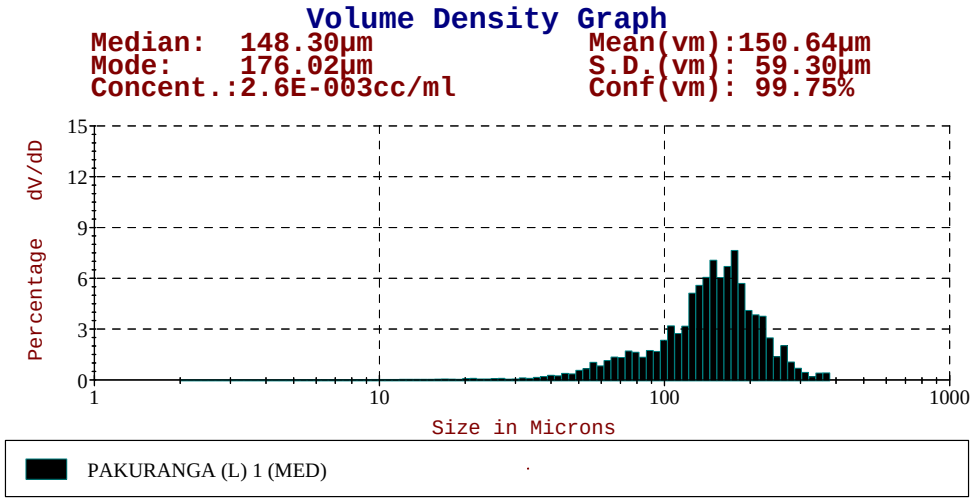

Area Ranges Table: **2/8/05 Pakuranga (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 5.52 | 5.52 | 94.48 |
| 3.9-7.8 | 1.90 | 7.42 | 92.58 |
| 7.8-15.6 | 2.37 | 9.78 | 90.22 |
| 15.6-31.3 | 3.61 | 13.39 | 86.61 |
| 31.3-62.5 | 11.52 | 24.92 | 75.08 |
| 62.5-125.0 | 39.36 | 64.27 | 35.73 |
| 125.0-250.0 | 34.37 | 98.64 | 1.36 |
| 250.0-300.0 | 1.36 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.09 | 0.09 | 99.91 |
| 3.9-7.8 | 0.10 | 0.19 | 99.81 |
| 7.8-15.6 | 0.25 | 0.44 | 99.56 |
| 15.6-31.3 | 0.79 | 1.23 | 98.77 |
| 31.3-62.5 | 5.40 | 6.63 | 93.37 |
| 62.5-125.0 | 36.28 | 42.91 | 57.09 |
| 125.0-250.0 | 53.72 | 96.63 | 3.37 |
| 250.0-300.0 | 3.37 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 1** medium (2-600 μm).



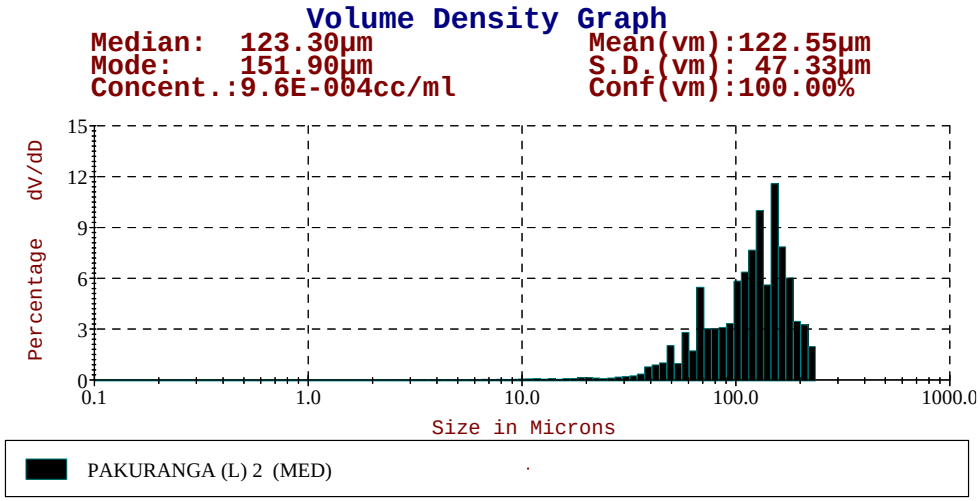

Area Ranges Table: **2/8/05 Pakuranga (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.83 | 0.83 | 99.17 |
| 3.9-7.8 | 2.07 | 2.90 | 97.10 |
| 7.8-15.6 | 3.02 | 5.92 | 94.08 |
| 15.6-31.3 | 3.80 | 9.72 | 90.28 |
| 31.3-62.5 | 12.32 | 22.04 | 77.96 |
| 62.5-125.0 | 31.81 | 53.85 | 46.15 |
| 125.0-250.0 | 43.98 | 97.84 | 2.16 |
| 250.0-500.0 | 2.16 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.10 | 0.13 | 99.87 |
| 7.8-15.6 | 0.30 | 0.42 | 99.58 |
| 15.6-31.3 | 0.73 | 1.15 | 98.85 |
| 31.3-62.5 | 5.26 | 6.41 | 93.60 |
| 62.5-125.0 | 25.52 | 31.92 | 68.08 |
| 125.0-250.0 | 62.75 | 94.67 | 5.33 |
| 250.0-500.0 | 5.33 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 2** low (0-300 μm).



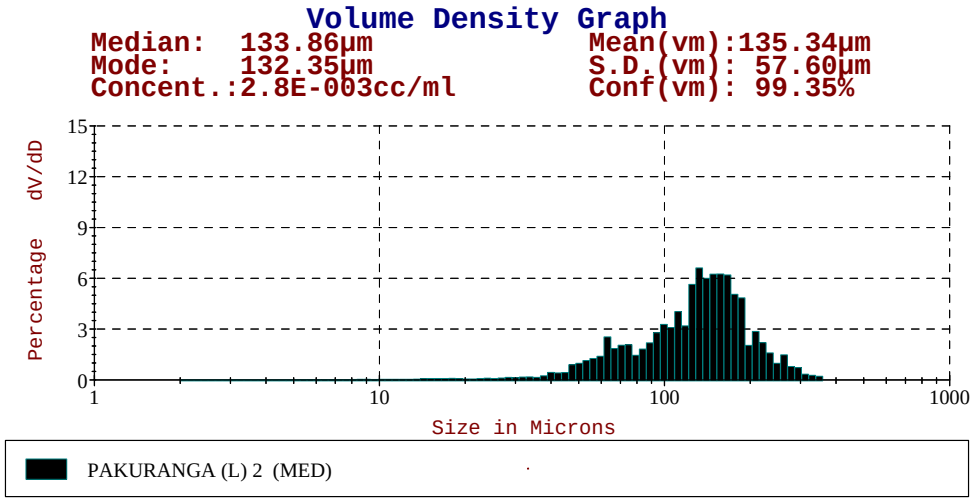

Area Ranges Table: **2/8/05 Pakuranga (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 6.35 | 6.35 | 93.65 |
| 3.9-7.8 | 2.14 | 8.48 | 91.52 |
| 7.8-15.6 | 3.31 | 11.79 | 88.21 |
| 15.6-31.3 | 3.94 | 15.73 | 84.27 |
| 31.3-62.5 | 17.65 | 33.39 | 66.61 |
| 62.5-125.0 | 38.64 | 72.03 | 27.97 |
| 125.0-250.0 | 27.97 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.11 | 0.11 | 99.89 |
| 3.9-7.8 | 0.14 | 0.25 | 99.75 |
| 7.8-15.6 | 0.41 | 0.66 | 99.34 |
| 15.6-31.3 | 0.99 | 1.65 | 98.35 |
| 31.3-62.5 | 9.65 | 11.30 | 88.70 |
| 62.5-125.0 | 39.42 | 50.72 | 49.28 |
| 125.0-250.0 | 49.28 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 2** medium (2-600 μm).



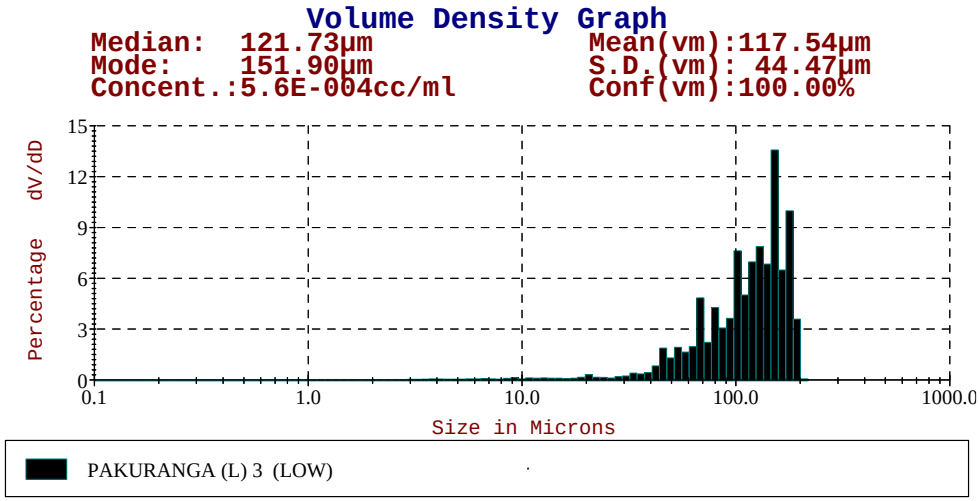

Area Ranges Table: **2/8/05 Pakuranga (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.81 | 0.81 | 99.19 |
| 3.9-7.8 | 2.16 | 2.97 | 97.03 |
| 7.8-15.6 | 4.00 | 6.97 | 93.03 |
| 15.6-31.3 | 4.93 | 11.90 | 88.10 |
| 31.3-62.5 | 17.28 | 29.18 | 70.82 |
| 62.5-125.0 | 35.40 | 64.58 | 35.42 |
| 125.0-250.0 | 33.99 | 98.57 | 1.43 |
| 250.0-500.0 | 1.43 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.03 | 0.03 | 99.97 |
| 3.9-7.8 | 0.12 | 0.15 | 99.85 |
| 7.8-15.6 | 0.46 | 0.61 | 99.39 |
| 15.6-31.3 | 1.10 | 1.71 | 98.29 |
| 31.3-62.5 | 8.57 | 10.28 | 89.72 |
| 62.5-125.0 | 31.92 | 42.20 | 57.80 |
| 125.0-250.0 | 53.83 | 96.03 | 3.97 |
| 250.0-500.0 | 3.97 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 3** low (0-300 μm).



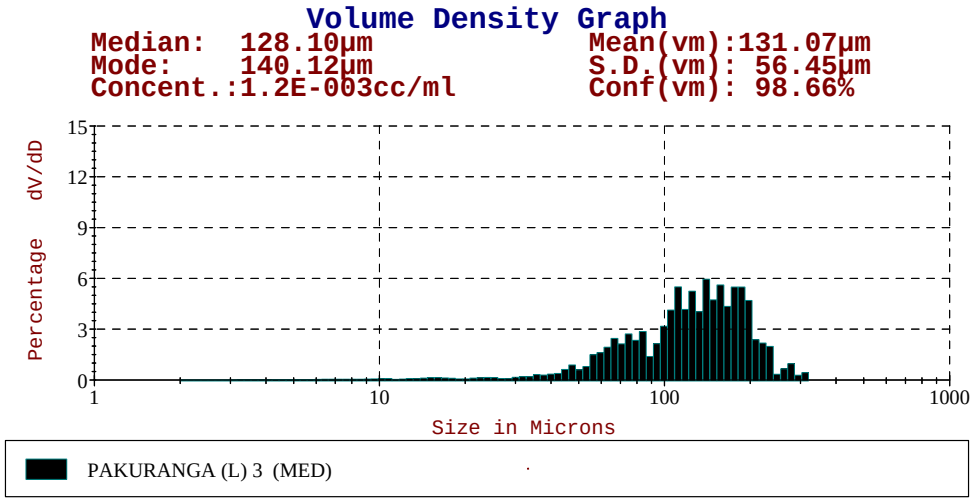

Area Ranges Table: **2/8/05 Pakuranga (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 16.53 | 16.53 | 83.47 |
| 3.9-7.8 | 5.75 | 22.28 | 77.72 |
| 7.8-15.6 | 5.45 | 27.72 | 72.28 |
| 15.6-31.3 | 4.56 | 32.28 | 67.72 |
| 31.3-62.5 | 13.99 | 46.27 | 53.73 |
| 62.5-125.0 | 30.99 | 77.26 | 22.74 |
| 125.0-250.0 | 22.74 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.40 | 0.40 | 99.60 |
| 3.9-7.8 | 0.44 | 0.84 | 99.16 |
| 7.8-15.6 | 0.83 | 1.66 | 98.34 |
| 15.6-31.3 | 1.42 | 3.08 | 96.92 |
| 31.3-62.5 | 9.33 | 12.41 | 87.59 |
| 62.5-125.0 | 39.08 | 51.49 | 48.51 |
| 125.0-250.0 | 48.51 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (L) 3** medium (2-600 μm).



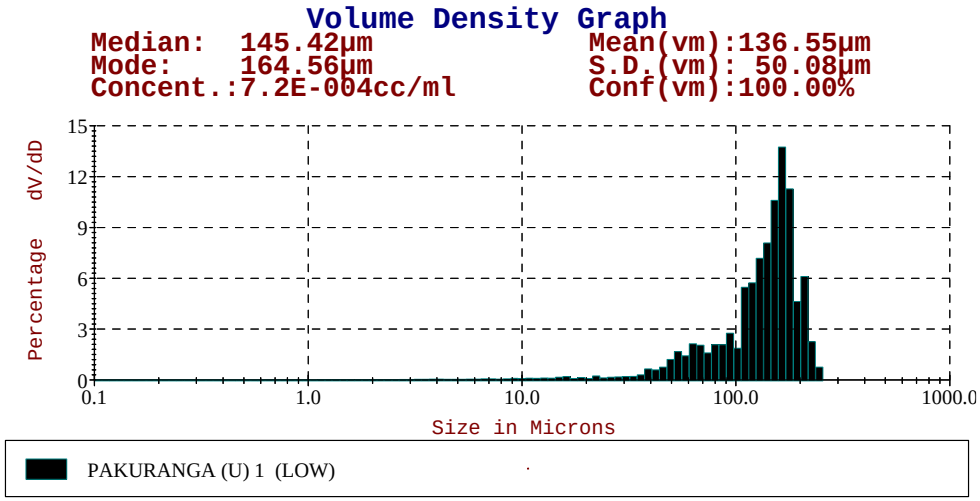

Area Ranges Table: **2/8/05 Pakuranga (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.14 | 2.14 | 97.86 |
| 3.9-7.8 | 5.36 | 7.50 | 92.50 |
| 7.8-15.6 | 6.65 | 14.15 | 85.85 |
| 15.6-31.3 | 5.55 | 19.70 | 80.31 |
| 31.3-62.5 | 15.62 | 35.31 | 64.69 |
| 62.5-125.0 | 36.95 | 72.26 | 27.74 |
| 125.0-250.0 | 26.86 | 99.12 | 0.88 |
| 250.0-500.0 | 0.88 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.34 | 0.41 | 99.59 |
| 7.8-15.6 | 0.84 | 1.26 | 98.75 |
| 15.6-31.3 | 1.34 | 2.59 | 97.41 |
| 31.3-62.5 | 8.53 | 11.12 | 88.88 |
| 62.5-125.0 | 37.54 | 48.66 | 51.34 |
| 125.0-250.0 | 48.67 | 97.33 | 2.67 |
| 250.0-500.0 | 2.67 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (U) 1** low (0-300 μm).



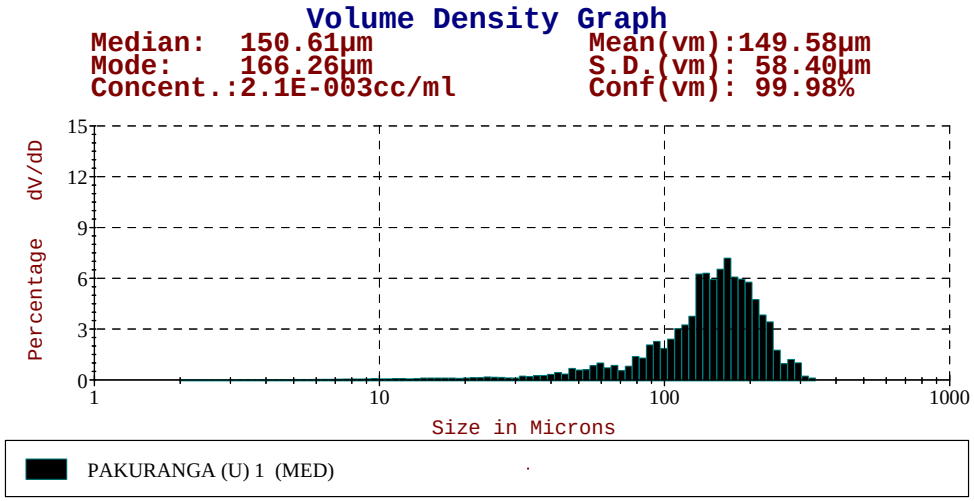

Area Ranges Table: **2/8/05 Pakuranga (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 12.51 | 12.51 | 87.49 |
| 3.9-7.8 | 5.72 | 18.22 | 81.78 |
| 7.8-15.6 | 6.14 | 24.36 | 75.64 |
| 15.6-31.3 | 4.98 | 29.35 | 70.65 |
| 31.3-62.5 | 13.67 | 43.01 | 56.99 |
| 62.5-125.0 | 23.47 | 66.48 | 33.52 |
| 125.0-250.0 | 33.52 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.27 | 0.27 | 99.73 |
| 3.9-7.8 | 0.37 | 0.65 | 99.36 |
| 7.8-15.6 | 0.81 | 1.46 | 98.54 |
| 15.6-31.3 | 1.28 | 2.74 | 97.26 |
| 31.3-62.5 | 7.81 | 10.55 | 89.45 |
| 62.5-125.0 | 25.77 | 36.33 | 63.67 |
| 125.0-250.0 | 63.68 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (U) 1** medium (2-600 μm).




Area Ranges Table: **2/8/05 Pakuranga (U) 1**

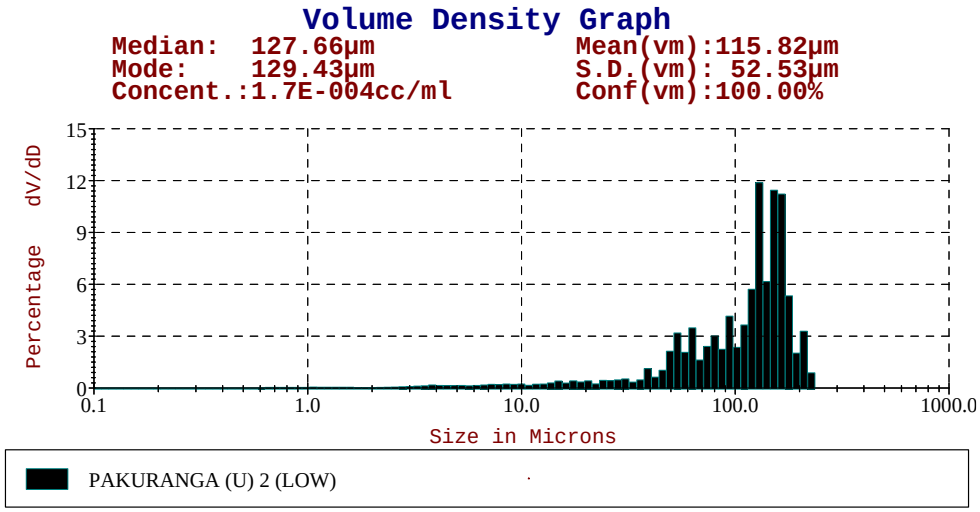
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.16 | 2.16 | 97.84 |
| 3.9-7.8 | 5.72 | 7.88 | 92.12 |
| 7.8-15.6 | 7.98 | 15.86 | 84.14 |
| 15.6-31.3 | 7.05 | 22.91 | 77.09 |
| 31.3-62.5 | 12.63 | 35.54 | 64.46 |
| 62.5-125.0 | 23.31 | 58.85 | 41.15 |
| 125.0-250.0 | 39.76 | 98.60 | 1.40 |
| 250.0-500.0 | 1.40 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.33 | 0.40 | 99.60 |
| 7.8-15.6 | 0.88 | 1.28 | 98.72 |
| 15.6-31.3 | 1.53 | 2.81 | 97.19 |
| 31.3-62.5 | 5.92 | 8.72 | 91.28 |
| 62.5-125.0 | 21.90 | 30.62 | 69.38 |
| 125.0-250.0 | 65.58 | 96.20 | 3.80 |
| 250.0-500.0 | 3.80 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

## Particle Size

Volume Distribution: Sample **2/8/05 Pakuranga (U) 2** low (0-300 µm).



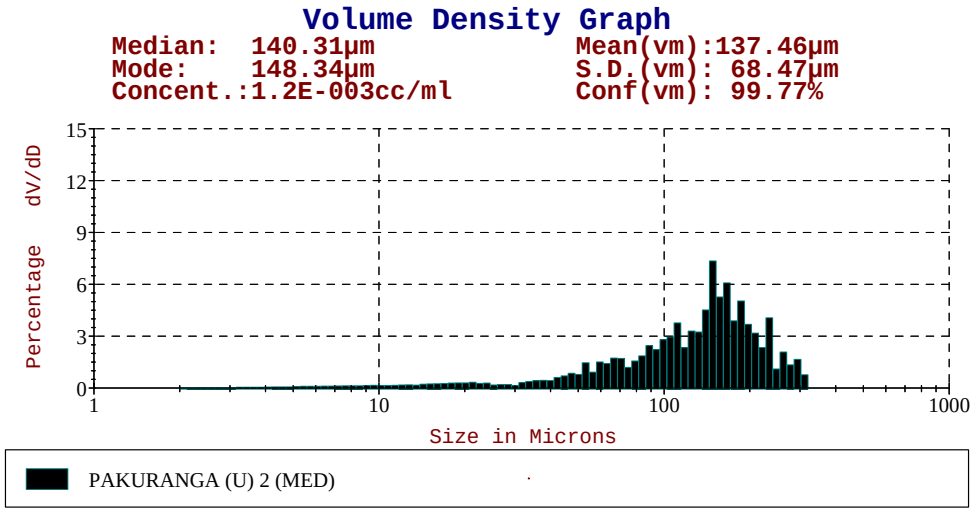

Area Ranges Table: **2/8/05 Pakuranga (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 31.43 | 31.43 | 68.57 |
| 3.9-7.8 | 10.77 | 42.21 | 57.79 |
| 7.8-15.6 | 8.59 | 50.80 | 49.20 |
| 15.6-31.3 | 7.12 | 57.92 | 42.08 |
| 31.3-62.5 | 11.55 | 69.48 | 30.52 |
| 62.5-125.0 | 14.59 | 84.06 | 15.94 |
| 125.0-250.0 | 15.94 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.10 | 1.10 | 98.90 |
| 3.9-7.8 | 1.27 | 2.36 | 97.64 |
| 7.8-15.6 | 2.05 | 4.42 | 95.58 |
| 15.6-31.3 | 3.38 | 7.80 | 92.20 |
| 31.3-62.5 | 11.92 | 19.72 | 80.28 |
| 62.5-125.0 | 28.07 | 47.79 | 52.21 |
| 125.0-250.0 | 52.21 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (U) 2** medium (2-600 μm).



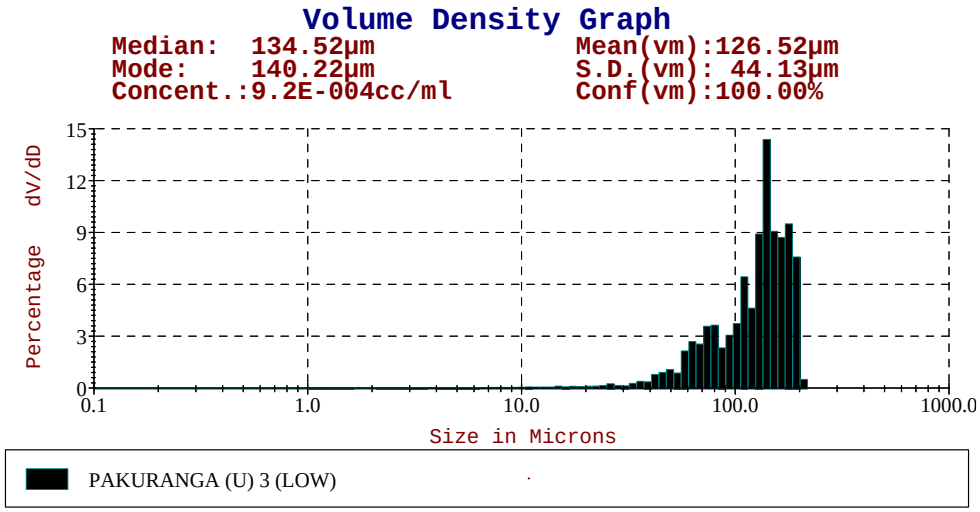

Area Ranges Table: **2/8/05 Pakuranga (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 5.19 | 5.19 | 94.81 |
| 3.9-7.8 | 12.96 | 18.15 | 81.85 |
| 7.8-15.6 | 12.70 | 30.85 | 69.15 |
| 15.6-31.3 | 10.25 | 41.10 | 58.90 |
| 31.3-62.5 | 14.10 | 55.20 | 44.80 |
| 62.5-125.0 | 22.10 | 77.30 | 22.70 |
| 125.0-250.0 | 21.10 | 98.40 | 1.60 |
| 250.0-500.0 | 1.60 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.23 | 0.23 | 99.77 |
| 3.9-7.8 | 1.04 | 1.26 | 98.74 |
| 7.8-15.6 | 1.98 | 3.24 | 96.76 |
| 15.6-31.3 | 3.00 | 6.24 | 93.76 |
| 31.3-62.5 | 9.35 | 15.59 | 84.41 |
| 62.5-125.0 | 28.46 | 44.05 | 55.95 |
| 125.0-250.0 | 49.79 | 93.84 | 6.16 |
| 250.0-500.0 | 6.16 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (U) 3** low (0-300 µm).



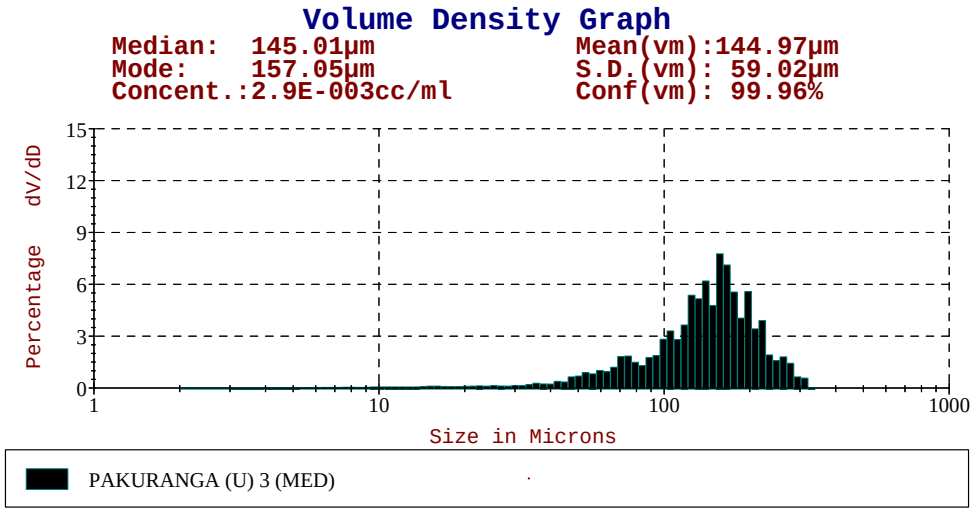

Area Ranges Table: **2/8/05 Pakuranga (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 7.99 | 7.99 | 92.01 |
| 3.9-7.8 | 3.05 | 11.04 | 88.96 |
| 7.8-15.6 | 3.70 | 14.74 | 85.26 |
| 15.6-31.3 | 4.26 | 19.00 | 81.00 |
| 31.3-62.5 | 15.31 | 34.31 | 65.69 |
| 62.5-125.0 | 31.77 | 66.08 | 33.92 |
| 125.0-250.0 | 33.92 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.15 | 0.15 | 99.85 |
| 3.9-7.8 | 0.19 | 0.34 | 99.66 |
| 7.8-15.6 | 0.47 | 0.81 | 99.19 |
| 15.6-31.3 | 1.07 | 1.87 | 98.13 |
| 31.3-62.5 | 8.40 | 10.28 | 89.72 |
| 62.5-125.0 | 32.07 | 42.35 | 57.65 |
| 125.0-250.0 | 57.65 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **2/8/05 Pakuranga (U) 3** medium (2-600 µm).



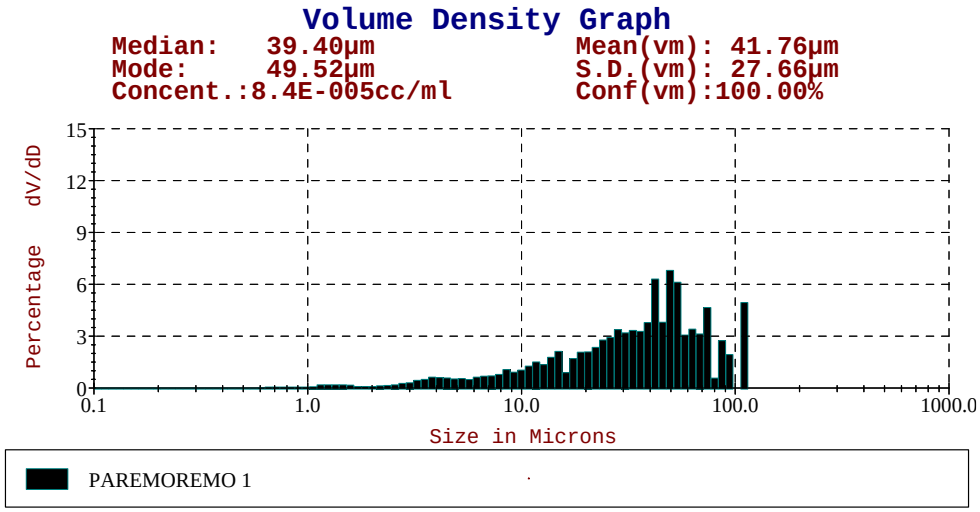

Area Ranges Table: **2/8/05 Pakuranga (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.11 | 2.11 | 97.89 |
| 3.9-7.8 | 5.10 | 7.20 | 92.80 |
| 7.8-15.6 | 6.53 | 13.73 | 86.27 |
| 15.6-31.3 | 6.03 | 19.76 | 80.24 |
| 31.3-62.5 | 13.07 | 32.83 | 67.17 |
| 62.5-125.0 | 29.71 | 62.54 | 37.46 |
| 125.0-250.0 | 35.68 | 98.22 | 1.78 |
| 250.0-500.0 | 1.78 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **2/8/05 Pakuranga (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.29 | 0.36 | 99.64 |
| 7.8-15.6 | 0.74 | 1.10 | 98.90 |
| 15.6-31.3 | 1.32 | 2.42 | 97.58 |
| 31.3-62.5 | 6.30 | 8.72 | 91.28 |
| 62.5-125.0 | 27.79 | 36.51 | 63.49 |
| 125.0-250.0 | 58.66 | 95.17 | 4.83 |
| 250.0-500.0 | 4.83 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **16/8/05 Paremoremo 1** low (0-300 μm).



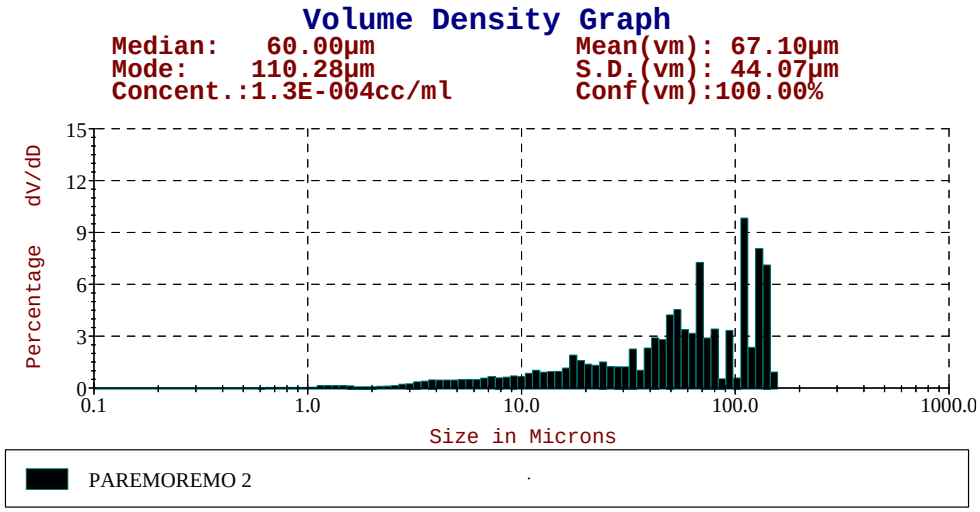

Area Ranges Table: **16/8/05 Paremoremo 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 32.88 | 32.88 | 67.12 |
| 3.9-7.8 | 15.37 | 48.26 | 51.74 |
| 7.8-15.6 | 17.18 | 65.44 | 34.56 |
| 15.6-31.3 | 15.36 | 80.80 | 19.20 |
| 31.3-62.5 | 15.20 | 96.00 | 4.00 |
| 62.5-125.0 | 4.00 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Paremoremo 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 3.70 | 3.70 | 96.30 |
| 3.9-7.8 | 4.95 | 8.65 | 91.35 |
| 7.8-15.6 | 11.45 | 20.10 | 79.90 |
| 15.6-31.3 | 20.75 | 40.85 | 59.15 |
| 31.3-62.5 | 39.72 | 80.57 | 19.43 |
| 62.5-125.0 | 19.44 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **16/8/05 Paremoremo 2** low (0-300 μm).



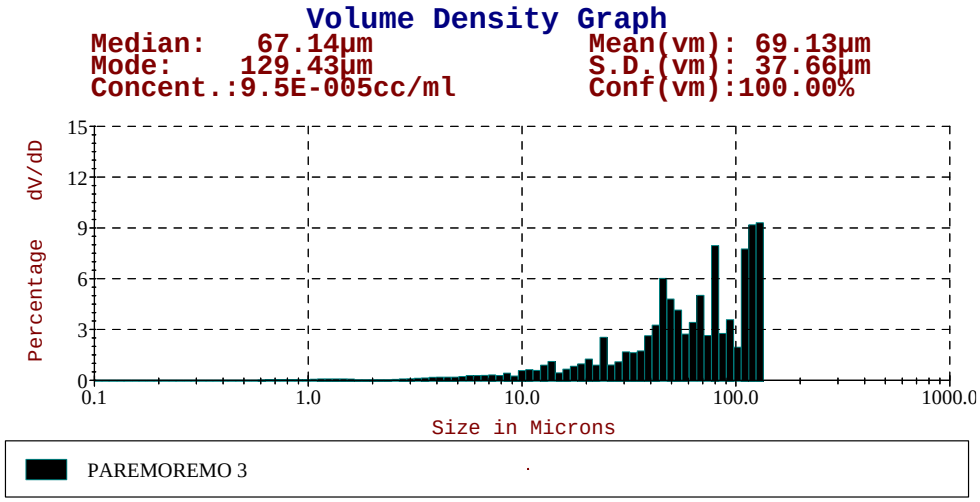

Area Ranges Table: **16/8/05 Paremoremo 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 31.67 | 31.67 | 68.33 |
| 3.9-7.8 | 17.28 | 48.95 | 51.05 |
| 7.8-15.6 | 14.31 | 63.26 | 36.74 |
| 15.6-31.3 | 12.89 | 76.15 | 23.85 |
| 31.3-62.5 | 12.92 | 89.07 | 10.93 |
| 62.5-125.0 | 8.20 | 97.27 | 2.73 |
| 125.0-250.0 | 2.73 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Paremoremo 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 2.81 | 2.81 | 97.19 |
| 3.9-7.8 | 4.21 | 7.02 | 92.98 |
| 7.8-15.6 | 7.03 | 14.05 | 85.95 |
| 15.6-31.3 | 12.08 | 26.13 | 73.88 |
| 31.3-62.5 | 26.26 | 52.38 | 47.62 |
| 62.5-125.0 | 31.32 | 83.70 | 16.30 |
| 125.0-250.0 | 16.30 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **16/8/05 Paremoremo 3** low (0-300 μm).



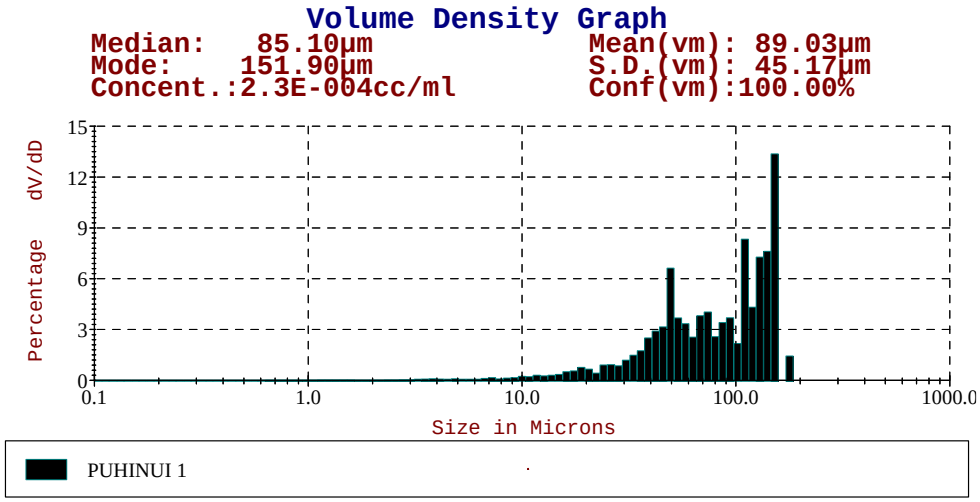

Area Ranges Table: **16/8/05 Paremoremo 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 26.12 | 26.12 | 73.88 |
| 3.9-7.8 | 10.76 | 36.87 | 63.13 |
| 7.8-15.6 | 13.35 | 50.22 | 49.78 |
| 15.6-31.3 | 13.84 | 64.07 | 35.93 |
| 31.3-62.5 | 18.56 | 82.63 | 17.37 |
| 62.5-125.0 | 15.94 | 98.57 | 1.43 |
| 125.0-250.0 | 1.43 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **16/8/05 Paremoremo 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.34 | 1.34 | 98.67 |
| 3.9-7.8 | 2.00 | 3.33 | 96.67 |
| 7.8-15.6 | 5.02 | 8.35 | 91.65 |
| 15.6-31.3 | 10.30 | 18.65 | 81.35 |
| 31.3-62.5 | 27.60 | 46.25 | 53.75 |
| 62.5-125.0 | 47.75 | 94.00 | 6.00 |
| 125.0-250.0 | 6.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Puhinui 1** low (0-300 μm).



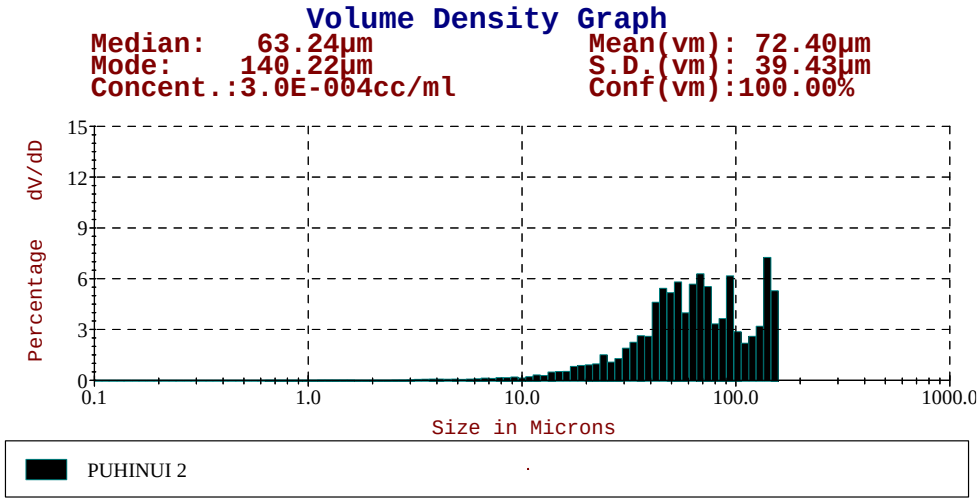

Area Ranges Table: **29/8/05 Puhinui 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 14.14 | 14.14 | 85.86 |
| 3.9-7.8 | 5.91 | 20.05 | 79.95 |
| 7.8-15.6 | 8.50 | 28.55 | 71.45 |
| 15.6-31.3 | 13.98 | 42.54 | 57.46 |
| 31.3-62.5 | 29.23 | 71.76 | 28.24 |
| 62.5-125.0 | 18.32 | 90.08 | 9.92 |
| 125.0-250.0 | 9.92 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Puhinui 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.51 | 0.51 | 99.49 |
| 3.9-7.8 | 0.68 | 1.19 | 98.81 |
| 7.8-15.6 | 2.00 | 3.19 | 96.81 |
| 15.6-31.3 | 6.44 | 9.63 | 90.37 |
| 31.3-62.5 | 27.56 | 37.18 | 62.82 |
| 62.5-125.0 | 33.82 | 71.01 | 28.99 |
| 125.0-250.0 | 28.99 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Puhinui 2** low (0-300 μm).



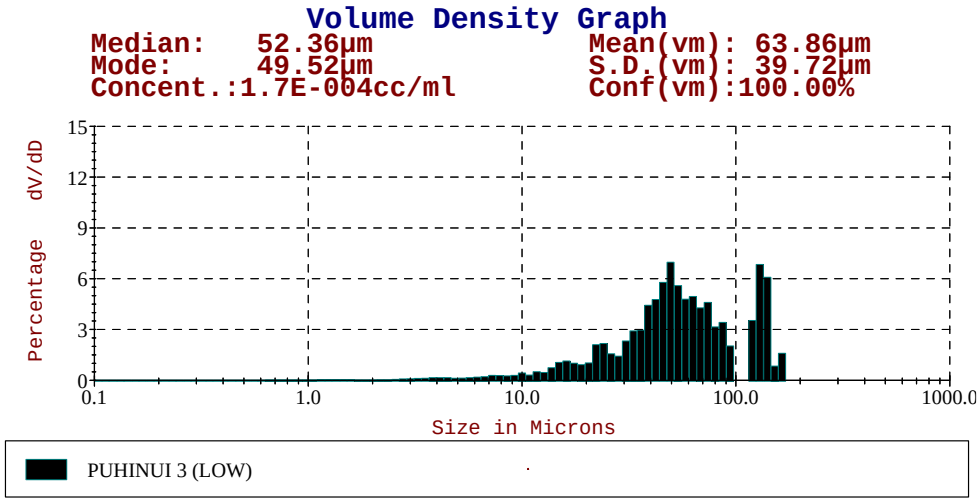

Area Ranges Table: **29/8/05 Puhinui 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 11.41 | 11.41 | 88.59 |
| 3.9-7.8 | 5.35 | 16.76 | 83.24 |
| 7.8-15.6 | 8.84 | 25.60 | 74.40 |
| 15.6-31.3 | 17.39 | 42.99 | 57.01 |
| 31.3-62.5 | 33.12 | 76.11 | 23.89 |
| 62.5-125.0 | 19.11 | 95.21 | 4.79 |
| 125.0-250.0 | 4.79 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Puhinui 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.46 | 0.46 | 99.54 |
| 3.9-7.8 | 0.71 | 1.17 | 98.83 |
| 7.8-15.6 | 2.42 | 3.59 | 96.41 |
| 15.6-31.3 | 9.27 | 12.86 | 87.14 |
| 31.3-62.5 | 35.16 | 48.02 | 51.98 |
| 62.5-125.0 | 36.17 | 84.19 | 15.81 |
| 125.0-250.0 | 15.81 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **29/8/05 Puhinui 3** low (0-300 μm).



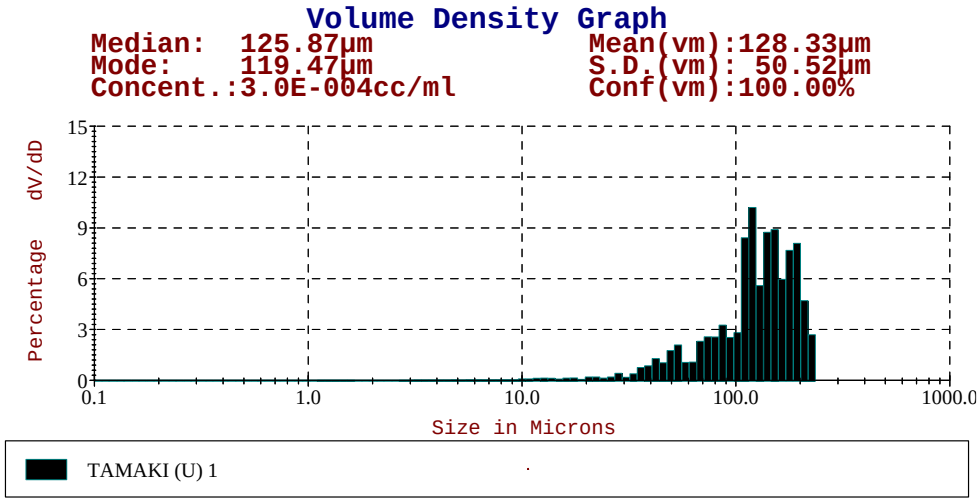

Area Ranges Table: **29/8/05 Puhinui 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 17.08 | 17.08 | 82.92 |
| 3.9-7.8 | 8.63 | 25.70 | 74.30 |
| 7.8-15.6 | 11.82 | 37.53 | 62.47 |
| 15.6-31.3 | 18.81 | 56.33 | 43.67 |
| 31.3-62.5 | 30.03 | 86.36 | 13.64 |
| 62.5-125.0 | 9.92 | 96.28 | 3.72 |
| 125.0-250.0 | 3.72 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **29/8/05 Puhinui 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.96 | 0.96 | 99.04 |
| 3.9-7.8 | 1.49 | 2.45 | 97.55 |
| 7.8-15.6 | 4.24 | 6.69 | 93.31 |
| 15.6-31.3 | 12.88 | 19.57 | 80.43 |
| 31.3-62.5 | 41.20 | 60.77 | 39.23 |
| 62.5-125.0 | 23.78 | 84.55 | 15.45 |
| 125.0-250.0 | 15.45 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **02/8/05 Tamaki (U) 1** low (0-300 µm).



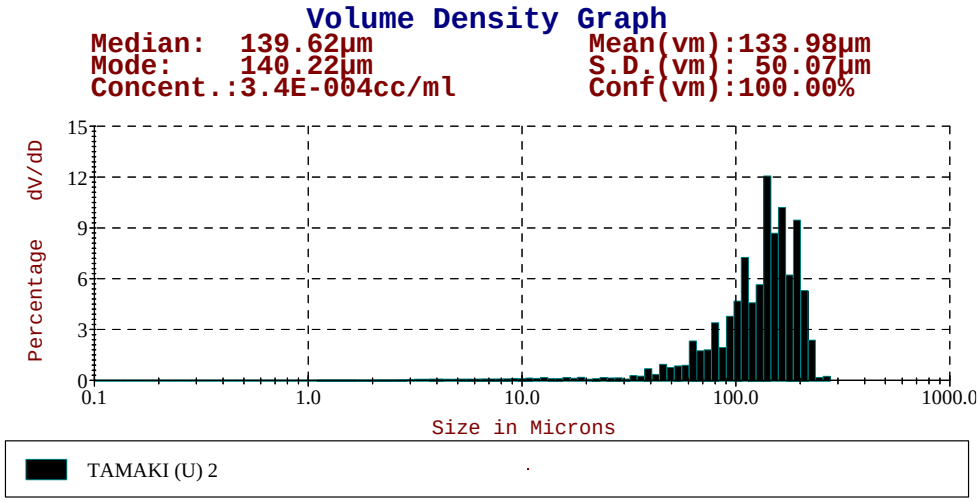

Area Ranges Table: **02/8/05 Tamaki (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 10.27 | 10.27 | 89.73 |
| 3.9-7.8 | 3.71 | 13.97 | 86.03 |
| 7.8-15.6 | 4.98 | 18.95 | 81.05 |
| 15.6-31.3 | 5.66 | 24.61 | 75.39 |
| 31.3-62.5 | 18.18 | 42.79 | 57.21 |
| 62.5-125.0 | 30.33 | 73.11 | 26.89 |
| 125.0-250.0 | 26.89 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **02/8/05 Tamaki (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.19 | 0.19 | 99.81 |
| 3.9-7.8 | 0.24 | 0.44 | 99.56 |
| 7.8-15.6 | 0.68 | 1.12 | 98.88 |
| 15.6-31.3 | 1.55 | 2.67 | 97.33 |
| 31.3-62.5 | 10.11 | 12.78 | 87.22 |
| 62.5-125.0 | 35.17 | 47.95 | 52.05 |
| 125.0-250.0 | 52.05 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **02/8/05 Tamaki (U) 2** low (0-300 µm).



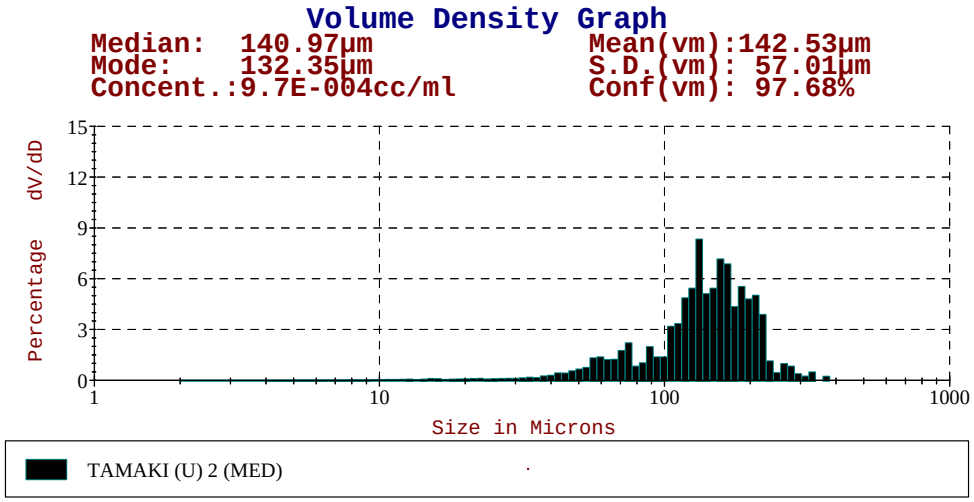

Area Ranges Table: **02/8/05 Tamaki (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 17.43 | 17.43 | 82.57 |
| 3.9-7.8 | 8.23 | 25.66 | 74.34 |
| 7.8-15.6 | 6.62 | 32.27 | 67.73 |
| 15.6-31.3 | 4.00 | 36.27 | 63.73 |
| 31.3-62.5 | 9.87 | 46.14 | 53.86 |
| 62.5-125.0 | 25.18 | 71.32 | 28.68 |
| 125.0-250.0 | 28.62 | 99.93 | 0.07 |
| 250.0-300.0 | 0.07 | 100.00 | 0.00 |

Volume Ranges Table: **02/8/05 Tamaki (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.47 | 0.47 | 99.53 |
| 3.9-7.8 | 0.58 | 1.05 | 98.95 |
| 7.8-15.6 | 0.94 | 1.99 | 98.01 |
| 15.6-31.3 | 1.10 | 3.08 | 96.92 |
| 31.3-62.5 | 6.14 | 9.22 | 90.78 |
| 62.5-125.0 | 30.57 | 39.79 | 60.21 |
| 125.0-250.0 | 59.98 | 99.77 | 0.23 |
| 250.0-300.0 | 0.23 | 100.00 | 0.00 |

Volume Distribution: Sample **02/8/05 Tamaki (U) 2** medium (2-600 μm).



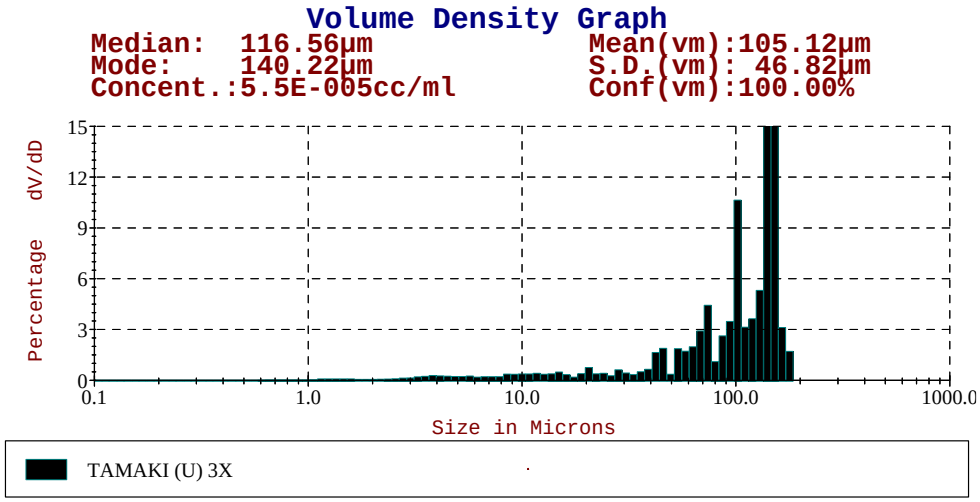

Area Ranges Table: **02/8/05 Tamaki (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.64 | 1.64 | 98.36 |
| 3.9-7.8 | 3.51 | 5.15 | 94.85 |
| 7.8-15.6 | 5.92 | 11.07 | 88.93 |
| 15.6-31.3 | 5.37 | 16.43 | 83.57 |
| 31.3-62.5 | 14.59 | 31.02 | 68.98 |
| 62.5-125.0 | 28.94 | 59.96 | 40.04 |
| 125.0-250.0 | 38.90 | 98.86 | 1.14 |
| 250.0-500.0 | 1.14 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **02/8/05 Tamaki (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.20 | 0.25 | 99.75 |
| 7.8-15.6 | 0.66 | 0.91 | 99.09 |
| 15.6-31.3 | 1.16 | 2.07 | 97.93 |
| 31.3-62.5 | 7.01 | 9.08 | 90.92 |
| 62.5-125.0 | 26.35 | 35.43 | 64.57 |
| 125.0-250.0 | 61.37 | 96.80 | 3.20 |
| 250.0-500.0 | 3.20 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **02/8/05 Tamaki (U) 3** low (0-300 µm).



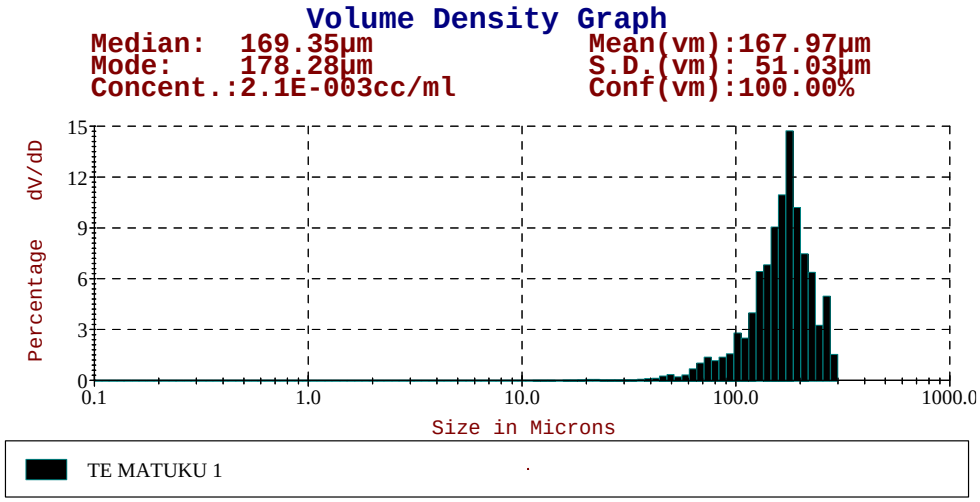

Area Ranges Table: **02/8/05 Tamaki (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 34.13 | 34.13 | 65.87 |
| 3.9-7.8 | 13.15 | 47.28 | 52.72 |
| 7.8-15.6 | 11.24 | 58.52 | 41.48 |
| 15.6-31.3 | 6.37 | 64.89 | 35.11 |
| 31.3-62.5 | 8.08 | 72.96 | 27.04 |
| 62.5-125.0 | 14.55 | 87.51 | 12.49 |
| 125.0-250.0 | 12.49 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **02/8/05 Tamaki (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.71 | 1.71 | 98.29 |
| 3.9-7.8 | 1.80 | 3.51 | 96.49 |
| 7.8-15.6 | 3.17 | 6.68 | 93.32 |
| 15.6-31.3 | 3.62 | 10.30 | 89.70 |
| 31.3-62.5 | 9.70 | 20.00 | 80.00 |
| 62.5-125.0 | 33.44 | 53.44 | 46.56 |
| 125.0-250.0 | 46.56 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 1** low (0-300 µm).



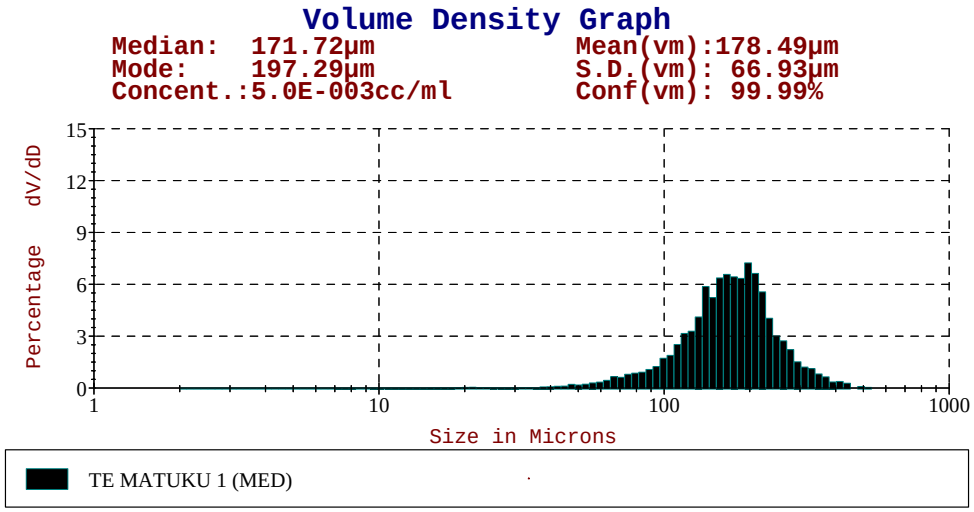

Area Ranges Table: **31/8/05 Te Matuku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.20 | 1.20 | 98.80 |
| 3.9-7.8 | 0.55 | 1.75 | 98.25 |
| 7.8-15.6 | 0.88 | 2.63 | 97.37 |
| 15.6-31.3 | 2.00 | 4.63 | 95.37 |
| 31.3-62.5 | 4.84 | 9.47 | 90.53 |
| 62.5-125.0 | 24.63 | 34.11 | 65.89 |
| 125.0-250.0 | 62.12 | 96.23 | 3.77 |
| 250.0-300.0 | 3.77 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.02 | 0.02 | 99.99 |
| 3.9-7.8 | 0.02 | 0.04 | 99.96 |
| 7.8-15.6 | 0.07 | 0.11 | 99.89 |
| 15.6-31.3 | 0.30 | 0.41 | 99.59 |
| 31.3-62.5 | 1.67 | 2.08 | 97.92 |
| 62.5-125.0 | 16.37 | 18.45 | 81.55 |
| 125.0-250.0 | 74.53 | 92.98 | 7.02 |
| 250.0-300.0 | 7.02 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 1** medium (2-600 μm).



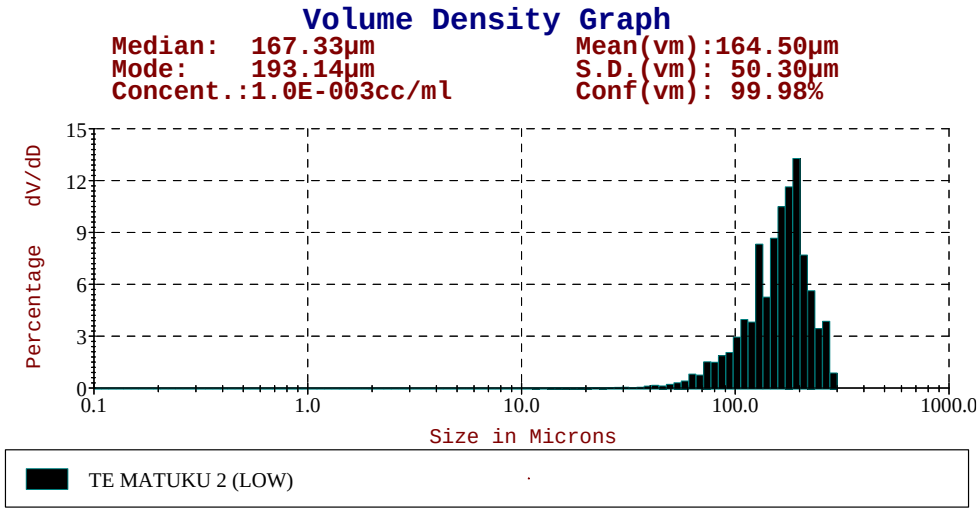

Area Ranges Table: **31/8/05 Te Matuku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.31 | 0.31 | 99.69 |
| 3.9-7.8 | 0.85 | 1.17 | 98.83 |
| 7.8-15.6 | 1.10 | 2.26 | 97.74 |
| 15.6-31.3 | 2.05 | 4.31 | 95.69 |
| 31.3-62.5 | 5.40 | 9.71 | 90.29 |
| 62.5-125.0 | 26.41 | 36.11 | 63.89 |
| 125.0-250.0 | 57.81 | 93.92 | 6.08 |
| 250.0-500.0 | 6.07 | 99.99 | 0.01 |
| 500.0-600.0 | 0.01 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.03 | 0.04 | 99.96 |
| 7.8-15.6 | 0.09 | 0.13 | 99.87 |
| 15.6-31.3 | 0.30 | 0.43 | 99.57 |
| 31.3-62.5 | 1.85 | 2.28 | 97.72 |
| 62.5-125.0 | 17.40 | 19.68 | 80.32 |
| 125.0-250.0 | 68.08 | 87.75 | 12.25 |
| 250.0-500.0 | 12.21 | 99.97 | 0.03 |
| 500.0-600.0 | 0.03 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 2** low (0-300 µm).



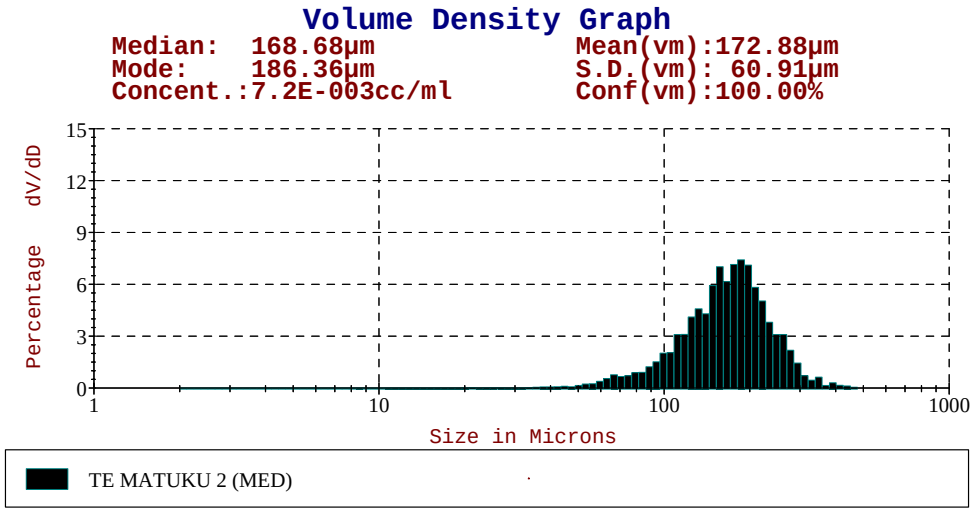

Area Ranges Table: **31/8/05 Te Matuku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.95 | 1.95 | 98.05 |
| 3.9-7.8 | 0.60 | 2.55 | 97.45 |
| 7.8-15.6 | 0.61 | 3.15 | 96.85 |
| 15.6-31.3 | 1.04 | 4.19 | 95.81 |
| 31.3-62.5 | 4.29 | 8.48 | 91.52 |
| 62.5-125.0 | 28.89 | 37.38 | 62.62 |
| 125.0-250.0 | 59.05 | 96.43 | 3.57 |
| 250.0-300.0 | 3.57 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.02 | 0.04 | 99.96 |
| 7.8-15.6 | 0.05 | 0.10 | 99.90 |
| 15.6-31.3 | 0.17 | 0.27 | 99.73 |
| 31.3-62.5 | 1.52 | 1.78 | 98.22 |
| 62.5-125.0 | 19.69 | 21.48 | 78.52 |
| 125.0-250.0 | 71.84 | 93.32 | 6.68 |
| 250.0-300.0 | 6.69 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 2** medium (2-600 μm).



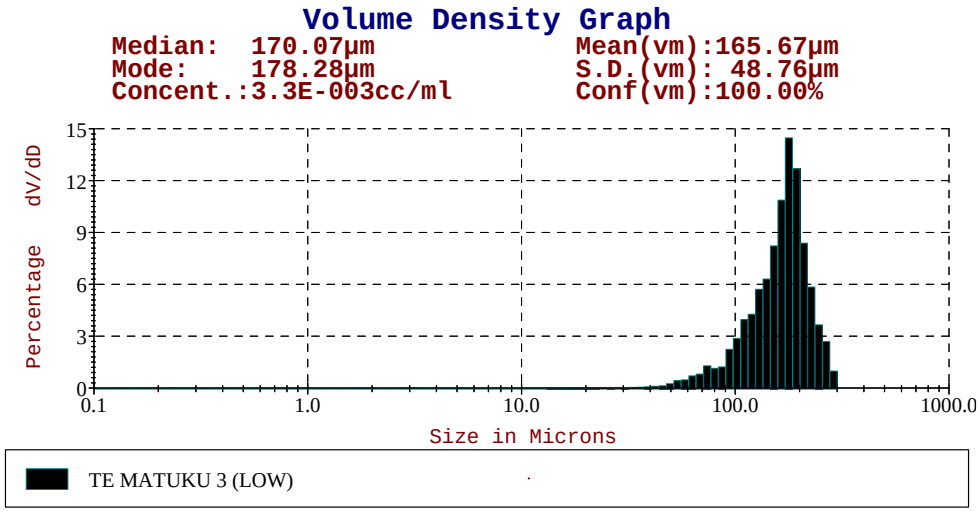

Area Ranges Table: **31/8/05 Te Matuku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.22 | 0.22 | 99.78 |
| 3.9-7.8 | 0.63 | 0.85 | 99.15 |
| 7.8-15.6 | 0.89 | 1.74 | 98.26 |
| 15.6-31.3 | 1.01 | 2.75 | 97.25 |
| 31.3-62.5 | 4.76 | 7.51 | 92.49 |
| 62.5-125.0 | 28.69 | 36.20 | 63.80 |
| 125.0-250.0 | 58.54 | 94.74 | 5.26 |
| 250.0-500.0 | 5.26 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 100.00 |
| 3.9-7.8 | 0.03 | 0.03 | 99.97 |
| 7.8-15.6 | 0.07 | 0.10 | 99.90 |
| 15.6-31.3 | 0.15 | 0.25 | 99.75 |
| 31.3-62.5 | 1.67 | 1.92 | 98.08 |
| 62.5-125.0 | 18.98 | 20.90 | 79.10 |
| 125.0-250.0 | 68.85 | 89.75 | 10.25 |
| 250.0-500.0 | 10.25 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 3** low (0-300 µm).



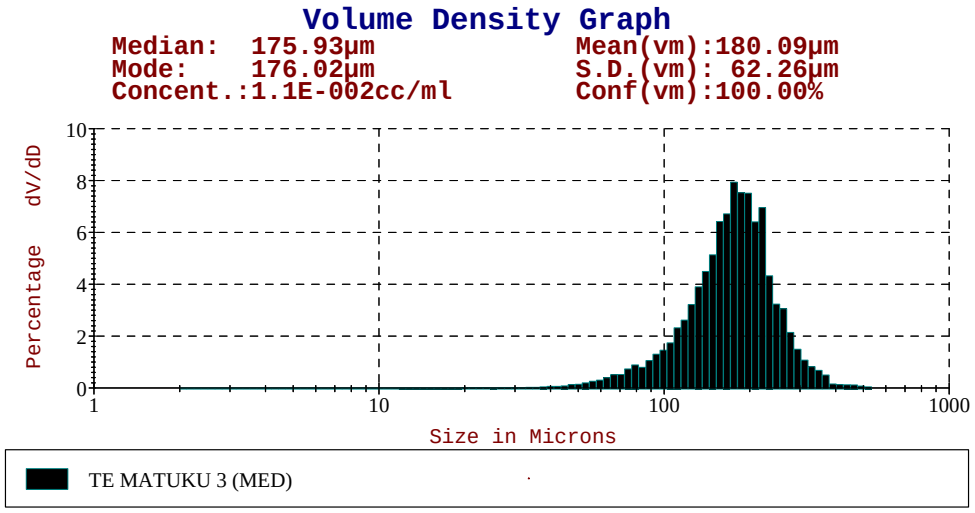

Area Ranges Table: **31/8/05 Te Matuku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.71 | 0.71 | 99.29 |
| 3.9-7.8 | 0.30 | 1.01 | 98.99 |
| 7.8-15.6 | 0.44 | 1.45 | 98.55 |
| 15.6-31.3 | 0.88 | 2.33 | 97.67 |
| 31.3-62.5 | 4.99 | 7.32 | 92.68 |
| 62.5-125.0 | 27.48 | 34.80 | 65.20 |
| 125.0-250.0 | 62.59 | 97.38 | 2.62 |
| 250.0-300.0 | 2.62 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.04 | 0.06 | 99.94 |
| 15.6-31.3 | 0.14 | 0.19 | 99.81 |
| 31.3-62.5 | 1.77 | 1.96 | 98.04 |
| 62.5-125.0 | 18.39 | 20.35 | 79.65 |
| 125.0-250.0 | 74.84 | 95.20 | 4.80 |
| 250.0-300.0 | 4.80 | 100.00 | 0.00 |

Volume Distribution: Sample **31/8/05 Te Matuku 3** medium (2-600 μm).



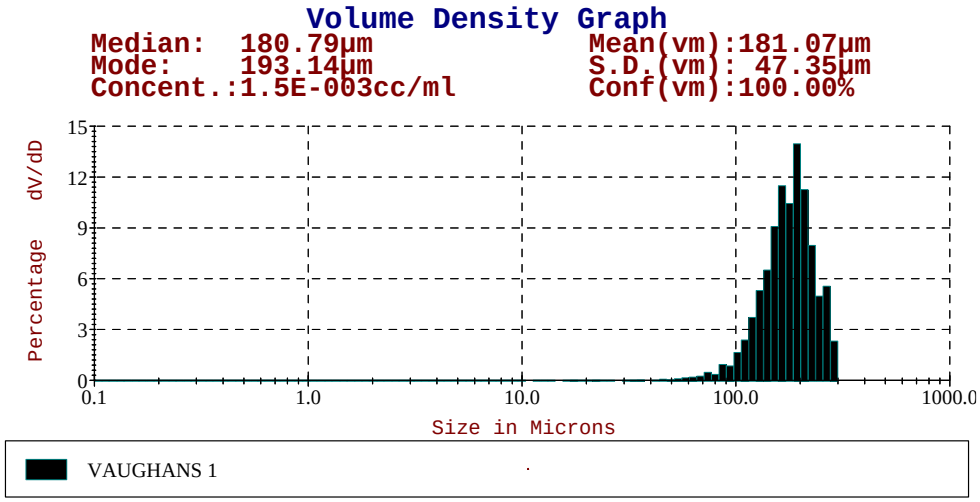

Area Ranges Table: **31/8/05 Te Matuku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.12 | 0.12 | 99.88 |
| 3.9-7.8 | 0.35 | 0.47 | 99.53 |
| 7.8-15.6 | 0.53 | 1.00 | 99.00 |
| 15.6-31.3 | 0.84 | 1.84 | 98.16 |
| 31.3-62.5 | 4.47 | 6.31 | 93.69 |
| 62.5-125.0 | 24.84 | 31.14 | 68.86 |
| 125.0-250.0 | 62.62 | 93.76 | 6.24 |
| 250.0-500.0 | 6.23 | 99.99 | 0.01 |
| 500.0-600.0 | 0.01 | 100.00 | 0.00 |

Volume Ranges Table: **31/8/05 Te Matuku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.04 | 0.06 | 99.94 |
| 15.6-31.3 | 0.13 | 0.18 | 99.82 |
| 31.3-62.5 | 1.48 | 1.66 | 98.34 |
| 62.5-125.0 | 15.57 | 17.23 | 82.77 |
| 125.0-250.0 | 71.09 | 88.32 | 11.68 |
| 250.0-500.0 | 11.64 | 99.96 | 0.04 |
| 500.0-600.0 | 0.04 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 1** low (0-300 µm).



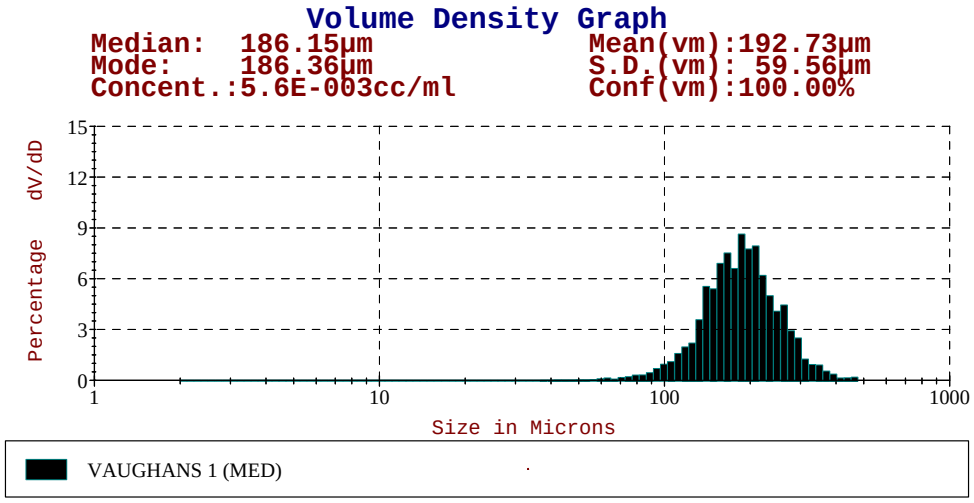

Area Ranges Table: **1/8/05 Vaughans 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.34 | 0.34 | 99.66 |
| 3.9-7.8 | 0.14 | 0.49 | 99.51 |
| 7.8-15.6 | 0.21 | 0.70 | 99.30 |
| 15.6-31.3 | 0.32 | 1.02 | 98.99 |
| 31.3-62.5 | 1.40 | 2.41 | 97.59 |
| 62.5-125.0 | 17.61 | 20.02 | 79.98 |
| 125.0-250.0 | 74.56 | 94.58 | 5.42 |
| 250.0-300.0 | 5.42 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.02 | 99.98 |
| 15.6-31.3 | 0.04 | 0.06 | 99.94 |
| 31.3-62.5 | 0.44 | 0.51 | 99.49 |
| 62.5-125.0 | 10.95 | 11.46 | 88.54 |
| 125.0-250.0 | 79.68 | 91.14 | 8.86 |
| 250.0-300.0 | 8.86 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 1** medium (2-600 µm).



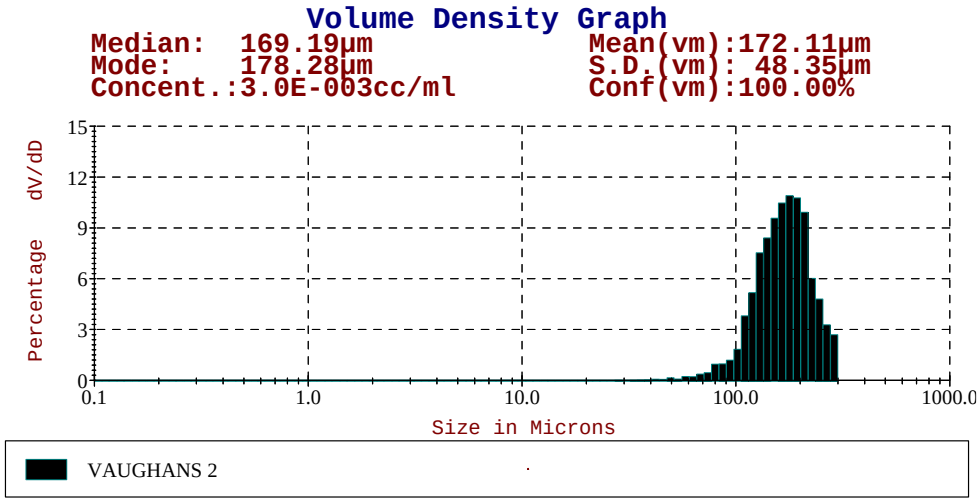

Area Ranges Table: **1/8/05 Vaughans 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.06 | 0.06 | 99.94 |
| 3.9-7.8 | 0.19 | 0.26 | 99.75 |
| 7.8-15.6 | 0.29 | 0.55 | 99.45 |
| 15.6-31.3 | 0.32 | 0.87 | 99.13 |
| 31.3-62.5 | 1.19 | 2.05 | 97.95 |
| 62.5-125.0 | 15.02 | 17.07 | 82.93 |
| 125.0-250.0 | 73.37 | 90.44 | 9.56 |
| 250.0-500.0 | 9.56 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.03 | 99.97 |
| 15.6-31.3 | 0.04 | 0.07 | 99.93 |
| 31.3-62.5 | 0.35 | 0.42 | 99.58 |
| 62.5-125.0 | 8.88 | 9.30 | 90.70 |
| 125.0-250.0 | 74.81 | 84.11 | 15.89 |
| 250.0-500.0 | 15.89 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 2** low (0-300 μm).



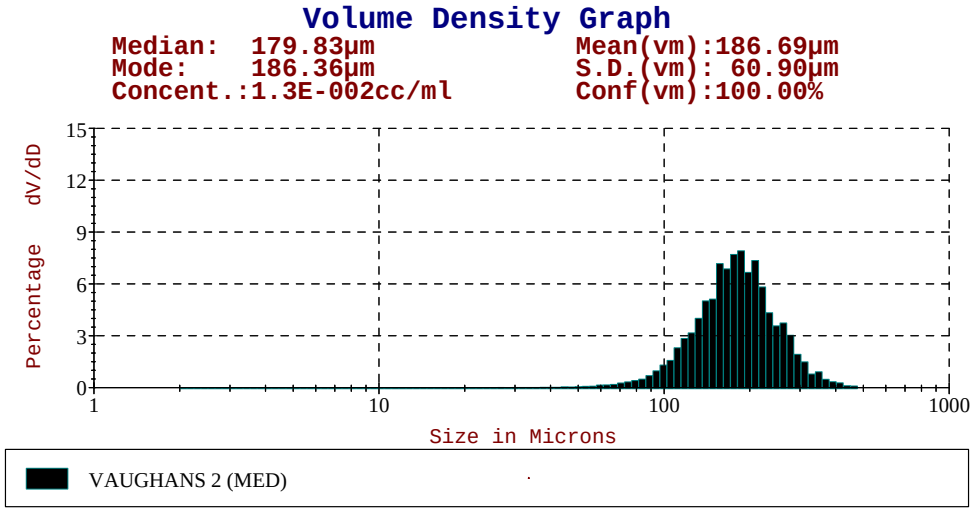

Area Ranges Table: **1/8/05 Vaughans 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.27 | 0.27 | 99.73 |
| 3.9-7.8 | 0.16 | 0.43 | 99.57 |
| 7.8-15.6 | 0.24 | 0.66 | 99.34 |
| 15.6-31.3 | 0.34 | 1.00 | 99.00 |
| 31.3-62.5 | 2.15 | 3.16 | 96.84 |
| 62.5-125.0 | 22.84 | 26.00 | 74.00 |
| 125.0-250.0 | 69.91 | 95.91 | 4.09 |
| 250.0-300.0 | 4.09 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.03 | 99.97 |
| 15.6-31.3 | 0.05 | 0.08 | 99.92 |
| 31.3-62.5 | 0.69 | 0.77 | 99.23 |
| 62.5-125.0 | 15.09 | 15.86 | 84.14 |
| 125.0-250.0 | 77.05 | 92.91 | 7.09 |
| 250.0-300.0 | 7.09 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 2** medium (2-600 μm).



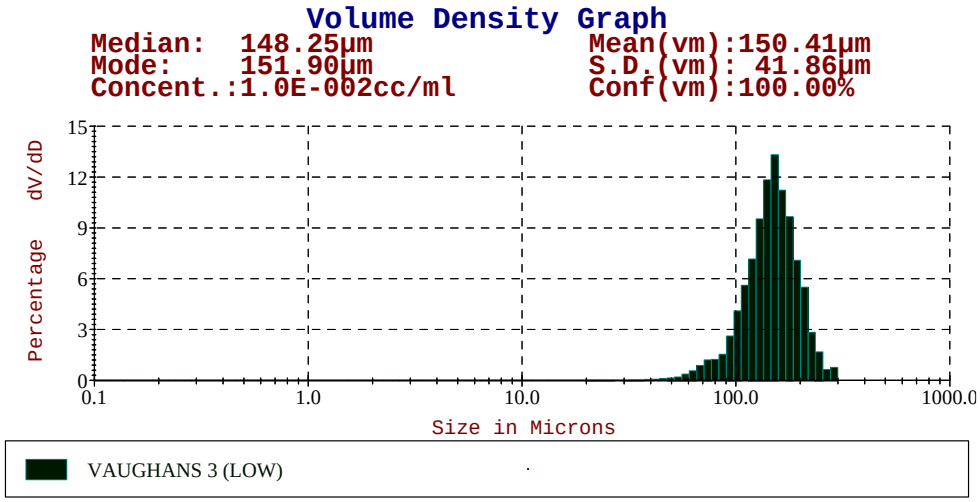

Area Ranges Table: **1/8/05 Vaughans 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.05 | 0.05 | 99.95 |
| 3.9-7.8 | 0.14 | 0.19 | 99.81 |
| 7.8-15.6 | 0.21 | 0.40 | 99.60 |
| 15.6-31.3 | 0.26 | 0.66 | 99.34 |
| 31.3-62.5 | 1.82 | 2.49 | 97.51 |
| 62.5-125.0 | 20.87 | 23.36 | 76.64 |
| 125.0-250.0 | 68.45 | 91.81 | 8.19 |
| 250.0-500.0 | 8.19 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.02 | 0.02 | 99.98 |
| 15.6-31.3 | 0.04 | 0.06 | 99.94 |
| 31.3-62.5 | 0.57 | 0.62 | 99.38 |
| 62.5-125.0 | 12.86 | 13.48 | 86.52 |
| 125.0-250.0 | 72.22 | 85.70 | 14.30 |
| 250.0-500.0 | 14.30 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 3** low (0-300 μm).



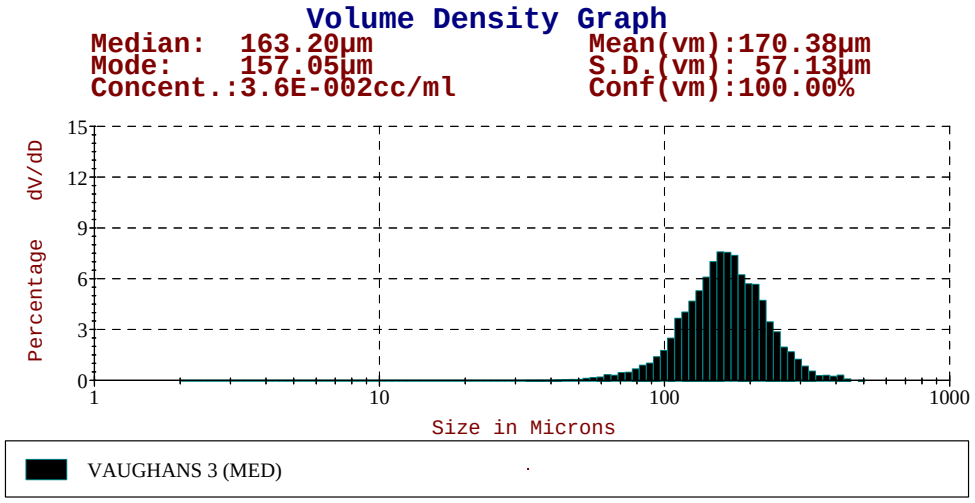

Area Ranges Table: **1/8/05 Vaughans 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.18 | 0.18 | 99.82 |
| 3.9-7.8 | 0.09 | 0.27 | 99.74 |
| 7.8-15.6 | 0.09 | 0.35 | 99.65 |
| 15.6-31.3 | 0.42 | 0.77 | 99.23 |
| 31.3-62.5 | 3.00 | 3.77 | 96.23 |
| 62.5-125.0 | 34.41 | 38.18 | 61.82 |
| 125.0-250.0 | 60.97 | 99.15 | 0.85 |
| 250.0-300.0 | 0.85 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.00 | 0.01 | 99.99 |
| 7.8-15.6 | 0.01 | 0.01 | 99.99 |
| 15.6-31.3 | 0.07 | 0.08 | 99.92 |
| 31.3-62.5 | 1.13 | 1.21 | 98.79 |
| 62.5-125.0 | 25.26 | 26.47 | 73.53 |
| 125.0-250.0 | 71.83 | 98.30 | 1.70 |
| 250.0-300.0 | 1.70 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Vaughans 3** medium (2-600 µm).



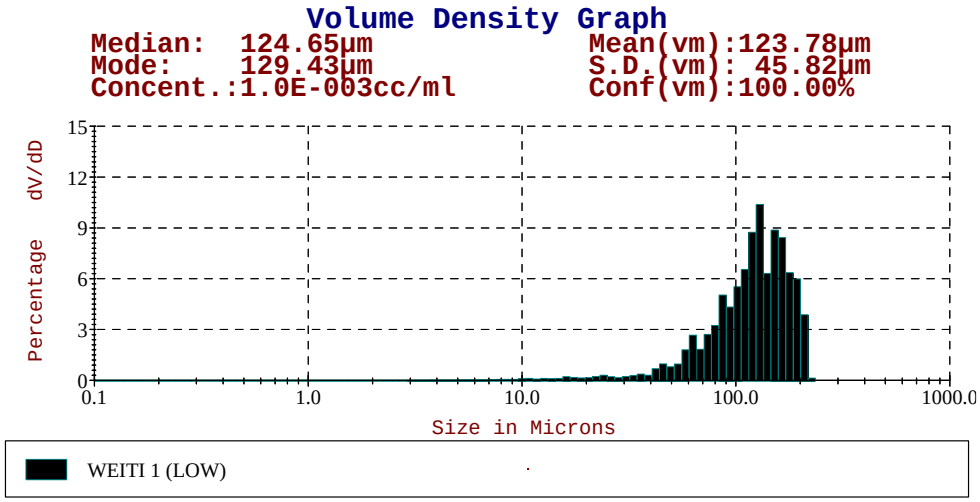

Area Ranges Table: **1/8/05 Vaughans 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.09 | 0.11 | 99.89 |
| 7.8-15.6 | 0.16 | 0.27 | 99.73 |
| 15.6-31.3 | 0.27 | 0.55 | 99.45 |
| 31.3-62.5 | 2.43 | 2.98 | 97.02 |
| 62.5-125.0 | 28.94 | 31.92 | 68.08 |
| 125.0-250.0 | 63.60 | 95.53 | 4.47 |
| 250.0-500.0 | 4.47 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **1/8/05 Vaughans 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.00 | 0.00 | 100.00 |
| 7.8-15.6 | 0.01 | 0.02 | 99.98 |
| 15.6-31.3 | 0.04 | 0.06 | 99.94 |
| 31.3-62.5 | 0.85 | 0.91 | 99.09 |
| 62.5-125.0 | 19.43 | 20.34 | 79.66 |
| 125.0-250.0 | 71.10 | 91.44 | 8.56 |
| 250.0-500.0 | 8.56 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 1** low (0-300 µm).



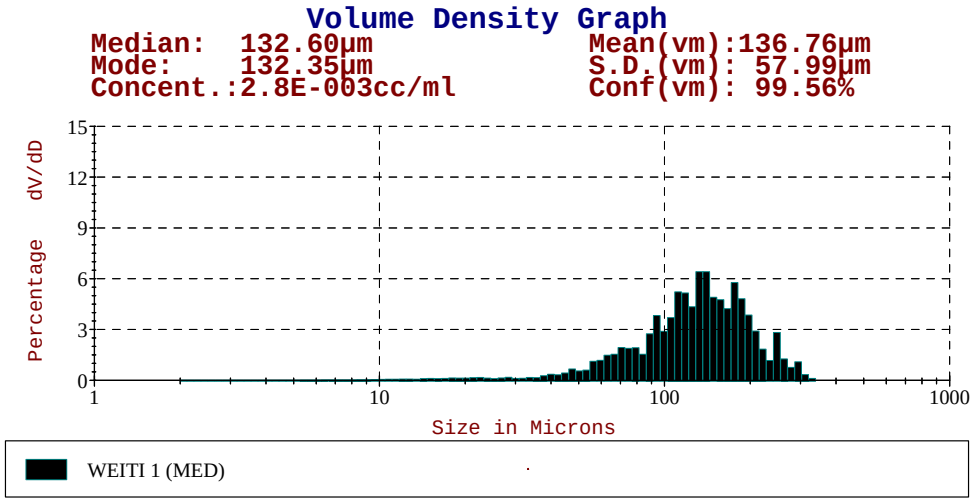

Area Ranges Table: **01/8/05 Weiti 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 6.00 | 6.00 | 94.00 |
| 3.9-7.8 | 3.81 | 9.81 | 90.19 |
| 7.8-15.6 | 5.66 | 15.47 | 84.53 |
| 15.6-31.3 | 6.90 | 22.36 | 77.64 |
| 31.3-62.5 | 12.17 | 34.53 | 65.47 |
| 62.5-125.0 | 37.89 | 72.42 | 27.58 |
| 125.0-250.0 | 27.58 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.13 | 0.13 | 99.87 |
| 3.9-7.8 | 0.25 | 0.38 | 99.62 |
| 7.8-15.6 | 0.73 | 1.11 | 98.89 |
| 15.6-31.3 | 1.73 | 2.84 | 97.16 |
| 31.3-62.5 | 6.78 | 9.63 | 90.38 |
| 62.5-125.0 | 40.72 | 50.35 | 49.65 |
| 125.0-250.0 | 49.66 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 1** medium (2-600 μm).



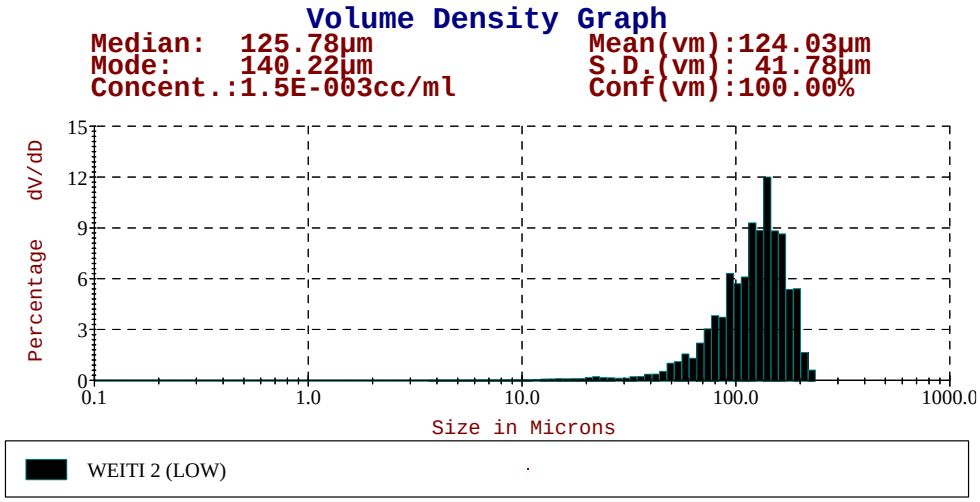

Area Ranges Table: **01/8/05 Weiti 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.64 | 0.64 | 99.36 |
| 3.9-7.8 | 2.38 | 3.02 | 96.98 |
| 7.8-15.6 | 6.15 | 9.17 | 90.83 |
| 15.6-31.3 | 7.16 | 16.33 | 83.67 |
| 31.3-62.5 | 13.02 | 29.35 | 70.65 |
| 62.5-125.0 | 38.02 | 67.37 | 32.63 |
| 125.0-250.0 | 31.21 | 98.58 | 1.42 |
| 250.0-500.0 | 1.42 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.15 | 0.17 | 99.83 |
| 7.8-15.6 | 0.72 | 0.89 | 99.11 |
| 15.6-31.3 | 1.57 | 2.46 | 97.54 |
| 31.3-62.5 | 6.46 | 8.91 | 91.08 |
| 62.5-125.0 | 35.94 | 44.86 | 55.14 |
| 125.0-250.0 | 51.20 | 96.06 | 3.94 |
| 250.0-500.0 | 3.94 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 2** low (0-300 µm).



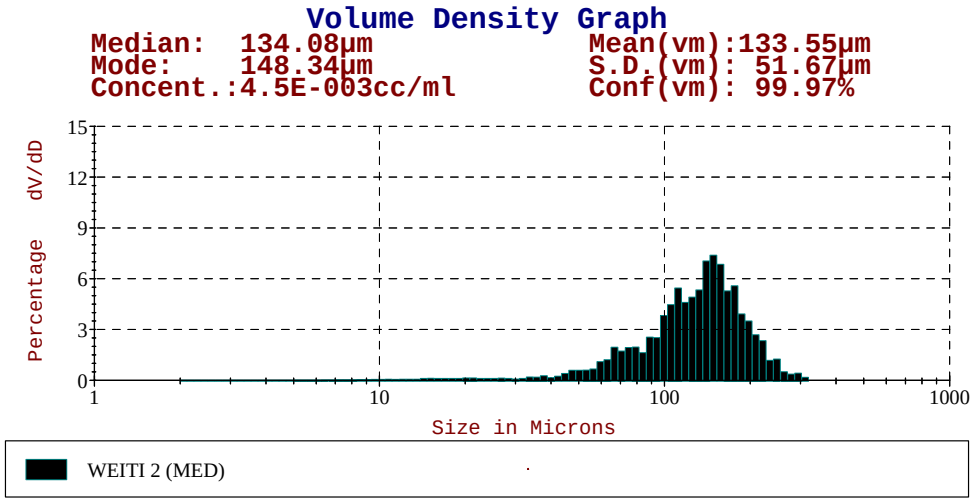

Area Ranges Table: **01/8/05 Weiti 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 3.84 | 3.84 | 96.16 |
| 3.9-7.8 | 2.54 | 6.38 | 93.62 |
| 7.8-15.6 | 3.64 | 10.02 | 89.98 |
| 15.6-31.3 | 4.98 | 15.00 | 85.00 |
| 31.3-62.5 | 11.35 | 26.34 | 73.66 |
| 62.5-125.0 | 41.91 | 68.26 | 31.74 |
| 125.0-250.0 | 31.75 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.15 | 0.22 | 99.78 |
| 7.8-15.6 | 0.45 | 0.67 | 99.33 |
| 15.6-31.3 | 1.15 | 1.82 | 98.18 |
| 31.3-62.5 | 5.85 | 7.66 | 92.34 |
| 62.5-125.0 | 41.48 | 49.14 | 50.86 |
| 125.0-250.0 | 50.86 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 2** medium (2-600 μm).



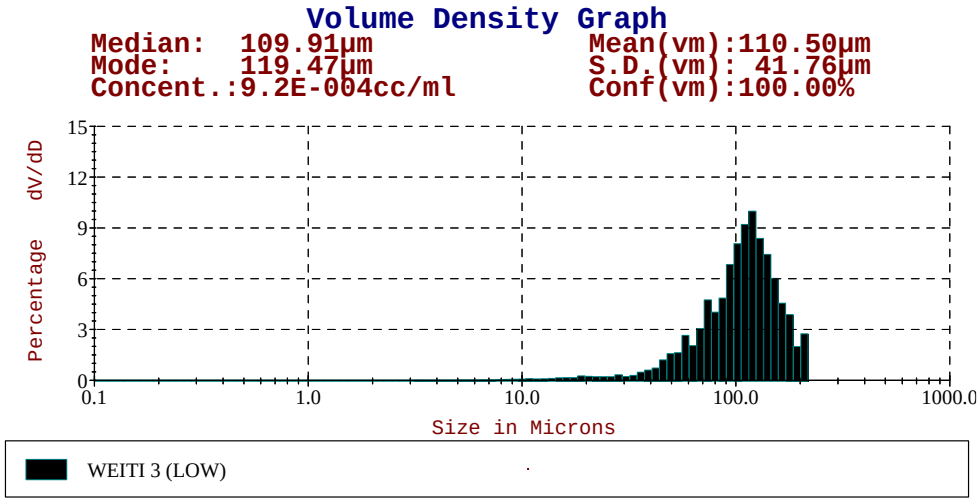

Area Ranges Table: **01/8/05 Weiti 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.75 | 0.75 | 99.25 |
| 3.9-7.8 | 3.00 | 3.75 | 96.25 |
| 7.8-15.6 | 6.55 | 10.30 | 89.70 |
| 15.6-31.3 | 6.33 | 16.63 | 83.37 |
| 31.3-62.5 | 11.18 | 27.81 | 72.19 |
| 62.5-125.0 | 38.02 | 65.83 | 34.17 |
| 125.0-250.0 | 33.46 | 99.29 | 0.71 |
| 250.0-500.0 | 0.71 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.18 | 0.21 | 99.79 |
| 7.8-15.6 | 0.76 | 0.97 | 99.03 |
| 15.6-31.3 | 1.37 | 2.34 | 97.67 |
| 31.3-62.5 | 5.52 | 7.85 | 92.15 |
| 62.5-125.0 | 36.08 | 43.94 | 56.06 |
| 125.0-250.0 | 54.13 | 98.07 | 1.93 |
| 250.0-500.0 | 1.93 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 3** low (0-300 µm).



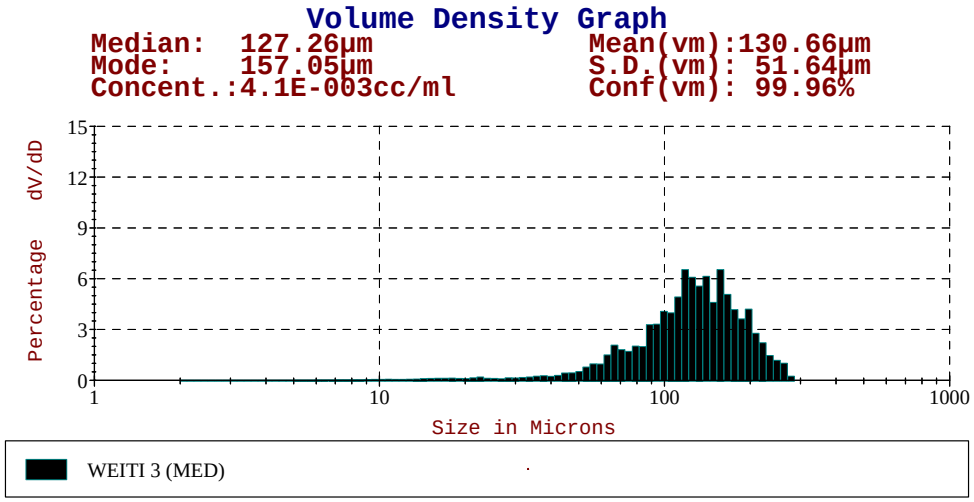

Area Ranges Table: **01/8/05 Weiti 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 5.87 | 5.87 | 94.13 |
| 3.9-7.8 | 2.65 | 8.52 | 91.48 |
| 7.8-15.6 | 5.02 | 13.54 | 86.46 |
| 15.6-31.3 | 6.92 | 20.45 | 79.55 |
| 31.3-62.5 | 15.85 | 36.30 | 63.70 |
| 62.5-125.0 | 45.40 | 81.69 | 18.31 |
| 125.0-250.0 | 18.31 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.11 | 0.11 | 99.89 |
| 3.9-7.8 | 0.19 | 0.30 | 99.70 |
| 7.8-15.6 | 0.72 | 1.02 | 98.98 |
| 15.6-31.3 | 1.92 | 2.94 | 97.06 |
| 31.3-62.5 | 9.61 | 12.54 | 87.46 |
| 62.5-125.0 | 52.86 | 65.40 | 34.60 |
| 125.0-250.0 | 34.60 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **01/8/05 Weiti 3** medium (2-600 μm).



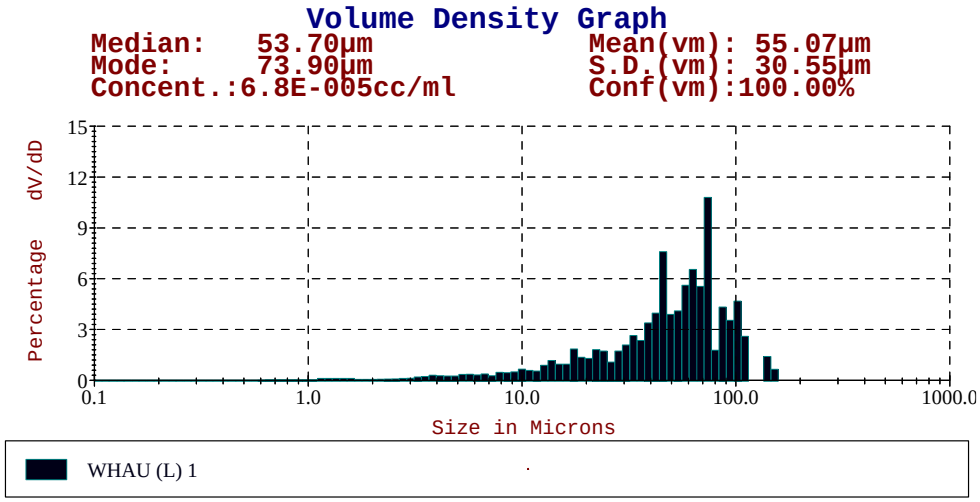

Area Ranges Table: **01/8/05 Weiti 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.69 | 0.69 | 99.31 |
| 3.9-7.8 | 3.03 | 3.73 | 96.27 |
| 7.8-15.6 | 6.07 | 9.80 | 90.20 |
| 15.6-31.3 | 6.85 | 16.65 | 83.35 |
| 31.3-62.5 | 11.79 | 28.44 | 71.56 |
| 62.5-125.0 | 40.77 | 69.21 | 30.79 |
| 125.0-250.0 | 30.29 | 99.50 | 0.50 |
| 250.0-500.0 | 0.50 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **01/8/05 Weiti 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.19 | 0.21 | 99.79 |
| 7.8-15.6 | 0.72 | 0.93 | 99.07 |
| 15.6-31.3 | 1.53 | 2.47 | 97.53 |
| 31.3-62.5 | 5.95 | 8.41 | 91.59 |
| 62.5-125.0 | 39.71 | 48.12 | 51.88 |
| 125.0-250.0 | 50.51 | 98.63 | 1.37 |
| 250.0-500.0 | 1.37 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **no date Whau (L) 1** low (0-300 µm).



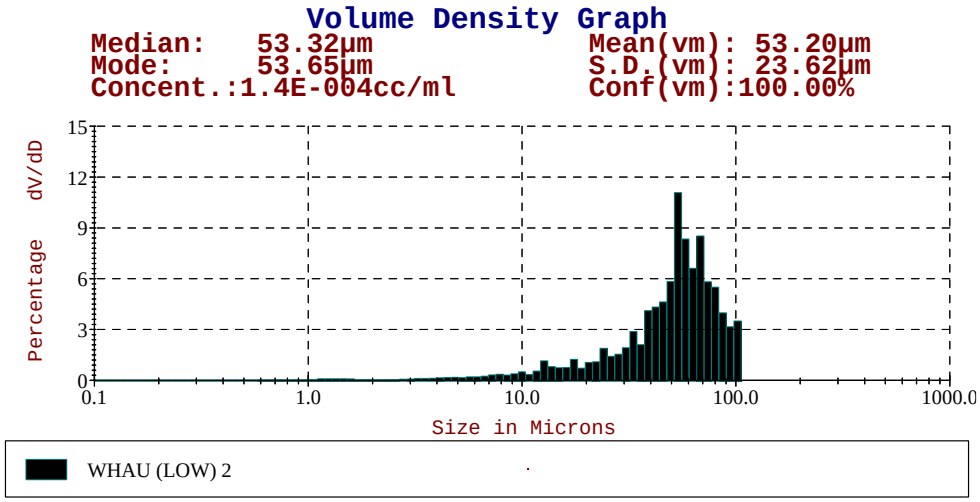

Area Ranges Table: **no date Whau (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 25.83 | 25.83 | 74.18 |
| 3.9-7.8 | 11.96 | 37.78 | 62.22 |
| 7.8-15.6 | 13.52 | 51.31 | 48.69 |
| 15.6-31.3 | 15.75 | 67.06 | 32.94 |
| 31.3-62.5 | 20.41 | 87.47 | 12.53 |
| 62.5-125.0 | 12.17 | 99.63 | 0.37 |
| 125.0-250.0 | 0.37 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **no date Whau (L) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.84 | 1.84 | 98.16 |
| 3.9-7.8 | 2.57 | 4.41 | 95.59 |
| 7.8-15.6 | 6.03 | 10.44 | 89.56 |
| 15.6-31.3 | 13.58 | 24.02 | 75.98 |
| 31.3-62.5 | 36.25 | 60.26 | 39.74 |
| 62.5-125.0 | 37.66 | 97.93 | 2.07 |
| 125.0-250.0 | 2.08 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **no date Whau (L) 2** low (0-300 µm).



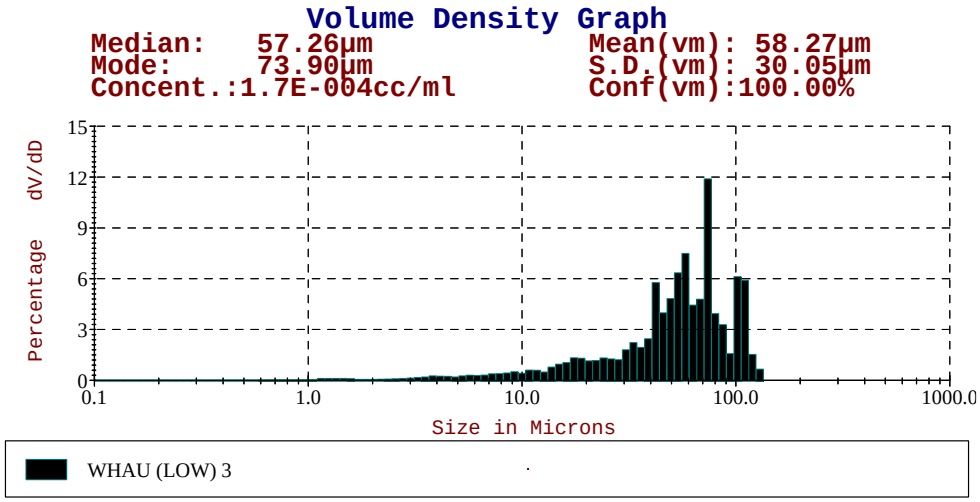

Area Ranges Table: **no date Whau (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 20.77 | 20.77 | 79.23 |
| 3.9-7.8 | 9.05 | 29.82 | 70.18 |
| 7.8-15.6 | 12.75 | 42.57 | 57.43 |
| 15.6-31.3 | 14.49 | 57.07 | 42.93 |
| 31.3-62.5 | 29.72 | 86.79 | 13.21 |
| 62.5-125.0 | 13.21 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **no date Whau (L) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.10 | 1.10 | 98.90 |
| 3.9-7.8 | 1.73 | 2.84 | 97.16 |
| 7.8-15.6 | 4.94 | 7.78 | 92.22 |
| 15.6-31.3 | 11.02 | 18.80 | 81.20 |
| 31.3-62.5 | 47.13 | 65.93 | 34.07 |
| 62.5-125.0 | 34.07 | 100.00 | 0.00 |
| 125.0-250.0 | 0.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **no date Whau (L) 3** low (0-300 µm).



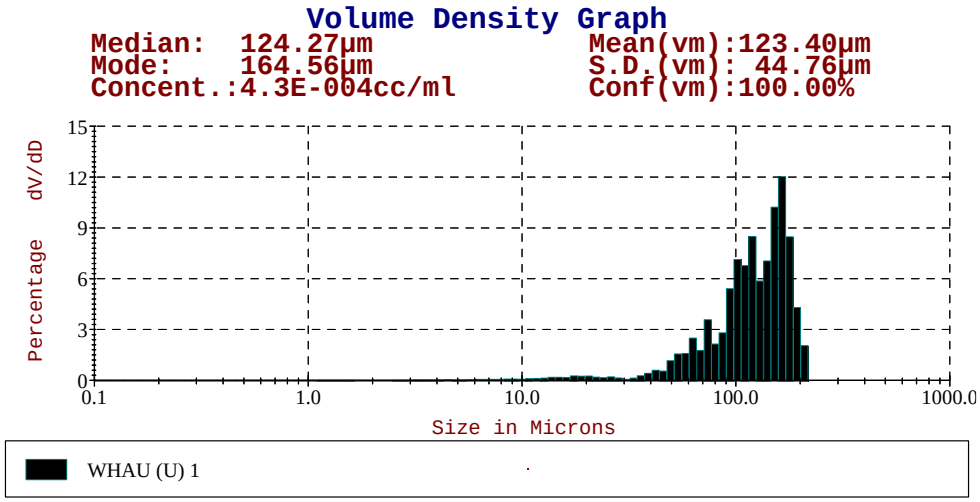

Area Ranges Table: **no date Whau (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 25.37 | 25.37 | 74.63 |
| 3.9-7.8 | 11.43 | 36.80 | 63.20 |
| 7.8-15.6 | 12.30 | 49.10 | 50.90 |
| 15.6-31.3 | 14.25 | 63.35 | 36.65 |
| 31.3-62.5 | 22.39 | 85.74 | 14.26 |
| 62.5-125.0 | 14.11 | 99.86 | 0.14 |
| 125.0-250.0 | 0.15 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **no date Whau (L) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.69 | 1.69 | 98.31 |
| 3.9-7.8 | 2.29 | 3.98 | 96.02 |
| 7.8-15.6 | 4.99 | 8.96 | 91.04 |
| 15.6-31.3 | 11.21 | 20.18 | 79.82 |
| 31.3-62.5 | 37.49 | 57.67 | 42.33 |
| 62.5-125.0 | 41.67 | 99.34 | 0.66 |
| 125.0-250.0 | 0.66 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 1** low (0-300 µm).



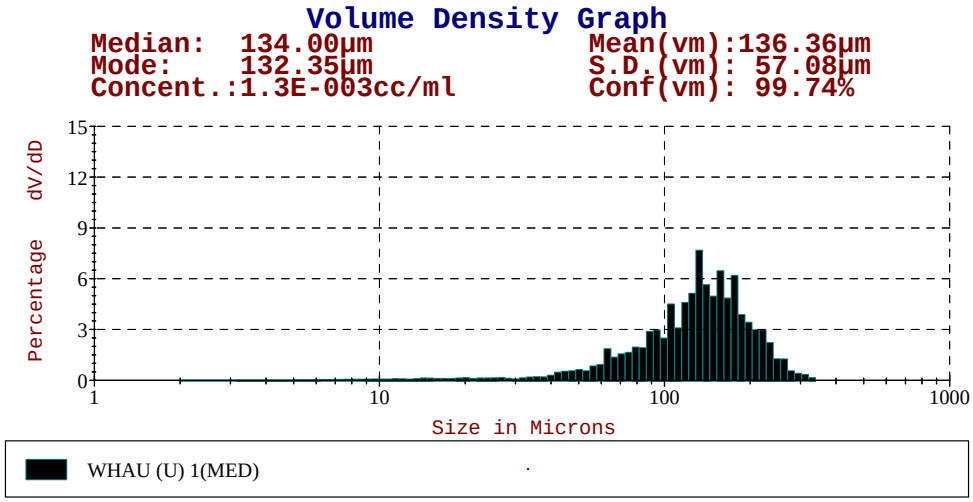

Area Ranges Table: **05/8/05 Whau (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 11.27 | 11.27 | 88.73 |
| 3.9-7.8 | 5.36 | 16.63 | 83.38 |
| 7.8-15.6 | 6.30 | 22.93 | 77.07 |
| 15.6-31.3 | 6.07 | 29.00 | 71.00 |
| 31.3-62.5 | 11.71 | 40.71 | 59.29 |
| 62.5-125.0 | 34.29 | 75.00 | 25.00 |
| 125.0-250.0 | 25.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.25 | 0.25 | 99.75 |
| 3.9-7.8 | 0.37 | 0.62 | 99.38 |
| 7.8-15.6 | 0.91 | 1.53 | 98.47 |
| 15.6-31.3 | 1.56 | 3.09 | 96.91 |
| 31.3-62.5 | 7.27 | 10.36 | 89.64 |
| 62.5-125.0 | 40.64 | 51.00 | 49.00 |
| 125.0-250.0 | 49.00 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 1** medium (2-600 µm).



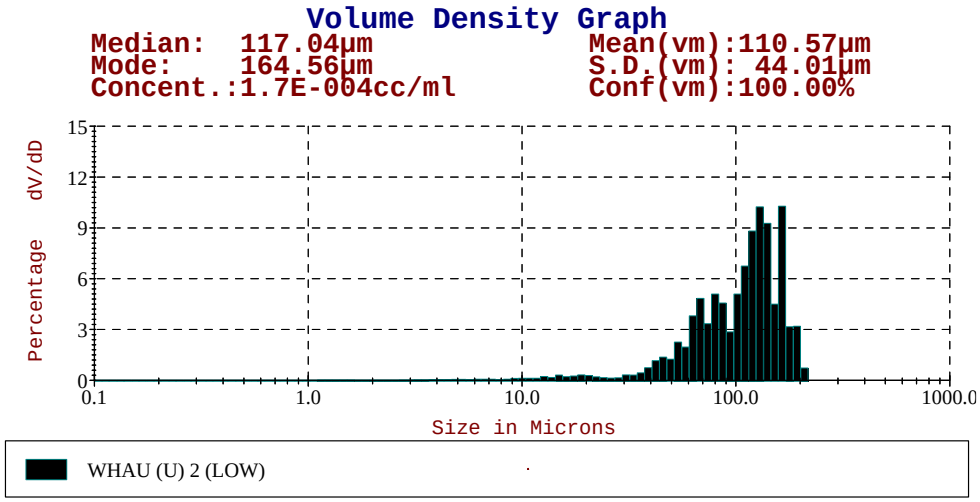

Area Ranges Table: **05/8/05 Whau (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.16 | 2.16 | 97.84 |
| 3.9-7.8 | 5.95 | 8.12 | 91.88 |
| 7.8-15.6 | 8.52 | 16.64 | 83.36 |
| 15.6-31.3 | 6.52 | 23.16 | 76.84 |
| 31.3-62.5 | 12.11 | 35.27 | 64.73 |
| 62.5-125.0 | 32.80 | 68.07 | 31.93 |
| 125.0-250.0 | 30.73 | 98.80 | 1.20 |
| 250.0-500.0 | 1.20 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.07 | 0.07 | 99.93 |
| 3.9-7.8 | 0.38 | 0.45 | 99.55 |
| 7.8-15.6 | 1.04 | 1.49 | 98.51 |
| 15.6-31.3 | 1.53 | 3.02 | 96.98 |
| 31.3-62.5 | 6.39 | 9.41 | 90.59 |
| 62.5-125.0 | 33.22 | 42.63 | 57.37 |
| 125.0-250.0 | 53.85 | 96.48 | 3.52 |
| 250.0-500.0 | 3.52 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 2** low (0-300 µm).



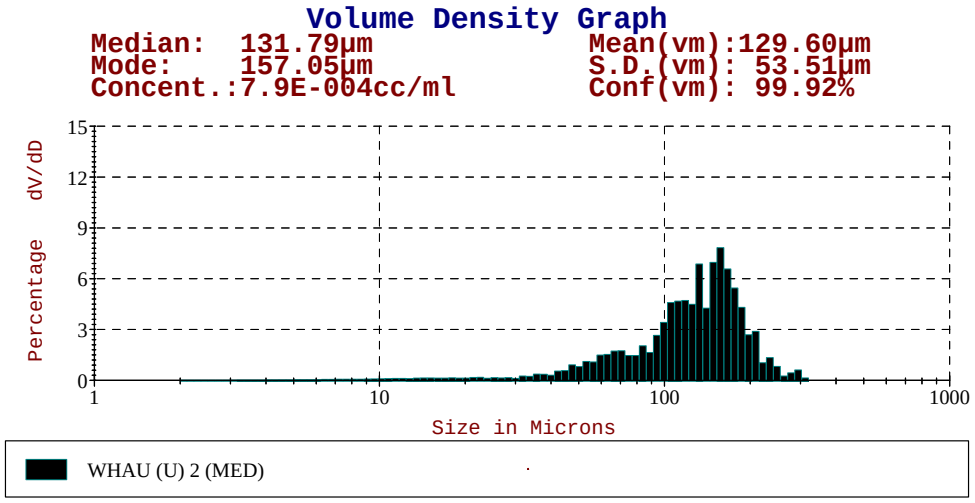

Area Ranges Table: **05/8/05 Whau (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 12.93 | 12.93 | 87.07 |
| 3.9-7.8 | 5.26 | 18.19 | 81.81 |
| 7.8-15.6 | 7.32 | 25.51 | 74.49 |
| 15.6-31.3 | 6.28 | 31.78 | 68.22 |
| 31.3-62.5 | 14.58 | 46.36 | 53.64 |
| 62.5-125.0 | 35.04 | 81.40 | 18.60 |
| 125.0-250.0 | 18.60 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.32 | 0.32 | 99.68 |
| 3.9-7.8 | 0.42 | 0.74 | 99.26 |
| 7.8-15.6 | 1.25 | 1.99 | 98.01 |
| 15.6-31.3 | 1.93 | 3.91 | 96.09 |
| 31.3-62.5 | 10.18 | 14.09 | 85.91 |
| 62.5-125.0 | 45.44 | 59.52 | 40.48 |
| 125.0-250.0 | 40.48 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 2** medium (2-600 µm).



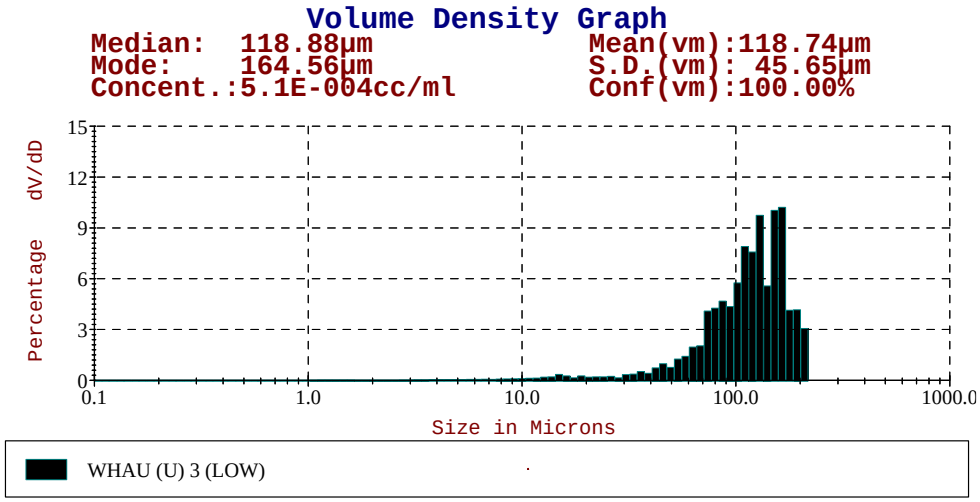

Area Ranges Table: **05/8/05 Whau (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.54 | 2.54 | 97.46 |
| 3.9-7.8 | 6.29 | 8.83 | 91.17 |
| 7.8-15.6 | 8.97 | 17.80 | 82.20 |
| 15.6-31.3 | 6.86 | 24.66 | 75.34 |
| 31.3-62.5 | 15.41 | 40.07 | 59.93 |
| 62.5-125.0 | 30.53 | 70.60 | 29.40 |
| 125.0-250.0 | 28.88 | 99.48 | 0.52 |
| 250.0-500.0 | 0.52 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.09 | 0.09 | 99.91 |
| 3.9-7.8 | 0.43 | 0.52 | 99.48 |
| 7.8-15.6 | 1.17 | 1.69 | 98.31 |
| 15.6-31.3 | 1.72 | 3.40 | 96.60 |
| 31.3-62.5 | 8.61 | 12.01 | 87.99 |
| 62.5-125.0 | 33.13 | 45.14 | 54.86 |
| 125.0-250.0 | 53.21 | 98.34 | 1.66 |
| 250.0-500.0 | 1.66 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 3** low (0-300 µm).



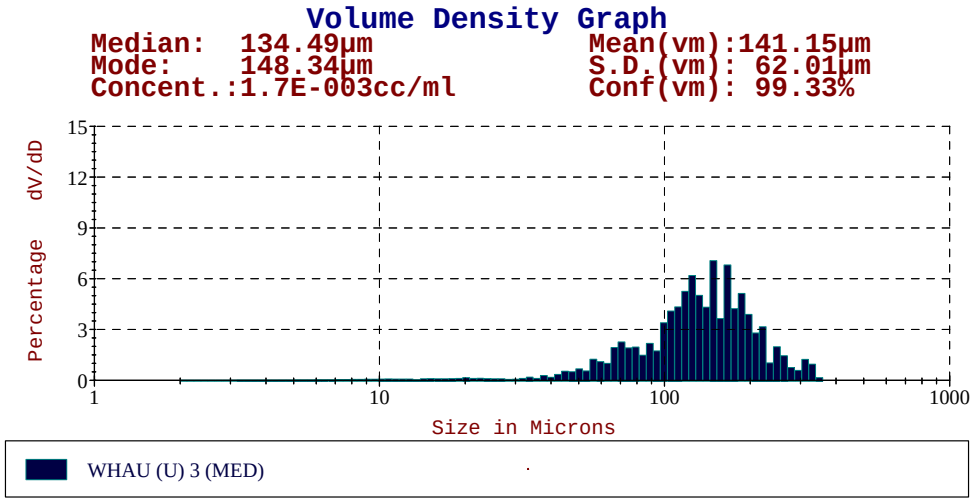

Area Ranges Table: **05/8/05 Whau (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 14.70 | 14.70 | 85.30 |
| 3.9-7.8 | 5.24 | 19.94 | 80.06 |
| 7.8-15.6 | 7.87 | 27.81 | 72.19 |
| 15.6-31.3 | 6.28 | 34.09 | 65.91 |
| 31.3-62.5 | 11.26 | 45.35 | 54.65 |
| 62.5-125.0 | 32.53 | 77.88 | 22.12 |
| 125.0-250.0 | 22.12 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.33 | 0.33 | 99.67 |
| 3.9-7.8 | 0.40 | 0.74 | 99.26 |
| 7.8-15.6 | 1.29 | 2.03 | 97.97 |
| 15.6-31.3 | 1.89 | 3.92 | 96.08 |
| 31.3-62.5 | 7.42 | 11.33 | 88.67 |
| 62.5-125.0 | 41.67 | 53.01 | 46.99 |
| 125.0-250.0 | 46.99 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **05/8/05 Whau (U) 3** medium (2-600 µm).



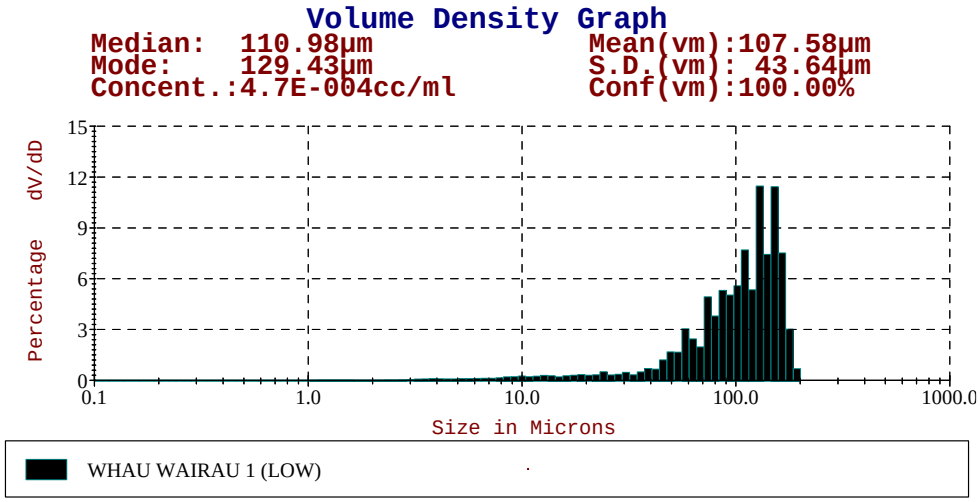

Area Ranges Table: **05/8/05 Whau (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.82 | 1.82 | 98.18 |
| 3.9-7.8 | 5.00 | 6.82 | 93.18 |
| 7.8-15.6 | 7.08 | 13.91 | 86.09 |
| 15.6-31.3 | 5.36 | 19.27 | 80.73 |
| 31.3-62.5 | 12.05 | 31.32 | 68.68 |
| 62.5-125.0 | 35.79 | 67.11 | 32.89 |
| 125.0-250.0 | 30.97 | 98.08 | 1.92 |
| 250.0-500.0 | 1.92 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **05/8/05 Whau (U) 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.06 | 0.06 | 99.94 |
| 3.9-7.8 | 0.30 | 0.36 | 99.64 |
| 7.8-15.6 | 0.80 | 1.16 | 98.84 |
| 15.6-31.3 | 1.16 | 2.32 | 97.68 |
| 31.3-62.5 | 6.07 | 8.39 | 91.61 |
| 62.5-125.0 | 34.28 | 42.67 | 57.33 |
| 125.0-250.0 | 51.73 | 94.40 | 5.60 |
| 250.0-500.0 | 5.60 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 1** low (0-300 μm).



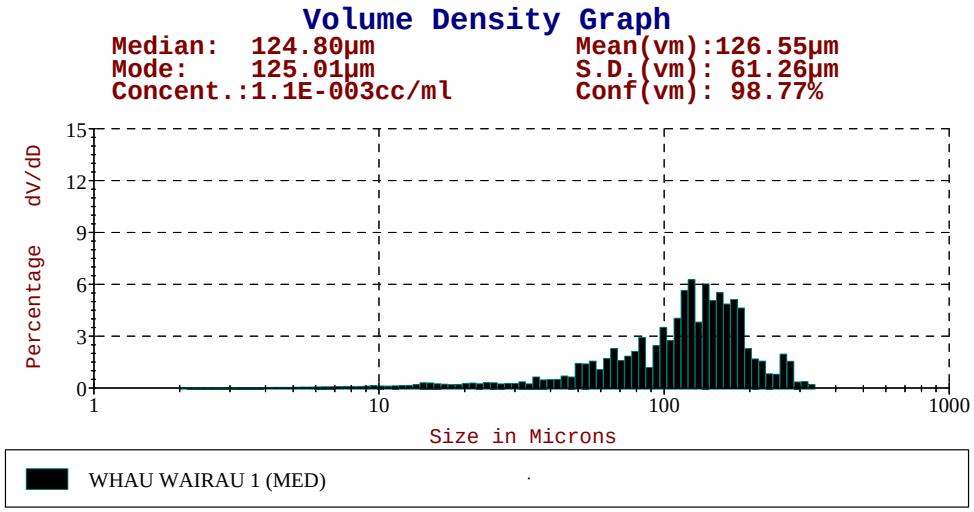

Area Ranges Table: **3/8/05 Whau Wairau 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 15.76 | 15.76 | 84.24 |
| 3.9-7.8 | 8.82 | 24.58 | 75.42 |
| 7.8-15.6 | 10.54 | 35.12 | 64.88 |
| 15.6-31.3 | 8.13 | 43.26 | 56.74 |
| 31.3-62.5 | 13.16 | 56.41 | 43.59 |
| 62.5-125.0 | 26.87 | 83.28 | 16.72 |
| 125.0-250.0 | 16.72 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.52 | 0.52 | 99.48 |
| 3.9-7.8 | 0.83 | 1.35 | 98.65 |
| 7.8-15.6 | 1.95 | 3.29 | 96.71 |
| 15.6-31.3 | 3.03 | 6.33 | 93.67 |
| 31.3-62.5 | 10.90 | 17.23 | 82.77 |
| 62.5-125.0 | 41.40 | 58.63 | 41.37 |
| 125.0-250.0 | 41.37 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 1** medium (2-600 μm).



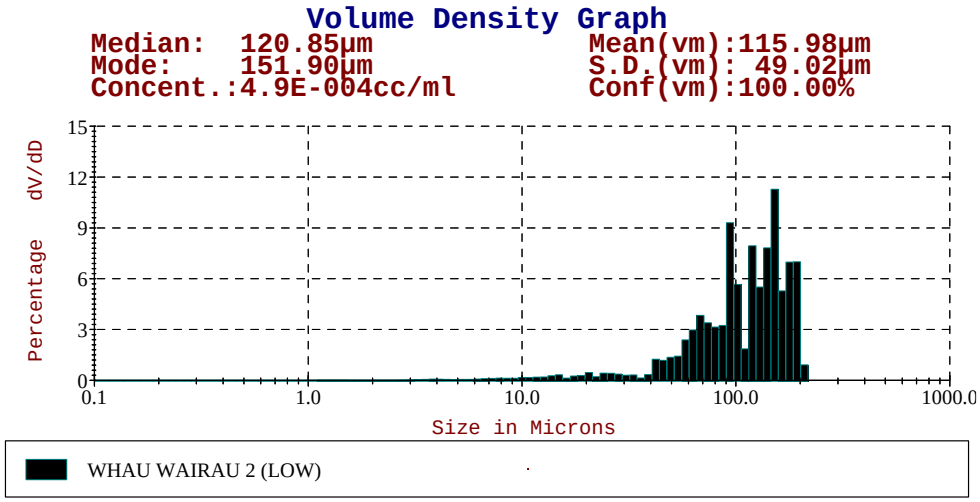

Area Ranges Table: **3/8/05 Whau Wairau 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.62 | 2.62 | 97.38 |
| 3.9-7.8 | 8.07 | 10.69 | 89.31 |
| 7.8-15.6 | 12.03 | 22.72 | 77.28 |
| 15.6-31.3 | 10.65 | 33.37 | 66.63 |
| 31.3-62.5 | 15.71 | 49.08 | 50.92 |
| 62.5-125.0 | 28.24 | 77.32 | 22.68 |
| 125.0-250.0 | 21.46 | 98.79 | 1.21 |
| 250.0-500.0 | 1.21 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.11 | 0.11 | 99.89 |
| 3.9-7.8 | 0.63 | 0.74 | 99.26 |
| 7.8-15.6 | 1.85 | 2.59 | 97.42 |
| 15.6-31.3 | 3.09 | 5.67 | 94.33 |
| 31.3-62.5 | 9.86 | 15.53 | 84.47 |
| 62.5-125.0 | 34.68 | 50.21 | 49.79 |
| 125.0-250.0 | 45.36 | 95.57 | 4.43 |
| 250.0-500.0 | 4.43 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 2** low (0-300 μm).



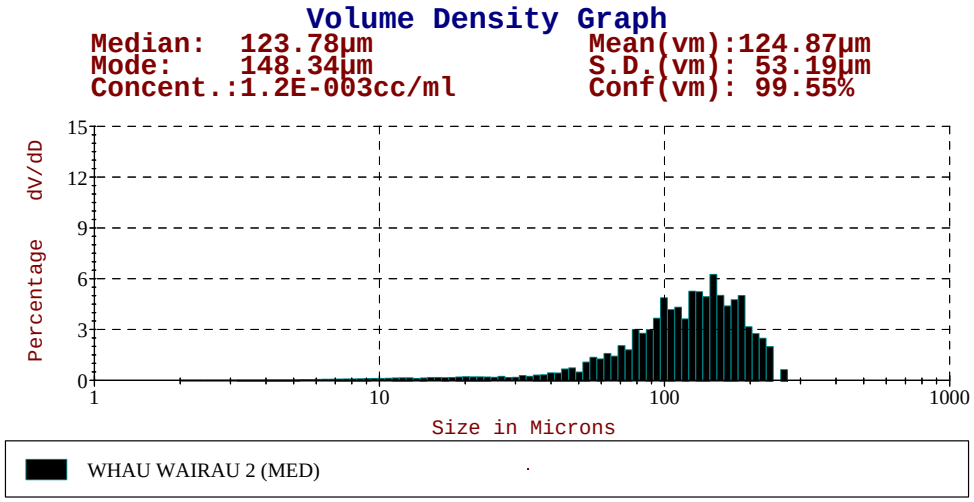

Area Ranges Table: **3/8/05 Whau Wairau 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 13.73 | 13.73 | 86.27 |
| 3.9-7.8 | 6.91 | 20.64 | 79.36 |
| 7.8-15.6 | 9.32 | 29.96 | 70.04 |
| 15.6-31.3 | 8.08 | 38.04 | 61.96 |
| 31.3-62.5 | 13.78 | 51.83 | 48.17 |
| 62.5-125.0 | 29.11 | 80.94 | 19.06 |
| 125.0-250.0 | 19.06 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.39 | 0.39 | 99.61 |
| 3.9-7.8 | 0.59 | 0.98 | 99.02 |
| 7.8-15.6 | 1.60 | 2.57 | 97.43 |
| 15.6-31.3 | 2.70 | 5.27 | 94.73 |
| 31.3-62.5 | 10.30 | 15.57 | 84.43 |
| 62.5-125.0 | 39.53 | 55.11 | 44.89 |
| 125.0-250.0 | 44.89 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 2** medium (2-600 μm).



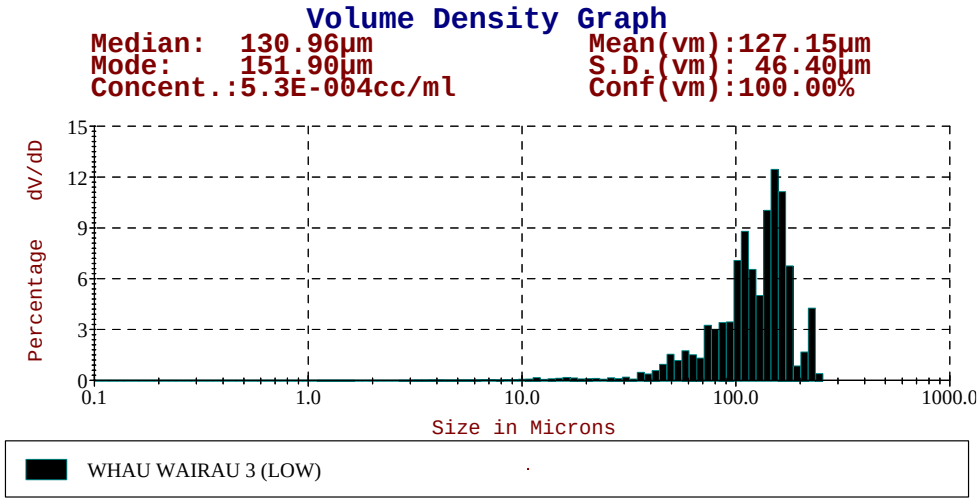

Area Ranges Table: **3/8/05 Whau Wairau 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 2.07 | 2.07 | 97.93 |
| 3.9-7.8 | 7.01 | 9.08 | 90.92 |
| 7.8-15.6 | 10.41 | 19.49 | 80.51 |
| 15.6-31.3 | 8.49 | 27.97 | 72.03 |
| 31.3-62.5 | 13.40 | 41.38 | 58.62 |
| 62.5-125.0 | 34.24 | 75.62 | 24.38 |
| 125.0-250.0 | 24.18 | 99.80 | 0.20 |
| 250.0-500.0 | 0.20 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.08 | 0.08 | 99.92 |
| 3.9-7.8 | 0.51 | 0.59 | 99.41 |
| 7.8-15.6 | 1.43 | 2.02 | 97.98 |
| 15.6-31.3 | 2.27 | 4.29 | 95.71 |
| 31.3-62.5 | 7.91 | 12.20 | 87.80 |
| 62.5-125.0 | 38.91 | 51.11 | 48.89 |
| 125.0-250.0 | 48.26 | 99.37 | 0.63 |
| 250.0-500.0 | 0.63 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 3** low (0-300 μm).



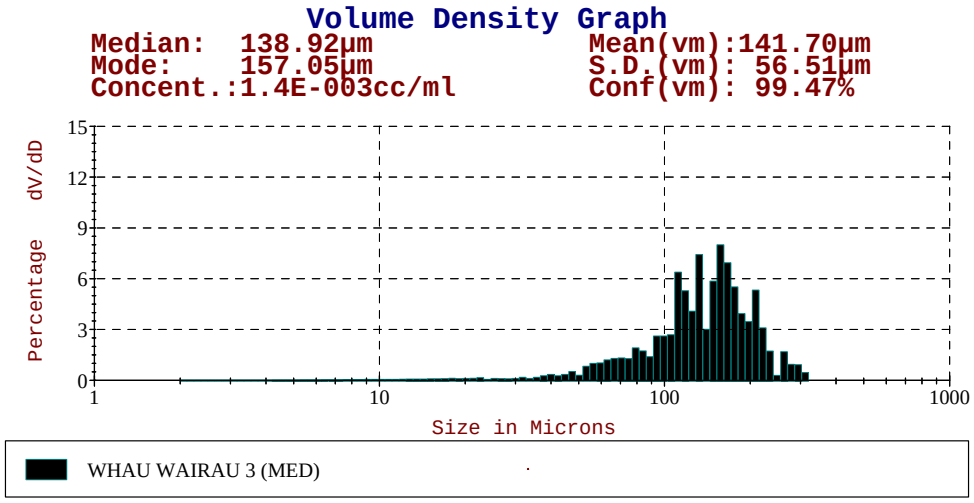

Area Ranges Table: **3/8/05 Whau Wairau 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 9.12 | 9.12 | 90.88 |
| 3.9-7.8 | 4.35 | 13.46 | 86.54 |
| 7.8-15.6 | 4.98 | 18.44 | 81.56 |
| 15.6-31.3 | 4.22 | 22.66 | 77.34 |
| 31.3-62.5 | 13.81 | 36.47 | 63.53 |
| 62.5-125.0 | 34.35 | 70.82 | 29.18 |
| 125.0-250.0 | 29.18 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.18 | 0.18 | 99.82 |
| 3.9-7.8 | 0.28 | 0.46 | 99.54 |
| 7.8-15.6 | 0.65 | 1.11 | 98.89 |
| 15.6-31.3 | 1.04 | 2.15 | 97.85 |
| 31.3-62.5 | 7.78 | 9.93 | 90.07 |
| 62.5-125.0 | 37.44 | 47.37 | 52.63 |
| 125.0-250.0 | 52.63 | 100.00 | 0.00 |
| 250.0-300.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **3/8/05 Whau Wairau 3** medium (2-600 μm).



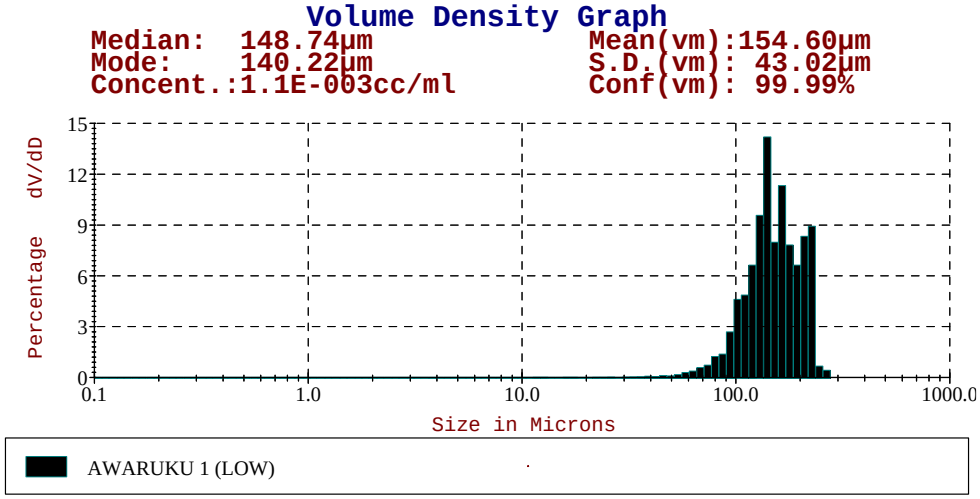

Area Ranges Table: **3/8/05 Whau Wairau 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 1.26 | 1.26 | 98.74 |
| 3.9-7.8 | 4.26 | 5.52 | 94.48 |
| 7.8-15.6 | 6.34 | 11.86 | 88.14 |
| 15.6-31.3 | 6.03 | 17.89 | 82.11 |
| 31.3-62.5 | 12.18 | 30.07 | 69.93 |
| 62.5-125.0 | 33.23 | 63.30 | 36.70 |
| 125.0-250.0 | 35.13 | 98.43 | 1.57 |
| 250.0-500.0 | 1.57 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Ranges Table: **3/8/05 Whau Wairau 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.04 | 0.04 | 99.96 |
| 3.9-7.8 | 0.25 | 0.29 | 99.71 |
| 7.8-15.6 | 0.70 | 0.99 | 99.01 |
| 15.6-31.3 | 1.28 | 2.27 | 97.73 |
| 31.3-62.5 | 5.89 | 8.16 | 91.84 |
| 62.5-125.0 | 31.26 | 39.41 | 60.59 |
| 125.0-250.0 | 56.35 | 95.76 | 4.24 |
| 250.0-500.0 | 4.24 | 100.00 | 0.00 |
| 500.0-600.0 | 0.00 | 100.00 | 0.00 |

Volume Distribution: Sample **1/8/05 Awaruku 1** low (0-300 μm).



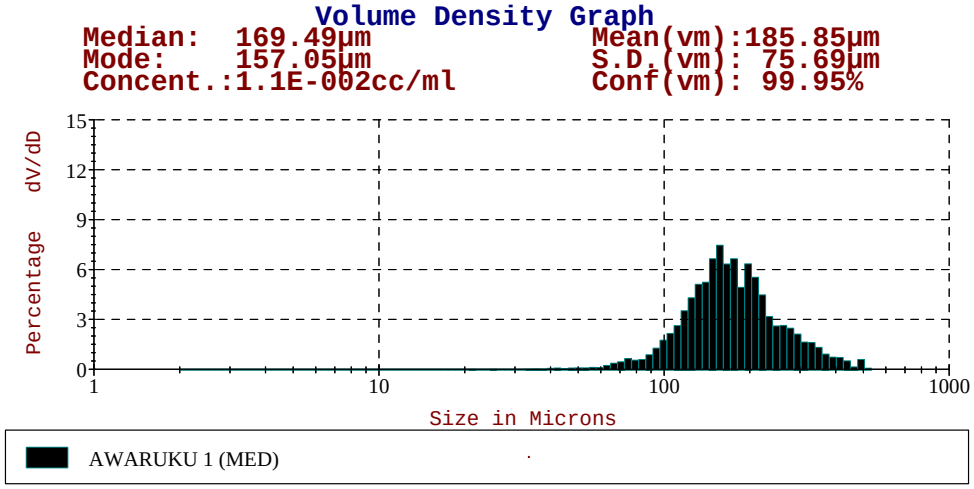

Area Ranges Table: **1/8/05 Awaruku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.45 | 1.45 | 98.55 |
| 3.9-7.8 | 0.68 | 2.13 | 97.87 |
| 7.8-15.6 | 0.76 | 2.89 | 97.11 |
| 15.6-31.3 | 0.68 | 3.57 | 96.43 |
| 31.3-62.5 | 2.55 | 6.12 | 93.88 |
| 62.5-125.0 | 31.84 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.02 | 0.02 | 99.98 |
| 3.9-7.8 | 0.03 | 0.05 | 99.95 |
| 7.8-15.6 | 0.06 | 0.11 | 99.89 |
| 15.6-31.3 | 0.11 | 0.22 | 99.78 |
| 31.3-62.5 | 0.93 | 1.15 | 98.85 |
| 62.5-125.0 | 23.66 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **1/8/05 Awaruku 1** medium (2-600 μm).



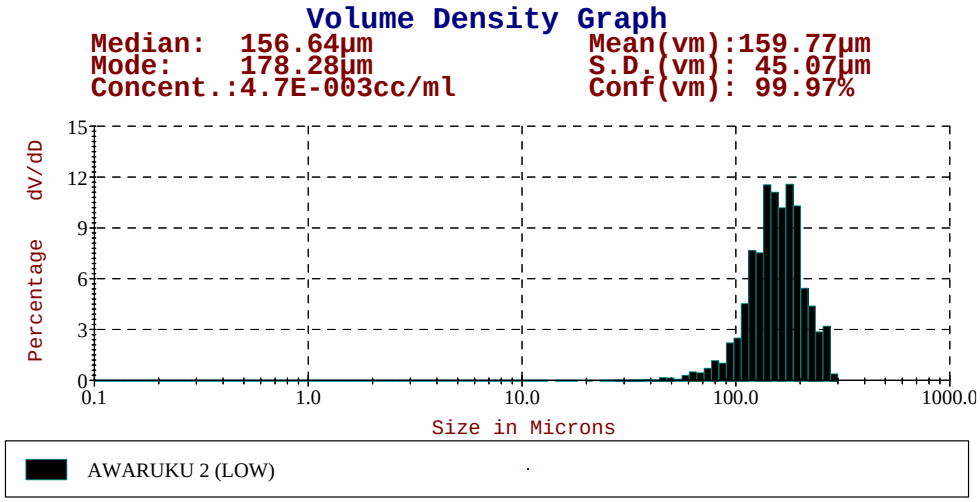

Area Ranges Table: **1/8/05 Awaruku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.25 | 0.25 | 99.75 |
| 3.9-7.8 | 0.70 | 0.94 | 99.06 |
| 7.8-15.6 | 0.68 | 1.62 | 98.38 |
| 15.6-31.3 | 0.61 | 2.23 | 97.77 |
| 31.3-62.5 | 2.37 | 4.60 | 95.40 |
| 62.5-125.0 | 26.11 | 30.71 | 69.29 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.01 | 0.01 | 100.00 |
| 3.9-7.8 | 0.03 | 0.03 | 99.97 |
| 7.8-15.6 | 0.05 | 0.08 | 99.92 |
| 15.6-31.3 | 0.09 | 0.17 | 99.83 |
| 31.3-62.5 | 0.74 | 0.91 | 99.09 |
| 62.5-125.0 | 16.81 | 17.72 | 82.28 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Distribution: Sample **1/8/05 Awaruku 2** low (0-300 µm).



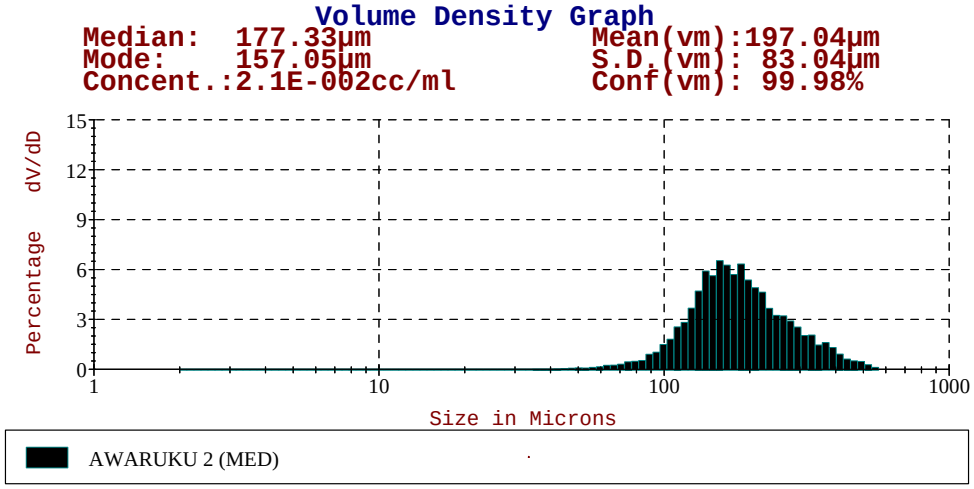

Area Ranges Table: **1/8/05 Awaruku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.76 | 0.76 | 99.24 |
| 3.9-7.8 | 0.40 | 1.16 | 98.85 |
| 7.8-15.6 | 0.37 | 1.53 | 98.47 |
| 15.6-31.3 | 0.32 | 1.85 | 98.15 |
| 31.3-62.5 | 2.24 | 4.08 | 95.92 |
| 62.5-125.0 | 29.31 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.02 | 0.03 | 99.97 |
| 7.8-15.6 | 0.03 | 0.06 | 99.94 |
| 15.6-31.3 | 0.06 | 0.11 | 99.89 |
| 31.3-62.5 | 0.76 | 0.88 | 99.13 |
| 62.5-125.0 | 20.78 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **1/8/05 Awaruku 2** medium (2-600 µm).



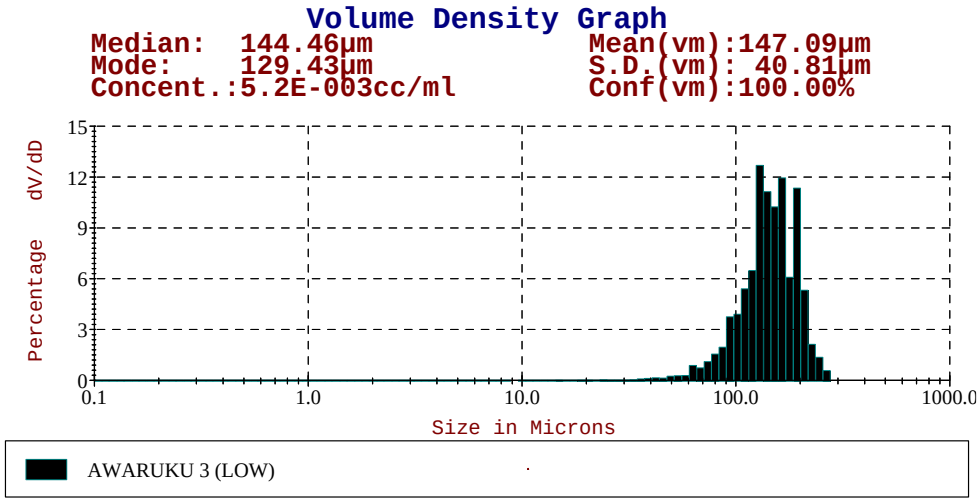

Area Ranges Table: **1/8/05 Awaruku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.10 | 0.10 | 99.90 |
| 3.9-7.8 | 0.31 | 0.41 | 99.60 |
| 7.8-15.6 | 0.42 | 0.83 | 99.18 |
| 15.6-31.3 | 0.35 | 1.18 | 98.82 |
| 31.3-62.5 | 2.19 | 3.37 | 96.63 |
| 62.5-125.0 | 23.60 | 26.96 | 73.04 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.01 | 99.99 |
| 7.8-15.6 | 0.03 | 0.04 | 99.96 |
| 15.6-31.3 | 0.05 | 0.09 | 99.91 |
| 31.3-62.5 | 0.68 | 0.77 | 99.23 |
| 62.5-125.0 | 14.43 | 15.20 | 84.80 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Distribution: Sample **1/8/05 Awaruku 3** low (0-300 µm).



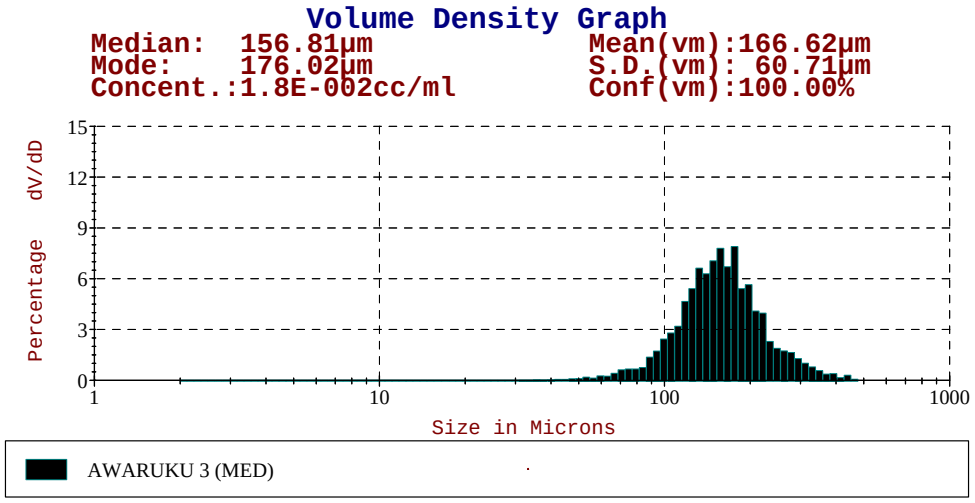

Area Ranges Table: **1/8/05 Awaruku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.68 | 0.68 | 99.32 |
| 3.9-7.8 | 0.35 | 1.03 | 98.97 |
| 7.8-15.6 | 0.51 | 1.54 | 98.46 |
| 15.6-31.3 | 0.55 | 2.09 | 97.91 |
| 31.3-62.5 | 4.62 | 6.70 | 93.30 |
| 62.5-125.0 | 34.56 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.01 | 0.01 | 99.99 |
| 3.9-7.8 | 0.02 | 0.03 | 99.97 |
| 7.8-15.6 | 0.05 | 0.07 | 99.93 |
| 15.6-31.3 | 0.10 | 0.17 | 99.83 |
| 31.3-62.5 | 1.78 | 1.95 | 98.05 |
| 62.5-125.0 | 26.20 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **1/8/05 Awaruku 3** medium (2-600 µm).



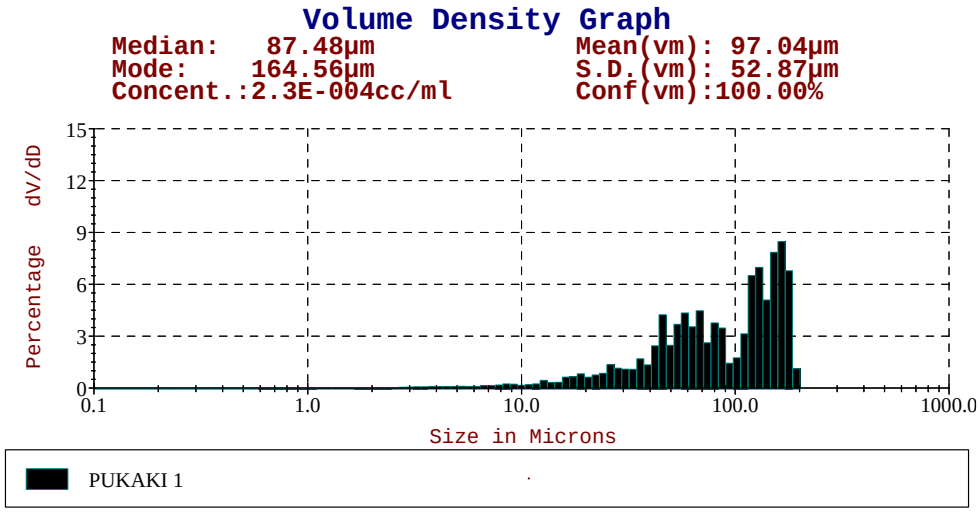

Area Ranges Table: **1/8/05 Awaruku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.10 | 0.10 | 99.90 |
| 3.9-7.8 | 0.34 | 0.44 | 99.56 |
| 7.8-15.6 | 0.39 | 0.83 | 99.17 |
| 15.6-31.3 | 0.58 | 1.41 | 98.59 |
| 31.3-62.5 | 3.03 | 4.44 | 95.56 |
| 62.5-125.0 | 31.62 | 36.05 | 63.95 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Ranges Table: **1/8/05 Awaruku 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 2.0-3.9 | 0.00 | 0.00 | 100.00 |
| 3.9-7.8 | 0.01 | 0.02 | 99.98 |
| 7.8-15.6 | 0.03 | 0.05 | 99.95 |
| 15.6-31.3 | 0.09 | 0.14 | 99.86 |
| 31.3-62.5 | 1.06 | 1.19 | 98.81 |
| 62.5-125.0 | 22.03 | 23.22 | 76.78 |
| 125.0-250.0 | | | |
| 250.0-500.0 | | | |
| 500.0-600.0 | | | |

Volume Distribution: Sample **16/8/05 Pukaki 1** low (0-300 μm).



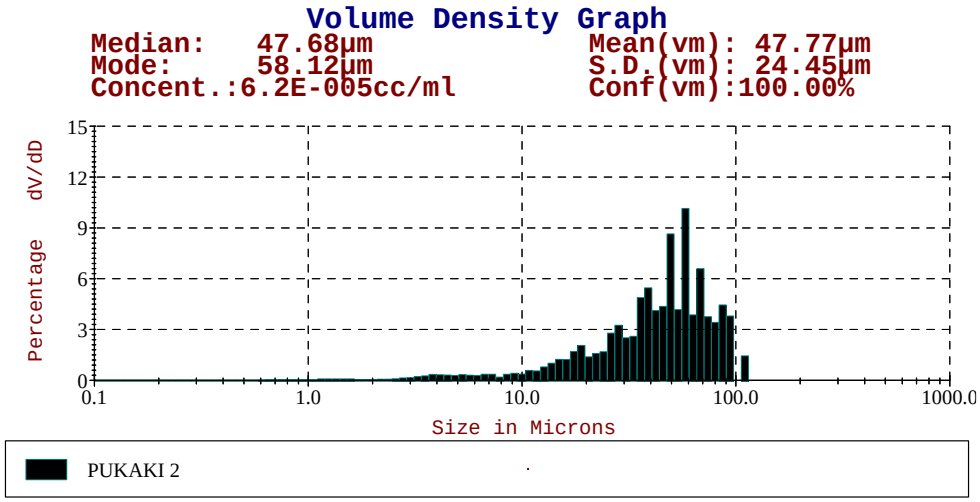

Area Ranges Table: **16/8/05 Pukaki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 14.12 | 14.12 | 85.88 |
| 3.9-7.8 | 7.59 | 21.71 | 78.29 |
| 7.8-15.6 | 9.78 | 31.49 | 68.51 |
| 15.6-31.3 | 16.24 | 47.72 | 52.28 |
| 31.3-62.5 | 23.66 | 71.38 | 28.62 |
| 62.5-125.0 | 17.46 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **16/8/05 Pukaki 1**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.56 | 0.56 | 99.44 |
| 3.9-7.8 | 0.87 | 1.43 | 98.57 |
| 7.8-15.6 | 2.25 | 3.68 | 96.32 |
| 15.6-31.3 | 7.48 | 11.15 | 88.85 |
| 31.3-62.5 | 22.47 | 33.62 | 66.38 |
| 62.5-125.0 | 31.10 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **16/8/05 Pukaki 2** low (0-300 μm).



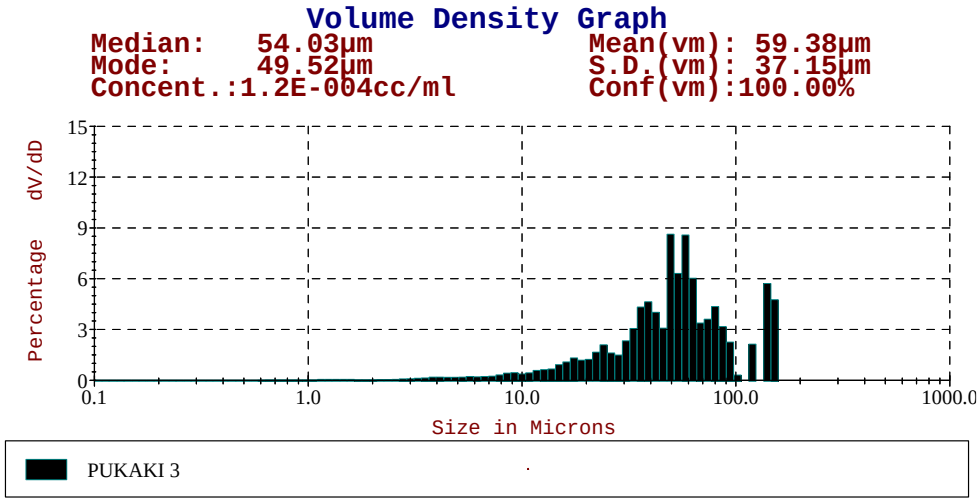

Area Ranges Table: **16/8/05 Pukaki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 23.64 | 23.64 | 76.36 |
| 3.9-7.8 | 11.66 | 35.29 | 64.71 |
| 7.8-15.6 | 11.57 | 46.87 | 53.13 |
| 15.6-31.3 | 19.06 | 65.92 | 34.08 |
| 31.3-62.5 | 25.66 | 91.59 | 8.41 |
| 62.5-125.0 | 8.41 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **16/8/05 Pukaki 2**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.86 | 1.86 | 98.14 |
| 3.9-7.8 | 2.51 | 4.37 | 95.63 |
| 7.8-15.6 | 5.51 | 9.88 | 90.12 |
| 15.6-31.3 | 17.28 | 27.17 | 72.83 |
| 31.3-62.5 | 46.73 | 73.90 | 26.10 |
| 62.5-125.0 | 26.10 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **16/8/05 Pukaki 3** low (0-300 μm).



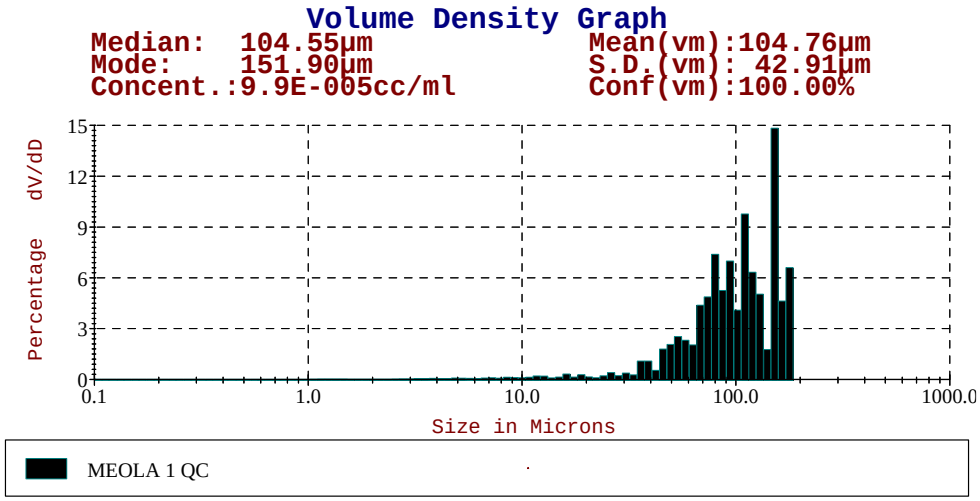

Area Ranges Table: **16/8/05 Pukaki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 18.50 | 18.50 | 81.50 |
| 3.9-7.8 | 9.33 | 27.83 | 72.17 |
| 7.8-15.6 | 12.56 | 40.38 | 59.62 |
| 15.6-31.3 | 18.02 | 58.40 | 41.60 |
| 31.3-62.5 | 30.64 | 89.05 | 10.95 |
| 62.5-125.0 | 8.70 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **16/8/05 Pukaki 3**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 1.13 | 1.13 | 98.87 |
| 3.9-7.8 | 1.70 | 2.83 | 97.17 |
| 7.8-15.6 | 4.71 | 7.54 | 92.46 |
| 15.6-31.3 | 13.26 | 20.80 | 79.20 |
| 31.3-62.5 | 46.25 | 67.04 | 32.96 |
| 62.5-125.0 | 22.41 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Distribution: Sample **Meola 1 QC** low (0-300 µm).




Area Ranges Table: **Meola 1 QC**

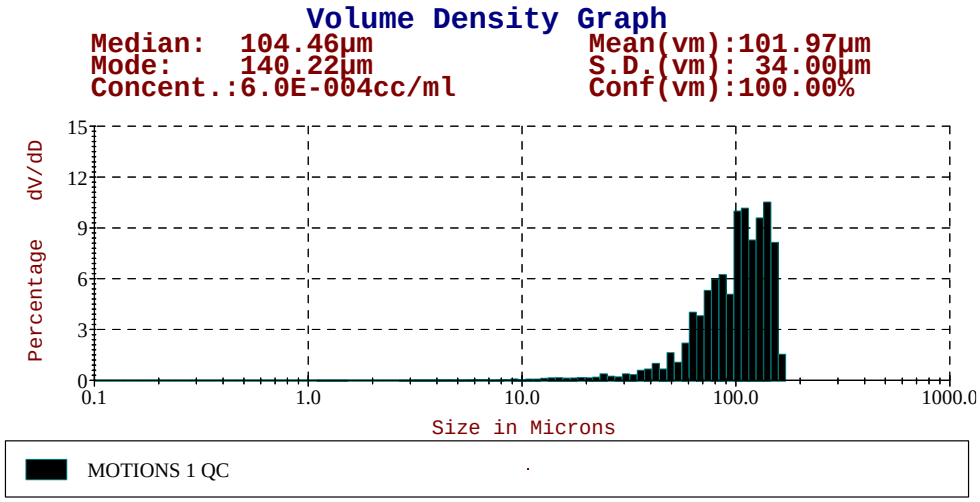
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 13.90 | 13.90 | 86.10 |
| 3.9-7.8 | 6.58 | 20.48 | 79.52 |
| 7.8-15.6 | 6.77 | 27.25 | 72.75 |
| 15.6-31.3 | 6.08 | 33.33 | 66.68 |
| 31.3-62.5 | 17.04 | 50.36 | 49.64 |
| 62.5-125.0 | 35.77 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **Meola 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.40 | 0.40 | 99.60 |
| 3.9-7.8 | 0.56 | 0.96 | 99.04 |
| 7.8-15.6 | 1.17 | 2.14 | 97.86 |
| 15.6-31.3 | 2.10 | 4.23 | 95.77 |
| 31.3-62.5 | 12.73 | 16.96 | 83.04 |
| 62.5-125.0 | 50.10 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

## Particle Size

Volume Distribution:  Sample **Motions 1 QC** low (0-300 µm).




Area Ranges Table: **Motions 1 QC**

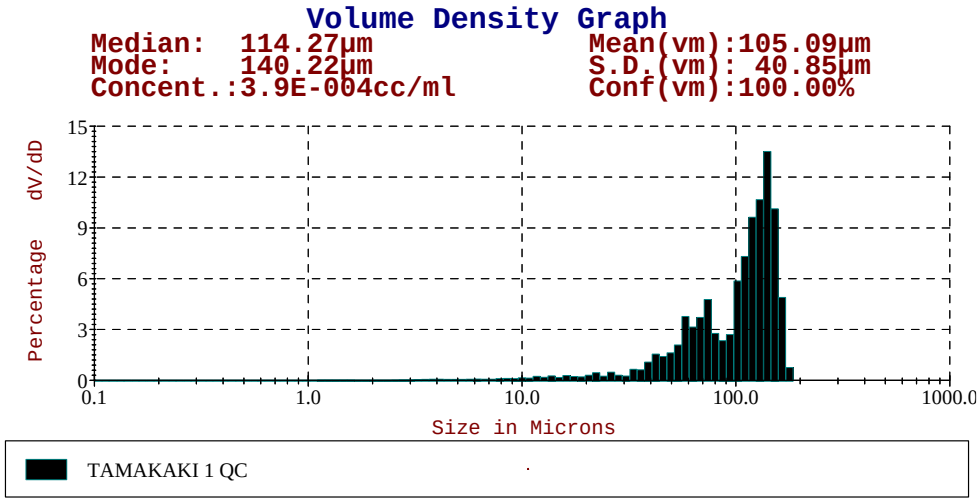
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 7.57 | 7.57 | 92.43 |
| 3.9-7.8 | 3.39 | 10.95 | 89.05 |
| 7.8-15.6 | 4.82 | 15.78 | 84.22 |
| 15.6-31.3 | 6.11 | 21.88 | 78.12 |
| 31.3-62.5 | 15.16 | 37.04 | 62.96 |
| 62.5-125.0 | 47.46 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **Motions 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.18 | 0.18 | 99.82 |
| 3.9-7.8 | 0.25 | 0.42 | 99.58 |
| 7.8-15.6 | 0.76 | 1.18 | 98.82 |
| 15.6-31.3 | 1.87 | 3.05 | 96.95 |
| 31.3-62.5 | 9.85 | 12.90 | 87.10 |
| 62.5-125.0 | 58.20 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

## Particle Size

Volume Distribution: Sample **Tamaki 1 QC** low (0-300 μm).




Area Ranges Table: **Tamaki 1 QC**

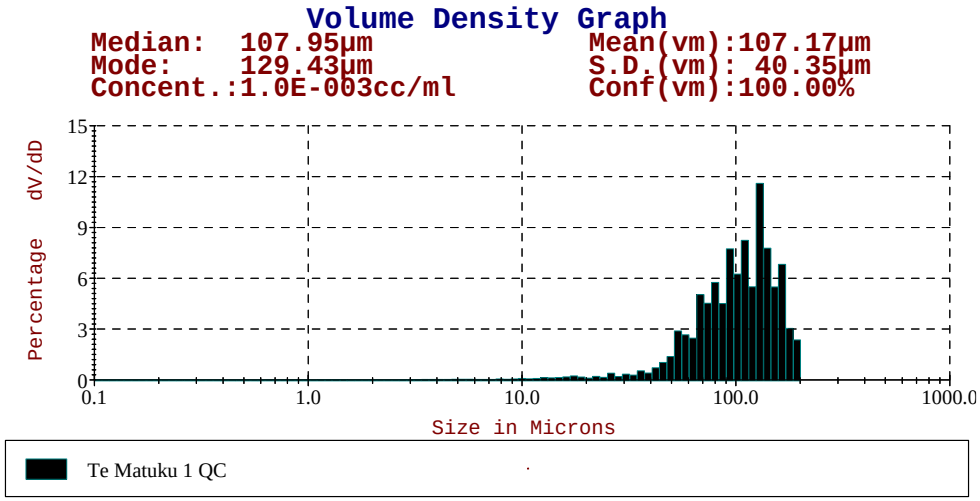
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 13.04 | 13.04 | 86.96 |
| 3.9-7.8 | 6.01 | 19.05 | 80.95 |
| 7.8-15.6 | 7.85 | 26.90 | 73.10 |
| 15.6-31.3 | 7.57 | 34.47 | 65.53 |
| 31.3-62.5 | 19.86 | 54.32 | 45.68 |
| 62.5-125.0 | 27.58 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **Tamaki 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.39 | 0.39 | 99.61 |
| 3.9-7.8 | 0.52 | 0.90 | 99.10 |
| 7.8-15.6 | 1.39 | 2.29 | 97.71 |
| 15.6-31.3 | 2.59 | 4.88 | 95.12 |
| 31.3-62.5 | 15.13 | 20.01 | 79.99 |
| 62.5-125.0 | 39.94 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

## Particle Size

Volume Distribution: Sample **Te Matuku 1 QC** low (0-300 µm).




Area Ranges Table: **Te Matuku 1 QC**

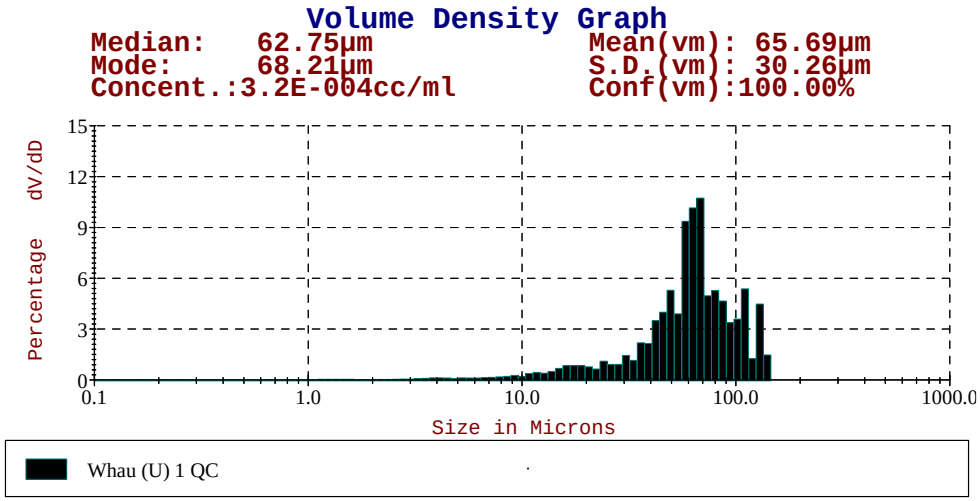
| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 7.17 | 7.17 | 92.83 |
| 3.9-7.8 | 3.09 | 10.26 | 89.74 |
| 7.8-15.6 | 4.89 | 15.15 | 84.85 |
| 15.6-31.3 | 6.37 | 21.52 | 78.48 |
| 31.3-62.5 | 16.58 | 38.10 | 61.90 |
| 62.5-125.0 | 42.81 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **Te Matuku 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.16 | 0.16 | 99.84 |
| 3.9-7.8 | 0.22 | 0.38 | 99.62 |
| 7.8-15.6 | 0.74 | 1.12 | 98.88 |
| 15.6-31.3 | 1.86 | 2.99 | 97.01 |
| 31.3-62.5 | 10.72 | 13.71 | 86.29 |
| 62.5-125.0 | 49.75 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

## Particle Size

Volume Distribution: Sample **Whau (U) 1 QC** low (0-300 µm).




Area Ranges Table: **Whau (U) 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 13.93 | 13.93 | 86.07 |
| 3.9-7.8 | 6.97 | 20.90 | 79.10 |
| 7.8-15.6 | 10.78 | 31.68 | 68.32 |
| 15.6-31.3 | 14.14 | 45.82 | 54.18 |
| 31.3-62.5 | 29.95 | 75.77 | 24.23 |
| 62.5-125.0 | 22.41 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |

Volume Ranges Table: **Whau (U) 1 QC**

| Size(microns) | Local(%) | Undersize(%) | Oversize(%) |
|---|---|---|---|
| 0.0-3.9 | 0.66 | 0.66 | 99.35 |
| 3.9-7.8 | 0.97 | 1.62 | 98.38 |
| 7.8-15.6 | 3.17 | 4.79 | 95.21 |
| 15.6-31.3 | 7.86 | 12.65 | 87.35 |
| 31.3-62.5 | 36.68 | 49.32 | 50.68 |
| 62.5-125.0 | 44.70 | | |
| 125.0-250.0 | | | |
| 250.0-300.0 | | | |