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Committee       Environment  
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## **An investigation into selected contaminant levels in eels and mussels, Waiwhetu Stream, Gracefield – May 2004**

### **1. Purpose**

To inform the Committee about the findings of an investigation into contamination levels in eels and mussels in the Waiwhetu Stream.

### **2. Background**

Over the past few years Greater Wellington Regional Council has completed a number of projects designed to quantify the nature and extent of contaminants in water and sediments of the Waiwhetu Stream.

However, this investigation determines the extent to which contaminants are present in the organisms living in the Waiwhetu Stream and whether contaminants in kaimoana are reaching levels which pose a threat to public health.

This work was funded from the Ministry for the Environment's Contaminated Sites Remediation Fund.

### **3. Methodology**

Mussels were collected from concrete piles below the bridge on Seaview Road at low tide. Thirty eight eels were caught at a location upstream of the Bell Road bridge. Six were selected for sampling and the rest were released. It is worth noting that eels were only caught on the second attempt at a site periperal to the study area. Earlier attempts to catch eels adjacent to the motor camp were unsuccessful. While earlier visits to the study site (and earlier research) suggested the presence of pipis, no live pipis were discovered at the time of sampling.

All samples were sent to the National Institute of Water and Atmospheric Testing (NIWA) laboratory in Hamilton and analysed for a suite of organochlorines and metals.

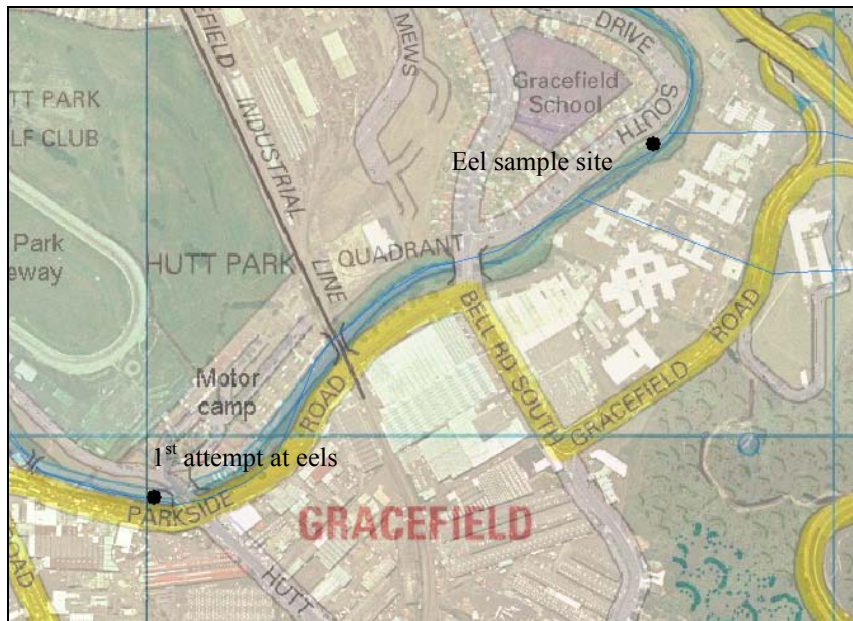
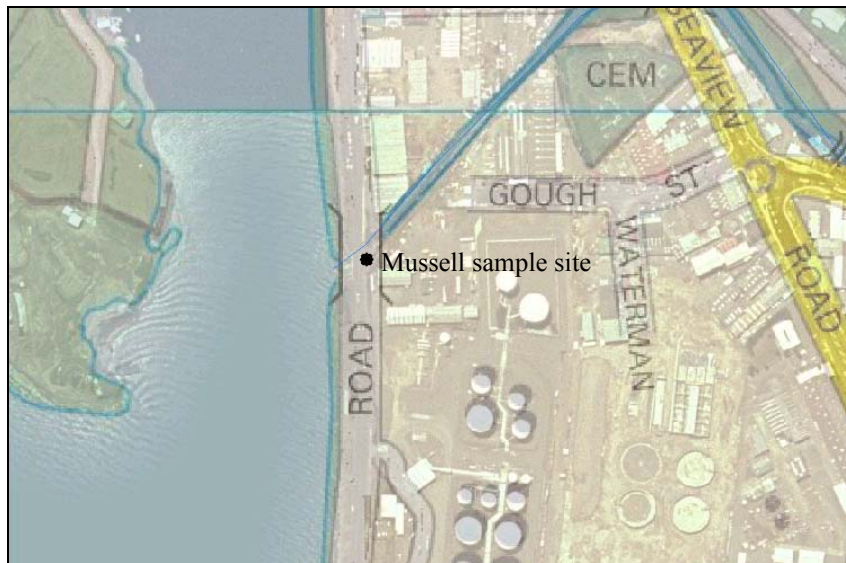


Figure 1 showing sampling sites chosen for survey work.



The New Zealand Food Standards Authority (NZFSA) recommended appropriate guidelines to assess the levels of contamination. Many contaminants did not have New Zealand standards in fish or shellfish. The NZFSA recommended a range of overseas standards from Canada, Australia, the United States of America and the United Kingdom as appropriate replacements. The standards used for comparison and their origins are provided as an attachment to this report.

## **4. Key Results**

The results are attached to this report. The key to the graphs is explained at the start of the attachment.

Generally, mussel samples showed a higher level of metal contaminants than eel samples. Eel samples showed higher concentrations of organochlorines than mussels. After adjustment for different levels of fats and oils, all eel and mussel samples exceeded the guidelines provided for total DDT. Eel samples were between nine and twenty one times the recommended guideline, mussel samples were between five and six times the recommended guidelines.

Dieldrin, a widely used pesticide de-registered in 1989, made up a significant proportion of the total organochlorine load. In mussels, dieldrin did not exceed the NZFSA standard, however the eel samples exceeded the recommended guidelines by between two and six times.

Cobalt and lead levels exceeded guidelines in mussel samples. Cobalt was between four and seven times a United Kingdom standard and the NZFSA standard for lead was exceeded in one of the samples. Standards could not be found for aluminium. However, aluminium levels in mussels were over 100 times the levels found in eels. No guidelines for metals were exceeded in eel flesh sampled.

## **5. Conclusions**

The conclusion drawn from this study is that contaminants in sediments and water are transferring through different trophic levels of Waiwhetu ecosystems. Gut analysis of eels showed that their diet consisted mostly of sediment dwelling worms. The mussels filter micro-organisms from the water.

The difference in feeding techniques is likely to cause the differing levels and nature of contaminants in eel and shellfish flesh. Additionally, some species accumulate contaminants more than other species. Some contaminants are bound to be more available in the water than in the sediment.

The findings have suggested that there may be a health risk associated with the consumption of kaimoana species taken from the Waiwhetu Stream.

## **6. Communications**

Because the results of this investigation suggested that there was a significant risk to people eating mussels or eels taken from the Waiwhetu Stream - the local iwi, Lower Hutt City Council and Regional Public Health representatives were informed immediately. No further communication is considered necessary at this time. Copies of the technical report are available for Councillors upon request.

## 7. Strategic Context

Clean and healthy rivers, streams and coasts are an objective of Greater Wellington Regional Council's adopted ten year plan. Environment management has two targets specifically linked to this work. The long term target is "to improve the water quality of our six most polluted streams". The short - term target is progression of the "Waiwhetu Stream Action Plan".

## 8. Implications

This investigation has provided additional information which will aid the decision making process for determining remediation options for the Waiwhetu Stream.

## 9. Recommendations

*It is recommended that the Committee:*

1. *receive the report; and*
2. *note the contents.*

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**Attachment 1: Results**