

16th December 2015

Auckland Council
Private Bag 92300
Auckland 1142

Attention: Nigel Donovan

Re: Investigation of Three Kings Quarry Biannual Random Sampling Exceedance Nov 2015

Dear Nigel

Biannual in situ sampling of fill at Three Kings is required by Condition 25 of the suite of consents that authorise filling.

On the 10th November 2015 Focus Environmental Ltd conducted composite sampling of two Tip heads at Three Kings Quarry: Winter Tip head (COMP01) and the Northern Section of the Red Tip head (COMP02). The subsequent report "Re: Soil Sampling for Auckland Council at the Three Kings Quarry Managed Fill Site" prepared by Focus Environmental Ltd was received on the 2nd December 2015 (Appendix A). The results for COMP01 (Winter Tip head) were fully compliant. The results for COMP02 (Northern Section of Red Tip head) were compliant with the exception of BaP(eq) that was reported at 2.8mg/kg which is above the maximum fill acceptance criteria of 2.15mg/kg for this parameter.

Council and Rob Burden (Domain Environmental) were notified on the 2nd December 2015 and an investigation was initiated by the Environmental Fill Specialist.

Investigation Key Points:

Consent condition 25 does not specify what actions are required if an exceedance in the random biannual sampling occurs, therefore it has been agreed with Council that the procedure to follow shall be the same as set out in the Three Kings Fill Management Plan for a fill test load exceedance.

Focus Environmental returned to site on the 3rd December 2015 and collected a further four samples from the Northern section of the Red Tip Head (COMP2-AR, COMP2-BR, COMP2-CR, COMP2-DR). The analysis report from Hill Laboratories Ltd (Appendix B), showed BaP(eq) results for all four samples were well below the Three Kings Fill Acceptance Criteria, indicating that only a small quantity of fill within the Northern Section of the Red Tip Head contains an elevated BaP(eq) concentration.

The fill disposed at Three Kings is from either pre-approved or non pre-approved sources. Pre-approved material is that which demonstrates compliance with the limits set out in the consents by providing soil testing and analysis. Non pre-approved material is that which has not been subject to pre-approval as less than 200m³ is to be placed on site from a single source and is subject to additional onsite testing for heavy metal concentrations via XRF analysis. Analytical testing of non pre-approved loads is also undertaken at a rate of no less than 1 in every 150 incoming loads (or every 1400 tonnes).

Three Kings fill disposal records indicate that fill disposal commenced at the Northern Section of the Red Tip head (COMP02 location) on the 13th August 2015 and stopped on the 29th August 2015. A total of approximately 15,000m³ of fill was disposed at the Northern section of the Red Tip head during this time. Records indicate that 91% of the total volume of fill disposed in this area was from pre-approved jobs and only 9% was non pre-approved. Test results for pre-approved and non pre-approved fill tipped at the Northern section of the Red Tip head over the period 13 August to 29 August 2015 are summarised in the attached table (*Appendix C*). All test results for BaP(eq) were significantly less than the maximum fill acceptance criterion of 2.15mg/kg with the exception of one non pre-approved job which had a recorded BaP(eq) result of 13.7mg/kg (Report entitled “*Three Kings Quarry Failed Test Load and Report Incident – 2 November 2015*”, submitted to council 13th November 2015). Approximately 6m³ from this source was disposed in the Northern Section of the Red Tip head, indicating that only a relatively small quantity of fill within the Northern section of the Red Tip head contained a concentration of BaP(eq) above the maximum fill acceptance criterion.

The fill acceptance criteria in the consents are split into two threshold groups, both of which must be met. These two groups are the Maximum Criteria and the Weighted Rolling Mean Criteria. The weighted rolling mean is a live system which is updated as each new set of laboratory results become available.

To be conservative, the weighted rolling mean for BaP(eq) has been recalculated assuming that 100% of the total fill placed at the Northern section of the Red Tip head between 13 August and 29 August 2015 (15,000m³) contains a BaP(eq) concentration of 2.8mg/kg (the concentration detected in fill sample COMP02). On this basis the current weighted rolling mean has increased from 0.26mg/kg to 0.39mg/kg which is still significantly less than the Maximum Deeper Fill Weighted Rolling 12-Month Mean level for BaP(eq) of 1.0mg/kg (*Refer to Appendix D*).

If there are any further queries or comments on this investigation please do not hesitate to contact me on 027 504 3624 or at angela.klein@gbcwinstone.co.nz.

Yours faithfully



Angela Klein
Environmental Fill Specialist