

BASELINE AIR QUALITY MONITORING REPORT

FOR


CONTRACT No. CV/2002/13

FILL BANK AT TUEN MUN AREA 38

(Revision No.1)

Report No.: ET11698


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Date:

7/8/03

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EXECUTIVE SUMMARY.

Stanger Asia Ltd. has been appointed by Penta-Ocean Construction Co. Ltd. to provide an Environmental Team (ET) to monitor air and water quality and to audit landscape works for Contract No. CV/2002/13, Fill Bank at Tuen Mun Area 38.

As there is very limited time available between the proposed start date of operation for the above Fill Bank, and the time required for the completion and reporting of any Baseline Air Quality Monitoring data (minimum 14 days for monitoring and a further 5 days for reporting) for this project, it has been proposed subject to approval by the appropriate authorities to employ recent air quality monitoring data produced for the current works contract at this site, "Contract No. CV/2000/01 – Tuen Mun Area 38 Reclamation, Stage 2."

A site visit (07/06/2003) was carried out that has confirmed that one of the proposed monitoring locations for this project, A1, is within 20metres of the air quality monitoring station DM1 currently employed under contract CV/2000/01. In addition there was very little works activity within the vicinity of this station on the date of the site visit and, it is therefore proposed that data obtained in recent months for 24 and 1-hour TSP monitoring would be sufficiently representative of ambient air quality in this area to serve as Baseline data to derive the Action levels for future impact air quality monitoring works to be carried out under Contract CV/2002/13.

Statistical analysis of the data for the monitoring of 24 and 1-hour TSP from the monthly Environmental Monitoring & Audit reports for the months of March, April and May 2003 produced for Contract CV/2000/01 was carried out in accordance to those procedures recommended in Section 4.7 of the "Agreement No. PW 01/2003, Project Profile for Fill Bank at Tuen Mun Area 38 – Environmental Monitoring & Audit Manual" to derive the relevant Action levels for future impact air quality monitoring works.

The Action level of 24-hour TSP monitoring for location DM1 was calculated to be $192\mu\text{g}/\text{m}^3$. The Action level for 1-hour TSP monitoring for location DM1 was calculated to be $344\mu\text{g}/\text{m}^3$.

The Limit Level for 24-hour TSP and 1-hour TSP was $260\mu\text{g}/\text{m}^3$ and $500\mu\text{g}/\text{m}^3$ respectively. These Limit Levels were taken from the Environmental Monitoring and Audit Manual produced for this project which have been set in accordance with recommended guidelines for air quality in Hong Kong.

1. INTRODUCTION.

1.1 Purpose of Document.

This report outlines the air quality data to be employed as Baseline monitoring data for Contract No. CV/2002/13. The report aims to provide data in terms of 24 and 1-hour Total Suspended Particulates (TSP) for air quality prior to the commencement of any construction activities under Contract No. CV/2002/13.

The Baseline monitoring data is then used for the determination of the appropriate Action levels with the Limit levels being set in accordance with those as stipulated in the Environmental Monitoring and Audit Manual produced for this project.

As there is very limited time available between the proposed start date of operation for the above Fill Bank, and the time required for the completion and reporting of any Baseline Air Quality Monitoring data (minimum 14 days for monitoring and a further 5 days for reporting) for this project it has been proposed, subject to approval by the appropriate authorities, to employ recent air quality monitoring data produced for the current works contract at this site, "Contract No. CV/2000/01 – Tuen Mun Area 38 Reclamation, Stage 2."

This report has been produced with reference to the "Agreement No. PW 01/2002, Project Profile for Fill Bank at Tuen Mun Area 38 – Environmental Monitoring and Audit Manual" dated November 2002 and prepared by CH2M HILL (China) Limited.

1.2 The Project Background Information.

The works for this contract mainly comprise the operation – inclusive of receiving of materials and transferal to barge, maintenance and landscaping works of the Fill Bank at Tuen Mun Area 38 in the North West New Territories.

The project proponent of the project is the Civil Engineering Department, Port Works Division, of Hong Kong.

The operation, maintenance and landscaping works is to be carried out by Penta-Ocean Construction Co. Ltd. of Hong Kong, the main contractor.

The Project Engineer to oversee the contract will be the Civil Engineering Department, Port Works Division.

1.3 Scope of Baseline Air Quality Monitoring Programme.

The scope of the air quality monitoring programme is to establish baseline air quality levels at a specified location.

1.4 Structure of Air Quality Monitoring Baseline Report.

- Section 1 - Gives an introduction and background information to the content and purpose of this report.
- Section 2 - Gives the organisation and structure for the management of the air quality baseline, monitoring programme , and gives the responsibilities of key individuals;
- Section 3 - Gives the air quality baseline monitoring requirements including baseline monitoring schedule, lists monitoring equipment, methodology and monitoring locations.
- Section 4 - Gives the details for air quality monitoring results and observations.
- Section 5 - Gives the derivation of the Action and Limit Levels.
- Section 6 - Gives the Event and Action Plan for Exceedances.
- Section 7 - Conclusion

2. PROJECT ORGANISATION.

2.1 General.

The contract specifications for the Project requires that the Contractor appoints an Environmental Team (ET) and an ET Leader (ETL) to conduct air quality monitoring and auditing works during the construction phase of the Project.

The appointment of the ET is subject to approval from the Environmental Protection Department (EPD).

The ETL shall have previous relevant experience in carrying out similar EM&A programmes, both in the monitoring and auditing of environmental parameters.

2.2 Project Organisation.

The Engineer appointed to oversee the construction works for the project will be from the Civil Engineering Department, Port Works Division. The appointed Resident Engineer is Mr. Chan Lun-ming, (Tel: 2762 5602) (Fax: 22714 0113).

The main Contractor for this project is Penta-Ocean Construction Co. Ltd. The Construction Manager is Mr. Stephen Choi, (Tel: 2491 1584) (Fax: 2496 9433).

The Independent Checker Environmental (IEC) for this project is Mr. Joseph Poon, Environmental Consultant, Materialab Consultants Ltd., (Tel: 24509 8238) (Fax: 2450 6138).

The Environmental Team Leader (ETL) proposed for this project is Mr. Chris Shenfield, Senior Environmental Scientist, Stanger Asia Ltd., (Tel: 2682 1203) (Fax: 2682 0046).

3. MONITORING PROGRAMME.

3.1 Monitoring Locations.

The Environmental Monitoring & Audit (EM&A) Manual produced for this project specifies two monitoring locations, A1 and A2, for the carrying out of air quality monitoring.

Location A1 is fixed location in the vicinity of the site office, and location A2 is a movable location to the western boundary of the site which is designed to move as works the progress.

The wind speed and direction logging equipment will be established at location A1, i.e. the permanent location.

The coordinates monitoring location A1 and A2 for Contract CV/2002/13, in addition the location DM1 for Contract CV/2000/01 are listed in the following table.

Table 3.1 – Coordinates of Air Monitoring Locations

Station	HK Metric Grid – Easting	HK Metric Grid - Northing
A1	“811368”	“8255 93”
A2	Not yet confirmed	Not yet confirmed
DM1 (Contract No. CV/2002/13)	811369.00	825592.00

Key: ““ – indicates estimated form Ordinance Survey Map, to be confirmed by on-site measurement prior to commencement of impact monitoring works.

The description of the locations are summarized in the following table.

Table 3.2 – Description of Monitoring Locations

Location Code	Description	Level
A1	North East corner of the site, within 20mteres of the site office and adjacent to the Truck Load Control Zone.	Ground level
A2	To the Western boundary of the Site, movable in-line with works progress.	Ground level
DM1 (Contract No. CV/2002/13)	North East corner of the site, adjacent to site office. .	Ground level

The ET shall review the location of the monitoring stations regularly in regards to its suitability to serve nearby air sensitive receivers, in order to take into account the changes in the surrounding environment and the nature of construction works in progress, if necessary. Monitoring locations are shown in [Figure 3.1](#)

3.2 Monitoring Methodology.

The measurement of 24-hour and 1-hour TSP levels were carried out in accordance to high volume sampling method set out in the Title 40 of the Code of Federal Regulations, Chapter 1 (Part 50).

When positioning the high volume samplers, the following points have been considered:

- a horizontal platform with appropriate support to secure the high volume sampler against gusty wind, should be provided;
- no two high volume samplers should be placed less than 2 m apart;
- horizontal distance between the high volume samplers and an obstacle, such as buildings, must be at least twice the height of the obstacle protruding above the high volume samplers;
- a minimum separation of 2m should be provided from walls, parapets, and penthouses for rooftop high volume samplers;
- a minimum separation of 2m should be provided from any supporting structure measured horizontally;
- there should not be any furnace or incinerator flues nearby;
- there should be unrestricted airflow around the high volume samplers;
- a minimum separation of 20m should be provided from the dripline;
- any wire fence and gate employed to protect the high volume samplers should not cause any obstruction during monitoring.

All relevant data including elapsed time, meter reading for the start and finish of the sampler, identification and weight of the filter paper, and other special phenomena were recorded.

3.3 Monitoring Equipment and Calibration Details.

High Volume Air Samplers.

Anderson GMW Model SA2310 high volume samplers were used to carry out the monitoring of 24-hour and 1-hour TSP.

The high volume samplers are in compliance with the specifications listed in the EM&A Manual as follows:

- 0.6 – 1.7 m³/min (20-60 SCFM) adjustable flow range;
- equipped with a timing / control device with 5 minutes accuracy over 24 hours operations;
- installed with elapsed-time meter with 2 minutes accuracy over 24 hours operations;
- capable of providing a minimum exposed area of 406 cm² (63 in²);
- flow control accuracy: 2.5% deviation over 24-hr sampling period;
- equipped with shelter to protect the filter and sampler;
- incorporated with an electronic mass flow rate controller or other equivalent devices;

- equipped with a flow recorder for continuous monitoring;
- provided with peaked roof inlet, incorporated with manometer;
- able to hold and seal the filter paper to the sampler housing at horizontal position;
- easy to change filter; and
- capable of operating continuously for 24-hour period.

Calibration.

The high volume samplers were calibrated upon installation. The calibration kit comprising pressure plates and a transfer standard is traceable to the internationally recognized standard.

3.4 Laboratory Measurement.

The laboratory measurements were carried out at Materialab Ltd., a HOKLAS accredited laboratory with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments.

Clean filter papers of size 8" x 10" with no pin holes were labeled before sampling. They were conditioned in a dessicator with less than 50% relative humidity for over 24-hr and pre-weighted before use for sampling.

After sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag. The filter papers were then returned to the laboratory for reconditioning in the dessicator with less than 50% relative humidity followed by accurate weighing by an electronic balance regularly calibrated against a traceable standard with a read out down to 0.1 mg.

Materialab has comprehensive quality assurance and quality control programmes for QA/AC procedures in accordance with the requirements of HOKLAS accreditation, all filters were equilibrated and weighted repeatedly until the difference of two consecutive results is less than 0.5 mg.

3.5 Monitoring Schedule.

The EM&A manual for the project specified that baseline air quality monitoring should be carried out at least one location, for fourteen days continuously. During this period 24-hour TSP shall be measured every day giving 14 data points for this parameter, with 1-hour TSP being measured three times every day when the highest level of dust generation is to be expected giving 42 data points for this parameter.

As there is very limited time available between the proposed start date of operation for the above Fill Bank, and the time required for the completion and reporting of any Baseline Air Quality Monitoring data as per the EM&A manual (minimum 14 days for monitoring and a further 5 days for reporting) it has been proposed, subject to approval by the appropriate authorities, to employ recent air quality monitoring data produced for the current works contract at this site, "Contract No. CV/2000/01 – Tuen Mun Area 38 Reclamation, Stage 2" to serve as baseline data for Contract No. CV/2002/13.

Therefore, statistical analysis of data for the monitoring of 24 and 1-hour TSP from the monthly Environmental Monitoring & Audit (EM&A) reports for the months of March, April and May 2003 produced for Contract CV/2000/01 was carried out in accordance to those procedures recommended in Section 4.7 of the "Agreement No. PW 01/2003, Project Profile for Fill Bank at Tuen Mun Area 38 – Environmental Monitoring & audit Manual" to derive the relevant Action levels for these parameters.

At the designated monitoring locations, 24-hr TSP samples were taken once every six days, with 1-hour TSP being samples being taken three times every six days when the highest levels of dust generation were to be expected.

Table 3.3- Monitoring Schedule

Monitoring Locations	Parameter	Period	Frequency
DM1	24-hr TSP	March, April & May 2003	Once every six days.
	1-hr TSP	March, April & May 2003	Three times every six days.

4 MONITORING RESULTS AND OBSERVATIONS.

4.1 Monitoring Results.

The detailed monitoring records for 24-hour and 1-hour TSP were not available to the ET. However, from a recent inspection there was little or no major construction activities in the vicinity of monitoring location DM1 during those periods. The results are presented graphically in [Figure 4.1](#) and [Figure 4.2](#). The statistical summary of the TSP levels is tabulated below.

Table 4.1 - Statistical Summary of 24-hour and 1-hour TSP Baseline Monitoring Data

Sample Location	Averaged 24-hour TSP Level (Range), $\mu\text{g}/\text{m}^3$	Averaged 1-hour TSP Level (Range), $\mu\text{g}/\text{m}^3$
DM1	95.3 (29 – 193)	145 (35-440*)

Key: * - four data points from May 2003 which exceeded the Limit level were excluded from this data.

4.2 Influencing Factors, Weather Conditions and Major Activities.

Only details on weather were stated in the available EM&A reports. Influencing factors for the month of May 2003 were derived from a site visit conducted on the 7th June 2003.

Table 4.2 - Summary of the Weather and Influencing Factors

Date	Day	Weather condition	Wind Direction	Influencing Factors
02/03/2003	Sun	Fine	n/s	n/s
08/03/2003	Sat	Cloudy	n/s	
14/03/2003	Fri	Fine	n/s	
20/03/2003	Tue	Rainy	n/s	
26/03/2003	Wed	Fine	n/s	
01/04/2003	Tue	Cloudy	n/s	n/s
07/04/2003	Mon	Cloudy	n/s	
13/04/2003	Sun	Cloudy	n/s	
17/04/2003	Thu	Cloudy	n/s	
23/04/2003	Wed	Cloudy	n/s	
29/04/2003	Tue	Fine	n/s	
05/05/2003	Mon	Heavy Raining	n/s	
11/05/2003	Sun	Fine	n/s	
17/05/2003	Sat	Cloudy	n/s	
23/05/2003	Fri	Fine	n/s	
29/05/2003	Thu	Cloudy	n/s	

Key: n/s – not stated in relevant EM&A reports.

5. DETERMINATION OF ACTION AND LIMIT LEVELS.

5.1 Methodology for setting up the Action and Limit Levels.

Based on the statistical analysis of the results of the air quality monitoring data obtained for the months of March, April and May 2003 and utilising the criteria laid out in the EM&A Manual for the project, as given in Table 5.1 below, the Action levels for this Project have been calculated.

Table 5.1 - Action and Limit Levels for Air Quality

Parameters	Action	Limit
24-hour TSP in $\mu\text{g}/\text{m}^3$	For baseline level $\leq 200\mu\text{g}/\text{m}^3$, Action Level = (Baseline level x 1.3 + Limit level)/2; For baseline level $> 200\mu\text{g}/\text{m}^3$, Action level = Limit level.	$260\mu\text{g}/\text{m}^3$
1-hour TSP	For Baseline level $< 384\mu\text{g}/\text{m}^3$, Action level = (Baseline level x 1.3 + Limit level)/2; For Baseline level $> 384\mu\text{g}/\text{m}^3$, Action level = Limit level.	$500\mu\text{g}/\text{m}^3$

5.2 Derived Action and Limit Levels.

According to the Table 5.1 and the results obtained in Section 4.1, the Action and Limit levels for the project are thus calculated and summarized in the following table.

Table 5.2 - Action and Limit Levels for the Project

Parameter Monitored	Monitoring Locations	Action Level $\mu\text{g}/\text{m}^3$	Limit Level $\mu\text{g}/\text{m}^3$
24-hour TSP	A1 & A2	192	260
1-hour TSP	A1 & A2	344	500

6. EVENT AND ACTION PLAN FOR EXCEEDANCES TO ACTION AND LIMIT LEVELS.

Should the non-compliance of the Action and Limit Levels for this project occur, actions in accordance with the Action Plan in the following table shall be carried out.

Table 6.1 – Event and Action Plan for Air Quality

EVENT	ACTION			
	ET Leader	IC (E)	ER	CONTRACTOR
Action Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, IEC and Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor’s working methods. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify unacceptable practice. 2. Amend working methods if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC and Contractor. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency to daily. 5. Discuss with IEC and Contractor on remedial actions. 6. If exceedance continues, arrange meeting with IEC and ER. 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor’s working method. 3. Discuss with ET and Contractor on possible remedial measures. 4. Advise the ER on the effectiveness of the proposed remedial measures. 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions are properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to ER within 3 working days of notification. 2. Implement the agreed proposals. 3. Amend proposals if appropriate.

Table 6.1(cont'd) - Event and Action Plan for Air Quality

EVENT	ACTION			
	ET Leader	IC (E)	ER	CONTRCATOR
Limit Level				
Exceedance for one sample	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform ER, Contractor and EPD. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency to daily. 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET. 2. Check Contractor's working method. 4. Discuss with ET and Contractor on possible remedial measures. 5. Advise the ER on the effectiveness of the proposed remedial measures. 6. Supervisor implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. Ensure remedial actions properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedances. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Amend proposal if appropriate.
Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> 1. Identify source, investigate the causes of exceedance and propose remedial measures. 2. Inform IEC, ER and Contractor and EPD. 3. Repeat measurements to confirm findings. 4. Increase monitoring frequency to daily. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation measure(s) to be implemented. 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken. 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions. 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify Contractor. 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented. 4. Ensure remedial measures properly implemented. 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance. 2. Submit proposals for remedial actions to IEC within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

7. CONCLUSION.

Statistical analysis of the air quality monitoring data generated from Contract No. CV/2000/01 for the periods of March, April and May 2003, was carried out in accordance with Section 4.7 of the EM&A Manual prepared for Contract No. CV/2002/13 to derive the Action level for 24 and 1-hour TSP.

The Action level for 24-hour TSP for location DM1 was calculated to be $192\mu\text{g}/\text{m}^3$.

The action level for 1-hour TSP for location DM1 was calculated to be $344\mu\text{g}/\text{m}^3$.

The Limit level for 24-hour TSP is set at $260\mu\text{g}/\text{m}^3$, with the Limit level for 1-hour TSP being set at $500\mu\text{g}/\text{m}^3$. The Limit levels for 24 and 1-hour TSP were taken from the EM&A Manual prepared for this project.

The site was subjected to fugitive dust generated by the traffic and wind blow dust.

No major construction activities were conducted during the baseline period.

Figures

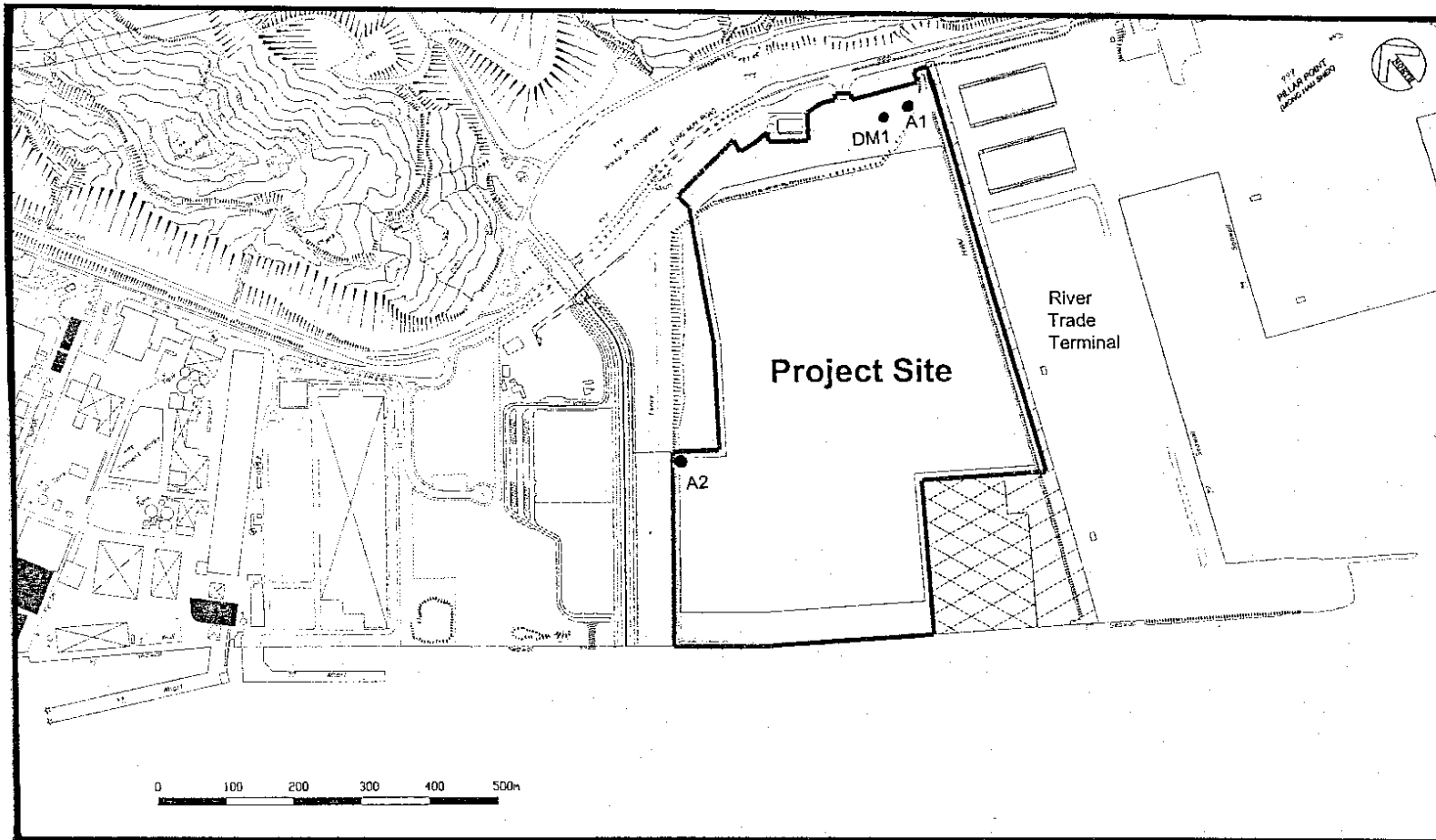


Figure 3.1 - Location of Air Monitoring Stations.

A1, A2 – Proposed TSP Monitoring Stations for Contract CV/2002/13

DM1 – Current TSP Monitoring Station for Contract CV/2000/01

Figure 4.1 - Graphical Plot of 1-hour TSP

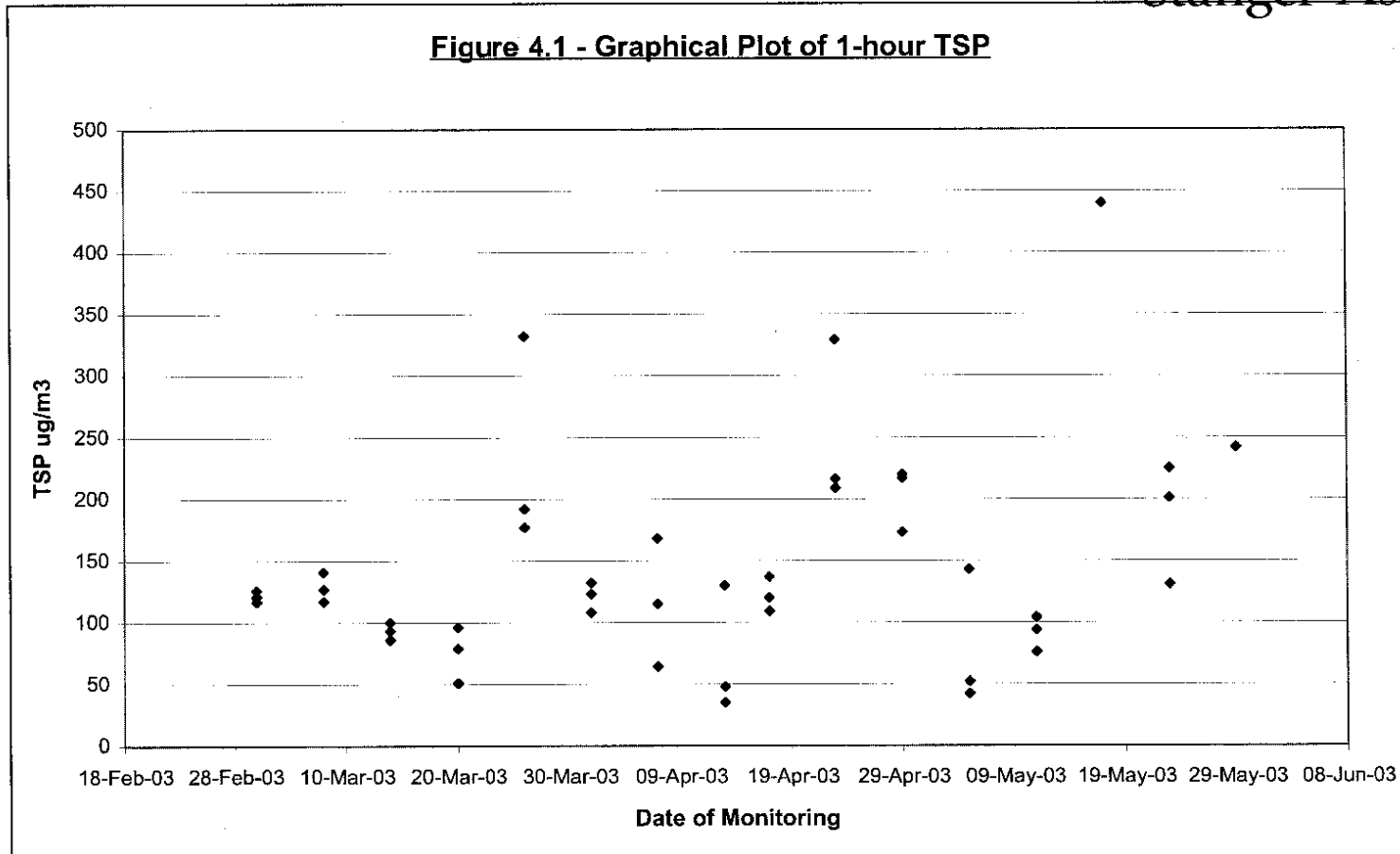
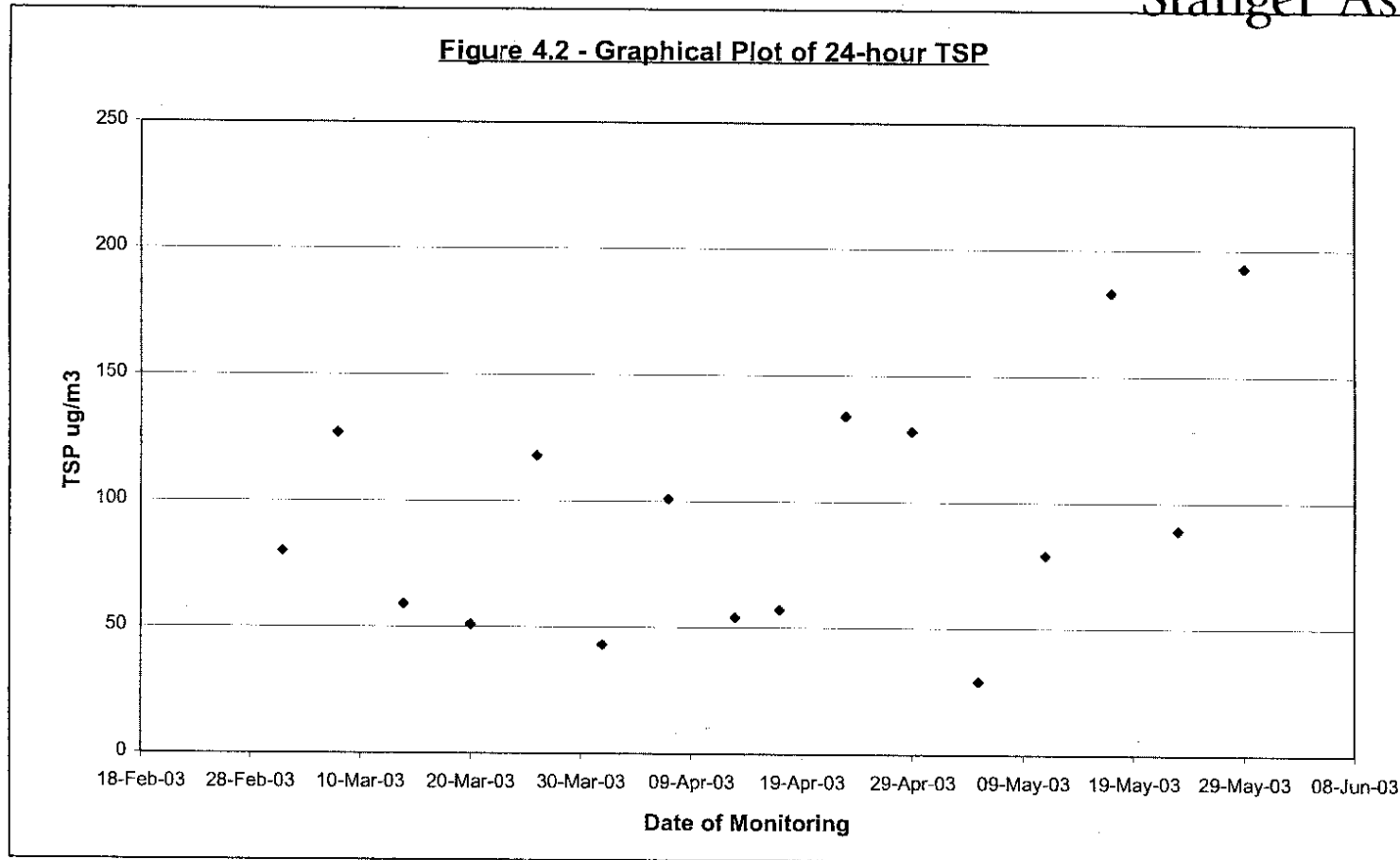


Figure 4.2 - Graphical Plot of 24-hour TSP



Appendix I

Calibration Records of Monitoring Equipment

Calibration records for the dust monitoring equipment were not available from the relevant EM&A reports.

Appendix II

Details of Monitoring Results

FUGRO TECHNICAL SERVICES LIMITED

Material Lab Division,
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Our Ref. No. : 00242BEN 30554
 Client : Penta Ocean Construction Co, Ltd.
 Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24/1 1*hr Impact TSP Monitoring Field Record

Equipment : 1. BMW BA-2310-100 High Volume Air Sampler
 2. Ohaus N2000 Analytical Balance (C-001-3)
 3. PHYLKO 240 Indicator (S-P13-2)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		Traffic Transitory in progress	
Weather condition		Cloudy	
Start of sampling	Date	5/5/03	
	Time	14:45	Timer reading : 4220 ³²
Completion of sampling	Date	06/05/2003	
	Time	14:44	Timer reading : 4244 ³²
Total duration of sampling		1439.4 min.	
Calibrated flow rate		43.11	Std. CFM
Total volume		1757.36	Std. m ³
Sample ID of filter		TM 1006	
Initial wt. of filter		2.8403	g
Final wt. of filter		2.8915	g
Weight gain of filter		0.0512	g
TSP level		29	µg/Std. m ³
Expandance		No expandance	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		423	500
24-hr TSP level in (µg/Std. m ³)		213	260

TSP (µg/Std. m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix B.

* Delete as appropriate

Field staff : *H. L. King*

Lab. staff : *Victor To*

Checked by : *[Signature]*

Date : *06/05/2003*

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MaterialLab

Our Ref. No. : 002428EN 30554
Client : Penta Ocean Construction Co. Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 hr Impact TSP Monitoring Field Record

Equipment : 1. QMVB-3315-106 High Volume Air Sampler
2. Bosch 91000 Analytical Balance (C-001-3)
3. PHYSIKO 140 Inculator (U-010-2)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		<i>(truck transport in progress)</i>	
Weather condition		<i>F-0</i>	
Start of sampling	Date	<i>11/1/03</i>	
	Time	<i>11:21</i>	Timer reading : <i>4247³¹</i>
Completion of sampling	Date	<i>12/05/2003</i>	
	Time	<i>11:21</i>	Timer reading : <i>4071³²</i>
Total duration of sampling		1440.0 min.	
Calibrated flow rate		43.11	Std. CFM
Total volume		1758.10	Std. m ³
Sample ID of filter		<i>DM1 1014</i>	
Initial wt. of filter		2.8529	g
Final wt. of filter		2.9917	g
Weight gain of filter		0.1388	g
TSP level		79	µg/Std. m ³
Exceedance		<i>No exceedance</i>	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		423	500
24-hr TSP level in (µg/Std. m ³)		213	260

TSP (µg/Std. m³) = A x 10⁶ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix B.

* Delete as appropriate

Field staff : *L.C. Kwok* Lab. staff : *Victor To* Checked by : *[Signature]*
Date : *11/1/03* Date : *19/05/2003* Date : *19/05/03*

FLURO TECHNICAL SERVICES LIMITED

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MaterialLab

Our Ref. No. : 002428EN
Client : Panta Ocean Construction Co. Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 hr Impact TSP Monitoring Field Record

Equipment : 1. DMW SA-3010-US High Volume Air Sampler
2. Bosch 82000 Analytical Balance (C-801-3)
3. PHYSICO 140 Incubator (C-016-X)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		Truck Transporting	
Weather condition		Fine	
Start of sampling	Date	17/05/2003	
	Time	13:45 Timer reading : 4274.22	
Completion of sampling	Date	18/05/2003	
	Time	13:44 Timer reading : 4298.20	
Total duration of sampling		1438.8 min.	
Calibrated flow rate		43.11 Std. CFM	
Total volume		1756.63 Std. m ³	
Sample ID of filter		TM1023	
Initial wt. of filter		2.8538 g	
Final wt. of filter		3.1760 g	
Weight gain of filter		0.3222 g	
TSP level		183 µg/Std. m ³	
Exceedance		No exceedance	
Parameters	Action Level	Limit Level	
1-hr TSP level in (µg/Std. m ³)	423	500	
24-hr TSP level in (µg/Std. m ³)	213	280	

TSP (µg/Std. m³) = A x 10⁶ / B A = mass of collected particulate B = Volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix G.

* Dates as appropriate

Field staff : *Kony*

Lab. staff : W. M. Fuk

Checked by : *[Signature]*

Date : 17/05/2003

Date : 21/05/2003

Date : 21/05/03

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Our Ref. No. : 00242BEN 30554
Client : Penta Ocean Construction Co. Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 hr Impact TSP Monitoring Field Record

Equipment : 1. GMAV SA-2510-105 High Volume Air Sampler
2. Oesch 8200 Analytical Balance (C-001-3)
3. PHYSIKO 240 Impactor (C-015-2)

Location		DM1
Details of location		Adjacent to site office next to the car park
Site conditions		
Weather condition		Excavating truck transport in progress Fine
Start of sampling	Date	27/5/03
	Time	14:55 Timer reading: 6301 ³⁰
Completion of sampling	Date	28/5/2003 27/5/03
	Time	14:54 14:55 Timer reading: 6325 ³⁰
Total duration of sampling		1439.4 min.
Calibrated flow rate		43.11 Std. CFM
Total volume		1757.36 Std. m ³
Sample ID of filter		TM 1030
Initial wt. of filter		2.8886 g
Final wt. of filter		3.0448 g
Weight gain of filter		0.1562 g
TSP level		89 µg/Std. m ³
Exceedance		No exceedance
Parameters		Action Level Limit Level
1-hr TSP level in (µg/Std. m ³)		423 500
24-hr TSP level in (µg/Std. m ³)		213 260

TSP (µg/Std. m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 50 Appendix B.

* Delete as appropriate

Field staff : C. C. (C) Lab. staff : Victor Tap Checked by :
Date : 27/5/03 Date : 28/05/2003 Date : 28/05/03

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MaterialLab

Ref. No. : 00242BEN 30554
 Client : Penta Ocean Construction Co. Ltd.
 Project : Contract No. CV/2000/01 - Tuen Mun Area 3B Reclamation, Stage 2

24 hr Impact TSP Monitoring Field Record

- Equipment:
 1. DMV BA-210-108 High Volume Air Sampler
 2. Ohaus N2000 Analytical Balance (D-001-9)
 3. PHY8100 240 Inhaler (D-010-2)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		Excavating, truck transport to project	
Weather condition		Cloudy	
Start of sampling	Date	29/1/03	
	Time	12:00	Timer reading : 43:30
Completion of sampling	Date	30/05/2003	
	Time	11:56	Timer reading : 43:52
Total duration of sampling		1434.0 min.	
Calibrated flow rate		43.11	Std. CFM
Total volume		1750.77	Std. m ³
Sample ID of filter		714103P	
Initial wt. of filter		2.8503	g
Final wt. of filter		3.1884	g
Weight gain of filter		0.3381	g
TSP level		193	µg/Std. m ³
Exceedance		No exceedance	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		420	500
24-hr TSP level in (µg/Std. m ³)		210	280

TSP (µg/Std. m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filter, were in accordance with USEPA Standard Method 40 CFR Part 50 Appendix A.

* Delete as appropriate

Field staff : C.K. Cheng Lab. staff : Victor Tang Checked by : [Signature]
 Date : 29/1/03 Date : 02/06/2003 Date : 02/06/03

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Our Ref. No. : 002428EN 30554
Client : Pentia Ocean Construction Co. Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 hr Impact TSP Monitoring Field Record

Equipment: 1. GMW GA-2010-105 High Volume Air Sampler
2. Bosch 9200n Analytical Balance (0-001g)
3. PHYSICO 240 Inhaler (0-01g)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		truck transporting in progress	
Weather condition		Rainy	
Start of sampling	Date	5/5/03	
	Time	08:46	
Completion of sampling	Date	5/5/03	
	Time	10:46	
Total duration of sampling		60.0 min.	
Calibrated flow rate		43.11 Std. CFM	
Total volume		73.25 Std. m ³	
Sample ID of filter		7H1000	
Initial wt. of filter		2.8729 g	
Final wt. of filter		2.8834 g	
Weight gain of filter		0.0105 g	
TSP level		143 µg/Std. m ³	
Exceedance		No exceedance	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		425	500
24-hr TSP level in (µg/Std. m ³)		213	260

TSP (µg/Std. m³) = A x 10⁶ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filter were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix B.

* Details as appropriate

Field staff : C. K. Kong Lab. staff : Victor Tang

Date : 5/5/03 Date : 09/05/2003

Checked by : [Signature] Date : 09/05/03

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MaterialLab

Our Ref. No. : 002428EN 30554
Client : Penta Ocean Construction Co. Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 (1) hr Impact TSP Monitoring Field Record

Equipment : 1, GMV SA-3510-100 High Volume Air Sampler
2, Bosch B2000 Analytical Balance (G-101-2)
3, PLYBICO 240 Incubator (C-613-5)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		truck transporting in progress	
Weather condition		cloudy	
Start of sampling	Date	5/5/03	
	Time	11:15	Timer reading: 00:00
Completion of sampling	Date	5/5/03	
	Time	12:15	Timer reading: 00:00
Total duration of sampling		60.0 min.	
Calibrated flow rate		43.11	Std. CFM
Total volume		73.25	Std. m ³
Sample ID of filter		TM-1002	
Initial wt. of filter		2.8858	g
Final wt. of filter		2.8889	g
Weight gain of filter		0.0031	g
TSP level		42	µg/Std. m ³
Expendance		No expenditure	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		423	500
24-hr TSP level in (µg/Std. m ³)		219	260

TSP (µg/Std. m³) = A x 10⁶ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix B.

* Delete as appropriate

Field staff : C.C. Kong Lab. staff : Victor Tang

Checked by :

Date : 5/5/03

Date : 09/05/2003

Date :

09/05/03

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Materialat

Our Ref. No. : 002428EN 30554
Client : Penta Ocean Construction Co., Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 (1) hr Impact TSP Monitoring Field Record

Equipment : 1. QM99 BA-2310-100 High Volume Air Sampler
2. Bosch B2000 Analytical Balance (0-400g)
3. RHYBICO 240 Incubator (0-010-2)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		Truck Transporting in progress	
Weather condition		Cloudy	
Start of sampling	Date	4/1/03	
	Time	13:00	Filter reading : 621 ³²
Completion of sampling	Date	4/1/03	
	Time	14:00	Filter reading : 6270 ³²
Total duration of sampling		60.0 min.	
Calibrated flow rate		43.11 Std. CFM	
Total volume		73.25 Std. m ³	
Sample ID of filter		TM 1004	
Initial wt. of filter		2.8705 g	
Final wt. of filter		2.8743 g	
Weight gain of filter		0.0038 g	
TSP level		52 µg/Std. m ³	
Exceedance		No exceedance	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		423	300
24-hr TSP level in (µg/Std. m ³)		213	200

TSP (µg/Std. m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 59 Appendix B.

* Details as appropriate

Field staff : C. C. K. *[Signature]*

Lab. staff : Victor Tang

Checked by :

Date : 4/1/03

Date : 09/05/2003

Date :

[Signature]
09/05/03

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Material Lab

Our Ref. No. : 0024285EN 20334
Client : Penta Ocean Construction Co, Ltd.
Project : Contract No. CV/2000/01 - Tuen Mun Area 38 Reclamation, Stage 2

24 Hr Impact TSP Monitoring Field Record

Equipment: 1. DMW SA-451A-Jos High Volume Air Sampler
2. Bosch B2000 Analytical Balance (C-010-2)
3. PHYSIKO 240 Weigher (C-010-2)

Location		DM1	
Details of location		Adjacent to site office next to the car park	
Site conditions		No special site activity	
Weather condition		Fine	
Start of sampling	Date	11/15/03	
	Time	08:00	Timer reading : 4294 ³¹
Completion of sampling	Date	11/15/03	
	Time	09:00	Timer reading : 4325 ³¹
Total duration of sampling		60.0 min.	
Calibrated flow rate		43.11	Std. CFM
Total volume		73.25	Std. m ³
Sample ID of filter		TM1008	
Initial wt. of filter		2.8334	g
Final wt. of filter		2.8410	g
Weight gain of filter		0.0076	g
TSP level		104	µg/Std. m ³
Exceedance		No exceedance	
Parameters		Action Level	Limit Level
1-hr TSP level in (µg/Std. m ³)		425	500
24-hr TSP level in (µg/Std. m ³)		213	260

TSP (µg/Std. m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled

The conditioning and weighing of filters were in accordance with USEPA Standard Method 40 CFR Part 60 Appendix B.

* Delete as appropriate

Field staff : C. K. Cheung Lab. staff : Victor Tang
Date : 11/15/03 Date : 15/05/2003

Checked by : [Signature]
Date : 15/05/03

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Our Ref. No: 102-2864 Sub 4
 Client: Prime Green Corporation Ltd
 Project: Bangladesh Gas Pipeline - Tura-Mun Area 30 Km. Section, Stage 2

24 (1) 10208 TSP Monitoring Field Report

Equipment: 1. 100ml Acetone and H₂O
 2. 100ml Acetone and H₂O
 3. TSP Filter (100ml)

Location		Date	
Details of location		Actual location of test in the map	
Site description		Track tangency to road	
Weather condition		22/10/03	
Start	Time	11:15	Time used: 15 min
Completion	Time	11:30	Time used: 15 min
Total volume of sample		600	ml
Collector Factor		1.0	ml
Sample Volume		120	ml
Initial dilution		2.8250	g
Final dilution		2.8304	g
Weight of filter		0.0058	g
TSP vol		76	µg/m ³
Exceedance		No exceedance	
Barometer		Atmos. Level	Sea Level
Atmos. Pressure		1013	hPa
Spot TSP Level (µg/m ³)		2-E	200

TSP (µg/m³) = (A - B) / (C * D) * E * F * G * H * I * J * K * L * M * N * O * P * Q * R * S * T * U * V * W * X * Y * Z * AA * AB * AC * AD * AE * AF * AG * AH * AI * AJ * AK * AL * AM * AN * AO * AP * AQ * AR * AS * AT * AU * AV * AW * AX * AY * AZ * BA * BB * BC * BD * BE * BF * BG * BH * BI * BJ * BK * BL * BM * BN * BO * BP * BQ * BR * BS * BT * BU * BV * BW * BX * BY * BZ * CA * CB * CC * CD * CE * CF * CG * CH * CI * CJ * CK * CL * CM * CN * CO * CP * CQ * CR * CS * CT * CU * CV * CW * CX * CY * CZ * DA * DB * DC * DD * DE * DF * DG * DH * DI * DJ * DK * DL * DM * DN * DO * DP * DQ * DR * DS * DT * DU * DV * DW * DX * DY * DZ * EA * EB * EC * ED * EE * EF * EG * EH * EI * EJ * EK * EL * EM * EN * EO * EP * EQ * ER * ES * ET * EU * EV * EW * EX * EY * EZ * FA * FB * FC * FD * FE * FF * FG * FH * FI * FJ * FK * FL * FM * FN * FO * FP * FQ * FR * FS * FT * FU * FV * FW * FX * FY * FZ * GA * GB * GC * GD * GE * GF * GG * GH * GI * GJ * GK * GL * GM * GN * GO * GP * GQ * GR * GS * GT * GU * GV * GW * GX * GY * GZ * HA * HB * HC * HD * HE * HF * HG * HH * HI * HJ * HK * HL * HM * HN * HO * HP * HQ * HR * HS * HT * HU * HV * HW * HX * HY * HZ * IA * IB * IC * ID * IE * IF * IG * IH * II * IJ * IK * IL * IM * IN * IO * IP * IQ * IR * IS * IT * IU * IV * IW * IX * IY * IZ * JA * JB * JC * JD * JE * JF * JG * JH * JI * JJ * JK * JL * JM * JN * JO * JP * JQ * JR * JS * JT * JU * JV * JW * JX * JY * JZ * KA * KB * KC * KD * KE * KF * KG * KH * KI * KJ * KK * KL * KM * KN * KO * KP * KQ * KR * KS * KT * KU * KV * KW * KX * KY * KZ * LA * LB * LC * LD * LE * LF * LG * LH * LI * LJ * LK * LL * LM * LN * LO * LP * LQ * LR * LS * LT * LU * LV * LW * LX * LY * LZ * MA * MB * MC * MD * ME * MF * MG * MH * MI * MJ * MK * ML * MM * MN * MO * MP * MQ * MR * MS * MT * MU * MV * MW * MX * MY * MZ * NA * NB * NC * ND * NE * NF * NG * NH * NI * NJ * NK * NL * NM * NN * NO * NP * NQ * NR * NS * NT * NU * NV * NW * NX * NY * NZ * OA * OB * OC * OD * OE * OF * OG * OH * OI * OJ * OK * OL * OM * ON * OO * OP * OQ * OR * OS * OT * OU * OV * OW * OX * OY * OZ * PA * PB * PC * PD * PE * PF * PG * PH * PI * PJ * PK * PL * PM * PN * PO * PP * PQ * PR * PS * PT * PU * PV * PW * PX * PY * PZ * QA * QB * QC * QD * QE * QF * QG * QH * QI * QJ * QK * QL * QM * QN * QO * QP * QQ * QR * QS * QT * QU * QV * QW * QX * QY * QZ * RA * RB * RC * RD * RE * RF * RG * RH * RI * RJ * RK * RL * RM * RN * RO * RP * RQ * RR * RS * RT * RU * RV * RW * RX * RY * RZ * SA * SB * SC * SD * SE * SF * SG * SH * SI * SJ * SK * SL * SM * SN * SO * SP * SQ * SR * SS * ST * SU * SV * SW * SX * SY * SZ * TA * TB * TC * TD * TE * TF * TG * TH * TI * TJ * TK * TL * TM * TN * TO * TP * TQ * TR * TS * TT * TU * TV * TW * TX * TY * TZ * UA * UB * UC * UD * UE * UF * UG * UH * UI * UJ * UK * UL * UM * UN * UO * UP * UQ * UR * US * UT * UY * UZ * VA * VB * VC * VD * VE * VF * VG * VH * VI * VJ * VK * VL * VM * VN * VO * VP * VQ * VR * VS * VT * VU * VV * VW * VX * VY * VZ * WA * WB * WC * WD * WE * WF * WG * WH * WI * WJ * WK * WL * WM * WN * WO * WP * WQ * WR * WS * WT * WU * WV * WW * WX * WY * WZ * XA * XB * XC * XD * XE * XF * XG * XH * XI * XJ * XK * XL * XM * XN * XO * XP * XQ * XR * XS * XT * XU * XV * XW * XX * XY * XZ * YA * YB * YC * YD * YE * YF * YG * YH * YI * YJ * YK * YL * YM * YN * YO * YP * YQ * YR * YS * YT * YU * YV * YW * YX * YZ * ZA * ZB * ZC * ZD * ZE * ZF * ZG * ZH * ZI * ZJ * ZK * ZL * ZM * ZN * ZO * ZP * ZQ * ZR * ZS * ZT * ZU * ZV * ZW * ZX * ZY * ZZ

Site No: 102-2864 Sub 4 Date: 15/10/03
 Client: Prime Green Corporation Ltd Date: 15/10/03
 Project: Bangladesh Gas Pipeline - Tura-Mun Area 30 Km. Section, Stage 2

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Our Ref. No. : 002420EN 2017/17
 Client : Perle Group Construction Co. Ltd.
 Project : Contract No. GUR0001 - TUKU HUK AREA 20 KUALA SELANGOR, ETAGE 2

24.1 Survei dan TSP Mula-mula Field Record

- 1. Nama Lokasi dan No. Plot/No. Lot/No. Bangunan
- 2. Nama projek pembangunan projek
- 3. Nama projek pembangunan projek

Location		Site	
Date of survey		Approximate date of the need to the sample	
Site conditions		Initial description <i>Initial description</i>	
Weather condition			
Point of sampling	Date	Time of reaction: 42.50	
	Time		
Completion	Date		
Observation	Time		
Date of collection of sample		6.00 AM	
Collected sample		43.11 ml	
Total volume		78.75 ml	
Sample Description		Initial description	
Initial weight		2.8555 g	
Final weight		2.8624 g	
Weight difference		0.0069 g	
TSP level		91	
Exposure		No exposure	
Moisture		Saturated	
Total TSP level (µg/m³)		287	
24-hr TSP level (µg/m³)		287	

TSP (µg/m³) = 287
 The above data are preliminary and subject to confirmation by the client. The data are subject to the standard method of the CEN for TSP measurement.

Field name : *Ulu Klang* Lab. name : *Ulu Klang* Checked by : *[Signature]*
 Date : *01/11/13* Day : *15/11/2013* Date : *15/11/13*

PLORO TECHNICAL SERVICES LIMITED

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Material Lab

Our Ref. No. : PD20200355504
 Client : Feroz Ocean Construction Co. Ltd,
 Project : Contract No. 00210001 - Tenth Muse Area JS Roadworks, Stage 2

24.01.2023 Test Report TSP Monitoring Field Record

Ref. No. : 00210001-02 (Roadwork) - Stage 2
 Date : 24.01.2023
 Time : 08:30 AM

Location		Date	
Details of location		Accepted to site office and to the contractor	
Site conditions		Truck Transporting	
Weather conditions		Fine	
Start of sampling	Date	24/01/2023	
	Time	8:30	Time reading 08:30
End of sampling	Date	24/01/2023	
	Time	9:30	Time reading 09:30
Total dust (mg/m ³)		60.00	
Dusts by law no		43.11	31.00
Total values		73.25	mg/m ³
Sample ID of 1st or		24/01/2023	
Initial of the		2.851	
Final of the		2.8433	
Sample ID of 2nd or		0-0322	
Initial of the		410	
Final of the		0.0000	
Remarks		Exceeded the action level	
Factory name		Station Level	Upper Level
TSP Test (mg/m ³)		200	200
24hr TSP level (mg/m ³)		210	200

TSP (mg/m³) < 200
 24hr TSP level (mg/m³) < 200
 A: Total of selected parameters
 B: Average of all selected parameters
 C: Maximum of all selected parameters
 D: Minimum of all selected parameters

Field staff : *[Signature]* Date : 24/01/2023
 Lab staff : Victor Tanyi Date : 21/01/2023
 Director : *[Signature]* Date : 21/01/2023

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Order No: 1002403LN 3 of 4
Client: Public Works Corporation Co. Ltd.
Project: Contract No. CU/2002/1 - T. Nagar Area 35 Reclamation, Stage 2

24 (1) PARTICULATE MATTER Monitoring Field Report

Contract: 1002403LN 3 of 4
Client: Public Works Corporation Co. Ltd.
Project: Contract No. CU/2002/1

Location		Date	
City of location		Reference to site office or to the contract	
Site conditions		Truck Transporting	
Weather conditions		Fair	
Start of sampling	End of sampling	17/05/2003	17/05/2003
Start of sampling	End of sampling	11:25	11:25
Start of sampling	End of sampling	17/05/2003	17/05/2003
Start of sampling	End of sampling	11:25	11:25
Total duration of sampling		60.0	
Calculated for each		43.4	60.0
Total volume		73.35	60.0
Sampled filter		TM (01) 9	
Initial weight		2.8594	
Final weight		2.9796	
Weight of filter		0.1202	
TEP level		1.64	4.5
Exceedance		Exceeded the ambient level	
Percentage		Ambient Level	Limit Level
30% TEP level in (µgld m ³)		228	610
24-hr TEP level in (µgld m ³)		215	290

The guidelines are as per CPCRI. All values are rounded up to the nearest integer. The concentration are rounded up to the nearest integer. The concentration are rounded up to the nearest integer. The concentration are rounded up to the nearest integer.

Field site: *Alwar* Lab. site: *Victor Veng* Checked by: *[Signature]*
Date: *17/05/03* Date: *21/05/2003* Date: *[Signature]*

FUGRO TECHNICAL SERVICES LIMITED

21 Kings Ct Way,
 Mega Development Office,
 6, Lee Road, Field St. Causeway Area,
 Tallinn, Tallinn 10141, Estonia

Tel : +372 611 8888
 Fax : +372 660 0100
 Email : info@fugro.com



Contract No. : 00040561 - 2023
 Client : Fugro Osegi Oudrusting Oo Ltd
 Project : Demolition of 0000001 - Tallinn Area 31 Reclamation, Gage 2

24 Hour Impact TSP Monitoring Field Report

Approved: [Signature]
 & Approved: [Signature]
 & Approved: [Signature]

Location		Date	
Subsector location		Adjacent to site (if any) within the site park	
Site conditions		Truck Transporting	
Weather and Sun			
Start of sampling	Date	12/08/2023	
	Time	11:30	Time ending: 12:30
Completion of sampling	Date	12/08/2023	
	Time	12:30	Time ending: 12:30
Total duration of sampling		60:00	min.
Calibrated flow rate		43.11	lit. CFM
Total volume		73.25	lit. m ³
Zeroed TSP filter		70.1021	
Initial weight		2.9952	
Final weight		2.9947	
Weight differential		0.0005	
TSP conc		75	µg/m ³
Exceedance		Exceeded the limit level	
Parameters		Actual Value	Limit Level
1 hr TSP level in (µg/m ³)		75	60
24 hr TSP level in (µg/m ³)		75	230

TSP (µg/m³) = A x 10³ / B A = mass of collected particulate B = volume of air sampled
 The concentration and volume of the sample are subject to the accuracy of the instrument used and the quality of the sample
 - Values are approximate

Field Staff: [Signature] Lab Staff: [Signature] Checked by: [Signature]
 Date: 17/08/2023 Date: 21/08/2023 Date: 17/08/2023

FUGRO TECHNICAL SERVICES LIMITED

Material Unit,
 Dept. Development & QA,
 2, Jalan Djarum, 17345, Kota Bharu Road,
 Teluk T. Anson, M.L. 16200 Kota Bharu.

Tel : 609-428 2200
 Fax : 609-428 1128
 Email : fts@fugro.com.my

Materialist
 Material Management System

Contract No. : 0024025N 2011
 Client : Panlu Ocean Construction Co., Ltd.
 Project : Contract No. CWS05001 - Tuaran Area 28 Reclamation, Stage 2

24/4/2011 - 25/4/2011 TSP Monitoring Field Record

Approved: 1. Method: 2011/05/01
 2. Method: 2011/05/01
 3. Method: 2011/05/01

Location		Date	
Details of location		Address to site either next to (or on) post	
Site conditions			
Weather condition			
Start of sampling	Time	13:15:00	
	Time	13:23:00	
Completion of sampling	Time	13:45:00	
	Time	13:45:00	
Description of sampling		Event	Unit
Collected flow rate		4.8 L/s	Std. CFV
Total volume		13.25	Std. m ³
Start of flow		7:14:00	
End of flow		2:34:00	
Final vol. of flow		2.8588	
Weight gain of flow		0.0147	
TSP loss		201	kg/m ³
Expenditure		No expenditure	
Parameters		Action Level	Limit Level
TSP level in 1.00 m ³		0.4	0.50
TSP level in 1.00 m ³		2.12	2.00

1. Method: 2011/05/01 2. Method: 2011/05/01 3. Method: 2011/05/01
 4. Method: 2011/05/01 5. Method: 2011/05/01 6. Method: 2011/05/01
 7. Method: 2011/05/01 8. Method: 2011/05/01 9. Method: 2011/05/01
 10. Method: 2011/05/01 11. Method: 2011/05/01 12. Method: 2011/05/01

Site No. : C-17-100 Lab. No. : Victor 100 Operator :
 Date : 23/5/11 Time : 23/05/2011 Date : 23/5/11

FURRO TECHNICAL SERVICES LIMITED

1000 Lakeshore Drive,
 Suite 1000, 17th St. W., Oakville, Ont. L6L 1A7
 Tel: (905) 846-1111 Fax: (905) 846-1112
 E-mail: info@furro.com



Our Ref. No. : 072426EN 201344
 Client : Florida Green Construction Co. Ltd.
 Project : Control No. CM200001 - Tuckerton Ave 22 Residential, Block 2

24/1 for Impact TSP Monitoring Field Report

Approved by: [Signature] Date: [Date]
 Prepared by: [Signature] Date: [Date]

Location		Dx1	
Details of project		Adjacent to site office next to the concrete	
Site conditions		Good visibility, traffic frequency is average	
Weather condition		Fine	
Start of sampling	Date	23/10/13	
	Time	10:25	
Completion of sampling	Date	23/10/13	
	Time	11:35	
Total duration of sampling		60.00 min.	
Calculated flow rate		48.00 m³/GPM	
Total volume		73.15 m³	
Sample ID number		714 1026	
Initial weight		2.863	
Final weight after		2.853	
Weight gain of filter		0.0165	
TSP level		125 µg/m³	
Excavation		No excavation	

Parameter	Action Level	Limit Level
1 hour TSP level in µg/m³	475	510
24 hour TSP level in µg/m³	710	360

The reported TSP level is based on the mass of collected particulate in the volume of air sampled. The concentration and weight of particulate is based on the OMSR standard of 40 µg/m³ per day. The reported TSP level is based on the mass of collected particulate in the volume of air sampled.

Field site: [Signature] Date: 23/10/13
 Name: [Signature] Date: 27/10/13
 Signature: [Signature]

FIBRO TECHNICAL SERVICES LIMITED

Waste Management Division

Environmental Services

15000 15th Street, Suite 200, Dallas, Texas 75244

Phone: (972) 242-1100 Fax: (972) 242-1101

Y4 2-380020 Item
 Feb 2-473,450 Item
 2001 2-144,480 Item



Contract No: 00042674
 Client: Public Works Construction Dept
 Project: Contract No. 00000001 - Air Main Area 28 Rehabilitation, Stage 2

287 Air Impact TSP Monitoring Field Record

Company: Fibro Technical Services Limited
 15000 15th Street, Suite 200, Dallas, Texas 75244
 Phone: (972) 242-1100 Fax: (972) 242-1101

Location		DN1	
Details of monitor		Adjacent to site office next to the car park	
Site conditions		<i>Track temporarily in progress</i>	
Weather condition			
Start of sampling	Date	<i>23/1/03</i>	
	Time	<i>13:00</i>	
Completion of sampling	Date	<i>23/1/03</i>	
	Time	<i>16:00</i>	
Total duration of sampling		<i>3 hours</i>	
Calibrated flow rate		<i>40.1 l/min</i>	
Total volume		<i>72.18 m³</i>	
Sample efficiency		<i>70%</i>	
Inletted volume		<i>50.53 m³</i>	
Filterable dust		<i>2.8088 g</i>	
Weight gain of filter		<i>2.9784 g</i>	
TSP level		<i>0.0096 g/m³</i>	
Exposure		<i>No exposure</i>	
Equipment		<i>4.7m flow, 100mm filter</i>	
Filter TSP level (g/m ³)		<i>0.28</i>	
Filter TSP weight (g)		<i>0.12</i>	

287 (Impact) - A x 1/1/03
 Fibro Technical Services Limited
 15000 15th Street, Suite 200, Dallas, Texas 75244
 Phone: (972) 242-1100 Fax: (972) 242-1101

Site Staff: *L. G. K...* Date: *23/1/03*
 Inspector: *Victor L...* Date: *27/01/03*
 Approved by: *[Signature]*
 Name: *[Signature]*

PUSACO TECHNICAL SERVICES LIMITED

Marine Division

Unit 2, Oceanic House,
8, South Beach, 174, South Beach Road,
Tulua, Tembuken, N.T., Honiara

Tel : 1333 2421 800
Fax : 1333 2421 805
Email : info@pusaco.com



Our Ref. No. : 002020EN 301514
Client : Pania Beach Corporation, Co. Ltd.
Project : Channel No. 00202004 - Tuou Niu Area BE Kulaunudu, Stage 2

2021 Impact TSP Monitoring Field Report

Reference: 1. 00202004 - Tuou Niu Area BE
2. 00202004 - Tuou Niu Area BE Channel No. 00202004
3. 00202004 - Tuou Niu Area BE Channel No. 00202004

Location		SM							
Details of location		Adjacent to one of the jetty to the company							
Site conditions									
Weather condition		<i>Exceeding tank temperature in temp.</i>							
Date of sampling	Date	<i>27/10/23</i>	T meter read no. <i>6320</i>						
	Time	<i>12:00</i>							
Completion of sampling	Date	<i>27/10/23</i>	T meter read no. <i>6320</i>						
	Time	<i>13:00</i>							
Total volume of sampling		60.0 m ³							
Calculated flow rate		42.11 m ³ /hr							
Tide volume		73.25 m ³							
Sample no. of filter		<i>10/10/23</i>							
Inflow of filter		2.8358 g							
Final wt. of filter		2.9435 g							
Weight loss of filter		0.1077 g							
Total TSP		242 mg/m ³							
Excess TSP		<i>10% over limit</i>							
Parameters		<table border="1"> <tr> <td>Asph. Level</td> <td>Level, mg</td> </tr> <tr> <td>0.2</td> <td>0.2</td> </tr> <tr> <td>0.2</td> <td>0.2</td> </tr> </table>		Asph. Level	Level, mg	0.2	0.2	0.2	0.2
Asph. Level	Level, mg								
0.2	0.2								
0.2	0.2								
Total TSP (mg/m ³)		242							
TSP (mg/m ³)		242							

TSP (mg/m³) = A x 100 / (B x C) A = mass of suspended solids (g) B = volume of air sampled (m³)
 * Correct for tare and moisture (Corrected mass = mass x 0.95) * Use the following table to convert mass to volume
 * Calculate the average

Field staff: *C.K. Kame* Lab staff: *Victor Mung* Checked by: *[Signature]*
 Date: *28/10/23* Date: *31/10/2023* Date: *10/11/23*

P. GAO TECHNICAL SERVICES - WATER

Water No. 00-0000

PAGE Technical Office,
5000 Central Expressway, Suite 100
Folsom, CA 95630

TEL: (916) 438-8888
FAX: (916) 438-8888
WWW: www.pgts.com



Client Ref. No. : 00000000000000000000
Client : Panta Power Generation Co. Ltd.
Project : Concreted (CWR00000) - Turb. Main Area 30 Sediment, Stage 2

24. Turbidity TSP for the Field Report

Approved by: [Signature]
Checked by: [Signature]
Supervisor: [Signature]

Location		DMA	
Description of location		Adjusted to also of content in the report	
Site description			
Weather condition			
Start of sampling	Date	25/6/03	
	Time	08:00	
Completion of sampling	Date	25/6/03	
	Time	10:30	
Total duration of sampling		60:00	
Collection flow rate		43.11	
Total volume		2595	
Sample ID Code		701-025	
Initial volume		2.885	
Final volume		2.924	
Weight loss of filter		0.0389	
TSP level		1531	
Excavation		Excavated the bank area 2	
Remarks		Adjusted level	and level
1-10 TSP level (multiplier) (µg/m³)		100	100
2-10 TSP level (multiplier) (µg/m³)		213	250

Excavating, bank temporary layer
Clear
25/6/03
08:00
25/6/03
10:30
60:00
43.11
2595
701-025
2.885
2.924
0.0389
1531
Excavated the bank area 2

TSP (µg/m³) = 100 x 10³ / (V₁ - V₂) x W₁ - W₂ / (V₁ - V₂)
 V₁ = Volume of air sampled (m³) at start of sampling
 V₂ = Volume of air sampled (m³) at end of sampling
 W₁ = Weight of filter (g) at start of sampling
 W₂ = Weight of filter (g) at end of sampling

Field work : [Signature] : [Signature]
 Date : 25/6/03 : 25/6/03
 Checked by : [Signature]
 Date : 25/6/03

FUGRO TECHNICAL SERVICES LIMITED

No. 100000000000
 Floor Development Building,
 8 Level 8 Road, 10 Mile, Costa Park Road,
 12100, Kuala Lumpur, Malaysia

Tel: +603 26112200
 Fax: +603 26112201
 Email: info@fugro.com



Our Ref. No. : **00468EN 3.4.14**
 Client : **Penki Ocean Construction Co. Ltd**
 Project : **Contract No. 02020001 - Tuar Mui Area 88 Road extension, Stage 2**

24.1.13 Chemical Test Monitoring "Blank" Report

1. Check for presence of the following:
 2. Check for presence of the following:
 3. Check for presence of the following:

Location		DN	
Details of location		As per site office record / the permit	
Site conditions		<i>Exposed, truck transport in air</i>	
Weather condition		<i>Cloudy</i>	
Start of sampling	Date	<i>29/11/13</i>	Instr used no: <i>10321</i>
Completion of sampling	Time	<i>11:00</i>	
Start of sampling	Date	<i>29/11/13</i>	Instr used no: <i>41324</i>
Completion of sampling	Time	<i>12:00</i>	
Total volume of sample		<i>60 D</i>	
Collected samples		<i>43-11</i>	Ind. Cont.
Total volume		<i>73.25</i>	Ind. Cont.
Sample ID of filter		<i>71-11-13</i>	
Initial of filter		<i>2 BPH</i>	ul
Final of filter		<i>20 BPH</i>	g.
Weight of filter		<i>0.0422</i>	
TSP level		<i>576</i>	µg/m ³
Location		<i>Exposed the front road</i>	
Parameters		Auto Level	Ind Level
1st 100 SF (area) (1) (unit) (g)		<i>425</i>	<i>100</i>
2nd 100 SF (area) (1) (unit) (g)		<i>513</i>	<i>200</i>

This report is for use only for the purpose of monitoring and control of air quality.
 The monitoring and control of air quality is not intended to be used as a basis for legal action or for other purposes.
 * Unless otherwise specified

Field staff : *C. K. K.* Job. no. : *Victor Tong* Checked by : *[Signature]*
 Date : *29/11/13* Job : *Site 12003* Date : *10/12/13*

Appendix III

Tabulation of Air Quality Monitoring Data from Monthly EM&A Reports.

Tabulation of 24-hour TSP monitoring data for location DM1.

Date	Result in $\mu\text{g}/\text{m}^3$
03-Mar-03	80
08-Mar-03	127
14-Mar-03	59
20-Mar-03	51
26-Mar-03	118
01-Apr-03	43
07-Apr-03	101
13-Apr-03	54
17-Apr-03	57
23-Apr-03	134
29-Apr-03	128
05-May-03	29
11-May-03	79
17-May-03	183
23-May-03	89
29-May-03	193

Lowest value = $29\mu\text{g}/\text{m}^3$

Highest value = $193\mu\text{g}/\text{m}^3$

Mean value = $95.3\mu\text{g}/\text{m}^3$

Tabulation of 1-hour TSP monitoring data for location DM1.

Date	Result in $\mu\text{g}/\text{m}^3$
02-Mar-03	117
	121
	126
08-Mar-03	117
	141
	127
14-Mar-03	93
	86
	100
20-Mar-03	96
	79
	51
26-Mar-03	332
	177
	192
01-Apr-03	108
	123
	132
07-Apr-03	115
	64
	168
13-Apr-03	130
	48
	35
17-Apr-03	120
	109
	137
23-Apr-03	209
	216
	329
29-Apr-03	173
	217
	220
05-May-03	143
	42
	52
11-May-03	104
	76
	94
17-May-03	440
	1641*
	785*

Date	Result in $\mu\text{g}/\text{m}^3$
23-May-03	201
	225
	131
29-May-03	242
	531*
	576*

* - not included in the calculation lowest and highest and mean values as exceeds the Limit Level.

Lowest value = $35\mu\text{g}/\text{m}^3$

Highest value = $440\mu\text{g}/\text{m}^3$

Mean value = $145\mu\text{g}/\text{m}^3$