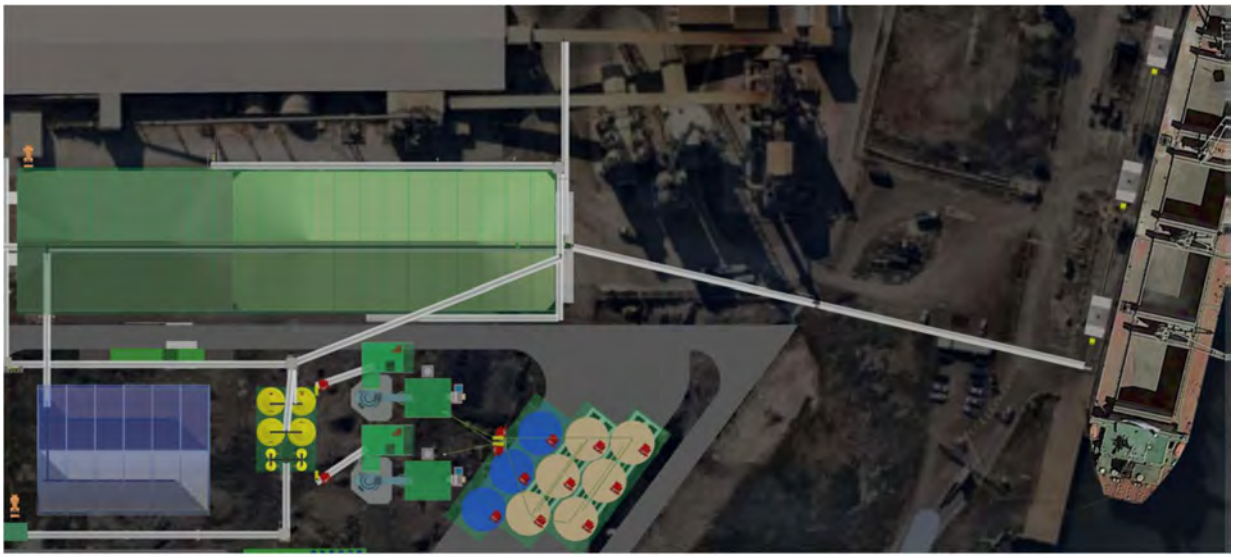
Ektimo

Air Quality Assessment
for a
Proposed Cement Grinding Plant Addition
Yarraville, Victoria



Steel Cement Pty Ltd

REPORT R012813-1r1

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Amendment Record

Document Number	Initiator	Report Date	Sections	Reason
R012813-1r1	client	5 September 2022	1, 4, 5	Receptor 10 shifted east to represent dwellings on Frederick Street within Industrial 3 zone to the west of the plant boundary, with the dispersion modelling and analysis updated. Reactive monitoring alarm thresholds updated, and monitoring location indicated.

Report Authorisation

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1 EXECUTIVE SUMMARY

1.1 Overview

Steel Cement Pty Ltd are proposing to add a cement grinding plant to their existing cement production operations at their facility at 295 Whitehall Street, Yarraville in Victoria. See **Figure 1** for the site locality. The existing facility comprises a slag grinding mill and a raw material drying, mixing, and bagging plant. Steel Cement currently operates the facility subject to the conditions of EPA Licence 128502, which they have done so with complete compliance since the original issue of that licence in 2016.

The introduction of the cement grinding plant will avoid the current requirement to import ground cement within a specialty ship to Steel Cement's Port Melbourne site by, instead, importing cement clinker within a generic bulk carrier direct to the Yarraville facility and then value-adding this raw material within the new plant. The proposed cement grinding plant will be installed in two stages: (i) Stage 1 with a single mill producing 750,000 tonnes per annum (tpa) of ground cement; and (ii) Stage 2 with an additional identical mill increasing the production to 1,500,000 tpa. The cement clinker is to be imported over a newly developed Berth 6 with modern hoppers connected to a purpose-built storage shed via an enclosed conveyor system. The granulated slag currently imported via Berth 5 may also be imported via the developed Berth 6 depending upon berth availability. The expanded plant may operate 24 hours per day, 7 days per week.

With the introduction of cement grinding at the proposed annual tonnage, a default separation distance of 500 metres[1] will apply to the facility to protect surrounding sensitive land uses from industrial residual air emissions, notably dust, from this type of plant. With reference to **Figure 1**, the nearest sensitive receivers are dwellings located on Frederick Street within the adjoining Industrial 3 zone from 85 metres from the site boundary to the west; as well as residential zones located from 230 metres to the west, and sporting fields 660 metres to the north-west and 1.7 km to the south-east.

As per the *Environment Protection Act 2017*, Steel Cement have a General Environmental Duty to minimise the risk of any substances discharged to atmosphere from the site causing environmental harm so far as reasonably practicable. This reduced separation triggers a requirement for a detailed air quality assessment that considers the risk of an exceedance of any Environment Reference Standard ground level concentration relating to dust emissions at the nearest sensitive land uses, and that details required management and monitoring measures to minimise that risk.

1.2 Approach

This assessment has been conducted to determine the potential for suspended particulate matter as inhalable PM10, and respirable PM2.5[2] inclusive of residual Respirable Crystalline Silica (RCS), discharged from the expanded facility to impact beyond the surrounding industrial land-use into the distant residential areas including the sporting fields. The adopted methodology is consistent with a Level 2 assessment as per EPA Publication 1961: *Guideline for Assessing and Minimising Air Pollution*.

The cement grinding plant dust emission sources and those activities within the wider plant with the potential to be notable sources of dust are detailed. As per EPA publication 1695.1 *Assessing and Controlling Risk for Businesses*, a treatment plan was developed from a risk assessment of these potential sources to reduce their inherent risk of environmental harm to low residual levels. The

[1] EPA publication 1518: Recommended separation distances for industrial residual air emissions (2013).
[2] Particulate Matter with an aerodynamic equivalent diameter of less than 10 or 2.5 microns, respectively.

required treatment informed the controls and management measures to be consistently implemented to maintain this low residual risk.

Figure 2 illustrates the site area with the proposed additional and existing plant indicated. The predominant source of residual dust emissions to air include:

Proposed plant

- Bag filter stack for each staged cement grinding mill.
- Fabric filters for displaced headspace air from bulk and ready clinker storage, elevators, control systems, cement dispatch silos, and weighbridge loadout.
- Ship unloading sources including engine exhaust, dumping of clinker into hoppers and fabric filter exhaust from hoppers and conveyor switch points.

Existing plant

- Slag grinding bag filter stack (DP1) plus various fabric filters for displaced headspace air from elevators and silo storage of the crushed slag. DP1 is the only licenced discharge point at the current plant and is tested annually for compliance with an emission limit for Total Particulate Matter (TPM) of 48 gram/minute. Tested emissions in the years to date have been less than 50% of this limit.
- Dryer bag filter stack and various fabric filters for displaced headspace air from the mixing and bagging plant.

Total dust emission rates were based on design data for the grinding mill baghouse exhaust stacks, direct testing of the emissions from the existing baghouse stacks, and design levels and flows for the various fabric filter exhausts. Proportions of PM10 and PM2.5 within the total dust emissions from the stacks were based on direct testing from the Steel Cement plant or from other comparable plants.

Residual fugitive dust emissions from the less frequent bulk handling and transfer of aggregate, limestone, and gypsum onsite were not assessed directly but were subject to treatment and control in accordance with their individual risk.

A Level 2 assessment of the dust emissions was conducted as per EPA Publication 1961 *Guideline for assessing and minimising air pollution*. The EPA approved AERMOD dispersion model was used as per EPA guidance, in conjunction with meteorological data from the nearby EPA monitoring station at Footscray. Peak ground level concentrations of each dust component were predicted for comparison with air pollution assessment criteria (APAC), inclusive of background ambient concentrations as also recorded by EPA at the Footscray station.

1.3 Outcomes

Peak daily average and annual average concentrations of PM10 and PM2.5 as predicted at the nearest sensitive receiver locations complied with the APAC inclusive of background concentrations for both Stage 1 and Stage 2 production emissions. At the most affected sensitive receiver for the higher total emissions from the Stage 2 production:

- The peak predicted incremental daily average represented 14% of the APAC for both PM10 and PM2.5. The existing daily background levels of PM10 and of PM2.5 already exceed the APAC a few times per year. When the predicted increment from the operations at the facility are added to this, there is no increase to the number of days that the APAC are exceeded for either PM10 or PM2.5.

- The highest predicted annual average increment at any sensitive receiver represented 5% of the APAC for both PM10 and PM2.5. When added to the existing average background, the total was not predicted to exceed the APAC for each.
- The most exposed sensitive receivers comprised the dwellings on Frederick Street within the Industrial 3 zone just beyond the western site boundary and also residences just beyond in the nearest residential zone to the west.

RCS is at <3% of any of the materials ground within the mills onsite, with a peak predicted impact at the most affected sensitive receiver of <0.4% of the substance APAC.

These modelling outcomes are dependent upon the proposed cement grinding plant and the existing slag grinding and raw material drying/mixing/bagging plants being managed and operated effectively to maintain low dust emissions to air as per the requirements of the General Environmental Duty. Steel Cement will undertake the management and control measures detailed in **Table 10** to minimise the risk of causing environmental harm so far as is reasonably practicable, with performance measures detailed in **Section 5.4**.

Key monitoring requirements recommended to manage this risk include:

- Ongoing observation of ship unloading and production activities via video links to identify visible dust emissions and trigger enhanced dust management measures.
- Continuous monitoring of differential pressure on all baghouse filters with alarm levels to trigger immediate investigation and a potential halt in production if abatement has reduced.
- Continuous ambient air monitoring at a single location on the western boundary (see **Figure 2**) in the direction of the nearest sensitive receivers for indicative concentrations of PM10 and PM2.5 with short term alarm levels to trigger enhanced dust management measures to minimise the risk of daily average APAC's being exceeded.
- Annual testing of the cement and slag grinding baghouse stack emissions of TPM, PM10 and PM2.5 to current EPA sampling guidelines to validate that the emissions are comparable to the expected norms as assessed.

This report has been prepared for Steel Cement Pty Ltd and should be read in conjunction with the scope and limitations as detailed in **Section 6**.

Figure 1: **Local area around the existing cement plant site, surrounded by industrial land use, with numbered receptors representing the nearest sensitive receivers comprising residential areas and sporting fields. Receptor 10 is representative of the nearest dwellings along Frederick Street within the Industrial 3 zone.**

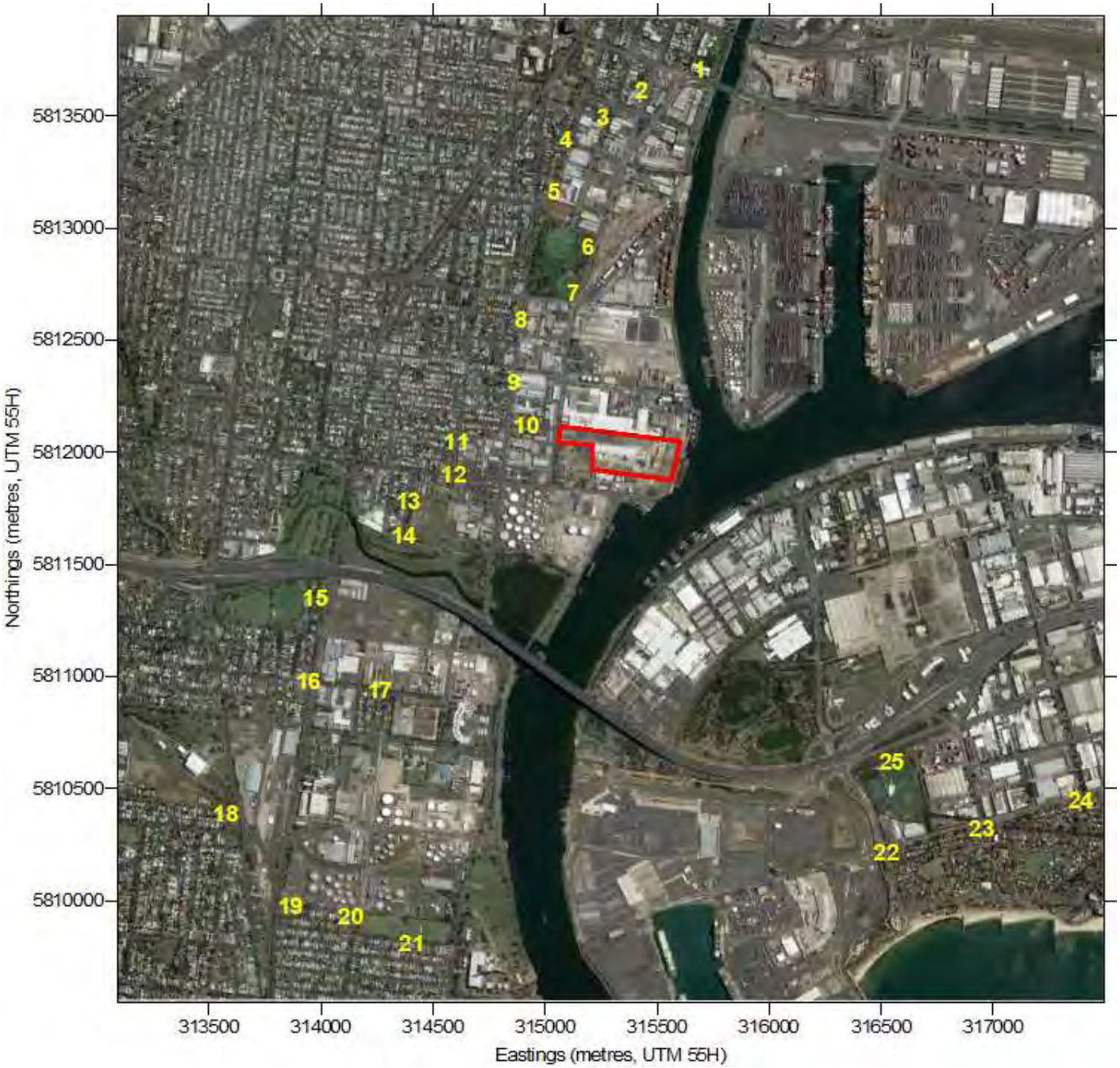


Figure 2: Site area with features of the proposed additional and existing plant indicated, as well as the proposed monitoring location near the western boundary.

2 REGULATORY FRAMEWORK

As per the Environment Protection Act 2017, Steel Cement has a General Environmental Duty to minimise the risk of the substances discharged to atmosphere from the site causing environmental harm at nearest sensitive land uses so far as reasonably practicable. The risk is informed by predicted exceedances of any Environment Reference Standard Air Pollution Assessment Criteria (APAC) ground level concentrations, or any other substance APAC as per EPA publication 1961 *Guideline for assessing and minimising air pollution,* within a sensitive land use for criteria averaging times of 24 hours or more.

The APAC for the dust components emitted from the facility plant are summarised in **Table 1** below. inclusive of averaging periods. Peak predicted ground level concentrations are compared with the APAC using EPA Draft Publication 1551 Rev 2 June 2014 *Guidance Notes for using AERMOD*. Five individual years of hourly meteorological data are used, with the highest of the peak predictions from these compared with the APAC.

Table 1: Applicable Air Pollution Assessment Criteria (APAC) as per the Environmental Reference Standards tabled under Section 93 of the *Environment Protection Act 2017*, and EPA Pub 1961, *Guideline for assessing and minimising air pollution in Victoria*.

Pollutant Substance	APAC 24 Hour Average (µg/m3)	APAC Annual Average (µg/m3)
Particles 10 micron or less (PM10)	50	20
Particles 2.5 micron or less (PM2.5)	25	8
Respirable crystalline silica	-	3

3 ASSESSMENT METHODOLOGY

The assessment of the various dust component emissions to air requires the characterisation of the following key inputs:

1. Receiving environment, including land-use and background air quality.
2. Model selection and configuration.
3. Meteorological data.
4. Emissions inventory.

These are each addressed in the sections below.

3.1 Receiving Environment

With reference to **Figure 1**, the existing cement plant operations are within the Industrial 1 zoned Yarraville industrial area, bordered to the east by the Yarra River, Port area and Coode Island industrial area. The nearest sensitive receivers are dwellings located on Frederick Street within the adjoining Industrial 3 zone from 85 metres to the west of the site boundary; residential zones located from 230 metres to the west; and sporting fields 660 metres to the north-west and 1.7 km to the south-east. The separation distance for industrial residual air emissions (notably dust in this case) recommended by EPA for cement clinker grinding operations at >150,000 tonnes per year is 500 metre[3].

The terrain around the facility, the surrounding industrial areas and the adjoining residential areas is predominantly flat.

The monitoring of ambient concentrations of PM10 and PM2.5 has been conducted continuously for the period of meteorological data used (2014-2018) by EPA at their monitoring station at Footscray ~3 km to the north-west of the Steel Cement facility. This hourly varying data has been incorporated directly into the modelling.

- Daily average PM10 concentrations from a TEOM.
- Reference standard daily average Partisol data for PM2.5 were adopted in preference to the available near-reference BAM monitoring data, where this was also available.
- Where either PM10 or PM2.5 daily average concentrations were not available then these were proportioned from concurrent PM2.5 or PM10 data if available, based on annual average proportions for each during that monitoring calendar year.

Figures 3 and 4 illustrate the cumulative frequency distribution of the monitored daily average ambient concentrations of PM10 and PM2.5, respectively, each for the years 2014 to 2018.

- Up to 1.4% of PM10 recordings are more than the daily average ERS of 50 µg/m^3.
- Up to 1.1% of PM2.5 recordings are more than the daily average ERS of 25 µg/m^3.
- The highest annual average for PM10 was 18.8 µg/m^3 compared to the ERS of 20 µg/m^3.
- The highest annual average for PM2.5 was 7.6 µg/m^3 compared to the ERS of 8 µg/m^3.

[3] EPA publication 1518: Recommended separation distances for industrial residual air emissions (2013).

Figure 3: Daily Average PM10 Concentration at Footscray AQMS, Years 2014-2018

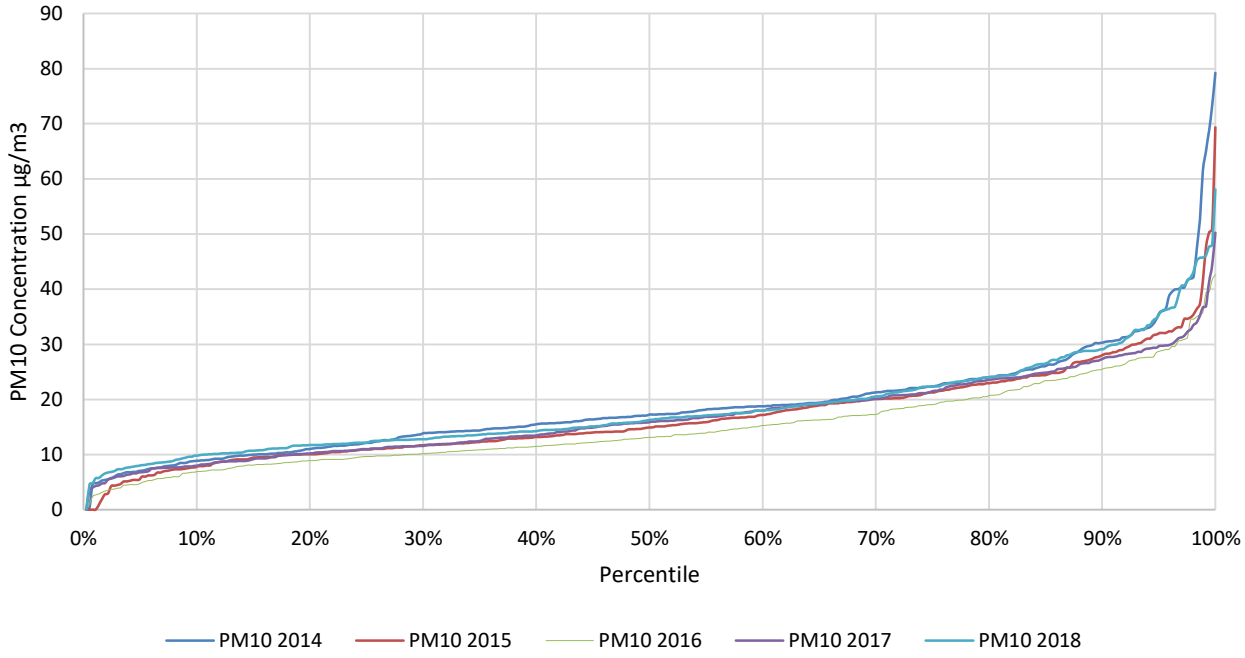
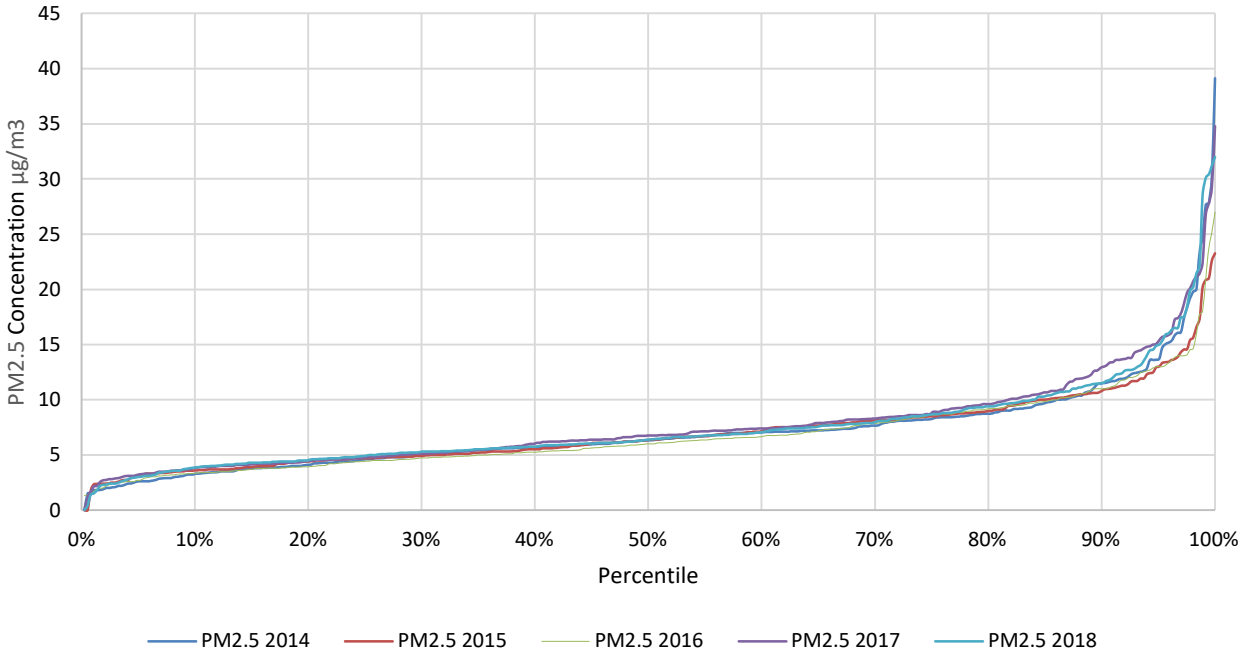


Figure 4: Daily Average PM2.5 Concentration at Footscray AQMS, Years 2014-2018



3.2 Model Selection and Configuration

AERMOD is a steady state plume model that incorporates the latest science, having been developed and being maintained by the U.S. EPA. This is the approved model for dispersion modelling assessments in Victoria.

The approximately 37 metre tall partially wake effected cement grinding mill baghouse stacks, the shorter wake-effected stacks and near ground level fugitive emissions will disperse over flat terrain with peak predicted concentrations generally decreasing with distance from the site. These conditions are within the capability of steady state plume models and so the AERMOD model is appropriate for this assessment in combination with site representative meteorological data.

AERMOD (version 21112) has been configured in accordance with the EPA Guidance as appropriate for this assessment. Key points are as follows:

- Continuous emissions 24 hours per day, 365 days per year.
- The influence on the initial dispersion of the vented stack plumes was considered via the use of the PRIME building wake algorithm informed by characteristic building dimensions derived from aerial imagery and site plans as provided by Steel Cement and processed with the Building Profile Input Procedure program. Note **Figure 2** for the outline of the buildings and structures on the site.
- Pre-processed site-representative meteorological data configured to the geophysical conditions typical of the local area was obtained from pDs Consultants for the five years 2014-2018. This is based on the high-quality data recorded by EPA Victoria at the nearby Footscray Air Quality Monitoring Station. Note **Section 3.3**.
- Rural dispersion was adopted in accordance with EPA guidance.
- A receptor grid resolution of 40 m was adopted.
- The monitoring of PM10 and PM2.5 has been conducted continuously for the period of meteorological data use (2014-2018). This hourly varying data has been incorporated directly into the modelling. See **Section 3.1** for further detail.
- Annual average concentrations have been calculated by adding the average contribution resulting from the continuous emissions of the production facility and the average contribution resulting from the ship unloading emissions proportioned by the 196 days in a year for unloading operations that would occur during Stage 2 operations. Daily average concentrations have been calculated based on continuous operation of all production and ship unloading sources.
- The modelling for particulate emissions assumed no mass depletion of the dispersed plume.

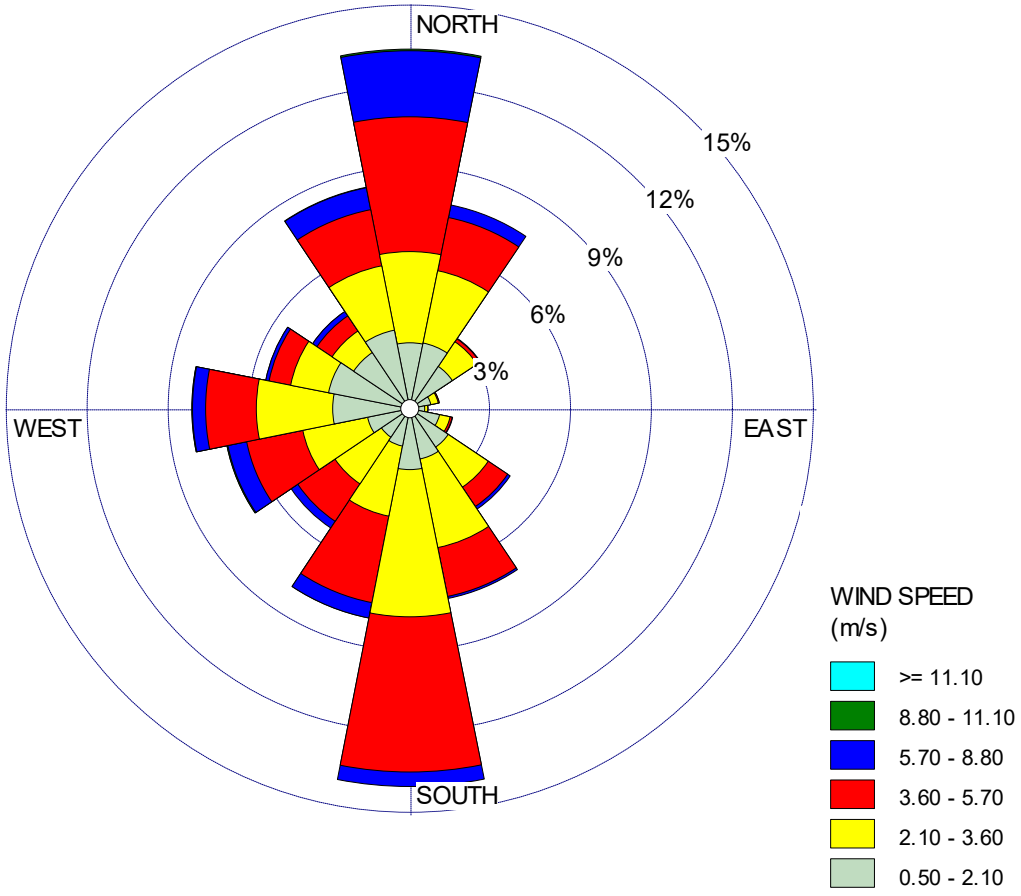
Further information on the AERMOD configuration is provided in the output files attached within **Appendix Section 7.4 and 7.5**. All files can be provided in electronic form upon request for peer review.

3.3 Meteorological Data

Site representative hourly varying meteorological data for the five individual years 2014-2018 was produced in the format required for the AERMOD dispersion model by pDs Consultancy from the EPA monitoring station at Footscray ~3 km to the north-west of the Steel Cement facility with flat terrain between these two locations. Note **Appendix Section 7.1** for a summary report on this data and the synthesis methodology.

Figure 5 illustrates a wind rose for the annual average wind distribution. Wind directions are predominantly from the north, south and west with least from the east. During spring, summer, and autumn the predominant winds are from the south and west. During winter the predominant winds are from the north and west. ***Nearest sensitive receivers are to the west of the plant with least winds in that direction***.

Figure 5: Distribution of hourly winds at Footscray EPA Air Quality Monitoring Station for the period 2014-2018.



3.4 Emissions Inventory

3.4.1 Production Process and Emissions Management

The cement grinding plant is proposed to be located at the existing Yarraville site where there is currently: (i) a slag grinding mill; and (ii) a raw material drying, mixing, and bagging plant. All these activities may operate 24 hours, 7 days per week.

The proposed cement grinding mill will produce up to 750,000 tonnes per annum (tpa) of cement at Stage 1 with a single grinding mill at 100 tonne per hour capacity. At Stage 2, up to 1,500,000 tpa will be produced with an additional identical grinding mill.

Granulated Blast Furnace Slag is currently imported in a wet form in ships via Berth 5 and an existing conveyor system. This is not inherently dusty until it is crushed and dried. Ground cement is currently imported to Steel Cement's Port Melbourne site via a specialist ship and transported to Yarraville facility via truck; however, an onsite grinding mill will enable generic bulk carriers to be used at lower cost with the clinker delivered direct to the Yarraville facility and subsequently value-added by the proposed grinding process.

Proposed ship unloading

The proposed additions will see cement clinker imported in bulk carrier ships via an upgraded Berth 6. For Stage 1 production capacity, each year 8 ships with slag and 20 ships with cement clinker will unload. For Stage 2 production capacity, each year 14 ships with slag and 42 ships per year of cement clinker will unload. Each unloading operation may take up to 3.5 days. Hence, for Stage 1 there will be 98 days per year of unloading, and for Stage 2 there will be up to 196 days of unloading. Up to two of the three hopper systems on Berth 6 will be used at any one time. The wet Granulated Blast Furnace Slag may also be unloaded via Berth 6 as well as the existing Berth 5. This assessment has assumed that 100% of the imported wet slag is transferred via Berth 6 with the proposed hoppers and conveyors.

The cement clinker is dry, free flowing, produces dust and is abrasive. This will be managed by design which includes the use of modern hoppers, enclosed conveyor systems, an enclosed bulk storage shed, and enclosed ready storage silos. Each have induced negative air pressure via fabric filters.

Figure 6: A hopper comparable to that proposed with the dust extraction systems visible on one of two sides, and with material being dumped into it from a crane operated grab bucket.

The clinker is unloaded from the ship holds via (i) up to two crane operated grab buckets which dump each grab into up to two hoppers operating at the berth; or via (ii) a shipboard conveyor into a single hopper at the berth. The ship cranes are powered by a ship auxiliary engine typically fuelled by heavy fuel oil which will have continuous exhaust emissions.

Each hopper will have a dust extraction fabric filter system that draws dust-laden air from the enclosure and minimises any puff of dust escaping during each dump. Reverse pulsing of the air flow expels the collected dust from the filter back into the load. See **Figure 6**. The clinker is then gravity fed downward through a grate to control the flow onto an enclosed conveyor system.

The conveyors then transfer the clinker into a storage shed via several switch points. Each switch point has an air extraction system via fabric filters that maintains the conveyor line under a slight negative pressure.

Proposed cement grinding mill

The bulk clinker storage shed is maintained under negative pressure via several fabric filter roof vents with forced ventilation. Gypsum and limestone are used in less proportions and are delivered to site in covered trucks and dumped into enclosed storage bays, from where these are transferred via a Front-End Loader to an enclosed Dump Station where each is conveyed to read-use storage silos.

On-demand, the clinker is to be conveyed via an underground feed system to ready use storage bins located adjacent to each cement grinding mill. Other ready use bins contain crushed slag from the slag grinding mill, gypsum, or limestone. Measured feed from each of these bins is introduced to each cement grinding mill. The cement grinding plant may grind a combination of:

- Slag and gypsum.
- Clinker, gypsum, and limestone.
- Clinker, slag, gypsum, and limestone.

A heated airflow from each grinding mill facilitates mixing and coarse/fine particle separation. The heated air is recirculated through the mill within a closed loop system and a proportion is discharged via a baghouse and stack.

The ground product is stored via enclosed pneumatic transfer system into storage silos. On demand, this is pneumatically transferred from the silos via a weigh point to customer trucks. All induced air flows are filtered of dust before release to atmosphere.

Existing slag grinding mill

Clumps of wet granulated blast furnace slag are transferred from a bulk storage shed via enclosed conveyor to the slag grinding mill. This mill crushes and dries this product at 100 tph before this is transferred to a storage silo. The heated airflow is discharged via a baghouse and stack (DP1). See **Figure 7**. The dust emissions from this source are tested annually for comparison with an EPA licence limit.

(a) **(b)**

Figure 7: The existing (a) slag grinding mill plant and (b) baghouse stack.

Existing raw material drying, mixing, and bagging plant

This plant is to produce pre-packaged concrete and mortar mixes. Raw material comprising various grades of aggregate stone and sand are delivered to site and dumped into wall storage bays. Each type of material is transferred to a hopper via a Front-End loader and enters the drying process after which this is then stored in individual read-use silos. The individual materials are then proportioned into a pug-mill, with the mixed product directed to another silo, beneath which is the bagging process. The drying and mixing process are enclosed and under negative pressure with dust-laden air directed to a baghouse filter before discharge to atmosphere via a stack. See **Figure 8**. These dust emissions were tested for this assessment.

Figure 8: The existing raw material drying, mixing and bagging plant and baghouse stack.

3.4.2 Dust Emission Inventory

Tables 2 and 3 summarise the dust emissions inventory for Stage 1 and the additional Stage 2 stack source and fugitive emissions sources, respectively. These also include the existing slag grinding mill and dry material drying/mixing/bagging plant. Further detail for individual types of emissions is provided below.

Ship Auxiliary Engine Exhaust

There are exhaust emissions from the ship-board auxiliary engine that powers either the two cranes each with a grab bucket that load a mobile hopper dedicated to each crane on the wharf, or the ship-board conveyor that loads a single hopper.

Emission factors from *Table 3-1: Tier 1 emission factors for ships using bunker fuel oil, European Environment Agency air pollution emissions inventory guidebook, 2016* have been used to calculate worst case particulate emissions rates from the auxiliary engine during unloading operations:

- 4800 kg/day consumption of heavy fuel oil, noting that unloading operations may take 3.5 days to complete with up to 98 days per year for Stage 1 and up to 196 days per year for Stage 2.
- 6.2 kg/tonne for PM10 equating to an emission rate of 0.34 g/sec.
- 5.6 kg/tonne PM2.5 equating to an emission rate of 0.31 g/sec.

See **Table 3** for the source emissions, locations, and model geometries.

Unloading into hoppers

Two mobile hoppers are each loaded either by ship crane operated grab buckets or a single mobile hopper is loaded by a ship conveyor. Dust control measures for this hopper design (see **Figure 6**) comprise a raised wall surrounding a grill onto which material is released from the bucket. The grill is under negative pressure with 26,000 Nm^3/hr drawn downwards through the grill to capture any fugitive dust emissions from the opening grab bucket which are drawn onto fabric filters. The bulk material is transferred to an enclosed conveyor system via an enclosed transfer point. The fabric filters have a **maximum** design total dust permeation rating of 30 mg/m^3 although typical dust emissions are expected to be lower than this. Hence, the maximum TPM[4] emission rate is 13 g/min/hopper, with 50% conservatively assumed as PM10 and 25% as PM2.5. See **Table 3** for the source emissions, locations, and model geometries.

Conveyor Transfer Points

A total of 9 conveyor transfer points are to be installed between conveyor runs as illustrated in **Figure 2**. Each transfer point is enclosed, and air is drawn from within via fabric filters at approximately 1 Nm3/hour thus effectively controlling any notable dust emissions to air. The fabric filters have a **maximum** dust permeation rating of 30 mg/m^3 although typical dust emissions are expected to be lower than this. Hence, the maximum TPM emission rate is 1.8 g/min/switch-point, with 50% conservatively assumed as PM10 and 25% as PM2.5. See **Table 3** for the source emissions, locations, and model geometries.

No emissions are assumed along the length of the conveyor as the material settles within a short distance of each transfer point within the enclosed system.

[4] Total Particulate Matter (TPM), a portion of which is suspended dust as PM10 and PM2.5.

Clinker Storage Shed and Raw Material Storage Bins

The imported clinker is to be stockpiled within a purpose built shed, with the conveyor input system entering through a wall space and clinker gravity fed to underground conveyors that transport the clinker to read-use raw material storage bins. Up to 6 roof-vent operate at any time to maintain dust control negative pressure, with air discharged via fabric filters at 5000 Nm^3/hr. The fabric filters have a **maximum** design total dust permeation rating of 30 mg/Nm^3 although typical dust emissions are expected to be lower than this.

The two raw material storage bins have a fabric filter on the headspace vent with flows at up to 2000 Nm3/hr. The fabric filters have a **maximum** design total dust permeation rating of 30 mg/m^3. Hence, the maximum TPM emission rate is 1 g/min/bin, with 50% conservatively assumed as PM10 and 25% as PM2.5. Only one bin loads or discharges at a time.

See **Table 3** for the source emissions, locations, and model geometries.

Cement Grinding Mills

Each cement grinding mill has a feed bucket elevator, an ECS filter and a cement bucket elevator, each with a design air flow rate through a fabric filter rated at maximum 30 mg/Nm^3 although typical dust emissions are expected to be lower than this. The PM10 emissions have been conservatively assumed at 50% TPM and PM2.5 at 25% TPM.

The TPM emissions from the baghouse exhaust was based on a design flowrate of 49,674 Nm3/hr and design dust concentration beyond the fabric filter of 8 mg/m^3 as provided by Steel Cement, and achieved via the larger volumetric air flow to cloth area ratio achievable in a purpose-built baghouse as opposed to a standard fabric filter. Ektimo based the proportion of PM10 (90%) and PM2.5 (45%) within the discharged TPM on library test data from cement grinding operations at Geelong North Shore in Victoria and at Maldon in NSW.

See **Table 2** for the stack discharge conditions, source emissions., geometries and locations for the Stage 1 and 2 grinding mill stacks. See **Table 3** for the source emissions, locations, and model geometries for the filter emissions.

Dispatch silos and weighbridge load out

Finished product is stored in dispatch silos with up to 4 loaded at any one time, and with headspace dust-laden air discharged via fabric filters. Up to 6 customer trucks may load from these via pneumatic transfer on a weighbridge, with the pneumatic air discharged via filters. All filters have a design maximum of 30 mg/Nm^3 of dust beyond the filter although typical dust emissions are expected to be lower than this.

See **Table 3** for the volumetric flow rates, source emissions, locations, and model geometries.

Existing Sources

The slag grinding mill baghouse stack (DP1) emissions of TPM were assessed as tested on 17TH March 2022 (see Ektimo test report R012606). The proportion of PM10 and PM2.5 within this tested TPM was based on earlier testing on 15th January 2016 (see Ektimo test report R002135a). This plant also has silo head space and bucket elevator headspace filtered vents with estimated emissions based on design flow rates and a design maximum of 30 mg/Nm^3 of dust beyond the filter. The proportion of PM10 and PM2.5 beyond these filters was based on the tested proportion within the baghouse stack.

The drying plant baghouse stack emissions were assessed as tested on 20th May 2022. See Ektimo test report R012813. This plant also has dust collection filtered vents with estimated emissions based on design flow rates and a design maximum of 30 mg/Nm^3 of dust beyond the filter. The PM10 emissions have been conservatively assumed at 50% TPM and PM2.5 at 25% TPM from these filters.

See **Table 2** for the stack discharge conditions, source emissions., geometries and locations for the Stage 1 and 2 grinding mill stacks. See **Table 3** for the source emissions, locations, and model geometries for the fugitive filter emissions.

Table 2: Stack emission sources within the total dust component emissions inventory with Stage 1 and additional Stage 2 sources adopted for assessment.

Name	East (metres, UTM 55H)	North (metres UTM 55H)	Source Type	Height (metres above ground level)	Filter Volume Flow Rate (Nm3/hr)	Internal Diameter (metre)	Discharge Temp. (degC)	Exit Velocity (m/sec)	Concentration (mg/Nm3) TPM	Maximum Emission Rate (g/min) TPM	Proportion PM10 (%)	Maximum Emission Rate (g/min) PM10	Proportion PM2.5 (%)	Maximum Emission Rate (g/min) PM2.5	Notes
Proposed Sources - Cement Grinding Plant															
1CMBFS	315367	5811893	Stage 1 Clinker Mill Bag Filter Stack	37	49674	0.366	60	10.0	9.76	8.1	90%	7.3	45%	3.6	Adopt 90% PM10 in TPM based on maximum derived from test data from a modern mill (Boral Maldon) and 50% PM2.5 in PM10 as a conservative estimate. A representative internal diameter is adopted to achieve an exit velocity of 10 m/s. Stage 1 only source indicated.
2CMBFS	315364	5811866	Stage 2 Clinker Mill Bag Filter Stack	37	49674	0.366	60	10.0	9.76	8.1	90%	7.3	45%	3.6	
Existing Slag Grinding Plant															
DP1	315481	5811934	Grinding Bag Filter Vent Stack	28	126000	2.4	83	11	11	22	19%	4.2	11%	2.4	Flows, temperature and TPM emission as tested on 17/3/2022 (Ektimo test report R012606). Proportion PM10 and PM2.5 from Ektimo test report R002135a of 15/1/2016.
Existing Dryer, mixing and bagging plant															
DP2	315301	5812063	Dryer Stack	14.3	35400	1.130	60	12	19	12	18%	2.2	7.9%	0.95	As tested 20/5/2022 (Ektimo test report R012813)

Table 3: Fugitive emission dust component emissions inventory with Stage 1 and additional Stage 2 components adopted for assessment.

Source Name and Location				Height	Flows	Volume Source		Discharge Dust Component Emissions						Notes
Name	East (metres, UTM 55H)	North (metres UTM 55H)	Source Type	Height (metres above ground level)	Filter Volume Flow Rate (Nm3/hr)	σy (metres)	σz (metres)	Concentration (mg/Nm3) TPM	Maximum Emission Rate (g/min) TPM	Proportion PM10 (%)	Maximum Emission Rate (g/min) PM10	Proportion PM2.5 (%)	Maximum Emission Rate (g/min) PM2.5	
Proposed Sources - Cement grinding plant														
1CMECS	315358	5811901	Stage 1 Clinker Mill ECS Filter	3	2700	3	3	30	1.4	50%	0.68	25%	0.34	
2CMECS	315356	5811875	Stage 2 Clinker Mill ECS Filter	3	2700	3	3	30	1.4	50%	0.68	25%	0.34	
1CMFBE	315333	5811892	Stage 1 Clinker Mill Feed Bucket Elevator Filter	23	2700	3	3	30	1.4	50%	0.68	25%	0.34	Design level.
2CMFBE	315331	5811863	Stage 2 Clinker Mill Feed Bucket Elevator Filter	23	2700	3	3	30	1.4	50%	0.68	25%	0.34	Stage 1 only sources indicated.
1CBE	315385	5811864	Stage 1 Cement Bucket Elevator Filter	54	2700	3	3	30	1.4	50%	0.68	25%	0.34	
2CBE	315390	5811872	Stage 2 Cement Bucket Elevator Filter	54	2700	3	3	30	1.4	50%	0.68	25%	0.34	
DS1F	315436	5811861	Dispatch Silo 1 Filter	47	4600	3	3	30	2.3	50%	1.2	25%	0.58	
DS2F	315426	5811849	Dispatch Silo 2 Filter	47	4600	3	3	30	2.3	50%	1.2	25%	0.58	
DS3F	315414	5811838	Dispatch Silo 3 Filter	47	4600	3	3	30	2.3	50%	1.2	25%	0.58	
DS4F	315422	5811864	Dispatch Silo 4 Filter	47	4600	3	3	30	2.3	50%	1.2	25%	0.58	Maximum of 4 operating at any one time for both Stages 1 and 2.
DS5F	315411	5811852	Dispatch Silo 5 Filter	47	4600	3	3	0	0.0	50%	0.0	25%	0.00	Design level.
DS6F	315398	5811840	Dispatch Silo 6 Filter	47	4600	3	3	0	0.0	50%	0.0	25%	0.00	Both Stages 1 and 2.
DS7F	315406	5811867	Dispatch Silo 7 Filter	47	4600	3	3	0	0.0	50%	0.0	25%	0.00	
DS8F	315396	5811855	Dispatch Silo 8 Filter	47	4600	3	3	0	0.0	50%	0.0	25%	0.00	
DS9F	315383	5811843	Dispatch Silo 9 Filter	47	4600	3	3	0	0.0	50%	0.0	25%	0.00	
WB1LOF	315423	5811850	Weighbridge 1 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	
WB2LOF	315418	5811853	Weighbridge 2 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	
WB3LOF	315408	5811853	Weighbridge 3 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	Design level.
WB4LOF	315405	5811856	Weighbridge 4 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	Weighbridges 5 and 6 for Stage 2 only.
WB5LOF	315393	5811857	Weighbridge 5 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	
WB6LOF	315389	5811858	Weighbridge 6 Load-out Filter	7	1500	3	3	30	0.8	50%	0.38	25%	0.19	
RMCSB1	315316	5811892	Raw Material (Clinker) Storage Bin #1	19	2000	3	3	30	1.0	50%	0.5	25%	0.25	Maximum 1 operating at any time for both
RMCSB2	315326	5811891	Raw Material (Clinker) Storage Bin #2	19	2000	3	3	0	0.0	50%	0	25%	0.00	Stages 1 and 2.
CS01	315399	5811933	Clinker Store #1	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	
CS02	315383	5811934	Clinker Store #2	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	
CS03	315365	5811936	Clinker Store #3	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	
CS04	315345	5811939	Clinker Store #4	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	
CS05	315325	5811941	Clinker Store #5	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	Maximum of 6 operating at any time for
CS06	315310	5811943	Clinker Store #6	25	5000	3	3	30	2.5	50%	1.3	25%	0.63	both Stages 1 and 2.
CS07	315301	5811943	Clinker Store #7	25	5000	3	3	0	0.0	50%	0.0	25%	0.00	Design level.
CS08	315286	5811945	Clinker Store #8	25	5000	3	3	0	0.0	50%	0.0	25%	0.00	
CS09	315270	5811947	Clinker Store #9	25	5000	3	3	0	0.0	50%	0.0	25%	0.00	
CS10	315255	5811949	Clinker Store #10	25	5000	3	3	0	0.0	50%	0.0	25%	0.00	
CS11	315242	5811951	Clinker Store #11	25	5000	3	3	0	0.0	50%	0.0	25%	0.00	
DUMPST	315284	5811908	Dump Station	14	4600	3	3	30	2.3	50%	1.2	25%	0.58	Design level for St
Proposed sources - Ship unloading of cement clinker into hoppers, enclosed conveyors with switching points														
SHIPEX	315629	5811957	Ship auxillary engine exhaust, Berth 6	20	-	1	3	-	-	-	0.34	-	0.31	Based on 4800 kg/day consumption of heavy fuel oil with operations.
HOP1	315617	5811966	Ship Unloading Hopper #1	11	26000	3	3	30	13	50%	6.5	25%	3.3	Maximum of 2 hop ship unloading at a time. Forecaste 42 clinker ships unloading per year for Stage 2, 3.5 days to discharge at Berth 6. Forecaste 14 slag ships per year, 3.5 days to discharge, assume all from Berth 6. Total of 196 days of unloading for Stage 2 or 54% of year.
HOP2	315602	5811923	Ship Unloading Hopper #2	11	26000	3	3	30	13	50%	6.5	25%	3.3	
HOP3	315587	5811881	Ship Unloading Hopper #3	11	26000	3	3	30	0	50%	0	25%	0.0	
CSP1	315583	5811870	Conveyor Switch Point 1	3	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP2	315497	5811899	Conveyor Switch Point 2	6	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP3	315418	5811927	Conveyor Switch Point 3	6	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP4	315418	5811955	Conveyor Switch Point 4	17	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP5	315413	5811907	Conveyor Switch Point 5	17	3600	3	3	30	1.8	50%	0.9	25%	0.45	Design level for Stages 1 and 2.
CSP6	315324	5811900	Conveyor Switch Point 6	12	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP7	315317	5811845	Conveyor Switch Point 7	12	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP8	315231	5811912	Conveyor Switch Point 8	3	3600	3	3	30	1.8	50%	0.9	25%	0.45	
CSP9	315236	5811948	Conveyor Switch Point 9	3	3600	3	3	30	1.8	50%	0.9	25%	0.45	
ECS	315492	5811976	2530-DC ECS off-take bucket elevator vent	29.3	3900	3	3	30	2.0	19%	0.37	11%	0.21	Design level, with proportion of PM10 and from DP1 slag grinding baghouse stack, Ektimo test report R002135a of 15/1/2016.
SILO1	315458	5811956	3111-DC Silo Air Slide Vent for silo 1	0	2000	3.5	16	30	1.0	19%	0.19	11%	0.11	Vented at ground level.
SILO3	315444	5811957	3131-DC Silo Air Slide Vent for silo 3	0	2000	3.5	12	30	1.0	19%	0.19	11%	0.11	
SBE														
DC1														
DC2														Design level
DC3	315292	5812048	Dust collector vent	22.5	12000	3	3	30	6.0	50%	3.0	25%	1.5	

4 CRITERIA POLLUTANT ASSESSMENT

Table 4 represents a summary of the dispersion modelling outcomes for each assessed substance and for each stage of production using 5 separate years of meteorological and ambient air monitoring data. Further detail with reference to contour plots of peak predictions over the local area and tabulated results for each of the nearest sensitive receivers are presented in the sections below.

Table 4: Summary of dispersion modelling outcomes for each assessed substance.

Criteria	Substance	Stage 1	Stage 2
Highest daily average increment at nearest sensitive receiver as a proportion of the APAC (%)	PM10	11%	14%
	PM2.5	12%	14%
Any additional exceedances of daily average APAC per year?	PM10	×	×
	PM2.5	×	×
Highest annual average increment at nearest sensitive receiver as a proportion of the APAC (%)	PM10	4%	5%
	PM2.5	5%	5%
Cumulative exceedance of annual average APAC with existing background?	PM10	×	×
	PM2.5	×	×
Highest annual average increment of RCS as a proportion of 3 µg/m^3 criterion (%).	RCS	<0.4%	

4.1 Stage 1 Emissions

PM10 daily averages

Table 5 summarises the peak predicted daily average ground level concentrations of PM10 inclusive of background at each of the nearest sensitive receiver locations as illustrated in **Figure 1**, as well as the peak predicted incremental concentrations of PM10. The peak concentrations are presented for each of five years of meteorological data and the maximum predictions from all these years are used for comparison to the Air Pollution Assessment Criterion (APAC) of 50 µg/m^3.

The highest predicted incremental concentration at any sensitive receiver was 5.7 µg/m^3 (11% of the APAC) at Receptor 10 which represents the nearest dwellings to the west of the facility. See **Figure 9** for a contour plot of the highest predicted daily average incremental concentrations of PM10 in the region for Stage 1 emissions. Peak daily average predictions are skewed to the east, north and south, based on the direction of predominant winds. For context, the 4th highest prediction at this worst affected receptor was 3.8 µg/m^3 (8% of the APAC).

Background daily average concentrations of ambient PM10 exceeded the APAC for up to 6 days for the assessed years. *With the addition of the predicted incremental daily average concentrations of PM10 over the background at each location and for each day, the number of exceedances of the APAC did not increase for any of the assessed years*.

PM10 annual averages

Table 7 summarises the predicted annual average ground level concentration of PM10 inclusive of background at each of the nearest sensitive receiver locations as illustrated in **Figure 1**, as well as the predicted incremental concentrations of PM10. The annual average concentrations are presented for each of five years of meteorological data and the highest predictions from all these years are used for comparison to the APAC of 20 µg/m^3.

The highest predicted incremental concentration at any sensitive receiver was 0.7 µg/m^3 (3.5% of the APAC) at Receptors 10 and 7, which represent the nearest dwelling the west and the sporting field to the north of the facility, respectively. See **Figure 10** for a contour plot of the predicted annual average incremental concentrations of PM10 in the region for Stage 1 emissions. The annual average predictions are skewed to the east, north and south, based on the direction of predominant winds.

The highest annual average background concentration of ambient PM10 within the assessed years was 18.8 µg/m^3. The addition of the predicted annual average concentrations at any receptor to the concurrent annual average background concentration did not result in an exceedance of the APAC. The highest total was 19.5 µg/m^3 or 98% of the APAC.

PM2.5 daily averages

Table 6 summarises the peak predicted daily average ground level concentrations of PM2.5 inclusive of background at each of the nearest sensitive receiver locations as illustrated in **Figure 1**, as well as the peak predicted incremental concentrations of PM2.5. The peak concentrations are presented for each of five years of meteorological data and the maximum predictions from all these years are used for comparison to the APAC of 25 µg/m^3.

The highest predicted incremental concentration at any sensitive receiver was 2.9 µg/m^3 (12% of the APAC) at Receptor 10 which represents the nearest dwellings to the west of the facility. See **Figure 11** for a contour plot of the highest predicted daily average incremental concentrations of PM2.5 in the region for Stage 1 emissions. Peak daily average predictions are skewed to the east, north and south, based on the direction of predominant winds. For context, the 4th highest prediction at this worst affected receptor was 1.9 µg/m^3 (8% of the APAC).

Background daily average concentrations of ambient PM2.5 exceeded the APAC for up to 4 days for the assessed years. *With the addition of the predicted incremental daily average concentrations of PM2.5 over the background at each location and for each day, the number of exceedances of the APAC did not increase for any of the assessed years*.

PM2.5 annual averages

Table 8 summarises the predicted annual average ground level concentration of PM2.5 inclusive of background at each of the nearest sensitive receiver locations as illustrated in **Figure 1**, as well as the predicted incremental concentrations of PM2.5. The annual average concentrations are presented for each of five years of meteorological data and the highest predictions from all these years are used for comparison to the APAC of 8 µg/m^3.

The highest predicted incremental concentration at any sensitive receiver was 0.4 µg/m^3 (5% of the APAC) at Receptor 10 which represent the nearest dwellings to the west of the facility. See **Figure 12** for a contour plot of the predicted annual average incremental concentrations of PM2.5 in the region for Stage 1 emissions. The annual average predictions are skewed to the east, north and south, based on the direction of predominant winds.

The highest annual average background concentration of ambient PM2.5 within the assessed years was 7.6 µg/m^3. The addition of the predicted annual average concentrations at any receptor to the concurrent annual average background concentration did not result in an exceedance of the APAC. The highest total was 8.0 µg/m^3 at 100% of the APAC.

4.2 Stage 2 Emissions

PM10 daily averages

From **Table 5**, the highest predicted incremental concentration at any sensitive receiver was 7.1 µg/m^3 (14% of the APAC) at Receptor 10 which represents the nearest dwellings to the west of the facility. See **Figure 13** for a contour plot of the highest predicted daily average incremental concentrations of PM10 in the region for Stage 2 emissions. For context, the 4th highest prediction at this worst affected receptor was 4.8 µg/m^3 (10% of the APAC).

With the addition of the predicted incremental daily average concentrations of PM10 over the background at each location and for each day, the number of exceedances of the APAC did not increase for any of the assessed years.

PM10 annual averages

From **Table 7**, the highest predicted incremental concentration at any sensitive receiver was 0.9 µg/m^3 (5% of the APAC) at Receptor 10 which represents the nearest dwellings to the west of the facility. See **Figure 14** for a contour plot of the predicted annual average incremental concentrations of PM10 in the region for Stage 2 emissions.

The highest annual average background concentration of ambient PM10 within the assessed years was 18.8 µg/m^3. The addition of the predicted annual average concentrations at any receptor to the concurrent annual average background concentration did not result in an exceedance of the APAC. The highest total was 19.6 µg/m^3 or 98% of the APAC.

PM2.5 daily averages

From **Table 6**, the highest predicted incremental concentration at any sensitive receiver was 3.6 µg/m^3 (14% of the APAC) at Receptor 10 which represents the nearest dwellings to the west of the facility. See **Figure 15** for a contour plot of the highest predicted daily average incremental concentrations of PM2.5 in the region for Stage 2 emissions. For context, the 4th highest prediction at this worst affected receptor was 2.4 µg/m^3 (10% of the APAC).

With the addition of the predicted incremental daily average concentrations of PM2.5 over the background at each location and for each day, the number of exceedances of the APAC did not increase for any of the assessed years.

PM2.5 annual averages

From **Table 8**, the highest predicted incremental concentration at any sensitive receiver was 0.4 µg/m^3 (5% of the APAC) at Receptors 7, 9 and 10 which represents the nearest sporting field to the north of the facility, and dwellings to the west. See **Figure 16** for a contour plot of the predicted annual average incremental concentrations of PM2.5 in the region for Stage 2 emissions.

The addition of the predicted annual average concentrations at any receptor to the concurrent annual average background concentration did not result in an exceedance of the APAC. The highest total was 8.0 µg/m^3 which represents 100% of the APAC.

4.3 Respirable crystalline silica

The material safety data sheets for each of the raw materials used at the facility were reviewed for the content of crystalline silica:

- Cement clinker <0.1%
- Granulated blast furnace slag (GBFS) <1%
- Gypsum (natural) <1%
- Limestone <3%

The cement clinker and GBFS are both pyro processed during which the crystalline structure of the constituent materials is broken down to an amorphous state, which limits the proportion of crystalline material. The proportion of crystalline silica (as quartz) within gypsum and limestone is that which occurs naturally and varies for each source quarry location. The respirable component of any residual crystalline silica is that within the proportion of particles that are PM2.5.

Hence, respirable crystalline silica (RCS) would be <3% of the predicted ground level concentrations of PM2.5.

From **Table 8**, the highest predicted annual average increment of PM2.5 at any of the nearest receivers was 0.4 µg/m^3 for both Stages 1 and 2. At <3% RCS, the highest annual average concentration would be <0.012 µg/m^3 which represents <0.4% of the annual average APAC for RCS of 3 µg/m^3.

Ektimo

Table 5: Peak daily average predictions at nearest sensitive receivers of PM10 for Stages 1 and 2.

2014

Senstive Receptor	Maximum Daily Average with Background PM10 (µg/m3)	Predicted increment PM10 on that day (µg/m3)	Background concentration PM10 on that day (µg/m3)	Highest Predicted Daily Average PM10 Increment (µg/m3)	4th Highest Predicted Daily Average PM10 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	80	0.9	79	1.2	0.9	6
2	80	0.8	79	1.3	1.1	6
3	80	0.7	79	1.6	1.2	6
4	80	0.6	79	1.8	1.3	6
5	80	0.6	79	2.2	1.6	6
6	80	1.2	79	3.2	2.4	6
7	80	1.2	79	3.7	3.0	6
8	80	0.7	79	4.3	2.9	6
9	80	0.7	79	3.6	2.8	6
10	80	1.0	79	5.1	3.5	6
11	79	0.4	79	2.4	1.6	6
12	79	0.4	79	3.6	1.1	6
13	79	0.3	79	2.9	0.6	6
14	79	0.3	79	3.3	0.7	6
15	79	0.1	79	1.7	0.5	6
16	79	0.1	79	1.1	0.9	6
17	79	0.2	79	1.9	1.3	6
18	79	0.1	79	0.9	0.6	6
19	79	0.1	79	1.0	0.7	6
20	79	0.1	79	1.1	0.8	6
21	79	0.1	79	1.1	0.9	6
22	79	0.1	79	0.7	0.7	6
23	79	0.1	79	0.5	0.4	6
24	79	0.1	79	0.4	0.4	6
25	79	0.1	79	0.9	0.6	6
Max.	**80**	**1.2**	**79**	**5.1**	**3.5**	**6**
					Background only N > 50 µg/m3:	*6*
STAGE 2						
1	80	1.0	79	1.4	1.1	6
2	80	1.0	79	1.6	1.2	6
3	80	0.9	79	1.9	1.4	6
4	80	0.7	79	2.2	1.6	6
5	80	0.8	79	2.6	1.9	6
6	80	1.4	79	3.8	2.8	6
7	80	1.5	79	4.6	3.7	6
8	80	0.8	79	5.1	3.6	6
9	80	0.8	79	4.6	3.5	6
10	80	1.2	79	6.2	4.5	6
11	80	0.5	79	3.3	2.1	6
12	79	0.5	79	4.4	1.3	6
13	79	0.3	79	3.3	0.8	6
14	79	0.3	79	4.2	0.9	6
15	79	0.2	79	2.0	0.6	6
16	79	0.1	79	1.3	1.0	6
17	79	0.2	79	2.3	1.6	6
18	79	0.1	79	1.1	0.8	6
19	79	0.1	79	1.2	0.8	6
20	79	0.1	79	1.3	0.9	6
21	79	0.1	79	1.3	1.1	6
22	79	0.1	79	0.9	0.8	6
23	79	0.1	79	0.6	0.5	6
24	79	0.1	79	0.5	0.4	6
25	79	0.2	79	1.0	0.7	6
Max.	**80**	**1.5**	**79**	**6.2**	**4.5**	**6**
					Background only N > 50 µg/m3:	*6*

2015

Senstive Receptor	Maximum Daily Average with Background PM10 (µg/m3)	Predicted increment PM10 on that day (µg/m3)	Background concentration PM10 on that day (µg/m3)	Highest Predicted Daily Average PM10 Increment (µg/m3)	4th Highest Predicted Daily Average PM10 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	69	0.1	69	1.0	0.9	2
2	69	0.1	69	1.1	0.9	2
3	69	0.1	69	1.1	1.0	2
4	69	0.1	69	1.2	1.0	2
5	69	0.2	69	1.5	1.3	2
6	69	0.2	69	2.2	1.8	2
7	69	0.4	69	3.0	2.8	2
8	70	0.6	69	2.9	2.4	2
9	70	0.6	69	3.6	2.9	2
10	70	0.7	69	4.1	3.0	2
11	69	0.2	69	1.6	1.2	2
12	69	0.2	69	1.1	1.0	2
13	69	0.2	69	0.8	0.6	2
14	69	0.2	69	0.9	0.6	2
15	69	0.1	69	0.6	0.4	2
16	69	0.1	69	0.8	0.5	2
17	69	0.2	69	1.7	1.0	2
18	69	0.1	69	0.8	0.4	2
19	69	0.1	69	1.0	0.8	2
20	69	0.1	69	1.1	0.9	2
21	69	0.2	69	1.2	1.0	2
22	69	0.2	69	0.6	0.6	2
23	69	0.1	69	0.6	0.4	2
24	69	0.1	69	0.5	0.4	2
25	69	0.2	69	0.8	0.6	2
Max.	**70**	**0.7**	**69**	**4.1**	**3.0**	**2**
					Background only N > 50 µg/m3:	*2*
STAGE 2						
1	69	0.1	69	1.2	1.1	2
2	69	0.1	69	1.2	1.0	2
3	69	0.1	69	1.3	1.2	2
4	69	0.1	69	1.4	1.2	2
5	69	0.2	69	1.8	1.6	2
6	69	0.3	69	2.6	2.2	2
7	69	0.4	69	3.6	3.3	2
8	70	0.7	69	3.6	2.8	2
9	70	0.9	69	4.6	3.5	2
10	70	0.9	69	5.1	3.7	2
11	69	0.3	69	2.0	1.6	2
12	69	0.3	69	1.4	1.2	2
13	69	0.2	69	0.9	0.8	2
14	69	0.2	69	1.1	0.7	2
15	69	0.1	69	0.7	0.5	2
16	69	0.1	69	0.9	0.5	2
17	69	0.2	69	2.1	1.2	2
18	69	0.1	69	1.0	0.5	2
19	69	0.1	69	1.2	0.9	2
20	69	0.2	69	1.3	1.0	2
21	69	0.2	69	1.4	1.2	2
22	69	0.2	69	0.8	0.7	2
23	69	0.1	69	0.7	0.5	2
24	69	0.1	69	0.6	0.5	2
25	69	0.2	69	1.0	0.7	2
Max.	**70**	**0.9**	**69**	**5.1**	**3.7**	**2**
					Background only N > 50 µg/m3:	*2*

2016

Senstive Receptor	Maximum Daily Average with Background PM10 (µg/m3)	Predicted increment PM10 on that day (µg/m3)	Background concentration PM10 on that day (µg/m3)	Highest Predicted Daily Average PM10 Increment (µg/m3)	4th Highest Predicted Daily Average PM10 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	43	0.4	43	1.3	1.0	0
2	44	0.7	43	1.3	0.9	0
3	44	1.0	43	1.4	1.0	0
4	44	1.1	43	1.5	1.1	0
5	44	1.3	43	1.8	1.3	0
6	45	2.1	43	2.6	2.1	0
7	45	2.5	43	3.5	2.5	0
8	44	1.5	43	3.0	1.7	0
9	45	1.8	43	5.6	2.6	0
10	45	2.2	43	5.7	3.5	0
11	44	0.8	43	3.0	1.2	0
12	43	0.5	43	2.3	1.0	0
13	43	0.3	43	1.5	0.7	0
14	43	0.3	43	1.4	0.7	0
15	43	0.2	43	0.7	0.5	0
16	43	0.3	43	1.0	0.6	0
17	43	0.2	43	1.5	1.0	0
18	43	0.1	43	0.7	0.5	0
19	43	0.0	43	0.8	0.5	0
20	43	0.0	43	1.2	0.6	0
21	43	0.0	43	1.1	0.6	0
22	43	0.1	43	0.8	0.5	0
23	43	0.0	43	0.5	0.4	0
24	43	0.0	43	0.5	0.4	0
25	43	0.1	43	0.8	0.6	0
Max.	**45**	**2.5**	**43**	**5.7**	**3.5**	**0**
					Background only N > 50 µg/m3:	*0*
STAGE 2						
1	43	0.5	43	1.5	1.2	0
2	44	0.9	43	1.5	1.1	0
3	44	1.2	43	1.7	1.2	0
4	44	1.3	43	1.7	1.3	0
5	45	1.6	43	2.2	1.6	0
6	45	2.5	43	3.1	2.5	0
7	46	2.9	43	4.2	3.0	0
8	45	1.7	43	3.7	2.1	0
9	45	2.1	43	6.3	3.2	0
10	46	2.7	43	7.1	4.2	0
11	44	1.0	43	3.8	1.4	0
12	44	0.6	43	3.0	1.2	0
13	43	0.3	43	1.7	0.8	0
14	43	0.4	43	1.6	0.8	0
15	43	0.3	43	0.9	0.5	0
16	43	0.3	43	1.2	0.7	0
17	43	0.2	43	1.8	1.3	0
18	43	0.1	43	0.9	0.6	0
19	43	0.0	43	1.0	0.6	0
20	43	0.0	43	1.4	0.7	0
21	43	0.0	43	1.4	0.7	0
22	43	0.1	43	1.0	0.6	0
23	43	0.0	43	0.6	0.5	0
24	43	0.0	43	0.6	0.5	0
25	43	0.1	43	0.9	0.7	0
Max.	**46**	**2.9**	**43**	**7.1**	**4.2**	**0**
					Background only N > 50 µg/m3:	*0*

2017

Senstive Receptor	Maximum Daily Average with Background PM10 (µg/m3)	Predicted increment PM10 on that day (µg/m3)	Background PM10 on that day (µg/m3)	Highest Predicted Daily Average PM10 Increment (µg/m3)	4th Highest Predicted Daily Average PM10 Increment (µg/m3)	Number predicted with background >50 µg/m3
STAGE 1						
1	50	0.1	50	0.8	0.8	0
2	50	0.1	50	1.0	0.8	0
3	50	0.1	50	0.9	0.9	0
4	50	0.1	50	1.0	0.8	0
5	50	0.1	50	1.1	0.9	0
6	50	0.1	50	1.9	1.6	0
7	50	0.1	50	2.2	1.9	0
8	50	0.1	50	2.7	2.3	0
9	50	0.2	50	4.7	3.1	0
10	50	0.3	50	4.4	3.8	0
11	50	0.1	50	1.7	1.3	0
12	50	0.1	50	1.2	1.1	0
13	50	0.1	50	0.9	0.7	0
14	50	0.1	50	1.3	0.7	0
15	50	0.1	50	0.8	0.5	0
16	50	0.1	50	0.9	0.5	0
17	50	0.1	50	1.5	0.9	0
18	50	0.1	50	0.7	0.4	0
19	50	0.1	50	0.8	0.6	0
20	50	0.1	50	1.0	0.6	0
21	50	0.1	50	1.1	0.7	0
22	50	0.1	50	0.6	0.5	0
23	50	0.0	50	0.5	0.4	0
24	50	0.0	50	0.6	0.4	0
25	50	0.1	50	0.7	0.6	0
Max.	**50**	**0.3**	**50**	**4.7**	**3.8**	**0**
					Background only N > 50 µg/m3:	*0*
STAGE 2						
1	50	0.1	50	1.0	0.9	0
2	50	0.1	50	1.1	1.0	0
3	50	0.1	50	1.1	1.1	0
4	50	0.1	50	1.2	1.0	0
5	50	0.1	50	1.4	1.1	0
6	50	0.1	50	2.3	1.9	0
7	50	0.2	50	2.7	2.3	0
8	50	0.1	50	3.1	2.7	0
9	50	0.2	50	5.7	3.8	0
10	50	0.3	50	5.5	4.8	0
11	50	0.2	50	2.2	1.7	0
12	50	0.2	50	1.5	1.2	0
13	50	0.1	50	1.0	0.8	0
14	50	0.1	50	1.5	0.8	0
15	50	0.1	50	1.0	0.6	0
16	50	0.1	50	1.0	0.6	0
17	50	0.2	50	1.8	1.1	0
18	50	0.1	50	0.9	0.5	0
19	50	0.1	50	1.0	0.7	0
20	50	0.1	50	1.3	0.8	0
21	50	0.1	50	1.4	0.8	0
22	50	0.1	50	0.7	0.6	0
23	50	0.0	50	0.6	0.5	0
24	50	0.0	50	0.7	0.5	0
25	50	0.1	50	0.9	0.7	0
Max.	**50**	**0.3**	**50**	**5.7**	**4.8**	**0**
					Background only N > 50 µg/m3:	*0*

2018

Senstive Receptor	Maximum Daily Average with PM10 (µg/m3)	Predicted increment PM10 on that day (µg/m3)	Background concentration PM10 on that day (µg/m3)	Highest Predicted Daily Average PM10 Increment (µg/m3)	4th Highest Predicted Daily Average PM10 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	58	0.0	58	0.8	0.7	1
2	58	0.0	58	1.0	0.8	1
3	58	0.0	58	1.2	0.9	1
4	58	0.0	58	1.2	1.0	1
5	58	0.1	58	1.6	1.2	1
6	58	0.1	58	2.2	1.8	1
7	58	0.1	58	3.0	2.3	1
8	58	0.1	58	3.1	2.2	1
9	58	0.2	58	5.0	3.2	1
10	58	0.3	58	4.1	3.2	1
11	58	0.1	58	1.7	1.1	1
12	58	0.1	58	1.1	0.9	1
13	58	0.1	58	0.7	0.5	1
14	58	0.1	58	0.9	0.6	1
15	58	0.0	58	0.7	0.4	1
16	58	0.0	58	1.1	0.6	1
17	58	0.0	58	1.6	1.1	1
18	58	0.0	58	0.8	0.5	1
19	58	0.0	58	0.9	0.6	1
20	58	0.0	58	0.9	0.8	1
21	58	0.1	58	1.0	0.9	1
22	58	0.1	58	0.7	0.6	1
23	58	0.1	58	0.6	0.4	1
24	58	0.1	58	0.6	0.3	1
25	58	0.1	58	0.8	0.7	1
Max.	**58**	**0.3**	**58**	**5.0**	**3.2**	**1**
					Background only N > 50 µg/m3:	*1*
STAGE 2						
1	58	0.0	58	1.0	0.8	1
2	58	0.0	58	1.2	0.9	1
3	58	0.1	58	1.4	1.0	1
4	58	0.1	58	1.5	1.2	1
5	58	0.1	58	1.9	1.4	1
6	58	0.1	58	2.7	2.2	1
7	58	0.1	58	3.8	2.8	1
8	58	0.1	58	3.5	2.7	1
9	58	0.2	58	6.3	4.1	1
10	58	0.3	58	5.0	3.8	1
11	58	0.2	58	2.3	1.5	1
12	58	0.2	58	1.4	1.1	1
13	58	0.1	58	0.8	0.6	1
14	58	0.1	58	1.1	0.7	1
15	58	0.1	58	0.7	0.4	1
16	58	0.0	58	1.3	0.7	1
17	58	0.1	58	1.9	1.3	1
18	58	0.0	58	0.9	0.6	1
19	58	0.0	58	1.1	0.8	1
20	58	0.0	58	1.1	0.9	1
21	58	0.1	58	1.2	1.0	1
22	58	0.1	58	0.8	0.7	1
23	58	0.1	58	0.7	0.5	1
24	58	0.1	58	0.7	0.4	1
25	58	0.1	58	1.0	0.8	1
Max.	**58**	**0.3**	**58**	**6.3**	**4.1**	**1**
					Background only N > 50 µg/m3:	*1*

Table 6: Peak daily average predictions at nearest sensitive receivers of PM2.5 for Stages 1 and 2.

2014

Senstive Receptor	Maximum Daily Average PM2.5 with Background (µg/m3)	Predicted increment PM2.5 on that day (µg/m3)	Background concentration PM2.5 on that day (µg/m3)	Highest Predicted Daily Average PM2.5 Increment (µg/m3)	4th Highest Predicted Daily Average PM2.5 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	39	0.1	39	0.6	0.5	4
2	39	0.1	39	0.7	0.5	4
3	39	0.2	39	0.8	0.6	4
4	39	0.2	39	0.9	0.7	4
5	39	0.3	39	1.1	0.8	4
6	39	0.4	39	1.6	1.2	4
7	40	0.6	39	1.9	1.5	4
8	40	0.8	39	2.1	1.5	4
9	40	0.5	39	1.8	1.4	4
10	39	0.4	39	2.5	1.8	4
11	39	0.1	39	1.2	0.8	4
12	39	0.1	39	1.8	0.5	4
13	39	0.1	39	1.4	0.3	4
14	39	0.1	39	1.7	0.4	4
15	39	0.0	39	0.8	0.3	4
16	39	0.0	39	0.6	0.4	4
17	39	0.0	39	0.9	0.7	4
18	39	0.0	39	0.5	0.3	4
19	39	0.0	39	0.5	0.3	4
20	39	0.0	39	0.5	0.4	4
21	39	0.0	39	0.6	0.4	4
22	39	0.0	39	0.4	0.4	4
23	39	0.0	39	0.3	0.2	4
24	39	0.0	39	0.2	0.2	4
25	39	0.0	39	0.4	0.3	4
Max.	**40**	**0.8**	**39**	**2.5**	**1.8**	**4**
					N > 25 µg/m3 background	*4*
STAGE 2						
1	39	0.2	39	0.7	0.5	4
2	39	0.2	39	0.8	0.6	4
3	39	0.2	39	0.9	0.7	4
4	39	0.3	39	1.1	0.8	4
5	39	0.4	39	1.3	1.0	4
6	40	0.5	39	1.9	1.4	4
7	40	0.7	39	2.3	1.8	4
8	40	0.9	39	2.6	1.8	4
9	40	0.6	39	2.3	1.7	4
10	39	0.4	39	3.1	2.2	4
11	39	0.1	39	1.7	1.0	4
12	39	0.1	39	2.2	0.7	4
13	39	0.1	39	1.7	0.4	4
14	39	0.1	39	2.1	0.4	4
15	39	0.0	39	1.0	0.3	4
16	39	0.0	39	0.7	0.5	4
17	39	0.0	39	1.1	0.8	4
18	39	0.0	39	0.5	0.4	4
19	39	0.0	39	0.6	0.4	4
20	39	0.0	39	0.6	0.5	4
21	39	0.0	39	0.7	0.5	4
22	39	0.0	39	0.4	0.4	4
23	39	0.0	39	0.3	0.2	4
24	39	0.0	39	0.3	0.2	4
25	39	0.0	39	0.5	0.3	4
	40	**0.9**	**39**	**3.1**	**2.2**	**4**
					N > 25 µg/m3 background	*4*

2015

Senstive Receptor	Maximum Daily Average PM2.5 with Background (µg/m3)	Predicted increment PM2.5 on that day (µg/m3)	Background concentration PM2.5 on that day (µg/m3)	Highest Predicted Daily Average PM2.5 Increment (µg/m3)	4th Highest Predicted Daily Average PM2.5 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	23	0.1	23	0.5	0.5	0
2	23	0.1	23	0.5	0.5	0
3	23	0.1	23	0.6	0.5	0
4	23	0.1	23	0.6	0.5	0
5	23	0.2	23	0.8	0.7	0
6	23	0.3	23	1.1	0.9	0
7	23	0.4	23	1.5	1.4	0
8	24	0.7	23	1.5	1.2	0
9	24	0.8	23	1.8	1.4	0
10	24	0.8	23	2.1	1.5	0
11	23	0.3	23	0.8	0.6	0
12	23	0.3	23	0.5	0.5	0
13	23	0.2	23	0.4	0.3	0
14	23	0.3	23	0.5	0.3	0
15	23	0.2	23	0.3	0.2	0
16	23	0.2	23	0.4	0.2	0
17	24	0.6	23	0.9	0.5	0
18	23	0.3	23	0.4	0.2	0
19	23	0.4	23	0.5	0.4	0
20	23	0.4	23	0.5	0.4	0
21	23	0.3	23	0.6	0.5	0
22	23	0.2	23	0.3	0.3	0
23	23	0.1	23	0.3	0.2	0
24	23	0.1	23	0.2	0.2	0
25	23	0.2	23	0.4	0.3	0
Max.	**24**	**0.8**	**23**	**2.1**	**1.5**	**0**
					N > 25 µg/m3 background	*0*
STAGE 2						
1	23	0.1	23	0.6	0.5	0
2	23	0.1	23	0.6	0.5	0
3	23	0.1	23	0.7	0.6	0
4	23	0.2	23	0.7	0.6	0
5	23	0.2	23	0.9	0.8	0
6	23	0.3	23	1.3	1.1	0
7	24	0.5	23	1.8	1.7	0
8	24	0.9	23	1.8	1.4	0
9	24	1.0	23	2.3	1.8	0
10	24	1.0	23	2.5	1.8	0
11	23	0.3	23	1.0	0.8	0
12	23	0.4	23	0.7	0.6	0
13	23	0.3	23	0.4	0.4	0
14	23	0.3	23	0.5	0.4	0
15	23	0.2	23	0.3	0.2	0
16	23	0.3	23	0.4	0.3	0
17	24	0.7	23	1.0	0.6	0
18	23	0.3	23	0.5	0.3	0
19	23	0.5	23	0.6	0.5	0
20	23	0.5	23	0.7	0.5	0
21	23	0.4	23	0.7	0.6	0
22	23	0.2	23	0.4	0.3	0
23	23	0.1	23	0.4	0.3	0
24	23	0.1	23	0.3	0.2	0
25	23	0.2	23	0.5	0.4	0
	24	**1.0**	**23**	**2.5**	**1.8**	**0**
					N > 25 µg/m3 background	*0*

2016

Senstive Receptor	Maximum Daily Average PM2.5 with Background (µg/m3)	Predicted increment PM2.5 on that day (µg/m3)	Background concentration PM2.5 on that day (µg/m3)	Highest Predicted Daily Average PM2.5 Increment (µg/m3)	4th Highest Predicted Daily Average PM2.5 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	27	0.1	27	0.6	0.5	1
2	27	0.1	27	0.6	0.5	1
3	27	0.1	27	0.7	0.5	1
4	27	0.1	27	0.7	0.6	1
5	27	0.1	27	0.9	0.7	1
6	27	0.1	27	1.3	1.1	1
7	27	0.1	27	1.8	1.3	1
8	27	0.1	27	1.5	0.9	1
9	27	0.1	27	2.8	1.3	1
10	27	0.1	27	2.9	1.8	1
11	27	0.0	27	1.5	0.6	1
12	27	0.0	27	1.1	0.5	1
13	27	0.0	27	0.7	0.3	1
14	27	0.0	27	0.7	0.4	1
15	27	0.0	27	0.4	0.2	1
16	27	0.0	27	0.5	0.3	1
17	27	0.0	27	0.7	0.5	1
18	27	0.0	27	0.4	0.3	1
19	27	0.0	27	0.4	0.3	1
20	27	0.0	27	0.6	0.3	1
21	27	0.0	27	0.6	0.3	1
22	27	0.0	27	0.4	0.3	1
23	27	0.0	27	0.2	0.2	1
24	27	0.0	27	0.3	0.2	1
25	27	0.0	27	0.4	0.3	1
Max.	**27**	**0.1**	**27**	**2.9**	**1.8**	**1**
					N > 25 µg/m3 background	*1*
STAGE 2						
1	27	0.1	27	0.7	0.6	1
2	27	0.1	27	0.8	0.6	1
3	27	0.1	27	0.8	0.6	1
4	27	0.1	27	0.9	0.7	1
5	27	0.1	27	1.1	0.8	1
6	27	0.1	27	1.6	1.3	1
7	27	0.1	27	2.1	1.5	1
8	27	0.1	27	1.9	1.1	1
9	27	0.1	27	3.1	1.6	1
10	27	0.1	27	3.6	2.1	1
11	27	0.1	27	1.9	0.7	1
12	27	0.1	27	1.5	0.6	1
13	27	0.0	27	0.9	0.4	1
14	27	0.0	27	0.8	0.4	1
15	27	0.0	27	0.4	0.3	1
16	27	0.0	27	0.6	0.3	1
17	27	0.0	27	0.9	0.6	1
18	27	0.0	27	0.4	0.3	1
19	27	0.0	27	0.5	0.3	1
20	27	0.0	27	0.7	0.3	1
21	27	0.0	27	0.7	0.4	1
22	27	0.0	27	0.5	0.3	1
23	27	0.0	27	0.3	0.3	1
24	27	0.0	27	0.3	0.2	1
25	27	0.0	27	0.5	0.4	1
	27	**0.1**	**27**	**3.6**	**2.1**	**1**
					N > 25 µg/m3 background	*1*

2017

Senstive Receptor	Maximum Daily Average PM2.5 with Background (µg/m3)	Predicted increment PM2.5 on that day (µg/m3)	Background concentration PM2.5 on that day (µg/m3)	Highest Predicted Daily Average PM2.5 Increment (µg/m3)	4th Highest Predicted Daily Average PM2.5 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	35	0.0	35	0.4	0.4	4
2	35	0.0	35	0.5	0.4	4
3	35	0.0	35	0.5	0.5	4
4	35	0.0	35	0.5	0.4	4
5	35	0.1	35	0.6	0.5	4
6	35	0.1	35	0.9	0.8	4
7	35	0.1	35	1.1	0.9	4
8	35	0.1	35	1.3	1.2	4
9	35	0.2	35	2.4	1.5	4
10	35	0.3	35	2.2	1.9	4
11	35	0.1	35	0.8	0.7	4
12	35	0.1	35	0.6	0.5	4
13	35	0.1	35	0.4	0.3	4
14	35	0.1	35	0.6	0.3	4
15	35	0.0	35	0.4	0.2	4
16	35	0.1	35	0.4	0.3	4
17	35	0.2	35	0.8	0.4	4
18	35	0.1	35	0.4	0.2	4
19	35	0.2	35	0.4	0.3	4
20	35	0.2	35	0.5	0.3	4
21	35	0.2	35	0.6	0.3	4
22	35	0.0	35	0.3	0.3	4
23	35	0.0	35	0.3	0.2	4
24	35	0.0	35	0.3	0.2	4
25	35	0.1	35	0.4	0.3	4
Max.	**35**	**0.3**	**35**	**2.4**	**1.9**	**4**
					N > 25 µg/m3 background	*4*
STAGE 2						
1	35	0.0	35	0.5	0.5	4
2	35	0.0	35	0.6	0.5	4
3	35	0.0	35	0.6	0.6	4
4	35	0.0	35	0.6	0.5	4
5	35	0.1	35	0.7	0.6	4
6	35	0.1	35	1.1	1.0	4
7	35	0.1	35	1.4	1.1	4
8	35	0.1	35	1.5	1.4	4
9	35	0.2	35	2.9	1.9	4
10	35	0.3	35	2.7	2.4	4
11	35	0.1	35	1.1	0.8	4
12	35	0.1	35	0.7	0.6	4
13	35	0.1	35	0.5	0.4	4
14	35	0.1	35	0.7	0.4	4
15	35	0.0	35	0.5	0.3	4
16	35	0.1	35	0.5	0.3	4
17	35	0.2	35	0.9	0.5	4
18	35	0.1	35	0.4	0.3	4
19	35	0.2	35	0.5	0.4	4
20	35	0.2	35	0.6	0.4	4
21	35	0.3	35	0.7	0.4	4
22	35	0.1	35	0.4	0.3	4
23	35	0.0	35	0.3	0.2	4
24	35	0.0	35	0.4	0.3	4
25	35	0.1	35	0.4	0.4	4
	35	**0.3**	**35**	**2.9**	**2.4**	**4**
					N > 25 µg/m3 background	*4*

2018

Senstive Receptor	Maximum Daily Average PM2.5 with Background (µg/m3)	Predicted increment PM2.5 on that day (µg/m3)	Background day (µg/m3)	Highest Predicted Daily Average PM2.5 Increment (µg/m3)	4th Highest Predicted Daily Average PM2.5 Increment (µg/m3)	Number predicted daily averages with background >50 µg/m3
STAGE 1						
1	32	0.1	32	0.4	0.4	3
2	32	0.1	32	0.5	0.4	3
3	32	0.1	32	0.6	0.4	3
4	32	0.1	32	0.6	0.5	3
5	32	0.1	32	0.8	0.6	3
6	32	0.2	32	1.1	0.9	3
7	32	0.3	32	1.5	1.2	3
8	32	0.2	32	1.5	1.1	3
9	32	0.2	32	2.5	1.6	3
10	32	0.4	32	2.1	1.6	3
11	32	0.2	32	0.9	0.6	3
12	32	0.2	32	0.5	0.5	3
13	32	0.1	32	0.4	0.3	3
14	32	0.1	32	0.4	0.3	3
15	32	0.1	32	0.3	0.2	3
16	32	0.1	32	0.6	0.3	3
17	32	0.1	32	0.8	0.5	3
18	32	0.0	32	0.4	0.3	3
19	32	0.0	32	0.5	0.3	3
20	32	0.0	32	0.5	0.4	3
21	32	0.0	32	0.5	0.4	3
22	32	0.1	32	0.3	0.3	3
23	32	0.1	32	0.3	0.2	3
24	32	0.1	32	0.3	0.2	3
25	32	0.1	32	0.4	0.3	3
Max.	**32**	**0.4**	**32**	**2.5**	**1.6**	**3**
					N > 25 µg/m3 background	*3*
STAGE 2						
1	32	0.2	32	0.5	0.4	3
2	32	0.2	32	0.6	0.5	3
3	32	0.2	32	0.7	0.5	3
4	32	0.1	32	0.7	0.6	3
5	32	0.1	32	1.0	0.7	3
6	32	0.3	32	1.3	1.1	3
7	32	0.3	32	1.9	1.4	3
8	32	0.2	32	1.8	1.4	3
9	32	0.3	32	3.2	2.0	3
10	32	0.4	32	2.5	1.9	3
11	32	0.2	32	1.1	0.7	3
12	32	0.2	32	0.7	0.5	3
13	32	0.2	32	0.4	0.3	3
14	32	0.1	32	0.5	0.4	3
15	32	0.1	32	0.4	0.2	3
16	32	0.1	32	0.7	0.4	3
17	32	0.1	32	0.9	0.6	3
18	32	0.0	32	0.5	0.3	3
19	32	0.0	32	0.5	0.4	3
20	32	0.0	32	0.6	0.5	3
21	32	0.0	32	0.6	0.5	3
22	32	0.1	32	0.4	0.3	3
23	32	0.1	32	0.4	0.3	3
24	32	0.1	32	0.4	0.2	3
25	32	0.2	32	0.5	0.4	3
	32	**0.4**	**32**	**3.2**	**2.0**	**3**
					N > 25 µg/m3 background	*3*

Table 7: Annual average PM10 at nearest sensitive receivers for Stages 1 and 2.

Year	2014		2015		2016		2017		2018	
PM10 Background (µg/m3)	18.8		16.8		14.8		16.9		18.2	
Senstive Receptor	PM10 Increment (µg/m3)	PM10 Total (µg/m3)	PM10 Increment (µg/m3)	PM10 Total (µg/m3)	PM10 Increment (µg/m3)	PM10 Total (µg/m3)	PM10 Increment (µg/m3)	PM10 Total (µg/m3)	PM10 Increment (µg/m3)	PM10 Total (µg/m3)
STAGE 1										
1	0.2	19.0	0.2	17.0	0.2	15.0	0.2	17.1	0.2	18.4
2	0.2	19.1	0.2	17.0	0.2	15.0	0.2	17.1	0.2	18.4
3	0.3	19.1	0.2	17.0	0.2	15.0	0.2	17.1	0.2	18.4
4	0.3	19.1	0.2	17.0	0.2	15.0	0.2	17.1	0.2	18.4
5	0.3	19.2	0.3	17.1	0.3	15.1	0.3	17.1	0.3	18.5
6	0.5	19.3	0.5	17.3	0.5	15.2	0.4	17.3	0.5	18.7
7	0.7	19.5	0.6	17.4	0.6	15.3	0.5	17.4	0.6	18.8
8	0.5	19.3	0.5	17.3	0.4	15.2	0.4	17.3	0.5	18.7
9	0.6	19.4	0.5	17.3	0.4	15.2	0.6	17.4	0.5	18.7
10	0.7	19.5	0.6	17.4	0.5	15.3	0.7	17.6	0.6	18.8
11	0.3	19.1	0.2	17.0	0.2	15.0	0.3	17.2	0.3	18.5
12	0.2	19.1	0.2	17.0	0.2	15.0	0.2	17.1	0.2	18.4
13	0.2	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.2	18.4
14	0.1	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.1	18.4
15	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
16	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
17	0.1	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.1	18.4
18	0.1	18.9	0.1	16.8	0.1	14.8	0.1	17.0	0.1	18.3
19	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
20	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
21	0.1	19.0	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
22	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
23	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
24	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
25	0.1	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.1	18.4
Maximum (µg/m3)	***0.7***	***19.5***	***0.6***	***17.4***	***0.6***	***15.3***	***0.7***	***17.6***	***0.6***	***18.8***
STAGE 2										
1	0.2	19.1	0.2	17.0	0.3	15.0	0.2	17.1	0.2	18.4
2	0.3	19.1	0.3	17.0	0.3	15.1	0.2	17.1	0.3	18.5
3	0.3	19.1	0.3	17.1	0.3	15.1	0.3	17.1	0.3	18.5
4	0.3	19.2	0.3	17.1	0.3	15.1	0.3	17.1	0.3	18.5
5	0.4	19.2	0.4	17.1	0.3	15.1	0.3	17.2	0.3	18.6
6	0.6	19.5	0.6	17.4	0.6	15.3	0.5	17.4	0.6	18.8
7	0.8	19.6	0.7	17.5	0.7	15.5	0.6	17.5	0.7	18.9
8	0.6	19.4	0.6	17.4	0.5	15.2	0.5	17.4	0.5	18.7
9	0.7	19.5	0.7	17.4	0.5	15.3	0.7	17.6	0.6	18.8
10	0.8	19.6	0.8	17.6	0.7	15.4	0.9	17.7	0.8	19.0
11	0.3	19.2	0.3	17.1	0.3	15.1	0.3	17.2	0.3	18.5
12	0.3	19.1	0.3	17.0	0.2	15.0	0.3	17.2	0.3	18.5
13	0.2	19.0	0.2	17.0	0.2	14.9	0.2	17.1	0.2	18.4
14	0.2	19.0	0.2	16.9	0.2	14.9	0.2	17.1	0.2	18.4
15	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
16	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
17	0.2	19.0	0.2	16.9	0.1	14.9	0.2	17.1	0.2	18.4
18	0.1	18.9	0.1	16.9	0.1	14.8	0.1	17.0	0.1	18.3
19	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
20	0.1	19.0	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
21	0.2	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.1	18.4
22	0.1	19.0	0.1	16.9	0.1	14.9	0.2	17.0	0.2	18.4
23	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
24	0.1	18.9	0.1	16.9	0.1	14.9	0.1	17.0	0.1	18.3
25	0.2	19.0	0.2	17.0	0.1	14.9	0.2	17.1	0.2	18.4
Maximum (µg/m3)	***0.8***	***19.6***	***0.8***	***17.6***	***0.7***	***15.5***	***0.9***	***17.7***	***0.8***	***19.0***

Table 8: Annual average PM2.5 at nearest sensitive receivers

Year	2014		2015		2016		2017		2018	
PM2.5 Background (µg/m3)	7.1		7.0		6.7		7.6		7.3	
Senstive Receptor	PM2.5 Increment (µg/m3)	PM2.5 Total (µg/m3)	PM2.5 Increment (µg/m3)	PM2.5 Total (µg/m3)	PM2.5 Increment (µg/m3)	PM2.5 Total (µg/m3)	PM2.5 Increment (µg/m3)	PM2.5 Total (µg/m3)	PM2.5 Increment (µg/m3)	PM2.5 Total (µg/m3)
STAGE 1										
1	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
2	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
3	0.1	7.3	0.2	7.2	0.1	6.8	0.1	7.7	0.1	7.4
4	0.1	7.3	0.2	7.2	0.1	6.8	0.1	7.7	0.1	7.4
5	0.2	7.3	0.2	7.2	0.1	6.8	0.1	7.7	0.2	7.5
6	0.3	7.4	0.3	7.3	0.2	6.9	0.2	7.8	0.2	7.5
7	0.3	7.5	0.3	7.3	0.3	7.0	0.3	7.9	0.3	7.6
8	0.3	7.4	0.3	7.3	0.2	6.9	0.2	7.8	0.2	7.5
9	0.3	7.4	0.3	7.3	0.2	6.9	0.3	7.9	0.3	7.6
10	0.3	7.5	0.3	7.3	0.3	7.0	0.4	8.0	0.3	7.6
11	0.1	7.3	0.2	7.2	0.1	6.8	0.2	7.8	0.1	7.4
12	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
13	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
14	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
15	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
16	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
17	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
18	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
19	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
20	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
21	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
22	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
23	0.1	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
24	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
25	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
Maximum (µg/m3)	***0.3***	***7.5***	***0.3***	***7.3***	***0.3***	***7.0***	***0.4***	***8.0***	***0.3***	***7.6***
STAGE 2										
1	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
2	0.1	7.3	0.2	7.2	0.1	6.8	0.1	7.7	0.1	7.4
3	0.2	7.3	0.2	7.2	0.2	6.8	0.1	7.7	0.2	7.5
4	0.2	7.3	0.2	7.2	0.2	6.8	0.1	7.7	0.2	7.5
5	0.2	7.3	0.2	7.2	0.2	6.9	0.2	7.8	0.2	7.5
6	0.3	7.4	0.3	7.3	0.3	7.0	0.3	7.9	0.3	7.6
7	0.4	7.5	0.4	7.4	0.3	7.0	0.3	7.9	0.4	7.7
8	0.3	7.4	0.3	7.3	0.2	6.9	0.3	7.9	0.3	7.6
9	0.3	7.5	0.4	7.4	0.3	7.0	0.4	8.0	0.3	7.6
10	0.4	7.5	0.4	7.4	0.3	7.0	0.4	8.0	0.4	7.7
11	0.2	7.3	0.2	7.2	0.1	6.8	0.2	7.8	0.2	7.5
12	0.2	7.3	0.2	7.2	0.1	6.8	0.2	7.8	0.2	7.5
13	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
14	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
15	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
16	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
17	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
18	0.0	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
19	0.1	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
20	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
21	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
22	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
23	0.1	7.2	0.1	7.1	0.1	6.7	0.1	7.7	0.1	7.4
24	0.1	7.2	0.1	7.1	0.0	6.7	0.1	7.7	0.1	7.4
25	0.1	7.2	0.1	7.1	0.1	6.8	0.1	7.7	0.1	7.4
Maximum (µg/m3)	***0.4***	***7.5***	***0.4***	***7.4***	***0.3***	***7.0***	***0.4***	***8.0***	***0.4***	***7.7***

Figure 9

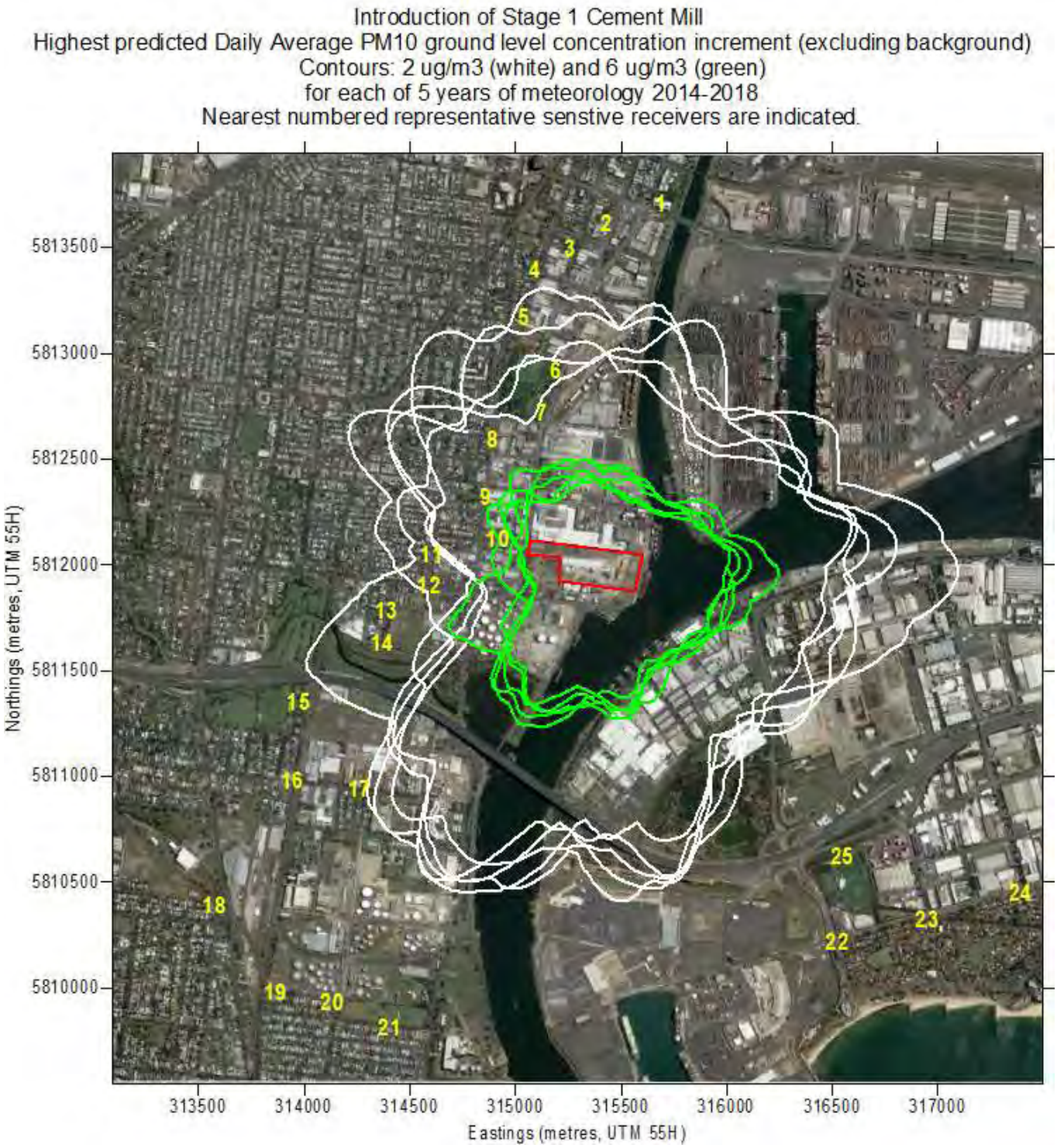
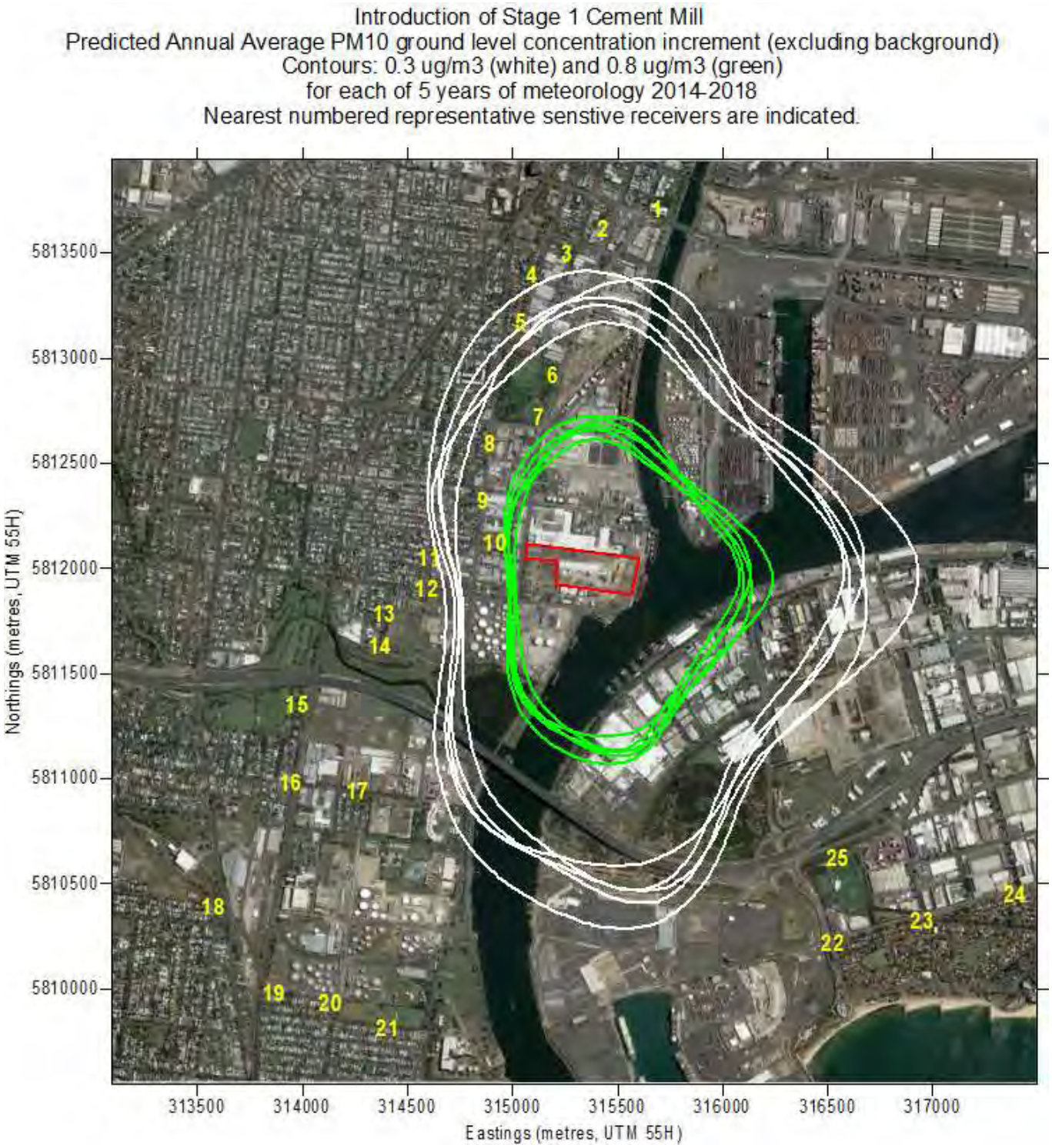

Introduction of Stage 1 Cement Mill
Highest predicted Daily Average PM10 ground level concentration increment (excluding background)
Contours: 2 ug/m3 (white) and 6 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Figure 10


Introduction of Stage 1 Cement Mill
Predicted Annual Average PM10 ground level concentration increment (excluding background)
Contours: 0.3 ug/m3 (white) and 0.8 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
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22
23
24
25

Figure 11

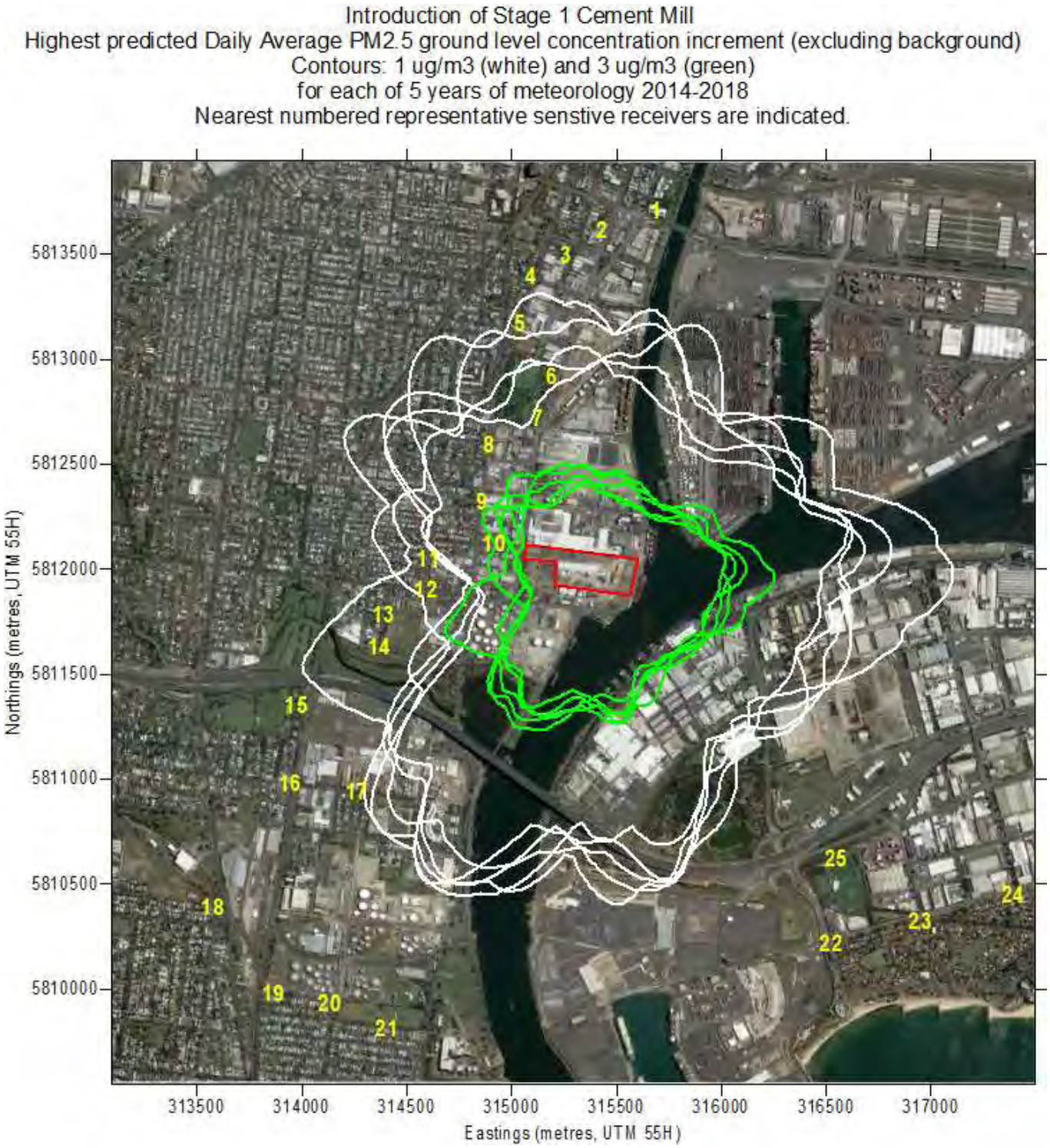
Introduction of Stage 1 Cement Mill
Highest predicted Daily Average PM2.5 ground level concentration increment (excluding background)
Contours: 1 ug/m3 (white) and 3 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
7
8
9
10
11
12
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Figure 12

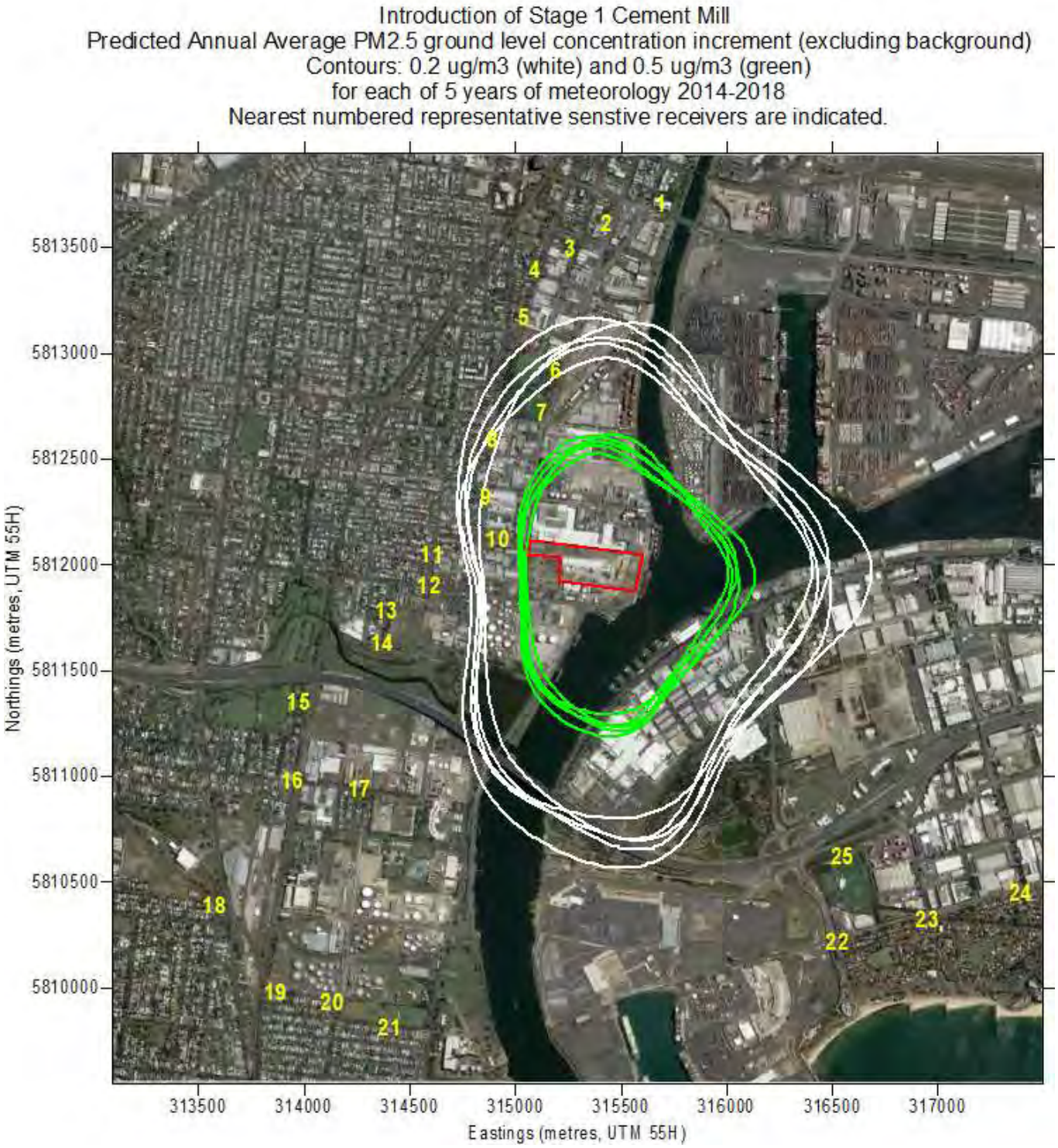
Introduction of Stage 1 Cement Mill
Predicted Annual Average PM2.5 ground level concentration increment (excluding background)
Contours: 0.2 ug/m3 (white) and 0.5 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
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Figure 13

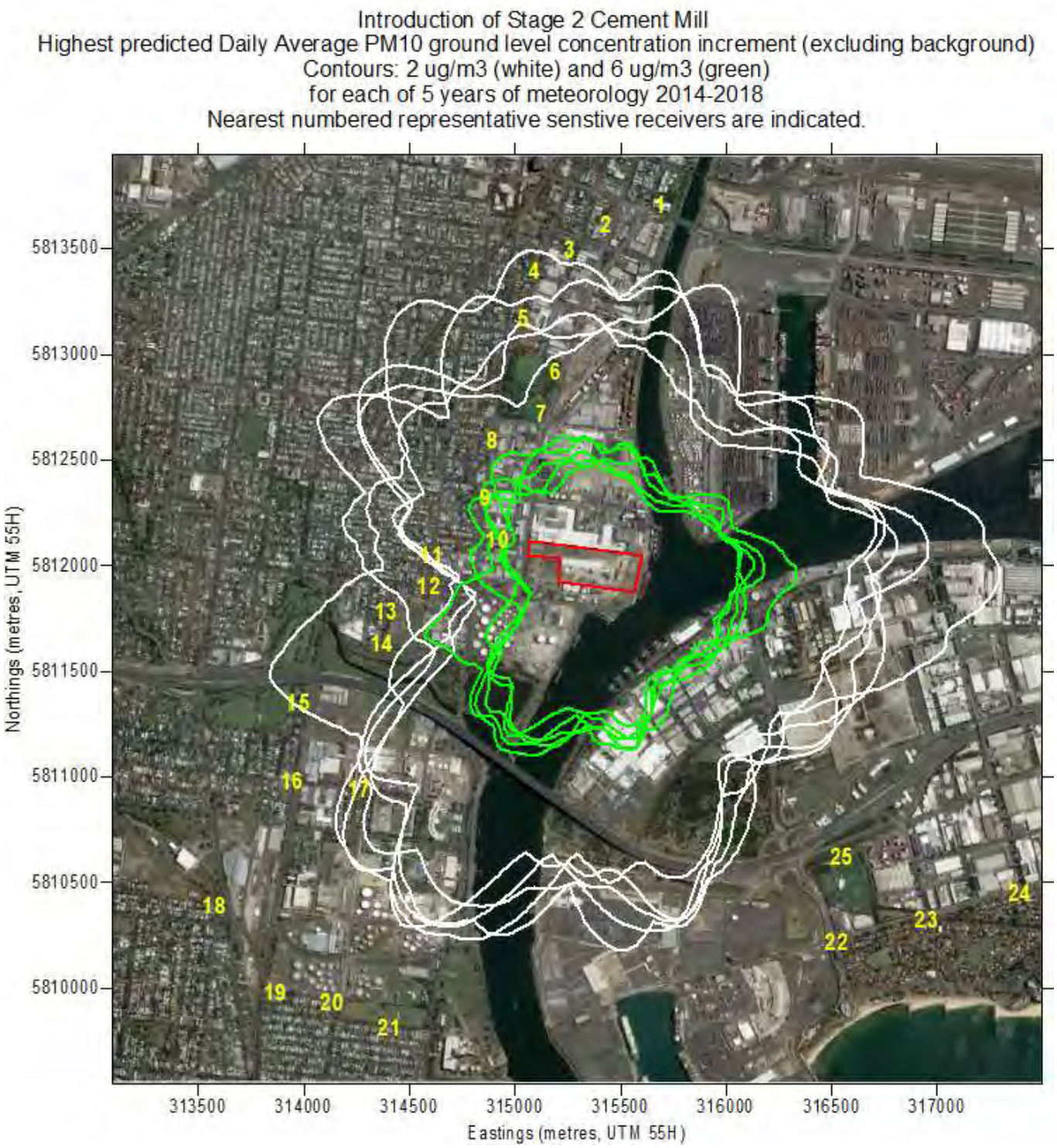
Introduction of Stage 2 Cement Mill
Highest predicted Daily Average PM10 ground level concentration increment (excluding background)
Contours: 2 ug/m3 (white) and 6 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
7
8
9
10
11
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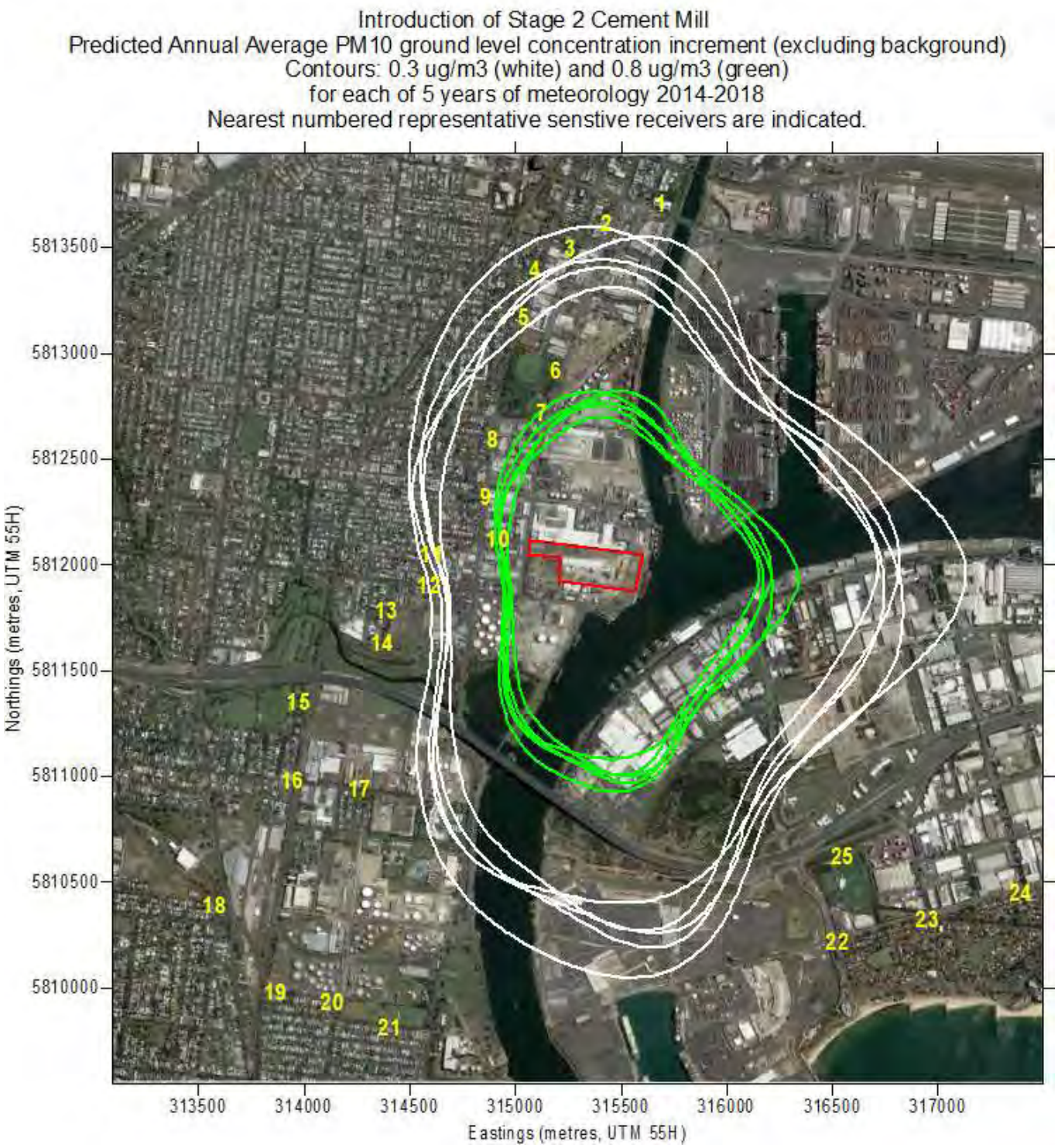
Figure 14


Introduction of Stage 2 Cement Mill
Predicted Annual Average PM10 ground level concentration increment (excluding background)
Contours: 0.3 ug/m3 (white) and 0.8 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
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5
6
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Figure 15

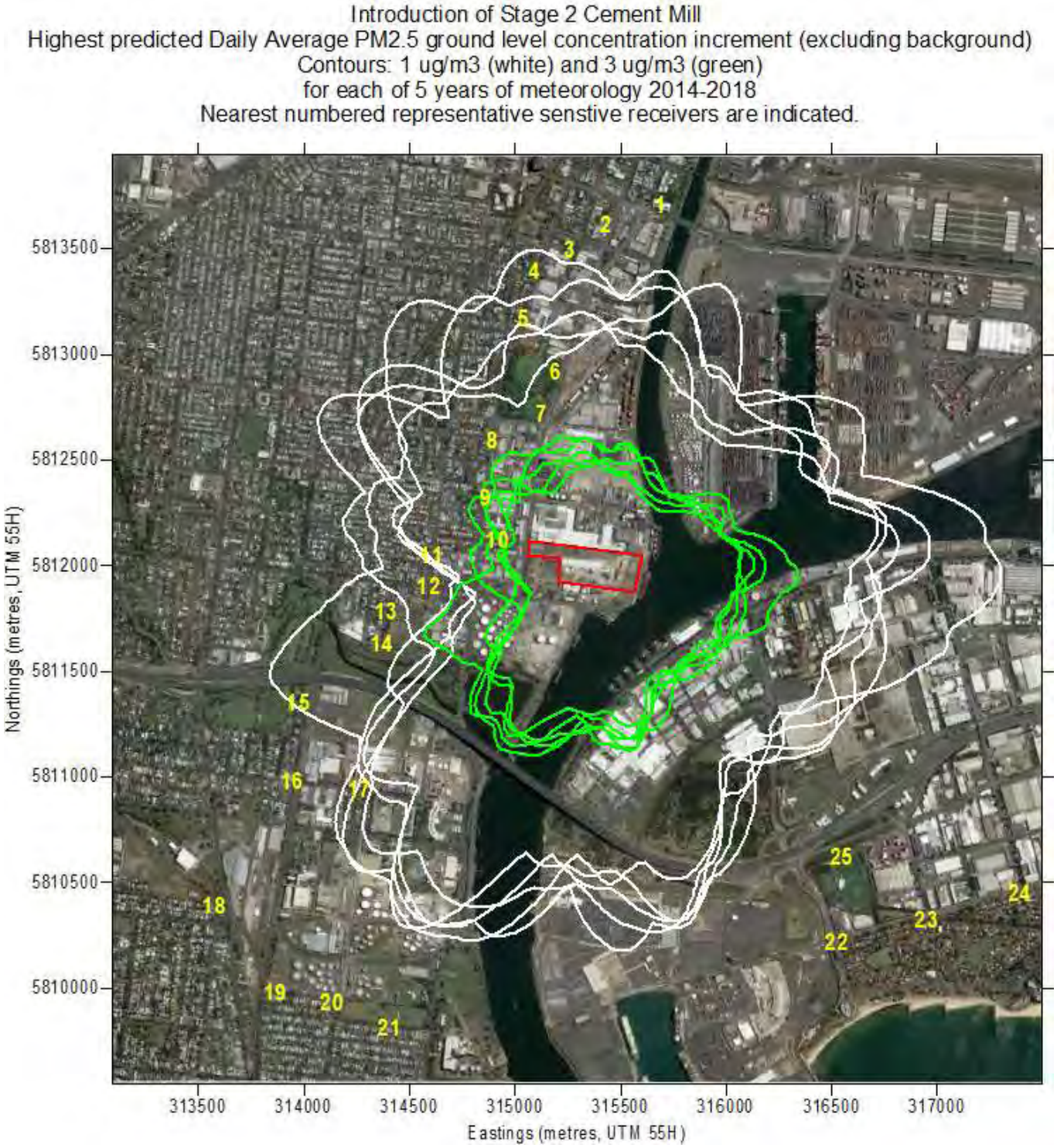
Introduction of Stage 2 Cement Mill
Highest predicted Daily Average PM2.5 ground level concentration increment (excluding background)
Contours: 1 ug/m3 (white) and 3 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.
Northings (metres, UTM 55H)
5813500
5813000
5812500
5812000
5811500
5811000
5810500
5810000
Eastings (metres, UTM 55H)
313500
314000
314500
315000
315500
316000
316500
317000
1
2
3
4
5
6
7
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Figure 16

Introduction of Stage 2 Cement Mill
Predicted Annual Average PM2.5 ground level concentration increment (excluding background)
Contours: 0.2 ug/m3 (white) and 0.5 ug/m3 (green)
for each of 5 years of meteorology 2014-2018
Nearest numbered representative senstive receivers are indicated.

5 RISK TREATMENT PLAN

The dust emission rates for all processes are detailed in **Section 3.4**. From **Section 4**, when the facility is operating at the Stage 2 capacity of 1,500,000 tpa, peak predicted daily average concentrations of both PM10 and of PM2.5 were at up to 14% of their respective APAC at the most exposed sensitive receiver dwellings and residences to the west and north-west. The room within the airshed for proposed additional particulate concentrations below the APAC ceiling is limited by the existing variable background levels that may at times be relatively high.

With the promulgation of the Environmental Protection Amendment Act, Steel Cement will have a General Environment Duty to minimise the risk of causing environmental harm due to activities within their site so far as reasonably practicable.

Uncontrolled emissions from the baghouse stacks and fabric filters, or from general fugitive emissions associated with bulk material transport and handling, represent a cumulative risk of causing harm, i.e., incremental dust concentrations downwind at nearest receivers that when added to background levels exceed the relevant APAC. A risk treatment plan for the operation of the site has been developed based upon the requirements of the EPA guidance *Assessing and controlling risk - a guide for business* (Pub. 1695.1), where applicable to this assessment. Individual risk events (hazards) have been identified with controls or management measures allocated based on their inherent risk to increase emissions from each source of dust to reduce the risk of causing harm to low residual levels.

5.1 Key Sensitive Receptors

Note the description of the receiving environment in **Section 3.1**.

5.2 Risk Events

The consequence and likelihood of each hazard and the determined risk rating has been derived using the risk metric detailed within Figure 2 of EPA Pub. 1695.1. This is reproduced in **Figure 17** below.

The allocation of controls and management measures may be prioritised via a risk assessment of those on-site activities with the potential to cause off-site harm. **Table 9** below details the derived categorised definitions of the **Likelihood** of harm and the **Consequence** of this harm, based on this framework. The **Likelihood** is based on the potential for the occurrences of causal factors that would lead to any increase in dust emissions. The **Consequence** is based on exceedance of the daily average concentration thresholds for PM10 or PM2.5, or visible dust emissions beyond the site boundary. The EPA risk metric combines the Likelihood and the Consequence to derive a level of **Risk**. **Table 10** indicates the **Treatment** for all the risk events based on the individually assessed levels of inherent risk which, in total, define the design elements and management measures required for operations at the site.

The highest determined **inherent** risk to nearest sensitive receiver locations was determined to be **Medium** which is acceptable if controls are in place.

5.3 Controls to Address Hazards

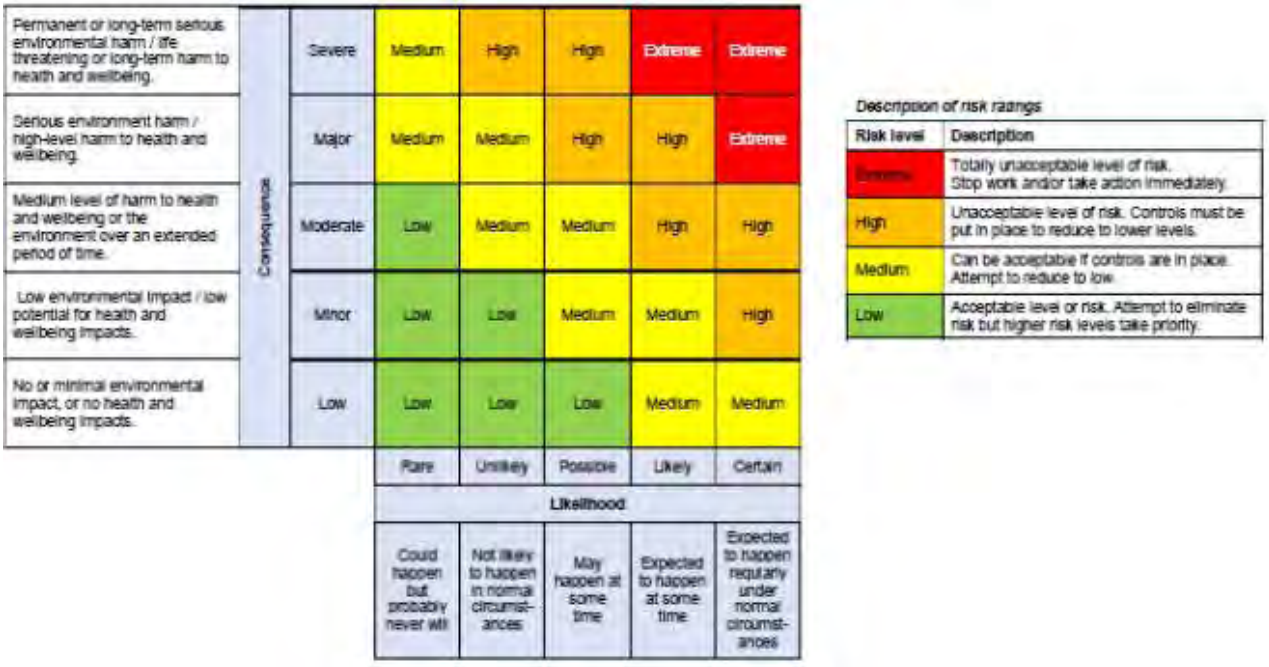
Table 9 summarises the assessment of the level of risk for the nearest sensitive receivers located to the east and north-east. The consequences of the assessed risk are either loss of amenity due to soiled surface or visible plumes, or potential health impacts through exposure to inhalable particulate matter. The highest assessed inherent risk was **High** where controls must be put in place to lower risk. This related to:

- Increased dust emissions from ship unloading into hoppers.
- Increased dust emissions from the individual baghouses controlling emissions from the cement grinding mill, slag grinding mill and the raw material dryer stacks.

These emissions were assumed within the assessed inventory to be maintained at or below design or directly tested levels, whichever was lower.

Based on the proposed controls for the expanded facility, the highest assessed risk to the residential areas or sporting field was **Low**. **Table 10** details proposed management measures inclusive of monitoring to mitigate this identified risk.

Figure 17: Risk matrix from Figure 2 of EPA Publication 1695.1 *Assessing and Controlling Risk: A Guide for Business.*



5.3.1 Controls

Controls are put in place to manage risk of the emissions of dust increasing above that assessed. In the order of effectiveness, the hierarchy of controls includes the following:

- **Eliminating** the hazard or **substituting** it for something else with a lesser risk.
- **Engineering controls** that prevent pollution from occurring or stop it from spreading.
- **Administrative controls** such as work processes or monitoring systems.

Table 10 details the individual controls that are to be consistently and effectively implemented to reduce the determined **inherent** risk to the nearest sensitive receivers to a maximum determined **residual** risk of **Low** as detailed in **Table 9**.

Table 9: Risk Register

#	Details of Risk Event	Risk assessment before including risk controls – project inherent risk			Risk assessment after including risk controls – project residual risk		
		Likelihood	Consequence	Risk Rating	Likelihood	Consequence	Risk Rating
1	Dust lift off and transport towards receivers within visible plumes during vehicle passage or high winds from silt-laden sealed internal roads.	Likely	Minor	Medium	Unlikely	Minor	Low
2	Increased dust emissions during raw material delivery and loading to enclosed bunkers, or during FEL transfer to dump stations or hoppers.	Possible	Minor	Medium	Unlikely	Low	Low
3	Increased dust emissions from ship unloading into hoppers	Certain	Minor	High	Possible	Low	Low
4	Increased dust emissions from conveyor enclosures or fabric filters at switch points.	Possible	Moderate	Medium	Rare	Moderate	Low
5	Increased dust emissions from fabric filters within the raw material bulk or ready storage enclosures, bucket elevators, product silos and weighbridge loadout stations.	Possible	Moderate	Medium	Rare	Moderate	Low
6	Failure of mechanically induced negative air pressure within enclosed dust-laden material storage, handling or processing spaces leading to increased fugitive dust emissions.	Unlikely	Moderate	Medium	Rare	Low	Low
7	Increased dust emissions from the cement grinding mill baghouse stacks. Impact of residual emissions upon receiving environment.	Likely	Moderate	High	Unlikely	Low	Low
8	Increased dust emissions from the slag grinding mill baghouse stack. Impact of residual emissions upon receiving environment.	Likely	Moderate	High	Unlikely	Low	Low
9	Increased dust emissions from the raw material dryer baghouses stack. Impact of residual emissions upon receiving environment.	Likely	Moderate	High	Unlikely	Low	Low

Table 10: Controls to be adopted to manage risk events

Details of controls			Risk Events
Substitution	1	Use imported cement clinker rather than manufacturing cement clinker onsite from clay or limestone in either a furnace or a kiln which would discharge higher quantities of particulate and other pollutants to atmosphere for the design production throughput.	N/A
Engineering Controls	2	Purpose built hoppers with induced negative air pressure into loading grate minimises dust from grab bucket drop of clinker. Induced air is filtered of dust and reverse pulse returns this to the load.	3
	3	Enclosed conveyor and switch point systems for conveyance of clinker and slag to bulk and ready use storage, with induced negative air pressure to minimise emissions. Induced air is filtered of dust at switch points via fabric filters.	4
	4	Purpose built storage shed for cement clinker with induced negative air pressure to minimise emissions. Induced air is filtered of dust at switch points via fabric filters.	5
	4	Purpose built fully enclosed storage sheds for granulated blast furnace slag, gypsum, and limestone. Gypsum and limestone also stored within walled bunkers within the enclosure.	5
	5	Raw material and product dispatch storage silos have fabric filters to remove particulate from displace head space air emissions.	5
	6	Raw feed and processed product bucket elevators have induced negative air pressure to minimise emissions. Induced air is filtered of dust via fabric filters.	5
	7	Outloading weighbridge product dispatch stations for customer trucks have fabric filters for displace air.	5
	8	Purpose built baghouse filters with high cloth area to volumetric flow ratio to remove particulate from cement grinding, slag grinding and dryer plant stacks emissions. 37-metre-tall cement plant baghouse vent stack and 28-metre-tall slag grinding plant baghouse vent stacks for dispersion into the atmosphere of residual particulate emissions free of any downwash influences from surrounding block-form buildings.	7,8,9
	9	Monitoring of differential pressure across all baghouse stack fabric filters with alarm trigger for filter failure.	7,8,9
	10	Running signal on all mechanical forced air ventilation for induced negative pressure on hoppers, conveyors and building ventilation systems with interlock to halt material transfer if there is a detected failure.	6
	10	Aggregate delivered to dryer/mixing/bagging plant and dumped into ready use walled dump stations for drying and storage within silos prior to mixing operations.	2
	11	The cement grinding and slag grinding processes are closed loop External Circulatory Systems (ECS) systems with oversized product recirculated back into the process, and with bleed air filtered of dust via fabric filters.	5,7,8
	12	Enclosures around raw material drying/mixing/bagging plant with induced negative air pressure to minimise emissions. Induced air is filtered of dust via fabric filters.	5
	13	All internal roads and activity areas sealed with concrete pavement.	1

Table 10 Continued

Details of controls			Risk Events
Administrative Controls	14	Safety induction and supervision of supplier and customer drivers for 10 km/hr speed limit and dust generation.	1,2
	15	Supplier trucks with raw aggregate to be tarped during arrival.	1,2
	16	Daily sweeping of internal sealed roads and work areas to remove accumulated surface silt.	1
	17	Periodic inspection of all baghouse dust control systems on cement grinding, slag grinding and dryer plant stacks as per manufacturer specification. Production stoppage in the event of bag filter failure.	7,8,9
	18	Periodic inspection of all fabric filter systems on hoppers, conveyors, building ventilation and process enclosures as per manufacturer specification	5
	19	Ongoing observation of ship unloading and production activities via video links to identify visible dust emissions and trigger enhanced dust management measures.	All
	20	Continuous monitoring of indicative PM10 and of PM2.5 ambient air concentrations at a single location on the western boundary in the direction of nearest sensitive receivers for real-time dust management (see **Figure 2**). Running hourly average PM10 and PM2.5 concentrations to be managed below 80 µg/m^3 and 40 µg/m^3 alarm levels, respectively when wind directions have an easterly component, such that daily average concentrations are maintained below 50 µg/m^3 and 25 µg/m^3, respectively, at this site boundary location. Text message/email alarms to designated staff to trigger enhanced dust management measures as per site environmental management plan.	All
	21	No maintenance on emission control equipment to be carried out during material transfer or production.	All

5.4 Performance Measurement

Steel Cement propose the following ongoing performance measurement at the site:

- Routinely scheduled review meetings to minimise unplanned maintenance hours.
- Annual testing of the cement and slag grinding baghouse stack emissions to current EPA sampling guidelines to validate that the particulate emissions are comparable to the expected norms as assessed.
- Daily average PM10 and PM2.5 indicative ambient concentrations as monitored by a single dust monitor on the western boundary (see **Figure 2**) to be below the APAC 50 µg/m^3 and 25 µg/m^3, respectively, during days when winds have an easterly direction component thus minimising the risk of exceeding the Environment Reference Standard ambient concentrations at the nearest downwind sensitive receiver dwellings to the west of the site.

  The monitor specifications are to include: (i) the pre-separation of the individual PM10 and PM2.5 particle fractions via sized cyclones; (ii) an automatic daily zero calibration; (iii) concurrent monitoring of wind speed, wind direction, temperature, and humidity; and (iv) data logging and 4G communication to the cloud for real-time access and alarm notification. The instrument is to be sited to the requirements of AS3580.1.1 where practicable at a height of between 1.5 and 15 metres above ground level clear of surrounding structures.
- Annual auditing for compliance, processing, capital upgrade and management systems.

6 LIMITATIONS

This report represents the results of an air dispersion modelling assessment for the purposes of this commission. The data and assessment outcomes provided herein relate only to the project and structures described herein and must be reviewed by a competent engineer/scientist before being used for any other purpose. Ektimo accept no responsibility for other use of the data and assessment outcomes.

Where monitoring results, physical measurements and tests, data collection and similar work have been performed, recorded, or provided by others the data is included and used in the form provided by others. The responsibility for the accuracy of such data remains with the issuing authority, not with Ektimo.

An understanding of a site's air quality impact depends on the integration of many pieces of information, some regional, some site specific, some structure specific and some experienced based. Hence this report should not be altered, amended, or abbreviated, issued in part or issued incomplete in any way without prior checking and approval by Ektimo. Ektimo accepts no responsibility for any circumstances which arise from the issue of the report which has been modified in any way as outlined above.

7 APPENDICES

7.1 Meteorological data synthesis (pDs Consultants)

AERMOD Ready Input Meteorological data files

Yarraville- VIC

This file was exclusively compiled for **EKTIMO** By pDs Consultancy.

pDs Consultancy
@1999-2022

INTRODUCTION

New generation regulatory model AERMOD requires hourly averaged meteorological data from a single site that is preferably within the model domain ('on-site' or site-specific data). However, data from the nearest 'off-site' meteorological station can be used when on-site data are not available, and the off-site data are representative of the area of concern (i.e. the meteorological parameters as well as surface characteristics characterise the transport and dispersion conditions of the location in question).

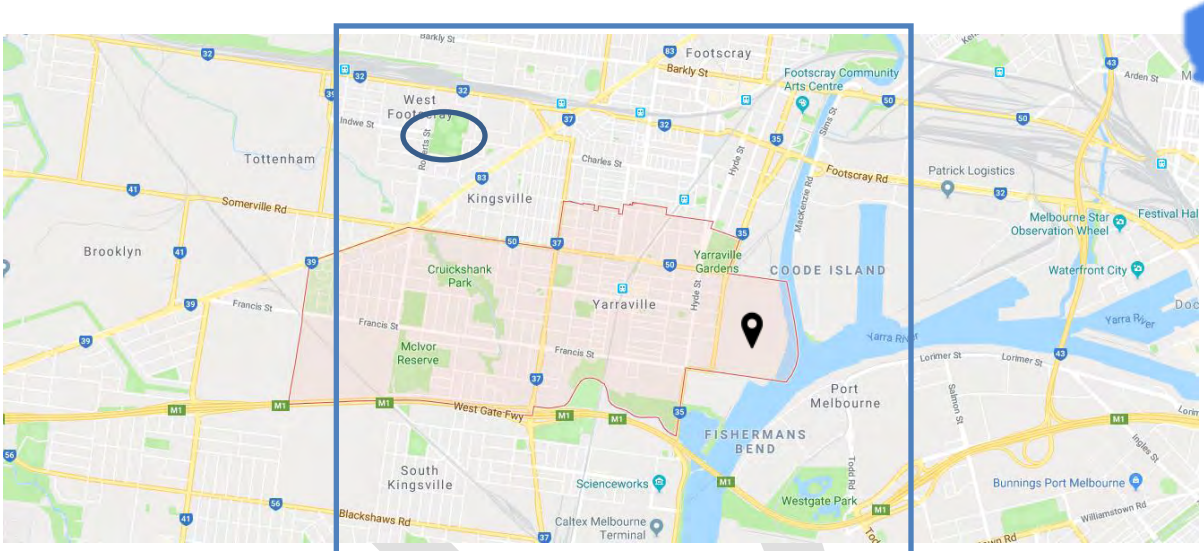
It is also preferable that:

- The compilation of the input meteorological data file is done in accordance with 'best practice', with procedures and algorithms recommended or set by environment regulators/US & VIC EPA.

pDs Consultancy has been engaged by **EKTIMO** to compile an 'AERMOD-type' meteorological files for an application site (Yarraville) which is within about 7 KM radius of **Footscray** Air Monitoring Station (AMS) maintained by EPA, Victoria.

This input meteorological data files have been compiled basically following the EPA, Victoria's draft guidelines: "Construction of input meteorological data files for EPA Victoria's regulatory air pollution model (AERMOD) (Publication No.1550)".

LOCATION OF THE APPLICATION SITE (YARRAVILLE) & MET DATA SOURCE: FOOTSCRAY



Application site and the met site are just within 1 KM radius

Data Processing

Input Information

Data Used for the compilation

Meteorological Data

1. **Mandatory Data (Footscray)**
    i. 10m Wind Direction and Speed
    ii. Ambient Temperature (Screen Level)
    iii. Sigmatheta

2. **Supplementary data (Melbourne Regional Office/Olympic Park)**

I. Surface Pressure
II. 3 Hourly Cloud observations (Essendon)
III. Relative Humidity
IV. Rainfall Rate

3. **Upper air Data (Melbourne Airport)**

I.Pressure Levels
II.Geopotential Heights
III.Temperature
IV.Dew Point

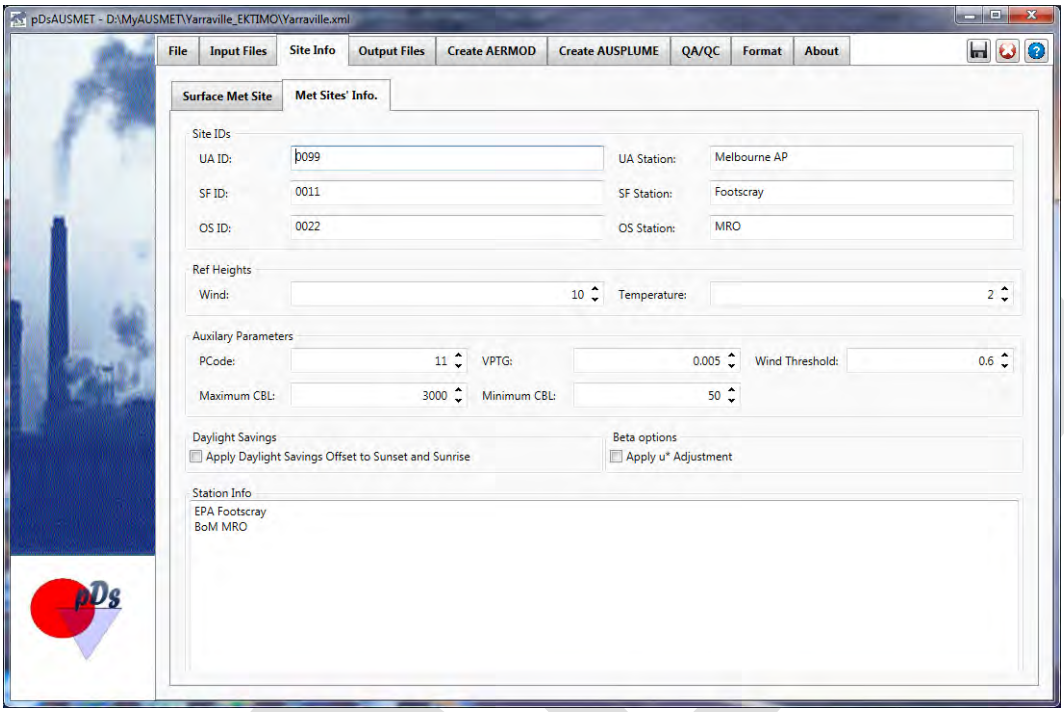
DATA SOURCE

- National Climate Centre, Bureau of Meteorology, Melbourne
- Data Source: Footscray (EPAV), Melbourne Regional Office /Olympic Park Essendon and Melbourne Airport
- Period :1 Jan 2014 to 31 Dec 2018

QA/QC ON RAW DATA

I. Hourly averaged winds both direction and speed and temperature examined for gaps and wind stalls
II. Small gaps filled with pervious or following hour records
III. Big data gaps found in 2015 and 2016 at Footscray. They were filled with Olympic Park Data
IV. Some days with big gaps removed maintaining 90% data recovery
V. Parameters QA/QCed based on extreme values
VI. Gaps in vertical temperature profiles were filled with previous or following day data for the completeness.

METSITE INFORMATION



DATA COVERAGE:

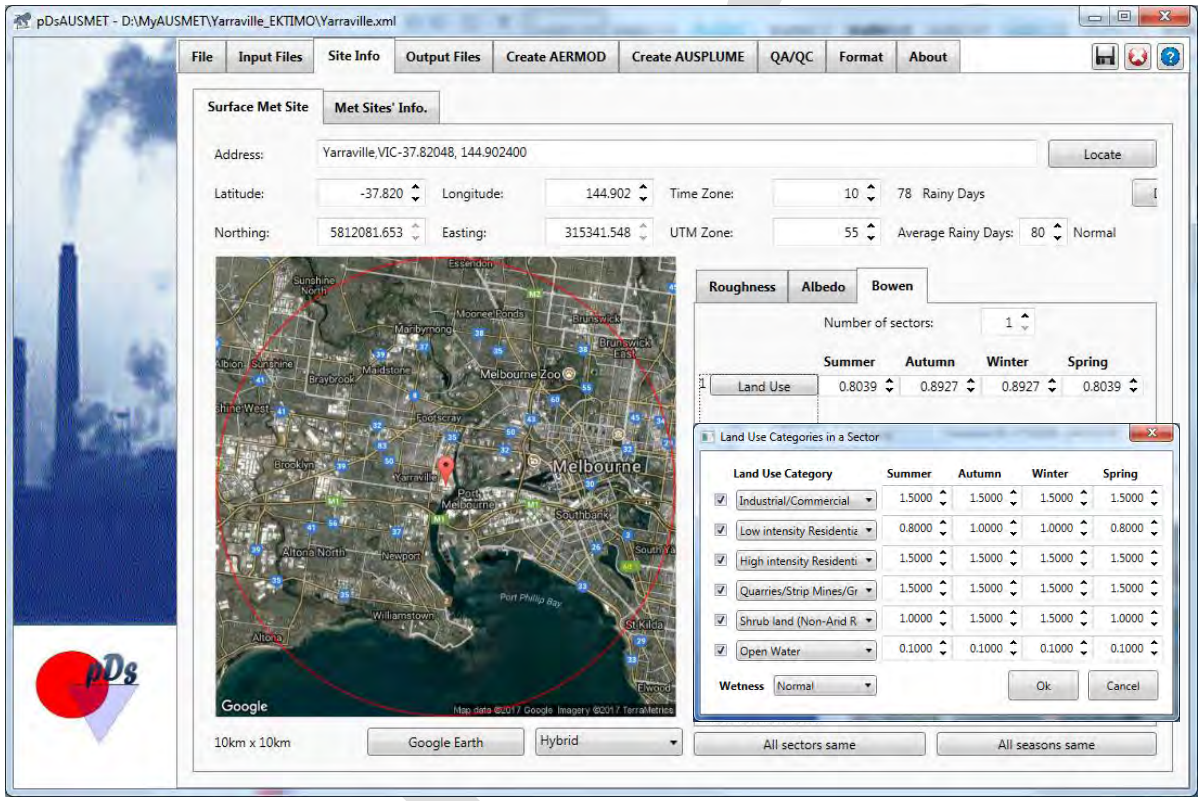
Season	Data Coverage %				
Year	2014	2015	2016	2017	2018
Summer	100	82	100	97	100
Autumn	98	95	100	98	100
Winter	100	98	97	98	96
Spring	100	97	97	100	100
Annual	100	94	99	99	99

Annual and Seasonal data coverage are meeting regulatory requirement (90% or better).

DETERMINATION OF SURFACE CHARACTERISTICS

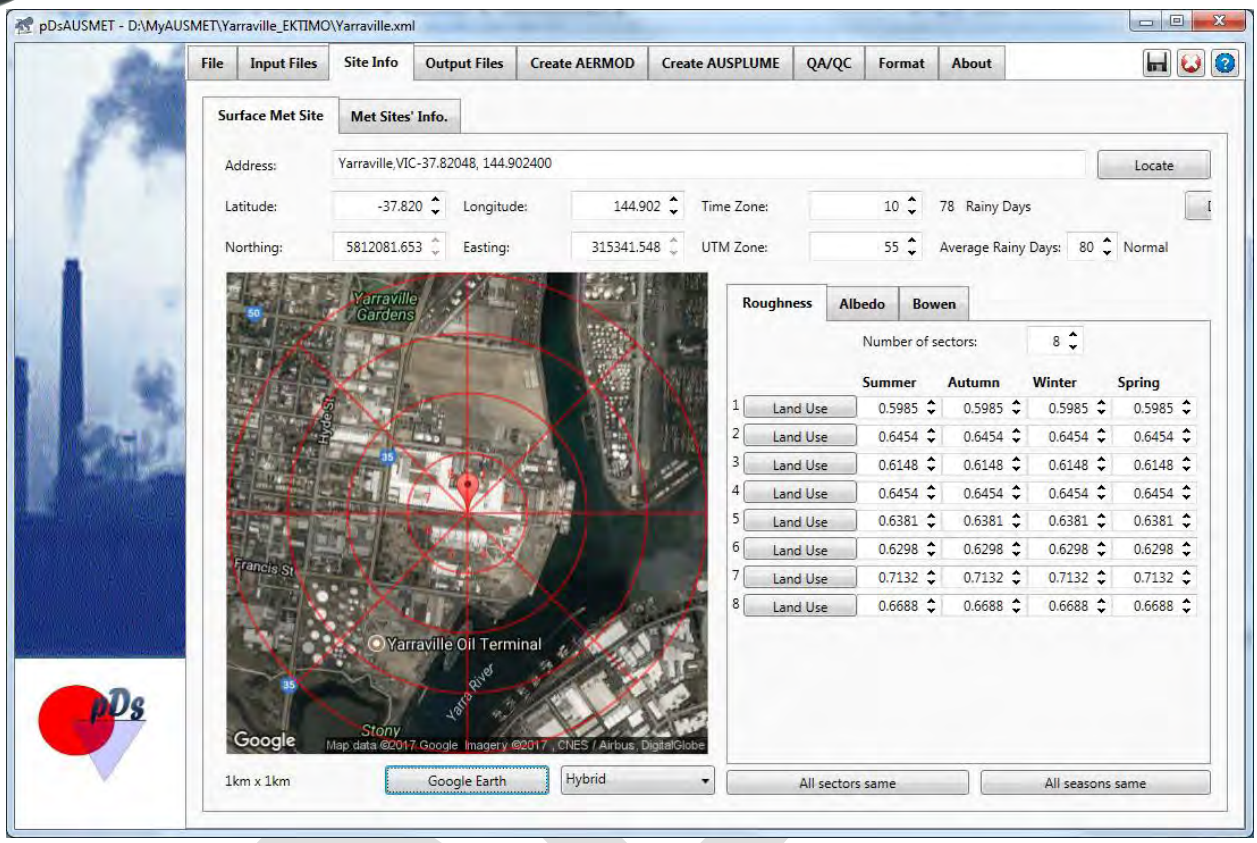
All available surface maps including google maps examined to determine correct land use categories within 10 Km by 10 KM area centring the application site.

Albedo and **Bowen ratio** were determined using land use categories shown



The year 2014 found to be a normal year for the location in question.

Sector dependent surface roughness was determined considering 8 sectors. The Roughness of each sector was assigned carefully examining land use distribution in 4 segments (250 m) of each sector.


pDsAUSMET - D:\MyAUSMET\Yarraville_EKTIMO\Yarraville.xml
File
Input Files
Site Info
Output Files
Create AERMOD
Create AUSPLUME
QA/QC
Format
About
Surface Met Site
Met Sites' Info.
Address:
Yarraville,VIC-37.82048, 144.902400
Locate
Latitude:
-37.820
Longitude:
144.902
Time Zone:
10
78 Rainy Days
Northing:
5812081.653
Easting:
315341.548
UTM Zone:
55
Average Rainy Days:
80
Normal
Yarraville Gardens
Hyde St
Francis St
Yarraville Oil Terminal
Yarra River
Stony
Google
Map data ©2017 Google Imagery ©2017 , CNES / Airbus, DigitalGlobe
Roughness
Albedo
Bowen
Number of sectors:
8
Summer
Autumn
Winter
Spring
1 Land Use 0.5985 0.5985 0.5985 0.5985
2 Land Use 0.6454 0.6454 0.6454 0.6454
3 Land Use 0.6148 0.6148 0.6148 0.6148
4 Land Use 0.6454 0.6454 0.6454 0.6454
5 Land Use 0.6381 0.6381 0.6381 0.6381
6 Land Use 0.6298 0.6298 0.6298 0.6298
7 Land Use 0.7132 0.7132 0.7132 0.7132
8 Land Use 0.6688 0.6688 0.6688 0.6688
1km x 1km
Google Earth
Hybrid
All sectors same
All seasons same

The following parameters were determined/computed following EPA, VIC and US EPA guidelines.

Sensible Heat flux –Calculated based on cloud observations

I. Friction Velocity (U*)
II. Monin-Obukhov Length (L)
III. Height of the Stable Boundary Layer(SBL)
IV. Vertical Velocity Scale (W*)
V. Height of the Convective Boundary Layer (CBL)

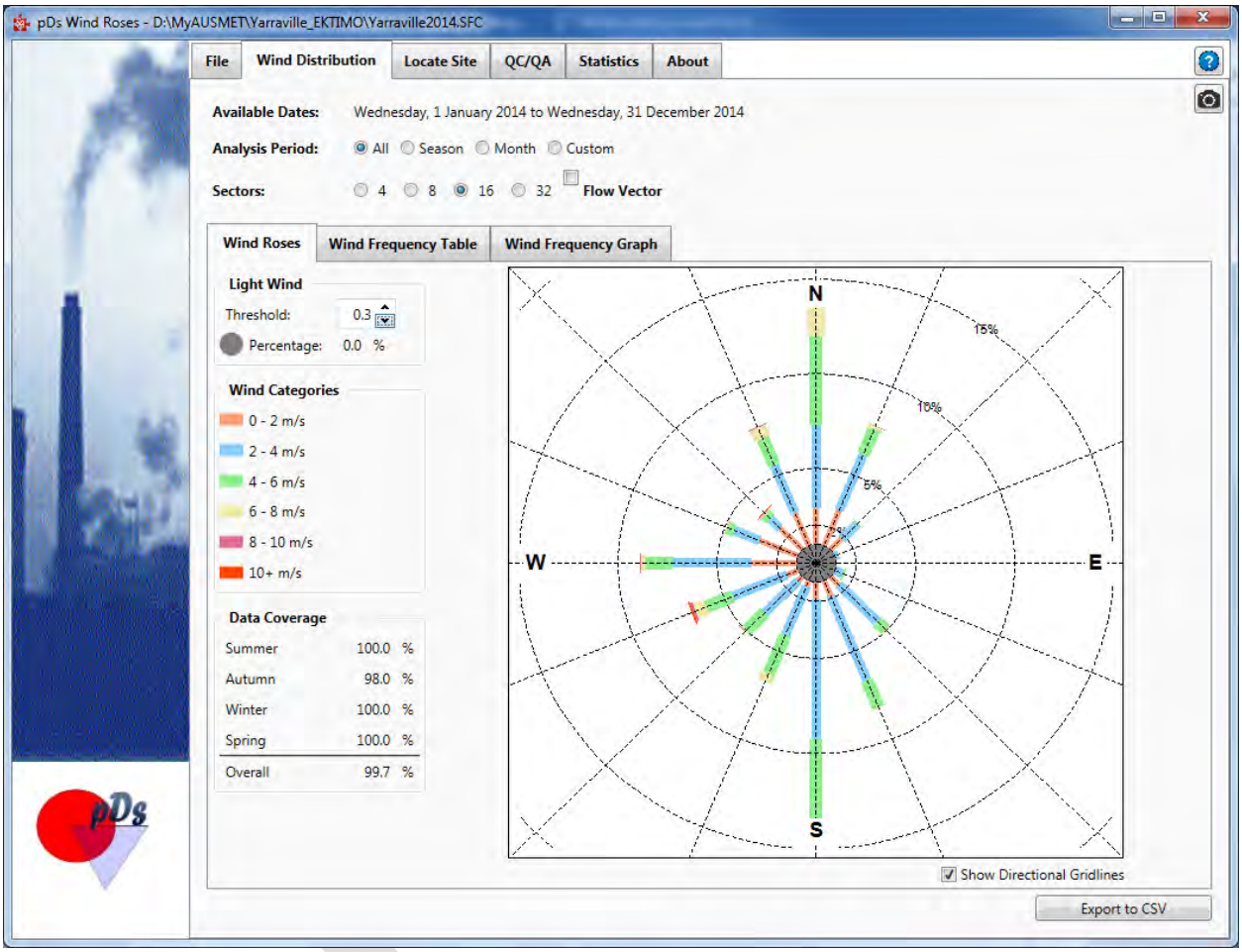
Mixing height (Convective)-CBL

DEFINITION:

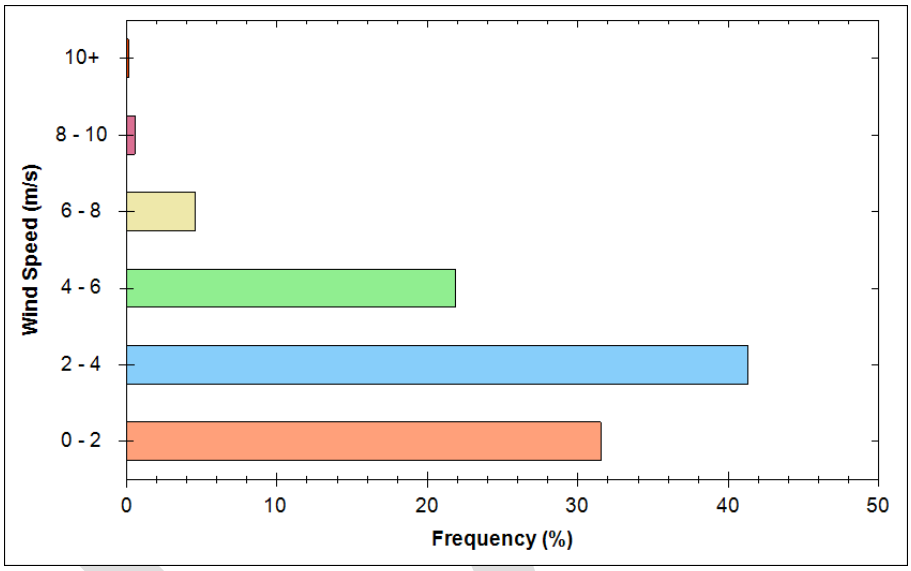
The convective mixing height, the depth of the surface mixed layer is the height of the atmosphere above the ground, which is well mixed due either to mechanical turbulence or convective turbulence. This height was determined by using the methodology of Benkley and Schulman (Journal of Applied Meteorology, Volume 18, 1979,pp 772-780). **Melbourne Airport** upper air observation containing temperature and moisture profiles and surface temperature at **Footscray,** pressure and relative humidity at **Melbourne Regional Office/Olympic Park** were used to determine daytime mixing height.

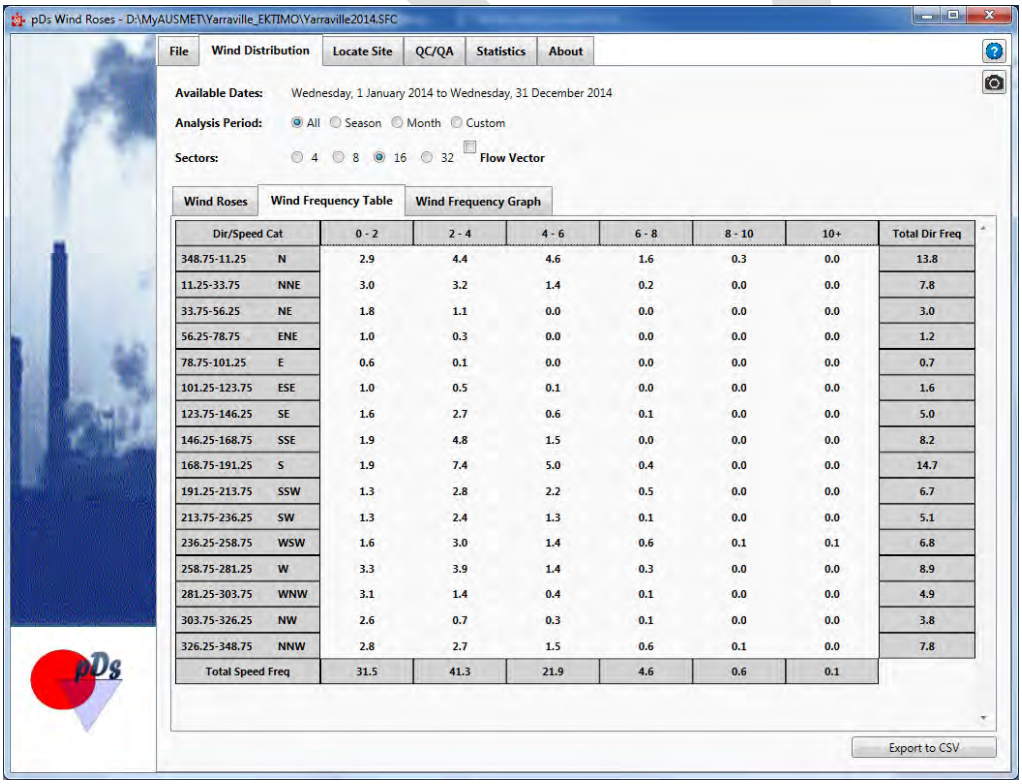
DATA ANALYSIS

ANNUAL WINDROSES FOR FOOTSCRAY-2014



FREQUENCY OF WIND SPEED

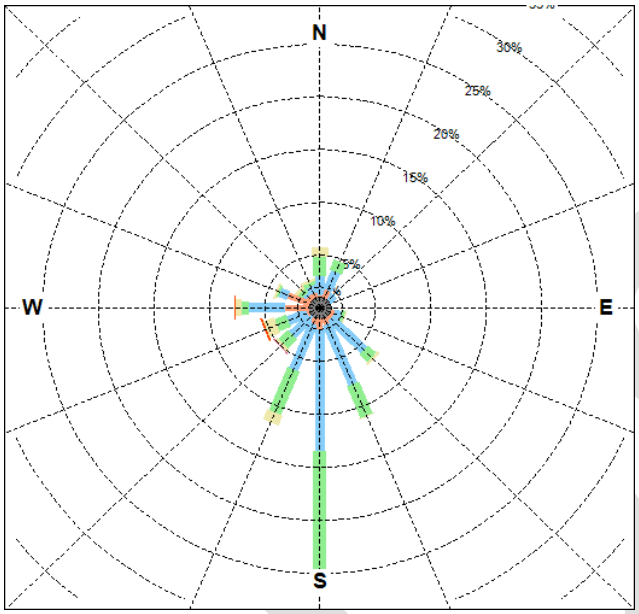


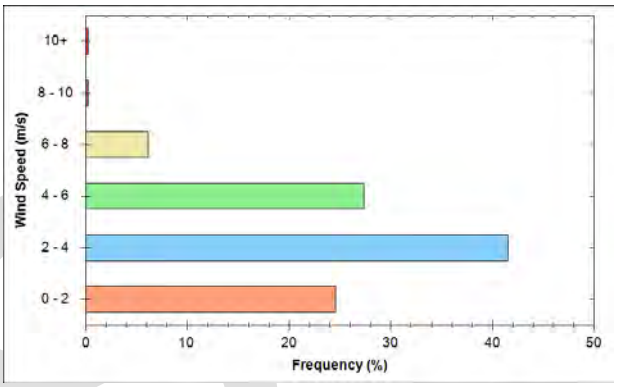


Dir/Speed Cat		0 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10+	Total Dir Freq
348.75-11.25	N	2.9	4.4	4.6	1.6	0.3	0.0	13.8
11.25-33.75	NNE	3.0	3.2	1.4	0.2	0.0	0.0	7.8
33.75-56.25	NE	1.8	1.1	0.0	0.0	0.0	0.0	3.0
56.25-78.75	ENE	1.0	0.3	0.0	0.0	0.0	0.0	1.2
78.75-101.25	E	0.6	0.1	0.0	0.0	0.0	0.0	0.7
101.25-123.75	ESE	1.0	0.5	0.1	0.0	0.0	0.0	1.6
123.75-146.25	SE	1.6	2.7	0.6	0.1	0.0	0.0	5.0
146.25-168.75	SSE	1.9	4.8	1.5	0.0	0.0	0.0	8.2
168.75-191.25	S	1.9	7.4	5.0	0.4	0.0	0.0	14.7
191.25-213.75	SSW	1.3	2.8	2.2	0.5	0.0	0.0	6.7
213.75-236.25	SW	1.3	2.4	1.3	0.1	0.0	0.0	5.1
236.25-258.75	WSW	1.6	3.0	1.4	0.6	0.1	0.1	6.8
258.75-281.25	W	3.3	3.9	1.4	0.3	0.0	0.0	8.9
281.25-303.75	WNW	3.1	1.4	0.4	0.1	0.0	0.0	4.9
303.75-326.25	NW	2.6	0.7	0.3	0.1	0.0	0.0	3.8
326.25-348.75	NNW	2.8	2.7	1.5	0.6	0.1	0.0	7.8
Total Speed Freq		31.5	41.3	21.9	4.6	0.6	0.1	

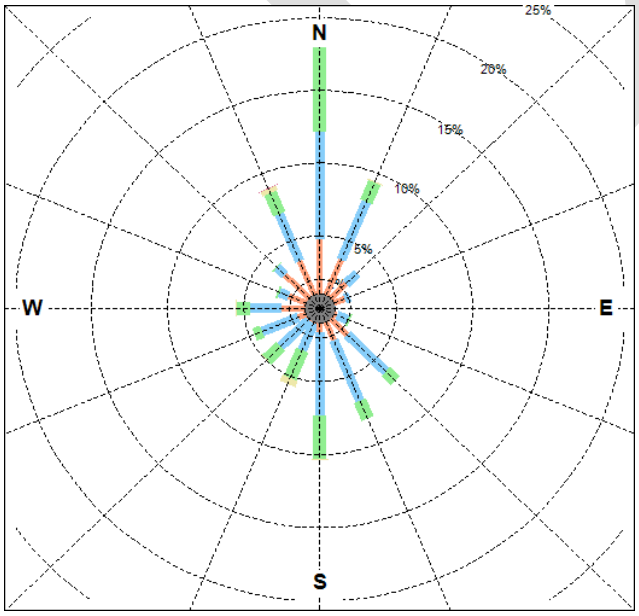
SEASONAL WINDROSES

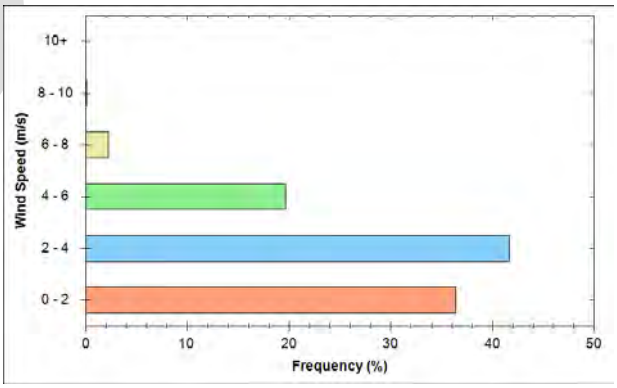
Summer



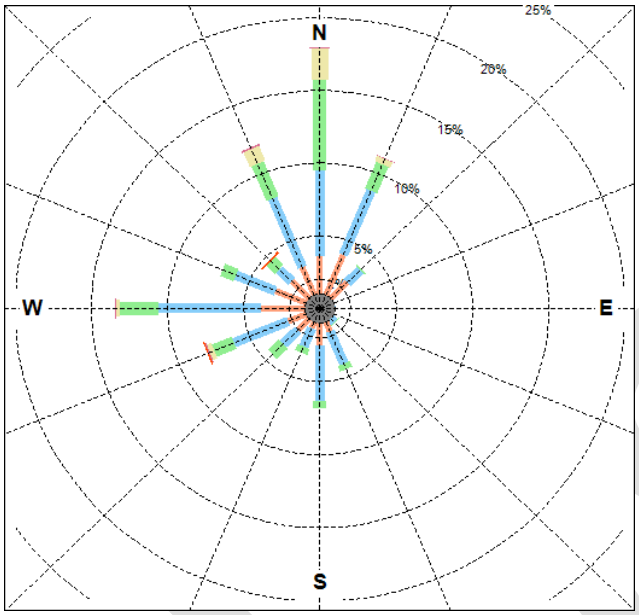


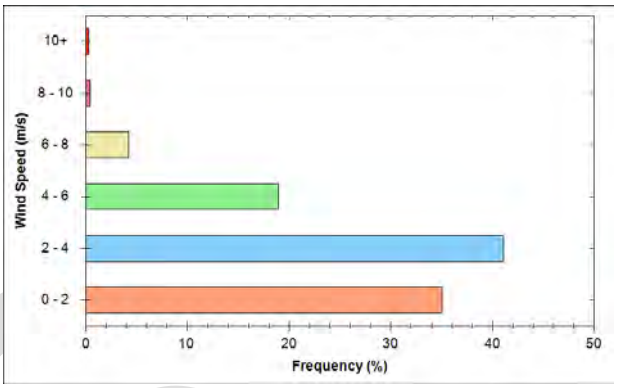
Autumn



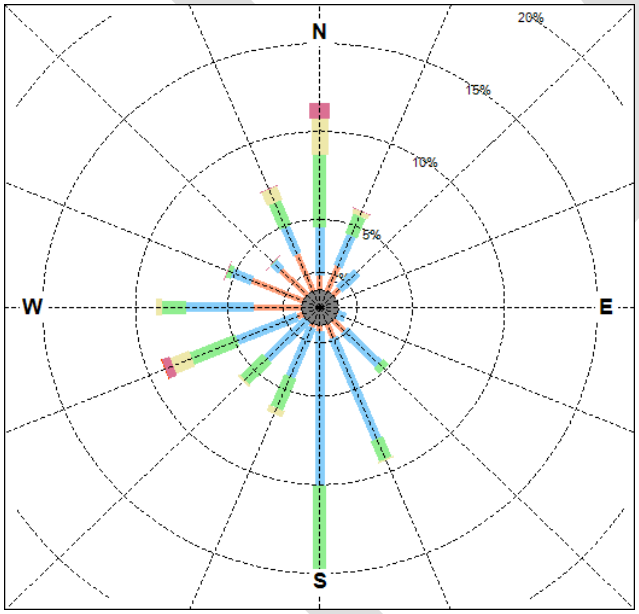


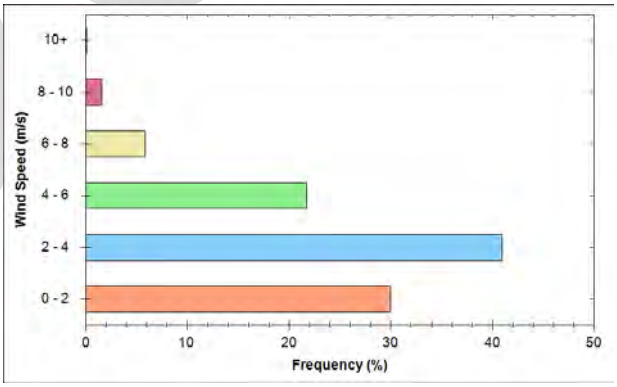
Winter





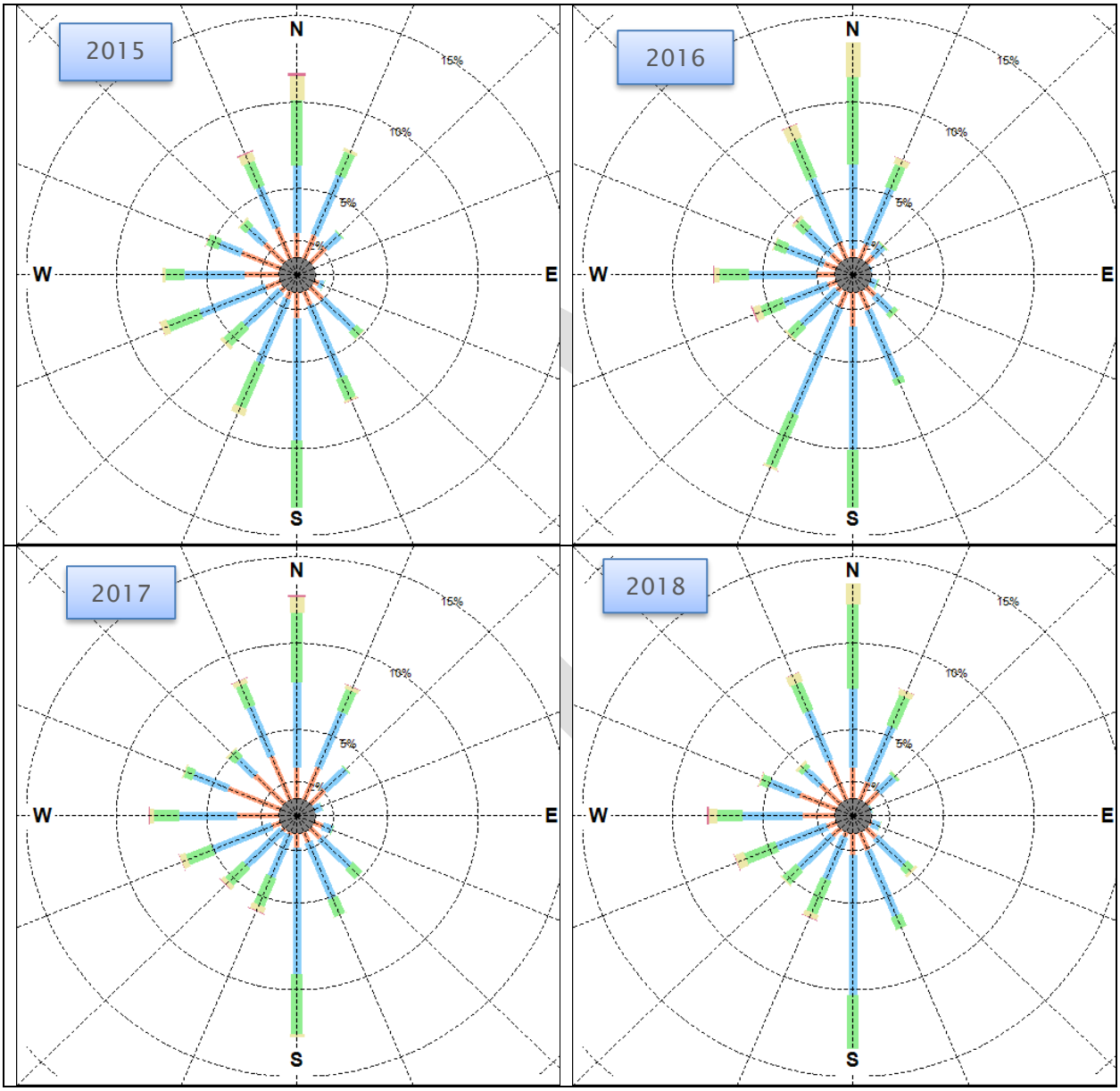
Spring





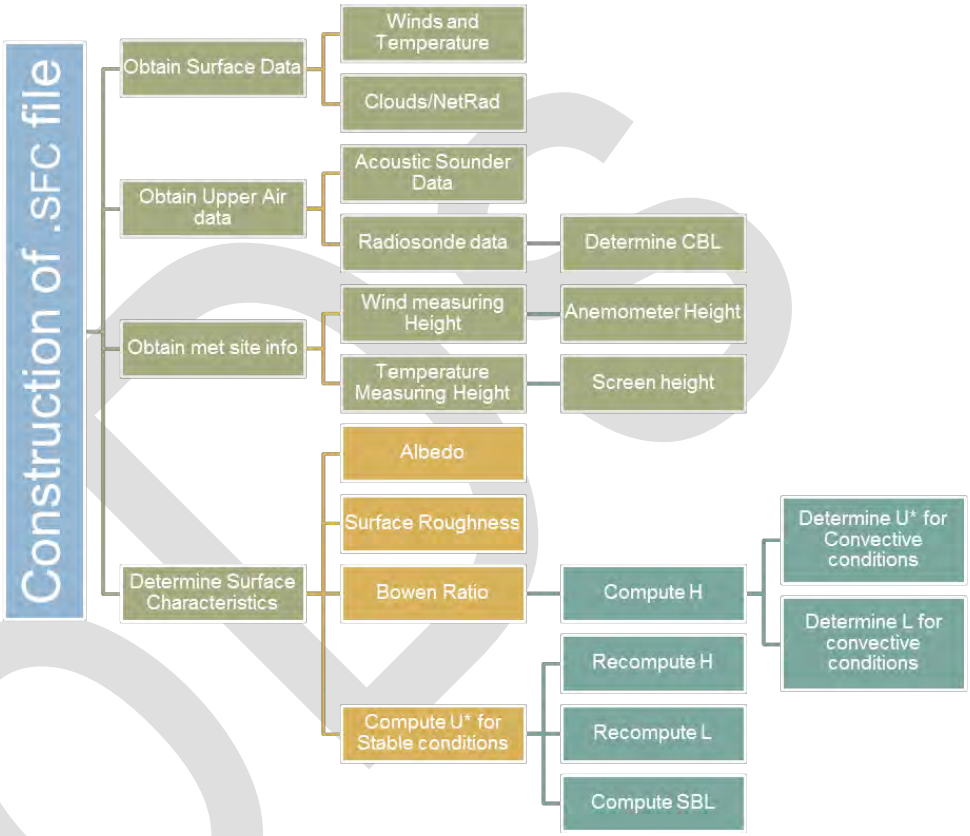
Seasonal variations are clearly depicted.

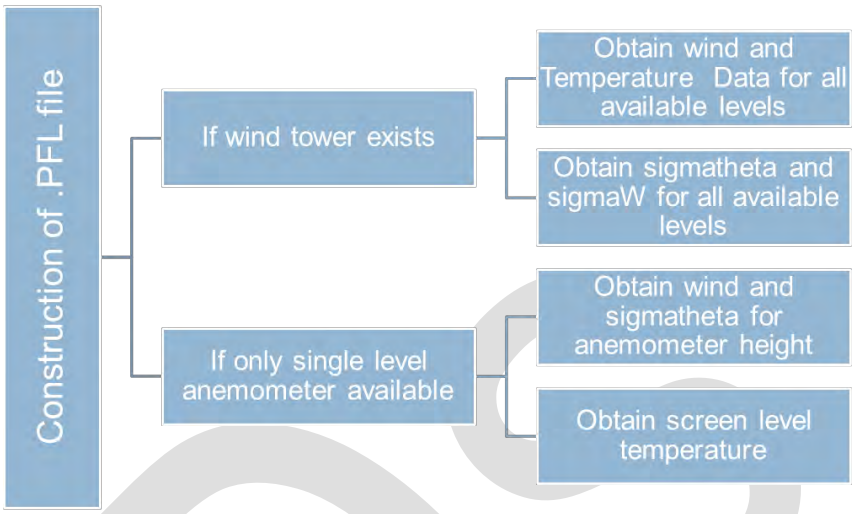
ANNUAL WINDROSES FOR FOOTSCRAY;2015-18



Appendix

FLOW CHARTS - CONSTRUCTION PROCEDURE




Construction of .PFL file
If wind tower exists
Obtain wind and Temperature Data for all available levels
Obtain sigmatheta and sigmaW for all available levels
If only single level anemometer available
Obtain wind and sigmatheta for anemometer height
Obtain screen level temperature

Bibliography

Australian Standard 2923-1987: Standards Association of Australia

Benkley, C.W,& Schulman L.L 1979 :Estimating Hourly Mixing Depths from Historical Meteorological Data :Jl of Applied Meteorology Vol 1 page 772-780

USEPA 2004, AERMOD :Description of Model Formulation, EPA-454/R-03-00. United States Environmental Protection Agency, Washington DC, USA.

USEPA 2012, User Guide for the AERMOD Meteorological Processor-AERMET; Addendum, United States Environmental Protection Agency, Washington DC, USA.

USEPA, 2000, Meteorological Monitoring Guidance for Regulatory Modelling Applications, EPA-450/R-99-005.United States Environmental Protection Agency, Washington DC, USA.

USEPA, Office of Air Quality Planning and Standards, AERSURFACE User's Guide, Research Triangle Park, North Carolina, EPA 454/B-08-001

USEPA, Office of Air Quality Planning and Standards, User's Guide for the AERMOD Meteorological Processor (AERMET) and Addendum, Research Triangle Park, North Carolina, EPA 454/B-03-002.

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7.2 Tested emissions from the slag grinding mill, Ektimo test report R012606

Ektimo

Steel Cement Ltd, Yarraville

Emission Testing Report – March 2022

Report Number R012606

Document Information

Template Version 211117

Client Name:	Steel Cement Ltd
Report Number:	R012606
Date of Issue:	25 March 2022
Attention:	Andrew McFarlane
Address:	295 Whitehall Street Yarraville VIC 3013
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation

Mathew Hutton **Air Monitoring Consultant**	NATA Accredited Laboratory No. 14601	**David Corbett** **Ektimo Signatory**

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo's terms of NATA accreditation. This does not include comments, conclusions or recommendations based upon the results. Refer to 'Test Methods' for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by Steel Cement Ltd to perform emission testing in compliance with Victorian EPA licence requirements. Results from this stack emission monitoring program indicate that Steel Cement Ltd was compliant with requirements of Licence 128502 during the sampling period.

1.2 Project Objective

The objectives of the project were to conduct a monitoring programme to quantify emissions from one (1) discharge point to determine compliance with Steel Cement Ltd's Environmental Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
DP1 Mill Stack	3 March 2022	Total particulate matter

* Flow rate, velocity, temperature and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in the report.

1.3 Licence Comparison

The following licence comparison table shows that all analytes highlighted in green are within the licence limit set by the Vic EPA as per licence 128502 (last amended on 10 December 2017).

EPA No.	Location Description	Pollutant	Units	Licence limit	Average Result	Detected values T 1	Detected values T 2
1	Mill Stack	Particles	g/min	48	22	18	27

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

Refer to the Test Methods table for the measurement uncertainties.

2 Results

2.1 DP1 Mill Stack

Date	17/03/2022	**Client**	Steel Cement
Report	R012606	**Stack ID**	DP1 Mill Stack
Licence No.	128502	**Location**	Yarraville
Ektimo Staff	Mathew Hutton, Eddie Camilleri	**State**	VIC
Process Conditions	Please refer to client records.		220315

Sampling Plane Details	
Sampling plane dimensions	2400 mm
Sampling plane area	4.52 m²
Sampling port size, number & depth	6" Flange (x4), 100 mm
Access & height of ports	Stairs 20 m
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 2 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 16
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

Comments
Normal operation at 65 tph
The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:
The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D
The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters		
Moisture content, %v/v	6.9	
Gas molecular weight, g/g mole	28.2 (wet)	29.0 (dry)
Gas density at STP, kg/m³	1.26 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m³	0.97	
Gas Flow Parameters		
Flow measurement time(s) (hhmm)	0950 & 1120	
Temperature, °C	83	
Velocity at sampling plane, m/s	11	
Volumetric flow rate, actual, m³/min	2900	
Volumetric flow rate (wet STP), m³/min	2200	
Volumetric flow rate (dry STP), m³/min	2100	
Mass flow rate (wet basis), kg/hour	170000	

Isokinetic Results	Average		Test 1		Test 2	
Sampling time			0955-1115		0955-1115	
	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
Total particulate matter	11	22	8.6	18	13	27
Isokinetic Sampling Parameters						
Sampling time, min			80		80	
Isokinetic rate, %			98		100	
Gravimetric analysis date (total particulate)			3/22/2022		3/22/2022	

3 Plant Operating Conditions

See Steel Cement Ltd records for complete process conditions.

Normal operation at a production rate of 65 tonnes per hour (tph).

4 Test Methods

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sampling points - Selection	AS 4323.1	NA	NA	✓	NA
Flow rate, temperature and velocity	ISO 10780	ISO 10780	8%, 2%, 7%	NA	✓
Moisture	USEPA Method 4	USEPA Method 4	8%	✓	✓
Total particulate matter	AS 4323.2	AS 4323.2	7%	✓	✓††

220302

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

†† Gravimetric analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601.

5 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

6 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
BSP	British standard pipe
CARB	Californian Air Resources Board
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
EPA	Environment Protection Authority
FTIR	Fourier Transform Infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NT	Not tested or results not required
OM	Other approved method
RATA	Relative accuracy test audit
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TM	Test method
TOC	The sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

7 Appendix 1: Site Photos

DP1 – Mill Stack

7.3 Tested emissions from the drying plant stack, Ektimo test report R012813

Ektimo

Steel Cement Ltd, Yarraville

Emission Testing Report

Report Number R012813

Document Information

Template Version 211117

Client Name:	Steel Cement Ltd
Report Number:	R012813
Date of Issue:	2 June 2022
Attention:	Jake Doesburg
Address:	295 Whitehall Street Yarraville VIC 3013
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation

Mathew Hutton **Air Monitoring Consultant**	NATA Accredited Laboratory No. 14601	**Greg Sceneay** **Ektimo Signatory**

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo's terms of NATA accreditation. This does not include comments, conclusions or recommendations based upon the results. Refer to 'Test Methods' for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by Steel Cement Ltd to perform emission testing at their Yarraville plant These results will be used in the air assessment for the dust emissions generated by the clinker grinding plant.

1.2 Project Objective

The objective of the project was to quantify emissions from 1 discharge point.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
Dryer Stack	20 May 2022	Total solid particles Particulate matter <10µm (PM_{10}) Particulate matter <2.5µm ($PM_{2.5}$)

* Flow rate, velocity, temperature and moisture were also determined.

All results are reported on a dry basis at STP.

Times of the testing have been noted in the report so Steel Cement personnel can reference plant operating conditions during the sampling.

Refer to the Test Methods table for the measurement uncertainties.

2 Results

2.1 Dryer Stack

Date	20/05/2022	**Client**	Steel Cement
Report	R012813	**Stack ID**	Dryer Stack
Licence No.	-	**Location**	Yarraville
Ektimo Staff	Mathew Hutton, Natalia Martinez	**State**	VIC
Process Conditions	Please refer to client records.		*220517*

Sampling Plane Details	
Sampling plane dimensions	1130 mm
Sampling plane area	1 m²
Sampling port size, number & depth	6" Flange (x2), 165 mm
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit >2 D
Upstream disturbance	Bend 6 D
No. traverses & points sampled	2 12
Sample plane conformance to AS4323.1 (2021)	Conforming but non-ideal

Comments

The discharge is assumed to be composed of dry air and moisture

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

Stack Parameters		
Moisture content, %v/v	2.5	
Gas molecular weight, g/g mole	28.7 (wet)	29.0 (dry)
Gas density at STP, kg/m³	1.28 (wet)	1.29 (dry)
Gas density at discharge conditions, kg/m³	1.07	
Gas Flow Parameters		
Flow measurement time(s) (hhmm)	1010 & 1155	
Temperature, °C	60	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/min	730	
Volumetric flow rate (wet STP), m³/min	610	
Volumetric flow rate (dry STP), m³/min	590	
Mass flow rate (wet basis), kg/hour	47000	

Isokinetic Results	Average		Test 1		Test 2	
Sampling time			1040-1140 (PM10&2.5)		1040-1140 (PM10&2.5)	
	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min	Concentration mg/m³	Mass Rate g/min
Total particulate matter	19	12	16	9.5	23	14
PM10	<7	<4	<6	<4	<8	<5
PM2.5	<3	<2	<3	<2	<3	<2
D50 cut size, 10µm			10.7		11.2	
D50 cut size, 2.5µm			2.31		2.51	
Isokinetic Sampling Parameters						
Sampling time, min				60		60
Isokinetic rate, %				86		94
Velocity difference, %				-2		-2

3 Plant Operating Conditions

See Steel Cement Ltd records for complete process conditions.

4 Test Methods

All sampling and analysis performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited Sampling	NATA accredited Analysis
Sampling points - Selection	AS 4323.1	NA	NA	✓	NA
Flow rate and velocity	AS 4323.1	AS 4323.1	8%, 7%	✓	✓
Moisture (stacks <60°C)	Ektimo 050	Ektimo 050	not specified	✓	✓
Total particulate matter	AS 4323.2	AS 4323.2	7%	✓	✓††
Particulate matter (PM_{10} and $PM_{2.5}$)	USEPA Method 201A	USEPA Method 201A	9%	✓	✓††

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

†† Gravimetric analysis conducted at the Ektimo Mitcham, VIC laboratory, NATA accreditation number 14601.

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6 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry or wet basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American Public Health Association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
BSP	British standard pipe
CARB	Californian Air Resources Board
CEM/CEMS	Continuous emission monitoring/Continuous emission monitoring system
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D_{50}	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D_{50} method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	Odour unit. One OU is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
PM_{10}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (µm).
$PM_{2.5}$	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those for which an analytical standard is not available), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
TOC	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

7.4 AERMOD output list file for PM10 (shortened for clarity)

All modelling files can be provided for peer review upon request.

PM10 for Stage 2 with meteorology for the year 2018, discrete receptors only

```
** Steel Cement Yarraville Plant particulate study for Cement Grinding Mill and Ship Unloading
CO STARTING
   TITLEONE Steel Cement PM10 - Cement Grinding Mill and Ship Unloading.  24 hour operation.
   TITLETWO Flat terrain. PRIME bldg wakes.  Stage 2 operation, PM10, 2018
   MODELOPT  CONC   FLAT  NOCHKD
   AVERTIME  24 PERIOD
   POLLUTID  PM10
   RUNORNOT  RUN
   ERRORFIL  ERRORS.OUT
CO FINISHED

SO STARTING
   ELEVUNIT METERS

** SOURCE TYPE AND LOCATION

** Proposed cement grinding mill sources
   LOCATION 1CMBFS POINT   315367 5811893 0
   LOCATION 2CMBFS POINT   315364 5811866 0
   LOCATION 1CMECS VOLUME  315358 5811901 0
   LOCATION 2CMECS VOLUME  315356 5811875 0
   LOCATION 1CMFBE VOLUME  315333 5811892 0
   LOCATION 2CMFBE VOLUME  315331 5811863 0
   LOCATION 1CBE   VOLUME  315385 5811864 0
   LOCATION 2CBE   VOLUME  315390 5811872 0
   LOCATION DS1F   VOLUME  315436 5811861 0
   LOCATION DS2F   VOLUME  315426 5811849 0
   LOCATION DS3F   VOLUME  315414 5811838 0
   LOCATION DS4F   VOLUME  315422 5811864 0
   LOCATION DS5F   VOLUME  315411 5811852 0
   LOCATION DS6F   VOLUME  315398 5811840 0
   LOCATION DS7F   VOLUME  315406 5811867 0
   LOCATION DS8F   VOLUME  315396 5811855 0
   LOCATION DS9F   VOLUME  315383 5811843 0
   LOCATION WB1LOF VOLUME  315423 5811850 0
   LOCATION WB2LOF VOLUME  315418 5811853 0
   LOCATION WB3LOF VOLUME  315408 5811853 0
   LOCATION WB4LOF VOLUME  315405 5811856 0
   LOCATION WB5LOF VOLUME  315393 5811857 0
   LOCATION WB6LOF VOLUME  315389 5811858 0
   LOCATION RMCSB1 VOLUME  315316 5811892 0
   LOCATION RMCSB2 VOLUME  315326 5811891 0
   LOCATION CS01   VOLUME  315399 5811933 0
   LOCATION CS02   VOLUME  315383 5811934 0
   LOCATION CS03   VOLUME  315365 5811936 0
   LOCATION CS04   VOLUME  315345 5811939 0
   LOCATION CS05   VOLUME  315325 5811941 0
   LOCATION CS06   VOLUME  315310 5811943 0
   LOCATION CS07   VOLUME  315301 5811943 0
   LOCATION CS08   VOLUME  315286 5811945 0
   LOCATION CS09   VOLUME  315270 5811947 0
   LOCATION CS10   VOLUME  315255 5811949 0
   LOCATION CS11   VOLUME  315242 5811951 0
   LOCATION DUMPST VOLUME  315284 5811908 0

** Proposed ship unloading
   LOCATION SHIPEX VOLUME  315629 5811957 0
   LOCATION HOP1   VOLUME  315617 5811966 0
   LOCATION HOP2   VOLUME  315602 5811923 0
   LOCATION HOP3   VOLUME  315587 5811881 0
   LOCATION CSP1   VOLUME  315583 5811870 0
   LOCATION CSP2   VOLUME  315497 5811899 0
   LOCATION CSP3   VOLUME  315418 5811927 0
   LOCATION CSP4   VOLUME  315418 5811955 0
   LOCATION CSP5   VOLUME  315413 5811907 0
   LOCATION CSP6   VOLUME  315324 5811900 0
   LOCATION CSP7   VOLUME  315317 5811845 0
   LOCATION CSP8   VOLUME  315231 5811912 0
   LOCATION CSP9   VOLUME  315236 5811948 0

** Existing sources - slag grinding facility
   LOCATION DP1    POINT   315481 5811934 0
   LOCATION ECS    VOLUME  315492 5811976 0
   LOCATION SILO1  VOLUME  315458 5811956 0
   LOCATION SILO3  VOLUME  315444 5811957 0
   LOCATION SBE    VOLUME  315464 5811955 0

** Existing sources - dryer, mixing and bagging plant
   LOCATION DC1    VOLUME  315294 5812057 0
   LOCATION DC2    VOLUME  315299 5812057 0
   LOCATION DC3    VOLUME  315292 5812048 0
   LOCATION DP2    POINT   315301 5812063 0

** SOURCE DISCHARGE CONDITIONS AND MASS RATES
** Point Source     QS      HS      TS      VS      DS
** Volume sources   QS      RELHT   SIG-Y   SIG-Z

** Proposed cement grinding mill sources
   SRCPARAM 1CMBFS 0.1212 37    333     10.0   0.366
   SRCPARAM 2CMBFS 0.1212 37    333     10.0   0.366
   SRCPARAM 1CMECS 0.0113  3      3      3
   SRCPARAM 2CMECS 0.0113  3      3      3
   SRCPARAM 1CMFBE 0.0113 23      3      3
   SRCPARAM 2CMFBE 0.0113 23      3      3
   SRCPARAM 1CBE   0.0113 54      3      3
   SRCPARAM 2CBE   0.0113 54      3      3
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   SRCPARAM DS1F   0.0192 47      3      3
   SRCPARAM DS2F   0.0192 47      3      3
   SRCPARAM DS3F   0.0192 47      3      3
   SRCPARAM DS4F   0.0192 47      3      3
   SRCPARAM DS5F   0.0000 47      3      3
   SRCPARAM DS6F   0.0000 47      3      3
   SRCPARAM DS7F   0.0000 47      3      3
   SRCPARAM DS8F   0.0000 47      3      3
   SRCPARAM DS9F   0.0000 47      3      3
   SRCPARAM WB1LOF 0.0063  7      3      3
   SRCPARAM WB2LOF 0.0063  7      3      3
   SRCPARAM WB3LOF 0.0063  7      3      3
   SRCPARAM WB4LOF 0.0063  7      3      3
   SRCPARAM WB5LOF 0.0063  7      3      3
   SRCPARAM WB6LOF 0.0063  7      3      3
   SRCPARAM RMCSB1 0.0083 19      3      3
   SRCPARAM RMCSB2 0.0000 19      3      3
   SRCPARAM CS01   0.0208 25      3      3
   SRCPARAM CS02   0.0208 25      3      3
   SRCPARAM CS03   0.0208 25      3      3
   SRCPARAM CS04   0.0208 25      3      3
   SRCPARAM CS05   0.0208 25      3      3
   SRCPARAM CS06   0.0208 25      3      3
   SRCPARAM CS07   0.0000 25      3      3
   SRCPARAM CS08   0.0000 25      3      3
   SRCPARAM CS09   0.0000 25      3      3
   SRCPARAM CS10   0.0000 25      3      3
   SRCPARAM CS11   0.0000 25      3      3
   SRCPARAM DUMPST 0.0192 14      3      3

** Proposed ship unloading
   SRCPARAM SHIPEX 0.0057 20      1      3
   SRCPARAM HOP1   0.1083 11      3      3
   SRCPARAM HOP2   0.1083 11      3      3
   SRCPARAM HOP3   0.0000 11      3      3
   SRCPARAM CSP1   0.0150  3      3      3
   SRCPARAM CSP2   0.0150  6      3      3
   SRCPARAM CSP3   0.0150  6      3      3
   SRCPARAM CSP4   0.0150 17      3      3
   SRCPARAM CSP5   0.0150 17      3      3
   SRCPARAM CSP6   0.0150 12      3      3
   SRCPARAM CSP7   0.0150 12      3      3
   SRCPARAM CSP8   0.0150  3      3      3
   SRCPARAM CSP9   0.0150  3      3      3

** Existing sources - slag grinding facility
   SRCPARAM DP1    0.0697 28    356       11    2.4
   SRCPARAM ECS    0.0062 29.3    3        3
   SRCPARAM SILO1  0.0032  0      3.5     16
   SRCPARAM SILO3  0.0032  0      3.5     12
   SRCPARAM SBE    0.0032 21      3        3

** Existing sources - dryer, mixing and bagging plant
   SRCPARAM DC1    0.0125 39       3      3
   SRCPARAM DC2    0.0125 39       3      3
   SRCPARAM DC3    0.0500 22.5     3      3
   SRCPARAM DP2    0.0360 24.4   333     12.   1.13

SO BUILDHGT DP1        21.00   21.00   21.00   21.00   34.00   34.00
SO BUILDHGT DP1        34.00   34.00   27.80   27.80   27.80   25.00
SO BUILDHGT DP1        25.00   25.00   25.00   25.00   25.00   21.00
SO BUILDHGT DP1        21.00   21.00   21.00   21.00   27.80   27.80
SO BUILDHGT DP1        27.80   25.00   25.00   25.00   25.00   25.00
SO BUILDHGT DP1        25.00   25.00   25.00   25.00   25.00   21.00
SO BUILDWID DP1         9.81   15.38   20.50   25.00   38.50   36.00
SO BUILDWID DP1        34.00   57.50   65.50   58.50   87.50  143.50
SO BUILDWID DP1        25.50   28.00   29.50   30.25   30.12   11.00
SO BUILDWID DP1         9.88   15.38   20.50   25.00  176.50  142.00
SO BUILDWID DP1       120.00   94.00   65.50   79.50  115.00  143.50
SO BUILDWID DP1        25.50   28.00   29.50   30.25   30.12   11.00
SO BUILDLEN DP1        34.50   34.50   34.50   32.50   39.25   21.50
SO BUILDLEN DP1        24.25   34.38  180.41  179.31  182.62  186.75
SO BUILDLEN DP1        29.50   28.00   26.00   23.00   19.50   34.00
SO BUILDLEN DP1        34.50   35.00   34.50   32.50  156.00  170.00
SO BUILDLEN DP1       179.00  230.12  226.53  221.25  199.50  186.75
SO BUILDLEN DP1        29.75   28.00   26.00   23.00   19.50   34.00
SO XBADJ    DP1         8.50    8.00    7.50    7.50 -149.75 -136.25
SO XBADJ    DP1      -139.75 -147.25 -244.56 -242.69 -238.38 -227.00
SO XBADJ    DP1       -56.75  -55.50  -53.50  -49.00  -43.00  -41.00
SO XBADJ    DP1       -42.50  -43.00  -42.50  -40.00   36.50   46.00
SO XBADJ    DP1        53.75   12.12   18.00   21.38   38.88   40.00
SO XBADJ    DP1        27.25   27.50   27.00   26.00   24.00    7.00
SO YBADJ    DP1        -2.78    1.56    6.00   10.00   25.75   23.50
SO YBADJ    DP1         1.00  -34.25    5.75  -21.75  -47.75  -58.25
SO YBADJ    DP1         0.25   -7.25  -14.25  -21.12  -27.31    7.50
SO YBADJ    DP1         2.69   -1.69   -5.75  -10.00  -95.25  -82.00
SO YBADJ    DP1       -58.00  -32.50   -5.75   11.25   36.50   57.75
SO YBADJ    DP1        -0.25    7.25   14.50   21.12   27.19   -7.50


SO BUILDHGT DP2        27.80   27.80   27.80   27.80   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   39.00   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   27.80   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   25.00   27.80   27.80   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   39.00   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   27.80   34.00   34.00   27.80
SO BUILDWID DP2       179.25  182.62  180.25  172.75   20.00   22.00
SO BUILDWID DP2        22.50   23.50   23.00   23.00   24.00   24.00
SO BUILDWID DP2        23.50   22.50  170.25   17.75   14.62   11.06
SO BUILDWID DP2         8.69  199.50  180.25  172.75   20.50   22.00
SO BUILDWID DP2        22.50   23.00   23.00   23.50   24.50   24.50
SO BUILDWID DP2        24.00   22.25  170.25   36.50   34.38  180.41
SO BUILDLEN DP2        58.50   88.00  114.50  137.00   22.50   20.50
SO BUILDLEN DP2        17.75   14.75   11.09    8.69   12.25   15.50
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SO BUILDLEN DP2        18.25   20.50  142.00   23.00   23.00   23.00
SO BUILDLEN DP2        23.50  115.00  114.50  137.00   22.50   20.25
SO BUILDLEN DP2        18.00   14.62   11.06    8.69   12.25   15.50
SO BUILDLEN DP2        18.25   20.50  142.00   38.50   39.00   65.50
SO XBADJ    DP2      -146.50 -151.50 -151.50 -147.00  -18.25  -17.50
SO XBADJ    DP2       -16.00  -14.25  -12.00  -10.88  -11.88  -12.50
SO XBADJ    DP2       -12.50  -12.50   49.00  -11.50  -10.00   -8.50
SO XBADJ    DP2        -7.50   38.00   37.00   10.00   -4.50   -3.00
SO XBADJ    DP2        -1.75   -0.50    0.91    2.12   -0.50   -3.25
SO XBADJ    DP2        -5.50   -8.50 -190.50 -203.00 -202.50 -156.00
SO YBADJ    DP2       -46.69  -66.31  -83.88  -98.88    2.00    0.50
SO YBADJ    DP2        -0.75   -1.75   -3.00   -4.00   -5.00   -6.00
SO YBADJ    DP2        -6.25   -7.00  -39.62   -7.12   -6.94   -6.44
SO YBADJ    DP2        -6.53   74.75   83.88   98.88   -2.25   -1.00
SO YBADJ    DP2         0.25    2.00    3.00    4.25    5.25    5.75
SO YBADJ    DP2         6.50    6.88   39.62    8.75  -24.81  -25.64


SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDWID 1CMBFS     31.69   34.12   35.25   36.50   37.00   36.00
SO BUILDWID 1CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 1CMBFS     41.50   39.50   37.75   36.50   34.38   31.22
SO BUILDWID 1CMBFS     31.75   34.12   35.25   36.50   37.00   36.50
SO BUILDWID 1CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 1CMBFS     41.50   39.25   37.75   36.50   34.38   31.19
SO BUILDLEN 1CMBFS     51.00   42.50   39.50   39.00   37.50   21.50
SO BUILDLEN 1CMBFS     24.25   34.38   31.19   29.38   34.12   36.50
SO BUILDLEN 1CMBFS     37.75   56.00   37.00   38.50   39.00   55.00
SO BUILDLEN 1CMBFS     51.50   42.00   39.50   39.00   37.75   21.50
SO BUILDLEN 1CMBFS     24.50   34.50   31.19   29.38   34.00   36.50
SO BUILDLEN 1CMBFS     37.75   56.50   37.50   38.50   39.00   54.50
SO XBADJ    1CMBFS    -42.50  -43.50  -33.50  -34.50  -34.25  -17.00
SO XBADJ    1CMBFS    -18.75  -27.88  -23.97  -21.19  -16.50  -12.50
SO XBADJ    1CMBFS     -7.75  -21.00  -20.00  -17.50  -15.50  -12.00
SO XBADJ    1CMBFS     -8.50    1.00   -6.50   -4.50   -3.75   -4.50
SO XBADJ    1CMBFS     -5.75   -6.62   -7.22   -8.25  -17.62  -24.25
SO XBADJ    1CMBFS    -30.00  -35.00  -17.50  -20.50  -23.50  -42.50
SO YBADJ    1CMBFS      5.22   -0.56    5.12    4.00    3.00    2.00
SO YBADJ    1CMBFS      0.50  -21.25   -7.00  -10.00  -21.75  -20.75
SO YBADJ    1CMBFS    -18.75  -16.25  -14.12  -12.50  -10.56   -8.36
SO YBADJ    1CMBFS     -5.25    0.69   -4.88   -4.00   -3.00   -1.75
SO YBADJ    1CMBFS     -0.50   21.25    7.00   10.00   21.75   20.75
SO YBADJ    1CMBFS     18.75   16.12   14.38   12.75   10.69    8.38


SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDWID 2CMBFS     31.69   34.12   35.25   36.50   37.00   36.00
SO BUILDWID 2CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 2CMBFS     41.50   39.50   37.75   36.50   34.38   31.22
SO BUILDWID 2CMBFS     31.75   34.12   35.25   36.50   37.00   36.50
SO BUILDWID 2CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 2CMBFS     41.50   39.25   37.75   36.50   34.38   31.19
SO BUILDLEN 2CMBFS     51.00   42.50   39.50   39.00   37.50   21.50
SO BUILDLEN 2CMBFS     24.25   34.38   31.19   29.38   34.12   36.50
SO BUILDLEN 2CMBFS     37.75   56.00   37.00   38.50   39.00   55.00
SO BUILDLEN 2CMBFS     51.50   42.00   39.50   39.00   37.75   21.50
SO BUILDLEN 2CMBFS     24.50   34.50   31.19   29.38   34.00   36.50
SO BUILDLEN 2CMBFS     37.75   56.50   37.50   38.50   39.00   54.50
SO XBADJ    2CMBFS    -15.50  -17.00   -8.50  -12.00  -14.50   -0.75
SO XBADJ    2CMBFS     -6.50  -20.25  -20.97  -22.88  -22.88  -23.25
SO XBADJ    2CMBFS    -23.00  -40.00  -41.50  -42.00  -41.50  -39.00
SO XBADJ    2CMBFS    -35.50  -25.50  -31.00  -27.00  -23.25  -20.50
SO XBADJ    2CMBFS    -17.75  -14.25  -10.22   -6.56  -11.25  -13.50
SO XBADJ    2CMBFS    -15.00  -16.50    4.50    3.50    2.50  -15.50
SO YBADJ    2CMBFS      6.97    5.81   16.12   19.00   21.50   24.00
SO YBADJ    2CMBFS     25.00    4.75   20.00   17.00    4.75    4.25
SO YBADJ    2CMBFS      4.25    3.25    1.88   -0.50   -2.94   -5.36
SO YBADJ    2CMBFS     -7.00   -5.69  -15.88  -19.25  -22.00  -23.75
SO YBADJ    2CMBFS    -25.00   -4.75  -20.00  -17.50   -4.25   -4.25
SO YBADJ    2CMBFS     -3.75   -3.62   -1.88    0.50    3.06    5.38

SO SRCGROUP  ALL
** Proposed ship unloading which occurrs at most for 54% of year (excluding background)
SO SRCGROUP SHIP SHIPEX HOP1-HOP3 CSP1-CSP9
SO FINISHED

RE STARTING
RE DISCCART   315693     5813702
RE DISCCART   315431     5813612
RE DISCCART   315256     5813493
RE DISCCART   315094     5813392
RE DISCCART   315041     5813162
RE DISCCART   315192     5812912
RE DISCCART   315126     5812711
RE DISCCART   314892     5812586
RE DISCCART   314863     5812313
RE DISCCART   314916     5812119
RE DISCCART   314606     5812043
RE DISCCART   314593     5811900
RE DISCCART   314389     5811780
RE DISCCART   314370     5811624
RE DISCCART   313975     5811348
RE DISCCART   313946     5810974
RE DISCCART   314264     5810935
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RE DISCCART   313575     5810383
RE DISCCART   313866     5809975
RE DISCCART   314134     5809925
RE DISCCART   314407     5809808
RE DISCCART   316523     5810214
RE DISCCART   316950     5810320
RE DISCCART   317390     5810444
RE DISCCART   316547     5810619
RE FINISHED

ME STARTING
   SURFFILE  "yarraville2018.sfc"
   PROFFILE  "yarraville2018.pfl"
   SURFDATA  00011  2018  Footscray
   UAIRDATA  00099  2018  Footscray
   SITEDATA  00022  2018  Footscray
   PROFBASE  113.0 METERS
ME FINISHED
OU STARTING
   RECTABLE  ALLAVE 1ST
   MAXTABLE  ALLAVE 100
   POSTFILE  24 ALL PLOT SteelCement-Stage2-PM10-24HR-2018.PLT
   POSTFILE  24 SHIP PLOT SteelCement-Stage2-ship-PM10-24HR-2018.PLT
   SUMMFILE  SteelCementPM10.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of           13 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320     101        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     102        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     103        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     104        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     105        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     113        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     120        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     121        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     122        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     123        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     124        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     131        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 MX W403     322       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

                                      ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Assumes Receptors on FLAT Terrain.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         NOCHKD   - Suppresses checking of date sequence in meteorology files

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM10

 **Model Calculates  1 Short Term Average(s) of:  24-HR
     and Calculates PERIOD Averages

 **This Run Includes:     59 Source(s);       2 Source Group(s); and      25 Receptor(s)

                with:      4 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                  and:    55 VOLUME source(s)
                  and:     0 AREA type source(s)
                  and:     0 LINE source(s)
                  and:     0 RLINE/RLINEXT source(s)
                  and:     0 OPENPIT source(s)
                  and:     0 BUOYANT LINE source(s) with a total of     0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  19191
```

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**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
        Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
        Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
        Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   113.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                            ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   ERRORS.OUT
**File for Summary of Results:   SteelCementPM10.SUM
```

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
1CMBFS	0	0.12120E+00	315367.0	5811893.0	113.0	37.00	333.00	10.00	0.37	YES	NO	NO	
2CMBFS	0	0.12120E+00	315364.0	5811866.0	113.0	37.00	333.00	10.00	0.37	YES	NO	NO	
DP1	0	0.69700E-01	315481.0	5811934.0	113.0	28.00	356.00	11.00	2.40	YES	NO	NO	
DP2	0	0.36000E-01	315301.0	5812063.0	113.0	24.40	333.00	12.00	1.13	YES	NO	NO	

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1CMECS	0	0.11300E-01	315358.0	5811901.0	113.0	3.00	3.00	3.00	NO	
2CMECS	0	0.11300E-01	315356.0	5811875.0	113.0	3.00	3.00	3.00	NO	
1CMFBE	0	0.11300E-01	315333.0	5811892.0	113.0	23.00	3.00	3.00	NO	
2CMFBE	0	0.11300E-01	315331.0	5811863.0	113.0	23.00	3.00	3.00	NO	
1CBE	0	0.11300E-01	315385.0	5811864.0	113.0	54.00	3.00	3.00	NO	
2CBE	0	0.11300E-01	315390.0	5811872.0	113.0	54.00	3.00	3.00	NO	
DS1F	0	0.19200E-01	315436.0	5811861.0	113.0	47.00	3.00	3.00	NO	
DS2F	0	0.19200E-01	315426.0	5811849.0	113.0	47.00	3.00	3.00	NO	
DS3F	0	0.19200E-01	315414.0	5811838.0	113.0	47.00	3.00	3.00	NO	
DS4F	0	0.19200E-01	315422.0	5811864.0	113.0	47.00	3.00	3.00	NO	
DS5F	0	0.00000E+00	315411.0	5811852.0	113.0	47.00	3.00	3.00	NO	
DS6F	0	0.00000E+00	315398.0	5811840.0	113.0	47.00	3.00	3.00	NO	
DS7F	0	0.00000E+00	315406.0	5811867.0	113.0	47.00	3.00	3.00	NO	
DS8F	0	0.00000E+00	315396.0	5811855.0	113.0	47.00	3.00	3.00	NO	
DS9F	0	0.00000E+00	315383.0	5811843.0	113.0	47.00	3.00	3.00	NO	
WB1LOF	0	0.63000E-02	315423.0	5811850.0	113.0	7.00	3.00	3.00	NO	
WB2LOF	0	0.63000E-02	315418.0	5811853.0	113.0	7.00	3.00	3.00	NO	
WB3LOF	0	0.63000E-02	315408.0	5811853.0	113.0	7.00	3.00	3.00	NO	
WB4LOF	0	0.63000E-02	315405.0	5811856.0	113.0	7.00	3.00	3.00	NO	
WB5LOF	0	0.63000E-02	315393.0	5811857.0	113.0	7.00	3.00	3.00	NO	
WB6LOF	0	0.63000E-02	315389.0	5811858.0	113.0	7.00	3.00	3.00	NO	
RMCSB1	0	0.83000E-02	315316.0	5811892.0	113.0	19.00	3.00	3.00	NO	
RMCSB2	0	0.00000E+00	315326.0	5811891.0	113.0	19.00	3.00	3.00	NO	
CS01	0	0.20800E-01	315399.0	5811933.0	113.0	25.00	3.00	3.00	NO	
CS02	0	0.20800E-01	315383.0	5811934.0	113.0	25.00	3.00	3.00	NO	
CS03	0	0.20800E-01	315365.0	5811936.0	113.0	25.00	3.00	3.00	NO	
CS04	0	0.20800E-01	315345.0	5811939.0	113.0	25.00	3.00	3.00	NO	
CS05	0	0.20800E-01	315325.0	5811941.0	113.0	25.00	3.00	3.00	NO	
CS06	0	0.20800E-01	315310.0	5811943.0	113.0	25.00	3.00	3.00	NO	
CS07	0	0.00000E+00	315301.0	5811943.0	113.0	25.00	3.00	3.00	NO	
CS08	0	0.00000E+00	315286.0	5811945.0	113.0	25.00	3.00	3.00	NO	
CS09	0	0.00000E+00	315270.0	5811947.0	113.0	25.00	3.00	3.00	NO	
CS10	0	0.00000E+00	315255.0	5811949.0	113.0	25.00	3.00	3.00	NO	
CS11	0	0.00000E+00	315242.0	5811951.0	113.0	25.00	3.00	3.00	NO	
DUMPST	0	0.19200E-01	315284.0	5811908.0	113.0	14.00	3.00	3.00	NO	
SHIPEX	0	0.57000E-02	315629.0	5811957.0	113.0	20.00	1.00	3.00	NO	
HOP1	0	0.10830E+00	315617.0	5811966.0	113.0	11.00	3.00	3.00	NO	
HOP2	0	0.10830E+00	315602.0	5811923.0	113.0	11.00	3.00	3.00	NO	
HOP3	0	0.00000E+00	315587.0	5811881.0	113.0	11.00	3.00	3.00	NO	
CSP1	0	0.15000E-01	315583.0	5811870.0	113.0	3.00	3.00	3.00	NO	

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
CSP2	0	0.15000E-01	315497.0	5811899.0	113.0	6.00	3.00	3.00	NO	
CSP3	0	0.15000E-01	315418.0	5811927.0	113.0	6.00	3.00	3.00	NO	
CSP4	0	0.15000E-01	315418.0	5811955.0	113.0	17.00	3.00	3.00	NO	
CSP5	0	0.15000E-01	315413.0	5811907.0	113.0	17.00	3.00	3.00	NO	
CSP6	0	0.15000E-01	315324.0	5811900.0	113.0	12.00	3.00	3.00	NO	
CSP7	0	0.15000E-01	315317.0	5811845.0	113.0	12.00	3.00	3.00	NO	
CSP8	0	0.15000E-01	315231.0	5811912.0	113.0	3.00	3.00	3.00	NO	
CSP9	0	0.15000E-01	315236.0	5811948.0	113.0	3.00	3.00	3.00	NO	
ECS	0	0.62000E-02	315492.0	5811976.0	113.0	29.30	3.00	3.00	NO	
SILO1	0	0.32000E-02	315458.0	5811956.0	113.0	0.00	3.50	16.00	NO	

SILO3	0	0.32000E-02	315444.0	5811957.0	113.0	0.00	3.50	12.00	NO
SBE	0	0.32000E-02	315464.0	5811955.0	113.0	21.00	3.00	3.00	NO
DC1	0	0.12500E-01	315294.0	5812057.0	113.0	39.00	3.00	3.00	NO
DC2	0	0.12500E-01	315299.0	5812057.0	113.0	39.00	3.00	3.00	NO
DC3	0	0.50000E-01	315292.0	5812048.0	113.0	22.50	3.00	3.00	NO

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE , 2CMFBE , 1CBE , 2CBE ,
	DS1F , DS2F , DS3F , DS4F , DS5F , DS6F , DS7F , DS8F ,
	DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF , WB5LOF , WB6LOF , RMCSB1 ,
	RMCSB2 , CS01 , CS02 , CS03 , CS04 , CS05 , CS06 , CS07 ,
	CS08 , CS09 , CS10 , CS11 , DUMPST , SHIPEX , HOP1 , HOP2 ,
	HOP3 , CSP1 , CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 ,
	CSP8 , CSP9 , DP1 , ECS , SILO1 , SILO3 , SBE , DC1 ,
	DC2 , DC3 , DP2 ,
SHIP	SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 , CSP2 , CSP3 , CSP4 ,
	CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: 1CMBFS

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	34.0,	31.7,	51.0,	-42.5,	5.2,	2	34.0,	34.1,	42.5,	-43.5,	-0.6,
3	34.0,	35.2,	39.5,	-33.5,	5.1,	4	34.0,	36.5,	39.0,	-34.5,	4.0,
5	34.0,	37.0,	37.5,	-34.2,	3.0,	6	34.0,	36.0,	21.5,	-17.0,	2.0,
7	34.0,	34.0,	24.2,	-18.8,	0.5,	8	34.0,	42.5,	34.4,	-27.9,	-21.2,
9	34.0,	38.0,	31.2,	-24.0,	-7.0,	10	34.0,	37.0,	29.4,	-21.2,	-10.0,
11	34.0,	42.5,	34.1,	-16.5,	-21.8,	12	34.0,	42.5,	36.5,	-12.5,	-20.8,
13	34.0,	41.5,	37.8,	-7.8,	-18.8,	14	34.0,	39.5,	56.0,	-21.0,	-16.2,
15	34.0,	37.8,	37.0,	-20.0,	-14.1,	16	34.0,	36.5,	38.5,	-17.5,	-12.5,
17	34.0,	34.4,	39.0,	-15.5,	-10.6,	18	34.0,	31.2,	55.0,	-12.0,	-8.4,
19	34.0,	31.8,	51.5,	-8.5,	-5.2,	20	34.0,	34.1,	42.0,	1.0,	0.7,
21	34.0,	35.2,	39.5,	-6.5,	-4.9,	22	34.0,	36.5,	39.0,	-4.5,	-4.0,
23	34.0,	37.0,	37.8,	-3.8,	-3.0,	24	34.0,	36.5,	21.5,	-4.5,	-1.8,
25	34.0,	34.0,	24.5,	-5.8,	-0.5,	26	34.0,	42.5,	34.5,	-6.6,	21.2,
27	34.0,	38.0,	31.2,	-7.2,	7.0,	28	34.0,	37.0,	29.4,	-8.2,	10.0,
29	34.0,	42.5,	34.0,	-17.6,	21.8,	30	34.0,	42.5,	36.5,	-24.2,	20.8,
31	34.0,	41.5,	37.8,	-30.0,	18.8,	32	34.0,	39.2,	56.5,	-35.0,	16.1,
33	34.0,	37.8,	37.5,	-17.5,	14.4,	34	34.0,	36.5,	38.5,	-20.5,	12.8,
35	34.0,	34.4,	39.0,	-23.5,	10.7,	36	34.0,	31.2,	54.5,	-42.5,	8.4,

SOURCE ID: 2CMBFS

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	34.0,	31.7,	51.0,	-15.5,	7.0,	2	34.0,	34.1,	42.5,	-17.0,	5.8,
3	34.0,	35.2,	39.5,	-8.5,	16.1,	4	34.0,	36.5,	39.0,	-12.0,	19.0,
5	34.0,	37.0,	37.5,	-14.5,	21.5,	6	34.0,	36.0,	21.5,	-0.8,	24.0,
7	34.0,	34.0,	24.2,	-6.5,	25.0,	8	34.0,	42.5,	34.4,	-20.2,	4.8,
9	34.0,	38.0,	31.2,	-21.0,	20.0,	10	34.0,	37.0,	29.4,	-22.9,	17.0,
11	34.0,	42.5,	34.1,	-22.9,	4.8,	12	34.0,	42.5,	36.5,	-23.2,	4.2,
13	34.0,	41.5,	37.8,	-23.0,	4.2,	14	34.0,	39.5,	56.0,	-40.0,	3.2,
15	34.0,	37.8,	37.0,	-41.5,	1.9,	16	34.0,	36.5,	38.5,	-42.0,	-0.5,
17	34.0,	34.4,	39.0,	-41.5,	-2.9,	18	34.0,	31.2,	55.0,	-39.0,	-5.4,
19	34.0,	31.8,	51.5,	-35.5,	-7.0,	20	34.0,	34.1,	42.0,	-25.5,	-5.7,
21	34.0,	35.2,	39.5,	-31.0,	-15.9,	22	34.0,	36.5,	39.0,	-27.0,	-19.2,
23	34.0,	37.0,	37.8,	-23.2,	-22.0,	24	34.0,	36.5,	21.5,	-20.5,	-23.8,
25	34.0,	34.0,	24.5,	-17.8,	-25.0,	26	34.0,	42.5,	34.5,	-14.2,	-4.8,
27	34.0,	38.0,	31.2,	-10.2,	-20.0,	28	34.0,	37.0,	29.4,	-6.6,	-17.5,
29	34.0,	42.5,	34.0,	-11.2,	-4.2,	30	34.0,	42.5,	36.5,	-13.5,	-4.2,
31	34.0,	41.5,	37.8,	-15.0,	-3.8,	32	34.0,	39.2,	56.5,	-16.5,	-3.6,
33	34.0,	37.8,	37.5,	4.5,	-1.9,	34	34.0,	36.5,	38.5,	3.5,	0.5,
35	34.0,	34.4,	39.0,	2.5,	3.1,	36	34.0,	31.2,	54.5,	-15.5,	5.4,

SOURCE ID: DP1

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	21.0,	9.8,	34.5,	8.5,	-2.8,	2	21.0,	15.4,	34.5,	8.0,	1.6,
3	21.0,	20.5,	34.5,	7.5,	6.0,	4	21.0,	25.0,	32.5,	7.5,	10.0,
5	34.0,	38.5,	39.2,	-149.8,	25.8,	6	34.0,	36.0,	21.5,	-136.2,	23.5,
7	34.0,	34.0,	24.2,	-139.8,	1.0,	8	34.0,	57.5,	34.4,	-147.2,	-34.2,
9	27.8,	65.5,	180.4,	-244.6,	5.8,	10	27.8,	58.5,	179.3,	-242.7,	-21.8,
11	27.8,	87.5,	182.6,	-238.4,	-47.8,	12	25.0,	143.5,	186.8,	-227.0,	-58.2,
13	25.0,	25.5,	29.5,	-56.8,	0.2,	14	25.0,	28.0,	28.0,	-55.5,	-7.2,
15	25.0,	29.5,	26.0,	-53.5,	-14.2,	16	25.0,	30.2,	23.0,	-49.0,	-21.1,
17	25.0,	30.1,	19.5,	-43.0,	-27.3,	18	21.0,	11.0,	34.0,	-41.0,	7.5,
19	21.0,	9.9,	34.5,	-42.5,	2.7,	20	21.0,	15.4,	35.0,	-43.0,	-1.7,
21	21.0,	20.5,	34.5,	-42.5,	-5.8,	22	21.0,	25.0,	32.5,	-40.0,	-10.0,
23	27.8,	176.5,	156.0,	36.5,	-95.2,	24	27.8,	142.0,	170.0,	46.0,	-82.0,
25	27.8,	120.0,	179.0,	53.8,	-58.0,	26	25.0,	94.0,	230.1,	12.1,	-32.5,
27	25.0,	65.5,	226.5,	18.0,	-5.8,	28	25.0,	79.5,	221.2,	21.4,	11.2,
29	25.0,	115.0,	199.5,	38.9,	36.5,	30	25.0,	143.5,	186.8,	40.0,	57.8,
31	25.0,	25.5,	29.8,	27.2,	-0.2,	32	25.0,	28.0,	28.0,	27.5,	7.2,
33	25.0,	29.5,	26.0,	27.0,	14.5,	34	25.0,	30.2,	23.0,	26.0,	21.1,
35	25.0,	30.1,	19.5,	24.0,	27.2,	36	21.0,	11.0,	34.0,	7.0,	-7.5,

SOURCE ID: DP2

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ

```
  1   27.8,  179.2,   58.5, -146.5,  -46.7,       2   27.8,  182.6,   88.0, -151.5,  -66.3,
  3   27.8,  180.2,  114.5, -151.5,  -83.9,       4   27.8,  172.8,  137.0, -147.0,  -98.9,
  5   39.0,   20.0,   22.5,  -18.2,    2.0,       6   39.0,   22.0,   20.5,  -17.5,    0.5,
  7   39.0,   22.5,   17.8,  -16.0,   -0.8,       8   39.0,   23.5,   14.8,  -14.2,   -1.8,
  9   39.0,   23.0,   11.1,  -12.0,   -3.0,      10   39.0,   23.0,    8.7,  -10.9,   -4.0,
 11   39.0,   24.0,   12.2,  -11.9,   -5.0,      12   39.0,   24.0,   15.5,  -12.5,   -6.0,
 13   39.0,   23.5,   18.2,  -12.5,   -6.2,      14   39.0,   22.5,   20.5,  -12.5,   -7.0,
 15   27.8,  170.2,  142.0,   49.0,  -39.6,      16   39.0,   17.8,   23.0,  -11.5,   -7.1,
 17   39.0,   14.6,   23.0,  -10.0,   -6.9,      18   39.0,   11.1,   23.0,   -8.5,   -6.4,
 19   39.0,    8.7,   23.5,   -7.5,   -6.5,      20   25.0,  199.5,  115.0,   38.0,   74.8,
 21   27.8,  180.2,  114.5,   37.0,   83.9,      22   27.8,  172.8,  137.0,   10.0,   98.9,
 23   39.0,   20.5,   22.5,   -4.5,   -2.2,      24   39.0,   22.0,   20.2,   -3.0,   -1.0,
 25   39.0,   22.5,   18.0,   -1.8,    0.2,      26   39.0,   23.0,   14.6,   -0.5,    2.0,
 27   39.0,   23.0,   11.1,    0.9,    3.0,      28   39.0,   23.5,    8.7,    2.1,    4.2,
 29   39.0,   24.5,   12.2,   -0.5,    5.2,      30   39.0,   24.5,   15.5,   -3.2,    5.8,
 31   39.0,   24.0,   18.2,   -5.5,    6.5,      32   39.0,   22.2,   20.5,   -8.5,    6.9,
 33   27.8,  170.2,  142.0, -190.5,   39.6,      34   34.0,   36.5,   38.5, -203.0,    8.8,
 35   34.0,   34.4,   39.0, -202.5,  -24.8,      36   27.8,  180.4,   65.5, -156.0,  -25.6,

                                       *** DISCRETE CARTESIAN RECEPTORS ***
                                     (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                     (METERS)

    ( 315693.0, 5813702.0,      113.0,      113.0,       0.0);         ( 315431.0, 5813612.0,      113.0,      113.0,       0.0);
    ( 315256.0, 5813493.0,      113.0,      113.0,       0.0);         ( 315094.0, 5813392.0,      113.0,      113.0,       0.0);
    ( 315041.0, 5813162.0,      113.0,      113.0,       0.0);         ( 315192.0, 5812912.0,      113.0,      113.0,       0.0);
    ( 315126.0, 5812711.0,      113.0,      113.0,       0.0);         ( 314892.0, 5812586.0,      113.0,      113.0,       0.0);
    ( 314863.0, 5812313.0,      113.0,      113.0,       0.0);         ( 314916.0, 5812119.0,      113.0,      113.0,       0.0);
    ( 314606.0, 5812043.0,      113.0,      113.0,       0.0);         ( 314593.0, 5811900.0,      113.0,      113.0,       0.0);
    ( 314389.0, 5811780.0,      113.0,      113.0,       0.0);         ( 314370.0, 5811624.0,      113.0,      113.0,       0.0);
    ( 313975.0, 5811348.0,      113.0,      113.0,       0.0);         ( 313946.0, 5810974.0,      113.0,      113.0,       0.0);
    ( 314264.0, 5810935.0,      113.0,      113.0,       0.0);         ( 313575.0, 5810383.0,      113.0,      113.0,       0.0);
    ( 313866.0, 5809975.0,      113.0,      113.0,       0.0);         ( 314134.0, 5809925.0,      113.0,      113.0,       0.0);
    ( 314407.0, 5809808.0,      113.0,      113.0,       0.0);         ( 316523.0, 5810214.0,      113.0,      113.0,       0.0);
    ( 316950.0, 5810320.0,      113.0,      113.0,       0.0);         ( 317390.0, 5810444.0,      113.0,      113.0,       0.0);
    ( 316547.0, 5810619.0,      113.0,      113.0,       0.0);

                                       *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                      (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                   *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                      (METERS/SEC)

                                            1.54,    3.09,    5.14,    8.23,   10.80,

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:    yarraville2018.sfc                                                               Met Version:  19191
  Profile file:    yarraville2018.pfl
  Surface format: FREE
  Profile format: FREE
  Surface station no.:        11                     Upper air station no.:        99
                Name: FOOTSCRAY                                      Name: FOOTSCRAY
                Year:   2018                                         Year:   2018

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 18 01 01    1 01  -30.5  0.297 -9.000  0.000 -999.  372.     81.2  0.60   0.80   1.00    1.00    6.   10.0  290.1    2.0
 18 01 01    1 02  -22.9  0.312 -9.000  0.000 -999.  401.    126.0  0.67   0.80   1.00    1.20  342.   10.0  290.8    2.0
 18 01 01    1 03  -16.0  0.361 -9.000  0.000 -999.  499.    279.8  0.71   0.80   1.00    1.70  271.   10.0  290.9    2.0
 18 01 01    1 04   -8.7  0.439 -9.000  0.000 -999.  669.    929.1  0.63   0.80   1.00    1.50  238.   10.0  291.0    2.0
 18 01 01    1 05   -8.7  0.502 -9.000  0.000 -999.  817.   1372.7  0.63   0.80   1.00    2.50  226.   10.0  290.8    2.0
 18 01 01    1 06   -3.5  0.544  0.001  0.005  840.  922.   4338.3  0.63   0.80   0.55    3.30  235.   10.0  290.4    2.0
 18 01 01    1 07   15.1  0.542  0.038  0.005  823.  918.  -1004.7  0.63   0.80   0.29    3.70  232.   10.0  290.5    2.0
 18 01 01    1 08  119.5  0.444  0.305  0.005  928.  681.    -69.9  0.63   0.80   0.17    2.70  251.   10.0  291.6    2.0
 18 01 01    1 09  201.7  0.439  0.514  0.005  927.  668.    -40.1  0.64   0.80   0.17    2.50  223.   10.0  293.0    2.0
 18 01 01    1 10  249.1  0.382  0.635  0.005  773.  543.    -21.5  0.64   0.80   0.17    2.00  195.   10.0  294.6    2.0
 18 01 01    1 11  280.0  0.531  0.714  0.005  920.  890.    -51.6  0.65   0.80   0.17    3.10  140.   10.0  295.6    2.0
 18 01 01    1 12  294.4  0.525  0.751  0.005 1148.  875.    -47.6  0.61   0.80   0.17    3.10  130.   10.0  296.1    2.0
 18 01 01    1 13  292.1  0.455  0.745  0.005 1224.  706.    -31.3  0.65   0.80   0.17    2.50  165.   10.0  296.8    2.0
 18 01 01    1 14  274.2  0.478  0.699  0.005 1273.  760.    -38.8  0.65   0.80   0.17    2.70  152.   10.0  298.1    2.0
 18 01 01    1 15  240.5  0.472  0.613  0.005 1289.  747.    -42.8  0.65   0.80   0.17    2.70  157.   10.0  298.8    2.0
 18 01 01    1 16  192.8  0.647  0.492  0.005 1284. 1196.   -136.7  0.65   0.80   0.17    4.10  175.   10.0  298.2    2.0
 18 01 01    1 17  134.3  0.810  0.342  0.005 1325. 1678.   -383.0  0.64   0.80   0.17    5.40  182.   10.0  295.7    2.0
 18 01 01    1 18   51.2  0.782  0.131  0.005 1339. 1589.   -896.7  0.64   0.80   0.33    5.30  186.   10.0  294.4    2.0
 18 01 01    1 19  -16.5  0.381  0.001  0.005 1320.  541.    322.5  0.64   0.80   0.65    5.10  182.   10.0  293.6    2.0
 18 01 01    1 20  -29.6  0.370 -9.000  0.000 -999.  518.    163.9  0.65   0.80   1.00    4.40  178.   10.0  292.4    2.0
 18 01 01    1 21  -29.9  0.362 -9.000  0.000 -999.  500.    150.7  0.65   0.80   1.00    3.90  177.   10.0  291.7    2.0
 18 01 01    1 22  -29.9  0.356 -9.000  0.000 -999.  488.    143.8  0.65   0.80   1.00    3.60  173.   10.0  291.7    2.0
 18 01 01    1 23  -22.6  0.357 -9.000  0.000 -999.  490.    191.6  0.65   0.80   1.00    3.00  172.   10.0  291.6    2.0
 18 01 01    1 24  -15.8  0.392 -9.000  0.000 -999.  565.    363.7  0.65   0.80   1.00    2.70  163.   10.0  291.5    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1    6.    1.00   290.1   34.0  -99.00    0.50

 F indicates top of profile (=1) or below (=0)

                              *** THE PERIOD (  8688 HRS) AVERAGE CONCENTRATION    VALUES FOR SOURCE GROUP: ALL      ***
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INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
315693.00	5813702.00	0.24128	315431.00	5813612.00	0.28167
315256.00	5813493.00	0.30681	315094.00	5813392.00	0.31144
315041.00	5813162.00	0.38086	315192.00	5812912.00	0.61372
315126.00	5812711.00	0.77802	314892.00	5812586.00	0.60572
314863.00	5812313.00	0.72448	314916.00	5812119.00	0.88999
314606.00	5812043.00	0.34602	314593.00	5811900.00	0.30594
314389.00	5811780.00	0.19462	314370.00	5811624.00	0.18741
313975.00	5811348.00	0.10689	313946.00	5810974.00	0.11177
314264.00	5810935.00	0.18018	313575.00	5810383.00	0.08084
313866.00	5809975.00	0.10483	314134.00	5809925.00	0.12892
314407.00	5809808.00	0.14879	316523.00	5810214.00	0.16279
316950.00	5810320.00	0.11869	317390.00	5810444.00	0.10073
316547.00	5810619.00	0.18702			

*** THE PERIOD (8688 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
315693.00	5813702.00	0.08275	315431.00	5813612.00	0.09008
315256.00	5813493.00	0.09473	315094.00	5813392.00	0.09426
315041.00	5813162.00	0.11437	315192.00	5812912.00	0.18229
315126.00	5812711.00	0.22630	314892.00	5812586.00	0.18088
314863.00	5812313.00	0.22320	314916.00	5812119.00	0.30304
314606.00	5812043.00	0.12917	314593.00	5811900.00	0.12165
314389.00	5811780.00	0.08025	314370.00	5811624.00	0.07561
313975.00	5811348.00	0.04315	313946.00	5810974.00	0.04120
314264.00	5810935.00	0.06047	313575.00	5810383.00	0.02806
313866.00	5809975.00	0.03335	314134.00	5809925.00	0.03975
314407.00	5809808.00	0.04480	316523.00	5810214.00	0.05923
316950.00	5810320.00	0.04100	317390.00	5810444.00	0.03309
316547.00	5810619.00	0.06851			

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
315693.00	5813702.00	0.97285	(18012224)	315431.00	5813612.00	1.23006	(18092524)
315256.00	5813493.00	1.42883	(18092524)	315094.00	5813392.00	1.45051	(18111724)
315041.00	5813162.00	1.94483	(18111724)	315192.00	5812912.00	2.68728	(18092524)
315126.00	5812711.00	3.75444	(18111724)	314892.00	5812586.00	3.54426	(18032124)
314863.00	5812313.00	6.30502	(18032124)	314916.00	5812119.00	5.04974	(18030224)
314606.00	5812043.00	2.25020	(18030224)	314593.00	5811900.00	1.35418	(18030224)
314389.00	5811780.00	0.84986	(18032224)	314370.00	5811624.00	1.05172	(18032224)
313975.00	5811348.00	0.74276	(18101424)	313946.00	5810974.00	1.32556	(18101424)
314264.00	5810935.00	1.88414	(18101424)	313575.00	5810383.00	0.92445	(18101424)
313866.00	5809975.00	1.07494	(18061124)	314134.00	5809925.00	1.11548	(18080224)
314407.00	5809808.00	1.21123	(18062024)	316523.00	5810214.00	0.82934	(18092024)
316950.00	5810320.00	0.70407	(18060124)	317390.00	5810444.00	0.72901	(18060124)
316547.00	5810619.00	0.99137	(18060124)				

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
315693.00	5813702.00	0.28505	(18092524)	315431.00	5813612.00	0.34187	(18092524)
315256.00	5813493.00	0.35719	(18111724)	315094.00	5813392.00	0.39138	(18111724)
315041.00	5813162.00	0.44892	(18111724)	315192.00	5812912.00	0.68086	(18111724)
315126.00	5812711.00	0.80638	(18030624)	314892.00	5812586.00	1.06007	(18032124)
314863.00	5812313.00	1.27113	(18032124)	314916.00	5812119.00	1.22095	(18032124)
314606.00	5812043.00	0.55036	(18041824)	314593.00	5811900.00	0.41898	(18041824)
314389.00	5811780.00	0.25526	(18032224)	314370.00	5811624.00	0.26365	(18032224)
313975.00	5811348.00	0.20633	(18101424)	313946.00	5810974.00	0.32838	(18101424)
314264.00	5810935.00	0.48854	(18101424)	313575.00	5810383.00	0.24128	(18101424)
313866.00	5809975.00	0.29655	(18061124)	314134.00	5809925.00	0.29095	(18080224)
314407.00	5809808.00	0.30822	(18080224)	316523.00	5810214.00	0.25790	(18080924)
316950.00	5810320.00	0.18091	(18060124)	317390.00	5810444.00	0.19119	(18060124)
316547.00	5810619.00	0.28916	(18092024)				

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE
1.	6.30502	(18032124) AT	(314863.00, 5812313.00) DC	41.	2.72014	(18020224) AT	(314863.00, 5812313.00) DC
2.	5.04974	(18030224) AT	(314916.00, 5812119.00) DC	42.	2.69064	(18092424) AT	(314863.00, 5812313.00) DC
3.	5.01700	(18032124) AT	(314916.00, 5812119.00) DC	43.	2.68900	(18021924) AT	(314863.00, 5812313.00) DC
4.	4.15139	(18101024) AT	(314863.00, 5812313.00) DC	44.	2.68728	(18092524) AT	(315192.00, 5812912.00) DC
5.	4.07587	(18022624) AT	(314863.00, 5812313.00) DC	45.	2.68712	(18111824) AT	(314863.00, 5812313.00) DC
6.	4.06087	(18020124) AT	(314863.00, 5812313.00) DC	46.	2.68574	(18080124) AT	(314863.00, 5812313.00) DC
7.	3.96893	(18011024) AT	(314916.00, 5812119.00) DC	47.	2.68432	(18052524) AT	(314916.00, 5812119.00) DC
8.	3.85134	(18020324) AT	(314863.00, 5812313.00) DC	48.	2.68095	(18032924) AT	(314916.00, 5812119.00) DC
9.	3.81931	(18101124) AT	(314916.00, 5812119.00) DC	49.	2.67464	(18041824) AT	(314916.00, 5812119.00) DC
10.	3.76133	(18010524) AT	(314916.00, 5812119.00) DC	50.	2.65656	(18012524) AT	(314916.00, 5812119.00) DC
11.	3.75444	(18111724) AT	(315126.00, 5812711.00) DC	51.	2.65142	(18093024) AT	(314916.00, 5812119.00) DC
12.	3.71492	(18020324) AT	(314916.00, 5812119.00) DC	52.	2.58609	(18090324) AT	(315126.00, 5812711.00) DC
13.	3.69740	(18101124) AT	(314863.00, 5812313.00) DC	53.	2.52977	(18062524) AT	(314916.00, 5812119.00) DC
14.	3.63034	(18102924) AT	(314916.00, 5812119.00) DC	54.	2.51938	(18111724) AT	(315192.00, 5812912.00) DC
15.	3.55089	(18020124) AT	(314916.00, 5812119.00) DC	55.	2.50046	(18082824) AT	(314863.00, 5812313.00) DC
16.	3.54457	(18121124) AT	(314916.00, 5812119.00) DC	56.	2.49114	(18020324) AT	(314892.00, 5812586.00) DC
17.	3.54426	(18032124) AT	(314892.00, 5812586.00) DC	57.	2.48051	(18021924) AT	(314916.00, 5812119.00) DC
18.	3.52542	(18082824) AT	(314916.00, 5812119.00) DC	58.	2.47853	(18103124) AT	(315126.00, 5812711.00) DC
19.	3.47036	(18020224) AT	(314916.00, 5812119.00) DC	59.	2.46572	(18041724) AT	(314916.00, 5812119.00) DC
20.	3.31611	(18061024) AT	(314863.00, 5812313.00) DC	60.	2.46359	(18041724) AT	(314863.00, 5812313.00) DC
21.	3.22035	(18022024) AT	(314916.00, 5812119.00) DC	61.	2.44744	(18030624) AT	(315126.00, 5812711.00) DC
22.	3.20358	(18052524) AT	(315126.00, 5812711.00) DC	62.	2.42606	(18091024) AT	(314916.00, 5812119.00) DC
23.	3.14326	(18030624) AT	(314863.00, 5812313.00) DC	63.	2.41523	(18030624) AT	(314916.00, 5812119.00) DC
24.	3.12681	(18102924) AT	(314863.00, 5812313.00) DC	64.	2.41374	(18021924) AT	(314892.00, 5812586.00) DC
25.	3.10263	(18022024) AT	(314863.00, 5812313.00) DC	65.	2.40551	(18100524) AT	(314892.00, 5812586.00) DC
26.	3.03622	(18111824) AT	(314916.00, 5812119.00) DC	66.	2.38842	(18113024) AT	(315126.00, 5812711.00) DC
27.	3.02422	(18080124) AT	(314916.00, 5812119.00) DC	67.	2.38775	(18011024) AT	(314863.00, 5812313.00) DC
28.	2.96095	(18120524) AT	(314916.00, 5812119.00) DC	68.	2.36989	(18011624) AT	(314863.00, 5812313.00) DC
29.	2.95034	(18022624) AT	(314916.00, 5812119.00) DC	69.	2.35665	(18061024) AT	(314916.00, 5812119.00) DC
30.	2.93036	(18092524) AT	(315126.00, 5812711.00) DC	70.	2.33710	(18092424) AT	(314892.00, 5812586.00) DC
31.	2.91930	(18030624) AT	(314892.00, 5812586.00) DC	71.	2.32976	(18111424) AT	(315126.00, 5812711.00) DC
32.	2.87010	(18011624) AT	(314916.00, 5812119.00) DC	72.	2.31370	(18093024) AT	(314863.00, 5812313.00) DC
33.	2.84538	(18030224) AT	(314863.00, 5812313.00) DC	73.	2.27615	(18062524) AT	(314863.00, 5812313.00) DC
34.	2.81872	(18101024) AT	(314916.00, 5812119.00) DC	74.	2.27280	(18092624) AT	(314863.00, 5812313.00) DC
35.	2.80062	(18032224) AT	(314916.00, 5812119.00) DC	75.	2.26761	(18021324) AT	(314916.00, 5812119.00) DC
36.	2.77587	(18040324) AT	(314916.00, 5812119.00) DC	76.	2.25414	(18120524) AT	(314863.00, 5812313.00) DC
37.	2.76570	(18092424) AT	(315126.00, 5812711.00) DC	77.	2.25251	(18060224) AT	(315126.00, 5812711.00) DC
38.	2.75281	(18102824) AT	(315126.00, 5812711.00) DC	78.	2.25020	(18030224) AT	(314606.00, 5812043.00) DC
39.	2.74487	(18022624) AT	(314892.00, 5812586.00) DC	79.	2.24378	(18102124) AT	(314916.00, 5812119.00) DC
40.	2.72148	(18101124) AT	(314892.00, 5812586.00) DC	80.	2.23802	(18041824) AT	(314606.00, 5812043.00) DC

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE
81.	2.23124	(18030524) AT	(315126.00, 5812711.00) DC	91.	2.14862	(18102624) AT	(315126.00, 5812711.00) DC
82.	2.22619	(18090224) AT	(315126.00, 5812711.00) DC	92.	2.12901	(18111624) AT	(315126.00, 5812711.00) DC
83.	2.21687	(18052524) AT	(315192.00, 5812912.00) DC	93.	2.12818	(18032224) AT	(314863.00, 5812313.00) DC
84.	2.21323	(18031624) AT	(314916.00, 5812119.00) DC	94.	2.12475	(18082724) AT	(315126.00, 5812711.00) DC
85.	2.21012	(18011624) AT	(314892.00, 5812586.00) DC	95.	2.12435	(18031424) AT	(315126.00, 5812711.00) DC
86.	2.20319	(18121124) AT	(314863.00, 5812313.00) DC	96.	2.12043	(18032924) AT	(314863.00, 5812313.00) DC
87.	2.17987	(18082324) AT	(314863.00, 5812313.00) DC	97.	2.11089	(18112924) AT	(315126.00, 5812711.00) DC
88.	2.16984	(18102824) AT	(315192.00, 5812912.00) DC	98.	2.10925	(18082324) AT	(314892.00, 5812586.00) DC
89.	2.16722	(18021824) AT	(314916.00, 5812119.00) DC	99.	2.10702	(18030824) AT	(314892.00, 5812586.00) DC
90.	2.15752	(18042724) AT	(314863.00, 5812313.00) DC	100.	2.10532	(18062624) AT	(314892.00, 5812586.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE
1.	1.27113	(18032124) AT	(314863.00, 5812313.00) DC	41.	0.69134	(18022624) AT	(314892.00, 5812586.00) DC
2.	1.22095	(18032124) AT	(314916.00, 5812119.00) DC	42.	0.69095	(18020124) AT	(314892.00, 5812586.00) DC
3.	1.06007	(18032124) AT	(314892.00, 5812586.00) DC	43.	0.68086	(18111724) AT	(315192.00, 5812912.00) DC
4.	0.99198	(18011024) AT	(314916.00, 5812119.00) DC	44.	0.68047	(18032224) AT	(314863.00, 5812313.00) DC
5.	0.98095	(18030224) AT	(314916.00, 5812119.00) DC	45.	0.67764	(18031624) AT	(314916.00, 5812119.00) DC
6.	0.97602	(18101024) AT	(314863.00, 5812313.00) DC	46.	0.67603	(18020224) AT	(314863.00, 5812313.00) DC
7.	0.95197	(18041824) AT	(314916.00, 5812119.00) DC	47.	0.67599	(18061024) AT	(314863.00, 5812313.00) DC
8.	0.92531	(18010524) AT	(314916.00, 5812119.00) DC	48.	0.67508	(18030224) AT	(314863.00, 5812313.00) DC
9.	0.92092	(18020324) AT	(314916.00, 5812119.00) DC	49.	0.66827	(18062624) AT	(314916.00, 5812119.00) DC
10.	0.89409	(18032224) AT	(314916.00, 5812119.00) DC	50.	0.66015	(18100524) AT	(315126.00, 5812711.00) DC
11.	0.89222	(18020324) AT	(314863.00, 5812313.00) DC	51.	0.64390	(18091024) AT	(314916.00, 5812119.00) DC
12.	0.88036	(18101024) AT	(314916.00, 5812119.00) DC	52.	0.64100	(18080124) AT	(314916.00, 5812119.00) DC
13.	0.86227	(18020124) AT	(314863.00, 5812313.00) DC	53.	0.63721	(18010524) AT	(314863.00, 5812313.00) DC
14.	0.84371	(18082824) AT	(314916.00, 5812119.00) DC	54.	0.63519	(18012524) AT	(314916.00, 5812119.00) DC
15.	0.82813	(18020124) AT	(314916.00, 5812119.00) DC	55.	0.63433	(18011624) AT	(314916.00, 5812119.00) DC
16.	0.82673	(18022024) AT	(314916.00, 5812119.00) DC	56.	0.63386	(18062624) AT	(315126.00, 5812711.00) DC
17.	0.82243	(18022624) AT	(314916.00, 5812119.00) DC	57.	0.62811	(18021924) AT	(314892.00, 5812586.00) DC
18.	0.80883	(18022624) AT	(314863.00, 5812313.00) DC	58.	0.62768	(18092524) AT	(315126.00, 5812711.00) DC
19.	0.80638	(18030624) AT	(315126.00, 5812711.00) DC	59.	0.62694	(18102124) AT	(314916.00, 5812119.00) DC
20.	0.80056	(18101024) AT	(314892.00, 5812586.00) DC	60.	0.62473	(18052524) AT	(314916.00, 5812119.00) DC
21.	0.79031	(18101124) AT	(314916.00, 5812119.00) DC	61.	0.62210	(18102824) AT	(315126.00, 5812711.00) DC
22.	0.78986	(18111824) AT	(314916.00, 5812119.00) DC	62.	0.62026	(18101124) AT	(315126.00, 5812711.00) DC
23.	0.75976	(18061024) AT	(314916.00, 5812119.00) DC	63.	0.61104	(18010424) AT	(314916.00, 5812119.00) DC
24.	0.74340	(18121124) AT	(314916.00, 5812119.00) DC	64.	0.60869	(18020224) AT	(315126.00, 5812711.00) DC

25.	0.73296 (18030624) AT (314916.00, 5812119.00)	DC	65.	0.60719 (18102924) AT (314916.00, 5812119.00)	DC
26.	0.73147 (18020324) AT (314892.00, 5812586.00)	DC	66.	0.60622 (18052524) AT (315126.00, 5812711.00)	DC
27.	0.73037 (18032124) AT (315126.00, 5812711.00)	DC	67.	0.60079 (18111824) AT (314863.00, 5812313.00)	DC
28.	0.72993 (18022024) AT (314863.00, 5812313.00)	DC	68.	0.60061 (18020324) AT (315126.00, 5812711.00)	DC
29.	0.72980 (18020224) AT (314916.00, 5812119.00)	DC	69.	0.60029 (18101124) AT (314892.00, 5812586.00)	DC
30.	0.72905 (18030624) AT (314863.00, 5812313.00)	DC	70.	0.59661 (18051424) AT (314916.00, 5812119.00)	DC
31.	0.72848 (18030624) AT (314892.00, 5812586.00)	DC	71.	0.59110 (18022024) AT (314892.00, 5812586.00)	DC
32.	0.72275 (18021924) AT (314863.00, 5812313.00)	DC	72.	0.59023 (18061924) AT (314916.00, 5812119.00)	DC
33.	0.71775 (18111724) AT (315126.00, 5812711.00)	DC	73.	0.58721 (18092624) AT (314916.00, 5812119.00)	DC
34.	0.71359 (18092424) AT (315126.00, 5812711.00)	DC	74.	0.58618 (18092524) AT (315192.00, 5812912.00)	DC
35.	0.70197 (18011024) AT (314863.00, 5812313.00)	DC	75.	0.58280 (18011624) AT (314863.00, 5812313.00)	DC
36.	0.70153 (18101124) AT (314863.00, 5812313.00)	DC	76.	0.58253 (18020124) AT (315126.00, 5812711.00)	DC
37.	0.69938 (18021924) AT (314916.00, 5812119.00)	DC	77.	0.57690 (18111124) AT (314916.00, 5812119.00)	DC
38.	0.69818 (18093024) AT (314916.00, 5812119.00)	DC	78.	0.57676 (18021324) AT (314916.00, 5812119.00)	DC
39.	0.69254 (18032924) AT (314916.00, 5812119.00)	DC	79.	0.57585 (18102824) AT (315192.00, 5812912.00)	DC
40.	0.69187 (18082824) AT (314863.00, 5812313.00)	DC	80.	0.57411 (18061024) AT (314892.00, 5812586.00)	DC

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE
81.	0.57364 (18021624) AT (314916.00, 5812119.00)	DC	91.	0.55149 (18082424) AT (314916.00, 5812119.00)	DC
82.	0.57024 (18022624) AT (315126.00, 5812711.00)	DC	92.	0.55052 (18030724) AT (315126.00, 5812711.00)	DC
83.	0.56994 (18121124) AT (314863.00, 5812313.00)	DC	93.	0.55036 (18041824) AT (314606.00, 5812043.00)	DC
84.	0.56732 (18093024) AT (314863.00, 5812313.00)	DC	94.	0.54996 (18041724) AT (314916.00, 5812119.00)	DC
85.	0.56477 (18100524) AT (314892.00, 5812586.00)	DC	95.	0.54658 (18120524) AT (314916.00, 5812119.00)	DC
86.	0.56316 (18020224) AT (314892.00, 5812586.00)	DC	96.	0.54591 (18092624) AT (315126.00, 5812711.00)	DC
87.	0.56063 (18092424) AT (314892.00, 5812586.00)	DC	97.	0.54221 (18092024) AT (314916.00, 5812119.00)	DC
88.	0.55957 (18030624) AT (315192.00, 5812912.00)	DC	98.	0.53917 (18011624) AT (315126.00, 5812711.00)	DC
89.	0.55759 (18030524) AT (315126.00, 5812711.00)	DC	99.	0.53807 (18082324) AT (314916.00, 5812119.00)	DC
90.	0.55750 (18092424) AT (315192.00, 5812912.00)	DC	100.	0.53626 (18022024) AT (315126.00, 5812711.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE SUMMARY OF MAXIMUM PERIOD (8688 HRS) RESULTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.88999 AT (314916.00, 5812119.00, 113.00, 113.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.77802 AT (315126.00, 5812711.00, 113.00, 113.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.72448 AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.61372 AT (315192.00, 5812912.00, 113.00, 113.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.60572 AT (314892.00, 5812586.00, 113.00, 113.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.38086 AT (315041.00, 5813162.00, 113.00, 113.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.34602 AT (314606.00, 5812043.00, 113.00, 113.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.31144 AT (315094.00, 5813392.00, 113.00, 113.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.30681 AT (315256.00, 5813493.00, 113.00, 113.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.30594 AT (314593.00, 5811900.00, 113.00, 113.00, 0.00)	DC	
SHIP	1ST HIGHEST VALUE IS	0.30304 AT (314916.00, 5812119.00, 113.00, 113.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.22630 AT (315126.00, 5812711.00, 113.00, 113.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.22320 AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.18229 AT (315192.00, 5812912.00, 113.00, 113.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.18088 AT (314892.00, 5812586.00, 113.00, 113.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.12917 AT (314606.00, 5812043.00, 113.00, 113.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.12165 AT (314593.00, 5811900.00, 113.00, 113.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.11437 AT (315041.00, 5813162.00, 113.00, 113.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.09473 AT (315256.00, 5813493.00, 113.00, 113.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.09426 AT (315094.00, 5813392.00, 113.00, 113.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	6.30502 ON 18032124:	AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
SHIP	HIGH 1ST HIGH VALUE IS	1.27113 ON 18032124:	AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 14 Warning Message(s)
A Total of 0 Informational Message(s)

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A Total of         8688 Hours Were Processed

A Total of            0 Calm Hours Identified

A Total of            0 Missing Hours Identified (  0.00 Percent)


   ******** FATAL ERROR MESSAGES ********
             ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     101        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     102        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     103        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     104        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     105        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     113        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     120        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     121        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     122        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     123        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     124        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     131        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
MX W403     322       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W394       1       METEXT: Met data may be from outdated version of AERMET:     No NAD/ADJ

   ***********************************
   *** AERMOD Finishes Successfully ***
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7.5 AERMOD output list file for PM2.5 (shortened for clarity)

All modelling files can be provided for peer review upon request.

PM2.5 for Stage 2 with meteorology for the year 2018, discrete receptors only

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CO STARTING
   TITLEONE Steel Cement PM10 - Cement Grinding Mill and Ship Unloading.  24 hour operation.
   TITLETWO Flat terrain. PRIME bldg wakes.  Stage 2 operation, PM2.5, 2018
   MODELOPT  CONC   FLAT  NOCHKD
   AVERTIME  24 PERIOD
   POLLUTID  PM10
   RUNORNOT  RUN
   ERRORFIL  ERRORS.OUT
CO FINISHED

SO STARTING
   ELEVUNIT METERS

** SOURCE TYPE AND LOCATION

** Proposed cement grinding mill sources
   LOCATION 1CMBFS POINT   315367 5811893 0
   LOCATION 2CMBFS POINT   315364 5811866 0
   LOCATION 1CMECS VOLUME  315358 5811901 0
   LOCATION 2CMECS VOLUME  315356 5811875 0
   LOCATION 1CMFBE VOLUME  315333 5811892 0
   LOCATION 2CMFBE VOLUME  315331 5811863 0
   LOCATION 1CBE   VOLUME  315385 5811864 0
   LOCATION 2CBE   VOLUME  315390 5811872 0
   LOCATION DS1F   VOLUME  315436 5811861 0
   LOCATION DS2F   VOLUME  315426 5811849 0
   LOCATION DS3F   VOLUME  315414 5811838 0
   LOCATION DS4F   VOLUME  315422 5811864 0
   LOCATION DS5F   VOLUME  315411 5811852 0
   LOCATION DS6F   VOLUME  315398 5811840 0
   LOCATION DS7F   VOLUME  315406 5811867 0
   LOCATION DS8F   VOLUME  315396 5811855 0
   LOCATION DS9F   VOLUME  315383 5811843 0
   LOCATION WB1LOF VOLUME  315423 5811850 0
   LOCATION WB2LOF VOLUME  315418 5811853 0
   LOCATION WB3LOF VOLUME  315408 5811853 0
   LOCATION WB4LOF VOLUME  315405 5811856 0
   LOCATION WB5LOF VOLUME  315393 5811857 0
   LOCATION WB6LOF VOLUME  315389 5811858 0
   LOCATION RMCSB1 VOLUME  315316 5811892 0
   LOCATION RMCSB2 VOLUME  315326 5811891 0
   LOCATION CS01   VOLUME  315399 5811933 0
   LOCATION CS02   VOLUME  315383 5811934 0
   LOCATION CS03   VOLUME  315365 5811936 0
   LOCATION CS04   VOLUME  315345 5811939 0
   LOCATION CS05   VOLUME  315325 5811941 0
   LOCATION CS06   VOLUME  315310 5811943 0
   LOCATION CS07   VOLUME  315301 5811943 0
   LOCATION CS08   VOLUME  315286 5811945 0
   LOCATION CS09   VOLUME  315270 5811947 0
   LOCATION CS10   VOLUME  315255 5811949 0
   LOCATION CS11   VOLUME  315242 5811951 0
   LOCATION DUMPST VOLUME  315284 5811908 0

** Proposed ship unloading
   LOCATION SHIPEX VOLUME  315629 5811957 0
   LOCATION HOP1   VOLUME  315617 5811966 0
   LOCATION HOP2   VOLUME  315602 5811923 0
   LOCATION HOP3   VOLUME  315587 5811881 0
   LOCATION CSP1   VOLUME  315583 5811870 0
   LOCATION CSP2   VOLUME  315497 5811899 0
   LOCATION CSP3   VOLUME  315418 5811927 0
   LOCATION CSP4   VOLUME  315418 5811955 0
   LOCATION CSP5   VOLUME  315413 5811907 0
   LOCATION CSP6   VOLUME  315324 5811900 0
   LOCATION CSP7   VOLUME  315317 5811845 0
   LOCATION CSP8   VOLUME  315231 5811912 0
   LOCATION CSP9   VOLUME  315236 5811948 0

** Existing sources - slag grinding facility
   LOCATION DP1    POINT   315481 5811934 0
   LOCATION ECS    VOLUME  315492 5811976 0
   LOCATION SILO1  VOLUME  315458 5811956 0
   LOCATION SILO3  VOLUME  315444 5811957 0
   LOCATION SBE    VOLUME  315464 5811955 0

** Existing sources - dryer, mixing and bagging plant
   LOCATION DC1    VOLUME  315294 5812057 0
   LOCATION DC2    VOLUME  315299 5812057 0
   LOCATION DC3    VOLUME  315292 5812048 0
   LOCATION DP2    POINT   315301 5812063 0

** SOURCE DISCHARGE CONDITIONS AND MASS RATES
** Point Source     QS     HS     TS     VS     DS
** Volume sources   QS     RELHT  SIG-Y  SIG-Z

** Proposed cement grinding mill sources
   SRCPARAM 1CMBFS 0.0606 37    333     10.0   0.366
   SRCPARAM 2CMBFS 0.0606 37    333     10.0   0.366
   SRCPARAM 1CMECS 0.0056  3      3      3
   SRCPARAM 2CMECS 0.0056  3      3      3
   SRCPARAM 1CMFBE 0.0056 23      3      3
   SRCPARAM 2CMFBE 0.0056 23      3      3
   SRCPARAM 1CBE   0.0056 54      3      3
   SRCPARAM 2CBE   0.0056 54      3      3
   SRCPARAM DS1F   0.0096 47      3      3
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   SRCPARAM DS2F   0.0096 47      3      3
   SRCPARAM DS3F   0.0096 47      3      3
   SRCPARAM DS4F   0.0096 47      3      3
   SRCPARAM DS5F   0.0000 47      3      3
   SRCPARAM DS6F   0.0000 47      3      3
   SRCPARAM DS7F   0.0000 47      3      3
   SRCPARAM DS8F   0.0000 47      3      3
   SRCPARAM DS9F   0.0000 47      3      3
   SRCPARAM WB1LOF 0.0031  7      3      3
   SRCPARAM WB2LOF 0.0031  7      3      3
   SRCPARAM WB3LOF 0.0031  7      3      3
   SRCPARAM WB4LOF 0.0031  7      3      3
   SRCPARAM WB5LOF 0.0031  7      3      3
   SRCPARAM WB6LOF 0.0031  7      3      3
   SRCPARAM RMCSB1 0.0042 19      3      3
   SRCPARAM RMCSB2 0.0000 19      3      3
   SRCPARAM CS01   0.0104 25      3      3
   SRCPARAM CS02   0.0104 25      3      3
   SRCPARAM CS03   0.0104 25      3      3
   SRCPARAM CS04   0.0104 25      3      3
   SRCPARAM CS05   0.0104 25      3      3
   SRCPARAM CS06   0.0104 25      3      3
   SRCPARAM CS07   0.0000 25      3      3
   SRCPARAM CS08   0.0000 25      3      3
   SRCPARAM CS09   0.0000 25      3      3
   SRCPARAM CS10   0.0000 25      3      3
   SRCPARAM CS11   0.0000 25      3      3
   SRCPARAM DUMPST 0.0096 14      3      3

** Proposed ship unloading
   SRCPARAM SHIPEX 0.0052 20      1      3
   SRCPARAM HOP1   0.0542 11      3      3
   SRCPARAM HOP2   0.0542 11      3      3
   SRCPARAM HOP3   0.0000 11      3      3
   SRCPARAM CSP1   0.0075  3      3      3
   SRCPARAM CSP2   0.0075  6      3      3
   SRCPARAM CSP3   0.0075  6      3      3
   SRCPARAM CSP4   0.0075 17      3      3
   SRCPARAM CSP5   0.0075 17      3      3
   SRCPARAM CSP6   0.0075 12      3      3
   SRCPARAM CSP7   0.0075 12      3      3
   SRCPARAM CSP8   0.0075  3      3      3
   SRCPARAM CSP9   0.0075  3      3      3

** Existing sources - slag grinding facility
   SRCPARAM DP1    0.0403 28    358       11    2.4
   SRCPARAM ECS    0.0036 29.3    3        3
   SRCPARAM SILO1  0.0018  0      3.5     16
   SRCPARAM SILO3  0.0018  0      3.5     12
   SRCPARAM SBE    0.0018 21      3        3

** Existing sources - dryer, mixing and bagging plant
   SRCPARAM DC1    0.0063 39       3      3
   SRCPARAM DC2    0.0063 39       3      3
   SRCPARAM DC3    0.0250 22.5     3      3
   SRCPARAM DP2    0.0158 24.4   333     12.   1.130

SO BUILDHGT DP1        21.00   21.00   21.00   21.00   34.00   34.00
SO BUILDHGT DP1        34.00   34.00   27.80   27.80   27.80   25.00
SO BUILDHGT DP1        25.00   25.00   25.00   25.00   25.00   21.00
SO BUILDHGT DP1        21.00   21.00   21.00   21.00   27.80   27.80
SO BUILDHGT DP1        27.80   25.00   25.00   25.00   25.00   25.00
SO BUILDHGT DP1        25.00   25.00   25.00   25.00   25.00   21.00
SO BUILDWID DP1         9.81   15.38   20.50   25.00   38.50   36.00
SO BUILDWID DP1        34.00   57.50   65.50   58.50   87.50  143.50
SO BUILDWID DP1        25.50   28.00   29.50   30.25   30.12   11.00
SO BUILDWID DP1         9.88   15.38   20.50   25.00  176.50  142.00
SO BUILDWID DP1       120.00   94.00   65.50   79.50  115.00  143.50
SO BUILDWID DP1        25.50   28.00   29.50   30.25   30.12   11.00
SO BUILDLEN DP1        34.50   34.50   34.50   32.50   39.25   21.50
SO BUILDLEN DP1        24.25   34.38  180.41  179.31  182.62  186.75
SO BUILDLEN DP1        29.50   28.00   26.00   23.00   19.50   34.00
SO BUILDLEN DP1        34.50   35.00   34.50   32.50  156.00  170.00
SO BUILDLEN DP1       179.00  230.12  226.53  221.25  199.50  186.75
SO BUILDLEN DP1        29.75   28.00   26.00   23.00   19.50   34.00
SO XBADJ    DP1         8.50    8.00    7.50    7.50 -149.75 -136.25
SO XBADJ    DP1      -139.75 -147.25 -244.56 -242.69 -238.38 -227.00
SO XBADJ    DP1       -56.75  -55.50  -53.50  -49.00  -43.00  -41.00
SO XBADJ    DP1       -42.50  -43.00  -42.50  -40.00   36.50   46.00
SO XBADJ    DP1        53.75   12.12   18.00   21.38   38.88   40.00
SO XBADJ    DP1        27.25   27.50   27.00   26.00   24.00    7.00
SO YBADJ    DP1        -2.78    1.56    6.00   10.00   25.75   23.50
SO YBADJ    DP1         1.00  -34.25    5.75  -21.75  -47.75  -58.25
SO YBADJ    DP1         0.25   -7.25  -14.25  -21.12  -27.31    7.50
SO YBADJ    DP1         2.69   -1.69   -5.75  -10.00  -95.25  -82.00
SO YBADJ    DP1       -58.00  -32.50   -5.75   11.25   36.50   57.75
SO YBADJ    DP1        -0.25    7.25   14.50   21.12   27.19   -7.50


SO BUILDHGT DP2        27.80   27.80   27.80   27.80   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   39.00   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   27.80   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   25.00   27.80   27.80   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   39.00   39.00   39.00   39.00
SO BUILDHGT DP2        39.00   39.00   27.80   34.00   34.00   27.80
SO BUILDWID DP2       179.25  182.62  180.25  172.75   20.00   22.00
SO BUILDWID DP2        22.50   23.50   23.00   23.00   24.00   24.00
SO BUILDWID DP2        23.50   22.50  170.25   17.75   14.62   11.06
SO BUILDWID DP2         8.69  199.50  180.25  172.75   20.50   22.00
SO BUILDWID DP2        22.50   23.00   23.00   23.50   24.50   24.50
SO BUILDWID DP2        24.00   22.25  170.25   36.50   34.38  180.41
SO BUILDLEN DP2        58.50   88.00  114.50  137.00   22.50   20.50
SO BUILDLEN DP2        17.75   14.75   11.09    8.69   12.25   15.50
SO BUILDLEN DP2        18.25   20.50  142.00   23.00   23.00   23.00
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SO BUILDLEN DP2        23.50  115.00  114.50  137.00   22.50   20.25
SO BUILDLEN DP2        18.00   14.62   11.06    8.69   12.25   15.50
SO BUILDLEN DP2        18.25   20.50  142.00   38.50   39.00   65.50
SO XBADJ    DP2      -146.50 -151.50 -151.50 -147.00  -18.25  -17.50
SO XBADJ    DP2       -16.00  -14.25  -12.00  -10.88  -11.88  -12.50
SO XBADJ    DP2       -12.50  -12.50   49.00  -11.50  -10.00   -8.50
SO XBADJ    DP2        -7.50   38.00   37.00   10.00   -4.50   -3.00
SO XBADJ    DP2        -1.75   -0.50    0.91    2.12   -0.50   -3.25
SO XBADJ    DP2        -5.50   -8.50 -190.50 -203.00 -202.50 -156.00
SO YBADJ    DP2       -46.69  -66.31  -83.88  -98.88    2.00    0.50
SO YBADJ    DP2        -0.75   -1.75   -3.00   -4.00   -5.00   -6.00
SO YBADJ    DP2        -6.25   -7.00  -39.62   -7.12   -6.94   -6.44
SO YBADJ    DP2        -6.53   74.75   83.88   98.88   -2.25   -1.00
SO YBADJ    DP2         0.25    2.00    3.00    4.25    5.25    5.75
SO YBADJ    DP2         6.50    6.88   39.62    8.75  -24.81  -25.64


SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 1CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDWID 1CMBFS     31.69   34.12   35.25   36.50   37.00   36.00
SO BUILDWID 1CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 1CMBFS     41.50   39.50   37.75   36.50   34.38   31.22
SO BUILDWID 1CMBFS     31.75   34.12   35.25   36.50   37.00   36.50
SO BUILDWID 1CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 1CMBFS     41.50   39.25   37.75   36.50   34.38   31.19
SO BUILDLEN 1CMBFS     51.00   42.50   39.50   39.00   37.50   21.50
SO BUILDLEN 1CMBFS     24.25   34.38   31.19   29.38   34.12   36.50
SO BUILDLEN 1CMBFS     37.75   56.00   37.00   38.50   39.00   55.00
SO BUILDLEN 1CMBFS     51.50   42.00   39.50   39.00   37.75   21.50
SO BUILDLEN 1CMBFS     24.50   34.50   31.19   29.38   34.00   36.50
SO BUILDLEN 1CMBFS     37.75   56.50   37.50   38.50   39.00   54.50
SO XBADJ    1CMBFS    -42.50  -43.50  -33.50  -34.50  -34.25  -17.00
SO XBADJ    1CMBFS    -18.75  -27.88  -23.97  -21.19  -16.50  -12.50
SO XBADJ    1CMBFS     -7.75  -21.00  -20.00  -17.50  -15.50  -12.00
SO XBADJ    1CMBFS     -8.50    1.00   -6.50   -4.50   -3.75   -4.50
SO XBADJ    1CMBFS     -5.75   -6.62   -7.22   -8.25  -17.62  -24.25
SO XBADJ    1CMBFS    -30.00  -35.00  -17.50  -20.50  -23.50  -42.50
SO YBADJ    1CMBFS      5.22   -0.56    5.12    4.00    3.00    2.00
SO YBADJ    1CMBFS      0.50  -21.25   -7.00  -10.00  -21.75  -20.75
SO YBADJ    1CMBFS    -18.75  -16.25  -14.12  -12.50  -10.56   -8.36
SO YBADJ    1CMBFS     -5.25    0.69   -4.88   -4.00   -3.00   -1.75
SO YBADJ    1CMBFS     -0.50   21.25    7.00   10.00   21.75   20.75
SO YBADJ    1CMBFS     18.75   16.12   14.38   12.75   10.69    8.38


SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDHGT 2CMBFS     34.00   34.00   34.00   34.00   34.00   34.00
SO BUILDWID 2CMBFS     31.69   34.12   35.25   36.50   37.00   36.00
SO BUILDWID 2CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 2CMBFS     41.50   39.50   37.75   36.50   34.38   31.22
SO BUILDWID 2CMBFS     31.75   34.12   35.25   36.50   37.00   36.50
SO BUILDWID 2CMBFS     34.00   42.50   38.00   37.00   42.50   42.50
SO BUILDWID 2CMBFS     41.50   39.25   37.75   36.50   34.38   31.19
SO BUILDLEN 2CMBFS     51.00   42.50   39.50   39.00   37.50   21.50
SO BUILDLEN 2CMBFS     24.25   34.38   31.19   29.38   34.12   36.50
SO BUILDLEN 2CMBFS     37.75   56.00   37.00   38.50   39.00   55.00
SO BUILDLEN 2CMBFS     51.50   42.00   39.50   39.00   37.75   21.50
SO BUILDLEN 2CMBFS     24.50   34.50   31.19   29.38   34.00   36.50
SO BUILDLEN 2CMBFS     37.75   56.50   37.50   38.50   39.00   54.50
SO XBADJ    2CMBFS    -15.50  -17.00   -8.50  -12.00  -14.50   -0.75
SO XBADJ    2CMBFS     -6.50  -20.25  -20.97  -22.88  -22.88  -23.25
SO XBADJ    2CMBFS    -23.00  -40.00  -41.50  -42.00  -41.50  -39.00
SO XBADJ    2CMBFS    -35.50  -25.50  -31.00  -27.00  -23.25  -20.50
SO XBADJ    2CMBFS    -17.75  -14.25  -10.22   -6.56  -11.25  -13.50
SO XBADJ    2CMBFS    -15.00  -16.50    4.50    3.50    2.50  -15.50
SO YBADJ    2CMBFS      6.97    5.81   16.12   19.00   21.50   24.00
SO YBADJ    2CMBFS     25.00    4.75   20.00   17.00    4.75    4.25
SO YBADJ    2CMBFS      4.25    3.25    1.88   -0.50   -2.94   -5.36
SO YBADJ    2CMBFS     -7.00   -5.69  -15.88  -19.25  -22.00  -23.75
SO YBADJ    2CMBFS    -25.00   -4.75  -20.00  -17.50   -4.25   -4.25
SO YBADJ    2CMBFS     -3.75   -3.62   -1.88    0.50    3.06    5.38

SO SRCGROUP ALL
** Proposed ship unloading which occurrs at most for 50% of year (excluding background)
SO SRCGROUP SHIP SHIPEX HOP1-HOP3 CSP1-CSP9
SO FINISHED

RE STARTING
RE DISCCART   315693     5813702
RE DISCCART   315431     5813612
RE DISCCART   315256     5813493
RE DISCCART   315094     5813392
RE DISCCART   315041     5813162
RE DISCCART   315192     5812912
RE DISCCART   315126     5812711
RE DISCCART   314892     5812586
RE DISCCART   314863     5812313
RE DISCCART   314916     5812119
RE DISCCART   314606     5812043
RE DISCCART   314593     5811900
RE DISCCART   314389     5811780
RE DISCCART   314370     5811624
RE DISCCART   313975     5811348
RE DISCCART   313946     5810974
RE DISCCART   314264     5810935
RE DISCCART   313575     5810383
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RE DISCCART   313866     5809975
RE DISCCART   314134     5809925
RE DISCCART   314407     5809808
RE DISCCART   316523     5810214
RE DISCCART   316950     5810320
RE DISCCART   317390     5810444
RE DISCCART   316547     5810619
RE FINISHED

ME STARTING
   SURFFILE  "yarraville2018.sfc"
   PROFFILE  "yarraville2018.pfl"
   SURFDATA  00011  2018  Footscray
   UAIRDATA  00099  2018  Footscray
   SITEDATA  00022  2018  Footscray
   PROFBASE  113.0 METERS
ME FINISHED
OU STARTING
   RECTABLE  ALLAVE 1ST
   MAXTABLE  ALLAVE 100
   POSTFILE  24 ALL PLOT SteelCement-Stage2-PM2-5-24HR-2018.PLT
   POSTFILE  24 SHIP PLOT SteelCement-Stage2-ship-PM2-5-24HR-2018.PLT
   SUMMFILE  SteelCementPM2-5.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of           13 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320     101        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     102        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     103        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     104        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     105        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     113        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     120        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     121        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     122        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     123        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     124        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 SO W320     131        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
 MX W403     322       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

                                      ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Assumes Receptors on FLAT Terrain.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        NOCHKD   - Suppresses checking of date sequence in meteorology files

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM10

 **Model Calculates  1 Short Term Average(s) of:  24-HR
     and Calculates PERIOD Averages

 **This Run Includes:     59 Source(s);       2 Source Group(s); and      25 Receptor(s)

                with:      4 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     55 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  19191
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**Output Options Selected:
        Model Outputs Tables of PERIOD Averages by Receptor
        Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
        Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE Keyword)
        Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
        Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   113.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                             ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   ERRORS.OUT
**File for Summary of Results:   SteelCementPM2-5.SUM
```

*** POINT SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/ HOR	EMIS RATE SCALAR VARY BY
1CMBFS	0	0.60600E-01	315367.0	5811893.0	113.0	37.00	333.00	10.00	0.37	YES	NO	NO	
2CMBFS	0	0.60600E-01	315364.0	5811866.0	113.0	37.00	333.00	10.00	0.37	YES	NO	NO	
DP1	0	0.40300E-01	315481.0	5811934.0	113.0	28.00	358.00	11.00	2.40	YES	NO	NO	
DP2	0	0.15800E-01	315301.0	5812063.0	113.0	24.40	333.00	12.00	1.13	YES	NO	NO	

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1CMECS	0	0.56000E-02	315358.0	5811901.0	113.0	3.00	3.00	3.00	NO	
2CMECS	0	0.56000E-02	315356.0	5811875.0	113.0	3.00	3.00	3.00	NO	
1CMFBE	0	0.56000E-02	315333.0	5811892.0	113.0	23.00	3.00	3.00	NO	
2CMFBE	0	0.56000E-02	315331.0	5811863.0	113.0	23.00	3.00	3.00	NO	
1CBE	0	0.56000E-02	315385.0	5811864.0	113.0	54.00	3.00	3.00	NO	
2CBE	0	0.56000E-02	315390.0	5811872.0	113.0	54.00	3.00	3.00	NO	
DS1F	0	0.96000E-02	315436.0	5811861.0	113.0	47.00	3.00	3.00	NO	
DS2F	0	0.96000E-02	315426.0	5811849.0	113.0	47.00	3.00	3.00	NO	
DS3F	0	0.96000E-02	315414.0	5811838.0	113.0	47.00	3.00	3.00	NO	
DS4F	0	0.96000E-02	315422.0	5811864.0	113.0	47.00	3.00	3.00	NO	
DS5F	0	0.00000E+00	315411.0	5811852.0	113.0	47.00	3.00	3.00	NO	
DS6F	0	0.00000E+00	315398.0	5811840.0	113.0	47.00	3.00	3.00	NO	
DS7F	0	0.00000E+00	315406.0	5811867.0	113.0	47.00	3.00	3.00	NO	
DS8F	0	0.00000E+00	315396.0	5811855.0	113.0	47.00	3.00	3.00	NO	
DS9F	0	0.00000E+00	315383.0	5811843.0	113.0	47.00	3.00	3.00	NO	
WB1LOF	0	0.31000E-02	315423.0	5811850.0	113.0	7.00	3.00	3.00	NO	
WB2LOF	0	0.31000E-02	315418.0	5811853.0	113.0	7.00	3.00	3.00	NO	
WB3LOF	0	0.31000E-02	315408.0	5811853.0	113.0	7.00	3.00	3.00	NO	
WB4LOF	0	0.31000E-02	315405.0	5811856.0	113.0	7.00	3.00	3.00	NO	
WB5LOF	0	0.31000E-02	315393.0	5811857.0	113.0	7.00	3.00	3.00	NO	
WB6LOF	0	0.31000E-02	315389.0	5811858.0	113.0	7.00	3.00	3.00	NO	
RMCSB1	0	0.42000E-02	315316.0	5811892.0	113.0	19.00	3.00	3.00	NO	
RMCSB2	0	0.00000E+00	315326.0	5811891.0	113.0	19.00	3.00	3.00	NO	
CS01	0	0.10400E-01	315399.0	5811933.0	113.0	25.00	3.00	3.00	NO	
CS02	0	0.10400E-01	315383.0	5811934.0	113.0	25.00	3.00	3.00	NO	
CS03	0	0.10400E-01	315365.0	5811936.0	113.0	25.00	3.00	3.00	NO	
CS04	0	0.10400E-01	315345.0	5811939.0	113.0	25.00	3.00	3.00	NO	
CS05	0	0.10400E-01	315325.0	5811941.0	113.0	25.00	3.00	3.00	NO	
CS06	0	0.10400E-01	315310.0	5811943.0	113.0	25.00	3.00	3.00	NO	
CS07	0	0.00000E+00	315301.0	5811943.0	113.0	25.00	3.00	3.00	NO	
CS08	0	0.00000E+00	315286.0	5811945.0	113.0	25.00	3.00	3.00	NO	
CS09	0	0.00000E+00	315270.0	5811947.0	113.0	25.00	3.00	3.00	NO	
CS10	0	0.00000E+00	315255.0	5811949.0	113.0	25.00	3.00	3.00	NO	
CS11	0	0.00000E+00	315242.0	5811951.0	113.0	25.00	3.00	3.00	NO	
DUMPST	0	0.96000E-02	315284.0	5811908.0	113.0	14.00	3.00	3.00	NO	
SHIPEX	0	0.52000E-02	315629.0	5811957.0	113.0	20.00	1.00	3.00	NO	
HOP1	0	0.54200E-01	315617.0	5811966.0	113.0	11.00	3.00	3.00	NO	
HOP2	0	0.54200E-01	315602.0	5811923.0	113.0	11.00	3.00	3.00	NO	
HOP3	0	0.00000E+00	315587.0	5811881.0	113.0	11.00	3.00	3.00	NO	
CSP1	0	0.75000E-02	315583.0	5811870.0	113.0	3.00	3.00	3.00	NO	

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
CSP2	0	0.75000E-02	315497.0	5811899.0	113.0	6.00	3.00	3.00	NO	
CSP3	0	0.75000E-02	315418.0	5811927.0	113.0	6.00	3.00	3.00	NO	
CSP4	0	0.75000E-02	315418.0	5811955.0	113.0	17.00	3.00	3.00	NO	
CSP5	0	0.75000E-02	315413.0	5811907.0	113.0	17.00	3.00	3.00	NO	
CSP6	0	0.75000E-02	315324.0	5811900.0	113.0	12.00	3.00	3.00	NO	
CSP7	0	0.75000E-02	315317.0	5811845.0	113.0	12.00	3.00	3.00	NO	
CSP8	0	0.75000E-02	315231.0	5811912.0	113.0	3.00	3.00	3.00	NO	
CSP9	0	0.75000E-02	315236.0	5811948.0	113.0	3.00	3.00	3.00	NO	
ECS	0	0.36000E-02	315492.0	5811976.0	113.0	29.30	3.00	3.00	NO	
SILO1	0	0.18000E-02	315458.0	5811956.0	113.0	0.00	3.50	16.00	NO	
SILO3	0	0.18000E-02	315444.0	5811957.0	113.0	0.00	3.50	12.00	NO	
SBE	0	0.18000E-02	315464.0	5811955.0	113.0	21.00	3.00	3.00	NO	

DC1	0	0.63000E-02	315294.0	5812057.0	113.0	39.00	3.00	3.00	NO
DC2	0	0.63000E-02	315299.0	5812057.0	113.0	39.00	3.00	3.00	NO
DC3	0	0.25000E-01	315292.0	5812048.0	113.0	22.50	3.00	3.00	NO

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE , 2CMFBE , 1CBE , 2CBE ,
	DS1F , DS2F , DS3F , DS4F , DS5F , DS6F , DS7F , DS8F ,
	DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF , WB5LOF , WB6LOF , RMCSB1 ,
	RMCSB2 , CS01 , CS02 , CS03 , CS04 , CS05 , CS06 , CS07 ,
	CS08 , CS09 , CS10 , CS11 , DUMPST , SHIPEX , HOP1 , HOP2 ,
	HOP3 , CSP1 , CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 ,
	CSP8 , CSP9 , DP1 , ECS , SILO1 , SILO3 , SBE , DC1 ,
	DC2 , DC3 , DP2 ,
SHIP	SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 , CSP2 , CSP3 , CSP4 ,
	CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DIRECTION SPECIFIC BUILDING DIMENSIONS ***

SOURCE ID: 1CMBFS

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	34.0,	31.7,	51.0,	-42.5,	5.2,	2	34.0,	34.1,	42.5,	-43.5,	-0.6,
3	34.0,	35.2,	39.5,	-33.5,	5.1,	4	34.0,	36.5,	39.0,	-34.5,	4.0,
5	34.0,	37.0,	37.5,	-34.2,	3.0,	6	34.0,	36.0,	21.5,	-17.0,	2.0,
7	34.0,	34.0,	24.2,	-18.8,	0.5,	8	34.0,	42.5,	34.4,	-27.9,	-21.2,
9	34.0,	38.0,	31.2,	-24.0,	-7.0,	10	34.0,	37.0,	29.4,	-21.2,	-10.0,
11	34.0,	42.5,	34.1,	-16.5,	-21.8,	12	34.0,	42.5,	36.5,	-12.5,	-20.8,
13	34.0,	41.5,	37.8,	-7.8,	-18.8,	14	34.0,	39.5,	56.0,	-21.0,	-16.2,
15	34.0,	37.8,	37.0,	-20.0,	-14.1,	16	34.0,	36.5,	38.5,	-17.5,	-12.5,
17	34.0,	34.4,	39.0,	-15.5,	-10.6,	18	34.0,	31.2,	55.0,	-12.0,	-8.4,
19	34.0,	31.8,	51.5,	-8.5,	-5.2,	20	34.0,	34.1,	42.0,	1.0,	0.7,
21	34.0,	35.2,	39.5,	-6.5,	-4.9,	22	34.0,	36.5,	39.0,	-4.5,	-4.0,
23	34.0,	37.0,	37.8,	-3.8,	-3.0,	24	34.0,	36.5,	21.5,	-4.5,	-1.8,
25	34.0,	34.0,	24.5,	-5.8,	-0.5,	26	34.0,	42.5,	34.5,	-6.6,	21.2,
27	34.0,	38.0,	31.2,	-7.2,	7.0,	28	34.0,	37.0,	29.4,	-8.2,	10.0,
29	34.0,	42.5,	34.0,	-17.6,	21.8,	30	34.0,	42.5,	36.5,	-24.2,	20.8,
31	34.0,	41.5,	37.8,	-30.0,	18.8,	32	34.0,	39.2,	56.5,	-35.0,	16.1,
33	34.0,	37.8,	37.5,	-17.5,	14.4,	34	34.0,	36.5,	38.5,	-20.5,	12.8,
35	34.0,	34.4,	39.0,	-23.5,	10.7,	36	34.0,	31.2,	54.5,	-42.5,	8.4,

SOURCE ID: 2CMBFS

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	34.0,	31.7,	51.0,	-15.5,	7.0,	2	34.0,	34.1,	42.5,	-17.0,	5.8,
3	34.0,	35.2,	39.5,	-8.5,	16.1,	4	34.0,	36.5,	39.0,	-12.0,	19.0,
5	34.0,	37.0,	37.5,	-14.5,	21.5,	6	34.0,	36.0,	21.5,	-0.8,	24.0,
7	34.0,	34.0,	24.2,	-6.5,	25.0,	8	34.0,	42.5,	34.4,	-20.2,	4.8,
9	34.0,	38.0,	31.2,	-21.0,	20.0,	10	34.0,	37.0,	29.4,	-22.9,	17.0,
11	34.0,	42.5,	34.1,	-22.9,	4.8,	12	34.0,	42.5,	36.5,	-23.2,	4.2,
13	34.0,	41.5,	37.8,	-23.0,	4.2,	14	34.0,	39.5,	56.0,	-40.0,	3.2,
15	34.0,	37.8,	37.0,	-41.5,	1.9,	16	34.0,	36.5,	38.5,	-42.0,	-0.5,
17	34.0,	34.4,	39.0,	-41.5,	-2.9,	18	34.0,	31.2,	55.0,	-39.0,	-5.4,
19	34.0,	31.8,	51.5,	-35.5,	-7.0,	20	34.0,	34.1,	42.0,	-25.5,	-5.7,
21	34.0,	35.2,	39.5,	-31.0,	-15.9,	22	34.0,	36.5,	39.0,	-27.0,	-19.2,
23	34.0,	37.0,	37.8,	-23.2,	-22.0,	24	34.0,	36.5,	21.5,	-20.5,	-23.8,
25	34.0,	34.0,	24.5,	-17.8,	-25.0,	26	34.0,	42.5,	34.5,	-14.2,	-4.8,
27	34.0,	38.0,	31.2,	-10.2,	-20.0,	28	34.0,	37.0,	29.4,	-6.6,	-17.5,
29	34.0,	42.5,	34.0,	-11.2,	-4.2,	30	34.0,	42.5,	36.5,	-13.5,	-4.2,
31	34.0,	41.5,	37.8,	-15.0,	-3.8,	32	34.0,	39.2,	56.5,	-16.5,	-3.6,
33	34.0,	37.8,	37.5,	4.5,	-1.9,	34	34.0,	36.5,	38.5,	3.5,	0.5,
35	34.0,	34.4,	39.0,	2.5,	3.1,	36	34.0,	31.2,	54.5,	-15.5,	5.4,

SOURCE ID: DP1

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	21.0,	9.8,	34.5,	8.5,	-2.8,	2	21.0,	15.4,	34.5,	8.0,	1.6,
3	21.0,	20.5,	34.5,	7.5,	6.0,	4	21.0,	25.0,	32.5,	7.5,	10.0,
5	34.0,	38.5,	39.2,	-149.8,	25.8,	6	34.0,	36.0,	21.5,	-136.2,	23.5,
7	34.0,	34.0,	24.2,	-139.8,	1.0,	8	34.0,	57.5,	34.4,	-147.2,	-34.2,
9	27.8,	65.5,	180.4,	-244.6,	5.8,	10	27.8,	58.5,	179.3,	-242.7,	-21.8,
11	27.8,	87.5,	182.6,	-238.4,	-47.8,	12	25.0,	143.5,	186.8,	-227.0,	-58.2,
13	25.0,	25.5,	29.5,	-56.8,	0.2,	14	25.0,	28.0,	28.0,	-55.5,	-7.2,
15	25.0,	29.5,	26.0,	-53.5,	-14.2,	16	25.0,	30.2,	23.0,	-49.0,	-21.1,
17	25.0,	30.1,	19.5,	-43.0,	-27.3,	18	21.0,	11.0,	34.0,	-41.0,	7.5,
19	21.0,	9.9,	34.5,	-42.5,	2.7,	20	21.0,	15.4,	35.0,	-43.0,	-1.7,
21	21.0,	20.5,	34.5,	-42.5,	-5.8,	22	21.0,	25.0,	32.5,	-40.0,	-10.0,
23	27.8,	176.5,	156.0,	36.5,	-95.2,	24	27.8,	142.0,	170.0,	46.0,	-82.0,
25	27.8,	120.0,	179.0,	53.8,	-58.0,	26	25.0,	94.0,	230.1,	12.1,	-32.5,
27	25.0,	65.5,	226.5,	18.0,	-5.8,	28	25.0,	79.5,	221.2,	21.4,	11.2,
29	25.0,	115.0,	199.5,	38.9,	36.5,	30	25.0,	143.5,	186.8,	40.0,	57.8,
31	25.0,	25.5,	29.8,	27.2,	-0.2,	32	25.0,	28.0,	28.0,	27.5,	7.2,
33	25.0,	29.5,	26.0,	27.0,	14.5,	34	25.0,	30.2,	23.0,	26.0,	21.1,
35	25.0,	30.1,	19.5,	24.0,	27.2,	36	21.0,	11.0,	34.0,	7.0,	-7.5,

SOURCE ID: DP2

IFV	BH	BW	BL	XADJ	YADJ	IFV	BH	BW	BL	XADJ	YADJ
1	27.8,	179.2,	58.5,	-146.5,	-46.7,	2	27.8,	182.6,	88.0,	-151.5,	-66.3,
3	27.8,	180.2,	114.5,	-151.5,	-83.9,	4	27.8,	172.8,	137.0,	-147.0,	-98.9,

5	39.0,	20.0,	22.5,	-18.2,	2.0,	6	39.0,	22.0,	20.5,	-17.5,	0.5,
7	39.0,	22.5,	17.8,	-16.0,	-0.8,	8	39.0,	23.5,	14.8,	-14.2,	-1.8,
9	39.0,	23.0,	11.1,	-12.0,	-3.0,	10	39.0,	23.0,	8.7,	-10.9,	-4.0,
11	39.0,	24.0,	12.2,	-11.9,	-5.0,	12	39.0,	24.0,	15.5,	-12.5,	-6.0,
13	39.0,	23.5,	18.2,	-12.5,	-6.2,	14	39.0,	22.5,	20.5,	-12.5,	-7.0,
15	27.8,	170.2,	142.0,	49.0,	-39.6,	16	39.0,	17.8,	23.0,	-11.5,	-7.1,
17	39.0,	14.6,	23.0,	-10.0,	-6.9,	18	39.0,	11.1,	23.0,	-8.5,	-6.4,
19	39.0,	8.7,	23.5,	-7.5,	-6.5,	20	25.0,	199.5,	115.0,	38.0,	74.8,
21	27.8,	180.2,	114.5,	37.0,	83.9,	22	27.8,	172.8,	137.0,	10.0,	98.9,
23	39.0,	20.5,	22.5,	-4.5,	-2.2,	24	39.0,	22.0,	20.2,	-3.0,	-1.0,
25	39.0,	22.5,	18.0,	-1.8,	0.2,	26	39.0,	23.0,	14.6,	-0.5,	2.0,
27	39.0,	23.0,	11.1,	0.9,	3.0,	28	39.0,	23.5,	8.7,	2.1,	4.2,
29	39.0,	24.5,	12.2,	-0.5,	5.2,	30	39.0,	24.5,	15.5,	-3.2,	5.8,
31	39.0,	24.0,	18.2,	-5.5,	6.5,	32	39.0,	22.2,	20.5,	-8.5,	6.9,
33	27.8,	170.2,	142.0,	-190.5,	39.6,	34	34.0,	36.5,	38.5,	-203.0,	8.8,
35	34.0,	34.4,	39.0,	-202.5,	-24.8,	36	27.8,	180.4,	65.5,	-156.0,	-25.6,

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(315693.0,	5813702.0,	113.0,	113.0,	0.0);	(315431.0,	5813612.0,	113.0,	113.0,	0.0);
(315256.0,	5813493.0,	113.0,	113.0,	0.0);	(315094.0,	5813392.0,	113.0,	113.0,	0.0);
(315041.0,	5813162.0,	113.0,	113.0,	0.0);	(315192.0,	5812912.0,	113.0,	113.0,	0.0);
(315126.0,	5812711.0,	113.0,	113.0,	0.0);	(314892.0,	5812586.0,	113.0,	113.0,	0.0);
(314863.0,	5812313.0,	113.0,	113.0,	0.0);	(314916.0,	5812119.0,	113.0,	113.0,	0.0);
(314606.0,	5812043.0,	113.0,	113.0,	0.0);	(314593.0,	5811900.0,	113.0,	113.0,	0.0);
(314389.0,	5811780.0,	113.0,	113.0,	0.0);	(314370.0,	5811624.0,	113.0,	113.0,	0.0);
(313975.0,	5811348.0,	113.0,	113.0,	0.0);	(313946.0,	5810974.0,	113.0,	113.0,	0.0);
(314264.0,	5810935.0,	113.0,	113.0,	0.0);	(313575.0,	5810383.0,	113.0,	113.0,	0.0);
(313866.0,	5809975.0,	113.0,	113.0,	0.0);	(314134.0,	5809925.0,	113.0,	113.0,	0.0);
(314407.0,	5809808.0,	113.0,	113.0,	0.0);	(316523.0,	5810214.0,	113.0,	113.0,	0.0);
(316950.0,	5810320.0,	113.0,	113.0,	0.0);	(317390.0,	5810444.0,	113.0,	113.0,	0.0);
(316547.0,	5810619.0,	113.0,	113.0,	0.0);					

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: yarraville2018.sfc — Met Version: 19191
Profile file: yarraville2018.pfl
Surface format: FREE
Profile format: FREE
Surface station no.: 11 — Upper air station no.: 99
Name: FOOTSCRAY — Name: FOOTSCRAY
Year: 2018 — Year: 2018

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
18	01	01	1	01	-30.5	0.297	-9.000	0.000	-999.	372.	81.2	0.60	0.80	1.00	1.00	6.	10.0	290.1	2.0
18	01	01	1	02	-22.9	0.312	-9.000	0.000	-999.	401.	126.0	0.67	0.80	1.00	1.20	342.	10.0	290.8	2.0
18	01	01	1	03	-16.0	0.361	-9.000	0.000	-999.	499.	279.8	0.71	0.80	1.00	1.70	271.	10.0	290.9	2.0
18	01	01	1	04	-8.7	0.439	-9.000	0.000	-999.	669.	929.1	0.63	0.80	1.00	1.50	238.	10.0	291.0	2.0
18	01	01	1	05	-8.7	0.502	-9.000	0.000	-999.	817.	1372.7	0.63	0.80	1.00	2.50	226.	10.0	290.8	2.0
18	01	01	1	06	-3.5	0.544	0.001	0.005	840.	922.	4338.3	0.63	0.80	0.55	3.30	235.	10.0	290.4	2.0
18	01	01	1	07	15.1	0.542	0.038	0.005	823.	918.	-1004.7	0.63	0.80	0.29	3.70	232.	10.0	290.5	2.0
18	01	01	1	08	119.5	0.444	0.305	0.005	928.	681.	-69.9	0.63	0.80	0.17	2.70	251.	10.0	291.6	2.0
18	01	01	1	09	201.7	0.439	0.514	0.005	927.	668.	-40.1	0.64	0.80	0.17	2.50	223.	10.0	293.0	2.0
18	01	01	1	10	249.1	0.382	0.635	0.005	773.	543.	-21.5	0.64	0.80	0.17	2.00	195.	10.0	294.6	2.0
18	01	01	1	11	280.0	0.531	0.714	0.005	920.	890.	-51.6	0.65	0.80	0.17	3.10	140.	10.0	295.6	2.0
18	01	01	1	12	294.4	0.525	0.751	0.005	1148.	875.	-47.6	0.61	0.80	0.17	3.10	130.	10.0	296.1	2.0
18	01	01	1	13	292.1	0.455	0.745	0.005	1224.	706.	-31.3	0.65	0.80	0.17	2.50	165.	10.0	296.8	2.0
18	01	01	1	14	274.2	0.478	0.699	0.005	1273.	760.	-38.8	0.65	0.80	0.17	2.70	152.	10.0	298.1	2.0
18	01	01	1	15	240.5	0.472	0.613	0.005	1289.	747.	-42.8	0.65	0.80	0.17	2.70	157.	10.0	298.8	2.0
18	01	01	1	16	192.8	0.647	0.492	0.005	1284.	1196.	-136.7	0.65	0.80	0.17	4.10	175.	10.0	298.2	2.0
18	01	01	1	17	134.3	0.810	0.342	0.005	1325.	1678.	-383.0	0.64	0.80	0.17	5.40	182.	10.0	295.7	2.0
18	01	01	1	18	51.2	0.782	0.131	0.005	1339.	1589.	-896.7	0.64	0.80	0.33	5.30	186.	10.0	294.4	2.0
18	01	01	1	19	-16.5	0.381	0.001	0.005	1320.	541.	322.5	0.64	0.80	0.65	5.10	182.	10.0	293.6	2.0
18	01	01	1	20	-29.6	0.370	-9.000	0.000	-999.	518.	163.9	0.65	0.80	1.00	4.40	178.	10.0	292.4	2.0
18	01	01	1	21	-29.9	0.362	-9.000	0.000	-999.	500.	150.7	0.65	0.80	1.00	3.90	177.	10.0	291.7	2.0
18	01	01	1	22	-29.9	0.356	-9.000	0.000	-999.	488.	143.8	0.65	0.80	1.00	3.60	173.	10.0	291.7	2.0
18	01	01	1	23	-22.6	0.357	-9.000	0.000	-999.	490.	191.6	0.65	0.80	1.00	3.00	172.	10.0	291.6	2.0
18	01	01	1	24	-15.8	0.392	-9.000	0.000	-999.	565.	363.7	0.65	0.80	1.00	2.70	163.	10.0	291.5	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
18	01	01	01	10.0	1	6.	1.00	290.1	34.0	-99.00	0.50

F indicates top of profile (=1) or below (=0)

*** THE PERIOD (8688 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,

DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
315693.00	5813702.00	0.12154	315431.00	5813612.00	0.14162
315256.00	5813493.00	0.15412	315094.00	5813392.00	0.15638
315041.00	5813162.00	0.19111	315192.00	5812912.00	0.30772
315126.00	5812711.00	0.38992	314892.00	5812586.00	0.30322
314863.00	5812313.00	0.36277	314916.00	5812119.00	0.44584
314606.00	5812043.00	0.17345	314593.00	5811900.00	0.15332
314389.00	5811780.00	0.09758	314370.00	5811624.00	0.09396
313975.00	5811348.00	0.05364	313946.00	5810974.00	0.05609
314264.00	5810935.00	0.09035	313575.00	5810383.00	0.04061
313866.00	5809975.00	0.05268	314134.00	5809925.00	0.06479
314407.00	5809808.00	0.07482	316523.00	5810214.00	0.08208
316950.00	5810320.00	0.05982	317390.00	5810444.00	0.05076
316547.00	5810619.00	0.09423			

*** THE PERIOD (8688 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
315693.00	5813702.00	0.04200	315431.00	5813612.00	0.04570
315256.00	5813493.00	0.04803	315094.00	5813392.00	0.04777
315041.00	5813162.00	0.05793	315192.00	5812912.00	0.09232
315126.00	5812711.00	0.11449	314892.00	5812586.00	0.09140
314863.00	5812313.00	0.11255	314916.00	5812119.00	0.15251
314606.00	5812043.00	0.06506	314593.00	5811900.00	0.06125
314389.00	5811780.00	0.04042	314370.00	5811624.00	0.03809
313975.00	5811348.00	0.02175	313946.00	5810974.00	0.02079
314264.00	5810935.00	0.03053	313575.00	5810383.00	0.01417
313866.00	5809975.00	0.01687	314134.00	5809925.00	0.02012
314407.00	5809808.00	0.02270	316523.00	5810214.00	0.03010
316950.00	5810320.00	0.02081	317390.00	5810444.00	0.01679
316547.00	5810619.00	0.03479			

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
315693.00	5813702.00	0.48923	(18012224)	315431.00	5813612.00	0.61831	(18092524)
315256.00	5813493.00	0.71651	(18092524)	315094.00	5813392.00	0.72840	(18111724)
315041.00	5813162.00	0.97393	(18111724)	315192.00	5812912.00	1.34533	(18092524)
315126.00	5812711.00	1.87628	(18111724)	314892.00	5812586.00	1.77935	(18032124)
314863.00	5812313.00	3.15618	(18032124)	314916.00	5812119.00	2.52716	(18030224)
314606.00	5812043.00	1.12894	(18030224)	314593.00	5811900.00	0.68005	(18030224)
314389.00	5811780.00	0.42633	(18032224)	314370.00	5811624.00	0.52640	(18032224)
313975.00	5811348.00	0.37120	(18101424)	313946.00	5810974.00	0.66555	(18101424)
314264.00	5810935.00	0.94719	(18101424)	313575.00	5810383.00	0.46481	(18101424)
313866.00	5809975.00	0.54118	(18061124)	314134.00	5809925.00	0.56062	(18080224)
314407.00	5809808.00	0.60894	(18062024)	316523.00	5810214.00	0.41705	(18092024)
316950.00	5810320.00	0.35473	(18060124)	317390.00	5810444.00	0.36735	(18060124)
316547.00	5810619.00	0.49899	(18060124)				

*** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
315693.00	5813702.00	0.14543	(18092524)	315431.00	5813612.00	0.17419	(18092524)
315256.00	5813493.00	0.18227	(18111724)	315094.00	5813392.00	0.19936	(18111724)
315041.00	5813162.00	0.22818	(18111724)	315192.00	5812912.00	0.34630	(18111724)
315126.00	5812711.00	0.41053	(18030624)	314892.00	5812586.00	0.53972	(18032124)
314863.00	5812313.00	0.64337	(18032124)	314916.00	5812119.00	0.61487	(18032124)
314606.00	5812043.00	0.27812	(18041824)	314593.00	5811900.00	0.21117	(18041824)
314389.00	5811780.00	0.12911	(18032224)	314370.00	5811624.00	0.13355	(18032224)
313975.00	5811348.00	0.10444	(18101424)	313946.00	5810974.00	0.16665	(18101424)
314264.00	5810935.00	0.24808	(18101424)	313575.00	5810383.00	0.12261	(18101424)
313866.00	5809975.00	0.15066	(18061124)	314134.00	5809925.00	0.14789	(18080224)
314407.00	5809808.00	0.15679	(18080224)	316523.00	5810214.00	0.13145	(18080924)
316950.00	5810320.00	0.09209	(18060124)	317390.00	5810444.00	0.09739	(18060124)
316547.00	5810619.00	0.14748	(18092024)				

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	3.15618	(18032124)	AT	(314863.00, 5812313.00)	DC	41.	1.35899	(18020224)	AT	(314863.00, 5812313.00)	DC
2.	2.52716	(18030224)	AT	(314916.00, 5812119.00)	DC	42.	1.34894	(18021924)	AT	(314863.00, 5812313.00)	DC
3.	2.51563	(18032124)	AT	(314916.00, 5812119.00)	DC	43.	1.34693	(18092424)	AT	(314863.00, 5812313.00)	DC
4.	2.08393	(18101024)	AT	(314863.00, 5812313.00)	DC	44.	1.34675	(18111824)	AT	(314863.00, 5812313.00)	DC
5.	2.04145	(18022624)	AT	(314863.00, 5812313.00)	DC	45.	1.34533	(18092524)	AT	(315192.00, 5812912.00)	DC
6.	2.02904	(18020124)	AT	(314863.00, 5812313.00)	DC	46.	1.34370	(18080124)	AT	(314863.00, 5812313.00)	DC
7.	1.99964	(18011024)	AT	(314916.00, 5812119.00)	DC	47.	1.34260	(18052524)	AT	(314916.00, 5812119.00)	DC
8.	1.92459	(18020324)	AT	(314863.00, 5812313.00)	DC	48.	1.33819	(18032924)	AT	(314916.00, 5812119.00)	DC
9.	1.91498	(18101124)	AT	(314916.00, 5812119.00)	DC	49.	1.33808	(18041824)	AT	(314916.00, 5812119.00)	DC
10.	1.88157	(18010524)	AT	(314916.00, 5812119.00)	DC	50.	1.32907	(18093024)	AT	(314916.00, 5812119.00)	DC
11.	1.87628	(18111724)	AT	(315126.00, 5812711.00)	DC	51.	1.32856	(18012524)	AT	(314916.00, 5812119.00)	DC
12.	1.86361	(18020324)	AT	(314916.00, 5812119.00)	DC	52.	1.29390	(18090324)	AT	(315126.00, 5812711.00)	DC
13.	1.84831	(18101124)	AT	(314863.00, 5812313.00)	DC	53.	1.26664	(18062524)	AT	(314916.00, 5812119.00)	DC
14.	1.81847	(18102924)	AT	(314916.00, 5812119.00)	DC	54.	1.26425	(18111724)	AT	(315192.00, 5812912.00)	DC
15.	1.78068	(18020124)	AT	(314916.00, 5812119.00)	DC	55.	1.25314	(18082824)	AT	(314863.00, 5812313.00)	DC
16.	1.78009	(18121124)	AT	(314916.00, 5812119.00)	DC	56.	1.24791	(18020324)	AT	(314892.00, 5812586.00)	DC
17.	1.77935	(18032124)	AT	(314892.00, 5812586.00)	DC	57.	1.24662	(18021924)	AT	(314916.00, 5812119.00)	DC
18.	1.76959	(18082824)	AT	(314916.00, 5812119.00)	DC	58.	1.23875	(18103124)	AT	(315126.00, 5812711.00)	DC
19.	1.74242	(18020224)	AT	(314916.00, 5812119.00)	DC	59.	1.23643	(18041724)	AT	(314916.00, 5812119.00)	DC
20.	1.65963	(18061024)	AT	(314863.00, 5812313.00)	DC	60.	1.23133	(18030624)	AT	(315126.00, 5812711.00)	DC
21.	1.61852	(18022024)	AT	(314916.00, 5812119.00)	DC	61.	1.23119	(18041724)	AT	(314863.00, 5812313.00)	DC
22.	1.60465	(18052524)	AT	(315126.00, 5812711.00)	DC	62.	1.21507	(18091024)	AT	(314916.00, 5812119.00)	DC
23.	1.57461	(18030624)	AT	(314863.00, 5812313.00)	DC	63.	1.21230	(18030624)	AT	(314916.00, 5812119.00)	DC
24.	1.56114	(18102924)	AT	(314863.00, 5812313.00)	DC	64.	1.20877	(18021924)	AT	(314892.00, 5812586.00)	DC
25.	1.55443	(18022024)	AT	(314863.00, 5812313.00)	DC	65.	1.20016	(18100524)	AT	(314892.00, 5812586.00)	DC
26.	1.52163	(18111824)	AT	(314916.00, 5812119.00)	DC	66.	1.19792	(18011024)	AT	(314863.00, 5812313.00)	DC
27.	1.51657	(18080124)	AT	(314916.00, 5812119.00)	DC	67.	1.19519	(18113024)	AT	(315126.00, 5812711.00)	DC
28.	1.48290	(18120524)	AT	(314916.00, 5812119.00)	DC	68.	1.18646	(18011624)	AT	(314863.00, 5812313.00)	DC
29.	1.47871	(18022624)	AT	(314916.00, 5812119.00)	DC	69.	1.18025	(18061024)	AT	(314916.00, 5812119.00)	DC
30.	1.46755	(18092524)	AT	(315126.00, 5812711.00)	DC	70.	1.17109	(18092424)	AT	(314892.00, 5812586.00)	DC
31.	1.45946	(18030624)	AT	(314892.00, 5812586.00)	DC	71.	1.16517	(18111424)	AT	(315126.00, 5812711.00)	DC
32.	1.43718	(18011624)	AT	(314916.00, 5812119.00)	DC	72.	1.15705	(18093024)	AT	(314863.00, 5812313.00)	DC
33.	1.42160	(18030224)	AT	(314863.00, 5812313.00)	DC	73.	1.13828	(18062524)	AT	(314863.00, 5812313.00)	DC
34.	1.41233	(18101024)	AT	(314916.00, 5812119.00)	DC	74.	1.13803	(18092624)	AT	(314863.00, 5812313.00)	DC
35.	1.40784	(18032224)	AT	(314916.00, 5812119.00)	DC	75.	1.13121	(18021324)	AT	(314916.00, 5812119.00)	DC
36.	1.39133	(18040324)	AT	(314916.00, 5812119.00)	DC	76.	1.12894	(18030224)	AT	(314606.00, 5812043.00)	DC
37.	1.38599	(18092424)	AT	(315126.00, 5812711.00)	DC	77.	1.12617	(18060224)	AT	(315126.00, 5812711.00)	DC
38.	1.37681	(18102824)	AT	(315126.00, 5812711.00)	DC	78.	1.12503	(18120524)	AT	(314863.00, 5812313.00)	DC
39.	1.37345	(18022624)	AT	(314892.00, 5812586.00)	DC	79.	1.12497	(18102124)	AT	(314916.00, 5812119.00)	DC
40.	1.36176	(18101124)	AT	(314892.00, 5812586.00)	DC	80.	1.12416	(18041824)	AT	(314606.00, 5812043.00)	DC

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): 1CMBFS , 2CMBFS , 1CMECS , 2CMECS , 1CMFBE ,
2CMFBE , 1CBE , 2CBE , DS1F , DS2F , DS3F , DS4F , DS5F ,
DS6F , DS7F , DS8F , DS9F , WB1LOF , WB2LOF , WB3LOF , WB4LOF ,
WB5LOF , WB6LOF , RMCSB1 , RMCSB2 , CS01 , CS02 , CS03 , . . . ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
81.	1.11852	(18030524)	AT	(315126.00, 5812711.00)	DC	91.	1.07421	(18102624)	AT	(315126.00, 5812711.00)	DC
82.	1.11428	(18052524)	AT	(315192.00, 5812912.00)	DC	92.	1.06751	(18032224)	AT	(314863.00, 5812313.00)	DC
83.	1.11291	(18090224)	AT	(315126.00, 5812711.00)	DC	93.	1.06648	(18111624)	AT	(315126.00, 5812711.00)	DC
84.	1.10638	(18031624)	AT	(314916.00, 5812119.00)	DC	94.	1.06415	(18082724)	AT	(315126.00, 5812711.00)	DC
85.	1.10225	(18011624)	AT	(314892.00, 5812586.00)	DC	95.	1.06180	(18031424)	AT	(315126.00, 5812711.00)	DC
86.	1.10128	(18121124)	AT	(314863.00, 5812313.00)	DC	96.	1.06077	(18101024)	AT	(314892.00, 5812586.00)	DC
87.	1.09130	(18082324)	AT	(314863.00, 5812313.00)	DC	97.	1.06067	(18032924)	AT	(314863.00, 5812313.00)	DC
88.	1.08795	(18102824)	AT	(315192.00, 5812912.00)	DC	98.	1.05629	(18062624)	AT	(315126.00, 5812711.00)	DC
89.	1.08396	(18021824)	AT	(314916.00, 5812119.00)	DC	99.	1.05562	(18112924)	AT	(315126.00, 5812711.00)	DC
90.	1.07901	(18042724)	AT	(314863.00, 5812313.00)	DC	100.	1.05458	(18082324)	AT	(314892.00, 5812586.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE	RANK	CONC	(YYMMDDHH)	AT	RECEPTOR (XR,YR)	OF TYPE
1.	0.64337	(18032124)	AT	(314863.00, 5812313.00)	DC	41.	0.35051	(18082824)	AT	(314863.00, 5812313.00)	DC
2.	0.61487	(18032124)	AT	(314916.00, 5812119.00)	DC	42.	0.34981	(18032924)	AT	(314916.00, 5812119.00)	DC
3.	0.53972	(18032124)	AT	(314892.00, 5812586.00)	DC	43.	0.34630	(18111724)	AT	(315192.00, 5812912.00)	DC
4.	0.50168	(18011024)	AT	(314916.00, 5812119.00)	DC	44.	0.34402	(18032224)	AT	(314863.00, 5812313.00)	DC
5.	0.49712	(18030224)	AT	(314916.00, 5812119.00)	DC	45.	0.34301	(18030224)	AT	(314863.00, 5812313.00)	DC
6.	0.49319	(18101024)	AT	(314863.00, 5812313.00)	DC	46.	0.34228	(18031624)	AT	(314916.00, 5812119.00)	DC
7.	0.48193	(18041824)	AT	(314916.00, 5812119.00)	DC	47.	0.34222	(18020224)	AT	(314863.00, 5812313.00)	DC
8.	0.46825	(18010524)	AT	(314916.00, 5812119.00)	DC	48.	0.34107	(18061024)	AT	(314863.00, 5812313.00)	DC
9.	0.46401	(18020324)	AT	(314916.00, 5812119.00)	DC	49.	0.33637	(18062624)	AT	(314916.00, 5812119.00)	DC
10.	0.45163	(18020324)	AT	(314863.00, 5812313.00)	DC	50.	0.33582	(18100524)	AT	(315126.00, 5812711.00)	DC
11.	0.45088	(18032224)	AT	(314916.00, 5812119.00)	DC	51.	0.32486	(18091024)	AT	(314916.00, 5812119.00)	DC
12.	0.44237	(18101024)	AT	(314916.00, 5812119.00)	DC	52.	0.32341	(18080124)	AT	(314916.00, 5812119.00)	DC
13.	0.43632	(18020124)	AT	(314863.00, 5812313.00)	DC	53.	0.32305	(18010524)	AT	(314863.00, 5812313.00)	DC
14.	0.42545	(18082824)	AT	(314916.00, 5812119.00)	DC	54.	0.32208	(18062624)	AT	(315126.00, 5812711.00)	DC
15.	0.41714	(18022024)	AT	(314916.00, 5812119.00)	DC	55.	0.32090	(18012524)	AT	(314916.00, 5812119.00)	DC
16.	0.41668	(18020124)	AT	(314916.00, 5812119.00)	DC	56.	0.31976	(18011624)	AT	(314916.00, 5812119.00)	DC
17.	0.41421	(18022624)	AT	(314916.00, 5812119.00)	DC	57.	0.31870	(18021924)	AT	(314892.00, 5812586.00)	DC
18.	0.41053	(18030624)	AT	(315126.00, 5812711.00)	DC	58.	0.31770	(18092524)	AT	(315126.00, 5812711.00)	DC
19.	0.40937	(18022624)	AT	(314863.00, 5812313.00)	DC	59.	0.31583	(18102124)	AT	(314916.00, 5812119.00)	DC
20.	0.40737	(18101024)	AT	(314892.00, 5812586.00)	DC	60.	0.31583	(18101124)	AT	(315126.00, 5812711.00)	DC
21.	0.39935	(18111824)	AT	(314916.00, 5812119.00)	DC	61.	0.31532	(18052524)	AT	(314916.00, 5812119.00)	DC
22.	0.39873	(18101124)	AT	(314916.00, 5812119.00)	DC	62.	0.31494	(18102824)	AT	(315126.00, 5812711.00)	DC
23.	0.38202	(18061024)	AT	(314916.00, 5812119.00)	DC	63.	0.30944	(18010424)	AT	(314916.00, 5812119.00)	DC
24.	0.37499	(18121124)	AT	(314916.00, 5812119.00)	DC	64.	0.30927	(18020224)	AT	(315126.00, 5812711.00)	DC
25.	0.37286	(18032124)	AT	(315126.00, 5812711.00)	DC	65.	0.30717	(18052524)	AT	(315126.00, 5812711.00)	DC

26.	0.37233 (18020324) AT (314892.00, 5812586.00)	DC	66.	0.30650 (18102924) AT (314916.00, 5812119.00)	DC
27.	0.36982 (18022024) AT (314863.00, 5812313.00)	DC	67.	0.30612 (18020324) AT (315126.00, 5812711.00)	DC
28.	0.36949 (18030624) AT (314892.00, 5812586.00)	DC	68.	0.30547 (18101124) AT (314892.00, 5812586.00)	DC
29.	0.36896 (18030624) AT (314916.00, 5812119.00)	DC	69.	0.30476 (18111824) AT (314863.00, 5812313.00)	DC
30.	0.36829 (18030624) AT (314863.00, 5812313.00)	DC	70.	0.30038 (18022024) AT (314892.00, 5812586.00)	DC
31.	0.36791 (18020224) AT (314916.00, 5812119.00)	DC	71.	0.30033 (18051424) AT (314916.00, 5812119.00)	DC
32.	0.36545 (18021924) AT (314863.00, 5812313.00)	DC	72.	0.29779 (18061924) AT (314916.00, 5812119.00)	DC
33.	0.36338 (18111724) AT (315126.00, 5812711.00)	DC	73.	0.29741 (18092524) AT (315192.00, 5812912.00)	DC
34.	0.36250 (18092424) AT (315126.00, 5812711.00)	DC	74.	0.29576 (18020124) AT (315126.00, 5812711.00)	DC
35.	0.35640 (18011024) AT (314863.00, 5812313.00)	DC	75.	0.29528 (18092624) AT (314916.00, 5812119.00)	DC
36.	0.35555 (18101124) AT (314863.00, 5812313.00)	DC	76.	0.29468 (18011624) AT (314863.00, 5812313.00)	DC
37.	0.35223 (18021924) AT (314916.00, 5812119.00)	DC	77.	0.29249 (18102824) AT (315192.00, 5812912.00)	DC
38.	0.35193 (18022624) AT (314892.00, 5812586.00)	DC	78.	0.29168 (18111124) AT (314916.00, 5812119.00)	DC
39.	0.35189 (18093024) AT (314916.00, 5812119.00)	DC	79.	0.29139 (18061024) AT (314892.00, 5812586.00)	DC
40.	0.35126 (18020124) AT (314892.00, 5812586.00)	DC	80.	0.29115 (18021324) AT (314916.00, 5812119.00)	DC

*** THE MAXIMUM 100 24-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SHIP ***
INCLUDING SOURCE(S): SHIPEX , HOP1 , HOP2 , HOP3 , CSP1 ,
CSP2 , CSP3 , CSP4 , CSP5 , CSP6 , CSP7 , CSP8 , CSP9 ,

** CONC OF PM10 IN MICROGRAMS/M**3 **

RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE	RANK	CONC	(YYMMDDHH) AT	RECEPTOR (XR,YR) OF TYPE
81.	0.29072 (18022624) AT	(315126.00, 5812711.00)	DC	91.	0.27955 (18030724) AT	(315126.00, 5812711.00)	DC
82.	0.29059 (18021624) AT	(314916.00, 5812119.00)	DC	92.	0.27812 (18041824) AT	(314606.00, 5812043.00)	DC
83.	0.28908 (18121124) AT	(314863.00, 5812313.00)	DC	93.	0.27778 (18082424) AT	(314916.00, 5812119.00)	DC
84.	0.28694 (18093024) AT	(314863.00, 5812313.00)	DC	94.	0.27742 (18092624) AT	(315126.00, 5812711.00)	DC
85.	0.28578 (18020224) AT	(314892.00, 5812586.00)	DC	95.	0.27688 (18041724) AT	(314916.00, 5812119.00)	DC
86.	0.28577 (18100524) AT	(314892.00, 5812586.00)	DC	96.	0.27547 (18120524) AT	(314916.00, 5812119.00)	DC
87.	0.28522 (18030624) AT	(315192.00, 5812912.00)	DC	97.	0.27445 (18011624) AT	(315126.00, 5812711.00)	DC
88.	0.28414 (18092424) AT	(314892.00, 5812586.00)	DC	98.	0.27285 (18092024) AT	(314916.00, 5812119.00)	DC
89.	0.28353 (18092424) AT	(315192.00, 5812912.00)	DC	99.	0.27269 (18022024) AT	(315126.00, 5812711.00)	DC
90.	0.28261 (18030524) AT	(315126.00, 5812711.00)	DC	100.	0.27125 (18011624) AT	(314892.00, 5812586.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE SUMMARY OF MAXIMUM PERIOD (8688 HRS) RESULTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.44584 AT (314916.00, 5812119.00, 113.00, 113.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.38992 AT (315126.00, 5812711.00, 113.00, 113.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.36277 AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.30772 AT (315192.00, 5812912.00, 113.00, 113.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.30322 AT (314892.00, 5812586.00, 113.00, 113.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.19111 AT (315041.00, 5813162.00, 113.00, 113.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.17345 AT (314606.00, 5812043.00, 113.00, 113.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.15638 AT (315094.00, 5813392.00, 113.00, 113.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.15412 AT (315256.00, 5813493.00, 113.00, 113.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.15332 AT (314593.00, 5811900.00, 113.00, 113.00, 0.00)	DC	
SHIP	1ST HIGHEST VALUE IS	0.15251 AT (314916.00, 5812119.00, 113.00, 113.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	0.11449 AT (315126.00, 5812711.00, 113.00, 113.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	0.11255 AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	0.09232 AT (315192.00, 5812912.00, 113.00, 113.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	0.09140 AT (314892.00, 5812586.00, 113.00, 113.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	0.06506 AT (314606.00, 5812043.00, 113.00, 113.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	0.06125 AT (314593.00, 5811900.00, 113.00, 113.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	0.05793 AT (315041.00, 5813162.00, 113.00, 113.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	0.04803 AT (315256.00, 5813493.00, 113.00, 113.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	0.04777 AT (315094.00, 5813392.00, 113.00, 113.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	3.15618 ON 18032124:	AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	
SHIP	HIGH 1ST HIGH VALUE IS	0.64337 ON 18032124:	AT (314863.00, 5812313.00, 113.00, 113.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)

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A Total of           14 Warning Message(s)
A Total of            0 Informational Message(s)

A Total of         8688 Hours Were Processed

A Total of            0 Calm Hours Identified

A Total of            0 Missing Hours Identified (  0.00 Percent)


   ******** FATAL ERROR MESSAGES ********
             ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320     101        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     102        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     103        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     104        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     105        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     113        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     120        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     121        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     122        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     123        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     124        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
SO W320     131        VPARM: Input Parameter May Be Out-of-Range for Parameter            QS
MX W403     322       PFLCNV: Turbulence data is being used w/o ADJ_U* option       SigA Data
MX W394       1       METEXT: Met data may be from outdated version of AERMET:     No NAD/ADJ

   ***********************************
   *** AERMOD Finishes Successfully ***
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