Appendix D Air Quality Impact Assessment Report

F I N A L R E P O R T

Woy Woy Waste Management Facility Air Quality Impact Assessment

Prepared for

Gosford City Council
49 Mann St
Gosford NSW 2250

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43177409

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URS (Australia) Pty Ltd has been commissioned by Gosford City Council to undertake an air quality impact assessment for the proposed Woy Woy Waste Management Facility, to be located at the Woy Woy Landfill site. Upon development, it is proposed that the Facility will accept 70,000 tonnes per annum of Municipal Solid Waste to an Alternative Waste Technology (AWT) facility. The proposed development will also include an enclosed green waste facility which would accept 30,000 tonnes per annum of green waste and 15,000 tonnes per annum of biosolids. As part of processing of the waste, compost will be created and the Facility will also incorporate a compost maturation and storage area.

The air quality impact assessment of the proposed development has been assessed against the Department of Environment and Climate Change, incorporating the New South Wales Environment Protection Authority (NSW EPA) Impact Assessment Criteria as specified within NSW EPA (2005) *Approved methods for the modelling and assessment of air pollutants within New South Wales* and NSW EPA (2006) *Technical framework: Assessment and management of odour from stationary source in NSW*. Air quality criteria provided within these documents have been set with the aim of protecting public health, and to provide mitigation against nuisance odour.

Due to the nature of the processing on site, the primary air quality impact of concern is odour. The proposed processes at the site have odorous emissions resulting from the decomposition of Municipal Solid Waste, Green Waste and Biosolids. The proposed facility aims to reduce emissions by enclosing the processes, extracting the odorous air from the buildings and passing it through biofilters. Emission estimates of odour have been made for the proposed development based on measurements undertaken for similar activities on other sites both within Australia and internationally.

The dispersion of odorous emissions was modelled using the Calpuff V6.0 dispersion modelling package, which has the capability to address the complex terrain surrounding the site. The nearest Bureau of Meteorology station was located at Narara, north of Gosford (14km north of the site), which due to its remote and sheltered location, was not considered suitable for implementation in modelling applications. On this basis a synthetic meteorological file was generated using the CSIRO's TAPM package, which uses a synoptic weather database with terrain and land use information to calculate hourly three-dimensional weather data. These TAPM results were processed within the meteorological pre-processor CALMET to generate the wind fields within the terrain surrounding the site.

The results from the dispersion modelling show that the peak odour concentration as a result of site activities will be less than 1.7 Odour Units (OU) at the nearest sensitive receptor (99.0 percentile, nose response time) against a 2 OU criteria.

In relation to other atmospheric pollutants, the combustion of fuel including the use of motor vehicles results in the liberation of nitrogen and carbon in all oxidation states as well as particulate matter. Representative background data was examined for 2005, and all combustion and industrial related pollutants were found to be below the limit values with the exception of PM_{10}. In December 2005, the maximum background concentration of PM_{10} during the month, as measured over 24 hours, was equal to the limit value of $50\mu gm^{-3}$. It is likely that this occurred due to a natural particulate event and may be discounted from the record.

Combustion on site will be limited to site and delivery vehicles. It is predicted that there will be an additional 8 truck deliveries per day to the site as a result of the proposed development. Such a low number of vehicles will not add appreciably to ambient pollutant concentrations, and given the low background levels, this additional activity will not result in an exceedance of the assessment criteria for nitrogen dioxide and carbon monoxide.

The greatest potential for the generation of suspended particulates and PM_{10} is as a result of site vehicles passing over unsealed roads. An undertaking to seal all site access roads and main internal haul roads will reduce the potential for dust generation. Areas where vehicles pass over unsealed ground will be sprayed with water to mitigate dust emissions. Using these methods, it is considered that the generation of dust will be minimised, and that concentrations at the nearest sensitive receptors will not exceed the assessment thresholds.

The consideration of likely emissions and the results of dispersion modelling therefore indicate that the proposed activities will not adversely impact the air quality at nearby sensitive receptors.

1.1 Introduction

Gosford City Council (Council) is currently in the process of augmenting their Waste Management Facility (WMF) at Woy Woy landfill. The proposed development is to include three primary facilities, namely:

1. An enclosed Alternative Waste Technology (AWT) Treatment Facility. The AWT facility will treat up to 70,000 tonnes of municipal solid wastes (MSW) per year. The type of AWT will be determined through a separate tendering process; however it is likely that Council will only consider fully enclosed systems at the site.

2. An enclosed Greenwaste Processing Facility. This facility will receive, sort and shred garden organics. It is understood an enclosed type composting facility is preferred, with the capacity for up to 30,000 tonnes of source separated municipal greenwaste and 15,000 tonnes of biosolids, per year.

3. Matured greenwaste / biosolids Compost Processing and Storage area.

Prior to this detailed investigation, a preliminary odour assessment was performed by URS. In the NSW odour guidelines, (NSW EPA, 2001), three levels of odour assessment are provided, namely Levels 1, 2 and 3, each successive level being more detailed and refined. A Level 1 assessment uses simple calculations and presumes worst case impacts to assess whether a more refined assessment (Level 2 or 3) is necessary. Levels 2 and 3 are more refined and use atmospheric dispersion modelling which incorporates site specific geographic and meteorological data.

The preliminary assessment comprised a Level 2 assessment and used the dispersion model AUSPLUME V6.0, with generic (non-site specific) meteorological data. The results displayed the potential for an adverse impact at the nearest receptors, justifying the Level 3 assessment documented in this report.

Whilst odour is generally considered the primary air emission from waste and composting type facilities, this report has also investigated the potential for dust and other common air pollutants such as nitrogen dioxide, carbon monoxide and sulphur dioxide to present adverse air quality impacts on air quality. These pollutants were also investigated as part of this assessment and a brief background of the pollutants are discussed in the following sections.

1.2 Odour

An odour is defined as the property of a substance that gives it its characteristic scent or smell. Odours are very subjective, with responses varying greatly from individual to individual. Whether an odour is perceived as being pleasant or unpleasant is often based on personal opinion.

The sensory perception of odour has four major dimensions: concentration, intensity, character, and hedonic tone.

- **Odour concentration**: otherwise known as the odour threshold, is the concentration of a compound necessary for detection by 50% of the population.
- **Odour intensity**: this refers to the perceived strength of the odour sensation. Intensity, for most chemicals, increases exponentially with the concentration of the compound.
- **Odour character**: this is what the substance smells like. A commonly used list of descriptors includes "fishy, hay, nutty, creosote, turpentine, rancid, sewer, and ammonia".
- **Hedonic tone**: this is the judgement of the relative pleasantness or unpleasantness of the odour. It is this aspect that primarily dictates whether an odour nuisance occurs.

Obviously, there are many odours, or situations, when a smell does not cause a nuisance. It is the subjective judgement of the hedonic tone that enables the decision to be made as to whether an odour is a nuisance or not. Solid waste and greenwaste odours are generally considered to be unpleasant, however, treatment using odour control technologies, such as biofilters, reduce the concentration and intensity of the odours and normally change the character of the odour, resulting in the odour having a more neutral tone.

1.3 Particulate Matter

Particulate Matter is generally divided into two broad fractions, deposited and suspended. Deposited particulate matter is dust that, because of its aerodynamic diameter and density, rapidly falls from the air. In general terms, deposited particulate has a diameter of greater than about 20 µm. However there is no distinct dividing line between these particles and the smaller particles of suspended matter that fall more slowly out of the air. Because of the size of the particulate matter, most of this material will not enter the body. Hence the effects of deposited particulate are primarily nuisance, and may only affect health via annoyance reactions and the like.

Suspended particulate matter is dust or aerosol that stays suspended in the atmosphere for significant periods. The current nomenclature is to describe fractions of suspended particulate as:

- PM_{10}: all particulate effectively less than 10 microns (µm) in diameter;
- $PM_{2.5}$: all particulate effectively less than 2.5 µm in diameter; and
- TSP: total suspended particulate, generally less than 50 µm in diameter.

Within the range of suspended particulate, the group of particles which are sized 10 µm or less (PM_{10}) have been associated with health effects including increases in mortality, aggravation of existing respiratory and cardiovascular disease, increased hospital admissions and increased asthma incidents. More recent research however, indicates that it may be the $PM_{2.5}$ fraction that has the greatest impact on human health. Particles that are larger than 10 µm, tend not to be able to penetrate the respiratory tract and do not appear to be significant with respect to potential health effects.

Major natural sources of background particulate levels include forest fires, pollen and wind-blown dust from exposed areas. Anthropogenic sources include stationary and mobile combustion sources, road dust, agriculture, mining, major fires and emissions from industrial processes. Background levels vary widely depending on location, meteorology and proximity of major point or area sources.

1.4 Combustion Products & Other Criteria Pollutants

Combustion products such as oxides of nitrogen (NO_X) and carbon monoxide (CO) as well as industrial related emissions such as sulphur dioxide (SO_2) are unlikely to be emitted from the proposed development in large quantities, however, are ubiquitous in the ambient air and can occur in high concentrations, hence the need for assessment.

1.4.1 Oxides of nitrogen

Oxides of nitrogen (NO_X) is the sum of nitric oxide (NO) and nitrogen dioxide (NO_2) concentrations. NO and NO_2 are linked in a circular reaction with oxidants such as ozone which generates NO_2 from NO and sunlight which breaks NO_2 down to NO. Due to this reaction sequence, the exact amount of NO and NO_2 within emissions is often unknown, and consequently the sum emission of both species is quoted. The ambient concentration of NO_2 near to a NO_X source is dependent on the amount of oxidant and sunlight at the time.

In ambient concentrations usually found within the atmosphere, NO has no impact on either human health or the environment. Conversely, it is known that short term concentrations greater than 200ppb (411µg.m^{-3}), people with asthma have an increased response to irritant stimuli. To ensure that these potential sufferers are protected, maximum short term exposure is set within NSW at 246µg.m^{-3} (120ppb). The long term effects of NO_2 are less well known although some evidence suggests poor lung function of inhabitants of areas with high NO_2 concentrations. A limit of 62µg.m^{-3} has been set by the NSW EPA as an annual mean.

1.4.2 Carbon monoxide

CO binds more readily with red blood cells than oxygen forming carboxyhaemaglobin (COHb) which deprives the human body of the oxygen needed to function. In ambient concentrations found within non-urban environments, carbon monoxide (CO) does not have any impact on human health. In high traffic environments where pollutants become trapped within street canyons, such as in congested urban centres CO concentrations are known to build to concentrations which often result in headaches.

Carbon monoxide (CO) is produced due to the incomplete combustion of any fuel containing carbon, where there is too little oxygen within the mix or the fuel is burnt at too high a temperature. The most common generation of this is in motor vehicles which are driving at low speeds, idling or coasting downhill.

1.4.3 Sulphur dioxide

As SO_2 is released in to the atmosphere it combines with water within the atmosphere to generate acid rain which acidifies lakes, results in the destruction of forest and damages buildings constructed of limestone. The sulphuric acid may also damage the moist parts of the nose, mouth, pharynx and larger bronchiole.

SO_2 is generated through the combustion of sulphur containing fuels such as coal and petrol / diesel. The site has no plans to burn coal and the Federal Clean Fuels Act, 2000 ensures that the sulphur content of automotive fuels will be reduced in the coming years. It is considered, therefore, that sulphur emissions from the site will be minimal and will not result in elevated concentrations in the surrounding area.

2.1 Assessment Criteria

There are three main types of air quality criteria which are generally assessed as part of developments:

Emission Standards – which are maximum allowable pollutant concentrations specified for particular classes of equipment;

Air Impact Assessment Criteria – which are designed for use in air dispersion modelling studies and air quality impact assessments for new or modified emission sources; and

Ambient Air Quality Standards – set standards against which ambient air quality monitoring results may be assessed.

The Emission Standards are primarily used to limit major industrial processes emissions such as oxides of nitrogen and sulphur from power plants. For this development, Emissions Standards are not as relevant as the principal air quality impacts will be from fugitive odour during operation and potentially fugitive dust emission during construction. The Air Impact Assessment Criteria are more relevant to this development.

Air Impact Assessment Criteria are used in evaluating the expected impact of air emissions on local air quality and the effectiveness of plant design and any associated mitigation measures. Another objective of these criteria is to ensure that the resulting local and regional ambient air quality meets the relevant Ambient Air Quality Standards.

The Ambient Air Quality Standards refers to the NEPM guidelines which provide regional guidelines for several key air pollutants and the guidelines and have not been designed to provide guidelines for assessing individual developments, rather for setting broad scale regional limits. They are discussed in Section 2.2.2.

2.1.1 Air Impact Assessment Criteria

Department of Environment and Conservation (incorporating the New South Wales Environment Protection Authority) have published impact assessment criteria to be applied in the design stages of an activity to ensure that there will be no impact on public health or amenity values. These criteria are set on the basis of the toxicity of a chemical or, if more stringent, the odour threshold of a pollutant. DEC impact assessment criteria relevant to the proposed development are given in Table 2-1.

Table 2-1: DEC (NSW EPA) Impact Assessment Criteria

Pollutant	NSW EPA Impact Assessment Criteria ($\mu g/m^3$) [A]	Averaging Time
Odour	2 OU (nose response time) [B]	1 hour
PM_{10}	50 30	24 hours annual
Nitrogen Dioxide	246 62	1 hour annual
Carbon Monoxide	100,000 30,000 10,000	15 minutes 1 hour 8 hours
Sulphur Dioxide	712 570 228 60	10 minutes 1 hour 24 hours annual

[A] all criteria listed in $\mu g/m^3$, unless otherwise specified.

[B] See Table 2-2 for more detail on odour units.

Odour Regulations in New South Wales

The NSW EPA provides odour criteria in NSW EPA (2006a) *Technical framework: Assessment and management of odour from stationary sources in NSW*. The criteria is shown in Table 2-2, and ranges from 2 OU to 7 OU (99.0%, nose response time) and corresponds to an affected population of >2000 (2 OU criteria) to 2 (7 OU criteria).

Table 2-2: Odour Performance Criteria (from Table 3.1, NSW EPA 2006)

Population of affected community	Odour performance criteria (odour units/m^3)
Urban areas (≥ 2000)	2.0
500 - 2000	3.0
125-500	4.0
30-125	5.0
10-30	6.0
Single residence (≤ 2)	7.0

The nose response time essentially refers to a 1 second averaging time and incorporates "peak to mean ratios". The peak to mean ratio is defined by NSW EPA (2006a, p55) as "*a conversion factor that adjusts mean dispersion model predictions to the peak concentrations perceived by the human nose*". Peak to mean ratios for odorous area and volume sources (likely for this development) are presented in Table 2-3.

Table 2-3: Peak to Mean Ratios (from Table 6.1, NSW EPA 2005)

	Pasquill-Gifford stability class	Near field i_{maz}	Near field x_{max}	Near field P/M_{60}	Far field i	Far field P/M60
Area	D	0.5	500 to 1000	2.5	0.4	2.3
	E,F	0.5	300 to 800	2.3	0.3	1.9
	A,B,C	0.5	500 to 1000	2.5	0.4	2.3
Volume	A-F	0.4	-	2.3	0.4	2.3

Peak to mean ratios can be further explained in the following example. Where a 1-hour averaging time has been used for modelling and an odour concentration at a receptor (resident) is predicted to be 0.5 OU, a peak to mean ratio of 3 would increase the predicted odour concentration to 1.5 OU. During that hour, the dispersion model predicts an average concentration of 0.5 OU at the receptor, however, the odour concentration at the receptor may rise to 1.5 OU and fall to 0.1 OU, but the fluctuations may only last for a matter of seconds. As the nose has a relatively quick response time, namely in the order of seconds, the peak to mean ratio incorporates the quick response time of the human nose when perceiving natural variations (increases) in odour concentration throughout that hour period.

Based on the residential area to the east, the odour performance criterion to be adopted is 2 OU.

2.1.2 Ambient Air Quality Standards

In June 1998, the National Environment Protection Council (NEPC) released a National Environment Protection Measure (NEPM) for Ambient Air Quality, setting out national standards and goals for six common ambient air pollutants (NEPC, 1998).

When reviewing the standards and goals set out in the NEPM for Ambient Air Quality, it should be noted that they are designed for use in assessing regional air quality and are not intended for use as site boundary of atmospheric dispersion modelling criteria. Consequently, proposed facility emissions have not been assessed directly against NEPM guidelines, however, the guidelines provided by the NEPM match the Air Impact Assessment Criteria provided in NSW EPA (2005).

3.1 Proposed Operations

AWT Facility

This will involve the receival of approximately 70,000 tpa of Municipal Solid Waste (MSW) into an enclosed building which will separate the waste into various fractions. The various operations involved in receiving and sorting the waste will generate strong odours, hence the building air will be vented via an external biofilter to treat the odorous air. In this assessment, allowance for fugitive emissions has also been made.

Greenwaste / Biosolids Processing Facility

The enclosed type composting facility will process up to 30,000 tonnes of source separated municipal greenwaste and 15,000 tonnes of biosolids, per year. The receival, sorting and shredding facility for greenwaste will generate odours, however the greatest odours are generally associated with exposed surface areas of greenwaste composting. Building air will be ducted to a biofilter, and as in the case of the AWT facility allowance for fugitive emissions has also been made.

Matured Compost Processing and Storage area

This area is not expected to generate significant odour, however these sources have been included in the dispersion modelling for completeness.

Pre-Existing Operations

Whilst the introduction of the AWT facility will reduce the proportion of waste to be directed to landfill, the existing Landfill and Leachate system will continue to operate on the site.

4.1 Climate

The closest Automatic Weather Station (AWS) is located at Narara Research Station, north of Gosford in the foothills of Mount Penang. This data was considered inappropriate for use in dispersion modelling due to the highly specific terrain-induced flows present at the sheltered location, coupled with its distance from the proposed site (14km to the north). However this data was considered generally indicative of the local climate.

A summary of climatological data collected at the Narara Research Station AWS is provided in Table 4-1. The climatological data indicates that the region experiences warm summers and mild winters. The records indicate that average daily temperatures for summer are approximately 27°C but can exceed 40°C in January, February and March. The area experiences a high amount of rainfall for the region. An annual rainfall of 1320mm over an average of 116 rain days per year is reported. In comparison, Sydney's mean annual rainfall is 1094mm. The wettest months are between January and June.

Mean wind speeds are lightest in the months between March and August. Afternoon winds show more seasonal variability than the morning winds, which may be attributed to coastal sea breezes. The morning winds remain consistently light until August to November where the monthly mean wind speed increases.

A discussion of site representative meteorology, as used in the dispersion modelling, is provided in Appendix A.

4.2 Background air quality

Odour

For the majority of air quality assessments, background concentrations of pollutants are added to the concentrations predicted to occur from the plant emissions in order to obtain a cumulative, or total concentration. In relation to odour assessments, it is generally accepted practice to assume a zero background odour concentrations unless there are significant odour sources in the vicinity of the development.

The only potential odour source identified in the vicinity of the development is the Woy Woy Sewage Treatment Plant (STP), located in the base of the valley to the north of the site. The STP is isolated from the proposed facility by a distance of approximately 2km, and by strong terrain features with a difference in elevation of greater than 120m along the path, between the two sites. The STP has been excluded from the assessment as a potential odour source, as explained in the following sections.

The Council has not received odour complaints from the Woy Woy STP for the past 25 years, suggesting the odour from the STP is confined to the site. This is consistent with a field odour assessment conducted by URS on the eastern boundary of the STP on 8 May 2007, which did not detect sewage type odours.

Furthermore, the meteorological conditions of northerly breezes and/or surface layer convection, in which air is potentially transported from the STP, to the region of the proposed site are not synonymous with worst case odour conditions, as significant amounts of turbulence (mechanical and/or convective) would be an inherent part of these transport mechanisms. These atmospheric conditions are in contrast to stable, low wind conditions, which are conducive to poor dispersion and adverse odour impacts. Consequently atmospheric conditions likely to transport odour from the STP to the area surrounding the proposed development are conditions where low odour impacts are expected from the development.

In addition, the relative alignment of the STP, the proposed development and the sensitive receptors nearest to the proposed site also prevents the STP from forming a source of background odour during worst case conditions i.e. westerly breezes. During westerly breezes, the emissions from the proposed facility would be transported towards receptors to the east of the proposed facility. These conditions suggest that the odours from the proposed facility would be travelling in parallel to the STP odours, thus the cumulative odour impact on the residential area to the east of the proposed development would be negligible.

Furthermore, the modelling conducted, which is discussed in subsequent sections, predicts the likely odour impact from the proposed development in the vicinity of STP. The results show that the odour concentration from the proposed development at the STP is approximately 0.1 OU (nose response time).

Given that the closest receptors to the STP are to the north east of the STP and further away from the proposed development, it follows that the added odour impact at the nearest receptors to the STP would be less than 0.1 OU (nose response time), which is considered negligible.

On this basis, the STP is unlikely to add to the predicted odour from the proposed development to cause a cumulative odour impact in exceedance of guidelines at sensitive receptors. Thus the STP has been excluded from this assessment as a significant odour source.

Table 4-1: Climate Data from Narara Research Station Automatic Weather Station (BoM, 2006)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	No. Years
Mean Daily Max Temp (deg C)	27.5	27.1	26	23.7	20.2	17.8	17.4	18.8	21.1	23.6	24.9	26.9	22.9	23.6
Mean no. Days, Max >= 40 deg C	0.4	0.2	0.1	0	0	0	0	0	0	0	0	0.2	1	20.7
Highest Max Temp (deg C)	42.8	43	40.1	32.8	28	25	25.5	29.3	36.1	36.5	39.9	43	43	20.8
Mean Daily Min Temp (deg C)	16.6	17.1	15.4	11.9	8.3	6.4	4.5	5.4	7.6	10.6	12.7	15.2	10.9	23.9
Mean no. Days, Min =< 0 deg C	0	0	0	0	0	0.5	2.1	0.7	0	0	0	0	3.3	20.9
Lowest Min Temp (deg C)	7.5	9.7	5.8	3.1	0.1	-1.1	-4.2	-1.1	-0.6	1.1	3.9	6	-4.2	21
Mean 9am Air Temp (deg C)	22.9	22.4	20.9	18.4	14.2	11.6	10.3	12.7	16.1	19.1	20.4	22.4	17.6	23.9
Mean 9am Wind Speed (km/hr)	8.3	7.2	7	6.8	6.9	7.3	7.2	9	10.1	10.8	9.6	8.5	8.2	20.3
Mean 3pm Air Temp (deg C)	26.8	26	24.4	21.7	18.7	16.3	15.8	17.6	19.7	21.9	22.8	25	21	8.3
Mean 3pm Wind Speed (km/hr)	13.7	11.7	11.2	9.1	7.9	7.6	8.4	10.2	12.4	11.5	12.8	13.4	10.8	8.6
Mean Rainfall (mm)	139	148.1	149.8	136.2	119.1	127.6	79	75.9	68.6	82.9	92.4	102.2	1320.8	81.6
Highest Monthly Rainfall (mm)	517.5	597.7	500.3	661.9	634	664	455.6	426.2	232.1	344.1	361.5	417.1	-	81.6
Lowest Monthly Rainfall (mm)	4.3	0	6	4.6	6.1	1.9	0	0	2	1	4.1	6	-	81.6
Highest Recorded Daily Rain (mm)	210.8	191.8	205.5	218.4	177.3	170.7	194.8	119.2	106.9	129.3	155.2	155.2	218.4	75.9
Mean No. Raindays[1]	11.1	10.8	11.1	10.6	9.2	9.7	8	8.1	8.4	9	9.8	10.1	115.8	67.3
Mean no. of Clear Days	6.7	8	7.3	9.3	7.3	6.6	9.8	12.4	6.2	9.8	5.8	6.8	96	4.3
Mean no. of Cloudy Days	11.3	7.7	8	5	10	6.8	6.4	5	8	6.2	7.2	5.6	87.2	4.3
Maximum Wind Gust (km/hr)	53.6	51.8	50	57.2	48.2	77.8	50	57.2	51.8	64.8	53.6	50	77.8	3.9

[1] A rainday is a day where more than 0.2mm of precipitation was recorded.

Particulate Matter and Criteria Pollutants

Background concentrations of pollutants within the immediate locale are an important consideration when undertaking an air quality assessment. Background concentrations provide an indication of existing air quality prior to development. Background monitoring stations only monitor the air quality for the location in which they are placed, and provide only an indication of existing air quality in other areas. When using data from an air quality monitor in one area as representative of another area, both areas should have similar topography and surrounding land use. Within New South Wales (NSW), monitoring is undertaken by the DEC in multiple locations and also by specific industries, where it is considered relevant by the DEC. Data from industrial monitoring is not publicly available, and therefore cannot be considered within this assessment. The DEC has monitors throughout NSW, and within the area surrounding the site, four were primarily considered, these were:

1. Lindfield – approximately 35km south-west of the site;

2. Beresfield – approximately 85km north-east of the site;

3. Newcastle – approximately 75km north-east of the site; and

4. Wallsend – approximately 75km north of the site;

Of the four monitors considered, the Wallsend site was considered most representative of the site as it was located on the edge of a moderately sized urban area, with a large forested area to the west and south-west of the monitoring location. Whilst urbanisation exists closer to the monitoring location than is the case at the proposed site, there are no major roads indicating that this would be a typical background location, and would be representative of the expected background concentrations at site.

Data collected at the Wallsend monitoring site for the most recent complete monitoring cycle (2005) was compared to the impact assessment criteria identified within the DEC, 2005. The impact assessment criteria within NSW have been drawn from a number of Australian and International sources and represent limit values at which ambient concentrations are not considered harmful to human health or the environment. Figure 4-1 shows the annual mean concentrations of NO_2, PM_{10} and SO_2 in comparison to the NSW impact assessment criteria, it may be seen, that in 2005 background concentrations were significantly below the assessment criteria for these pollutants.

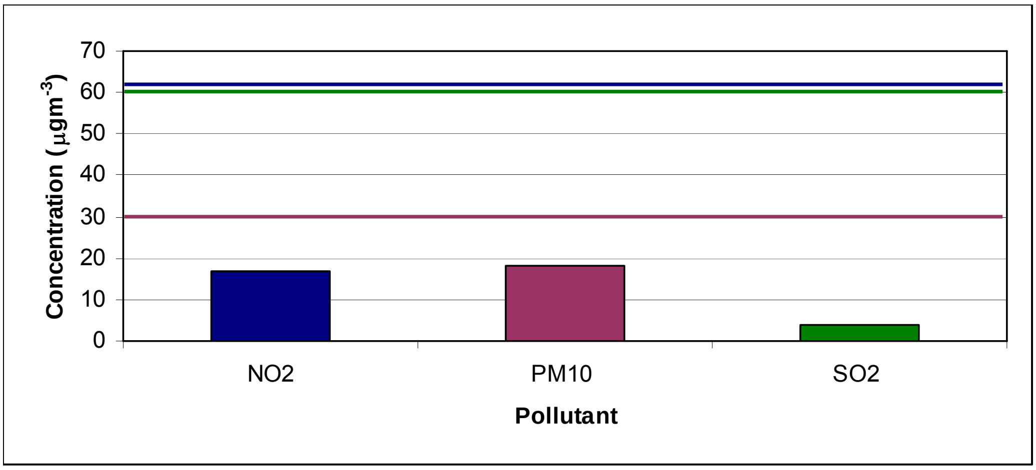

Figure 4-1: Annual mean background concentration compared with DEC impact assessment criteria, measured at Wallsend in 2005

The NSW impact assessment criteria also require comparison of certain pollutants against concentrations measured over shorter averaging periods than the annual mean due to the acute impact of elevated short-term concentrations.

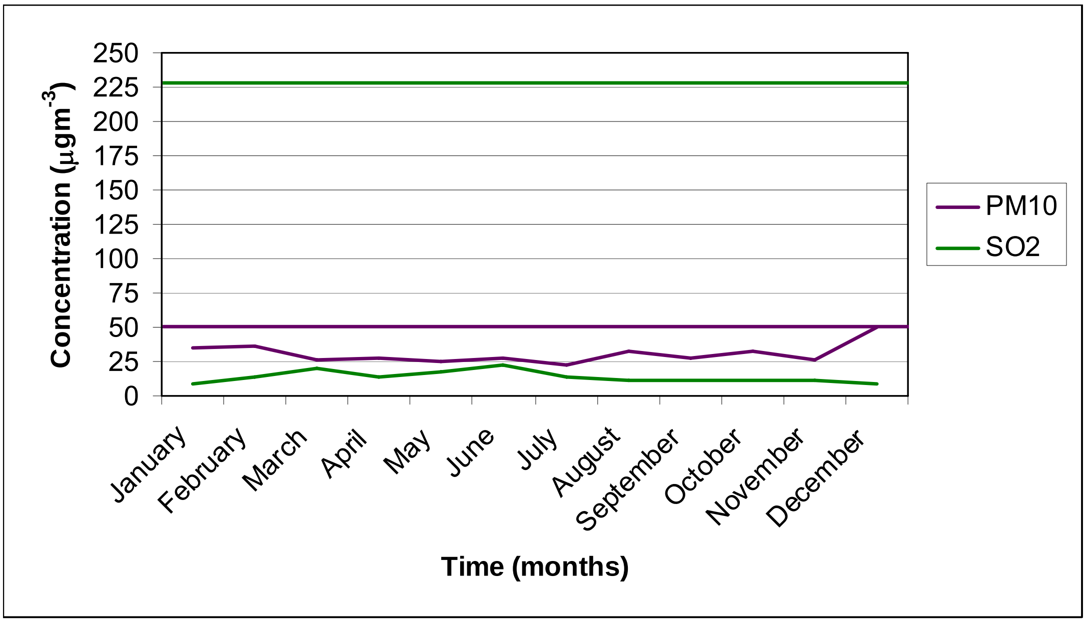

Figure 4-2: Maximum 24-hour mean concentration for PM_{10} and SO_2 measured at Wallsend in 2005

Figure 4-2 shows the maximum twenty-four hour mean concentration for each month in 2005 as measured at the Wallsend monitoring station in comparison to the impact assessment criteria. As would be expected in a suburban environment away from industrial sources, 24-hour mean concentrations of SO_2 are significantly below the assessment criteria. Background concentrations of PM_{10} are closer to the assessment criteria, and in December 2005 ambient concentrations measured over 24-hours were equal to the assessment criteria. It is thought that this is the result of a naturally occurring wind-blown dust, or a bush fire in the surrounding area.

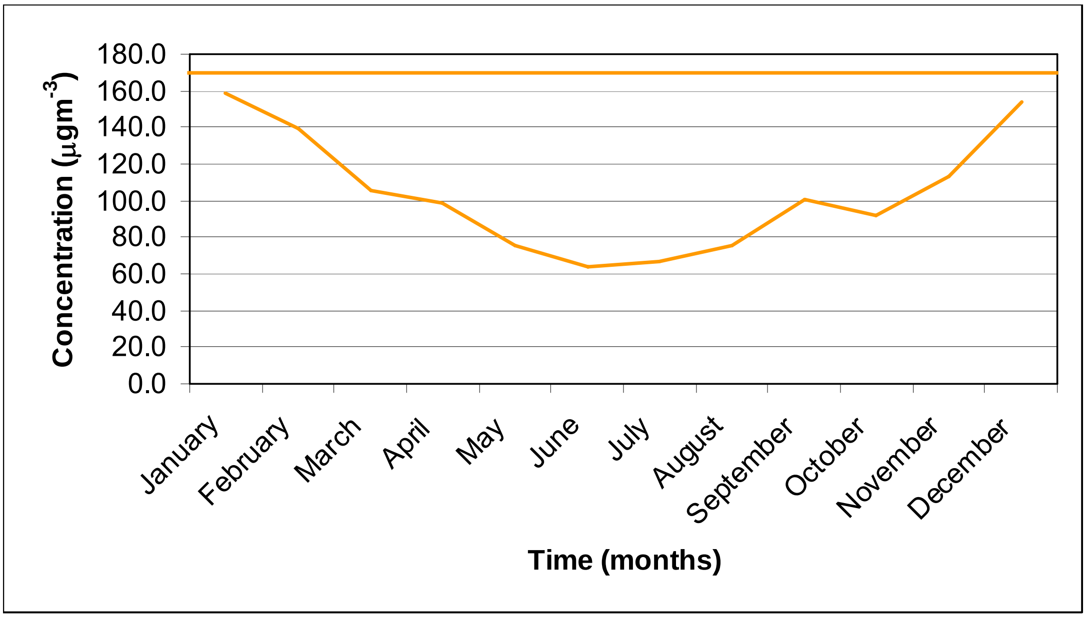

Figure 4-3: Maximum 4-hour mean concentration of O_3 measured at Wallsend in 2005

Figure 4-3 shows the maximum 4-hour mean concentration of ozone which is commonly used as a representative indication of photochemical oxidants within a study area. Photochemical oxidants are important as they oxidise nitric oxide in to nitrogen dioxide and are needed in the formation of peroxyactyl nitrates (PAN), or photochemical smog. Concentrations of these pollutants were below the assessment criteria for the measurement period.

Figure 4-4 shows the maximum 1-hour mean concentrations for ozone (O_3), NO_2 and SO_2 measured at Wallsend for each month in 2005. Concentrations of these pollutants did not exceed the assessment criteria at any point throughout the year.

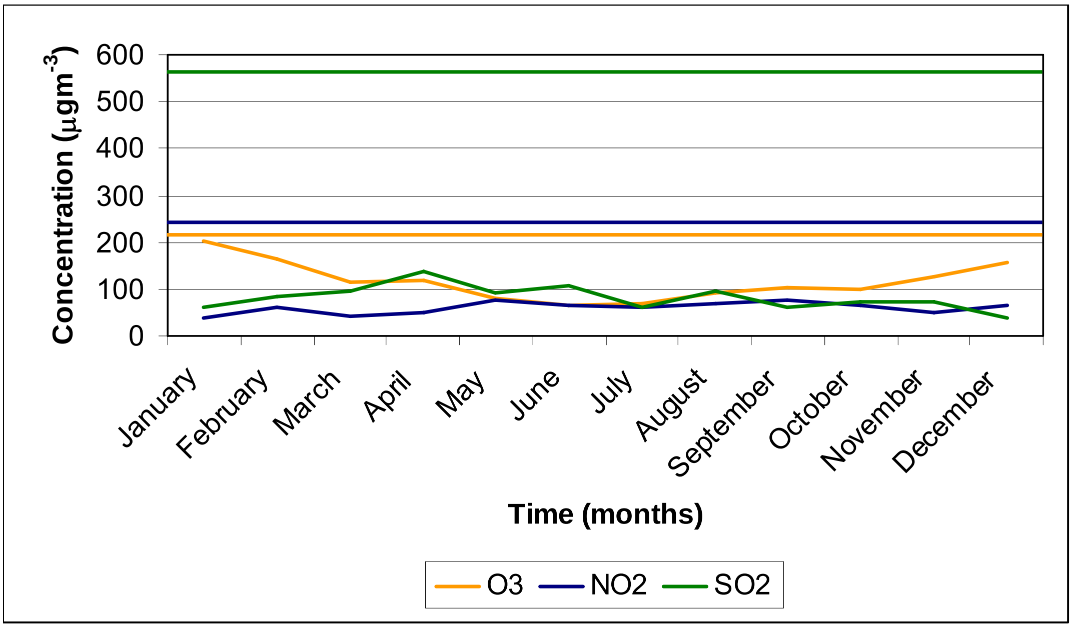

Figure 4-4: Maximum 1-hour concentrations of O_3, NO_2 and SO_2 measured at Wallsend in 2005

4.3 Summary

Emissions of ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM_{10}) and sulphur dioxide (SO_2) from the site will be negligible. Anthropogenic creation of O_3 within the troposphere is not the result of direct emission; rather it is the result of chemical reactions of oxides of nitrogen (NO_X) and volatile organic compounds (VOCs) with other natural atmospheric constituents and isolation.

Anthropogenic generation of O_3 in large quantities requires large volumes of traffic and insolation. It would not be expected that the site would provide sufficient additional traffic to generate added O_3, and has therefore not been considered further in this assessment. NO_X emissions from the site will also be minimal due to the low number of site vehicles and other on site combustion sources, and it would not be expected that the additional site traffic would result in an exceedance of the assessment criteria.

PM_{10} emissions are likely to be generated from site vehicles passing over unsealed roads. The majority of roads on site will be sealed reducing PM_{10} emissions to the maximum extent achievable. Only machinery within the cells will pass over unsealed roads; emissions of PM_{10} will be kept to a minimum within these areas by control techniques. It is not anticipated that site activities will significantly add to background concentrations of PM_{10}, and these have therefore not been considered further within this assessment.

Finally emissions of SO_2 will be limited to those generated through the use of sulphur containing fuels on site. The amount of sulphur in fuels in controlled in Australia by the Fuel Quality Standards Act, 2000, which limits sulphur in diesel to 50ppm as from 1 January 2006 and to 10ppm from the 1st January 2009. The low sulphur fuels will ensure that site sulphur emissions are minimal and that site contribution to ambient concentrations will not result in exceedance of the assessment criteria over any averaging period.

Carbon monoxide was not measured at the Wallsend site, however, background concentrations are likely to be low and site emission sources, namely vehicle emissions, are derived from relatively few sources and are not expected to add significant concentrations to background concentrations. Hence, carbon monoxide is not considered to be a significant pollutant in relation to this assessment.

Background concentrations for the pollutants considered within this section over all averaging periods combined with the expected emissions would not be expected to exceed the assessment criteria specified by the DEC. The only significant pollutant likely to arise from the proposed development is additional odour, which is further assessed in the following sections.

5.1 Proposed Operations

The two major sources of air emissions related to this project include dust emissions during the construction phase and odour emissions during the operational phase. As dust generated during construction will be temporary and can be effectively controlled using mitigation measures, this report will focus on the assessment of odour during the operational phase of the project.

5.2 Odour Emission Rates

The final design selection of the AWT and composting facility to be employed at the Woy Woy facility is yet to be made. Thus Odour Emission Rates (OERs) have been calculated based on the proposed tonnage of material to be processed, in accordance with emission rates from existing facilities which employ similar processes to those proposed for the Woy Woy facility. The OERs calculated, include significant margin for safety, in order to be consistent with the conservative nature of this assessment. Where a range of OERs have been available, the most conservative rates have generally been selected.

5.2.1 AWT Facility

OERs for the AWT facility have been estimated from a proposed Municipal Solid Waste Facility at South Windsor (Thiess Services, 2003). The odour emission data presented in Thiess Services (2003) was based on empirical odour data collected from waste at a plant with similar operations, hence the data is considered suitable for use in this assessment.

The proposed AWT facility is to consist of a waste receival hall where municipal solid waste is delivered by trucks and unloaded inside the building. The waste is then to be conveyed to adjoining rooms for processing using a rotating drum. An extraction system captures air from the primary processing areas which is then vented to a biofilter. The estimation of odorous emissions from the facility have also included a large quantity of fugitive emissions from the building, however, it is expected that the odours will primarily be treated by the biofilter.

The OERs for the Woy Woy AWT facility are based on this work, as the process proposed for the Woy Woy AWT is similar to that investigated at South Windsor. Thiess (2003) calculated a fugitive odour emission rate of 5100 $OU.s^{-1}$ based on a throughput of 155,000 tonnes per annum with the odour control technology being a biofilter, which was designed to have a surface area of $100m^2$, with a total emission rate 556 $OU.s^{-1}$.

The OERs for the proposed Woy Woy AWT were scaled linearly to the throughput of 70,000 tonnes per annum for the AWT (as shown below in Equation 5-1), which resulted in an OER of 2303 $OU.s^{-1}$ for the AWT facility and an OER of 250 $OU.s^{-1}$ for the biofilter.

$$OER_D = OER_T \times \frac{Throughput_D}{Throughput_T}$$ ...Equation 5-1

Where:
OER_D and OER_T are the Odour Emission Rates proposed for Woy Woy and South Windsor respectively.
$Throughput_D$ and $Throughput_T$ are the proposed development throughputs for Woy Woy (70,000 Tpa) and South Windsor respectively (155,000Tpa)

It should be noted that all wastewater generate as part of this facility will be contained within storage tanks, hence this source does not warrant inclusion in the odour modelling.

5.2.2 Green Waste / Biosolids Composting Facility

The composting facility will comprise an enclosed building where the majority of processing is to occur. In a manner similar to the AWT facility, air from within the building will be ducted to a biofilter, whilst a large allowance for fugitive emissions has been made.

Based on the likely throughput of approximately 45,000 Tonnes of material annually, and given 20,000 tonnes would generally comprise 8 windrows operating continuously, 18 windrows were assumed to be situated within the building. Each windrow used in the modelling assumed dimensions shown in Figure 5-1, with a height of 3m.

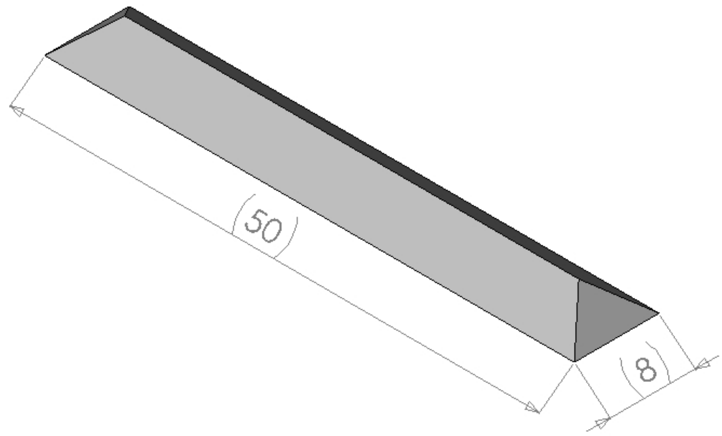

Figure 5-1: Windrow dimensions (in metres) used in emission calculations.

The surface area of each cell was calculated by assuming that each cell occupied 50 x 8m of ground, and formed a triangular prism. Each end was angled at 40 degrees from horizontal which gave a total exposed surface area of approximately 571 m^2 per cell. This area allows the Odour Emission Rate (OER) for a single windrow to be calculated from the Surface Odour Emission Rate (SOER).

Work undertaken by Kühner *et al.* 1999 has shown that for a Gore covered windrow, such as those proposed, have an SOER of 1.25 $OU.m^{-2}.s^{-1}$, resulting in an average odour emission rate of 714 $OU.s^{-1}$ per windrow. On the basis that 18 windrows are contained within the Composting Facility, and that 50% of the odorous air is either treated using a biofilter or retained by the enclosure, the odours produced by the windrows that escape the building as fugitive emissions, is estimated to be 6,424 $OU.s^{-1}$. Whilst it is known that odour emissions from the windrows are increased during turning, the biofilter and enclosure will act to contain those peak emissions.

The composting facility is proposed to have a biofilter which is used to treat the extracted air from the building. GHD (2006) indicated that a 440 m^2 biofilter attached to a similar green waste facility (30,000 tpa) generated an SOER of 2.8 $OU.m^{-2}.s^{-1}$. Similar to the method used to calculate the biofilter area of the AWT facility, the area of the proposed biofilter has been designed to be 660m^2, based on 45,000 tpa of biosolids and greenwaste combined. This will produce a net emission rate of 1848 $OU.s^{-1}$ from the biofilter.

It should be noted that all wastewater generate as part of this facility will be contained within storage tanks, hence this source does not warrant inclusion in the odour modelling.

5.2.3 Green Waste Maturation Windrows

It is known that greenwaste processing can generate significant odorous emissions, however, it is generally during the initial weeks where the majority of the odours are released. After 12 weeks of processing within the enclosed composting facility, significant odour emissions are unlikely to be generated when the windrows are moved outside for further drying.

Mature windrows, such as these, have been shown to have an SOER of approximately 0.46 $OU.m^{-2}.s^{-1}$. The value of 0.46 $OU.m^{-2}.s^{-1}$ was calculated from other mature compost odour emission rates, as shown in Table 5.1. It should be noted, in Table 5-1, that URS considers the inclusion of the Mature Product, with an SOER of 4.5 $OU.m^{-2}.s^{-1}$ as being overly conservative, and it is the experience of URS that SOERs for this type of source would generally be significantly less than shown. Consequently, the geometric average was used to reduce the skew which resulted from the inclusion of this datum.

Table 5-1: Literature review of SOER from Mature Compost Product

Odour Emission Source	SOER ($OU.m^{-2}.s^{-1}$)	Geometric Average A ($OU.m^{-2}.s^{-1}$)	Sampling Method	Reference
Finished Product – Fine	0.83	0.46	Flux Hood	AWT (2001)
Finished Product – Coarse	0.18		Flux Hood	AWT (2001)
Unscreened Finished Compost	0.08		Flux Hood	AWT (2001)
Mature Product	4.5		Wind Tunnel	Kühner & Kischer (1999)
Final Product	0.4		Unknown	Haug (1993)

It has been assumed that 12 windrows of material, each having a surface area of 571 m^2, will be stored in the maturation area at any one time. The net emission rate from the external windrows will therefore be 3152 $OU.s^{-1}$.

5.2.4 Existing Tip Face

The existing tip face will remain operational to accept the fraction of waste which the AWT is unable to treat or use elsewhere. Emission rates incorporated into this assessment are for tip faces which accept putrescible Municipal Solid Waste. Table 5.2 gives a range of emission rates for active tip faces including emission rates measured Woy Woy in 2003. The site specific data has not been included as there is more conservative data available. The dispersion modelling has assumed an odour emission rate of 2.7 $OU.m^{-2}.s^{-1}$, which was sourced from GHD, 2006[2].

Table 5-2: SOERs for Putrescible Solid Waste Landfill Tip Faces

Odour Emission Source	SOER ($OU.m^{-2}.s^{-1}$)	Sampling Method	Reference
Kincumber Landfill	0.146	Flux Hood	Bowly (2003)
Woy Woy Landfill	0.110	Flux Hood	Bowly (2003)
Buttonderry Landfill	0.335	Flux Hood	Bowly (2003)
Jacks Gully WMC	2.71	Flux Hood	GHD (2006)

[1] This incorporates a scaling factor of two in order to account for cooler weather during sampling (GHD,2006)

Given that the tip face will move around the site as the landfill takes on new material, the tip face has been assumed to be located at the southern-most point of the landfilling area. This allows for the emissions of the AWT and tip face to consolidate, hence ensuring the most conservative location has been assessed. The tip face was assumed to be 30 x 30 m^2 , a total of 900 square metres. This results in a source emission rate of 2,430 OU/s. As an added level of conservativeness, the tipface emissions were assumed to emit continuously, even though the tipface is generally covered by soil during night times.

5.2.5 Leachate Pond

The leachate pond on the site will remain operational in order to process the leachate produced by the existing landfill. Table 5.3 gives a range of emission rates for leachate ponds.

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[2] Contained in Table 10 of Appendix 7.

Table 5-3: SOERs for Leachate Ponds

Odour Emission Source	SOER ($OU.m^{-2}.s^{-1}$)	Sampling Method	Reference
Buttonderry Landfill	0.833	Flux Hood (converted)	Bowly (2003)
Jacks Gully WRC	0.108	Flux Hood	URS(2004)
Jacks Gully WRC	0.054	Flux Hood	URS(2004)

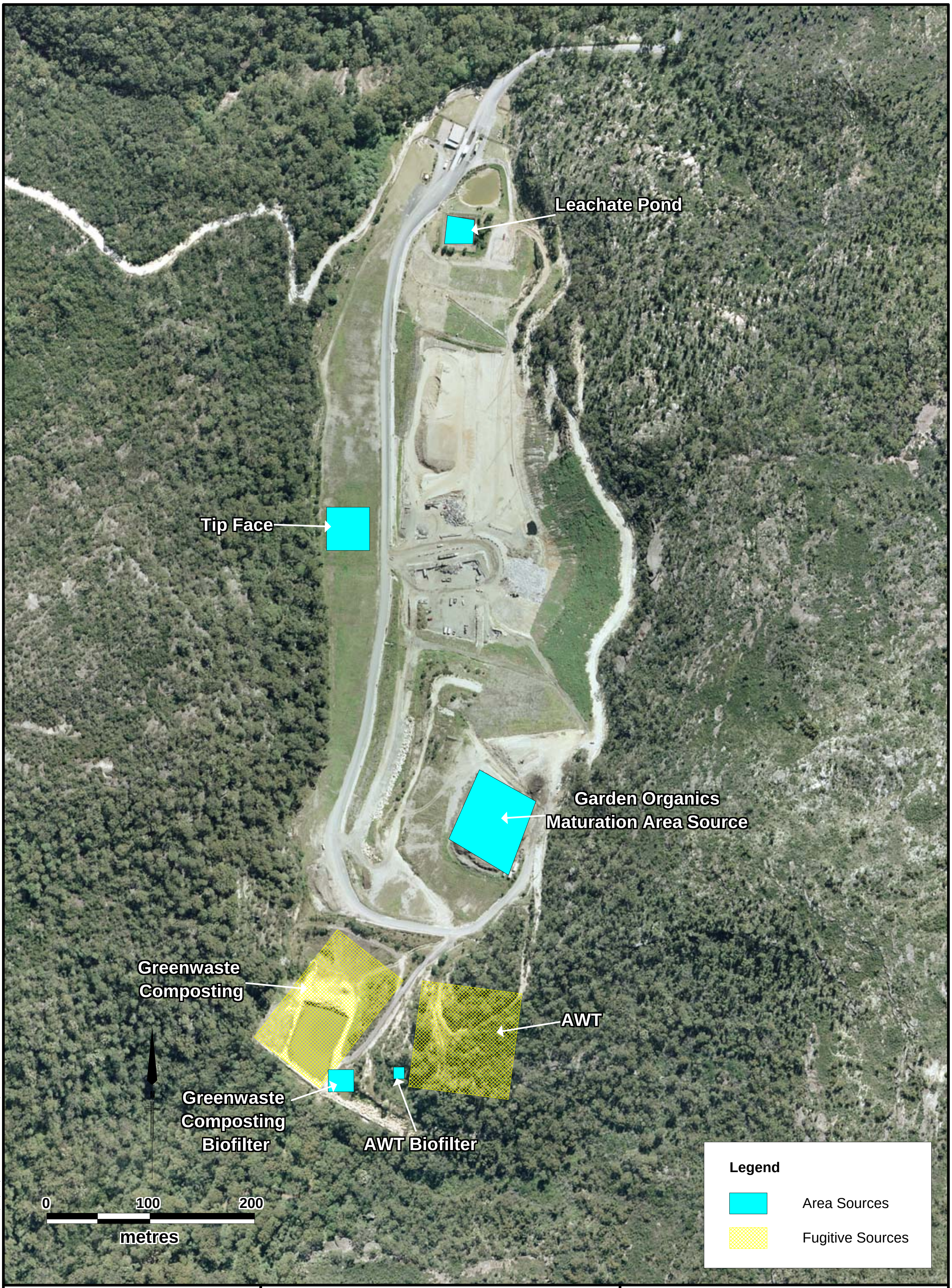
The existing leachate pond is approximately 23 x 23m^2 in size, totalling 529 square metres. Taking the most conservative SOER from Table 5-3, this constitutes a total of 441 OU/s being emitted from the leachate pond for every hour of the year.

5.3 Odour emission rate summary

The odour emission rates used in the modelling are provided in Table 5-2, and have been derived from various studies of other similar facilities both internationally and within Australia as described above. These emission rates do not incorporate a peak to mean ratio, as a peak to mean ratio of 2.5 has been incorporated in the post processing of the model results. The locations of the sources are shown in Figure 5.2 on the following page**.**

Table 5-4: Odour Emission Rates

Odour Source	Source Type	Surface Odour Emission Rate ($OU.m^{-2}.s^{-1}$)	Odour Emission Rate ($OU.s^{-1}$)
AWT Treatment Facility	Fugitive	-	2,303
AWT Treatment Facility (Biofilter)	Area	2.5	250
Green waste Treatment Facility	Fugitive	-	6,424
Green waste Treatment Facility (Biofilter)	Area	2.8	1,848
Green waste Maturation Area	Area	0.46	3,152
Tip Face	Area	2.7	2,430
Leachate Pond	Area	0.833	441
		TOTAL	16,848



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Client	Project	Title
GOSFORD CITY COUNCIL	WOY WOY WASTE MANAGEMENT FACILITY	**SOURCE TYPE AND LOCATIONS AS USED IN DISPERSION MODELLING**
URS	Drawn: AJW / Approved: DRAFT / Date: 27/06/2007	Figure: **5-2**
	Job No: **43177409** / File No: 43177409-006.wor	

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5.4 Modelling Methodology & Parameters

A discussion of the modelling, performed using CALPUFF, including processing of meteorological data is provided in Appendix A and example of the CALPUFF files are provided in Appendix B. The modelling domain and an example of a wind field over the domain is provided in Figure 5.3, which shows the lower wind speeds in the valleys and higher wind speeds atop the ridges. Generation of suitable wind speeds is necessary, as adverse odour impacts generally occur under light wind and stable atmospheric conditions.

In addition to the modelling discussion in Appendix A, the following sections discuss some of the key points in relation to dispersion modelling.

Sensitive Receptors

Sensitive receptors are locations close to the development where people or organisms could be adversely affected by the emissions from the development. For this development, the location of sensitive receptors, such as residences, are located approximately 1000m to the east of the development.

Frequency

The frequency of the modelling is the amount of time it spends at or below a given concentration. For example, modelled contours at a 99% frequency indicate that the concentration of a species will lie within the area shown by the contours for 99% of the year. Following on, for 1% of the year, there exists a potential that the species will exist at a concentration higher that that shown by the contours.

For the odour dispersion modelling performed, a frequency of 99% was used, as recommended in NSW EPA (2006).

Averaging Times

The hourly concentration output from a dispersion model is a representation of what is in the real world a constantly fluctuating quantity. The concentration of a species is constantly changing in time depending on the proximity and nature of the plume at any one instant. Thus a user-defined averaging time is input into the model, to specify the period over which the concentration will be averaged.

The averaging time used will vary from seconds to hours or even months, and is generally dependent on the nature of the receptor's sensitivity to a species. For example, in a situation where an odour nuisance is to be assessed, one is able to detect the odorous air within seconds, thus short averaging times will be used, ensuring that the extremities of the fluctuations are represented in the results.

Whilst on the other hand, for pollutants that have chronic or cumulative effects on the receptor, a longer averaging time is used. Here the amount of fluctuation of concentration is not as critical as the total average exposure.

Using a lower averaging time will give a higher concentration in the model output, as higher concentrations (which may only exist for short periods) are represented in the top ranking results. Alternatively, higher averaging times will give a lower result, as the variations in concentration are averaged out over a longer period.

For the odour dispersion modelling performed, an averaging time of 1 hour was used, as recommended in DEC, 2006a.

Peak to Mean Ratios

As recommended by NSW EPA (2006), appropriate peak to mean ratios should be applied in these modelling situations to account for fluctuation in odour concentration. The peak to mean ratios are provided in Table 6.1 of NSW EPA (2005). This table gives a specific range of values between 2.3 and 2.5 for area and volume odour sources. As all sources were considered to be area or volume sources, the more conservative peak to mean ratio of 2.5 was applied to the modelled concentrations.

Building and Biofilter Information

The dimensions of the buildings, as used in the dispersion modelling, are provided in Table 5-3.

Table 5-2: Building dimensions

Building	Length (m)	Width (m)	Height (m) [A]
AWT	100	100	10
AWT Biofilter	10	10	1
Greenwaste Composting	130	80	10
Greenwaste Composting Biofilter	33	20	1

A: height in metres above ground level.

It should be noted that the biofilters were regarded as separate units for the purposes of consistency with previous assessments, however the option to combine the two biofilters into one larger unit, as proposed in the main report, will not significantly affect the outcome of this assessment. In addition, slight changes to the location of the buildings and biofilter may occur upon finalisation of the layout of the facility. Again, slight modifications to the location of the facility are not considered to significantly affect the outcomes of this assessment.

6.1 Odour

On the basis that 2 OU (nose response time) represents the odour performance criteria, Figure 6.1 shows that the modelling has predicted an odour concentration contour 2OU approximately 900m to the east of the proposed development, located within the Brisbane Waters National Park. Thus, the predicted odour concentration at the residential area to the east of the site is below the criteria of 2 OU (nose response time).

To confirm the impact of odour on sensitive receptors close to the site, four receptor locations were chosen to be examined. Figure 6-2 shows the three closest residential receptor locations close to the proposed site. The odour concentration predicted at these locations, as shown in Table 6-1, were below 2 OU, confirming odour impact at sensitive receptors to be meet regulatory guidelines.

Table 6-1: Odour concentrations at sensitive receptors

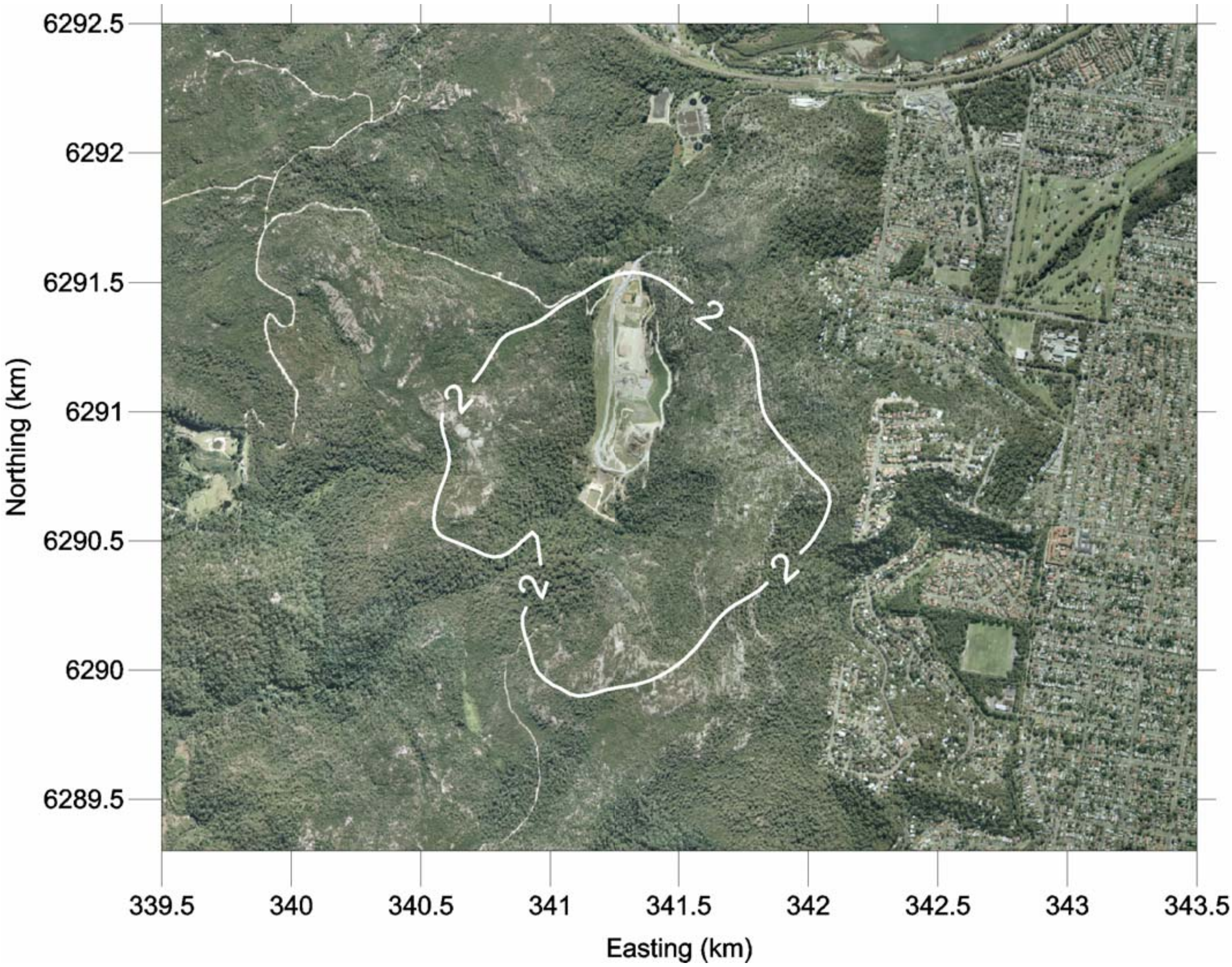
Location	Odour concentration (OU) (99.0%ile, Peak to Mean Ratio of 2.5)
Sensitive receptor location 1	1.1
Sensitive receptor location 2	1.7
Sensitive receptor location 3	0.7
Woy Woy STP	0.1

To further demonstrate the influence of terrain on the odorous emissions, Figure 6.3 shows the odour impacts lessening down the valleys to the north and south-west of the site, whilst ridges to the east and west of the site show increased odour impacts.

6.2 Particulate Matter

Particulate emissions generated during construction will be temporary and can be controlled using known and effective dust mitigation measures.

During operation, PM_{10} emissions are likely to be generated from site vehicles passing over unsealed roads, however, the majority of roads on site will be sealed, limiting the adverse impacts of PM_{10}. Other site activities, such as those being performed within enclosed buildings are not anticipated to significantly add to background concentrations of PM_{10}, and therefore PM_{10} is not considered to have a significantly adverse impact on local air quality.



GDA94 Coordinates

Client	Project	Title
GOSFORD CITY COUNCIL	Environmental Assessment of Proposed Alternative Waste Technology and Composting Facilities at Woy Woy WMF	**OPERATING FACILITY 2OU CONCENTRATION CONTOUR (99.0% NOSE RESPONSE TIME)**
URS	Drawn: AJW; Approved: FINAL; Date: 25/06/2007; Job No: **43177409**; File No: 43177409-008.wor	Figure: **6-1**

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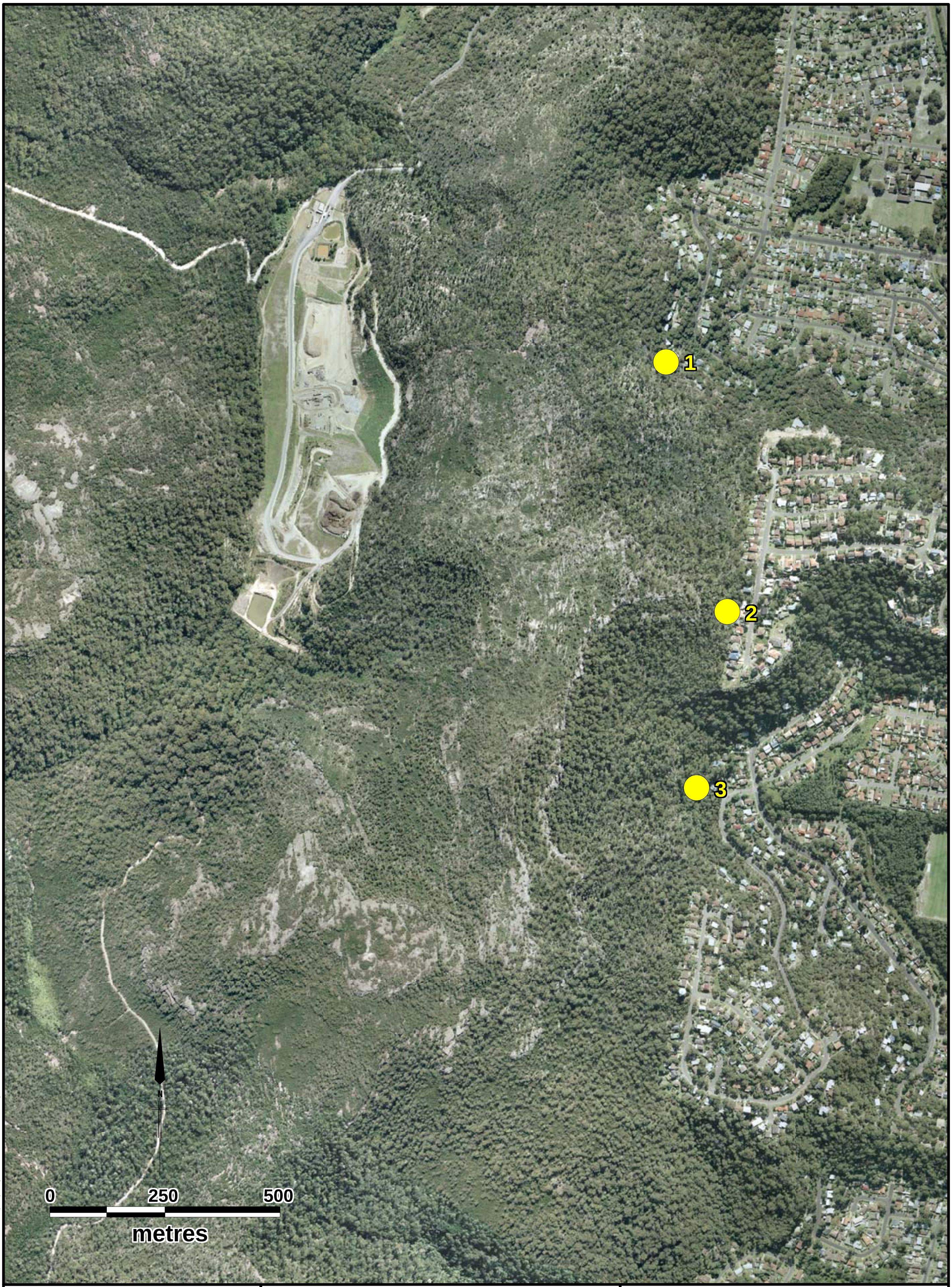

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Client	Project	Title
GOSFORD CITY COUNCIL	WOY WOY WASTE MANAGEMENT FACILITY	**DISCRETE RECEPTORS**
URS	Drawn: AJW / Approved: DRAFT / Date: 30/10/2006 / Job No: **43177409** / File No: 43177409-010.wor	Figure: **6-2**

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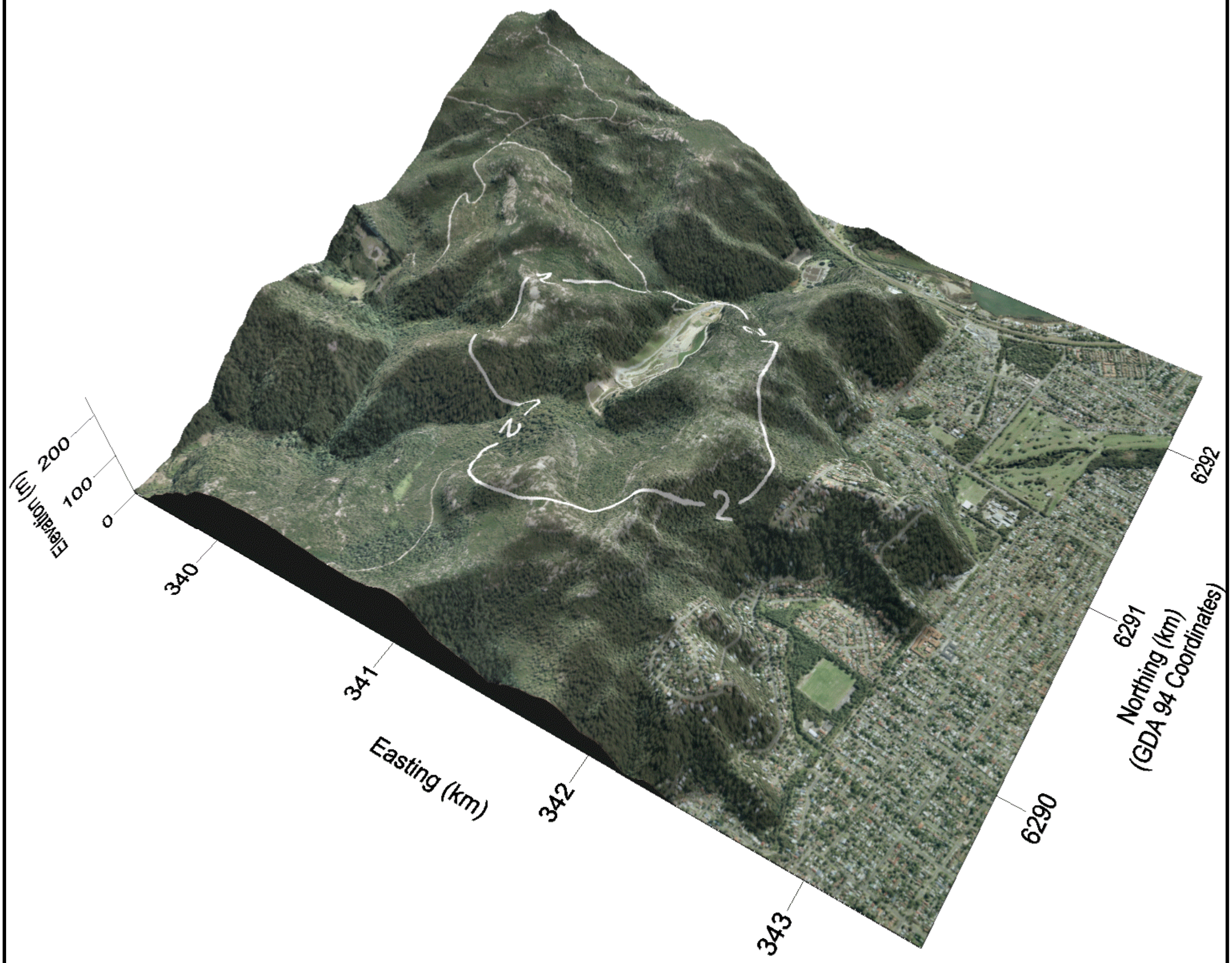

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Client	Project	Title
GOSFORD CITY COUNCIL	WOY WOY WASTE MANAGEMENT FACILITY	**3D VIEW OF OPERATING FACILITY 2OU CONCENTRATION CONTOUR (99.0% NOSE RESPONSE TIME)**
URS	Drawn: AJW; Approved: DRAFT; Date: 25/06/2007	Figure: **6-3**
	Job No: **43177409**; File No: 43177409-007.wor	

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6.3 Oxides of Nitrogen

NO_X is generated through the combustion of nitrogen containing fuels, and also in high temperature environments, such as a combustion engine, where nitrogen and oxygen within the air become combined to form NO and NO_2 in approximately a 9:1 ratio. When the proposed facilities are operating at peak capacity the site will have an increase of 57 trucks of per day on current levels, as well as a small number of site vehicles. There is currently planned to be no other on combustion sources on site. Due to the relatively low number of site and delivery vehicles and the lack of other combustion sources, it is considered that site contribution to ambient NO_2 concentrations will not be significant. Furthermore, it is known that NO_X generated by transport sources will disperse to background concentrations within 200m of generation (Highways, 2003). The nearest sensitive receptors to site are 1000m from the site access roads or workings.

6.4 Oxides of Sulphur

Emission of sulphur dioxide from the site will be limited to the combustion of fuels such as petrol and diesel which contain sulphur. The amount of sulphur within petrol and diesel is controlled by the Clean Fuels Act, 2000, which will continue to reduce the amount of sulphur within fuels. As a result of this legislation, high concentrations of sulphur dioxide are not associated with high traffic densities, and it is therefore considered that the site will not contribute significant amounts of sulphur dioxide to the surrounding environment.

6.5 Carbon monoxide

High CO levels are only expected where there is a high concentration of vehicles to generate the pollutant. Due to the low number of site and delivery vehicles, it would be expected that the site would not generate a high concentration of CO.

6.6 Summary

Impact of odour on the surrounding area was shown to minimal, with the highest concentration shown to be less then 2 OU at the nearest receptor. Thus odour impacts on sensitive receptors adhere to NSW odour regulations of 2 OU (nose response time) and the odour impacts are expected to be minimal.

As discussed, emissions of CO, NO_X and SO_2 are considered to be minimal from the proposed development. When these minimal emissions are dispersed in to the wider environment, it would not be expected that ambient concentrations of these pollutants would change and regional air quality would therefore be protected.

Dust generation on site will be minimised by the sealing of all site haul roads and site access roads with the exception of work within the cells. Within the unpaved areas, dust generation will be minimised through the use of water sprays in very dry weather where work is undertaken. The reduction in area for potential dust generation combined with dust suppression techniques on remaining areas will ensure that the site impact on regional dust levels will be minimal. When dispersion is also considered with the high surface roughness of the land use surrounding the site, dust concentrations at a regional level will not be increased significantly from current levels.

7.1 During the Design Phase

The atmospheric dispersion modelling study undertaken as part of this assessment has been based on preliminary design information and covers a number of possible design options. As part of the detailed design of the development, the assumptions and emission estimates used in this assessment will be reviewed despite the conservative nature of emissions estimates used, should the expected emission rates increase over values used, the modelling will be revised to ensure that they are compliant with NSW EPA air quality standards and goals.

In addition, throughout the design process, opportunities to minimise emissions to air will be investigated and implemented wherever possible to ensure that off-site impacts are minimised.

7.2 During Construction

Environmental safeguards that would be implemented during the construction phases of the expansion are listed below. Any emissions of particulates (dust) would be specifically controlled through the implementation of these mitigation measures, which would be incorporated into a Construction Environment Management Plan (CEMP) for the works.

- Before works begin, a CEMP will be prepared which addresses air monitoring and management issues.
- In dry, windy conditions, water sprays will be used to dampen down soils prior to excavation and handling. Exposed surfaces and stockpiles will also be watered, sprayed or covered where required.
- Where practical, demolition activities or particularly dusty works will be scheduled under favourable meteorological conditions only. Earth-moving activities will be stopped when wind speeds exceed 30 km/hr.
- Vehicles will only be loaded to less than the height of the side and tailboards and loads of contaminated fill will be covered during transport. Any soil adhering to the undercarriage and wheels of trucks will be removed prior to departure from the site.
- Any long-term stockpiles will be stabilised using fast-seeding grass or synthetic cover spray.
- All major access roads will be sealed and vehicle speeds on unsealed areas will be controlled to minimise dust.

The air quality impact assessment of the proposed Woy Woy AWT Facility has been assessed against the DECC (NSW EPA) Impact Assessment Criteria as specified within DEC (2005) *Approved methods for the modelling and assessment of air pollutants within New South Wales* and NSW EPA (2006) *Technical Framework: Assessment and management of odour from stationary sources in NSW*'. Limit values provided within these documents have been set with the aim of protecting public health, and in the case of odour, mitigating against public annoyance.

The air quality species assessed as part of this investigation included the following:

- Odour;
- Particulate matter (dust);
- Oxides of nitrogen;
- Sulphur dioxide; and
- Carbon monoxide.

As the primary air quality issue relating to waste processing and composting facilities is odour, this investigation focused on the generation and dispersion of odour. The odour emissions were modelled using the Calpuff dispersion modelling package, based on TAPM generated meteorological data.

Due to the highly exposed nature of the areas around the proposed site and despite conservative odour emission estimates, the proposed facility was found to have no adverse odour impacts at the nearest sensitive receptors. The predicted results showed the odour concentration to be present at a maximum concentration of 1.7 OU, at the nearest sensitive receptors, falling below the NSW odour performance criteria of 2 OU (nose response time).

The majority of site generated total suspended particulates and PM_{10} will occur as a result of site vehicles passing over unmade roads. An undertaking to seal all site access roads and main internal haul roads will reduce the potential for dust generation. Areas where vehicles pass over unmade ground will be sprayed with water to reduce dust emissions. Using these mitigation methods, it is considered that the generation of dust will be minimised, and that concentrations at the nearest sensitive receptors will not exceed the assessment thresholds.

In relation to other atmospheric pollutants, namely oxides of nitrogen, sulphur dioxide and carbon monoxide the combustion of fossil fuel including the use of motor vehicles results in the liberation of nitrogen and carbon in all oxidation states as well as particulate matter.

Representative background data for these species was examined for the year 2005, and all combustion and industrial related pollutants were found to be below the limit values with the exception of PM_{10}. It is likely that this is due to a naturally occurring dust event and may be discounted from the record.

Such a low number of additional vehicles will not add appreciably to ambient pollutant concentrations, and given the low background levels will not result in an exceedance of the assessment criteria for nitrogen dioxide and carbon monoxide.

In conclusion, the findings of this report indicate that the proposed activities will not present an adverse impact the air quality in the area.

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Gosford City Council and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated April 2006.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between October 2006 and August 2007 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

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Appendix A

Meteorological Data Discussion

Contents

Appendix A Meteorological Data Discussion

Appendix A
Meteorological Data Discussion

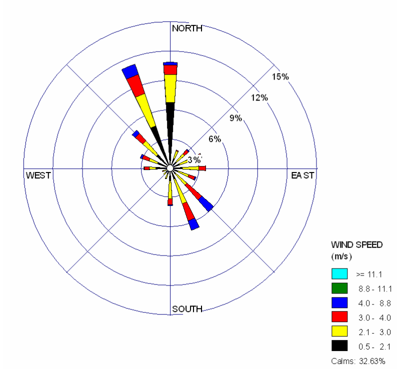
A1.1 Assessment of Meteorological Data – 2000 to 2005

The meteorological data needed for dispersion modelling is required to be site representative. The closest weather station to the Woy Woy Landfill site is located at Narara Research Station, approximately 14km north-northeast (GDA94 344592mE, 6303685mN) of the proposed site.

Due to its location in the foothills of Mt Penang, the Narara meteorological station was considered to to be affected by localised terrain-induced flows, therefore not suitable for inclusion in the meteorological modelling for the Woy Woy site. However, the data was considered an indicator of the regional climate. Thus, URS examined six years from 2000 through to 2005 as recommended by DEC (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*.

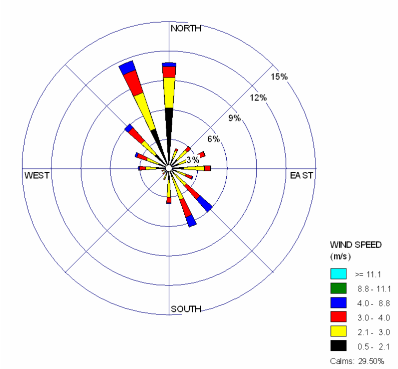
The Narara Research Station windroses for 2000 – 2005 are shown in Figure A.1. The examination of the six years showed extremely low wind speeds at the Narara AWS, and the high occurrence of calms in the vicinity of 30%. The average wind speed showed little difference from year to year, with a range between 1.49 m/s to 1.59m/s, the average being 1.53 m/s. The year 2004 appears to be consistent with other years, does not show any anomalous characteristics. Where possible, the most recent meteorological data is used in the assessments, however, 2005 was shown to have a low average wind speed, when compared to other years, consequently the year 2004 was considered suitable for use within this assessment.

The generation and assessment of site specific meteorological data is discussed in the following sections.



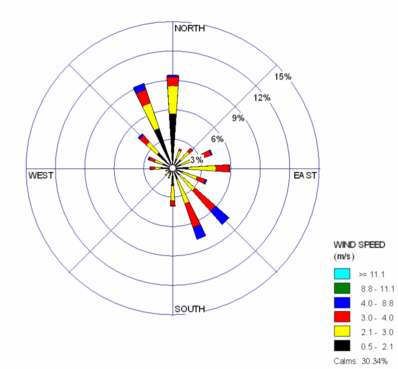
2000

Average wind speed: 1.49 m/s



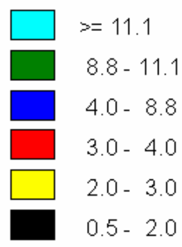
2001

Average wind speed: 1.59 m/s

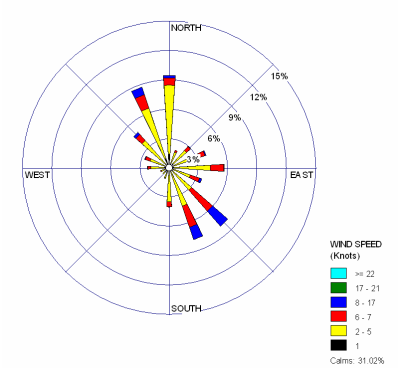


2002

Average wind speed: 1.55 m/s

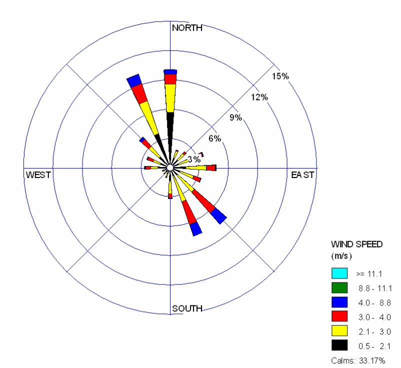


Wind Speed Legend (m/s)



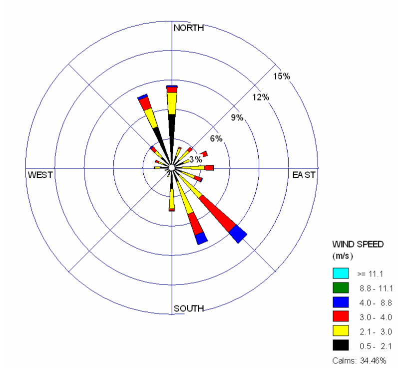
2003

Average wind speed: 1.55 m/s



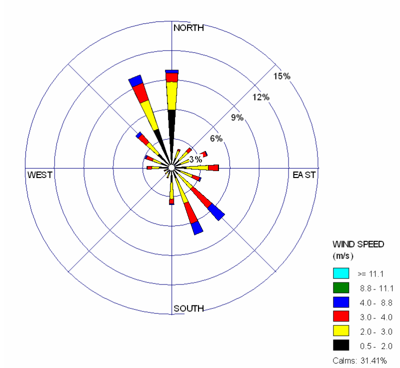
2004

Average wind speed: 1.51 m/s



2005

Average wind speed: 1.39 m/s



All years

Average wind speed: 1.53 m/s

Figure A.1: Narara Research station wind roses 2000-2004

A1.2 Meteorological Data Generation Using TAPM

Where site specific meteorological data does not exist, the DEC (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* suggests the use of CSIRO's The Air Pollution Model (TAPM) to predict site specific meteorology, which is based on regional meteorological observations.

TAPM was run to calculate meteorological fields for the modelling domain. Through a number of verification studies (e.g. CSIRO 2005), TAPM has been identified as a suitable model of choice to simulate meteorological fields in a number of situations[1].

TAPM is an incompressible, non-hydrostatic, primitive equation model with a terrain-following vertical co-ordinate for three-dimensional simulations. It includes parameterisations for cloud/rain micro-physical processes, turbulence closure, urban/vegetative canopy and soil, and radiative fluxes.

Whilst the Narara AWS was located within the TAPM modelling domain for the first three nests, the wind information was not included for assimilation in the TAPM Meteorological modelling, as the small radius of influence used for the Narara data would limit it from affecting meteorology at or nearby the Woy Woy site.

TAPM was configured as detailed below:

- Grid centre coordinates –33°30.5' latitude,151^{0}17.5' longitude (GDA 341326mE, 6291051mN);
- Four nested grid domains with 25 x 25 points at the following resolution: 10km, 3km, 1km, 300m
- Twenty-five vertical grid levels from 10 to 8000m;
- Terrain, vegetation and soil type data at a 250m grid spacing from the US Geological Survey, Earth Resources Observation System (EROS) Data Centre Distributed Active Archive Centre (EDC DAAC);
- Sea surface temperature data at 100km grid intervals from the US National Centre for Atmospheric Research (NCAR);and
- Six hourly synoptic scale meteorology on a 75 to 100 km grid: this data is derived from the Bureau of Meteorology's Limited Area Prediction System (LAPS).

Upon completion, the TAPM meteorological data was further processed in Calmet, which was needed for incorporation into the dispersion model, Calpuff.

---

[1] CSIRO, 2005. *The Air Pollution Model (TAPM) Version 3. Part 2: Summary of Some Verification Studies.* CSIRO Atmospheric Research Technical Paper 72, 2005.

A1.3 Dispersion Meteorology Generation Using Calmet

Calmet was run with the following parameters and options:

- 49 x 49 Grid Points at 150m resolution (Total grid dimensions of 7.2 x 7.2km) using high resolution terrain and land use data.
- TAPM Generated Surface and Upper air meteorological stations for a point 1 kilometre northwest of the site (339826mE 6292551mN) site for the year 2004.
- CSUMM formatted TAPM output for use in the 'initial guess' stage of wind field generation.
- 9 vertical levels ranging from 10 to 1500m (cell centers).

An example of the Calmet generated wind fields can be seen in Figure 5.3. This figure of the full 7.2 x 7.2km Calmet domain shows Calmet's ability to produce flow vector fields that reflect the localised terrain and land use.

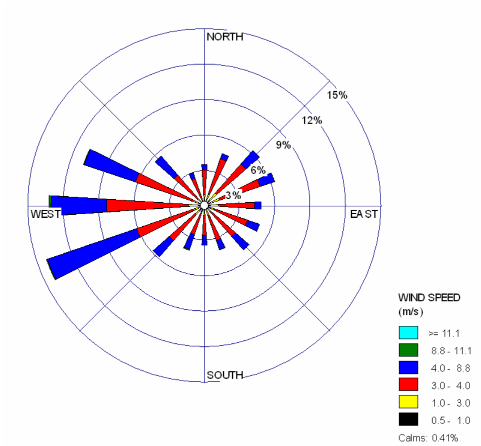
Upon completion, the meteorological data was used as input data in the dispersion model for the assessment, namely Calpuff.

A1.4 Assessment of Meteorological data 2004

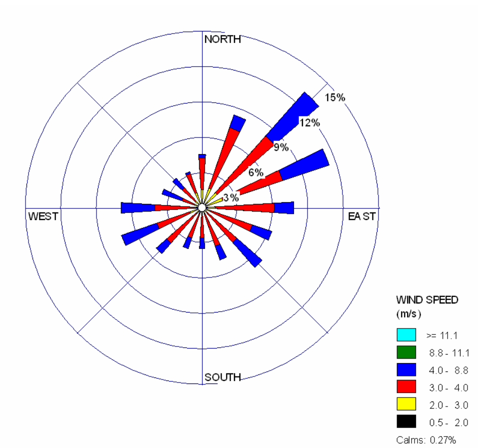
A1.4.1 Wind Speed and Direction

The Calmet produced wind roses are presented in Figure A.2 and show the dominance of high wind speed in the area surrounding the site. Westerly winds are seen to be dominant throughout the year, with the exception of summer where regional northerly winds coupled with afternoon sea breezes result in a north-easterly trend to wind patterns.

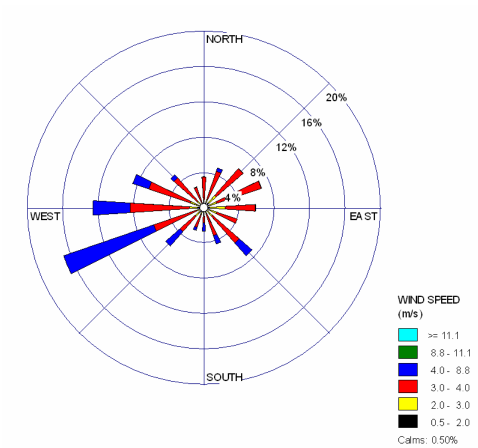
TAPM has predicted calm conditions (wind speeds less than 0.5m/s) for 0.4% of the year, on an hourly averaged basis. This is as would be expected for an elevated (170m) coastal location that is so openly exposed from all directions. This is also consistent with wind frequency distributions for locations of this type in the region, where annual calms of less than 1% are experienced.



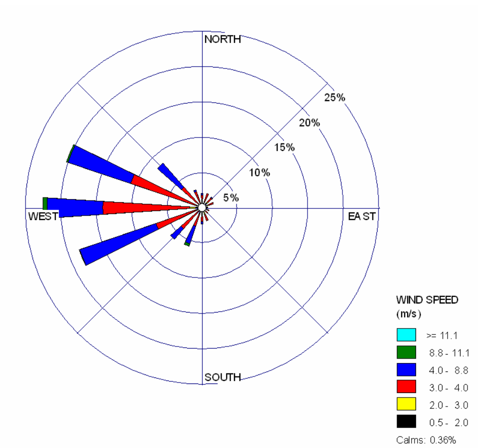
Annual Windrose



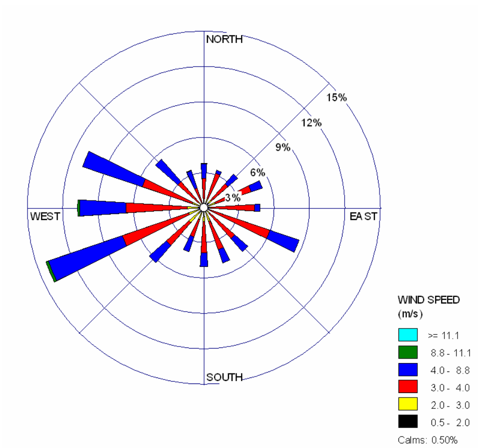
Summer



Autumn



Winter



Spring

Figure A.2: TAPM/Calmet generated Windroses for Woy Woy Landfill (2004)

Appendix A
Meteorological Data Discussion

The presence of east to north-easterly sea breezes is indicated in the wind rose for summer afternoons (3-6pm) shown below, in Figure A.3.

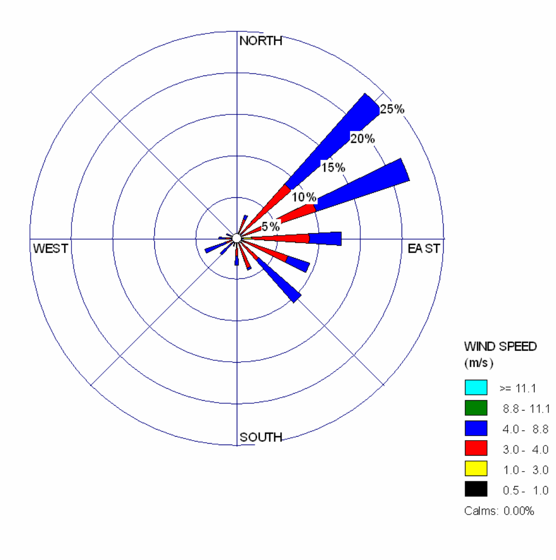


Figure A.3 – Summer afternoon sea breezes

A1.4.2 Atmospheric Stability

Stability class is used as an indicator of atmospheric dispersion for use in dispersion models. Gaussian Atmospheric dispersion calculation is generally based on the Pasquill-Gifford-Turner scheme where six categories are used (A to F) which represent atmospheric stability from extremely unstable to moderately stable conditions. The stability class of the atmosphere is based on two main characteristics, these being:

- Static Stability/Convective turbulence (vertical temperature profiles as dictated by radiative heating of the ground);and
- Mechanical turbulence (as a function of wind speed and surface roughness).

The Pasquill Gifford Stability classes are provided in Table A.1.

The relative frequency of stability classes for the site have been extracted from the Calmet generated meteorological file and are shown in Table A.1.

Appendix A
Meteorological Data Discussion

Table A.1: Modified Pasquill-Gifford Stability Classes (adapted from Turner, 1994)

Surface Wind Speed at 10m (m/s)	Insolation			Night-time cloud (Oktas)	
	Strong	Moderate	Slight	Thinly overcast of > 4/8 low cloud	< 3/8 Cloud
≤ 2	A	A-B	B	-	-
2 - 3	A-B	B	C	E	F
3 - 5	B	B-C	C	D	E
5 - 6	C	C-D	D	D	D
> 6	C	D	D	D	D

The Pasquill Gifford Stability Classes, shown in Table A.2 show neutral atmospheric conditions (Stability Class D) is the most prevalent Stability Class of the area, with the extreme stability classes, namely Extremely Unstable (Stability Class A) being the least prevalent

Table A.2: Site Representative Pasquill-Gifford Stability Classes

Stability Class	% of year
A	0.8%
B	10.9%
C	18.6%
D	29.4%
E	23.2%
F	17.0%

In addition to their composition, Calmet predicted Stability Classes are also presented as a function of time of day, as shown in Figure A.4. The Stability Classes in Figure A.4 are labelled 1 through 6 and refer to Stability Classes A (Extremely Unstable) through F (Very Stable) respectively. As expected, the there is a tendency for the unstable classes (Stability Classes A, B and C) to occur during daytime, whilst the more stable conditions (Stability Classes D, E and F) are shown to occur primarily during night time.

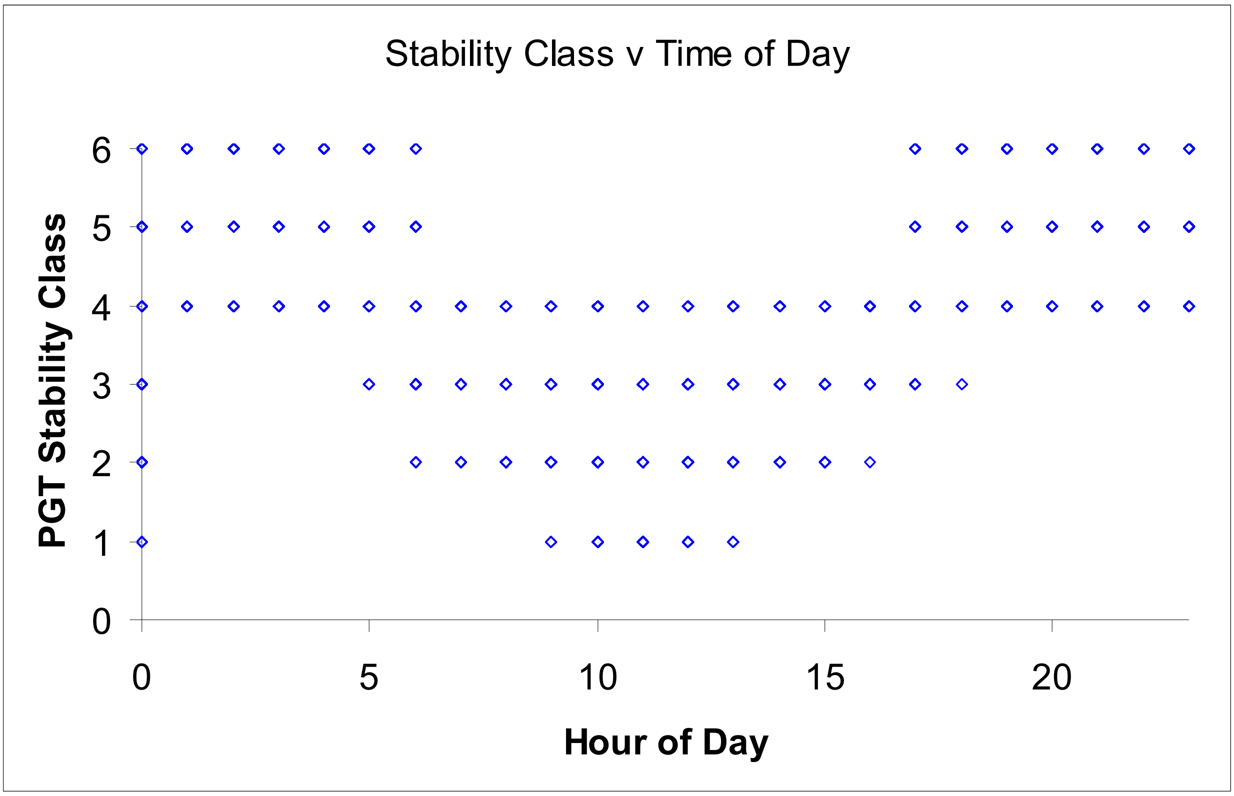


Figure A.4: Stability Class vs Time of Day, as generated by Calmet/TAPM at Woy Woy Landfill, 2004

In Figure A.5 stability Classes are shown against wind speed,. The Stability Classes in Figure A.5 are labelled 1 through 6 and refer to Stability Classes A through F respectively. As expected, the highest wind speeds are associated with stable or neutral stability classes (Stability Classes C and D). The more unstable conditions (Stability Classes A and B) are associated with situations where there are lower wind speeds present, coupled with radiative heating of the ground. When this occurs convective turbulence leads to strong vertical mixing (assisting dispersion). The more stable conditions (Stability Classes E and F) also are also associated with lower wind speeds, but in the absence of radiative heating (i.e. night). Here the absence of both mechanical and convective turbulence acts to minimise dispersion. The data are consistent with the values contained in Table A.1.

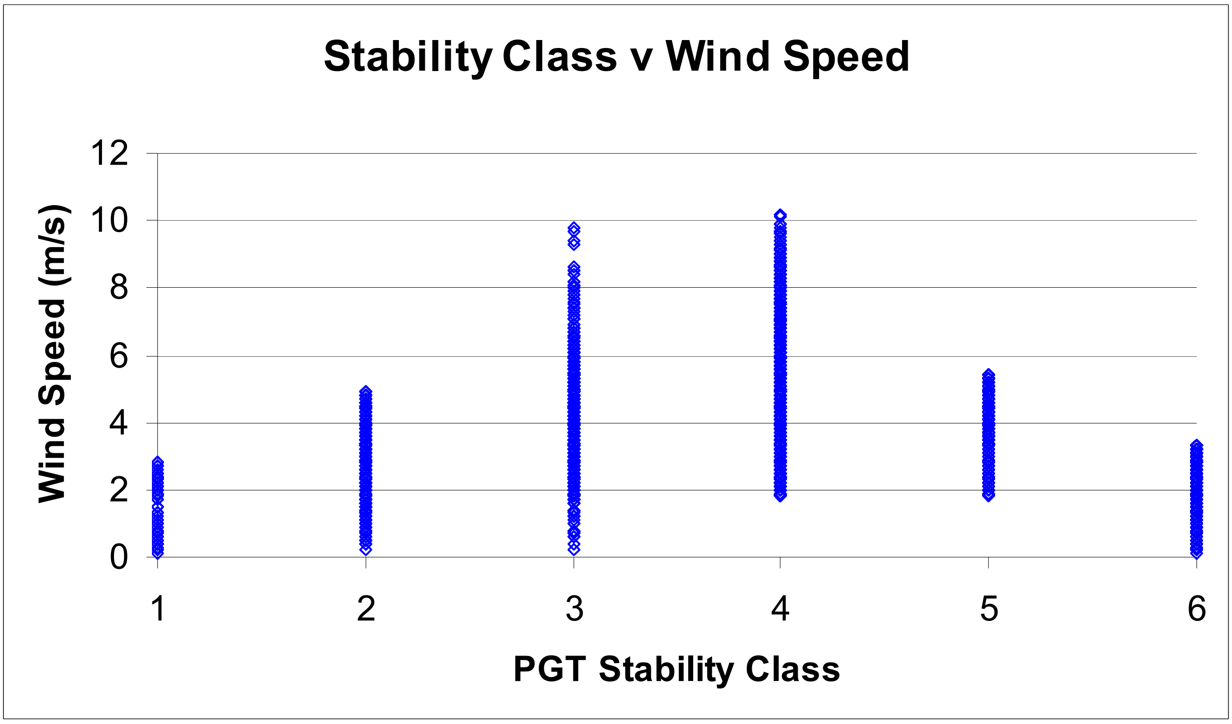


Figure A.5: Stability Class vs Wind Speed – as generated by Calmet/TAPM at Woy Woy Landfill, 2004

A1.5 Conclusion

Where site specific meteorological data does not exist, as is the case for the Woy Woy Landfill site, the predicted meteorological data used in the dispersion modelling is required to be representative of the surrounding area. It is an accepted standard Australian practice, that in situations where adequate site-specific meteorological data does not exist, TAPM is used to synthetically generate meteorological data. TAPM is a sophisticated, 3D meteorological model that has been extensively validated.

The assessment of the predicted meteorology at the Woy Woy Landfill site was discussed and was shown to be consistent with general atmospheric parameters. It is therefore considered that the meteorological data used in dispersion modelling is appropriate.

Appendix B
Dispersion Modelling Files

Appendix B
Dispersion Modelling Files
CALPUFF List File

```
                                    CALPUFF       Version: 6.113          Lev
 ********************************************************************************


  Clock time: 16:10:54
        Date: 06-10-2007

 Internal Coordinate Transformations by  ---  COORDLIB   Version: 1.96   Level: 05


  Run Title:
     Woy Woy MSW/Greenwaste Facility Odour Modelling



 --------------------------------------------------------------------------------

 INPUT GROUP: 1 -- General run control parameters
 --------------

     Option to run all periods found
     in the met. file     (METRUN)   Default: 0       ! METRUN =   0  !

          METRUN = 0 - Run period explicitly defined below
          METRUN = 1 - Run all periods in met. file

      Starting date:    Year   (IBYR)  --    No default   ! IBYR  =  2004  !
                        Month  (IBMO)  --    No default   ! IBMO  =  1  !
                        Day    (IBDY)  --    No default   ! IBDY  =  1  !
      Starting time:    Hour   (IBHR)  --    No default   ! IBHR  =  0  !
                        Minute (IBMIN) --    No default   ! IBMIN =  0  !
                        Second (IBSEC) --    No default   ! IBSEC =  0  !

      Ending date:      Year   (IEYR)  --    No default   ! IEYR  =  2004  !
                        Month  (IEMO)  --    No default   ! IEMO  =  12  !
                        Day    (IEDY)  --    No default   ! IEDY  =  31  !
      Ending time:      Hour   (IEHR)  --    No default   ! IEHR  =  23  !
                        Minute (IEMIN) --    No default   ! IEMIN =  0  !
                        Second (IESEC) --    No default   ! IESEC =  0  !

      (These are only used if METRUN = 0)

      Base time zone        (XBTZ) -- No default       ! XBTZ= -10.0  !
      The zone is the number of hours that must be
      ADDED to the time to obtain UTC (or GMT)
      Examples: PST = 8., MST = 7.
                CST = 6., EST = 5.

      Length of modeling time-step (seconds)
      Equal to update period in the primary
      meteorological data files, or an
      integer fraction of it (1/2, 1/3 ...)
      Must be no larger than 1 hour
      (NSECDT)                        Default:3600     ! NSECDT =  3600  !
                                      Units: seconds

      Number of chemical species (NSPEC)
                                      Default: 5       ! NSPEC =  1   !

      Number of chemical species
      to be emitted  (NSE)            Default: 3       ! NSE =  1   !

      Flag to stop run after
      SETUP phase (ITEST)             Default: 2       ! ITEST =  2   !
      (Used to allow checking
      of the model inputs, files, etc.)
            ITEST = 1 - STOPS program after SETUP phase
            ITEST = 2 - Continues with execution of program
```



```
                        after SETUP

      Restart Configuration:

         Control flag (MRESTART)      Default: 0       ! MRESTART =  0   !

            0 = Do not read or write a restart file
            1 = Read a restart file at the beginning of
                the run
            2 = Write a restart file during run
            3 = Read a restart file at beginning of run
                and write a restart file during run

         Number of periods in Restart
         output cycle (NRESPD)        Default: 0       ! NRESPD =  0   !

            0 = File written only at last period
           >0 = File updated every NRESPD periods

      Meteorological Data Format (METFM)
                                      Default: 1       ! METFM =  1   !

            METFM = 1 - CALMET binary file (CALMET.MET)
            METFM = 2 - ISC ASCII file (ISCMET.MET)
            METFM = 3 - AUSPLUME ASCII file (PLMMET.MET)
            METFM = 4 - CTDM plus tower file (PROFILE.DAT) and
                        surface parameters file (SURFACE.DAT)
            METFM = 5 - AERMET tower file (PROFILE.DAT) and
                        surface parameters file (SURFACE.DAT)

      Meteorological Profile Data Format (MPRFFM)
             (used only for METFM = 1, 2, 3)
                                      Default: 1       ! MPRFFM =  1   !

            MPRFFM = 1 - CTDM plus tower file (PROFILE.DAT)
            MPRFFM = 2 - AERMET tower file (PROFILE.DAT)

      PG sigma-y is adjusted by the factor (AVET/PGTIME)**0.2
      Averaging Time (minutes) (AVET)
                                      Default: 60.0    ! AVET = 60. !
      PG Averaging Time (minutes) (PGTIME)
                                      Default: 60.0    ! PGTIME = 60. !

 !END!

 -------------------------------------------------
 NOTICE: Starting year in control file sets the
         expected century for the simulation.  All
         YY years are converted to YYYY years in
         the range:  1954 2053
 -------------------------------------------------



 --------------------------------------------------------------------------------

 INPUT GROUP: 2 -- Technical options
 --------------


      Vertical distribution used in the
      near field (MGAUSS)                   Default: 1     ! MGAUSS =  1   !
         0 = uniform
         1 = Gaussian

      Terrain adjustment method
      (MCTADJ)                              Default: 3     ! MCTADJ =  3   !
         0 = no adjustment
         1 = ISC-type of terrain adjustment
         2 = simple, CALPUFF-type of terrain
             adjustment
         3 = partial plume path adjustment
```



```
      Subgrid-scale complex terrain
      flag (MCTSG)                          Default: 0     ! MCTSG =  0   !
         0 = not modeled
         1 = modeled

      Near-field puffs modeled as
      elongated slugs? (MSLUG)              Default: 0     ! MSLUG =  0   !
         0 = no
         1 = yes (slug model used)

      Transitional plume rise modeled?
      (MTRANS)                              Default: 1     ! MTRANS =  0   !
         0 = no  (i.e., final rise only)
         1 = yes (i.e., transitional rise computed)

      Stack tip downwash? (MTIP)            Default: 1     ! MTIP =  0  !
         0 = no  (i.e., no stack tip downwash)
         1 = yes (i.e., use stack tip downwash)

      Method used to simulate building
      downwash? (MBDW)                      Default: 1     ! MBDW =   1  !
         1 = ISC method
         2 = PRIME method

      Vertical wind shear modeled above
      stack top? (MSHEAR)                   Default: 0     ! MSHEAR =  0  !
         0 = no  (i.e., vertical wind shear not modeled)
         1 = yes (i.e., vertical wind shear modeled)

      Puff splitting allowed? (MSPLIT)      Default: 0     ! MSPLIT =  0  !
         0 = no (i.e., puffs not split)
         1 = yes (i.e., puffs are split)

      Chemical mechanism flag (MCHEM)       Default: 1     ! MCHEM =  0   !
         0 = chemical transformation not
             modeled
         1 = transformation rates computed
             internally (MESOPUFF II scheme)
         2 = user-specified transformation
             rates used
         3 = transformation rates computed
             internally (RIVAD/ARM3 scheme)
         4 = secondary organic aerosol formation
             computed (MESOPUFF II scheme for OH)

      Aqueous phase transformation flag (MAQCHEM)
      (Used only if MCHEM = 1, or 3)        Default: 0     ! MAQCHEM =  0   !
         0 = aqueous phase transformation
             not modeled
         1 = transformation rates adjusted
             for aqueous phase reactions

      Wet removal modeled ? (MWET)          Default: 1     ! MWET =  0   !
         0 = no
         1 = yes

      Dry deposition modeled ? (MDRY)       Default: 1     ! MDRY =  0   !
         0 = no
         1 = yes
         (dry deposition method specified
          for each species in Input Group 3)


      Gravitational settling (plume tilt)
      modeled ? (MTILT)                     Default: 0     ! MTILT =  0   !
         0 = no
         1 = yes
         (puff center falls at the gravitational
          settling velocity for 1 particle species)

      Restrictions:
          - MDRY  = 1
```



```
          - NSPEC = 1  (must be particle species as well)
          - sg    = 0  GEOMETRIC STANDARD DEVIATION in Group 8 is
                       set to zero for a single particle diameter

      Method used to compute dispersion
      coefficients (MDISP)                  Default: 3     ! MDISP =  3   !

         1 = dispersion coefficients computed from measured values
             of turbulence, sigma v, sigma w
         2 = dispersion coefficients from internally calculated
             sigma v, sigma w using micrometeorological variables
             (u*, w*, L, etc.)
         3 = PG dispersion coefficients for RURAL areas (computed using
             the ISCST multi-segment approximation) and MP coefficients in
             urban areas
         4 = same as 3 except PG coefficients computed using
             the MESOPUFF II eqns.
         5 = CTDM sigmas used for stable and neutral conditions.
             For unstable conditions, sigmas are computed as in
             MDISP = 3, described above.  MDISP = 5 assumes that
             measured values are read

      Sigma-v/sigma-theta, sigma-w measurements used? (MTURBVW)
      (Used only if MDISP = 1 or 5)         Default: 3     ! MTURBVW =  3   !
         1 = use sigma-v or sigma-theta measurements
             from PROFILE.DAT to compute sigma-y
             (valid for METFM = 1, 2, 3, 4, 5)
         2 = use sigma-w measurements
             from PROFILE.DAT to compute sigma-z
             (valid for METFM = 1, 2, 3, 4, 5)
         3 = use both sigma-(v/theta) and sigma-w
             from PROFILE.DAT to compute sigma-y and sigma-z
             (valid for METFM = 1, 2, 3, 4, 5)
         4 = use sigma-theta measurements
             from PLMMET.DAT to compute sigma-y
             (valid only if METFM = 3)

      Back-up method used to compute dispersion
      when measured turbulence data are
      missing (MDISP2)                      Default: 3     ! MDISP2 =  3  !
      (used only if MDISP = 1 or 5)
         2 = dispersion coefficients from internally calculated
             sigma v, sigma w using micrometeorological variables
             (u*, w*, L, etc.)
         3 = PG dispersion coefficients for RURAL areas (computed using
             the ISCST multi-segment approximation) and MP coefficients in
             urban areas
         4 = same as 3 except PG coefficients computed using
             the MESOPUFF II eqns.

      [DIAGNOSTIC FEATURE]
      Method used for Lagrangian timescale for Sigma-y
      (used only if MDISP=1,2 or MDISP2=1,2)
      (MTAULY)                              Default: 0     ! MTAULY =  0  !
         0 = Draxler default 617.284 (s)
         1 = Computed as Lag. Length / (.75 q) -- after SCIPUFF
        10 < Direct user input (s)             -- e.g., 306.9


      [DIAGNOSTIC FEATURE]
      Method used for Advective-Decay timescale for Turbulence
      (used only if MDISP=2 or MDISP2=2)
      (MTAUADV)                             Default: 0     ! MTAUADV =  0  !
         0 = No turbulence advection
         1 = Computed (OPTION NOT IMPLEMENTED)
        10 < Direct user input (s)   -- e.g., 300


      Method used to compute turbulence sigma-v &
      sigma-w using micrometeorological variables
      (Used only if MDISP = 2 or MDISP2 = 2)
      (MCTURB)                              Default: 1     ! MCTURB =  1  !
         1 = Standard CALPUFF subroutines
```

```
          2 = AERMOD subroutines

       PG sigma-y,z adj. for roughness?      Default: 0     ! MROUGH =  0  !
       (MROUGH)
          0 = no
          1 = yes

       Partial plume penetration of          Default: 1     ! MPARTL =  0  !
       elevated inversion?
       (MPARTL)
          0 = no
          1 = yes

       Strength of temperature inversion     Default: 0     ! MTINV =  0  !
       provided in PROFILE.DAT extended records?
       (MTINV)
          0 = no (computed from measured/default gradients)
          1 = yes

       PDF used for dispersion under convective conditions?
                                             Default: 0     ! MPDF =  0  !
       (MPDF)
          0 = no
          1 = yes

       Sub-Grid TIBL module used for shore line?
                                             Default: 0     ! MSGTIBL = 0  !
       (MSGTIBL)
          0 = no
          1 = yes

       Boundary conditions (concentration) modeled?
                                             Default: 0     ! MBCON = 0  !
       (MBCON)
          0 = no
          1 = yes, using formatted BCON.DAT file
          2 = yes, using unformatted CONC.DAT file

       Note:  MBCON > 0 requires that the last species modeled
              be 'BCON'.  Mass is placed in species BCON when
              generating boundary condition puffs so that clean
              air entering the modeling domain can be simulated
              in the same way as polluted air.  Specify zero
              emission of species BCON for all regular sources.

       Individual source contributions saved?
                                             Default: 0     ! MSOURCE = 0  !
       (MSOURCE)
          0 = no
          1 = yes


       Analyses of fogging and icing impacts due to emissions from
       arrays of mechanically-forced cooling towers can be performed
       using CALPUFF in conjunction with a cooling tower emissions
       processor (CTEMISS) and its associated postprocessors.  Hourly
       emissions of water vapor and temperature from each cooling tower
       cell are computed for the current cell configuration and ambient
       conditions by CTEMISS. CALPUFF models the dispersion of these
       emissions and provides cloud information in a specialized format
       for further analysis. Output to FOG.DAT is provided in either
       'plume mode' or 'receptor mode' format.

       Configure for FOG Model output?
                                             Default: 0     ! MFOG =  0   !
       (MFOG)
          0 = no
          1 = yes  - report results in PLUME Mode format
          2 = yes  - report results in RECEPTOR Mode format


       Test options specified to see if
       they conform to regulatory
```



```
      values? (MREG)                       Default: 1     ! MREG =  0   !

         0 = NO checks are made
         1 = Technical options must conform to USEPA
             Long Range Transport (LRT) guidance
                        METFM    1 or 2
                        AVET     60. (min)
                        PGTIME   60. (min)
                        MGAUSS   1
                        MCTADJ   3
                        MTRANS   1
                        MTIP     1
                        MCHEM    1 or 3 (if modeling SOx, NOx)
                        MWET     1
                        MDRY     1
                        MDISP    2 or 3
                        MPDF     0 if MDISP=3
                                 1 if MDISP=2
                        MROUGH   0
                        MPARTL   1
                        SYTDEP   550. (m)
                        MHFTSZ   0


!END!


-------------------------------------------------------------------------------

INPUT GROUP: 3a, 3b -- Species list
-------------------

------------
Subgroup (3a)
------------

  The following species are modeled:

! CSPEC =         ODOR !         !END!

                                                             Dry                OUTPUT
    SPECIES          MODELED          EMITTED       DEPOSITED                 NUMB
     NAME          (0=NO, 1=YES)    (0=NO, 1=YES)    (0=NO,                  (0=NON
   (Limit: 12                                         1=COMPUTED-GAS         1=1st
    Characters                                        2=COMPUTED-PARTICLE    2=2nd
    in length)                                        3=USER-SPECIFIED)      3= etc

!         ODOR  =         1,               1,           0,                  0   !

!END!

  Note:  The last species in (3a) must be 'BCON' when using the
         boundary condition option (MBCON > 0).  Species BCON should
         typically be modeled as inert (no chem transformation or
         removal).


-------------
Subgroup (3b)
-------------
  The following names are used for Species-Groups in which results
  for certain species are combined (added) prior to output.  The
  CGRUP name will be used as the species name in output files.
  Use this feature to model specific particle-size distributions
  by treating each size-range as a separate species.
  Order must be consistent with 3(a) above.



-------------------------------------------------------------------------------


INPUT GROUP: 4 -- Map Projection and Grid control parameters
```



```
 --------------

       Projection for all (X,Y):
       -------------------------

       Map projection
       (PMAP)                     Default: UTM    ! PMAP = UTM  !

           UTM :  Universal Transverse Mercator
           TTM :  Tangential Transverse Mercator
           LCC :  Lambert Conformal Conic
            PS :  Polar Stereographic
            EM :  Equatorial Mercator
          LAZA :  Lambert Azimuthal Equal Area

       False Easting and Northing (km) at the projection origin
       (Used only if PMAP= TTM, LCC, or LAZA)
       (FEAST)                    Default=0.0     ! FEAST  = 0.000  !
       (FNORTH)                   Default=0.0     ! FNORTH = 0.000  !

       UTM zone (1 to 60)
       (Used only if PMAP=UTM)
       (IUTMZN)                   No Default      ! IUTMZN =  56   !

       Hemisphere for UTM projection?
       (Used only if PMAP=UTM)
       (UTMHEM)                   Default: N      ! UTMHEM = S  !
           N   :  Northern hemisphere projection
           S   :  Southern hemisphere projection

       Latitude and Longitude (decimal degrees) of projection origin
       (Used only if PMAP= TTM, LCC, PS, EM, or LAZA)
       (RLAT0)                    No Default      ! RLAT0 = 0N  !
       (RLON0)                    No Default      ! RLON0 = 0E  !

           TTM :  RLON0 identifies central (true N/S) meridian of projection
                  RLAT0 selected for convenience
           LCC :  RLON0 identifies central (true N/S) meridian of projection
                  RLAT0 selected for convenience
           PS  :  RLON0 identifies central (grid N/S) meridian of projection
                  RLAT0 selected for convenience
           EM  :  RLON0 identifies central meridian of projection
                  RLAT0 is REPLACED by 0.0N (Equator)
           LAZA:  RLON0 identifies longitude of tangent-point of mapping plane
                  RLAT0 identifies latitude of tangent-point of mapping plane

       Matching parallel(s) of latitude (decimal degrees) for projection
       (Used only if PMAP= LCC or PS)
       (XLAT1)                    No Default      ! XLAT1 = 0N  !
       (XLAT2)                    No Default      ! XLAT2 = 0N  !

           LCC :  Projection cone slices through Earth's surface at XLAT1 and XLAT2
           PS  :  Projection plane slices through Earth at XLAT1
                  (XLAT2 is not used)

       ----------
       Note:  Latitudes and longitudes should be positive, and include a
              letter N,S,E, or W indicating north or south latitude, and
              east or west longitude.  For example,
              35.9  N Latitude  =  35.9N
              118.7 E Longitude = 118.7E


       Datum-region
       ------------

       The Datum-Region for the coordinates is identified by a character
       string.  Many mapping products currently available use the model of the
       Earth known as the World Geodetic System 1984 (WGS-84).  Other local
       models may be in use, and their selection in CALMET will make its output
       consistent with local mapping products.  The list of Datum-Regions with
       official transformation parameters is provided by the National Imagery and
       Mapping Agency (NIMA).
```



```
      NIMA Datum - Regions(Examples)
      ------------------------------------------------------------------------------
      WGS-84    WGS-84 Reference Ellipsoid and Geoid, Global coverage (WGS84)
      NAS-C     NORTH AMERICAN 1927 Clarke 1866 Spheroid, MEAN FOR CONUS (NAD27)
      NAR-C     NORTH AMERICAN 1983 GRS 80 Spheroid, MEAN FOR CONUS (NAD83)
      NWS-84    NWS 6370KM Radius, Sphere
      ESR-S     ESRI REFERENCE 6371KM Radius, Sphere

      Datum-region for output coordinates
      (DATUM)                    Default: WGS-84    ! DATUM = WGS-84  !

 METEOROLOGICAL Grid:

      Rectangular grid defined for projection PMAP,
      with X the Easting and Y the Northing coordinate

             No. X grid cells (NX)      No default     ! NX =  49   !
             No. Y grid cells (NY)      No default     ! NY =  49   !
          No. vertical layers (NZ)      No default     ! NZ =  9   !

            Grid spacing (DGRIDKM)      No default     ! DGRIDKM = .15 !
                                        Units: km

                 Cell face heights
                   (ZFACE(nz+1))        No defaults
                                        Units: m
   ! ZFACE = .0, 20.0, 40.0, 60.0, 90.0, 150.0, 250.0, 500.0, 1000.0, 2000.0 !

             Reference Coordinates
            of SOUTHWEST corner of
                  grid cell(1, 1):

             X coordinate (XORIGKM)     No default     ! XORIGKM = 337.717 !
             Y coordinate (YORIGKM)     No default     ! YORIGKM = 6287.453 !
                                       Units: km


 COMPUTATIONAL Grid:

      The computational grid is identical to or a subset of the MET. grid.
      The lower left (LL) corner of the computational grid is at grid point
      (IBCOMP, JBCOMP) of the MET. grid.  The upper right (UR) corner of the
      computational grid is at grid point (IECOMP, JECOMP) of the MET. grid.
      The grid spacing of the computational grid is the same as the MET. grid.

         X index of LL corner (IBCOMP)      No default     ! IBCOMP =  11   !
                   (1 <= IBCOMP <= NX)

         Y index of LL corner (JBCOMP)      No default     ! JBCOMP =  11   !
                   (1 <= JBCOMP <= NY)


         X index of UR corner (IECOMP)      No default     ! IECOMP =  39   !
                   (1 <= IECOMP <= NX)

         Y index of UR corner (JECOMP)      No default     ! JECOMP =  39   !
                   (1 <= JECOMP <= NY)



 SAMPLING Grid (GRIDDED RECEPTORS):

      The lower left (LL) corner of the sampling grid is at grid point
      (IBSAMP, JBSAMP) of the MET. grid.  The upper right (UR) corner of the
      sampling grid is at grid point (IESAMP, JESAMP) of the MET. grid.
      The sampling grid must be identical to or a subset of the computational
      grid.  It may be a nested grid inside the computational grid.
      The grid spacing of the sampling grid is DGRIDKM/MESHDN.

         Logical flag indicating if gridded
         receptors are used (LSAMP)         Default: T     ! LSAMP = T !
```

```
        (T=yes, F=no)

        X index of LL corner (IBSAMP)      No default     ! IBSAMP =  11   !
         (IBCOMP <= IBSAMP <= IECOMP)

        Y index of LL corner (JBSAMP)      No default     ! JBSAMP =  11   !
         (JBCOMP <= JBSAMP <= JECOMP)


        X index of UR corner (IESAMP)      No default     ! IESAMP =  39   !
         (IBCOMP <= IESAMP <= IECOMP)

        Y index of UR corner (JESAMP)      No default     ! JESAMP =  39   !
         (JBCOMP <= JESAMP <= JECOMP)


       Nesting factor of the sampling
        grid (MESHDN)                      Default: 1     ! MESHDN =  1  !
        (MESHDN is an integer >= 1)

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 5 -- Output Options
--------------
                                                    *                          *
     FILE                        DEFAULT VALUE             VALUE THIS RUN
     ----                        -------------             --------------

   Concentrations (ICON)              1                    !  ICON =  1   !
   Dry Fluxes (IDRY)                  1                    !  IDRY =  0   !
   Wet Fluxes (IWET)                  1                    !  IWET =  0   !
   2D Temperature (IT2D)              0                    !  IT2D =  0   !
   2D Density (IRHO)                  0                    !  IRHO =  0   !
   Relative Humidity (IVIS)           1                    !  IVIS =  0   !
    (relative humidity file is
     required for visibility
     analysis)
   Use data compression option in output file?
   (LCOMPRS)                           Default: T          ! LCOMPRS = T !

   *
    0 = Do not create file, 1 = create file


    QA PLOT FILE OUTPUT OPTION:

       Create a standard series of output files (e.g.
       locations of sources, receptors, grids ...)
       suitable for plotting?
       (IQAPLOT)                       Default: 1          !  IQAPLOT =  1   !
         0 = no
         1 = yes

    DIAGNOSTIC MASS FLUX OUTPUT OPTIONS:

       Mass flux across specified boundaries
       for selected species reported?
       (IMFLX)                         Default: 0          ! IMFLX =  0  !
         0 = no
         1 = yes (FLUXBDY.DAT and MASSFLX.DAT filenames
                  are specified in Input Group 0)

       Mass balance for each species
       reported?
       (IMBAL)                         Default: 0          ! IMBAL =  0  !
         0 = no
         1 = yes (MASSBAL.DAT filename is
              specified in Input Group 0)
```



```
    LINE PRINTER OUTPUT OPTIONS:

       Print concentrations (ICPRT)    Default: 0        ! ICPRT =  0   !
       Print dry fluxes (IDPRT)        Default: 0        ! IDPRT =  0   !
       Print wet fluxes (IWPRT)        Default: 0        ! IWPRT =  0   !
       (0 = Do not print, 1 = Print)

       Concentration print interval
       (ICFRQ) in timesteps            Default: 1        ! ICFRQ =  1   !
       Dry flux print interval
       (IDFRQ) in timesteps            Default: 1        ! IDFRQ =  1   !
       Wet flux print interval
       (IWFRQ) in timesteps            Default: 1        ! IWFRQ =  1   !

       Units for Line Printer Output
       (IPRTU)                         Default: 1        ! IPRTU =  1   !
                      for              for
                 Concentration    Deposition
           1 =        g/m**3         g/m**2/s
           2 =       mg/m**3        mg/m**2/s
           3 =       ug/m**3        ug/m**2/s
           4 =       ng/m**3        ng/m**2/s
           5 =     Odour Units

       Messages tracking progress of run
       written to the screen ?
       (IMESG)                         Default: 2        ! IMESG =  2   !
         0 = no
         1 = yes (advection step, puff ID)
         2 = yes (YYYYJJJHH, # old puffs, # emitted puffs)


     SPECIES (or GROUP for combined species) LIST FOR OUTPUT OPTIONS

                ---- CONCENTRATIONS ----   ------ DRY FLUXES ------   ------ WET
   SPECIES
   /GROUP       PRINTED?  SAVED ON DISK?   PRINTED?  SAVED ON DISK?   PRINTED?
   -------      ------------------------   ------------------------   ----------
!        ODOR =      0,           1,           0,           0,           0,

  Note:  Species BCON (for MBCON > 0) does not need to be saved on disk.


     OPTIONS FOR PRINTING "DEBUG" QUANTITIES (much output)

       Logical for debug output
       (LDEBUG)                                 Default: F     ! LDEBUG = F !

       First puff to track
       (IPFDEB)                                 Default: 1     ! IPFDEB =  1  !

       Number of puffs to track
       (NPFDEB)                                 Default: 1     ! NPFDEB =  1  !

       Met. period to start output
       (NN1)                                    Default: 1     ! NN1 =  1   !

       Met. period to end output
       (NN2)                                    Default: 10    ! NN2 =  10  !

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 6a, 6b, & 6c -- Subgrid scale complex terrain inputs
-------------------------

---------------
Subgroup (6a)
---------------
```



```
       Number of terrain features (NHILL)       Default: 0     ! NHILL =  0   !

       Number of special complex terrain
       receptors  (NCTREC)                      Default: 0     ! NCTREC =  0   !

       Terrain and CTSG Receptor data for
       CTSG hills input in CTDM format ?
       (MHILL)                                  No Default     ! MHILL =  2   !
       1 = Hill and Receptor data created
           by CTDM processors & read from
           HILL.DAT and HILLRCT.DAT files
       2 = Hill data created by OPTHILL &
           input below in Subgroup (6b);
           Receptor data in Subgroup (6c)

       Factor to convert horizontal dimensions  Default: 1.0   ! XHILL2M = 1.0 !
       to meters (MHILL=1)

       Factor to convert vertical dimensions    Default: 1.0   ! ZHILL2M = 1.0 !
       to meters (MHILL=1)

       X-origin of CTDM system relative to      No Default     ! XCTDMKM = 0 !
       CALPUFF coordinate system, in Kilometers (MHILL=1)

       Y-origin of CTDM system relative to      No Default     ! YCTDMKM = 0 !
       CALPUFF coordinate system, in Kilometers (MHILL=1)

! END !

---------------
Subgroup (6b)
---------------

                      1 **
     HILL information


HILL           XC        YC       THETAH  ZGRID  RELIEF    EXPO 1    EXPO 2   SCA
 NO.          (km)      (km)      (deg.)   (m)     (m)       (m)       (m)      (
----          ----      ----      ------  -----  ------    ------    ------   ---

---------------
Subgroup (6c)
---------------

    COMPLEX TERRAIN RECEPTOR INFORMATION

                      XRCT         YRCT        ZRCT          XHH
                      (km)         (km)         (m)
                     ------        -----       ------         ----


-------------------
1
     Description of Complex Terrain Variables:
          XC, YC  = Coordinates of center of hill
          THETAH  = Orientation of major axis of hill (clockwise from
                    North)
          ZGRID   = Height of the  0  of the grid above mean sea
                    level
          RELIEF  = Height of the crest of the hill above the grid elevation
          EXPO 1  = Hill-shape exponent for the major axis
          EXPO 2  = Hill-shape exponent for the major axis
          SCALE 1 = Horizontal length scale along the major axis
          SCALE 2 = Horizontal length scale along the minor axis
          AMAX    = Maximum allowed axis length for the major axis
          BMAX    = Maximum allowed axis length for the major axis

          XRCT, YRCT = Coordinates of the complex terrain receptors
          ZRCT    = Height of the ground (MSL) at the complex terrain
                    Receptor
          XHH     = Hill number associated with each complex terrain receptor
                    (NOTE: MUST BE ENTERED AS A REAL NUMBER)
```



```
   **
     NOTE: DATA for each hill and CTSG receptor are treated as a separate
           input subgroup and therefore must end with an input group terminator.

-------------------------------------------------------------------------------


INPUT GROUP: 7 -- Chemical parameters for dry deposition of gases
--------------

      SPECIES     DIFFUSIVITY      ALPHA STAR      REACTIVITY    MESOPHYLL RESIST
       NAME        (cm**2/s)                                            (s/cm)
      -------     -----------      ----------      ----------    ----------------


!END!


-------------------------------------------------------------------------------


INPUT GROUP: 8 -- Size parameters for dry deposition of particles
--------------

     For SINGLE SPECIES, the mean and standard deviation are used to
     compute a deposition velocity for NINT (see group 9) size-ranges,
     and these are then averaged to obtain a mean deposition velocity.

     For GROUPED SPECIES, the size distribution should be explicitly
     specified (by the 'species' in the group), and the standard deviation
     for each should be entered as 0.  The model will then use the
     deposition velocity for the stated mean diameter.

      SPECIES      GEOMETRIC MASS MEAN        GEOMETRIC STANDARD
       NAME             DIAMETER                  DEVIATION
                        (microns)                 (microns)
      -------      -------------------        ------------------

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 9 -- Miscellaneous dry deposition parameters
--------------

     Reference cuticle resistance (s/cm)
     (RCUTR)                           Default: 30    !  RCUTR = 30.0 !
     Reference ground resistance  (s/cm)
     (RGR)                             Default: 10    !    RGR = 10.0 !
     Reference pollutant reactivity
     (REACTR)                          Default: 8     ! REACTR = 8.0 !

     Number of particle-size intervals used to
     evaluate effective particle deposition velocity
     (NINT)                            Default: 9     !   NINT =  9  !

     Vegetation state in unirrigated areas
     (IVEG)                            Default: 1     !   IVEG =  1   !
        IVEG=1 for active and unstressed vegetation
        IVEG=2 for active and stressed vegetation
        IVEG=3 for inactive vegetation

!END!


-------------------------------------------------------------------------------


INPUT GROUP: 10 -- Wet Deposition Parameters
---------------
```

```
                    Scavenging Coefficient -- Units: (sec)**(-1)

       Pollutant      Liquid Precip.       Frozen Precip.
       ---------      --------------       --------------

!END!

-------------------------------------------------------------------------------

INPUT GROUP: 11 -- Chemistry Parameters
---------------

     Ozone data input option (MOZ)     Default: 1            ! MOZ =  0   !
     (Used only if MCHEM = 1, 3, or 4)
        0 = use a monthly background ozone value
        1 = read hourly ozone concentrations from
            the OZONE.DAT data file

     Monthly ozone concentrations
     (Used only if MCHEM = 1, 3, or 4 and
      MOZ = 0 or MOZ = 1 and all hourly O3 data missing)
     (BCKO3) in ppb                    Default: 12*80.
     !  BCKO3 = 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80.00, 80

     Monthly ammonia concentrations
     (Used only if MCHEM = 1, or 3)
     (BCKNH3) in ppb                   Default: 12*10.
     !  BCKNH3 = 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 10.00, 1

     Nighttime SO2 loss rate (RNITE1)
     in percent/hour                   Default: 0.2          ! RNITE1 = .2 !

     Nighttime NOx loss rate (RNITE2)
     in percent/hour                   Default: 2.0          ! RNITE2 = 2.0 !

     Nighttime HNO3 formation rate (RNITE3)
     in percent/hour                   Default: 2.0          ! RNITE3 = 2.0 !

     H2O2 data input option (MH2O2)    Default: 1            ! MH2O2 =  1   !
     (Used only if MAQCHEM = 1)
        0 = use a monthly background H2O2 value
        1 = read hourly H2O2 concentrations from
            the H2O2.DAT data file

     Monthly H2O2 concentrations
     (Used only if MQACHEM = 1 and
      MH2O2 = 0 or MH2O2 = 1 and all hourly H2O2 data missing)
     (BCKH2O2) in ppb                  Default: 12*1.
     !  BCKH2O2 = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.0


 --- Data for SECONDARY ORGANIC AEROSOL (SOA) Option
     (used only if MCHEM = 4)

     The SOA module uses monthly values of:
          Fine particulate concentration in ug/m^3 (BCKPMF)
          Organic fraction of fine particulate     (OFRAC)
          VOC / NOX ratio (after reaction)         (VCNX)
     to characterize the air mass when computing
     the formation of SOA from VOC emissions.
     Typical values for several distinct air mass types are:

        Month    1    2    3    4    5    6    7    8    9   10   11   12
                Jan  Feb  Mar  Apr  May  Jun  Jul  Aug  Sep  Oct  Nov  Dec

     Clean Continental
        BCKPMF   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.   1.
        OFRAC  .15  .15  .20  .20  .20  .20  .20  .20  .20  .20  .20  .15
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.
```



```
     Clean Marine (surface)
        BCKPMF  .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5   .5
        OFRAC  .25  .25  .30  .30  .30  .30  .30  .30  .30  .30  .30  .25
        VCNX    50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.  50.

     Urban - low biogenic (controls present)
        BCKPMF  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.  30.
        OFRAC  .20  .20  .25  .25  .25  .25  .25  .25  .20  .20  .20  .20
        VCNX     4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.   4.

     Urban - high biogenic (controls present)
        BCKPMF  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.  60.
        OFRAC  .25  .25  .30  .30  .30  .55  .55  .55  .35  .35  .35  .25
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.

     Regional Plume
        BCKPMF  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.  20.
        OFRAC  .20  .20  .25  .35  .25  .40  .40  .40  .30  .30  .30  .20
        VCNX    15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.  15.

     Urban - no controls present
        BCKPMF 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100. 100.
        OFRAC  .30  .30  .35  .35  .35  .55  .55  .55  .35  .35  .35  .30
        VCNX     2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.   2.

     Default: Clean Continental
     !  BCKPMF = 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00, 1.00
     !  OFRAC  = 0.15, 0.15, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20, 0.20
     !  VCNX   = 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 50.00, 5


!END!

-------------------------------------------------------------------------------

INPUT GROUP: 12 -- Misc. Dispersion and Computational Parameters
---------------

     Horizontal size of puff (m) beyond which
     time-dependent dispersion equations (Heffter)
     are used to determine sigma-y and
     sigma-z (SYTDEP)                           Default: 550.   ! SYTDEP = 5.5E02

     Switch for using Heffter equation for sigma z
     as above (0 = Not use Heffter; 1 = use Heffter
     (MHFTSZ)                                   Default: 0      ! MHFTSZ =  0   !

     Stability class used to determine plume
     growth rates for puffs above the boundary
     layer (JSUP)                               Default: 5      ! JSUP =  5   !

     Vertical dispersion constant for stable
     conditions (k1 in Eqn. 2.7-3)  (CONK1)     Default: 0.01   ! CONK1 = .01 !

     Vertical dispersion constant for neutral/
     unstable conditions (k2 in Eqn. 2.7-4)
     (CONK2)                                    Default: 0.1    ! CONK2 = .1 !

     Factor for determining Transition-point from
     Schulman-Scire to Huber-Snyder Building Downwash
     scheme (SS used for Hs < Hb + TBD * HL)
     (TBD)                                      Default: 0.5    ! TBD = .5 !
        TBD < 0   ==> always use Huber-Snyder
        TBD = 1.5 ==> always use Schulman-Scire
        TBD = 0.5 ==> ISC Transition-point

     Range of land use categories for which
     urban dispersion is assumed
     (IURB1, IURB2)                             Default: 10     ! IURB1 =  10  !
                                                         19     ! IURB2 =  10  !
```



```
     Site characterization parameters for single-point Met data files ---------
     (needed for METFM = 2,3,4,5)

        Land use category for modeling domain
        (ILANDUIN)                            Default: 20     ! ILANDUIN =  20

        Roughness length (m) for modeling domain
        (Z0IN)                                Default: 0.25   ! Z0IN = .25 !

        Leaf area index for modeling domain
        (XLAIIN)                              Default: 3.0    ! XLAIIN = 3.0 !

        Elevation above sea level (m)
        (ELEVIN)                              Default: 0.0    ! ELEVIN = .0 !

        Latitude (degrees) for met location
        (XLATIN)                              Default: -999.  ! XLATIN = -999.0

        Longitude (degrees) for met location
        (XLONIN)                              Default: -999.  ! XLONIN = -999.0

     Specialized information for interpreting single-point Met data files -----

        Anemometer height (m) (Used only if METFM = 2,3)
        (ANEMHT)                              Default: 10.    ! ANEMHT = 10.0 !

        Form of lateral turbulance data in PROFILE.DAT file
        (Used only if METFM = 4,5 or MTURBVW = 1 or 3)
        (ISIGMAV)                             Default: 1      ! ISIGMAV =  1  !
            0 = read sigma-theta
            1 = read sigma-v

        Choice of mixing heights (Used only if METFM = 4)
        (IMIXCTDM)                            Default: 0      ! IMIXCTDM =  0
            0 = read PREDICTED mixing heights
            1 = read OBSERVED mixing heights

     Maximum length of a slug (met. grid units)
     (XMXLEN)                                 Default: 1.0    ! XMXLEN = 1.0 !

     Maximum travel distance of a puff/slug (in
     grid units) during one sampling step
     (XSAMLEN)                                Default: 1.0    ! XSAMLEN = 1.0 !

     Maximum Number of slugs/puffs release from
     one source during one time step
     (MXNEW)                                  Default: 99     ! MXNEW =  99   !

     Maximum Number of sampling steps for
     one puff/slug during one time step
     (MXSAM)                                  Default: 99     ! MXSAM =  99   !

     Number of iterations used when computing
     the transport wind for a sampling step
     that includes gradual rise (for CALMET
     and PROFILE winds)
     (NCOUNT)                                 Default: 2      ! NCOUNT =  2   !

     Minimum sigma y for a new puff/slug (m)
     (SYMIN)                                  Default: 1.0    ! SYMIN = 1.0  !

     Minimum sigma z for a new puff/slug (m)
     (SZMIN)                                  Default: 1.0    ! SZMIN = 1.0  !

     Default minimum turbulence velocities sigma-v and sigma-w
     for each stability class over land and over water (m/s)
     (SVMIN(12) and SWMIN(12))

                     ----------  LAND  ----------       ---------  WATER  -------
        Stab Class :  A    B    C    D    E    F         A    B    C    D    E
                     ---  ---  ---  ---  ---  ---       ---  ---  ---  ---  ---
     Default SVMIN : .50, .50, .50, .50, .50, .50,      .37, .37, .37, .37, .37,
```



```
     Default SWMIN : .20, .12, .08, .06, .03, .016,     .20, .12, .08, .06, .03,

           ! SVMIN = 0.500, 0.500, 0.500, 0.500, 0.500, 0.500, 0.370, 0.370, 0.37
           ! SWMIN = 0.200, 0.120, 0.080, 0.060, 0.030, 0.016, 0.200, 0.120, 0.08

     Divergence criterion for dw/dz across puff
     used to initiate adjustment for horizontal
     convergence (1/s)
     Partial adjustment starts at CDIV(1), and
     full adjustment is reached at CDIV(2)
     (CDIV(2))                                  Default: 0.0,0.0  ! CDIV = .0, .0

     Minimum wind speed (m/s) allowed for
     non-calm conditions. Also used as minimum
     speed returned when using power-law
     extrapolation toward surface
     (WSCALM)                                   Default: 0.5    ! WSCALM = .5 !

     Maximum mixing height (m)
     (XMAXZI)                                   Default: 3000.  ! XMAXZI = 3000.0

     Minimum mixing height (m)
     (XMINZI)                                   Default: 50.    ! XMINZI = 50.0 !

     Default wind speed classes --
     5 upper bounds (m/s) are entered;
     the 6th class has no upper limit
     (WSCAT(5))                      Default   :
                                     ISC RURAL : 1.54, 3.09, 5.14, 8.23, 10.8 (10

                              Wind Speed Class :  1     2     3     4     5
                                                 ---   ---   ---   ---   ---
                                       ! WSCAT = 1.54, 3.09, 5.14, 8.23, 10.80 !

     Default wind speed profile power-law
     exponents for stabilities 1-6
     (PLX0(6))                       Default   : ISC RURAL values
                                     ISC RURAL : .07, .07, .10, .15, .35, .55
                                     ISC URBAN : .15, .15, .20, .25, .30, .30

                               Stability Class :  A     B     C     D     E     F
                                                 ---   ---   ---   ---   ---   --
                                        ! PLX0 = 0.07, 0.07, 0.10, 0.15, 0.35, 0.

     Default potential temperature gradient
     for stable classes E, F (degK/m)
     (PTG0(2))                       Default: 0.020, 0.035
                                        ! PTG0 = 0.020,   0.035 !

     Default plume path coefficients for
     each stability class (used when option
     for partial plume height terrain adjustment
     is selected -- MCTADJ=3)
     (PPC(6))                  Stability Class :  A     B     C     D     E     F
                                  Default  PPC : .50,  .50,  .50,  .50,  .35,  .3
                                                 ---   ---   ---   ---   ---   --
                                       !  PPC = 0.50, 0.50, 0.50, 0.50, 0.35, 0.

     Slug-to-puff transition criterion factor
     equal to sigma-y/length of slug
     (SL2PF)                               Default: 10.       ! SL2PF = 10.0 !

     Puff-splitting control variables ------------------------

       VERTICAL SPLIT
       --------------

       Number of puffs that result every time a puff
       is split - nsplit=2 means that 1 puff splits
       into 2
       (NSPLIT)                            Default:   3       ! NSPLIT =  3  !

       Time(s) of a day when split puffs are eligible to
```

```
       be split once again; this is typically set once
       per day, around sunset before nocturnal shear develops.
       24 values: 0 is midnight (00:00) and 23 is 11 PM (23:00)
       0=do not re-split    1=eligible for re-split
       (IRESPLIT(24))                     Default:  Hour 17 = 1
       !  IRESPLIT = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0 !

       Split is allowed only if last hour's mixing
       height (m) exceeds a minimum value
       (ZISPLIT)                          Default: 100.       ! ZISPLIT = 100.0

       Split is allowed only if ratio of last hour's
       mixing ht to the maximum mixing ht experienced
       by the puff is less than a maximum value (this
       postpones a split until a nocturnal layer develops)
       (ROLDMAX)                          Default: 0.25       ! ROLDMAX = 0.25 !


       HORIZONTAL SPLIT
       ----------------

       Number of puffs that result every time a puff
       is split - nsplith=5 means that 1 puff splits
       into 5
       (NSPLITH)                          Default:   5        ! NSPLITH =  5  !

       Minimum sigma-y (Grid Cells Units) of puff
       before it may be split
       (SYSPLITH)                         Default:  1.0       ! SYSPLITH = 1.0 !

       Minimum puff elongation rate (SYSPLITH/hr) due to
       wind shear, before it may be split
       (SHSPLITH)                         Default:  2.        ! SHSPLITH = 2.0 !

       Minimum concentration (g/m^3) of each
       species in puff before it may be split
       Enter array of NSPEC values; if a single value is
       entered, it will be used for ALL species
       (CNSPLITH)                         Default:  1.0E-07   ! CNSPLITH = 1.0E-

     Integration control variables ------------------------

       Fractional convergence criterion for numerical SLUG
       sampling integration
       (EPSSLUG)                          Default:   1.0e-04  ! EPSSLUG = 1.0E-0

       Fractional convergence criterion for numerical AREA
       source integration
       (EPSAREA)                          Default:   1.0e-06  ! EPSAREA = 1.0E-0

       Trajectory step-length (m) used for numerical rise
       integration
       (DSRISE)                           Default:   1.0      ! DSRISE = 1.0 !

       Boundary Condition (BC) Puff control variables ------------------------

       Minimum height (m) to which BC puffs are mixed as they are emitted
       (MBCON=2 ONLY).  Actual height is reset to the current mixing height
       at the release point if greater than this minimum.
       (HTMINBC)                          Default:   500.     ! HTMINBC = 500.0

       Search radius (km) about a receptor for sampling nearest BC puff.
       BC puffs are typically emitted with a spacing of one grid cell
       length, so the search radius should be greater than DGRIDKM.
       (RSAMPBC)                          Default:   10.      ! RSAMPBC = 10.0 !

       Near-Surface depletion adjustment to concentration profile used when
       sampling BC puffs?
       (MDEPBC)                           Default:   1        ! MDEPBC =  1  !
          0 = Concentration is NOT adjusted for depletion
          1 = Adjust Concentration for depletion

 !END!
```



```
 --------------------------------------------------------------------------------


 INPUT GROUPS: 13a, 13b, 13c, 13d -- Point source parameters
 --------------------------------

 ---------------
 Subgroup (13a)
 ---------------

      Number of point sources with
      parameters provided below      (NPT1)  No default  !  NPT1 =  0  !

      Units used for point source
      emissions below                (IPTU)  Default: 1  !  IPTU =   1  !
            1 =        g/s
            2 =       kg/hr
            3 =       lb/hr
            4 =     tons/yr
            5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
            6 =     Odour Unit * m**3/min
            7 =     metric tons/yr

      Number of source-species
      combinations with variable
      emissions scaling factors
      provided below in (13d)        (NSPT1) Default: 0  !  NSPT1 =  0  !

      Number of point sources with
      variable emission parameters
      provided in external file      (NPT2)  No default  !  NPT2 =  0  !

      (If NPT2 > 0, these point
      source emissions are read from
      the file: PTEMARB.DAT)

 !END!

 ---------------
 Subgroup (13b)
 ---------------
                                        a
           POINT SOURCE: CONSTANT DATA
           -----------------------------
                                                                                 b
   Source       X          Y        Stack    Base     Stack    Exit  Exit    Bldg.
    No.     Coordinate Coordinate Height Elevation Diameter  Vel.  Temp.   Dwash
               (km)       (km)       (m)      (m)        (m)  (m/s) (deg. K)
   ------   ---------- ---------- ------  ------   -------- ----- -------- ----- -

 --------

     a
      Data for each source are treated as a separate input subgroup
      and therefore must end with an input group terminator.

      SRCNAM  is a 12-character name for a source
              (No default)
      X       is an array holding the source data listed by the column headings
              (No default)
      SIGYZI  is an array holding the initial sigma-y and sigma-z (m)
              (Default: 0.,0.)
      FMFAC   is a vertical momentum flux factor (0. or 1.0) used to represent
              the effect of rain-caps or other physical configurations that
              reduce momentum rise associated with the actual exit velocity.
              (Default: 1.0  -- full momentum used)
      ZPLTFM  is the platform height (m) for sources influenced by an isolated
              structure that has a significant open area between the surface
              and the bulk of the structure, such as an offshore oil platform.
              The Base Elevation is that of the surface (ground or ocean),
              and the Stack Height is the release height above the Base (not
```



```
             above the platform).  Building heights entered in Subgroup 13c
             must be those of the buildings on the platform, measured from
             the platform deck.  ZPLTFM is used only with MBDW=1 (ISC
             downwash method) for sources with building downwash.
             (Default: 0.0)

     b
      0. = No building downwash modeled
      1. = Downwash modeled for buildings resting on the surface
      2. = Downwash modeled for buildings raised above the surface (ZPLTFM > 0.)
      NOTE: must be entered as a REAL number (i.e., with decimal point)

     c
      An emission rate must be entered for every pollutant modeled.
      Enter emission rate of zero for secondary pollutants that are
      modeled, but not emitted.  Units are specified by IPTU
      (e.g. 1 for g/s).

 ---------------
 Subgroup (13c)
 ---------------

           BUILDING DIMENSION DATA FOR SOURCES SUBJECT TO DOWNWASH
           -------------------------------------------------------
 Source                                                                 a
  No.      Effective building height, width, length and X/Y offset (in meters)
           every 10 degrees.  LENGTH, XBADJ, and YBADJ are only needed for
           MBDW=2 (PRIME downwash option)
 ------    --------------------------------------------------------------------


 --------

     a
      Building height, width, length, and X/Y offset from the source are treated
      as a separate input subgroup for each source and therefore must end with
      an input group terminator.  The X/Y offset is the position, relative to the
      stack, of the center of the upwind face of the projected building, with the
      x-axis pointing along the flow direction.

 ---------------
 Subgroup (13d)
 ---------------
                                                 a
          POINT SOURCE: VARIABLE EMISSIONS DATA
          ---------------------------------------

      Use this subgroup to describe temporal variations in the emission
      rates given in 13b.  Factors entered multiply the rates in 13b.
      Skip sources here that have constant emissions.  For more elaborate
      variation in source parameters, use PTEMARB.DAT and NPT2 > 0.

      IVARY determines the type of variation, and is source-specific:
      (IVARY)                                Default: 0
            0 =       Constant
            1 =       Diurnal cycle (24 scaling factors: hours 1-24)
            2 =       Monthly cycle (12 scaling factors: months 1-12)
            3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                     where first group is DEC-JAN-FEB)
            4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                     first group is Stability Class A,
                                     and the speed classes have upper
                                     bounds (m/s) defined in Group 12
            5 =       Temperature   (12 scaling factors, where temperature
                                     classes have upper bounds (C) of:
                                     0, 5, 10, 15, 20, 25, 30, 35, 40,
                                     45, 50, 50+)



 --------
     a
      Data for each species are treated as a separate input subgroup
```



```
      and therefore must end with an input group terminator.


 --------------------------------------------------------------------------------


 INPUT GROUPS: 14a, 14b, 14c, 14d -- Area source parameters
 --------------------------------

 ---------------
 Subgroup (14a)
 ---------------

      Number of polygon area sources with
      parameters specified below (NAR1)       No default  !  NAR1 =  5   !

      Units used for area source
      emissions below            (IARU)       Default: 1  !  IARU =   5  !
            1 =        g/m**2/s
            2 =       kg/m**2/hr
            3 =       lb/m**2/hr
            4 =     tons/m**2/yr
            5 =     Odour Unit * m/s  (vol. flux/m**2 of odour compound)
            6 =     Odour Unit * m/min
            7 =     metric tons/m**2/yr

      Number of source-species
      combinations with variable
      emissions scaling factors
      provided below in (14d)        (NSAR1) Default: 0  !  NSAR1 =  0  !

      Number of buoyant polygon area sources
      with variable location and emission
      parameters (NAR2)                      No default  !  NAR2 =  0   !
      (If NAR2 > 0, ALL parameter data for
      these sources are read from the file: BAEMARB.DAT)

 !END!

 ---------------
 Subgroup (14b)
 ---------------
                                       a
           AREA SOURCE: CONSTANT DATA
           ----------------------------
                                                              b
 Source            Effect.    Base      Initial    Emission
  No.              Height   Elevation   Sigma z     Rates
                     (m)       (m)        (m)
 -------           ------    ------     --------   ---------

    1! SRCNAM = GOBF !
    1! X =            1.0,   115.0,         1.5,    2.8E00 ! !END!
    2! SRCNAM = AWTBF !
    2! X =            1.0,   115.0,         1.0,    2.5E00 ! !END!
    3! SRCNAM = MGOWR !
    3! X =            3.0,   140.0,         2.0,   4.6E-01 ! !END!
    4! SRCNAM = LEACHT !
    4! X =             .0,    68.0,         1.0,   8.33E-01 ! !END!
    5! SRCNAM = TIPFAC !
    5! X =             .0,   100.0,         2.0,    2.7E00 ! !END!

 --------
     a
      Data for each source are treated as a separate input subgroup
      and therefore must end with an input group terminator.
     b
      An emission rate must be entered for every pollutant modeled.
      Enter emission rate of zero for secondary pollutants that are
      modeled, but not emitted.  Units are specified by IARU
      (e.g. 1 for g/m**2/s).

 ---------------
```

```
Subgroup (14c)
---------------

           COORDINATES (km) FOR EACH VERTEX(4) OF EACH POLYGON
           --------------------------------------------------------
Source                                                                  a
 No.       Ordered list of X followed by list of Y, grouped by source
------     ------------------------------------------------------------

 1    ! SRCNAM  =   GOBF !
 1      !  XVERT = 341.18,    341.213,    341.213,    341.18!
 1      !  YVERT = 6290.63,    6290.63,    6290.61,    6290.61!
!END!
 2    ! SRCNAM  =   AWTBF !
 2      !  XVERT = 341.24,    341.25,    341.25,    341.24!
 2      !  YVERT = 6290.633,    6290.633,    6290.623,    6290.623!
!END!
 3    ! SRCNAM  =   MGOWR !
 3      !  XVERT = 341.295,    341.376,    341.35,    341.266!
 3      !  YVERT = 6290.934,    6290.888,    6290.819,    6290.869!
!END!
 4    ! SRCNAM  =   LEACHT !
 4      !  XVERT = 341.295,    341.318,    341.318,    341.295!
 4      !  YVERT = 6291.453,    6291.453,    6291.43,    6291.43!
!END!
 5    ! SRCNAM  =   TIPFAC !
 5      !  XVERT = 341.17,    341.2,    341.2,    341.17!
 5      !  YVERT = 6291.18,    6291.18,    6291.15,    6291.15!
!END!

--------
    a
     Data for each source are treated as a separate input subgroup
     and therefore must end with an input group terminator.


---------------
Subgroup (14d)
---------------
                                                 a
          AREA SOURCE: VARIABLE EMISSIONS DATA
          --------------------------------------

     Use this subgroup to describe temporal variations in the emission
     rates given in 14b.  Factors entered multiply the rates in 14b.
     Skip sources here that have constant emissions.  For more elaborate
     variation in source parameters, use BAEMARB.DAT and NAR2 > 0.

     IVARY determines the type of variation, and is source-specific:
     (IVARY)                                Default: 0
           0 =       Constant
           1 =       Diurnal cycle (24 scaling factors: hours 1-24)
           2 =       Monthly cycle (12 scaling factors: months 1-12)
           3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                    where first group is DEC-JAN-FEB)
           4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                    first group is Stability Class A,
                                    and the speed classes have upper
                                    bounds (m/s) defined in Group 12
           5 =       Temperature   (12 scaling factors, where temperature
                                    classes have upper bounds (C) of:
                                    0, 5, 10, 15, 20, 25, 30, 35, 40,
                                    45, 50, 50+)



--------
    a
     Data for each species are treated as a separate input subgroup
     and therefore must end with an input group terminator.


-------------------------------------------------------------------------------
```



```
INPUT GROUPS: 15a, 15b, 15c -- Line source parameters
---------------------------

---------------
Subgroup (15a)
---------------

     Number of buoyant line sources
     with variable location and emission
     parameters (NLN2)                             No default  !  NLN2 =  0   !

     (If NLN2 > 0, ALL parameter data for
      these sources are read from the file: LNEMARB.DAT)

     Number of buoyant line sources (NLINES)       No default   ! NLINES =  0  !

     Units used for line source
     emissions below                (ILNU)         Default: 1  !  ILNU =   1  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
     provided below in (15c)        (NSLN1) Default: 0  !  NSLN1 =  0  !

     Maximum number of segments used to model
     each line (MXNSEG)                            Default: 7   ! MXNSEG =  7  !

     The following variables are required only if NLINES > 0.  They are
     used in the buoyant line source plume rise calculations.

        Number of distances at which               Default: 6   ! NLRISE =  6  !
        transitional rise is computed

        Average building length (XL)               No default   ! XL = .0 !
                                                   (in meters)

        Average building height (HBL)              No default   ! HBL = .0 !
                                                   (in meters)

        Average building width (WBL)               No default   ! WBL = .0 !
                                                   (in meters)

        Average line source width (WML)            No default   ! WML = .0 !
                                                   (in meters)

        Average separation between buildings (DXL) No default   ! DXL = .0 !
                                                   (in meters)

        Average buoyancy parameter (FPRIMEL)       No default   ! FPRIMEL = .0 !
                                                   (in m**4/s**3)

!END!

---------------
Subgroup (15b)
---------------

          BUOYANT LINE SOURCE: CONSTANT DATA
          ----------------------------------

Source     Beg. X      Beg. Y      End. X    End. Y     Release    Base         Em
 No.     Coordinate  Coordinate  Coordinate Coordinate  Height    Elevation
            (km)        (km)        (km)       (km)       (m)        (m)
------   ----------  ----------  ---------  ----------  -------   ---------     --
```



```
--------

    a
     Data for each source are treated as a separate input subgroup
     and therefore must end with an input group terminator.

    b
     An emission rate must be entered for every pollutant modeled.
     Enter emission rate of zero for secondary pollutants that are
     modeled, but not emitted.  Units are specified by ILNTU
     (e.g. 1 for g/s).

---------------
Subgroup (15c)
---------------
                                                          a
          BUOYANT LINE SOURCE: VARIABLE EMISSIONS DATA
          ----------------------------------------------

     Use this subgroup to describe temporal variations in the emission
     rates given in 15b.  Factors entered multiply the rates in 15b.
     Skip sources here that have constant emissions.

     IVARY determines the type of variation, and is source-specific:
     (IVARY)                                Default: 0
           0 =       Constant
           1 =       Diurnal cycle (24 scaling factors: hours 1-24)
           2 =       Monthly cycle (12 scaling factors: months 1-12)
           3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                    where first group is DEC-JAN-FEB)
           4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                    first group is Stability Class A,
                                    and the speed classes have upper
                                    bounds (m/s) defined in Group 12
           5 =       Temperature   (12 scaling factors, where temperature
                                    classes have upper bounds (C) of:
                                    0, 5, 10, 15, 20, 25, 30, 35, 40,
                                    45, 50, 50+)



--------
    a
     Data for each species are treated as a separate input subgroup
     and therefore must end with an input group terminator.


-------------------------------------------------------------------------------


INPUT GROUPS: 16a, 16b, 16c -- Volume source parameters
---------------------------

---------------
Subgroup (16a)
---------------

     Number of volume sources with
     parameters provided in 16b,c (NVL1)     No default  !  NVL1 =  4   !

     Units used for volume source
     emissions below in 16b       (IVLU)     Default: 1  !  IVLU =   5  !
           1 =        g/s
           2 =       kg/hr
           3 =       lb/hr
           4 =     tons/yr
           5 =     Odour Unit * m**3/s  (vol. flux of odour compound)
           6 =     Odour Unit * m**3/min
           7 =     metric tons/yr

     Number of source-species
     combinations with variable
     emissions scaling factors
```



```
     provided below in (16c)      (NSVL1)    Default: 0  !  NSVL1 =  0  !

     Number of volume sources with
     variable location and emission
     parameters                    (NVL2)     No default  !  NVL2 =   0   !

     (If NVL2 > 0, ALL parameter data for
      these sources are read from the VOLEMARB.DAT file(s) )

!END!

---------------
Subgroup (16b)
---------------
                                        a
           VOLUME SOURCE: CONSTANT DATA
           ------------------------------
                                                                          b
         X           Y        Effect.    Base     Initial    Initial   Emission
     Coordinate  Coordinate   Height   Elevation  Sigma y    Sigma z     Rates
        (km)        (km)        (m)       (m)       (m)        (m)
     ----------  ----------   ------    ------    --------   --------   --------

   1! SRCNAM = GOBLD1 !
! X =   341.214,  6290.711,     5.0,    115.0,      12.5,       2.5,3.213E03 ! !E
   2! SRCNAM = GOBLD2 !
! X =   341.174,  6290.644,     5.0,    115.0,      12.5,       2.5,3.213E03 ! !E
   3! SRCNAM = AWTBL1 !
! X =   341.337,   6290.69,     5.0,    115.0,      12.5,       2.5,1.152E03 ! !E
   4! SRCNAM = AWTBL2 !
! X =    341.33,  6290.639,     5.0,    115.0,      12.5,       2.5,1.152E03 ! !E

--------
    a
     Data for each source are treated as a separate input subgroup
     and therefore must end with an input group terminator.

    b
     An emission rate must be entered for every pollutant modeled.
     Enter emission rate of zero for secondary pollutants that are
     modeled, but not emitted.  Units are specified by IVLU
     (e.g. 1 for g/s).

---------------
Subgroup (16c)
---------------
                                                 a
          VOLUME SOURCE: VARIABLE EMISSIONS DATA
          ----------------------------------------

     Use this subgroup to describe temporal variations in the emission
     rates given in 16b.  Factors entered multiply the rates in 16b.
     Skip sources here that have constant emissions.  For more elaborate
     variation in source parameters, use VOLEMARB.DAT and NVL2 > 0.

     IVARY determines the type of variation, and is source-specific:
     (IVARY)                                Default: 0
           0 =       Constant
           1 =       Diurnal cycle (24 scaling factors: hours 1-24)
           2 =       Monthly cycle (12 scaling factors: months 1-12)
           3 =       Hour & Season (4 groups of 24 hourly scaling factors,
                                    where first group is DEC-JAN-FEB)
           4 =       Speed & Stab. (6 groups of 6 scaling factors, where
                                    first group is Stability Class A,
                                    and the speed classes have upper
                                    bounds (m/s) defined in Group 12
           5 =       Temperature   (12 scaling factors, where temperature
                                    classes have upper bounds (C) of:
                                    0, 5, 10, 15, 20, 25, 30, 35, 40,
                                    45, 50, 50+)
```

```
--------
    a
     Data for each species are treated as a separate input subgroup
     and therefore must end with an input group terminator.


-------------------------------------------------------------------------------

INPUT GROUPS: 17a & 17b -- Non-gridded (discrete) receptor information
-----------------------

---------------
Subgroup (17a)
---------------

     Number of non-gridded receptors (NREC)  No default  !  NREC =  3   !

!END!

---------------
Subgroup (17b)
---------------
                                                     a
           NON-GRIDDED (DISCRETE) RECEPTOR DATA
           ------------------------------------

                   X            Y          Ground       Height   b
Receptor       Coordinate   Coordinate    Elevation   Above Ground
  No.             (km)         (km)          (m)          (m)
--------       ----------   ----------    ---------   ------------
     1 ! X =     342.046,    6291.203,     120.000,       2.000!   !END!
     2 ! X =      342.18,    6290.668,     125.000,       2.000!   !END!
     3 ! X =     342.112,    6290.283,      90.000,       2.000!   !END!


--------------------------------------------------------------------------------
         INPUT FILES

Default Name     Unit No.     File Name and Path
------------     --------     ------------------
 CALPUFF.INP         1        C:\CALPUFF\WOYWOY\WWCP5.INP
  CALMET.DAT         7        C:\CALPUFF\WOYWOY\WWCMJJ.DAT
    (----)           7        C:\CALPUFF\WOYWOY\WWCMJD.DAT


--------------------------------------------------------------------------------
         OUTPUT FILES

Default Name     Unit No.     File Name and Path
------------     --------     ------------------
 CALPUFF.LST         2        C:\CALPUFF\WOYWOY\WWCP5.LST
    CONC.DAT         8        C:\CALPUFF\WOYWOY\WWCP5.DAT


CALMET Control file information:
--------------------------------

CALMET.DAT      2.1             No-Obs file structure with embedded control file

Produced by CALMET Version: 6.212  Level: 060519
Internal Coordinate Transformations  ---  COORDLIB   Version: 1.96   Level: 0510
CALMET.INP      2.1              Hour Start and End Times with Seconds
woy woy calmet JJ



-- Data begin at:
 IBYR    =  2004
 IBMO    =  1
 IBDY    =  1
 IBHR    =  0
 IBSEC   =  0
```



```
-- Data end at:
 IEYR    =  2004
 IEMO    =  7
 IEDY    =  1
 IEHR    =  0
 IESEC   =  0

 XBTZM   =  -10.0000000
 IRLG    =  4368
 IRTYPE  =  1
 LCALGRD =  T
 PMAP    = UTM
 DATUM   = WGS-84
 NIMADATE= 02-21-2003
 FEASTM  =  0.00000000E+00
 FNORTHM =  0.00000000E+00
 IUTMZN  =  56
 UTMHEM  = S
 NXM     =  49
 NYM     =  49
 NZM     =  9
 XGRIDM  =  150.000000
 XORIGM  =  337717.000
 YORIGM  =  6287453.00
 IWFCOD  =  1
 NSSTA   =  1
 NUSTA   =  1
 NPSTA   =  0
 NOWSTA  =  0
 NLU     =  14
 IWAT1   =  55
 IWAT2   =  55
ZFACEM  =      0.000,    20.000,    40.000,    60.000,    90.000,   150.000,   250

Met Station Locations (Met Grid meters)
XSSTA    =  2108.98877
YSSTA    =  5097.78125
XUSTA    =  2108.98877
YUSTA    =  5097.78125

Surface roughness lengths (m)                                    Z0

Multiply all values by 10 **  -3

 49 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 48 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 47 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 46 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 45 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 44 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 43 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 42 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 41 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 40 I  1000  1000  1000  1000  1000  1000     1  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 39 I  1000  1000  1000  1000  1000     1     1  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 38 I  1000  1000  1000  1000  1000     1  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 37 I  1000  1000  1000  1000     1     1  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 36 I  1000  1000  1000     1     1  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 35 I  1000     1     1     1  1000  1000  1000  1000  1000  1000  1000  1000   100
```



```
    I     +     +     +     +     +     +     +     +     +     +     +     +
 34 I     1     1     1     1  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 33 I     1  1000     1  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 32 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 31 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 30 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 29 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 28 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 27 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 26 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 25 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 24 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 23 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 22 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 21 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 20 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 19 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 18 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 17 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 16 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 15 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 14 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 13 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 12 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 11 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000     1   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 10 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000     1  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  9 I  1000  1000  1000  1000  1000  1000  1000  1000     1  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  8 I  1000  1000  1000  1000  1000  1000  1000     1     1  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  7 I     1  1000  1000  1000  1000  1000  1000  1000     1  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  6 I     1  1000  1000  1000  1000  1000  1000  1000     1  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  5 I     1     1  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  4 I     1     1  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  3 I     1     1  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  2 I     1     1  1000  1000  1000  1000  1000  1000     1  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
  1 I     1     1  1000  1000  1000  1000  1000     1  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
    --------------------------------------------------------------------------------
          1     2     3     4     5     6     7     8     9    10    11    12     1

Surface roughness lengths (m)                                    Z0
```



```
Multiply all values by 10 **  -3

 49 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000     1
    I     +     +     +     +     +     +     +     +     +     +     +     +
 48 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000
    I     +     +     +     +     +     +     +     +     +     +     +     +
 47 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000
    I     +     +     +     +     +     +     +     +     +     +     +     +
 46 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000
    I     +     +     +     +     +     +     +     +     +     +     +     +
 45 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 44 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 43 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 42 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 41 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 40 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 39 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 38 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 37 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000
    I     +     +     +     +     +     +     +     +     +     +     +     +
 36 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 35 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000     1     1
    I     +     +     +     +     +     +     +     +     +     +     +     +
 34 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000     1     1
    I     +     +     +     +     +     +     +     +     +     +     +     +
 33 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 32 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 31 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 30 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 29 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 28 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 27 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 26 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 25 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 24 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 23 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 22 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 21 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 20 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 19 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 18 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 17 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 16 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
 15 I  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000   100
    I     +     +     +     +     +     +     +     +     +     +     +     +
```

```
  14 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  13 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  12 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  11 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  10 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   9 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   8 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   7 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   6 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   5 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   4 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   3 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   2 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   1 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
     ------------------------------------------------------------------------------------------
            21     22     23     24     25     26     27     28     29     30     31     32      3
```

Surface roughness lengths (m) Z0

Multiply all values by 10 ** -3

```
  49 I   1000   1000   1000   1000      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
  48 I   1000   1000   1000      1   1000      1   1000      1      1
     I      +      +      +      +      +      +      +      +      +
  47 I   1000   1000      1      1   1000      1   1000   1000      1
     I      +      +      +      +      +      +      +      +      +
  46 I   1000      1      1   1000   1000      1   1000   1000      1
     I      +      +      +      +      +      +      +      +      +
  45 I      1      1      1      1   1000   1000      1      1   1000
     I      +      +      +      +      +      +      +      +      +
  44 I      1      1      1      1   1000      1   1000      1      1
     I      +      +      +      +      +      +      +      +      +
  43 I      1      1      1      1   1000   1000   1000   1000      1
     I      +      +      +      +      +      +      +      +      +
  42 I   1000      1      1      1   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  41 I      1      1   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  40 I      1   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  39 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  38 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  37 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  36 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  35 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  34 I   1000   1000   1000   1000   1000   1000   1000   1000      1
     I      +      +      +      +      +      +      +      +      +
  33 I   1000   1000   1000   1000   1000   1000   1000   1000      1
     I      +      +      +      +      +      +      +      +      +
  32 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  31 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
```



```
  30 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  29 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  28 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  27 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  26 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  25 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  24 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  23 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  22 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  21 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  20 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  19 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  18 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  17 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  16 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  15 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  14 I   1000   1000   1000   1000   1000   1000   1000   1000   1000
     I      +      +      +      +      +      +      +      +      +
  13 I   1000   1000   1000   1000   1000      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
  12 I   1000   1000      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
  11 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
  10 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   9 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   8 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   7 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   6 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   5 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   4 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   3 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   2 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
   1 I      1      1      1      1      1      1      1      1      1
     I      +      +      +      +      +      +      +      +      +
     ---------------------------------------------------------------
            41     42     43     44     45     46     47     48     49
```

Land use categories ILANDU

Multiply all values by 10 ** -2

```
  49 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  48 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  47 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
```



```
  46 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  45 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  44 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  43 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  42 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  41 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  40 I   4000   4000   4000   4000   4000   4000   5000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  39 I   4000   4000   4000   4000   4000   5000   5000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  38 I   4000   4000   4000   4000   4000   5000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  37 I   4000   4000   4000   4000   5000   5000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  36 I   4000   4000   4000   5000   5000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  35 I   4000   5000   5000   5000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  34 I   5000   5000   5000   5000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  33 I   5000   4000   5000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  32 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  31 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  30 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  29 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  28 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  27 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  26 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  25 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  24 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  23 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  22 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  21 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  20 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  19 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  18 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  17 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  16 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  15 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  14 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  13 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  12 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  11 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   5000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  10 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   5000   4000    400
```



```
     I      +      +      +      +      +      +      +      +      +      +      +      +
   9 I   4000   4000   4000   4000   4000   4000   4000   4000   5000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   8 I   4000   4000   4000   4000   4000   4000   4000   5000   5000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   7 I   5000   4000   4000   4000   4000   4000   4000   4000   5000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   6 I   5000   4000   4000   4000   4000   4000   4000   4000   5000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   5 I   5000   5000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   4 I   5000   5000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   3 I   5000   5000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   2 I   5000   5000   4000   4000   4000   4000   4000   4000   5000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
   1 I   5000   5000   4000   4000   4000   4000   4000   5000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
     ------------------------------------------------------------------------------------------
             1      2      3      4      5      6      7      8      9     10     11     12      1
```

Land use categories ILANDU

Multiply all values by 10 ** -2

```
  49 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   5000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  48 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  47 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  46 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  45 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  44 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  43 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  42 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  41 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  40 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  39 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  38 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  37 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  36 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000    400
     I      +      +      +      +      +      +      +      +      +      +      +      +
  35 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   5000   5000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  34 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   5000   5000    500
     I      +      +      +      +      +      +      +      +      +      +      +      +
  33 I   4000   4000   4000   4000   4000   4000   4000   1000   1000   1000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  32 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  31 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  30 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  29 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  28 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  27 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000   1000    100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  26 I   4000   4000   4000   4000   4000   4000   4000   4000   4000   4000   1000   4000    100
```

	21	22	23	24	25	26	27	28	29	30	31	32	3
25	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
24	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
23	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
22	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
21	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	100
20	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	100
19	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	100
18	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	100
17	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
16	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
15	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
14	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	100
13	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	100
12	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	100
11	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	1000	100
10	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	1000	1000	100
9	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	1000	1000	100
8	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	100
7	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	1000	1000	100
6	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	1000	4000	400
5	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
4	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
3	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
2	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400
1	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	400

Land use categories ILANDU

Multiply all values by 10 ** -2

49	4000	4000	4000	4000	5000	5000	5000	5000	5000
48	4000	4000	4000	5000	1000	5000	1000	5000	5000
47	4000	4000	5000	5000	1000	5000	1000	1000	5000
46	4000	5000	5000	1000	1000	5000	1000	1000	5000
45	5000	5000	5000	5000	1000	1000	5000	5000	1000
44	5000	5000	5000	5000	1000	5000	1000	5000	5000
43	5000	5000	5000	5000	1000	1000	1000	1000	5000
42	4000	5000	5000	5000	1000	1000	1000	1000	1000

41	5000	5000	1000	1000	1000	1000	1000	1000	1000
40	5000	1000	1000	1000	1000	1000	1000	1000	1000
39	1000	1000	1000	1000	1000	1000	1000	1000	1000
38	1000	1000	1000	1000	1000	1000	1000	1000	1000
37	1000	1000	1000	1000	1000	1000	1000	1000	1000
36	1000	1000	1000	1000	1000	1000	1000	1000	1000
35	1000	1000	1000	1000	1000	1000	1000	1000	1000
34	1000	1000	1000	1000	1000	1000	1000	1000	5000
33	1000	1000	1000	1000	1000	1000	1000	1000	5000
32	1000	1000	1000	1000	1000	1000	1000	1000	1000
31	1000	1000	1000	1000	1000	1000	1000	1000	1000
30	1000	1000	1000	1000	1000	1000	1000	1000	1000
29	1000	1000	1000	1000	1000	1000	1000	1000	1000
28	1000	1000	1000	1000	1000	1000	1000	1000	1000
27	1000	1000	1000	1000	1000	1000	1000	1000	1000
26	1000	1000	1000	1000	1000	1000	1000	1000	1000
25	1000	1000	1000	1000	1000	1000	1000	1000	1000
24	1000	1000	1000	1000	1000	1000	1000	1000	1000
23	1000	1000	1000	1000	1000	1000	1000	1000	1000
22	1000	1000	1000	1000	1000	1000	1000	1000	1000
21	1000	1000	1000	1000	1000	1000	1000	1000	1000
20	1000	1000	1000	1000	1000	1000	1000	1000	1000
19	1000	1000	1000	1000	1000	1000	1000	1000	1000
18	1000	1000	1000	1000	1000	1000	1000	1000	1000
17	1000	1000	1000	1000	1000	1000	1000	1000	1000
16	1000	1000	1000	1000	1000	1000	1000	1000	1000
15	1000	1000	1000	1000	1000	1000	1000	1000	1000
14	1000	1000	1000	1000	1000	1000	1000	1000	1000
13	1000	1000	1000	1000	1000	5000	5000	5000	5000
12	1000	1000	5000	5000	5000	5000	5000	5000	5000
11	5000	5000	5000	5000	5000	5000	5000	5000	5000
10	5000	5000	5000	5000	5000	5000	5000	5000	5000
9	5000	5000	5000	5000	5000	5000	5000	5000	5000
8	5000	5000	5000	5000	5000	5000	5000	5000	5000
7	5000	5000	5000	5000	5000	5000	5000	5000	5000
6	5000	5000	5000	5000	5000	5000	5000	5000	5000

	41	42	43	44	45	46	47	48	49
5	5000	5000	5000	5000	5000	5000	5000	5000	5000
4	5000	5000	5000	5000	5000	5000	5000	5000	5000
3	5000	5000	5000	5000	5000	5000	5000	5000	5000
2	5000	5000	5000	5000	5000	5000	5000	5000	5000
1	5000	5000	5000	5000	5000	5000	5000	5000	5000

Terrain heights (m) ELEV

Multiply all values by 10 ** -1

49	1250	1180	1080	850	900	1080	960	500	300	250	500	1100	110
48	1370	1350	1300	1200	1350	1240	1000	800	150	800	860	1200	132
47	1540	1710	1550	1540	1500	1340	1200	700	120	950	1200	1500	180
46	1520	1510	1500	1500	1450	1300	1260	650	90	850	1300	1500	160
45	1360	1220	1120	1100	1130	1000	1220	600	70	820	1280	1200	128
44	1460	1260	1200	1100	920	740	960	750	60	550	1080	1070	115
43	1570	1510	1430	1350	1160	1200	600	100	40	300	500	600	110
42	1350	1510	1620	1500	1300	1080	700	10	270	200	200	330	95
41	1300	1200	1300	1500	1050	200	20	10	500	800	950	650	40
40	1260	1080	1190	1300	900	20	0	400	900	1240	1250	1070	88
39	1240	1030	850	1080	300	0	0	200	650	1000	1320	1280	100
38	1390	1110	650	600	10	0	300	830	1000	960	1380	1300	105
37	1340	1300	300	20	0	0	20	800	1200	1300	1400	1500	120
36	800	760	130	0	0	250	550	500	750	1240	1500	1700	160
35	20	0	0	0	60	500	1200	1100	830	1250	1600	1940	194
34	0	0	0	0	460	1000	1500	1450	1300	1500	1700	2000	217
33	0	70	0	200	640	1100	1400	1450	1640	1720	1900	2070	214
32	80	610	200	20	400	720	1000	1340	1430	1670	1870	1950	198
31	620	750	900	350	100	500	1000	1000	1330	1670	1780	1870	185
30	1270	1000	1350	1170	600	620	700	1000	1320	1560	1720	1790	174
29	1330	1300	1350	1420	1200	1200	1250	1160	1350	1490	1620	1600	145
28	1200	1230	1250	1300	1400	1500	1490	1430	1700	1400	1200	1260	113
27	1090	1140	1210	1260	1350	1460	1580	1680	1700	1400	1200	1050	102
26	1060	1140	1220	1300	1350	1400	1540	1700	1820	1620	1400	1080	90
25	1170	1150	1300	1370	1410	1470	1620	1800	1910	1800	1600	1470	120
24	1400	1330	1400	1400	1390	1580	1680	1780	2000	1870	1700	1300	115
23	1360	1470	1460	1420	1280	1430	1600	1710	1930	1600	1400	1100	90
22	1240	1200	1350	1430	1240	1320	1500	1700	1930	1650	1400	1150	110

	1	2	3	4	5	6	7	8	9	10	11	12	1
21	940	1060	1200	1400	1200	1310	1540	1700	1920	1860	1700	1460	121
20	1160	1200	1400	1340	1180	1320	1530	1800	1850	1600	1700	1640	143
19	1500	1450	1660	1300	1130	1240	1450	1800	1700	1420	1460	1500	110
18	1740	1780	1600	1230	1090	1180	1400	1600	1620	1300	1250	1100	85
17	1720	1820	1700	1300	1100	1130	1300	1500	1440	1100	900	850	40
16	1560	1640	1620	1260	1080	1100	1310	1440	1450	1240	850	800	25
15	1110	1360	1450	1360	1080	1050	1250	1540	1570	1100	830	400	5
14	930	1130	1320	1150	1300	1000	1170	1400	1200	1080	900	470	3
13	830	900	1000	1040	1030	1030	1080	1100	1230	1130	1000	750	2
12	820	730	740	780	900	1110	1100	900	1080	960	900	440	6
11	800	750	840	800	1040	900	940	870	700	600	230	0	1
10	600	1050	1020	1050	1070	900	680	650	50	20	0	400	30
9	700	1290	1200	1300	1100	700	540	100	0	70	400	760	70
8	280	1300	1500	1500	850	440	250	0	0	360	440	550	76
7	0	430	1500	1550	1170	650	400	10	0	100	500	660	87
6	0	20	1040	1820	1300	950	750	50	0	400	600	760	88
5	0	0	500	1500	1000	630	500	10	20	20	500	800	90
4	0	0	170	1100	1100	720	240	10	20	20	400	600	74
3	0	0	60	1050	900	1020	650	40	20	60	400	400	54
2	0	0	300	990	760	800	500	20	0	500	500	700	80
1	0	0	900	800	920	600	30	0	10	450	860	900	90

Terrain heights (m) ELEV

Multiply all values by 10 ** -1

49	1830	1900	1800	1840	1800	1600	1400	1130	850	300	160	0	
48	1700	1870	1830	1760	1560	1530	1470	1170	1060	1000	700	70	
47	1420	1480	1820	1700	1500	1400	1230	1200	1200	1210	1160	400	
46	1320	1430	1500	1500	1490	1400	1180	1000	1040	1060	900	740	20
45	1310	1300	1350	1430	1400	1320	1330	1150	1060	800	650	300	2
44	1330	1270	1240	1280	1280	1230	1350	1270	1190	940	640	670	60
43	1430	1320	1250	1190	1170	1170	1280	1340	1150	1030	860	910	83
42	1340	1310	1260	1180	1070	1100	1270	1500	1240	1120	1070	1140	100
41	1260	1230	1180	1110	910	1100	1330	1300	1200	1250	1050	900	78
40	1270	1140	1000	910	900	1050	1230	1100	980	1000	850	650	45
39	1270	1100	830	500	600	950	1200	1100	870	750	680	400	35
38	1270	1100	980	620	200	850	1300	1340	950	650	200	400	7

37	1250	1300	1150	860	100	400	1200	1100	900	640	100	10	
36	1060	1000	900	600	180	40	750	900	700	600	600	460	10
35	1140	1060	900	300	50	30	400	500	350	30	0	0	
34	1400	1300	1100	860	400	100	40	10	10	10	0	0	
33	1470	1450	1240	800	300	60	100	110	110	100	80	40	1
32	1350	1560	1200	840	340	30	100	630	400	450	300	80	2
31	1180	1480	1100	700	650	100	300	700	950	940	500	100	2
30	1030	1250	1160	900	350	350	700	1100	1350	950	400	20	1
29	950	900	860	500	200	600	1000	1280	1000	700	250	10	1
28	1000	880	700	600	720	960	900	1210	1000	340	50	20	2
27	1250	1000	950	740	820	1200	1100	1400	1200	700	130	60	6
26	1300	1150	1300	850	900	1500	1500	1600	1200	600	100	200	12
25	1500	1600	1600	970	1000	1400	1700	1680	1400	1100	600	700	40
24	1630	1460	1630	1100	1040	1600	1710	1700	1400	1120	1000	1030	105
23	1570	1350	1400	1250	1300	1540	1540	1640	1530	1300	1270	1200	120
22	1500	1160	1070	1080	1300	1260	1400	1610	1400	1300	1170	600	55
21	1200	920	1240	1240	1190	1220	1430	1590	1200	900	700	160	1
20	660	900	1230	1450	1400	1360	1530	1650	1100	750	70	30	3
19	850	1050	1140	1560	1640	1480	1520	1600	1170	750	200	100	7
18	900	1100	1550	1830	1880	1800	1700	1700	1200	1000	900	200	7
17	950	1200	1530	1660	1700	1850	1700	1700	1330	1330	1000	650	23
16	1060	1120	1260	1480	1640	1550	1460	1500	1100	1050	1200	1100	43
15	1190	1160	1240	1460	1560	1150	1100	1240	1160	710	970	800	43
14	1280	1230	1350	1550	1100	900	900	980	900	700	420	350	5
13	1430	1400	1630	1400	910	640	600	880	800	250	100	20	1
12	1540	1430	1650	1660	1200	900	500	200	650	300	60	10	1
11	1500	1170	1350	1500	1200	1000	850	270	200	140	50	10	1
10	1570	1240	1130	1100	1100	900	500	300	10	90	80	60	4
9	1530	1360	1100	1050	1080	1000	770	650	20	60	80	90	6
8	1640	1500	1100	1040	970	950	900	900	700	200	70	70	6
7	1760	1540	1240	1050	1050	1160	1250	1100	450	70	70	50	10
6	1750	1630	1400	1260	1130	1350	1000	700	350	200	130	250	60
5	1780	1720	1610	1500	1270	1140	970	930	800	830	560	750	63
4	1790	1800	1630	1490	1240	1220	1190	1160	1170	1070	870	930	76
3	1680	1660	1600	1580	1500	1400	1370	1370	1340	1240	960	600	12
2	1400	1300	1300	1300	1400	1460	1250	1100	1100	1100	1020	900	30
1	1450	1170	1050	1000	1080	1300	1250	770	720	770	760	850	50
	21	22	23	24	25	26	27	28	29	30	31	32	3

Terrain heights (m) ELEV

Multiply all values by 10 ** -1

49	640	930	600	20	0	0	0	0	0
48	650	200	10	0	10	0	30	0	0
47	580	50	0	0	10	0	20	10	0
46	0	60	0	0	10	10	0	10	20
45	0	0	0	0	20	10	0	0	20
44	0	0	0	0	10	0	10	0	0
43	0	0	0	0	20	20	20	10	0
42	20	0	0	0	20	10	10	10	20
41	0	0	10	30	20	10	10	10	10
40	0	20	30	30	20	20	10	10	10
39	20	30	30	30	20	20	10	10	10
38	20	10	20	30	20	20	10	10	20
37	20	20	30	30	20	20	10	10	20
36	20	30	30	30	20	20	10	10	20
35	20	30	30	30	20	20	10	10	10
34	30	30	30	20	20	20	10	10	0
33	30	30	30	20	20	10	10	20	0
32	40	40	30	30	20	20	20	30	20
31	50	50	40	30	20	20	30	30	30
30	50	50	40	30	30	30	40	40	30
29	60	60	50	40	30	40	50	40	60
28	60	60	60	50	50	40	40	20	40
27	60	60	60	60	50	40	40	10	20
26	50	60	60	60	50	40	30	10	10
25	40	50	60	60	50	40	30	10	10
24	40	50	60	60	50	50	30	20	10
23	30	50	60	60	60	50	40	30	30
22	30	50	50	60	60	60	50	50	40
21	30	40	50	60	60	60	60	50	40
20	30	40	50	60	60	60	60	50	40
19	30	40	50	60	60	60	60	50	30
18	30	40	50	60	60	60	50	40	20
17	30	40	40	50	50	50	40	30	20

16	30	30	40	40	40	40	30	20	20
15	30	30	30	30	30	30	20	20	20
14	30	30	20	30	20	20	30	20	30
13	20	20	30	10	10	0	0	0	0
12	30	10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0
	41	42	43	44	45	46	47	48	49

Leaf area index XLAI

Multiply all values by 10 ** -3

49	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
48	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
47	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
46	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
45	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
44	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
43	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
42	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
41	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
40	7000	7000	7000	7000	7000	7000	0	7000	7000	7000	7000	7000	700
39	7000	7000	7000	7000	7000	0	0	7000	7000	7000	7000	7000	700
38	7000	7000	7000	7000	7000	0	7000	7000	7000	7000	7000	7000	700
37	7000	7000	7000	7000	0	0	7000	7000	7000	7000	7000	7000	700
36	7000	7000	7000	0	0	7000	7000	7000	7000	7000	7000	7000	700
35	7000	0	0	0	7000	7000	7000	7000	7000	7000	7000	7000	700
34	0	0	0	0	7000	7000	7000	7000	7000	7000	7000	7000	700
33	0	7000	0	7000	7000	7000	7000	7000	7000	7000	7000	7000	700

32	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
31	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
30	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
29	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
28	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
27	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
26	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
25	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
24	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
23	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
22	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
21	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
20	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
19	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
18	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
17	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
16	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
15	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
14	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
13	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
12	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
11	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	0	700
10	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	0	7000	700
9	7000	7000	7000	7000	7000	7000	7000	7000	0	7000	7000	7000	700
8	7000	7000	7000	7000	7000	7000	7000	0	0	7000	7000	7000	700
7	0	7000	7000	7000	7000	7000	7000	7000	0	7000	7000	7000	700
6	0	7000	7000	7000	7000	7000	7000	7000	0	7000	7000	7000	700
5	0	0	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
4	0	0	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
3	0	0	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	700
2	0	0	7000	7000	7000	7000	7000	7000	0	7000	7000	7000	700
1	0	0	7000	7000	7000	7000	7000	0	7000	7000	7000	7000	700
	1	2	3	4	5	6	7	8	9	10	11	12	1

Leaf area index XLAI

Multiply all values by 10 ** -3

49	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	0

```
     I      +      +      +      +      +      +      +      +      +      +      +      +
  48 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000
     I      +      +      +      +      +      +      +      +      +      +      +      +
  47 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000
     I      +      +      +      +      +      +      +      +      +      +      +      +
  46 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000
     I      +      +      +      +      +      +      +      +      +      +      +      +
  45 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  44 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  43 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  42 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  41 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  40 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  39 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  38 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  37 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000
     I      +      +      +      +      +      +      +      +      +      +      +      +
  36 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  35 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000      0      0
     I      +      +      +      +      +      +      +      +      +      +      +      +
  34 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000      0      0
     I      +      +      +      +      +      +      +      +      +      +      +      +
  33 I   7000   7000   7000   7000   7000   7000   7000    200    200    200    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  32 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  31 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  30 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  29 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  28 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  27 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  26 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200   7000    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  25 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  24 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  23 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  22 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  21 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  20 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  19 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  18 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  17 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  16 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  15 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
  14 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  13 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
```



```
  12 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  11 I   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
  10 I   7000   7000   7000   7000   7000   7000   7000   7000    200    200    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
   9 I   7000   7000   7000   7000   7000   7000   7000   7000    200    200    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
   8 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
   7 I   7000   7000   7000   7000   7000   7000   7000   7000   7000    200    200    200    20
     I      +      +      +      +      +      +      +      +      +      +      +      +
   6 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000    200   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
   5 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
   4 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
   3 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
   2 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
   1 I   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   7000   700
     I      +      +      +      +      +      +      +      +      +      +      +      +
     ------------------------------------------------------------------------------------------
            21     22     23     24     25     26     27     28     29     30     31     32    3
```

Leaf area index XLAI

Multiply all values by 10 ** -3

```
  49 I   7000   7000   7000   7000      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
  48 I   7000   7000   7000      0    200      0    200      0      0
     I      +      +      +      +      +      +      +      +      +
  47 I   7000   7000      0      0    200      0    200    200      0
     I      +      +      +      +      +      +      +      +      +
  46 I   7000      0      0    200    200      0    200    200      0
     I      +      +      +      +      +      +      +      +      +
  45 I      0      0      0      0    200    200      0      0    200
     I      +      +      +      +      +      +      +      +      +
  44 I      0      0      0      0    200      0    200      0      0
     I      +      +      +      +      +      +      +      +      +
  43 I      0      0      0      0    200    200    200    200      0
     I      +      +      +      +      +      +      +      +      +
  42 I   7000      0      0      0    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  41 I      0      0    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  40 I      0    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  39 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  38 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  37 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  36 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  35 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  34 I    200    200    200    200    200    200    200    200      0
     I      +      +      +      +      +      +      +      +      +
  33 I    200    200    200    200    200    200    200    200      0
     I      +      +      +      +      +      +      +      +      +
  32 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  31 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  30 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  29 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
```



```
  28 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  27 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  26 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  25 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  24 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  23 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  22 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  21 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  20 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  19 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  18 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  17 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  16 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  15 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  14 I    200    200    200    200    200    200    200    200    200
     I      +      +      +      +      +      +      +      +      +
  13 I    200    200    200    200    200      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
  12 I    200    200      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
  11 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
  10 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   9 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   8 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   7 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   6 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   5 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   4 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   3 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   2 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
   1 I      0      0      0      0      0      0      0      0      0
     I      +      +      +      +      +      +      +      +      +
     ---------------------------------------------------------------
            41     42     43     44     45     46     47     48     49
```

Nearest surface station no. to each grid point NEARS

Multiply all values by 10 ** -3

```
  49 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  48 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  47 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  46 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  45 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
```



```
  44 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  43 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  42 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  41 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  40 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  39 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  38 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  37 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  36 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  35 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  34 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  33 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  32 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  31 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  30 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  29 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  28 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  27 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  26 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  25 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  24 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  23 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  22 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  21 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  20 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  19 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  18 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  17 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  16 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  15 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  14 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  13 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  12 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  11 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
  10 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   9 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
     I      +      +      +      +      +      +      +      +      +      +      +      +
   8 I   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   1000   100
```

```
    I    +     +     +     +     +     +     +     +     +     +     +     +
  7 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  6 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  5 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  4 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  3 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  2 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  1 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
    ------------------------------------------------------------------------------
         1     2     3     4     5     6     7     8     9    10    11    12     1

 Nearest surface station no. to each grid point                NEARS

 Multiply all values by 10 **  -3

 49 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 48 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 47 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 46 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 45 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 44 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 43 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 42 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 41 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 40 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 39 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 38 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 37 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 36 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 35 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 34 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 33 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 32 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 31 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 30 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 29 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 28 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 27 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 26 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 25 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 24 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
```



```
    I    +     +     +     +     +     +     +     +     +     +     +     +
 23 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 22 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 21 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 20 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 19 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 18 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 17 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 16 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 15 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 14 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 13 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 12 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 11 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
 10 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  9 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  8 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  7 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  6 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  5 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  4 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  3 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  2 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
  1 I 1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  1000  100
    I    +     +     +     +     +     +     +     +     +     +     +     +
    ------------------------------------------------------------------------------
        21    22    23    24    25    26    27    28    29    30    31    32     3

 Nearest surface station no. to each grid point                NEARS

 Multiply all values by 10 **  -3

 49 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 48 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 47 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 46 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 45 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 44 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 43 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 42 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 41 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 40 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
```



```
    I    +     +     +     +     +     +     +     +     +
 39 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 38 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 37 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 36 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 35 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 34 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 33 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 32 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 31 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 30 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 29 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 28 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 27 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 26 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 25 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 24 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 23 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 22 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 21 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 20 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 19 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 18 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 17 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 16 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 15 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 14 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 13 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 12 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 11 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
 10 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  9 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  8 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  7 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  6 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  5 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  4 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
```



```
  3 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  2 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
  1 I 1000  1000  1000  1000  1000  1000  1000  1000  1000
    I    +     +     +     +     +     +     +     +     +
    ------------------------------------------------------
        41    42    43    44    45    46    47    48    49


  LAST PERIOD PROCESSED ENDS AT:
       Year: 2004  Month: 12   Day: 31   Julian day: 366   Hour: 23   Second:    0


  End of run -- Clock time: 18:58:44
                      Date: 06-10-2007

        Elapsed Clock Time:    10070.0 (seconds)

                  CPU Time:    10070.0 (seconds)
```

Appendix B
Dispersion Modelling Files
CALPOST List File

```
********************************************************************************
                                                CALPOST  Version 6.132         Level
********************************************************************************



 Internal Coordinate Transformations by  ---  COORDLIB   Version: 1.96   Level: 05


  Run Title:




 -------------------------------------------------------------------------------

 INPUT GROUP: 1 -- General run control parameters
 --------------

      Option to run all periods found
      in the met. file(s)  (METRUN)        Default: 0   ! METRUN =   1  !

          METRUN = 0 - Run period explicitly defined below
          METRUN = 1 - Run all periods in CALPUFF data file(s)

      Starting date:    Year   (ISYR)  --    No default   ! ISYR  =  2004  !
                        Month  (ISMO)  --    No default   ! ISMO  =  0  !
                        Day    (ISDY)  --    No default   ! ISDY  =  0  !
      Starting time:    Hour   (ISHR)  --    No default   ! ISHR  =  0  !
                        Minute (ISMIN) --    No default   ! ISMIN =  0  !
                        Second (ISSEC) --    No default   ! ISSEC =  0  !

      Ending date:      Year   (IEYR)  --    No default   ! IEYR  =  0  !
                        Month  (IEMO)  --    No default   ! IEMO  =  0  !
                        Day    (IEDY)  --    No default   ! IEDY  =  0  !
      Ending time:      Hour   (IEHR)  --    No default   ! IEHR  =  0  !
                        Minute (IEMIN) --    No default   ! IEMIN =  0  !
                        Second (IESEC) --    No default   ! IESEC =  0  !

      (These are only used if METRUN = 0)

      All times are in the base time zone of the CALPUFF simulation.
      CALPUFF Dataset Version 2.1 contains the zone, but earlier versions
      do not, and the zone must be specified here.  The zone is the
      number of hours that must be ADDED to the time to obtain UTC (or GMT).
      Identify the Base Time Zone for the CALPUFF simulation
                                (BTZONE) -- No default   ! BTZONE = -10.0 !

      Process every period of data?
                                  (NREP) -- Default: 1   ! NREP  =  1  !
       (1 = every period processed,
        2 = every 2nd period processed,
        5 = every 5th period processed, etc.)

 Species & Concentration/Deposition Information
 ----------------------------------------------

       Species to process (ASPEC)       -- No default   ! ASPEC = ODOR  !
       (ASPEC = VISIB for visibility processing)

       Layer/deposition code (ILAYER)   -- Default: 1   ! ILAYER =  1  !
         '1'  for CALPUFF concentrations,
         '-1' for dry deposition fluxes,
         '-2' for wet deposition fluxes,
         '-3' for wet+dry deposition fluxes.

       Scaling factors of the form:     -- Defaults:    ! A =  2.5    !
             X(new) = X(old) * A + B         A = 0.0    ! B =  0.0    !
         (NOT applied if A = B = 0.0)        B = 0.0

       Add Hourly Background Concentrations/Fluxes?
```



```
                               (LBACK)  -- Default: F   ! LBACK =  F !

 Source information
 ------------------

   Option to process source contributions:
          0 =  Process only total reported contributions
          1 =  Sum all individual source contributions and process
          2 =  Run in TRACEBACK mode to identify source
               contributions at a SINGLE receptor
                              (MSOURCE) -- Default: 0   ! MSOURCE =  0  !

 Receptor information
 --------------------

   Gridded receptors processed?    (LG) -- Default: F   ! LG  = T  !
   Discrete receptors processed?   (LD) -- Default: F   ! LD  = T  !
   CTSG Complex terrain receptors processed?
                                  (LCT) -- Default: F   ! LCT = F  !

 --Report results by DISCRETE receptor RING?
   (only used when LD = T)     (LDRING) -- Default: F   ! LDRING = F  !

 --Select range of DISCRETE receptors (only used when LD = T):

   Select ALL DISCRETE receptors by setting NDRECP flag to -1;
                                  OR
   Select SPECIFIC DISCRETE receptors by entering a flag (0,1) for each
      0 = discrete receptor not processed
      1 = discrete receptor processed
   using repeated value notation to select blocks of receptors:
      23*1, 15*0, 12*1
   Flag for all receptors after the last one assigned is set to 0
   (NDRECP) -- Default: -1
                                                ! NDRECP =  -1  !


 --Select range of GRIDDED receptors (only used when LG = T):

        X index of LL corner (IBGRID) -- Default: -1     ! IBGRID = -1  !
            (-1 OR 1 <= IBGRID <= NX)

        Y index of LL corner (JBGRID) -- Default: -1     ! JBGRID = -1  !
            (-1 OR 1 <= JBGRID <= NY)

        X index of UR corner (IEGRID) -- Default: -1     ! IEGRID = -1  !
            (-1 OR 1 <= IEGRID <= NX)

        Y index of UR corner (JEGRID) -- Default: -1     ! JEGRID = -1  !
            (-1 OR 1 <= JEGRID <= NY)

   Note: Entire grid is processed if IBGRID=JBGRID=IEGRID=JEGRID=-1


 --Specific gridded receptors can also be excluded from CALPOST
   processing by filling a processing grid array with 0s and 1s.  If the
   processing flag for receptor index (i,j) is 1 (ON), that receptor
   will be processed if it lies within the range delineated by IBGRID,
   JBGRID,IEGRID,JEGRID and if LG=T. If it is 0 (OFF), it will not be
   processed in the run.  By default, all array values are set to 1 (ON).

   Number of gridded receptor rows provided in Subgroup (1a) to
   identify specific gridded receptors to process
                             (NGONOFF) -- Default: 0      ! NGONOFF =  0  !

 !END!


 --------------
 Subgroup (1a) -- Specific gridded receptors included/excluded
 --------------

     Specific gridded receptors are excluded from CALPOST processing
```



```
     by filling a processing grid array with 0s and 1s.  A total of
     NGONOFF lines are read here.  Each line corresponds to one 'row'
     in the sampling grid, starting with the NORTHERNMOST row that
     contains receptors that you wish to exclude, and finishing with
     row 1 to the SOUTH (no intervening rows may be skipped).  Within
     a row, each receptor position is assigned either a 0 or 1,
     starting with the westernmost receptor.
        0 = gridded receptor not processed
        1 = gridded receptor processed

     Repeated value notation may be used to select blocks of receptors:
        23*1, 15*0, 12*1

     Because all values are initially set to 1, any receptors north of
     the first row entered, or east of the last value provided in a row,
     remain ON.

     (NGXRECP) -- Default: 1


 -------------------------------------------------------------------------------

 INPUT GROUP: 2 -- Visibility Parameters (ASPEC = VISIB)
 --------------

     Particle growth curve f(RH) for hygroscopic species
                                 (MFRH) -- Default: 2   ! MFRH   =  2  !

          1 =  IWAQM (1998) f(RH) curve (originally used with MVISBK=1)
          2 =  FLAG (2000) f(RH) tabulation
          3 =  EPA (2003) f(RH) tabulation

     Maximum relative humidity (%) used in particle growth curve
                                (RHMAX) -- Default: 98  ! RHMAX  = 98.0 !

     Modeled species to be included in computing the light extinction
      Include SULFATE?           (LVSO4) -- Default: T   ! LVSO4  = T  !
      Include NITRATE?           (LVNO3) -- Default: T   ! LVNO3  = T  !
      Include ORGANIC CARBON?    (LVOC)  -- Default: T   ! LVOC   = T  !
      Include COARSE PARTICLES? (LVPMC)  -- Default: T   ! LVPMC  = T  !
      Include FINE PARTICLES?    (LVPMF) -- Default: T   ! LVPMF  = T  !
      Include ELEMENTAL CARBON? (LVEC)   -- Default: T   ! LVEC   = T  !

     And, when ranking for TOP-N, TOP-50, and Exceedance tables,
      Include BACKGROUND?        (LVBK)  -- Default: T   ! LVBK   = T  !

     Species name used for particulates in MODEL.DAT file
                  COARSE    (SPECPMC) -- Default: PMC ! SPECPMC = PMC !
                  FINE      (SPECPMF) -- Default: PMF ! SPECPMF = PMF !

 Extinction Efficiency (1/Mm per ug/m**3)
 ----------------------------------------
     MODELED particulate species:
                PM  COARSE      (EEPMC)  -- Default: 0.6 ! EEPMC  = 0.6 !
                PM  FINE        (EEPMF)  -- Default: 1.0 ! EEPMF  = 1.0 !
     BACKGROUND particulate species:
                PM  COARSE     (EEPMCBK) -- Default: 0.6 ! EEPMCBK = 0.6 !
     Other species:
               AMMONIUM SULFATE (EESO4)  -- Default: 3.0 ! EESO4  = 3.0 !
               AMMONIUM NITRATE (EENO3)  -- Default: 3.0 ! EENO3  = 3.0 !
               ORGANIC CARBON   (EEOC)   -- Default: 4.0 ! EEOC   = 4.0 !
               SOIL             (EESOIL) -- Default: 1.0 ! EESOIL = 1.0 !
               ELEMENTAL CARBON (EEEC)   -- Default: 10. ! EEEC   = 10.0 !

 Background Extinction Computation
 ---------------------------------

     Method used for the 24h-average of percent change of light extinction:
     Hourly ratio of source light extinction / background light extinction
     is averaged?               (LAVER) -- Default: F   ! LAVER = F  !


     Method used for background light extinction
```



```
                              (MVISBK) -- Default: 2   ! MVISBK =  2  !

          1 =  Supply single light extinction and hygroscopic fraction
               - Hourly F(RH) adjustment applied to hygroscopic background
                 and modeled sulfate and nitrate
          2 =  Compute extinction from speciated PM measurements (A)
               - Hourly F(RH) adjustment applied to observed and modeled sulfate
                 and nitrate
               - F(RH) factor is capped at F(RHMAX)
          3 =  Compute extinction from speciated PM measurements (B)
               - Hourly F(RH) adjustment applied to observed and modeled sulfate
                 and nitrate
               - Receptor-hour excluded if RH>RHMAX
               - Receptor-day excluded if fewer than 6 valid receptor-hours
          4 =  Read hourly transmissometer background extinction measurements
               - Hourly F(RH) adjustment applied to modeled sulfate and nitrate
               - Hour excluded if measurement invalid (missing, interference,
                 or large RH)
               - Receptor-hour excluded if RH>RHMAX
               - Receptor-day excluded if fewer than 6 valid receptor-hours
          5 =  Read hourly nephelometer background extinction measurements
               - Rayleigh extinction value (BEXTRAY) added to measurement
               - Hourly F(RH) adjustment applied to modeled sulfate and nitrate
               - Hour excluded if measurement invalid (missing, interference,
                 or large RH)
               - Receptor-hour excluded if RH>RHMAX
               - Receptor-day excluded if fewer than 6 valid receptor-hours
          6 =  Compute extinction from speciated PM measurements
               - FLAG monthly RH adjustment factor applied to observed and
                 modeled sulfate and nitrate
          7 =  Use observed weather or prognostic weather information for
               background extinction during weather events; otherwise, use Method
               - Hourly F(RH) adjustment applied to modeled sulfate and nitrate
               - F(RH) factor is capped at F(RHMAX)
               - During observed weather events, compute Bext from visual range
                 if using an observed weather data file, or
               - During prognostic weather events, use Bext from the prognostic
                 weather file
               - Use Method 2 for hours without a weather event

      Additional inputs used for MVISBK = 1:
      --------------------------------------
       Background light extinction (1/Mm)
                               (BEXTBK) -- No default   ! BEXTBK = 0.0 !
       Percentage of particles affected by relative humidity
                               (RHFRAC) -- No default   ! RHFRAC = 0.0 !

      Additional inputs used for MVISBK = 6:
      --------------------------------------
       Extinction coefficients for hygroscopic species (modeled and
       background) are computed using a monthly RH adjustment factor
       in place of an hourly RH factor (VISB.DAT file is NOT needed).
       Enter the 12 monthly factors here (RHFAC).  Month 1 is January.

       (RHFAC)  -- No default     ! RHFAC = 0.0, 0.0, 0.0, 0.0,
                                            0.0, 0.0, 0.0, 0.0,
                                            0.0, 0.0, 0.0, 0.0 !

      Additional inputs used for MVISBK = 7:
      --------------------------------------
       The weather data file (DATSAV abbreviated space-delimited) that
       is identified as VSRN.DAT may contain data for more than one
       station.  Identify the stations that are needed in the order in
       which they will be used to obtain valid weather and visual range.
       The first station that contains valid data for an hour will be
       used.  Enter up to MXWSTA (set in PARAMS file) integer station IDs
       of up to 6 digits each as variable IDWSTA, and enter the corresponding
       time zone for each, as variable TZONE (= UTC-LST).

       A prognostic weather data file with Bext for weather events may be used
       in place of the observed weather file.  Identify this as the VSRN.DAT
       file and use a station ID of IDWSTA = 999999, and TZONE = 0.
```

```
     NOTE:  TZONE identifies the time zone used in the dataset.  The
            DATSAV abbreviated space-delimited data usually are prepared
            with UTC time rather than local time, so TZONE is typically
            set to zero.

      (IDWSTA)    -- No default
     ! IDWSTA = 999999 !
      (TZONE)     -- No default
     ! TZONE  = 0.0 !

     Additional inputs used for MVISBK = 2,3,6,7:
     ----------------------------------------------
      Background extinction coefficients are computed from monthly
      CONCENTRATIONS of ammonium sulfate (BKSO4), ammonium nitrate (BKNO3),
      coarse particulates (BKPMC), organic carbon (BKOC), soil (BKSOIL), and
      elemental carbon (BKEC).  Month 1 is January.
      (ug/m**3)

      (BKSO4)  -- No default     ! BKSO4 = 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !
      (BKNO3)  -- No default     ! BKNO3 = 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !
      (BKPMC)  -- No default     ! BKPMC = 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !
      (BKOC)   -- No default     ! BKOC  = 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !
      (BKSOIL) -- No default     ! BKSOIL= 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !
      (BKEC)   -- No default     ! BKEC  = 0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0,
                                           0.0, 0.0, 0.0, 0.0 !

     Additional inputs used for MVISBK = 2,3,5,6,7:
     ----------------------------------------------
      Extinction due to Rayleigh scattering is added (1/Mm)
                                (BEXTRAY) -- Default: 10.0 ! BEXTRAY = 10.0 !

!END!
-------------------------------------------------------------------------------

INPUT GROUP: 3 -- Output options
--------------

Documentation
-------------

    Documentation records contained in the header of the
    CALPUFF output file may be written to the list file.
    Print documentation image?
                                (LDOC) -- Default: F   !  LDOC = F !

Output Units
------------
    Units for All Output       (IPRTU) -- Default: 1   ! IPRTU =  5   !
                     for             for
                Concentration    Deposition
       1 =         g/m**3          g/m**2/s
       2 =        mg/m**3         mg/m**2/s
       3 =        ug/m**3         ug/m**2/s
       4 =        ng/m**3         ng/m**2/s
       5 =      Odour Units

    Visibility: extinction expressed in 1/Mega-meters (IPRTU is ignored)


Averaging time(s) reported
--------------------------
```



```
     1-pd averages           (L1PD) -- Default: T   !   L1PD = T  !
     (pd = averaging period of model output)

     1-hr averages           (L1HR) -- Default: T   !   L1HR = T  !

     3-hr averages           (L3HR) -- Default: T   !   L3HR = F  !

     24-hr averages         (L24HR) -- Default: T   !  L24HR = F  !

     Run-length averages    (LRUNL) -- Default: T   !  LRUNL = F  !

     User-specified averaging time in hours, minutes, seconds
     - results for this averaging time are reported if it is not zero

                            (NAVGH) -- Default: 0   !   NAVGH =  0  !
                            (NAVGM) -- Default: 0   !   NAVGM =  0  !
                            (NAVGS) -- Default: 0   !   NAVGS =  0  !


 Types of tabulations reported
 ------------------------------

    1) Visibility: daily visibility tabulations are always reported
                   for the selected receptors when ASPEC = VISIB.
                   In addition, any of the other tabulations listed
                   below may be chosen to characterize the light
                   extinction coefficients.
                   [List file or Plot/Analysis File]


    2) Top 50 table for each averaging time selected
       [List file only]
                             (LT50) -- Default: T   !   LT50 = T  !

    3) Top 'N' table for each averaging time selected
       [List file or Plot file]
                            (LTOPN) -- Default: F   !  LTOPN = T  !

      -- Number of 'Top-N' values at each receptor
         selected (NTOP must be <= 4)
                             (NTOP) -- Default: 4   ! NTOP =  1   !

      -- Specific ranks of 'Top-N' values reported
         (NTOP values must be entered)
                    (ITOP(4) array) -- Default:     ! ITOP =  88   !
                                       1,2,3,4


    4) Threshold exceedance counts for each receptor and each averaging
       time selected
       [List file or Plot file]
                            (LEXCD) -- Default: F   !  LEXCD = F  !

      -- Identify the threshold for each averaging time by assigning a
         non-negative value (output units).

                                    -- Default: -1.0
         Threshold for  1-hr averages   (THRESH1) !  THRESH1 = -1.0  !
         Threshold for  3-hr averages   (THRESH3) !  THRESH3 = -1.0  !
         Threshold for 24-hr averages  (THRESH24) ! THRESH24 = -1.0  !
         Threshold for NAVG-hr averages (THRESHN) !  THRESHN = -1.0  !


      -- Counts for the shortest averaging period selected can be
         tallied daily, and receptors that experience more than NCOUNT
         counts over any NDAY period will be reported.  This type of
         exceedance violation output is triggered only if NDAY > 0.

         Accumulation period(Days)
                             (NDAY) -- Default: 0   !    NDAY =  0  !
         Number of exceedances allowed
                           (NCOUNT) -- Default: 1   !  NCOUNT =  1  !
```



```
    5) Selected day table(s)

       Echo Option -- Many records are written each averaging period
       selected and output is grouped by day
       [List file or Plot file]
                            (LECHO) -- Default: F   !  LECHO = F  !

       Timeseries Option -- Averages at all selected receptors for
       each selected averaging period are written to timeseries files.
       Each file contains one averaging period, and all receptors are
       written to a single record each averaging time.
       [TSERIES_ASPEC_ttHR_CONC_TSUNAM.DAT files]
                            (LTIME) -- Default: F   !  LTIME = F  !

       Peak Value Option -- Averages at all selected receptors for
       each selected averaging period are screened and the peak value
       each period is written to timeseries files.
       Each file contains one averaging period.
       [PEAKVAL_ASPEC_ttHR_CONC_TSUNAM.DAT files]
                            (LPEAK) -- Default: F   !  LPEAK = F  !

         -- Days selected for output
                       (IECHO(366)) -- Default: 366*0
            ! IECHO  = 366*0  !
            (366 values must be entered)

Plot output options
-------------------

      Plot files can be created for the Top-N, Exceedance, and Echo
      tables selected above.  Two formats for these files are available,
      DATA and GRID.  In the DATA format, results at all receptors are
      listed along with the receptor location [x,y,val1,val2,...].
      In the GRID format, results at only gridded receptors are written,
      using a compact representation.  The gridded values are written in
      rows (x varies), starting with the most southern row of the grid.
      The GRID format is given the .GRD extension, and includes headers
      compatible with the SURFER(R) plotting software.

      A plotting and analysis file can also be created for the daily
      peak visibility summary output, in DATA format only.

      Generate Plot file output in addition to writing tables
      to List file?
                               (LPLT) -- Default: F   ! LPLT  = T !

      Use GRID format rather than DATA format,
      when available?
                               (LGRD) -- Default: F   ! LGRD  = T !


Auxiliary Output Files (for subsequent analyses)
------------------------------------------------

       Visibility

       A separate output file may be requested that contains the change
       in visibility at each selected receptor when ASPEC = VISIB.  This
       file can be processed to construct visibility measures that are
       not available in CALPOST.

       Output file with the visibility change at each receptor?
                              (MDVIS) -- Default: 0   ! MDVIS  =  0  !

            0 =  Do Not create file
            1 =  Create file of DAILY (24 hour) Delta-Deciview
            2 =  Create file of DAILY (24 hour) Extinction Change (%)
            3 =  Create file of HOURLY Delta-Deciview
            4 =  Create file of HOURLY Extinction Change (%)


Additional Debug Output
```



```
 -----------------------

    Output selected information to List file
     for debugging?
                           (LDEBUG) -- Default: F  ! LDEBUG  = F !

    Output hourly extinction information to REPORT.HRV?
     (Visibility Method 7)
                         (LVEXTHR) -- Default: F  ! LVEXTHR = F !

 !END!

 ------------------------------------------------
 NOTICE: Starting year in control file sets the
         expected century for the simulation.  All
         YY years are converted to YYYY years in
         the range:  1954 2053
 ------------------------------------------------


********************************************************************************
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  CALPOST Control File Input Summary ------------------------

     Replace run data with data in Puff file 1=Y:    1
                       Run starting date -- year: 2004
                                           month:    0
                                             day:    0
                                     Julian day:    0
             Time at start of run  -  hour(0-23):    0
                                   -      minute:    0
                                   -      second:    0

                         Run ending date -- year:    0
                                           month:    0
                                             day:    0
                                     Julian day:    0
               Time at end of run  -  hour(0-23):    0
                                   -      minute:    0
                                   -      second:    0


                       Base time zone (Group 1): -10.0

 Every period of data processed -- NREP = 1


  Species & Concentration/Deposition Information
                                        Species: ODOR
                        Layer of processed data:    1
     (>0=conc, -1=dry flux, -2=wet flux, -3=wet & dry flux)
                    Multiplicative scaling factor: 2.5000E+00
                          Additive scaling factor: 0.0000E+00
                   Hourly background values used?: F


  SAMPLER option
                             Processing method: 0
                    0= SAMPLER option not used
                    1= Report total modeled impact (list file)
                    2= TRACEBACK mode (DAT files)
                    3= TRACEBACK mode with sampling factor (DAT files)


  Source information
                   Source contribution processing: 0
                    0= No source contributions
                    1= Contributions are summed
```

2= TRACEBACK mode for 1 receptor
3= Reported TOTAL is processed

Receptor information
Gridded receptors processed?: T
Discrete receptors processed?: T
CTSG Complex terrain receptors processed?: F

Gridded Receptors Processed

(All Gridded Receptors are Used)

Discrete Receptors Processed

(All Discrete Receptors are Used)

Visibility Processing is NOT Selected

Output options
Units requested for output: (Odour Units)

Averaging time(s) selected
User-specified averaging time (hr:mm:ss): 0: 0: 0
1-pd averages: T
1-hr averages: T
3-hr averages: F
24-hr averages: F
User-specified averages: F
Length of run averages: F

Output components selected
Top-50: T
Top-N values at each receptor: T
Exceedance counts at each receptor: F
Output selected information for debugging: F
Echo tables for selected days: F
Time-series for selected days: F
Peak value Time-series for selected days: F

Top "n" table control
Number of "top" values at each receptor: 1
Specific ranks of "top" values reported: 88

Plot file option
Plot files created: T
Plot file format is GRIDDED: .GRD

IDENTIFICATION OF PROCESSED MODEL FILE ----------

CALPUFF 6.113 060519

Woy Woy MSW/Greenwaste Facility Odour Modelling

Averaging time for values reported from model:
1 HOUR

Number of averaging periods in file from model:
8783

Chemical species names for each layer in model:
ODOR 1

************** NOTICE ***************
NDRECP array reset to full range: all 1s

************** NOTICE ***************
Gridded receptor range reset to NGX by NGY

INPUT FILES

Default Name	Unit No.	File Name and Path
CALPOST.INP	5	C:\CALPUFF\WOYWOY\WWCPST5.INP
MODEL.DAT	4	C:\CALPUFF\WOYWOY\WWCP5.DAT

OUTPUT FILES

Default Name	Unit No.	File Name and Path
CALPOST.LST	8	C:\CALPUFF\WOYWOY\WWCPST5.LST
(TOPN)	11	RANK()_SPECIES_ttHR_CONC_RUN1.GRD••••••••••••••••••

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ODOR 1

TOP-50 1 HOUR AVERAGE CONCENTRATION VALUES (Odour Units)

STARTING YEAR	DAY	TIME(HHMM)	RECEPTOR	TYPE	CONCENTRATION	COORDINATES (km	
2004	54	0000	(13, 11)	G	8.3145E+01	341.092	6290.5
2004	308	2200	(14, 11)	G	7.6380E+01	341.242	6290.5
2004	174	1800	(14, 11)	G	6.4746E+01	341.242	6290.5
2004	184	1900	(13, 11)	G	6.3326E+01	341.092	6290.5
2004	359	0200	(14, 11)	G	6.2557E+01	341.242	6290.5
2004	79	0300	(14, 11)	G	6.0127E+01	341.242	6290.5
2004	174	1700	(14, 11)	G	5.9106E+01	341.242	6290.5
2004	105	0000	(14, 11)	G	5.5558E+01	341.242	6290.5
2004	264	2100	(14, 15)	G	5.2407E+01	341.242	6291.1
2004	184	2000	(14, 11)	G	5.1575E+01	341.242	6290.5
2004	264	2100	(14, 11)	G	5.1365E+01	341.242	6290.5
2004	121	0200	(14, 13)	G	5.0519E+01	341.242	6290.8
2004	220	1700	(15, 12)	G	5.0481E+01	341.392	6290.6
2004	64	0100	(14, 11)	G	4.9045E+01	341.242	6290.5
2004	33	0200	(13, 11)	G	4.8683E+01	341.092	6290.5
2004	130	0200	(13, 13)	G	4.7470E+01	341.092	6290.8
2004	79	0200	(13, 11)	G	4.7079E+01	341.092	6290.5
2004	232	1700	(14, 13)	G	4.6665E+01	341.242	6290.8
2004	249	1800	(14, 11)	G	4.6576E+01	341.242	6290.5
2004	352	0300	(14, 15)	G	4.6378E+01	341.242	6291.1
2004	335	0000	(15, 12)	G	4.5784E+01	341.392	6290.6
2004	28	0200	(14, 11)	G	4.5218E+01	341.242	6290.5
2004	102	1900	(15, 12)	G	4.4835E+01	341.392	6290.6
2004	297	2200	(13, 11)	G	4.4753E+01	341.092	6290.5
2004	118	0200	(15, 12)	G	4.4672E+01	341.392	6290.6
2004	102	1800	(14, 13)	G	4.3691E+01	341.242	6290.8
2004	120	0500	(13, 13)	G	4.3184E+01	341.092	6290.8
2004	297	2300	(15, 12)	G	4.2667E+01	341.392	6290.6
2004	63	2300	(13, 11)	G	4.2244E+01	341.092	6290.5
2004	120	0300	(13, 16)	G	4.1873E+01	341.092	6291.2
2004	128	2000	(14, 11)	G	4.1855E+01	341.242	6290.5
2004	264	2000	(14, 13)	G	4.1638E+01	341.242	6290.8
2004	109	2300	(15, 12)	G	4.0553E+01	341.392	6290.6
2004	232	1800	(14, 11)	G	4.0322E+01	341.242	6290.5
2004	241	2200	(13, 13)	G	3.9236E+01	341.092	6290.8
2004	327	0300	(15, 12)	G	3.9202E+01	341.392	6290.6
2004	157	1900	(13, 11)	G	3.8715E+01	341.092	6290.5

2004	120	0500	(13, 16)	G	3.8482E+01	341.092	6291.2
2004	104	2300	(13, 11)	G	3.8317E+01	341.092	6290.5
2004	16	2000	(13, 11)	G	3.8283E+01	341.092	6290.5
2004	296	1900	(14, 13)	G	3.7154E+01	341.242	6290.8
2004	352	0200	(14, 11)	G	3.7106E+01	341.242	6290.5
2004	249	1900	(15, 12)	G	3.6887E+01	341.392	6290.6
2004	81	0200	(14, 13)	G	3.6836E+01	341.242	6290.8
2004	45	0200	(14, 13)	G	3.6540E+01	341.242	6290.8
2004	197	1800	(13, 11)	G	3.6355E+01	341.092	6290.5
2004	174	1900	(14, 11)	G	3.6327E+01	341.242	6290.5
2004	232	1800	(15, 12)	G	3.5689E+01	341.392	6290.6
2004	66	2300	(14, 13)	G	3.5543E+01	341.242	6290.8
2004	138	1900	(14, 13)	G	3.5163E+01	341.242	6290.8

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CALPOST Version 6.132 Level
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ODOR 1

TOP-50 1 HOUR AVERAGE CONCENTRATION VALUES (Odour Units)

STARTING YEAR	DAY	TIME(HHMM)	RECEPTOR	TYPE	CONCENTRATION	COORDINATES (km	
2004	54	0000	(13, 11)	G	8.3145E+01	341.092	6290.5
2004	308	2200	(14, 11)	G	7.6380E+01	341.242	6290.5
2004	174	1800	(14, 11)	G	6.4746E+01	341.242	6290.5
2004	184	1900	(13, 11)	G	6.3326E+01	341.092	6290.5
2004	359	0200	(14, 11)	G	6.2557E+01	341.242	6290.5
2004	79	0300	(14, 11)	G	6.0127E+01	341.242	6290.5
2004	174	1700	(14, 11)	G	5.9106E+01	341.242	6290.5
2004	105	0000	(14, 11)	G	5.5558E+01	341.242	6290.5
2004	264	2100	(14, 15)	G	5.2407E+01	341.242	6291.1
2004	184	2000	(14, 11)	G	5.1575E+01	341.242	6290.5
2004	264	2100	(14, 11)	G	5.1365E+01	341.242	6290.5
2004	121	0200	(14, 13)	G	5.0519E+01	341.242	6290.8
2004	220	1700	(15, 12)	G	5.0481E+01	341.392	6290.6
2004	64	0100	(14, 11)	G	4.9045E+01	341.242	6290.5
2004	33	0200	(13, 11)	G	4.8683E+01	341.092	6290.5
2004	130	0200	(13, 13)	G	4.7470E+01	341.092	6290.8
2004	79	0200	(13, 11)	G	4.7079E+01	341.092	6290.5
2004	232	1700	(14, 13)	G	4.6665E+01	341.242	6290.8
2004	249	1800	(14, 11)	G	4.6576E+01	341.242	6290.5
2004	352	0300	(14, 15)	G	4.6378E+01	341.242	6291.1
2004	335	0000	(15, 12)	G	4.5784E+01	341.392	6290.6
2004	28	0200	(14, 11)	G	4.5218E+01	341.242	6290.5
2004	102	1900	(15, 12)	G	4.4835E+01	341.392	6290.6
2004	297	2200	(13, 11)	G	4.4753E+01	341.092	6290.5
2004	118	0200	(15, 12)	G	4.4672E+01	341.392	6290.6
2004	102	1800	(14, 13)	G	4.3691E+01	341.242	6290.8
2004	120	0500	(13, 13)	G	4.3184E+01	341.092	6290.8
2004	297	2300	(15, 12)	G	4.2667E+01	341.392	6290.6
2004	63	2300	(13, 11)	G	4.2244E+01	341.092	6290.5
2004	120	0300	(13, 16)	G	4.1873E+01	341.092	6291.2
2004	128	2000	(14, 11)	G	4.1855E+01	341.242	6290.5
2004	264	2000	(14, 13)	G	4.1638E+01	341.242	6290.8
2004	109	2300	(15, 12)	G	4.0553E+01	341.392	6290.6
2004	232	1800	(14, 11)	G	4.0322E+01	341.242	6290.5
2004	241	2200	(13, 13)	G	3.9236E+01	341.092	6290.8
2004	327	0300	(15, 12)	G	3.9202E+01	341.392	6290.6
2004	157	1900	(13, 11)	G	3.8715E+01	341.092	6290.5
2004	120	0500	(13, 16)	G	3.8482E+01	341.092	6291.2
2004	104	2300	(13, 11)	G	3.8317E+01	341.092	6290.5
2004	16	2000	(13, 11)	G	3.8283E+01	341.092	6290.5
2004	296	1900	(14, 13)	G	3.7154E+01	341.242	6290.8
2004	352	0200	(14, 11)	G	3.7106E+01	341.242	6290.5
2004	249	1900	(15, 12)	G	3.6887E+01	341.392	6290.6
2004	81	0200	(14, 13)	G	3.6836E+01	341.242	6290.8
2004	45	0200	(14, 13)	G	3.6540E+01	341.242	6290.8
2004	197	1800	(13, 11)	G	3.6355E+01	341.092	6290.5
2004	174	1900	(14, 11)	G	3.6327E+01	341.242	6290.5
2004	232	1800	(15, 12)	G	3.5689E+01	341.392	6290.6

2004	66	2300	(14, 13)	G	3.5543E+01	341.242	6290.8
2004	138	1900	(14, 13)	G	3.5163E+01	341.242	6290.8

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CALPOST Version 6.132 Level
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ODOR 1

1 RANKED 1 HOUR AVERAGE CONCENTRATION VALUES AT EACH GRIDDED RECEPTOR (YE

RECEPTOR	COORDINATES (km)		88 RANK	
1, 1	339.292	6289.028	8.1330E-02	(2004,105,1700)
1, 2	339.292	6289.178	2.6140E-01	(2004,094,1800)
1, 3	339.292	6289.328	2.8109E-01	(2004,330,2000)
1, 4	339.292	6289.478	2.7171E-01	(2004,016,0400)
1, 5	339.292	6289.628	2.7391E-01	(2004,045,2300)
1, 6	339.292	6289.778	2.8662E-01	(2004,358,2100)
1, 7	339.292	6289.928	2.7686E-01	(2004,130,0000)
1, 8	339.292	6290.078	3.1425E-01	(2004,016,0700)
1, 9	339.292	6290.228	3.1748E-01	(2004,338,0500)
1, 10	339.292	6290.378	2.8962E-01	(2004,230,2100)
1, 11	339.292	6290.528	3.0719E-01	(2004,315,1800)
1, 12	339.292	6290.678	2.9263E-01	(2004,262,1700)
1, 13	339.292	6290.828	3.5356E-01	(2004,032,1900)
1, 14	339.292	6290.978	4.0691E-01	(2004,050,2100)
1, 15	339.292	6291.128	3.6461E-01	(2004,352,1900)
1, 16	339.292	6291.278	3.3591E-01	(2004,073,2000)
1, 17	339.292	6291.428	3.2444E-01	(2004,078,2100)
1, 18	339.292	6291.578	2.8170E-01	(2004,014,2000)
1, 19	339.292	6291.728	2.4857E-01	(2004,350,1900)
1, 20	339.292	6291.878	1.9447E-01	(2004,263,2200)
1, 21	339.292	6292.028	1.7381E-01	(2004,045,0000)
1, 22	339.292	6292.178	1.6962E-01	(2004,066,1800)
1, 23	339.292	6292.328	1.5853E-01	(2004,078,1300)
1, 24	339.292	6292.478	1.3891E-01	(2004,078,1400)
1, 25	339.292	6292.628	1.1360E-01	(2004,081,0600)
1, 26	339.292	6292.778	1.2368E-01	(2004,283,1700)
1, 27	339.292	6292.928	1.1557E-01	(2004,267,1700)
1, 28	339.292	6293.078	1.0704E-01	(2004,082,1900)
1, 29	339.292	6293.228	8.4639E-02	(2004,017,2200)
2, 1	339.442	6289.028	5.7533E-02	(2004,028,1900)
2, 2	339.442	6289.178	1.7020E-01	(2004,016,0300)
2, 3	339.442	6289.328	2.9002E-01	(2004,320,2200)
2, 4	339.442	6289.478	1.7774E-01	(2004,049,2100)
2, 5	339.442	6289.628	1.5247E-01	(2004,353,0500)
2, 6	339.442	6289.778	3.3027E-01	(2004,100,1600)
2, 7	339.442	6289.928	3.5226E-01	(2004,096,2300)
2, 8	339.442	6290.078	3.7243E-01	(2004,335,0000)
2, 9	339.442	6290.228	4.4987E-01	(2004,032,2300)
2, 10	339.442	6290.378	3.5694E-01	(2004,129,2300)
2, 11	339.442	6290.528	3.6364E-01	(2004,297,1700)
2, 12	339.442	6290.678	3.5595E-01	(2004,291,0400)
2, 13	339.442	6290.828	3.7713E-01	(2004,048,0600)
2, 14	339.442	6290.978	4.4411E-01	(2004,350,2200)
2, 15	339.442	6291.128	4.1212E-01	(2004,292,2300)
2, 16	339.442	6291.278	3.5778E-01	(2004,019,0200)
2, 17	339.442	6291.428	3.1620E-01	(2004,088,0400)
2, 18	339.442	6291.578	3.1345E-01	(2004,018,2000)
2, 19	339.442	6291.728	2.7983E-01	(2004,254,1700)
2, 20	339.442	6291.878	2.4498E-01	(2004,026,0300)
2, 21	339.442	6292.028	2.1920E-01	(2004,096,0500)
2, 22	339.442	6292.178	2.2090E-01	(2004,078,1700)
2, 23	339.442	6292.328	1.9673E-01	(2004,034,1800)
2, 24	339.442	6292.478	1.6399E-01	(2004,109,2100)
2, 25	339.442	6292.628	1.5498E-01	(2004,026,0500)
2, 26	339.442	6292.778	1.5312E-01	(2004,081,0600)
2, 27	339.442	6292.928	1.5006E-01	(2004,103,1700)
2, 28	339.442	6293.078	1.4270E-01	(2004,314,0500)
2, 29	339.442	6293.228	1.0779E-01	(2004,118,1600)
3, 1	339.592	6289.028	5.6668E-02	(2004,080,1900)

3, 2	339.592	6289.178	7.1355E-02	(2004,342,1900)
3, 3	339.592	6289.328	7.1006E-02	(2004,043,1600)
3, 4	339.592	6289.478	7.6094E-02	(2004,341,1700)
3, 5	339.592	6289.628	8.5395E-02	(2004,340,1700)
3, 6	339.592	6289.778	1.1557E-01	(2004,230,0000)
3, 7	339.592	6289.928	1.3358E-01	(2004,045,2300)
3, 8	339.592	6290.078	3.5110E-01	(2004,095,0000)
3, 9	339.592	6290.228	4.2779E-01	(2004,338,0000)
3, 10	339.592	6290.378	4.4681E-01	(2004,338,0400)
3, 11	339.592	6290.528	4.1116E-01	(2004,079,0100)
3, 12	339.592	6290.678	4.1783E-01	(2004,349,1900)
3, 13	339.592	6290.828	3.6238E-01	(2004,274,1800)
3, 14	339.592	6290.978	4.5920E-01	(2004,015,0200)
3, 15	339.592	6291.128	4.3749E-01	(2004,350,2100)
3, 16	339.592	6291.278	3.1183E-01	(2004,312,1700)
3, 17	339.592	6291.428	3.4320E-01	(2004,236,1600)
3, 18	339.592	6291.578	3.2939E-01	(2004,313,0000)
3, 19	339.592	6291.728	2.8725E-01	(2004,174,1600)
3, 20	339.592	6291.878	2.6822E-01	(2004,012,0700)
3, 21	339.592	6292.028	2.6214E-01	(2004,012,0600)
3, 22	339.592	6292.178	2.3130E-01	(2004,231,0500)
3, 23	339.592	6292.328	2.0105E-01	(2004,231,0500)
3, 24	339.592	6292.478	1.8545E-01	(2004,012,0300)
3, 25	339.592	6292.628	1.8197E-01	(2004,026,0600)
3, 26	339.592	6292.778	1.8129E-01	(2004,283,1700)
3, 27	339.592	6292.928	1.7022E-01	(2004,083,0600)
3, 28	339.592	6293.078	1.5659E-01	(2004,081,1900)
3, 29	339.592	6293.228	1.1207E-01	(2004,083,0600)
4, 1	339.742	6289.028	8.7239E-02	(2004,304,2200)
4, 2	339.742	6289.178	6.4870E-02	(2004,013,0500)
4, 3	339.742	6289.328	1.3593E-01	(2004,339,2100)
4, 4	339.742	6289.478	8.0232E-02	(2004,075,1500)
4, 5	339.742	6289.628	2.0709E-01	(2004,238,1600)
4, 6	339.742	6289.778	9.7206E-02	(2004,077,0500)
4, 7	339.742	6289.928	9.7222E-02	(2004,358,1800)
4, 8	339.742	6290.078	1.4314E-01	(2004,361,1600)
4, 9	339.742	6290.228	4.0853E-01	(2004,237,1700)
4, 10	339.742	6290.378	5.3984E-01	(2004,308,2100)
4, 11	339.742	6290.528	3.9498E-01	(2004,032,2200)
4, 12	339.742	6290.678	3.4885E-01	(2004,117,2000)
4, 13	339.742	6290.828	2.7272E-01	(2004,357,2200)
4, 14	339.742	6290.978	5.3974E-01	(2004,349,1900)
4, 15	339.742	6291.128	4.1539E-01	(2004,071,0200)
4, 16	339.742	6291.278	3.5271E-01	(2004,095,2300)
4, 17	339.742	6291.428	4.2616E-01	(2004,191,1600)
4, 18	339.742	6291.578	3.7064E-01	(2004,066,1700)
4, 19	339.742	6291.728	3.4062E-01	(2004,130,0100)
4, 20	339.742	6291.878	3.2472E-01	(2004,174,1600)
4, 21	339.742	6292.028	2.9029E-01	(2004,264,2000)
4, 22	339.742	6292.178	2.4146E-01	(2004,231,0700)
4, 23	339.742	6292.328	2.2993E-01	(2004,119,1600)
4, 24	339.742	6292.478	2.1881E-01	(2004,308,2100)
4, 25	339.742	6292.628	2.0812E-01	(2004,045,0100)
4, 26	339.742	6292.778	2.1355E-01	(2004,241,1800)
4, 27	339.742	6292.928	1.8799E-01	(2004,119,0900)
4, 28	339.742	6293.078	1.5902E-01	(2004,118,1700)
4, 29	339.742	6293.228	1.3076E-01	(2004,272,0400)
5, 1	339.892	6289.028	2.5979E-01	(2004,072,0300)
5, 2	339.892	6289.178	2.0436E-01	(2004,339,2200)
5, 3	339.892	6289.328	3.1909E-01	(2004,305,1900)
5, 4	339.892	6289.478	4.1078E-01	(2004,101,2200)
5, 5	339.892	6289.628	5.1067E-01	(2004,015,1900)
5, 6	339.892	6289.778	1.6933E-01	(2004,003,1700)
5, 7	339.892	6289.928	1.0159E-01	(2004,113,1000)
5, 8	339.892	6290.078	2.5577E-01	(2004,347,2200)
5, 9	339.892	6290.228	4.4782E-01	(2004,091,1700)
5, 10	339.892	6290.378	6.4716E-01	(2004,229,2100)
5, 11	339.892	6290.528	5.2289E-01	(2004,268,1700)
5, 12	339.892	6290.678	2.8737E-01	(2004,076,1800)
5, 13	339.892	6290.828	3.1996E-01	(2004,334,2300)
5, 14	339.892	6290.978	3.6038E-01	(2004,050,2000)
5, 15	339.892	6291.128	3.4147E-01	(2004,359,2200)
5, 16	339.892	6291.278	4.7265E-01	(2004,014,2100)

5, 17	339.892	6291.428	4.8739E-01	(2004,088,0000)
5, 18	339.892	6291.578	4.2207E-01	(2004,109,2300)
5, 19	339.892	6291.728	4.0905E-01	(2004,263,1800)
5, 20	339.892	6291.878	3.5710E-01	(2004,298,1800)
5, 21	339.892	6292.028	3.0911E-01	(2004,047,2100)
5, 22	339.892	6292.178	2.8366E-01	(2004,174,1500)
5, 23	339.892	6292.328	2.7073E-01	(2004,313,0300)
5, 24	339.892	6292.478	2.6959E-01	(2004,083,2300)
5, 25	339.892	6292.628	2.4774E-01	(2004,045,0100)
5, 26	339.892	6292.778	2.2875E-01	(2004,103,1900)
5, 27	339.892	6292.928	1.9436E-01	(2004,295,0600)
5, 28	339.892	6293.078	1.9075E-01	(2004,295,0600)
5, 29	339.892	6293.228	1.4500E-01	(2004,142,2000)
6, 1	340.042	6289.028	3.5142E-01	(2004,049,2300)
6, 2	340.042	6289.178	4.0674E-01	(2004,048,2000)
6, 3	340.042	6289.328	4.8952E-01	(2004,326,2300)
6, 4	340.042	6289.478	5.8992E-01	(2004,321,2100)
6, 5	340.042	6289.628	5.8982E-01	(2004,013,0400)
6, 6	340.042	6289.778	2.1939E-01	(2004,001,0100)
6, 7	340.042	6289.928	1.1031E-01	(2004,184,1900)
6, 8	340.042	6290.078	1.4388E-01	(2004,254,1800)
6, 9	340.042	6290.228	3.5487E-01	(2004,343,2100)
6, 10	340.042	6290.378	7.3239E-01	(2004,358,2300)
6, 11	340.042	6290.528	4.7054E-01	(2004,035,1800)
6, 12	340.042	6290.678	2.2005E-01	(2004,274,1800)
6, 13	340.042	6290.828	4.3873E-01	(2004,317,1700)
6, 14	340.042	6290.978	5.1173E-01	(2004,313,2200)
6, 15	340.042	6291.128	4.6862E-01	(2004,017,1800)
6, 16	340.042	6291.278	6.3049E-01	(2004,088,0400)
6, 17	340.042	6291.428	5.8271E-01	(2004,184,1800)
6, 18	340.042	6291.578	5.0643E-01	(2004,264,2000)
6, 19	340.042	6291.728	4.3771E-01	(2004,358,0100)
6, 20	340.042	6291.878	4.1940E-01	(2004,308,2200)
6, 21	340.042	6292.028	3.7085E-01	(2004,061,2300)
6, 22	340.042	6292.178	3.5791E-01	(2004,026,0800)
6, 23	340.042	6292.328	3.0998E-01	(2004,061,2100)
6, 24	340.042	6292.478	2.9902E-01	(2004,118,1100)
6, 25	340.042	6292.628	2.6872E-01	(2004,184,1600)
6, 26	340.042	6292.778	2.4771E-01	(2004,026,1900)
6, 27	340.042	6292.928	2.2105E-01	(2004,328,1800)
6, 28	340.042	6293.078	1.8282E-01	(2004,295,0600)
6, 29	340.042	6293.228	1.3228E-01	(2004,119,0200)
7, 1	340.192	6289.028	4.4609E-01	(2004,340,2200)
7, 2	340.192	6289.178	5.1874E-01	(2004,112,2300)
7, 3	340.192	6289.328	5.4333E-01	(2004,281,1800)
7, 4	340.192	6289.478	6.4489E-01	(2004,357,0100)
7, 5	340.192	6289.628	6.4200E-01	(2004,106,1700)
7, 6	340.192	6289.778	2.1406E-01	(2004,048,1700)
7, 7	340.192	6289.928	1.1550E-01	(2004,249,1700)
7, 8	340.192	6290.078	1.4624E-01	(2004,003,1600)
7, 9	340.192	6290.228	1.6230E-01	(2004,344,1800)
7, 10	340.192	6290.378	2.1886E-01	(2004,343,1600)
7, 11	340.192	6290.528	2.4580E-01	(2004,071,0800)
7, 12	340.192	6290.678	2.8590E-01	(2004,074,0500)
7, 13	340.192	6290.828	4.0693E-01	(2004,088,0000)
7, 14	340.192	6290.978	9.6891E-01	(2004,019,0200)
7, 15	340.192	6291.128	8.3981E-01	(2004,109,2300)
7, 16	340.192	6291.278	7.5339E-01	(2004,130,0200)
7, 17	340.192	6291.428	6.9218E-01	(2004,109,2300)
7, 18	340.192	6291.578	5.6764E-01	(2004,044,2200)
7, 19	340.192	6291.728	5.2296E-01	(2004,082,2000)
7, 20	340.192	6291.878	4.7817E-01	(2004,360,0000)
7, 21	340.192	6292.028	4.2465E-01	(2004,119,1200)
7, 22	340.192	6292.178	3.6602E-01	(2004,026,0900)
7, 23	340.192	6292.328	3.6382E-01	(2004,361,0400)
7, 24	340.192	6292.478	3.2849E-01	(2004,327,2000)
7, 25	340.192	6292.628	2.8468E-01	(2004,245,1700)
7, 26	340.192	6292.778	2.6460E-01	(2004,361,0500)
7, 27	340.192	6292.928	2.1368E-01	(2004,118,2200)
7, 28	340.192	6293.078	1.8224E-01	(2004,327,2100)
7, 29	340.192	6293.228	1.4455E-01	(2004,052,2200)
8, 1	340.342	6289.028	4.5455E-01	(2004,192,2000)
8, 2	340.342	6289.178	5.8158E-01	(2004,064,2000)

8, 3	340.342	6289.328	6.6109E-01	(2004,112,0300)
8, 4	340.342	6289.478	7.0492E-01	(2004,004,0000)
8, 5	340.342	6289.628	7.2115E-01	(2004,002,2200)
8, 6	340.342	6289.778	3.5456E-01	(2004,028,1900)
8, 7	340.342	6289.928	1.5076E-01	(2004,024,1700)
8, 8	340.342	6290.078	1.6921E-01	(2004,269,1600)
8, 9	340.342	6290.228	4.2239E-01	(2004,088,1700)
8, 10	340.342	6290.378	1.1005E+00	(2004,344,0500)
8, 11	340.342	6290.528	1.0547E+00	(2004,104,2100)
8, 12	340.342	6290.678	7.2180E-01	(2004,032,1800)
8, 13	340.342	6290.828	3.9782E-01	(2004,088,0300)
8, 14	340.342	6290.978	8.9332E-01	(2004,313,1900)
8, 15	340.342	6291.128	1.0422E+00	(2004,254,1700)
8, 16	340.342	6291.278	9.8412E-01	(2004,360,1900)
8, 17	340.342	6291.428	8.5198E-01	(2004,303,2200)
8, 18	340.342	6291.578	6.5916E-01	(2004,119,1700)
8, 19	340.342	6291.728	5.7769E-01	(2004,308,2200)
8, 20	340.342	6291.878	5.0889E-01	(2004,303,1800)
8, 21	340.342	6292.028	4.9726E-01	(2004,084,0000)
8, 22	340.342	6292.178	4.8090E-01	(2004,264,0200)
8, 23	340.342	6292.328	4.0104E-01	(2004,118,1200)
8, 24	340.342	6292.478	3.5617E-01	(2004,327,2100)
8, 25	340.342	6292.628	3.1282E-01	(2004,328,2000)
8, 26	340.342	6292.778	2.4932E-01	(2004,118,2300)
8, 27	340.342	6292.928	2.2067E-01	(2004,118,2300)
8, 28	340.342	6293.078	1.9729E-01	(2004,264,1900)
8, 29	340.342	6293.228	1.4012E-01	(2004,142,1600)
9, 1	340.492	6289.028	5.3150E-01	(2004,113,0200)
9, 2	340.492	6289.178	6.0488E-01	(2004,300,2300)
9, 3	340.492	6289.328	7.5149E-01	(2004,088,2200)
9, 4	340.492	6289.478	8.7500E-01	(2004,331,2000)
9, 5	340.492	6289.628	9.0489E-01	(2004,075,0300)
9, 6	340.492	6289.778	1.0064E+00	(2004,106,1700)
9, 7	340.492	6289.928	3.5995E-01	(2004,039,1600)
9, 8	340.492	6290.078	2.2769E-01	(2004,340,1700)
9, 9	340.492	6290.228	2.3144E-01	(2004,037,1400)
9, 10	340.492	6290.378	6.3627E-01	(2004,111,1000)
9, 11	340.492	6290.528	1.5044E+00	(2004,126,2000)
9, 12	340.492	6290.678	1.5524E+00	(2004,357,2100)
9, 13	340.492	6290.828	1.1590E+00	(2004,254,1700)
9, 14	340.492	6290.978	1.4571E+00	(2004,070,2100)
9, 15	340.492	6291.128	1.3401E+00	(2004,095,1900)
9, 16	340.492	6291.278	1.3140E+00	(2004,071,0500)
9, 17	340.492	6291.428	8.4975E-01	(2004,061,2100)
9, 18	340.492	6291.578	7.8735E-01	(2004,061,2100)
9, 19	340.492	6291.728	5.3685E-01	(2004,119,1300)
9, 20	340.492	6291.878	6.3269E-01	(2004,052,2100)
9, 21	340.492	6292.028	6.0041E-01	(2004,329,1900)
9, 22	340.492	6292.178	5.0129E-01	(2004,034,2000)
9, 23	340.492	6292.328	4.6094E-01	(2004,121,0200)
9, 24	340.492	6292.478	3.6064E-01	(2004,060,1800)
9, 25	340.492	6292.628	3.1509E-01	(2004,142,1600)
9, 26	340.492	6292.778	2.6240E-01	(2004,119,0000)
9, 27	340.492	6292.928	2.0542E-01	(2004,267,1800)
9, 28	340.492	6293.078	1.6657E-01	(2004,264,2100)
9, 29	340.492	6293.228	1.4128E-01	(2004,329,2300)
10, 1	340.642	6289.028	5.2971E-01	(2004,193,0200)
10, 2	340.642	6289.178	7.0036E-01	(2004,242,2100)
10, 3	340.642	6289.328	8.3470E-01	(2004,013,1900)
10, 4	340.642	6289.478	9.5566E-01	(2004,284,2000)
10, 5	340.642	6289.628	1.0836E+00	(2004,342,0200)
10, 6	340.642	6289.778	1.2851E+00	(2004,331,2000)
10, 7	340.642	6289.928	1.1657E+00	(2004,088,2000)
10, 8	340.642	6290.078	1.0092E+00	(2004,112,0000)
10, 9	340.642	6290.228	6.8985E-01	(2004,080,1200)
10, 10	340.642	6290.378	4.0871E-01	(2004,215,1300)
10, 11	340.642	6290.528	2.5017E+00	(2004,344,0700)
10, 12	340.642	6290.678	2.4450E+00	(2004,274,1800)
10, 13	340.642	6290.828	2.2365E+00	(2004,313,2000)
10, 14	340.642	6290.978	2.3820E+00	(2004,347,2300)
10, 15	340.642	6291.128	1.7349E+00	(2004,093,1900)
10, 16	340.642	6291.278	1.4699E+00	(2004,303,2300)
10, 17	340.642	6291.428	1.1646E+00	(2004,017,1900)

10, 18	340.642	6291.578	8.9387E-01	(2004,212,2100)
10, 19	340.642	6291.728	6.1977E-01	(2004,328,2000)
10, 20	340.642	6291.878	7.1690E-01	(2004,034,2100)
10, 21	340.642	6292.028	6.4533E-01	(2004,315,0500)
10, 22	340.642	6292.178	5.2236E-01	(2004,081,0100)
10, 23	340.642	6292.328	4.6150E-01	(2004,204,2000)
10, 24	340.642	6292.478	3.4244E-01	(2004,040,1800)
10, 25	340.642	6292.628	2.7156E-01	(2004,360,0700)
10, 26	340.642	6292.778	2.1536E-01	(2004,098,1100)
10, 27	340.642	6292.928	2.2013E-01	(2004,081,0200)
10, 28	340.642	6293.078	1.8768E-01	(2004,098,2100)
10, 29	340.642	6293.228	1.5094E-01	(2004,295,1800)
11, 1	340.792	6289.028	5.5556E-01	(2004,100,2000)
11, 2	340.792	6289.178	6.5903E-01	(2004,013,2000)
11, 3	340.792	6289.328	8.1272E-01	(2004,079,2200)
11, 4	340.792	6289.478	9.9060E-01	(2004,106,2100)
11, 5	340.792	6289.628	1.2060E+00	(2004,013,1900)
11, 6	340.792	6289.778	1.1616E+00	(2004,305,2200)
11, 7	340.792	6289.928	1.0740E+00	(2004,013,0400)
11, 8	340.792	6290.078	9.9748E-01	(2004,002,0300)
11, 9	340.792	6290.228	9.1600E-01	(2004,097,1000)
11, 10	340.792	6290.378	5.5551E-01	(2004,326,1600)
11, 11	340.792	6290.528	4.1997E+00	(2004,347,2000)
11, 12	340.792	6290.678	4.0367E+00	(2004,079,0100)
11, 13	340.792	6290.828	3.9499E+00	(2004,312,1800)
11, 14	340.792	6290.978	3.2677E+00	(2004,278,1800)
11, 15	340.792	6291.128	2.3041E+00	(2004,314,2100)
11, 16	340.792	6291.278	1.9479E+00	(2004,361,0200)
11, 17	340.792	6291.428	1.3464E+00	(2004,142,2200)
11, 18	340.792	6291.578	8.6262E-01	(2004,119,1200)
11, 19	340.792	6291.728	7.0555E-01	(2004,295,1300)
11, 20	340.792	6291.878	7.7605E-01	(2004,295,0900)
11, 21	340.792	6292.028	6.7441E-01	(2004,327,2200)
11, 22	340.792	6292.178	5.2297E-01	(2004,362,2000)
11, 23	340.792	6292.328	4.1355E-01	(2004,361,0500)
11, 24	340.792	6292.478	3.4994E-01	(2004,328,2200)
11, 25	340.792	6292.628	2.8786E-01	(2004,098,1100)
11, 26	340.792	6292.778	2.3871E-01	(2004,272,0200)
11, 27	340.792	6292.928	2.1525E-01	(2004,232,1600)
11, 28	340.792	6293.078	2.0589E-01	(2004,231,1600)
11, 29	340.792	6293.228	1.6290E-01	(2004,211,2200)
12, 1	340.942	6289.028	5.4620E-01	(2004,037,2200)
12, 2	340.942	6289.178	7.1784E-01	(2004,348,0400)
12, 3	340.942	6289.328	8.5577E-01	(2004,306,2100)
12, 4	340.942	6289.478	1.0268E+00	(2004,025,0100)
12, 5	340.942	6289.628	1.1654E+00	(2004,004,0200)
12, 6	340.942	6289.778	1.3131E+00	(2004,023,2200)
12, 7	340.942	6289.928	1.7971E+00	(2004,084,2100)
12, 8	340.942	6290.078	2.1786E+00	(2004,332,1900)
12, 9	340.942	6290.228	2.4476E+00	(2004,343,0300)
12, 10	340.942	6290.378	1.1969E+00	(2004,272,2200)
12, 11	340.942	6290.528	1.6868E+00	(2004,027,1800)
12, 12	340.942	6290.678	6.4468E+00	(2004,280,2100)
12, 13	340.942	6290.828	4.9561E+00	(2004,312,2300)
12, 14	340.942	6290.978	4.1715E+00	(2004,104,1800)
12, 15	340.942	6291.128	3.7950E+00	(2004,120,0500)
12, 16	340.942	6291.278	2.4444E+00	(2004,052,2200)
12, 17	340.942	6291.428	1.4116E+00	(2004,066,1800)
12, 18	340.942	6291.578	9.8838E-01	(2004,365,1900)
12, 19	340.942	6291.728	8.0448E-01	(2004,058,2200)
12, 20	340.942	6291.878	8.6465E-01	(2004,241,2100)
12, 21	340.942	6292.028	6.2058E-01	(2004,098,2100)
12, 22	340.942	6292.178	5.2253E-01	(2004,272,0200)
12, 23	340.942	6292.328	4.5428E-01	(2004,298,0500)
12, 24	340.942	6292.478	3.6877E-01	(2004,081,0400)
12, 25	340.942	6292.628	2.7889E-01	(2004,361,0400)
12, 26	340.942	6292.778	2.2360E-01	(2004,098,1900)
12, 27	340.942	6292.928	2.3205E-01	(2004,209,0300)
12, 28	340.942	6293.078	1.8784E-01	(2004,099,1700)
12, 29	340.942	6293.228	1.4243E-01	(2004,204,1800)
13, 1	341.092	6289.028	5.2363E-01	(2004,079,2300)
13, 2	341.092	6289.178	6.2354E-01	(2004,323,0000)
13, 3	341.092	6289.328	8.2281E-01	(2004,091,1900)

13, 4	341.092	6289.478	1.0561E+00	(2004,323,0000)
13, 5	341.092	6289.628	1.2445E+00	(2004,144,1900)
13, 6	341.092	6289.778	1.5034E+00	(2004,022,2200)
13, 7	341.092	6289.928	2.1071E+00	(2004,158,1800)
13, 8	341.092	6290.078	2.8651E+00	(2004,327,0200)
13, 9	341.092	6290.228	3.6887E+00	(2004,023,2200)
13, 10	341.092	6290.378	7.2363E+00	(2004,340,0500)
13, 11	341.092	6290.528	1.6828E+01	(2004,094,0100)
13, 12	341.092	6290.678	4.8569E+00	(2004,321,0600)
13, 13	341.092	6290.828	8.3836E+00	(2004,283,2200)
13, 14	341.092	6290.978	7.4104E+00	(2004,351,0100)
13, 15	341.092	6291.128	1.1622E+01	(2004,101,2000)
13, 16	341.092	6291.278	4.9718E+00	(2004,229,0600)
13, 17	341.092	6291.428	2.1123E+00	(2004,119,0200)
13, 18	341.092	6291.578	7.2987E-01	(2004,360,0600)
13, 19	341.092	6291.728	8.4210E-01	(2004,130,1600)
13, 20	341.092	6291.878	8.0702E-01	(2004,231,1600)
13, 21	341.092	6292.028	5.7044E-01	(2004,130,1900)
13, 22	341.092	6292.178	4.6260E-01	(2004,130,1900)
13, 23	341.092	6292.328	3.8584E-01	(2004,231,1600)
13, 24	341.092	6292.478	3.1498E-01	(2004,302,1800)
13, 25	341.092	6292.628	2.1832E-01	(2004,130,1700)
13, 26	341.092	6292.778	1.9790E-01	(2004,130,1900)
13, 27	341.092	6292.928	2.0260E-01	(2004,360,0600)
13, 28	341.092	6293.078	1.6644E-01	(2004,363,2000)
13, 29	341.092	6293.228	1.2343E-01	(2004,363,2000)
14, 1	341.242	6289.028	4.3314E-01	(2004,174,1800)
14, 2	341.242	6289.178	5.6242E-01	(2004,249,1800)
14, 3	341.242	6289.328	7.4305E-01	(2004,039,2300)
14, 4	341.242	6289.478	9.3023E-01	(2004,332,2100)
14, 5	341.242	6289.628	1.1915E+00	(2004,037,2300)
14, 6	341.242	6289.778	1.4781E+00	(2004,305,0000)
14, 7	341.242	6289.928	1.9986E+00	(2004,249,1700)
14, 8	341.242	6290.078	2.7842E+00	(2004,158,2000)
14, 9	341.242	6290.228	3.8147E+00	(2004,301,0200)
14, 10	341.242	6290.378	6.9921E+00	(2004,143,2300)
14, 11	341.242	6290.528	1.6038E+01	(2004,094,0300)
14, 12	341.242	6290.678	5.9561E+00	(2004,333,1800)
14, 13	341.242	6290.828	9.6890E+00	(2004,246,0200)
14, 14	341.242	6290.978	5.7190E+00	(2004,363,2200)
14, 15	341.242	6291.128	1.0864E+01	(2004,239,0500)
14, 16	341.242	6291.278	2.1258E+00	(2004,111,0000)
14, 17	341.242	6291.428	4.3334E+00	(2004,076,1800)
14, 18	341.242	6291.578	7.2737E-01	(2004,329,1900)
14, 19	341.242	6291.728	3.0448E-01	(2004,303,0800)
14, 20	341.242	6291.878	6.7020E-01	(2004,130,2300)
14, 21	341.242	6292.028	3.7571E-01	(2004,246,1400)
14, 22	341.242	6292.178	3.9510E-01	(2004,042,2100)
14, 23	341.242	6292.328	2.9702E-01	(2004,066,2100)
14, 24	341.242	6292.478	2.8386E-01	(2004,131,0000)
14, 25	341.242	6292.628	8.8819E-02	(2004,091,1200)
14, 26	341.242	6292.778	1.6927E-01	(2004,211,2100)
14, 27	341.242	6292.928	2.2707E-01	(2004,330,0400)
14, 28	341.242	6293.078	1.3628E-01	(2004,057,1000)
14, 29	341.242	6293.228	9.7842E-02	(2004,130,2100)
15, 1	341.392	6289.028	3.8665E-01	(2004,024,0000)
15, 2	341.392	6289.178	5.2929E-01	(2004,072,2000)
15, 3	341.392	6289.328	3.8558E-01	(2004,285,2000)
15, 4	341.392	6289.478	6.9542E-01	(2004,107,1900)
15, 5	341.392	6289.628	1.0359E+00	(2004,005,2000)
15, 6	341.392	6289.778	1.3834E+00	(2004,005,2000)
15, 7	341.392	6289.928	1.8438E+00	(2004,301,0400)
15, 8	341.392	6290.078	2.5586E+00	(2004,065,0000)
15, 9	341.392	6290.228	3.3979E+00	(2004,164,1700)
15, 10	341.392	6290.378	5.3721E+00	(2004,084,2300)
15, 11	341.392	6290.528	8.1231E+00	(2004,079,0500)
15, 12	341.392	6290.678	1.3801E+01	(2004,144,0400)
15, 13	341.392	6290.828	7.2500E+00	(2004,204,0000)
15, 14	341.392	6290.978	2.9733E+00	(2004,347,0900)
15, 15	341.392	6291.128	4.3924E+00	(2004,068,0100)
15, 16	341.392	6291.278	2.1547E+00	(2004,038,0400)
15, 17	341.392	6291.428	3.8372E+00	(2004,105,0400)
15, 18	341.392	6291.578	1.0653E+00	(2004,334,0300)

15, 19	341.392	6291.728	1.8531E-01	(2004,241,1000)
15, 20	341.392	6291.878	1.9299E-01	(2004,131,0800)
15, 21	341.392	6292.028	3.2749E-01	(2004,365,0100)
15, 22	341.392	6292.178	1.4693E-01	(2004,197,1100)
15, 23	341.392	6292.328	1.1944E-01	(2004,131,0900)
15, 24	341.392	6292.478	1.4248E-01	(2004,246,0000)
15, 25	341.392	6292.628	6.4586E-02	(2004,336,1800)
15, 26	341.392	6292.778	7.7330E-02	(2004,174,1200)
15, 27	341.392	6292.928	6.3414E-02	(2004,329,0000)
15, 28	341.392	6293.078	6.8147E-02	(2004,066,2300)
15, 29	341.392	6293.228	1.0641E-01	(2004,303,0200)
16, 1	341.542	6289.028	3.4236E-01	(2004,251,1900)
16, 2	341.542	6289.178	3.9436E-01	(2004,040,0000)
16, 3	341.542	6289.328	2.7758E-01	(2004,269,0000)
16, 4	341.542	6289.478	4.9229E-01	(2004,185,1600)
16, 5	341.542	6289.628	8.1292E-01	(2004,038,0600)
16, 6	341.542	6289.778	1.2464E+00	(2004,341,0200)
16, 7	341.542	6289.928	1.6061E+00	(2004,145,1700)
16, 8	341.542	6290.078	2.0551E+00	(2004,145,0100)
16, 9	341.542	6290.228	2.7261E+00	(2004,319,2000)
16, 10	341.542	6290.378	3.5012E+00	(2004,352,0300)
16, 11	341.542	6290.528	6.0049E+00	(2004,159,2300)
16, 12	341.542	6290.678	7.3236E+00	(2004,174,1700)
16, 13	341.542	6290.828	5.0605E+00	(2004,030,2000)
16, 14	341.542	6290.978	4.5269E+00	(2004,246,2100)
16, 15	341.542	6291.128	4.0531E+00	(2004,246,0400)
16, 16	341.542	6291.278	2.9245E+00	(2004,333,1800)
16, 17	341.542	6291.428	2.0166E+00	(2004,273,1900)
16, 18	341.542	6291.578	1.0142E+00	(2004,261,1700)
16, 19	341.542	6291.728	3.4818E-01	(2004,337,0000)
16, 20	341.542	6291.878	1.8678E-01	(2004,163,0300)
16, 21	341.542	6292.028	1.2498E-01	(2004,201,2000)
16, 22	341.542	6292.178	1.0587E-01	(2004,057,1500)
16, 23	341.542	6292.328	8.6565E-02	(2004,334,0500)
16, 24	341.542	6292.478	7.9645E-02	(2004,364,1500)
16, 25	341.542	6292.628	6.7851E-02	(2004,231,1900)
16, 26	341.542	6292.778	6.1959E-02	(2004,104,0800)
16, 27	341.542	6292.928	1.0253E-01	(2004,308,2100)
16, 28	341.542	6293.078	1.3652E-01	(2004,276,0000)
16, 29	341.542	6293.228	1.1924E-01	(2004,045,0300)
17, 1	341.692	6289.028	2.8290E-01	(2004,306,1700)
17, 2	341.692	6289.178	1.6386E-01	(2004,213,2200)
17, 3	341.692	6289.328	2.1114E-01	(2004,036,0200)
17, 4	341.692	6289.478	4.2225E-01	(2004,206,0600)
17, 5	341.692	6289.628	6.4625E-01	(2004,158,2300)
17, 6	341.692	6289.778	9.9978E-01	(2004,239,2000)
17, 7	341.692	6289.928	1.1728E+00	(2004,037,0100)
17, 8	341.692	6290.078	1.5948E+00	(2004,037,0200)
17, 9	341.692	6290.228	1.9561E+00	(2004,184,2100)
17, 10	341.692	6290.378	2.9531E+00	(2004,144,0100)
17, 11	341.692	6290.528	4.6526E+00	(2004,067,2200)
17, 12	341.692	6290.678	5.0003E+00	(2004,127,0000)
17, 13	341.692	6290.828	3.2941E+00	(2004,296,2100)
17, 14	341.692	6290.978	2.8966E+00	(2004,281,0400)
17, 15	341.692	6291.128	2.6518E+00	(2004,295,2300)
17, 16	341.692	6291.278	2.3479E+00	(2004,246,2100)
17, 17	341.692	6291.428	1.2909E+00	(2004,008,1900)
17, 18	341.692	6291.578	7.5546E-01	(2004,334,0200)
17, 19	341.692	6291.728	7.7463E-01	(2004,267,2200)
17, 20	341.692	6291.878	3.5971E-01	(2004,308,1900)
17, 21	341.692	6292.028	1.4600E-01	(2004,329,0600)
17, 22	341.692	6292.178	1.0785E-01	(2004,337,0700)
17, 23	341.692	6292.328	1.0037E-01	(2004,201,1800)
17, 24	341.692	6292.478	8.6442E-02	(2004,163,1200)
17, 25	341.692	6292.628	1.3129E-01	(2004,057,1400)
17, 26	341.692	6292.778	1.7081E-01	(2004,131,0200)
17, 27	341.692	6292.928	1.7975E-01	(2004,209,1000)
17, 28	341.692	6293.078	1.5818E-01	(2004,121,0300)
17, 29	341.692	6293.228	1.2236E-01	(2004,060,1700)
18, 1	341.842	6289.028	6.7899E-02	(2004,323,2100)
18, 2	341.842	6289.178	6.0433E-02	(2004,185,1400)
18, 3	341.842	6289.328	3.3352E-01	(2004,037,0000)
18, 4	341.842	6289.478	4.5776E-01	(2004,059,2300)

18, 5	341.842	6289.628	6.7536E-01	(2004,252,1900)
18, 6	341.842	6289.778	7.8790E-01	(2004,270,2300)
18, 7	341.842	6289.928	1.0207E+00	(2004,102,1900)
18, 8	341.842	6290.078	1.3102E+00	(2004,146,0600)
18, 9	341.842	6290.228	1.5092E+00	(2004,243,2100)
18, 10	341.842	6290.378	2.1784E+00	(2004,065,0500)
18, 11	341.842	6290.528	3.4917E+00	(2004,067,2300)
18, 12	341.842	6290.678	3.4641E+00	(2004,028,0200)
18, 13	341.842	6290.828	2.4888E+00	(2004,131,2300)
18, 14	341.842	6290.978	1.9680E+00	(2004,061,0400)
18, 15	341.842	6291.128	1.7982E+00	(2004,084,0200)
18, 16	341.842	6291.278	1.6249E+00	(2004,063,0600)
18, 17	341.842	6291.428	1.4822E+00	(2004,130,0500)
18, 18	341.842	6291.578	1.0166E+00	(2004,241,2300)
18, 19	341.842	6291.728	7.0678E-01	(2004,208,1700)
18, 20	341.842	6291.878	6.4222E-01	(2004,276,1800)
18, 21	341.842	6292.028	3.2958E-01	(2004,084,0100)
18, 22	341.842	6292.178	2.3972E-01	(2004,296,2000)
18, 23	341.842	6292.328	9.6176E-02	(2004,211,2200)
18, 24	341.842	6292.478	8.1142E-02	(2004,299,0900)
18, 25	341.842	6292.628	1.6605E-01	(2004,190,1600)
18, 26	341.842	6292.778	1.8460E-01	(2004,057,1800)
18, 27	341.842	6292.928	1.7995E-01	(2004,324,1900)
18, 28	341.842	6293.078	1.5236E-01	(2004,131,0300)
18, 29	341.842	6293.228	1.2294E-01	(2004,131,0500)
19, 1	341.992	6289.028	5.2982E-02	(2004,252,1400)
19, 2	341.992	6289.178	1.7925E-01	(2004,037,0100)
19, 3	341.992	6289.328	2.8296E-01	(2004,252,1900)
19, 4	341.992	6289.478	3.3927E-01	(2004,021,0000)
19, 5	341.992	6289.628	5.0149E-01	(2004,206,0300)
19, 6	341.992	6289.778	6.3202E-01	(2004,269,2300)
19, 7	341.992	6289.928	8.7695E-01	(2004,159,2200)
19, 8	341.992	6290.078	9.3135E-01	(2004,014,0400)
19, 9	341.992	6290.228	1.1585E+00	(2004,243,2100)
19, 10	341.992	6290.378	1.3323E+00	(2004,165,0100)
19, 11	341.992	6290.528	2.4020E+00	(2004,253,0500)
19, 12	341.992	6290.678	2.4051E+00	(2004,111,0400)
19, 13	341.992	6290.828	1.8333E+00	(2004,094,0500)
19, 14	341.992	6290.978	1.5314E+00	(2004,195,2100)
19, 15	341.992	6291.128	1.3990E+00	(2004,202,2100)
19, 16	341.992	6291.278	1.1167E+00	(2004,295,2300)
19, 17	341.992	6291.428	9.9484E-01	(2004,248,1800)
19, 18	341.992	6291.578	6.4919E-01	(2004,333,1700)
19, 19	341.992	6291.728	6.1061E-01	(2004,006,0400)
19, 20	341.992	6291.878	4.9234E-01	(2004,320,2300)
19, 21	341.992	6292.028	3.5062E-01	(2004,248,1700)
19, 22	341.992	6292.178	1.2691E-01	(2004,184,1400)
19, 23	341.992	6292.328	8.8256E-02	(2004,276,0500)
19, 24	341.992	6292.478	7.8693E-02	(2004,163,1600)
19, 25	341.992	6292.628	1.2287E-01	(2004,131,0600)
19, 26	341.992	6292.778	1.5751E-01	(2004,163,0000)
19, 27	341.992	6292.928	1.6655E-01	(2004,201,2000)
19, 28	341.992	6293.078	1.5784E-01	(2004,324,2100)
19, 29	341.992	6293.228	1.0992E-01	(2004,201,1300)
20, 1	342.142	6289.028	5.3259E-02	(2004,080,0100)
20, 2	342.142	6289.178	7.7780E-02	(2004,185,1700)
20, 3	342.142	6289.328	8.6908E-02	(2004,206,0100)
20, 4	342.142	6289.478	2.2809E-01	(2004,206,0500)
20, 5	342.142	6289.628	2.4452E-01	(2004,362,0300)
20, 6	342.142	6289.778	5.3963E-01	(2004,310,1800)
20, 7	342.142	6289.928	7.3667E-01	(2004,166,1900)
20, 8	342.142	6290.078	6.3330E-01	(2004,266,2000)
20, 9	342.142	6290.228	4.1922E-01	(2004,155,0200)
20, 10	342.142	6290.378	4.5645E-01	(2004,281,0100)
20, 11	342.142	6290.528	9.0237E-01	(2004,068,0400)
20, 12	342.142	6290.678	1.7221E+00	(2004,112,0700)
20, 13	342.142	6290.828	1.4763E+00	(2004,236,0300)
20, 14	342.142	6290.978	1.1074E+00	(2004,260,0400)
20, 15	342.142	6291.128	8.9044E-01	(2004,174,0200)
20, 16	342.142	6291.278	2.6706E-01	(2004,283,0600)
20, 17	342.142	6291.428	3.1778E-01	(2004,366,0200)
20, 18	342.142	6291.578	1.3867E-01	(2004,354,2300)
20, 19	342.142	6291.728	2.9452E-01	(2004,147,1800)

20, 20	342.142	6291.878	4.3283E-01	(2004,067,0100)
20, 21	342.142	6292.028	3.1187E-01	(2004,018,0200)
20, 22	342.142	6292.178	1.2072E-01	(2004,232,0700)
20, 23	342.142	6292.328	7.4157E-02	(2004,228,1700)
20, 24	342.142	6292.478	7.0188E-02	(2004,143,1000)
20, 25	342.142	6292.628	6.8172E-02	(2004,246,0300)
20, 26	342.142	6292.778	1.3650E-01	(2004,228,1600)
20, 27	342.142	6292.928	1.3413E-01	(2004,104,0200)
20, 28	342.142	6293.078	1.1347E-01	(2004,131,0600)
20, 29	342.142	6293.228	1.0510E-01	(2004,333,2300)
21, 1	342.292	6289.028	5.9856E-02	(2004,145,2300)
21, 2	342.292	6289.178	6.5183E-02	(2004,239,0800)
21, 3	342.292	6289.328	7.0865E-02	(2004,243,1400)
21, 4	342.292	6289.478	1.1950E-01	(2004,014,0200)
21, 5	342.292	6289.628	3.9080E-01	(2004,146,0400)
21, 6	342.292	6289.778	5.4958E-01	(2004,207,0200)
21, 7	342.292	6289.928	5.2875E-01	(2004,182,0500)
21, 8	342.292	6290.078	5.1101E-01	(2004,226,0300)
21, 9	342.292	6290.228	1.5021E-01	(2004,114,0900)
21, 10	342.292	6290.378	1.4156E-01	(2004,161,0800)
21, 11	342.292	6290.528	4.0868E-01	(2004,086,0200)
21, 12	342.292	6290.678	1.3390E+00	(2004,250,0300)
21, 13	342.292	6290.828	1.1679E+00	(2004,138,2100)
21, 14	342.292	6290.978	8.4338E-01	(2004,144,0400)
21, 15	342.292	6291.128	2.7014E-01	(2004,203,0100)
21, 16	342.292	6291.278	1.3121E-01	(2004,008,1800)
21, 17	342.292	6291.428	1.2585E-01	(2004,289,1500)
21, 18	342.292	6291.578	1.0532E-01	(2004,362,1800)
21, 19	342.292	6291.728	1.0513E-01	(2004,210,1500)
21, 20	342.292	6291.878	1.2256E-01	(2004,058,0100)
21, 21	342.292	6292.028	1.4023E-01	(2004,200,1800)
21, 22	342.292	6292.178	9.3031E-02	(2004,365,0600)
21, 23	342.292	6292.328	6.8952E-02	(2004,200,0600)
21, 24	342.292	6292.478	6.4313E-02	(2004,200,0600)
21, 25	342.292	6292.628	6.1498E-02	(2004,200,2100)
21, 26	342.292	6292.778	1.4123E-01	(2004,248,1700)
21, 27	342.292	6292.928	6.7683E-02	(2004,231,2200)
21, 28	342.292	6293.078	7.3287E-02	(2004,228,1700)
21, 29	342.292	6293.228	1.0162E-01	(2004,121,0300)
22, 1	342.442	6289.028	5.9174E-02	(2004,324,0000)
22, 2	342.442	6289.178	6.6846E-02	(2004,089,0300)
22, 3	342.442	6289.328	7.0324E-02	(2004,175,1600)
22, 4	342.442	6289.478	1.0998E-01	(2004,310,1700)
22, 5	342.442	6289.628	2.7922E-01	(2004,184,2100)
22, 6	342.442	6289.778	4.4574E-01	(2004,166,1800)
22, 7	342.442	6289.928	2.3323E-01	(2004,167,0600)
22, 8	342.442	6290.078	1.2667E-01	(2004,171,0700)
22, 9	342.442	6290.228	1.1972E-01	(2004,234,2100)
22, 10	342.442	6290.378	1.2004E-01	(2004,007,1800)
22, 11	342.442	6290.528	1.4615E-01	(2004,238,0700)
22, 12	342.442	6290.678	2.6035E-01	(2004,242,0800)
22, 13	342.442	6290.828	9.5306E-01	(2004,110,0000)
22, 14	342.442	6290.978	7.8147E-01	(2004,102,0100)
22, 15	342.442	6291.128	3.6930E-01	(2004,090,1800)
22, 16	342.442	6291.278	1.3996E-01	(2004,134,0200)
22, 17	342.442	6291.428	1.0419E-01	(2004,087,0200)
22, 18	342.442	6291.578	9.3263E-02	(2004,093,0600)
22, 19	342.442	6291.728	8.5260E-02	(2004,174,1000)
22, 20	342.442	6291.878	7.6206E-02	(2004,142,1000)
22, 21	342.442	6292.028	7.5735E-02	(2004,043,0200)
22, 22	342.442	6292.178	7.1202E-02	(2004,047,0400)
22, 23	342.442	6292.328	6.2394E-02	(2004,054,0600)
22, 24	342.442	6292.478	5.6000E-02	(2004,151,1600)
22, 25	342.442	6292.628	5.5889E-02	(2004,257,1500)
22, 26	342.442	6292.778	1.1201E-01	(2004,135,1600)
22, 27	342.442	6292.928	5.5760E-02	(2004,352,0700)
22, 28	342.442	6293.078	8.9202E-02	(2004,034,0600)
22, 29	342.442	6293.228	7.2955E-02	(2004,202,0700)
23, 1	342.592	6289.028	6.1062E-02	(2004,146,0600)
23, 2	342.592	6289.178	7.1898E-02	(2004,277,1900)
23, 3	342.592	6289.328	7.2280E-02	(2004,226,2000)
23, 4	342.592	6289.478	7.0718E-02	(2004,042,0600)
23, 5	342.592	6289.628	1.3196E-01	(2004,281,2300)

23, 6	342.592	6289.778	1.4642E-01	(2004,166,0600)
23, 7	342.592	6289.928	1.0751E-01	(2004,177,1600)
23, 8	342.592	6290.078	1.0045E-01	(2004,267,0500)
23, 9	342.592	6290.228	1.1427E-01	(2004,183,0800)
23, 10	342.592	6290.378	1.0958E-01	(2004,237,0100)
23, 11	342.592	6290.528	1.1424E-01	(2004,284,0600)
23, 12	342.592	6290.678	2.2081E-01	(2004,225,0100)
23, 13	342.592	6290.828	8.1261E-01	(2004,263,0500)
23, 14	342.592	6290.978	7.0926E-01	(2004,179,1700)
23, 15	342.592	6291.128	1.7051E-01	(2004,100,0800)
23, 16	342.592	6291.278	1.1802E-01	(2004,248,1200)
23, 17	342.592	6291.428	1.0092E-01	(2004,257,0000)
23, 18	342.592	6291.578	9.2569E-02	(2004,028,0700)
23, 19	342.592	6291.728	8.6394E-02	(2004,093,0500)
23, 20	342.592	6291.878	7.9161E-02	(2004,212,0900)
23, 21	342.592	6292.028	7.9577E-02	(2004,131,2000)
23, 22	342.592	6292.178	7.0839E-02	(2004,148,1600)
23, 23	342.592	6292.328	6.9243E-02	(2004,133,1000)
23, 24	342.592	6292.478	6.1110E-02	(2004,060,1600)
23, 25	342.592	6292.628	5.5455E-02	(2004,151,1600)
23, 26	342.592	6292.778	6.2762E-02	(2004,350,0100)
23, 27	342.592	6292.928	5.2955E-02	(2004,256,1800)
23, 28	342.592	6293.078	5.6304E-02	(2004,337,0000)
23, 29	342.592	6293.228	6.2929E-02	(2004,104,0400)
24, 1	342.742	6289.028	6.6119E-02	(2004,108,0000)
24, 2	342.742	6289.178	7.7723E-02	(2004,307,1800)
24, 3	342.742	6289.328	7.3049E-02	(2004,206,2200)
24, 4	342.742	6289.478	8.2210E-02	(2004,166,0200)
24, 5	342.742	6289.628	1.0293E-01	(2004,161,2200)
24, 6	342.742	6289.778	8.0931E-02	(2004,324,0600)
24, 7	342.742	6289.928	8.6327E-02	(2004,266,1700)
24, 8	342.742	6290.078	1.0399E-01	(2004,193,2200)
24, 9	342.742	6290.228	1.1420E-01	(2004,122,1900)
24, 10	342.742	6290.378	1.2435E-01	(2004,279,0000)
24, 11	342.742	6290.528	1.0026E-01	(2004,251,0600)
24, 12	342.742	6290.678	3.3859E-01	(2004,208,0600)
24, 13	342.742	6290.828	6.0821E-01	(2004,221,1900)
24, 14	342.742	6290.978	5.8221E-01	(2004,008,0200)
24, 15	342.742	6291.128	2.0806E-01	(2004,244,2100)
24, 16	342.742	6291.278	1.0659E-01	(2004,110,0800)
24, 17	342.742	6291.428	9.2722E-02	(2004,212,0600)
24, 18	342.742	6291.578	8.7915E-02	(2004,352,0400)
24, 19	342.742	6291.728	9.2591E-02	(2004,290,0100)
24, 20	342.742	6291.878	8.3605E-02	(2004,061,0400)
24, 21	342.742	6292.028	7.4750E-02	(2004,289,0300)
24, 22	342.742	6292.178	7.4840E-02	(2004,289,1900)
24, 23	342.742	6292.328	7.2422E-02	(2004,156,1700)
24, 24	342.742	6292.478	6.8926E-02	(2004,061,0000)
24, 25	342.742	6292.628	6.1323E-02	(2004,133,1000)
24, 26	342.742	6292.778	5.7009E-02	(2004,053,0200)
24, 27	342.742	6292.928	5.3151E-02	(2004,298,0200)
24, 28	342.742	6293.078	9.8362E-02	(2004,099,2200)
24, 29	342.742	6293.228	8.7908E-02	(2004,355,0500)
25, 1	342.892	6289.028	6.3948E-02	(2004,146,1800)
25, 2	342.892	6289.178	7.2748E-02	(2004,010,0500)
25, 3	342.892	6289.328	7.2982E-02	(2004,051,1800)
25, 4	342.892	6289.478	7.9111E-02	(2004,166,0800)
25, 5	342.892	6289.628	7.9044E-02	(2004,186,0100)
25, 6	342.892	6289.778	8.6404E-02	(2004,155,0000)
25, 7	342.892	6289.928	1.0001E-01	(2004,139,0700)
25, 8	342.892	6290.078	1.0472E-01	(2004,317,2100)
25, 9	342.892	6290.228	1.1143E-01	(2004,158,0200)
25, 10	342.892	6290.378	1.2275E-01	(2004,183,1800)
25, 11	342.892	6290.528	1.1892E-01	(2004,136,2300)
25, 12	342.892	6290.678	1.7062E-01	(2004,116,1900)
25, 13	342.892	6290.828	2.2496E-01	(2004,110,0600)
25, 14	342.892	6290.978	2.7912E-01	(2004,141,0500)
25, 15	342.892	6291.128	1.1791E-01	(2004,236,0000)
25, 16	342.892	6291.278	9.0767E-02	(2004,164,1000)
25, 17	342.892	6291.428	9.3881E-02	(2004,204,2300)
25, 18	342.892	6291.578	9.3960E-02	(2004,262,0400)
25, 19	342.892	6291.728	8.5810E-02	(2004,084,0600)
25, 20	342.892	6291.878	8.8998E-02	(2004,273,1800)

25, 21	342.892	6292.028	7.8415E-02	(2004,288,2000)
25, 22	342.892	6292.178	7.6465E-02	(2004,268,0100)
25, 23	342.892	6292.328	7.5053E-02	(2004,118,0700)
25, 24	342.892	6292.478	7.5023E-02	(2004,256,1900)
25, 25	342.892	6292.628	6.9974E-02	(2004,163,2100)
25, 26	342.892	6292.778	6.3745E-02	(2004,191,0200)
25, 27	342.892	6292.928	6.0116E-02	(2004,256,1800)
25, 28	342.892	6293.078	1.1143E-01	(2004,337,0200)
25, 29	342.892	6293.228	7.1700E-02	(2004,232,0500)
26, 1	343.042	6289.028	5.8629E-02	(2004,161,1600)
26, 2	343.042	6289.178	6.8673E-02	(2004,146,0600)
26, 3	343.042	6289.328	7.7537E-02	(2004,159,2200)
26, 4	343.042	6289.478	9.0166E-02	(2004,253,0000)
26, 5	343.042	6289.628	8.6975E-02	(2004,266,2000)
26, 6	343.042	6289.778	9.4730E-02	(2004,234,1900)
26, 7	343.042	6289.928	9.7226E-02	(2004,122,0600)
26, 8	343.042	6290.078	1.0149E-01	(2004,193,2300)
26, 9	343.042	6290.228	1.1302E-01	(2004,059,0500)
26, 10	343.042	6290.378	1.2045E-01	(2004,161,0500)
26, 11	343.042	6290.528	1.0610E-01	(2004,152,0600)
26, 12	343.042	6290.678	9.9063E-02	(2004,250,0200)
26, 13	343.042	6290.828	1.0499E-01	(2004,185,0400)
26, 14	343.042	6290.978	1.0366E-01	(2004,261,2200)
26, 15	343.042	6291.128	1.0274E-01	(2004,277,0600)
26, 16	343.042	6291.278	9.6222E-02	(2004,140,2200)
26, 17	343.042	6291.428	9.6159E-02	(2004,064,0200)
26, 18	343.042	6291.578	9.1641E-02	(2004,169,1800)
26, 19	343.042	6291.728	8.6096E-02	(2004,133,2200)
26, 20	343.042	6291.878	8.0768E-02	(2004,133,2100)
26, 21	343.042	6292.028	7.9389E-02	(2004,288,2000)
26, 22	343.042	6292.178	7.2271E-02	(2004,093,0500)
26, 23	343.042	6292.328	7.0839E-02	(2004,043,0300)
26, 24	343.042	6292.478	6.9080E-02	(2004,204,0700)
26, 25	343.042	6292.628	6.9969E-02	(2004,058,0200)
26, 26	343.042	6292.778	6.5865E-02	(2004,365,2300)
26, 27	343.042	6292.928	6.4339E-02	(2004,191,0300)
26, 28	343.042	6293.078	5.8909E-02	(2004,271,2200)
26, 29	343.042	6293.228	4.7507E-02	(2004,329,0400)
27, 1	343.192	6289.028	5.6144E-02	(2004,178,0100)
27, 2	343.192	6289.178	7.0162E-02	(2004,089,0400)
27, 3	343.192	6289.328	8.0965E-02	(2004,186,0000)
27, 4	343.192	6289.478	8.3353E-02	(2004,182,2200)
27, 5	343.192	6289.628	9.1116E-02	(2004,286,0000)
27, 6	343.192	6289.778	9.2494E-02	(2004,065,0400)
27, 7	343.192	6289.928	9.5029E-02	(2004,069,0300)
27, 8	343.192	6290.078	1.0171E-01	(2004,139,0500)
27, 9	343.192	6290.228	1.1080E-01	(2004,028,2300)
27, 10	343.192	6290.378	1.1420E-01	(2004,237,0400)
27, 11	343.192	6290.528	1.0488E-01	(2004,205,0600)
27, 12	343.192	6290.678	1.0537E-01	(2004,023,0500)
27, 13	343.192	6290.828	1.0486E-01	(2004,209,2200)
27, 14	343.192	6290.978	1.1049E-01	(2004,009,0100)
27, 15	343.192	6291.128	1.0516E-01	(2004,244,2100)
27, 16	343.192	6291.278	1.0112E-01	(2004,008,0300)
27, 17	343.192	6291.428	9.3794E-02	(2004,147,0600)
27, 18	343.192	6291.578	9.0807E-02	(2004,148,0000)
27, 19	343.192	6291.728	8.5043E-02	(2004,203,0600)
27, 20	343.192	6291.878	7.8565E-02	(2004,289,2200)
27, 21	343.192	6292.028	7.7023E-02	(2004,296,0000)
27, 22	343.192	6292.178	7.2623E-02	(2004,164,0000)
27, 23	343.192	6292.328	6.5880E-02	(2004,018,0200)
27, 24	343.192	6292.478	6.4518E-02	(2004,151,1700)
27, 25	343.192	6292.628	6.3535E-02	(2004,043,0200)
27, 26	343.192	6292.778	6.0560E-02	(2004,118,0700)
27, 27	343.192	6292.928	6.1484E-02	(2004,087,0400)
27, 28	343.192	6293.078	5.8257E-02	(2004,118,0600)
27, 29	343.192	6293.228	4.7795E-02	(2004,140,1600)
28, 1	343.342	6289.028	5.4793E-02	(2004,239,2200)
28, 2	343.342	6289.178	7.0522E-02	(2004,114,1700)
28, 3	343.342	6289.328	7.7240E-02	(2004,060,0100)
28, 4	343.342	6289.478	7.9237E-02	(2004,022,0300)
28, 5	343.342	6289.628	8.1851E-02	(2004,114,2000)
28, 6	343.342	6289.778	8.8068E-02	(2004,166,2300)

28, 7	343.342	6289.928	8.8357E-02	(2004,067,2300)
28, 8	343.342	6290.078	9.6546E-02	(2004,160,2200)
28, 9	343.342	6290.228	1.0269E-01	(2004,265,0500)
28, 10	343.342	6290.378	1.0565E-01	(2004,158,0400)
28, 11	343.342	6290.528	9.9028E-02	(2004,031,2200)
28, 12	343.342	6290.678	1.0092E-01	(2004,169,2100)
28, 13	343.342	6290.828	9.7277E-02	(2004,235,2100)
28, 14	343.342	6290.978	9.7166E-02	(2004,240,2300)
28, 15	343.342	6291.128	9.9945E-02	(2004,007,2200)
28, 16	343.342	6291.278	9.9507E-02	(2004,141,0000)
28, 17	343.342	6291.428	9.4005E-02	(2004,210,2000)
28, 18	343.342	6291.578	8.8077E-02	(2004,091,0500)
28, 19	343.342	6291.728	8.3022E-02	(2004,195,0600)
28, 20	343.342	6291.878	7.9561E-02	(2004,262,0500)
28, 21	343.342	6292.028	6.9541E-02	(2004,197,0100)
28, 22	343.342	6292.178	7.0308E-02	(2004,018,0400)
28, 23	343.342	6292.328	6.4820E-02	(2004,061,0100)
28, 24	343.342	6292.478	5.9384E-02	(2004,204,0300)
28, 25	343.342	6292.628	5.6606E-02	(2004,211,2300)
28, 26	343.342	6292.778	5.5124E-02	(2004,203,2300)
28, 27	343.342	6292.928	4.8845E-02	(2004,006,0300)
28, 28	343.342	6293.078	4.8997E-02	(2004,232,0400)
28, 29	343.342	6293.228	4.4237E-02	(2004,296,2000)
29, 1	343.492	6289.028	4.5538E-02	(2004,182,1900)
29, 2	343.492	6289.178	6.0686E-02	(2004,278,2300)
29, 3	343.492	6289.328	6.0669E-02	(2004,266,0300)
29, 4	343.492	6289.478	6.4802E-02	(2004,286,0000)
29, 5	343.492	6289.628	6.8892E-02	(2004,180,1700)
29, 6	343.492	6289.778	7.1015E-02	(2004,154,0000)
29, 7	343.492	6289.928	7.2525E-02	(2004,333,0400)
29, 8	343.492	6290.078	7.9550E-02	(2004,165,0200)
29, 9	343.492	6290.228	8.3918E-02	(2004,128,0100)
29, 10	343.492	6290.378	8.5863E-02	(2004,238,0400)
29, 11	343.492	6290.528	8.1059E-02	(2004,198,0600)
29, 12	343.492	6290.678	8.1580E-02	(2004,225,0300)
29, 13	343.492	6290.828	8.0275E-02	(2004,199,0000)
29, 14	343.492	6290.978	8.1560E-02	(2004,092,1900)
29, 15	343.492	6291.128	8.3937E-02	(2004,151,2300)
29, 16	343.492	6291.278	8.4045E-02	(2004,194,1900)
29, 17	343.492	6291.428	7.9098E-02	(2004,030,2200)
29, 18	343.492	6291.578	7.4660E-02	(2004,263,0600)
29, 19	343.492	6291.728	7.0343E-02	(2004,135,2200)
29, 20	343.492	6291.878	6.6621E-02	(2004,203,0600)
29, 21	343.492	6292.028	6.1588E-02	(2004,241,0500)
29, 22	343.492	6292.178	5.5920E-02	(2004,135,2000)
29, 23	343.492	6292.328	5.4635E-02	(2004,288,2100)
29, 24	343.492	6292.478	4.8211E-02	(2004,093,0400)
29, 25	343.492	6292.628	4.3844E-02	(2004,268,0300)
29, 26	343.492	6292.778	4.5085E-02	(2004,163,2100)
29, 27	343.492	6292.928	3.8594E-02	(2004,054,0200)
29, 28	343.492	6293.078	3.4822E-02	(2004,208,1800)
29, 29	343.492	6293.228	3.0030E-02	(2004,151,1500)

88 - RANK HIGHEST VALUES FOR PERIOD

Multiply all values by 10 ** -2

29 I	8	11	11	13	14	13	14	14	14	15	16	14	1
I	+	+	+	+	+	+	+	+	+	+	+	+	
28 I	11	14	16	16	19	18	18	20	17	19	21	19	1
I	+	+	+	+	+	+	+	+	+	+	+	+	
27 I	12	15	17	19	19	22	21	22	21	22	22	23	2
I	+	+	+	+	+	+	+	+	+	+	+	+	
26 I	12	15	18	21	23	25	26	25	26	22	24	22	2
I	+	+	+	+	+	+	+	+	+	+	+	+	
25 I	11	15	18	21	25	27	28	31	32	27	29	28	2
I	+	+	+	+	+	+	+	+	+	+	+	+	
24 I	14	16	19	22	27	30	33	36	36	34	35	37	3
I	+	+	+	+	+	+	+	+	+	+	+	+	
23 I	16	20	20	23	27	31	36	40	46	46	41	45	3
I	+	+	+	+	+	+	+	+	+	+	+	+	
22 I	17	22	23	24	28	36	37	48	50	52	52	52	4
I	+	+	+	+	+	+	+	+	+	+	+	+	

21 I	17	22	26	29	31	37	42	50	60	65	67	62	5
I	+	+	+	+	+	+	+	+	+	+	+	+	
20 I	19	24	27	32	36	42	48	51	63	72	78	86	8
I	+	+	+	+	+	+	+	+	+	+	+	+	
19 I	25	28	29	34	41	44	52	58	54	62	71	80	8
I	+	+	+	+	+	+	+	+	+	+	+	+	
18 I	28	31	33	37	42	51	57	66	79	89	86	99	7
I	+	+	+	+	+	+	+	+	+	+	+	+	
17 I	32	32	34	43	49	58	69	85	85	116	135	141	21
I	+	+	+	+	+	+	+	+	+	+	+	+	
16 I	34	36	31	35	47	63	75	98	131	147	195	244	49
I	+	+	+	+	+	+	+	+	+	+	+	+	
15 I	36	41	44	42	34	47	84	104	134	173	230	380	116
I	+	+	+	+	+	+	+	+	+	+	+	+	
14 I	41	44	46	54	36	51	97	89	146	238	327	417	74
I	+	+	+	+	+	+	+	+	+	+	+	+	
13 I	35	38	36	27	32	44	41	40	116	224	395	496	83
I	+	+	+	+	+	+	+	+	+	+	+	+	
12 I	29	36	42	35	29	22	29	72	155	244	404	645	48
I	+	+	+	+	+	+	+	+	+	+	+	+	
11 I	31	36	41	39	52	47	25	105	150	250	420	169	168
I	+	+	+	+	+	+	+	+	+	+	+	+	
10 I	29	36	45	54	65	73	22	110	64	41	56	120	72
I	+	+	+	+	+	+	+	+	+	+	+	+	
9 I	32	45	43	41	45	35	16	42	23	69	92	245	36
I	+	+	+	+	+	+	+	+	+	+	+	+	
8 I	31	37	35	14	26	14	15	17	23	101	100	218	28
I	+	+	+	+	+	+	+	+	+	+	+	+	
7 I	28	35	13	10	10	11	12	15	36	117	107	180	21
I	+	+	+	+	+	+	+	+	+	+	+	+	
6 I	29	33	12	10	17	22	21	35	101	129	116	131	15
I	+	+	+	+	+	+	+	+	+	+	+	+	
5 I	27	15	9	21	51	59	64	72	90	108	121	117	12
I	+	+	+	+	+	+	+	+	+	+	+	+	
4 I	27	18	8	8	41	59	64	70	87	96	99	103	10
I	+	+	+	+	+	+	+	+	+	+	+	+	
3 I	28	29	7	14	32	49	54	66	75	83	81	86	8
I	+	+	+	+	+	+	+	+	+	+	+	+	
2 I	26	17	7	6	20	41	52	58	60	70	66	72	6
I	+	+	+	+	+	+	+	+	+	+	+	+	
1 I	8	6	6	9	26	35	45	45	53	53	56	55	5
I	+	+	+	+	+	+	+	+	+	+	+	+	
	1	2	3	4	5	6	7	8	9	10	11	12	1

88 - RANK HIGHEST VALUES FOR PERIOD

Multiply all values by 10 ** -2

29 I	10	7	6	9	7	5	5	4	3
I	+	+	+	+	+	+	+	+	+
28 I	7	9	6	10	11	6	6	5	3
I	+	+	+	+	+	+	+	+	+
27 I	7	6	5	5	6	6	6	5	4
I	+	+	+	+	+	+	+	+	+
26 I	14	11	6	6	6	7	6	6	5
I	+	+	+	+	+	+	+	+	+
25 I	6	6	6	6	7	7	6	6	4
I	+	+	+	+	+	+	+	+	+
24 I	6	6	6	7	8	7	6	6	5
I	+	+	+	+	+	+	+	+	+
23 I	7	6	7	7	8	7	7	6	5
I	+	+	+	+	+	+	+	+	+
22 I	9	7	7	7	8	7	7	7	6
I	+	+	+	+	+	+	+	+	+
21 I	14	8	8	7	8	8	8	7	6
I	+	+	+	+	+	+	+	+	+
20 I	12	8	8	8	9	8	8	8	7
I	+	+	+	+	+	+	+	+	+
19 I	11	9	9	9	9	9	9	8	7
I	+	+	+	+	+	+	+	+	+
18 I	11	9	9	9	9	9	9	9	7
I	+	+	+	+	+	+	+	+	+

```
   17 I   13     10     10      9      9     10      9      9      8
      I    +      +      +      +      +      +      +      +      +
   16 I   13     14     12     11      9     10     10     10      8
      I    +      +      +      +      +      +      +      +      +
   15 I   27     37     17     21     12     10     11     10      8
      I    +      +      +      +      +      +      +      +      +
   14 I   84     78     71     58     28     10     11     10      8
      I    +      +      +      +      +      +      +      +      +
   13 I  117     95     81     61     22     10     10     10      8
      I    +      +      +      +      +      +      +      +      +
   12 I  134     26     22     34     17     10     11     10      8
      I    +      +      +      +      +      +      +      +      +
   11 I   41     15     11     10     12     11     10     10      8
      I    +      +      +      +      +      +      +      +      +
   10 I   14     12     11     12     12     12     11     11      9
      I    +      +      +      +      +      +      +      +      +
    9 I   15     12     11     11     11     11     11     10      8
      I    +      +      +      +      +      +      +      +      +
    8 I   51     13     10     10     10     10     10     10      8
      I    +      +      +      +      +      +      +      +      +
    7 I   53     23     11      9     10     10     10      9      7
      I    +      +      +      +      +      +      +      +      +
    6 I   55     45     15      8      9      9      9      9      7
      I    +      +      +      +      +      +      +      +      +
    5 I   39     28     13     10      8      9      9      8      7
      I    +      +      +      +      +      +      +      +      +
    4 I   12     11      7      8      8      9      8      8      6
      I    +      +      +      +      +      +      +      +      +
    3 I    7      7      7      7      7      8      8      8      6
      I    +      +      +      +      +      +      +      +      +
    2 I    7      7      7      8      7      7      7      7      6
      I    +      +      +      +      +      +      +      +      +
    1 I    6      6      6      7      6      6      6      5      5
      I    +      +      +      +      +      +      +      +      +
       -----------------------------------------------------------
         21     22     23     24     25     26     27     28     29
                                                               ODOR          1

 1 RANKED     1   HOUR AVERAGE  CONCENTRATION VALUES AT EACH DISCRETE RECEPTOR  (Y

RECEPTOR     COORDINATES (km)              88 RANK
      1      342.046  6291.203   1.1101E+00 (2004,169,1700)
      2      342.180  6290.668   1.7150E+00 (2004,111,0400)
      3      342.112  6290.283   6.8161E-01 (2004,207,2200)

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                                                    CALPOST  Version 6.132         Level
*********************************************************************************


                                                               ODOR          1


 1 RANKED     1   HOUR AVERAGE  CONCENTRATION VALUES AT EACH GRIDDED RECEPTOR  (YE

RECEPTOR     COORDINATES (km)              88 RANK
   1,  1     339.292  6289.028   8.1330E-02 (2004,105,1700)
   1,  2     339.292  6289.178   2.6140E-01 (2004,094,1800)
   1,  3     339.292  6289.328   2.8109E-01 (2004,330,2000)
   1,  4     339.292  6289.478   2.7171E-01 (2004,016,0400)
   1,  5     339.292  6289.628   2.7391E-01 (2004,045,2300)
   1,  6     339.292  6289.778   2.8662E-01 (2004,358,2100)
   1,  7     339.292  6289.928   2.7686E-01 (2004,130,0000)
   1,  8     339.292  6290.078   3.1425E-01 (2004,016,0700)
   1,  9     339.292  6290.228   3.1748E-01 (2004,338,0500)
   1, 10     339.292  6290.378   2.8962E-01 (2004,230,2100)
   1, 11     339.292  6290.528   3.0719E-01 (2004,315,1800)
   1, 12     339.292  6290.678   2.9263E-01 (2004,262,1700)
   1, 13     339.292  6290.828   3.5356E-01 (2004,032,1900)
   1, 14     339.292  6290.978   4.0691E-01 (2004,050,2100)
   1, 15     339.292  6291.128   3.6461E-01 (2004,352,1900)
   1, 16     339.292  6291.278   3.3591E-01 (2004,073,2000)
   1, 17     339.292  6291.428   3.2444E-01 (2004,078,2100)
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   1, 18     339.292  6291.578   2.8170E-01 (2004,014,2000)
   1, 19     339.292  6291.728   2.4857E-01 (2004,350,1900)
   1, 20     339.292  6291.878   1.9447E-01 (2004,263,2200)
   1, 21     339.292  6292.028   1.7381E-01 (2004,045,0000)
   1, 22     339.292  6292.178   1.6962E-01 (2004,066,1800)
   1, 23     339.292  6292.328   1.5853E-01 (2004,078,1300)
   1, 24     339.292  6292.478   1.3891E-01 (2004,078,1400)
   1, 25     339.292  6292.628   1.1360E-01 (2004,081,0600)
   1, 26     339.292  6292.778   1.2368E-01 (2004,283,1700)
   1, 27     339.292  6292.928   1.1557E-01 (2004,267,1700)
   1, 28     339.292  6293.078   1.0704E-01 (2004,082,1900)
   1, 29     339.292  6293.228   8.4639E-02 (2004,017,2200)
   2,  1     339.442  6289.028   5.7533E-02 (2004,028,1900)
   2,  2     339.442  6289.178   1.7020E-01 (2004,016,0300)
   2,  3     339.442  6289.328   2.9002E-01 (2004,320,2200)
   2,  4     339.442  6289.478   1.7774E-01 (2004,049,2100)
   2,  5     339.442  6289.628   1.5247E-01 (2004,353,0500)
   2,  6     339.442  6289.778   3.3027E-01 (2004,100,1600)
   2,  7     339.442  6289.928   3.5226E-01 (2004,096,2300)
   2,  8     339.442  6290.078   3.7243E-01 (2004,335,0000)
   2,  9     339.442  6290.228   4.4987E-01 (2004,032,2300)
   2, 10     339.442  6290.378   3.5694E-01 (2004,129,2300)
   2, 11     339.442  6290.528   3.6364E-01 (2004,297,1700)
   2, 12     339.442  6290.678   3.5595E-01 (2004,291,0400)
   2, 13     339.442  6290.828   3.7713E-01 (2004,048,0600)
   2, 14     339.442  6290.978   4.4411E-01 (2004,350,2200)
   2, 15     339.442  6291.128   4.1212E-01 (2004,292,2300)
   2, 16     339.442  6291.278   3.5778E-01 (2004,019,0200)
   2, 17     339.442  6291.428   3.1620E-01 (2004,088,0400)
   2, 18     339.442  6291.578   3.1345E-01 (2004,018,2000)
   2, 19     339.442  6291.728   2.7983E-01 (2004,254,1700)
   2, 20     339.442  6291.878   2.4498E-01 (2004,026,0300)
   2, 21     339.442  6292.028   2.1920E-01 (2004,096,0500)
   2, 22     339.442  6292.178   2.2090E-01 (2004,078,1700)
   2, 23     339.442  6292.328   1.9673E-01 (2004,034,1800)
   2, 24     339.442  6292.478   1.6399E-01 (2004,109,2100)
   2, 25     339.442  6292.628   1.5498E-01 (2004,026,0500)
   2, 26     339.442  6292.778   1.5312E-01 (2004,081,0600)
   2, 27     339.442  6292.928   1.5006E-01 (2004,103,1700)
   2, 28     339.442  6293.078   1.4270E-01 (2004,314,0500)
   2, 29     339.442  6293.228   1.0779E-01 (2004,118,1600)
   3,  1     339.592  6289.028   5.6668E-02 (2004,080,1900)
   3,  2     339.592  6289.178   7.1355E-02 (2004,342,1900)
   3,  3     339.592  6289.328   7.1006E-02 (2004,043,1600)
   3,  4     339.592  6289.478   7.6094E-02 (2004,341,1700)
   3,  5     339.592  6289.628   8.5395E-02 (2004,340,1700)
   3,  6     339.592  6289.778   1.1557E-01 (2004,230,0000)
   3,  7     339.592  6289.928   1.3358E-01 (2004,045,2300)
   3,  8     339.592  6290.078   3.5110E-01 (2004,095,0000)
   3,  9     339.592  6290.228   4.2779E-01 (2004,338,0000)
   3, 10     339.592  6290.378   4.4681E-01 (2004,338,0400)
   3, 11     339.592  6290.528   4.1116E-01 (2004,079,0100)
   3, 12     339.592  6290.678   4.1783E-01 (2004,349,1900)
   3, 13     339.592  6290.828   3.6238E-01 (2004,274,1800)
   3, 14     339.592  6290.978   4.5920E-01 (2004,015,0200)
   3, 15     339.592  6291.128   4.3749E-01 (2004,350,2100)
   3, 16     339.592  6291.278   3.1183E-01 (2004,312,1700)
   3, 17     339.592  6291.428   3.4320E-01 (2004,236,1600)
   3, 18     339.592  6291.578   3.2939E-01 (2004,313,0000)
   3, 19     339.592  6291.728   2.8725E-01 (2004,174,1600)
   3, 20     339.592  6291.878   2.6822E-01 (2004,012,0700)
   3, 21     339.592  6292.028   2.6214E-01 (2004,012,0600)
   3, 22     339.592  6292.178   2.3130E-01 (2004,231,0500)
   3, 23     339.592  6292.328   2.0105E-01 (2004,231,0500)
   3, 24     339.592  6292.478   1.8545E-01 (2004,012,0300)
   3, 25     339.592  6292.628   1.8197E-01 (2004,026,0600)
   3, 26     339.592  6292.778   1.8129E-01 (2004,283,1700)
   3, 27     339.592  6292.928   1.7022E-01 (2004,083,0600)
   3, 28     339.592  6293.078   1.5659E-01 (2004,081,1900)
   3, 29     339.592  6293.228   1.1207E-01 (2004,083,0600)
   4,  1     339.742  6289.028   8.7239E-02 (2004,304,2200)
   4,  2     339.742  6289.178   6.4870E-02 (2004,013,0500)
   4,  3     339.742  6289.328   1.3593E-01 (2004,339,2100)
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   4,  4     339.742  6289.478   8.0232E-02 (2004,075,1500)
   4,  5     339.742  6289.628   2.0709E-01 (2004,238,1600)
   4,  6     339.742  6289.778   9.7206E-02 (2004,077,0500)
   4,  7     339.742  6289.928   9.7222E-02 (2004,358,1800)
   4,  8     339.742  6290.078   1.4314E-01 (2004,361,1600)
   4,  9     339.742  6290.228   4.0853E-01 (2004,237,1700)
   4, 10     339.742  6290.378   5.3984E-01 (2004,308,2100)
   4, 11     339.742  6290.528   3.9498E-01 (2004,032,2200)
   4, 12     339.742  6290.678   3.4885E-01 (2004,117,2000)
   4, 13     339.742  6290.828   2.7272E-01 (2004,357,2200)
   4, 14     339.742  6290.978   5.3974E-01 (2004,349,1900)
   4, 15     339.742  6291.128   4.1539E-01 (2004,071,0200)
   4, 16     339.742  6291.278   3.5271E-01 (2004,095,2300)
   4, 17     339.742  6291.428   4.2616E-01 (2004,191,1600)
   4, 18     339.742  6291.578   3.7064E-01 (2004,066,1700)
   4, 19     339.742  6291.728   3.4062E-01 (2004,130,0100)
   4, 20     339.742  6291.878   3.2472E-01 (2004,174,1600)
   4, 21     339.742  6292.028   2.9029E-01 (2004,264,2000)
   4, 22     339.742  6292.178   2.4146E-01 (2004,231,0700)
   4, 23     339.742  6292.328   2.2993E-01 (2004,119,1600)
   4, 24     339.742  6292.478   2.1881E-01 (2004,308,2100)
   4, 25     339.742  6292.628   2.0812E-01 (2004,045,0100)
   4, 26     339.742  6292.778   2.1355E-01 (2004,241,1800)
   4, 27     339.742  6292.928   1.8799E-01 (2004,119,0900)
   4, 28     339.742  6293.078   1.5902E-01 (2004,118,1700)
   4, 29     339.742  6293.228   1.3076E-01 (2004,272,0400)
   5,  1     339.892  6289.028   2.5979E-01 (2004,072,0300)
   5,  2     339.892  6289.178   2.0436E-01 (2004,339,2200)
   5,  3     339.892  6289.328   3.1909E-01 (2004,305,1900)
   5,  4     339.892  6289.478   4.1078E-01 (2004,101,2200)
   5,  5     339.892  6289.628   5.1067E-01 (2004,015,1900)
   5,  6     339.892  6289.778   1.6933E-01 (2004,003,1700)
   5,  7     339.892  6289.928   1.0159E-01 (2004,113,1000)
   5,  8     339.892  6290.078   2.5577E-01 (2004,347,2200)
   5,  9     339.892  6290.228   4.4782E-01 (2004,091,1700)
   5, 10     339.892  6290.378   6.4716E-01 (2004,229,2100)
   5, 11     339.892  6290.528   5.2289E-01 (2004,268,1700)
   5, 12     339.892  6290.678   2.8737E-01 (2004,076,1800)
   5, 13     339.892  6290.828   3.1996E-01 (2004,334,2300)
   5, 14     339.892  6290.978   3.6038E-01 (2004,050,2000)
   5, 15     339.892  6291.128   3.4147E-01 (2004,359,2200)
   5, 16     339.892  6291.278   4.7265E-01 (2004,014,2100)
   5, 17     339.892  6291.428   4.8739E-01 (2004,088,0000)
   5, 18     339.892  6291.578   4.2207E-01 (2004,109,2300)
   5, 19     339.892  6291.728   4.0905E-01 (2004,263,1800)
   5, 20     339.892  6291.878   3.5710E-01 (2004,298,1800)
   5, 21     339.892  6292.028   3.0911E-01 (2004,047,2100)
   5, 22     339.892  6292.178   2.8366E-01 (2004,174,1500)
   5, 23     339.892  6292.328   2.7073E-01 (2004,313,0300)
   5, 24     339.892  6292.478   2.6959E-01 (2004,083,2300)
   5, 25     339.892  6292.628   2.4774E-01 (2004,045,0100)
   5, 26     339.892  6292.778   2.2875E-01 (2004,103,1900)
   5, 27     339.892  6292.928   1.9436E-01 (2004,295,0600)
   5, 28     339.892  6293.078   1.9075E-01 (2004,295,0600)
   5, 29     339.892  6293.228   1.4500E-01 (2004,142,2000)
   6,  1     340.042  6289.028   3.5142E-01 (2004,049,2300)
   6,  2     340.042  6289.178   4.0674E-01 (2004,048,2000)
   6,  3     340.042  6289.328   4.8952E-01 (2004,326,2300)
   6,  4     340.042  6289.478   5.8992E-01 (2004,321,2100)
   6,  5     340.042  6289.628   5.8982E-01 (2004,013,0400)
   6,  6     340.042  6289.778   2.1939E-01 (2004,001,0100)
   6,  7     340.042  6289.928   1.1031E-01 (2004,184,1900)
   6,  8     340.042  6290.078   1.4388E-01 (2004,254,1800)
   6,  9     340.042  6290.228   3.5487E-01 (2004,343,2100)
   6, 10     340.042  6290.378   7.3239E-01 (2004,358,2300)
   6, 11     340.042  6290.528   4.7054E-01 (2004,035,1800)
   6, 12     340.042  6290.678   2.2005E-01 (2004,274,1800)
   6, 13     340.042  6290.828   4.3873E-01 (2004,317,1700)
   6, 14     340.042  6290.978   5.1173E-01 (2004,313,2200)
   6, 15     340.042  6291.128   4.6862E-01 (2004,017,1800)
   6, 16     340.042  6291.278   6.3049E-01 (2004,088,0400)
   6, 17     340.042  6291.428   5.8271E-01 (2004,184,1800)
   6, 18     340.042  6291.578   5.0643E-01 (2004,264,2000)
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   6, 19     340.042  6291.728   4.3771E-01 (2004,358,0100)
   6, 20     340.042  6291.878   4.1940E-01 (2004,308,2200)
   6, 21     340.042  6292.028   3.7085E-01 (2004,061,2300)
   6, 22     340.042  6292.178   3.5791E-01 (2004,026,0800)
   6, 23     340.042  6292.328   3.0998E-01 (2004,061,2100)
   6, 24     340.042  6292.478   2.9902E-01 (2004,118,1100)
   6, 25     340.042  6292.628   2.6872E-01 (2004,184,1600)
   6, 26     340.042  6292.778   2.4771E-01 (2004,026,1900)
   6, 27     340.042  6292.928   2.2105E-01 (2004,328,1800)
   6, 28     340.042  6293.078   1.8282E-01 (2004,295,0600)
   6, 29     340.042  6293.228   1.3228E-01 (2004,119,0200)
   7,  1     340.192  6289.028   4.4609E-01 (2004,340,2200)
   7,  2     340.192  6289.178   5.1874E-01 (2004,112,2300)
   7,  3     340.192  6289.328   5.4333E-01 (2004,281,1800)
   7,  4     340.192  6289.478   6.4489E-01 (2004,357,0100)
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15, 28	341.392	6293.078	6.8147E-02	(2004,066,2300)
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16, 7	341.542	6289.928	1.6061E+00	(2004,145,1700)
16, 8	341.542	6290.078	2.0551E+00	(2004,145,0100)
16, 9	341.542	6290.228	2.7261E+00	(2004,319,2000)
16, 10	341.542	6290.378	3.5012E+00	(2004,352,0300)
16, 11	341.542	6290.528	6.0049E+00	(2004,159,2300)
16, 12	341.542	6290.678	7.3236E+00	(2004,174,1700)
16, 13	341.542	6290.828	5.0605E+00	(2004,030,2000)
16, 14	341.542	6290.978	4.5269E+00	(2004,246,2100)
16, 15	341.542	6291.128	4.0531E+00	(2004,246,0400)
16, 16	341.542	6291.278	2.9245E+00	(2004,333,1800)
16, 17	341.542	6291.428	2.0166E+00	(2004,273,1900)
16, 18	341.542	6291.578	1.0142E+00	(2004,261,1700)
16, 19	341.542	6291.728	3.4818E-01	(2004,337,0000)
16, 20	341.542	6291.878	1.8678E-01	(2004,163,0300)

16, 21	341.542	6292.028	1.2498E-01	(2004,201,2000)
16, 22	341.542	6292.178	1.0587E-01	(2004,057,1500)
16, 23	341.542	6292.328	8.6565E-02	(2004,334,0500)
16, 24	341.542	6292.478	7.9645E-02	(2004,364,1500)
16, 25	341.542	6292.628	6.7851E-02	(2004,231,1900)
16, 26	341.542	6292.778	6.1959E-02	(2004,104,0800)
16, 27	341.542	6292.928	1.0253E-01	(2004,308,2100)
16, 28	341.542	6293.078	1.3652E-01	(2004,276,0000)
16, 29	341.542	6293.228	1.1924E-01	(2004,045,0300)
17, 1	341.692	6289.028	2.8290E-01	(2004,306,1700)
17, 2	341.692	6289.178	1.6386E-01	(2004,213,2200)
17, 3	341.692	6289.328	2.1114E-01	(2004,036,0200)
17, 4	341.692	6289.478	4.2225E-01	(2004,206,0600)
17, 5	341.692	6289.628	6.4625E-01	(2004,158,2300)
17, 6	341.692	6289.778	9.9978E-01	(2004,239,2000)
17, 7	341.692	6289.928	1.1728E+00	(2004,037,0100)
17, 8	341.692	6290.078	1.5948E+00	(2004,037,0200)
17, 9	341.692	6290.228	1.9561E+00	(2004,184,2100)
17, 10	341.692	6290.378	2.9531E+00	(2004,144,0100)
17, 11	341.692	6290.528	4.6526E+00	(2004,067,2200)
17, 12	341.692	6290.678	5.0003E+00	(2004,127,0000)
17, 13	341.692	6290.828	3.2941E+00	(2004,296,2100)
17, 14	341.692	6290.978	2.8966E+00	(2004,281,0400)
17, 15	341.692	6291.128	2.6518E+00	(2004,295,2300)
17, 16	341.692	6291.278	2.3479E+00	(2004,246,2100)
17, 17	341.692	6291.428	1.2909E+00	(2004,008,1900)
17, 18	341.692	6291.578	7.5546E-01	(2004,334,0200)
17, 19	341.692	6291.728	7.7463E-01	(2004,267,2200)
17, 20	341.692	6291.878	3.5971E-01	(2004,308,1900)
17, 21	341.692	6292.028	1.4600E-01	(2004,329,0600)
17, 22	341.692	6292.178	1.0785E-01	(2004,337,0700)
17, 23	341.692	6292.328	1.0037E-01	(2004,201,1800)
17, 24	341.692	6292.478	8.6442E-02	(2004,163,1200)
17, 25	341.692	6292.628	1.3129E-01	(2004,057,1400)
17, 26	341.692	6292.778	1.7081E-01	(2004,131,0200)
17, 27	341.692	6292.928	1.7975E-01	(2004,209,1000)
17, 28	341.692	6293.078	1.5818E-01	(2004,121,0300)
17, 29	341.692	6293.228	1.2236E-01	(2004,060,1700)
18, 1	341.842	6289.028	6.7899E-02	(2004,323,2100)
18, 2	341.842	6289.178	6.0433E-02	(2004,185,1400)
18, 3	341.842	6289.328	3.3352E-01	(2004,037,0000)
18, 4	341.842	6289.478	4.5776E-01	(2004,059,2300)
18, 5	341.842	6289.628	6.7536E-01	(2004,252,1900)
18, 6	341.842	6289.778	7.8790E-01	(2004,270,2300)
18, 7	341.842	6289.928	1.0207E+00	(2004,102,1900)
18, 8	341.842	6290.078	1.3102E+00	(2004,146,0600)
18, 9	341.842	6290.228	1.5092E+00	(2004,243,2100)
18, 10	341.842	6290.378	2.1784E+00	(2004,065,0500)
18, 11	341.842	6290.528	3.4917E+00	(2004,067,2300)
18, 12	341.842	6290.678	3.4641E+00	(2004,028,0200)
18, 13	341.842	6290.828	2.4888E+00	(2004,131,2300)
18, 14	341.842	6290.978	1.9680E+00	(2004,061,0400)
18, 15	341.842	6291.128	1.7982E+00	(2004,084,0200)
18, 16	341.842	6291.278	1.6249E+00	(2004,063,0600)
18, 17	341.842	6291.428	1.4822E+00	(2004,130,0500)
18, 18	341.842	6291.578	1.0166E+00	(2004,241,2300)
18, 19	341.842	6291.728	7.0678E-01	(2004,208,1700)
18, 20	341.842	6291.878	6.4222E-01	(2004,276,1800)
18, 21	341.842	6292.028	3.2958E-01	(2004,084,0100)
18, 22	341.842	6292.178	2.3972E-01	(2004,296,2000)
18, 23	341.842	6292.328	9.6176E-02	(2004,211,2200)
18, 24	341.842	6292.478	8.1142E-02	(2004,299,0900)
18, 25	341.842	6292.628	1.6605E-01	(2004,190,1600)
18, 26	341.842	6292.778	1.8460E-01	(2004,057,1800)
18, 27	341.842	6292.928	1.7995E-01	(2004,324,1900)
18, 28	341.842	6293.078	1.5236E-01	(2004,131,0300)
18, 29	341.842	6293.228	1.2294E-01	(2004,131,0500)
19, 1	341.992	6289.028	5.2982E-02	(2004,252,1400)
19, 2	341.992	6289.178	1.7925E-01	(2004,037,0100)
19, 3	341.992	6289.328	2.8296E-01	(2004,252,1900)
19, 4	341.992	6289.478	3.3927E-01	(2004,021,0000)
19, 5	341.992	6289.628	5.0149E-01	(2004,206,0300)
19, 6	341.992	6289.778	6.3202E-01	(2004,269,2300)

19, 7	341.992	6289.928	8.7695E-01	(2004,159,2200)
19, 8	341.992	6290.078	9.3135E-01	(2004,014,0400)
19, 9	341.992	6290.228	1.1585E+00	(2004,243,2100)
19, 10	341.992	6290.378	1.3323E+00	(2004,165,0100)
19, 11	341.992	6290.528	2.4020E+00	(2004,253,0500)
19, 12	341.992	6290.678	2.4051E+00	(2004,111,0400)
19, 13	341.992	6290.828	1.8333E+00	(2004,094,0500)
19, 14	341.992	6290.978	1.5314E+00	(2004,195,2100)
19, 15	341.992	6291.128	1.3990E+00	(2004,202,2100)
19, 16	341.992	6291.278	1.1167E+00	(2004,295,2300)
19, 17	341.992	6291.428	9.9484E-01	(2004,248,1800)
19, 18	341.992	6291.578	6.4919E-01	(2004,333,1700)
19, 19	341.992	6291.728	6.1061E-01	(2004,006,0400)
19, 20	341.992	6291.878	4.9234E-01	(2004,320,2300)
19, 21	341.992	6292.028	3.5062E-01	(2004,248,1700)
19, 22	341.992	6292.178	1.2691E-01	(2004,184,1400)
19, 23	341.992	6292.328	8.8256E-02	(2004,276,0500)
19, 24	341.992	6292.478	7.8693E-02	(2004,163,1600)
19, 25	341.992	6292.628	1.2287E-01	(2004,131,0600)
19, 26	341.992	6292.778	1.5751E-01	(2004,163,0000)
19, 27	341.992	6292.928	1.6655E-01	(2004,201,2000)
19, 28	341.992	6293.078	1.5784E-01	(2004,324,2100)
19, 29	341.992	6293.228	1.0992E-01	(2004,201,1300)
20, 1	342.142	6289.028	5.3259E-02	(2004,080,0100)
20, 2	342.142	6289.178	7.7780E-02	(2004,185,1700)
20, 3	342.142	6289.328	8.6908E-02	(2004,206,0100)
20, 4	342.142	6289.478	2.2809E-01	(2004,206,0500)
20, 5	342.142	6289.628	2.4452E-01	(2004,362,0300)
20, 6	342.142	6289.778	5.3963E-01	(2004,310,1800)
20, 7	342.142	6289.928	7.3667E-01	(2004,166,1900)
20, 8	342.142	6290.078	6.3330E-01	(2004,266,2000)
20, 9	342.142	6290.228	4.1922E-01	(2004,155,0200)
20, 10	342.142	6290.378	4.5645E-01	(2004,281,0100)
20, 11	342.142	6290.528	9.0237E-01	(2004,068,0400)
20, 12	342.142	6290.678	1.7221E+00	(2004,112,0700)
20, 13	342.142	6290.828	1.4763E+00	(2004,236,0300)
20, 14	342.142	6290.978	1.1074E+00	(2004,260,0400)
20, 15	342.142	6291.128	8.9044E-01	(2004,174,0200)
20, 16	342.142	6291.278	2.6706E-01	(2004,283,0600)
20, 17	342.142	6291.428	3.1778E-01	(2004,366,0200)
20, 18	342.142	6291.578	1.3867E-01	(2004,354,2300)
20, 19	342.142	6291.728	2.9452E-01	(2004,147,1800)
20, 20	342.142	6291.878	4.3283E-01	(2004,067,0100)
20, 21	342.142	6292.028	3.1187E-01	(2004,018,0200)
20, 22	342.142	6292.178	1.2072E-01	(2004,232,0700)
20, 23	342.142	6292.328	7.4157E-02	(2004,228,1700)
20, 24	342.142	6292.478	7.0188E-02	(2004,143,1000)
20, 25	342.142	6292.628	6.8172E-02	(2004,246,0300)
20, 26	342.142	6292.778	1.3650E-01	(2004,228,1600)
20, 27	342.142	6292.928	1.3413E-01	(2004,104,0200)
20, 28	342.142	6293.078	1.1347E-01	(2004,131,0600)
20, 29	342.142	6293.228	1.0510E-01	(2004,333,2300)
21, 1	342.292	6289.028	5.9856E-02	(2004,145,2300)
21, 2	342.292	6289.178	6.5183E-02	(2004,239,0800)
21, 3	342.292	6289.328	7.0865E-02	(2004,243,1400)
21, 4	342.292	6289.478	1.1950E-01	(2004,014,0200)
21, 5	342.292	6289.628	3.9080E-01	(2004,146,0400)
21, 6	342.292	6289.778	5.4958E-01	(2004,207,0200)
21, 7	342.292	6289.928	5.2875E-01	(2004,182,0500)
21, 8	342.292	6290.078	5.1101E-01	(2004,226,0300)
21, 9	342.292	6290.228	1.5021E-01	(2004,114,0900)
21, 10	342.292	6290.378	1.4156E-01	(2004,161,0800)
21, 11	342.292	6290.528	4.0868E-01	(2004,086,0200)
21, 12	342.292	6290.678	1.3390E+00	(2004,250,0300)
21, 13	342.292	6290.828	1.1679E+00	(2004,138,2100)
21, 14	342.292	6290.978	8.4338E-01	(2004,144,0400)
21, 15	342.292	6291.128	2.7014E-01	(2004,203,0100)
21, 16	342.292	6291.278	1.3121E-01	(2004,008,1800)
21, 17	342.292	6291.428	1.2585E-01	(2004,289,1500)
21, 18	342.292	6291.578	1.0532E-01	(2004,362,1800)
21, 19	342.292	6291.728	1.0513E-01	(2004,210,1500)
21, 20	342.292	6291.878	1.2256E-01	(2004,058,0100)
21, 21	342.292	6292.028	1.4023E-01	(2004,200,1800)

21, 22	342.292	6292.178	9.3031E-02	(2004,365,0600)
21, 23	342.292	6292.328	6.8952E-02	(2004,200,0600)
21, 24	342.292	6292.478	6.4313E-02	(2004,200,0600)
21, 25	342.292	6292.628	6.1498E-02	(2004,200,2100)
21, 26	342.292	6292.778	1.4123E-01	(2004,248,1700)
21, 27	342.292	6292.928	6.7683E-02	(2004,231,2200)
21, 28	342.292	6293.078	7.3287E-02	(2004,228,1700)
21, 29	342.292	6293.228	1.0162E-01	(2004,121,0300)
22, 1	342.442	6289.028	5.9174E-02	(2004,324,0000)
22, 2	342.442	6289.178	6.6846E-02	(2004,089,0300)
22, 3	342.442	6289.328	7.0324E-02	(2004,175,1600)
22, 4	342.442	6289.478	1.0998E-01	(2004,310,1700)
22, 5	342.442	6289.628	2.7922E-01	(2004,184,2100)
22, 6	342.442	6289.778	4.4574E-01	(2004,166,1800)
22, 7	342.442	6289.928	2.3323E-01	(2004,167,0600)
22, 8	342.442	6290.078	1.2667E-01	(2004,171,0700)
22, 9	342.442	6290.228	1.1972E-01	(2004,234,2100)
22, 10	342.442	6290.378	1.2004E-01	(2004,007,1800)
22, 11	342.442	6290.528	1.4615E-01	(2004,238,0700)
22, 12	342.442	6290.678	2.6035E-01	(2004,242,0800)
22, 13	342.442	6290.828	9.5306E-01	(2004,110,0000)
22, 14	342.442	6290.978	7.8147E-01	(2004,102,0100)
22, 15	342.442	6291.128	3.6930E-01	(2004,090,1800)
22, 16	342.442	6291.278	1.3996E-01	(2004,134,0200)
22, 17	342.442	6291.428	1.0419E-01	(2004,087,0200)
22, 18	342.442	6291.578	9.3263E-02	(2004,093,0600)
22, 19	342.442	6291.728	8.5260E-02	(2004,174,1000)
22, 20	342.442	6291.878	7.6206E-02	(2004,142,1000)
22, 21	342.442	6292.028	7.5735E-02	(2004,043,0200)
22, 22	342.442	6292.178	7.1202E-02	(2004,047,0400)
22, 23	342.442	6292.328	6.2394E-02	(2004,054,0600)
22, 24	342.442	6292.478	5.6000E-02	(2004,151,1600)
22, 25	342.442	6292.628	5.5889E-02	(2004,257,1500)
22, 26	342.442	6292.778	1.1201E-01	(2004,135,1600)
22, 27	342.442	6292.928	5.5760E-02	(2004,352,0700)
22, 28	342.442	6293.078	8.9202E-02	(2004,034,0600)
22, 29	342.442	6293.228	7.2955E-02	(2004,202,0700)
23, 1	342.592	6289.028	6.1062E-02	(2004,146,0600)
23, 2	342.592	6289.178	7.1898E-02	(2004,277,1900)
23, 3	342.592	6289.328	7.2280E-02	(2004,226,2000)
23, 4	342.592	6289.478	7.0718E-02	(2004,042,0600)
23, 5	342.592	6289.628	1.3196E-01	(2004,281,2300)
23, 6	342.592	6289.778	1.4642E-01	(2004,166,0600)
23, 7	342.592	6289.928	1.0751E-01	(2004,177,1600)
23, 8	342.592	6290.078	1.0045E-01	(2004,267,0500)
23, 9	342.592	6290.228	1.1427E-01	(2004,183,0800)
23, 10	342.592	6290.378	1.0958E-01	(2004,237,0100)
23, 11	342.592	6290.528	1.1424E-01	(2004,284,0600)
23, 12	342.592	6290.678	2.2081E-01	(2004,225,0100)
23, 13	342.592	6290.828	8.1261E-01	(2004,263,0500)
23, 14	342.592	6290.978	7.0926E-01	(2004,179,1700)
23, 15	342.592	6291.128	1.7051E-01	(2004,100,0800)
23, 16	342.592	6291.278	1.1802E-01	(2004,248,1200)
23, 17	342.592	6291.428	1.0092E-01	(2004,257,0000)
23, 18	342.592	6291.578	9.2569E-02	(2004,028,0700)
23, 19	342.592	6291.728	8.6394E-02	(2004,093,0500)
23, 20	342.592	6291.878	7.9161E-02	(2004,212,0900)
23, 21	342.592	6292.028	7.9577E-02	(2004,131,2000)
23, 22	342.592	6292.178	7.0839E-02	(2004,148,1600)
23, 23	342.592	6292.328	6.9243E-02	(2004,133,1000)
23, 24	342.592	6292.478	6.1110E-02	(2004,060,1600)
23, 25	342.592	6292.628	5.5455E-02	(2004,151,1600)
23, 26	342.592	6292.778	6.2762E-02	(2004,350,0100)
23, 27	342.592	6292.928	5.2955E-02	(2004,256,1800)
23, 28	342.592	6293.078	5.6304E-02	(2004,337,0000)
23, 29	342.592	6293.228	6.2929E-02	(2004,104,0400)
24, 1	342.742	6289.028	6.6119E-02	(2004,108,0000)
24, 2	342.742	6289.178	7.7723E-02	(2004,307,1800)
24, 3	342.742	6289.328	7.3049E-02	(2004,206,2200)
24, 4	342.742	6289.478	8.2210E-02	(2004,166,0200)
24, 5	342.742	6289.628	1.0293E-01	(2004,161,2200)
24, 6	342.742	6289.778	8.0931E-02	(2004,324,0600)
24, 7	342.742	6289.928	8.6327E-02	(2004,266,1700)

24, 8	342.742	6290.078	1.0399E-01	(2004,193,2200)
24, 9	342.742	6290.228	1.1420E-01	(2004,122,1900)
24, 10	342.742	6290.378	1.2435E-01	(2004,279,0000)
24, 11	342.742	6290.528	1.0026E-01	(2004,251,0600)
24, 12	342.742	6290.678	3.3859E-01	(2004,208,0600)
24, 13	342.742	6290.828	6.0821E-01	(2004,221,1900)
24, 14	342.742	6290.978	5.8221E-01	(2004,008,0200)
24, 15	342.742	6291.128	2.0806E-01	(2004,244,2100)
24, 16	342.742	6291.278	1.0659E-01	(2004,110,0800)
24, 17	342.742	6291.428	9.2722E-02	(2004,212,0600)
24, 18	342.742	6291.578	8.7915E-02	(2004,352,0400)
24, 19	342.742	6291.728	9.2591E-02	(2004,290,0100)
24, 20	342.742	6291.878	8.3605E-02	(2004,061,0400)
24, 21	342.742	6292.028	7.4750E-02	(2004,289,0300)
24, 22	342.742	6292.178	7.4840E-02	(2004,289,1900)
24, 23	342.742	6292.328	7.2422E-02	(2004,156,1700)
24, 24	342.742	6292.478	6.8926E-02	(2004,061,0000)
24, 25	342.742	6292.628	6.1323E-02	(2004,133,1000)
24, 26	342.742	6292.778	5.7009E-02	(2004,053,0200)
24, 27	342.742	6292.928	5.3151E-02	(2004,298,0200)
24, 28	342.742	6293.078	9.8362E-02	(2004,099,2200)
24, 29	342.742	6293.228	8.7908E-02	(2004,355,0500)
25, 1	342.892	6289.028	6.3948E-02	(2004,146,1800)
25, 2	342.892	6289.178	7.2748E-02	(2004,010,0500)
25, 3	342.892	6289.328	7.2982E-02	(2004,051,1800)
25, 4	342.892	6289.478	7.9111E-02	(2004,166,0800)
25, 5	342.892	6289.628	7.9044E-02	(2004,186,0100)
25, 6	342.892	6289.778	8.6404E-02	(2004,155,0000)
25, 7	342.892	6289.928	1.0001E-01	(2004,139,0700)
25, 8	342.892	6290.078	1.0472E-01	(2004,317,2100)
25, 9	342.892	6290.228	1.1143E-01	(2004,158,0200)
25, 10	342.892	6290.378	1.2275E-01	(2004,183,1800)
25, 11	342.892	6290.528	1.1892E-01	(2004,136,2300)
25, 12	342.892	6290.678	1.7062E-01	(2004,116,1900)
25, 13	342.892	6290.828	2.2496E-01	(2004,110,0600)
25, 14	342.892	6290.978	2.7912E-01	(2004,141,0500)
25, 15	342.892	6291.128	1.1791E-01	(2004,236,0000)
25, 16	342.892	6291.278	9.0767E-02	(2004,164,1000)
25, 17	342.892	6291.428	9.3881E-02	(2004,204,2300)
25, 18	342.892	6291.578	9.3960E-02	(2004,262,0400)
25, 19	342.892	6291.728	8.5810E-02	(2004,084,0600)
25, 20	342.892	6291.878	8.8998E-02	(2004,273,1800)
25, 21	342.892	6292.028	7.8415E-02	(2004,288,2000)
25, 22	342.892	6292.178	7.6465E-02	(2004,268,0100)
25, 23	342.892	6292.328	7.5053E-02	(2004,118,0700)
25, 24	342.892	6292.478	7.5023E-02	(2004,256,1900)
25, 25	342.892	6292.628	6.9974E-02	(2004,163,2100)
25, 26	342.892	6292.778	6.3745E-02	(2004,191,0200)
25, 27	342.892	6292.928	6.0116E-02	(2004,256,1800)
25, 28	342.892	6293.078	1.1143E-01	(2004,337,0200)
25, 29	342.892	6293.228	7.1700E-02	(2004,232,0500)
26, 1	343.042	6289.028	5.8629E-02	(2004,161,1600)
26, 2	343.042	6289.178	6.8673E-02	(2004,146,0600)
26, 3	343.042	6289.328	7.7537E-02	(2004,159,2200)
26, 4	343.042	6289.478	9.0166E-02	(2004,253,0000)
26, 5	343.042	6289.628	8.6975E-02	(2004,266,2000)
26, 6	343.042	6289.778	9.4730E-02	(2004,234,1900)
26, 7	343.042	6289.928	9.7226E-02	(2004,122,0600)
26, 8	343.042	6290.078	1.0149E-01	(2004,193,2300)
26, 9	343.042	6290.228	1.1302E-01	(2004,059,0500)
26, 10	343.042	6290.378	1.2045E-01	(2004,161,0500)
26, 11	343.042	6290.528	1.0610E-01	(2004,152,0600)
26, 12	343.042	6290.678	9.9063E-02	(2004,250,0200)
26, 13	343.042	6290.828	1.0499E-01	(2004,185,0400)
26, 14	343.042	6290.978	1.0366E-01	(2004,261,2200)
26, 15	343.042	6291.128	1.0274E-01	(2004,277,0600)
26, 16	343.042	6291.278	9.6222E-02	(2004,140,2200)
26, 17	343.042	6291.428	9.6159E-02	(2004,064,0200)
26, 18	343.042	6291.578	9.1641E-02	(2004,169,1800)
26, 19	343.042	6291.728	8.6096E-02	(2004,133,2200)
26, 20	343.042	6291.878	8.0768E-02	(2004,133,2100)
26, 21	343.042	6292.028	7.9389E-02	(2004,288,2000)
26, 22	343.042	6292.178	7.2271E-02	(2004,093,0500)

26, 23	343.042	6292.328	7.0839E-02	(2004,043,0300)
26, 24	343.042	6292.478	6.9080E-02	(2004,204,0700)
26, 25	343.042	6292.628	6.9969E-02	(2004,058,0200)
26, 26	343.042	6292.778	6.5865E-02	(2004,365,2300)
26, 27	343.042	6292.928	6.4339E-02	(2004,191,0300)
26, 28	343.042	6293.078	5.8909E-02	(2004,271,2200)
26, 29	343.042	6293.228	4.7507E-02	(2004,329,0400)
27, 1	343.192	6289.028	5.6144E-02	(2004,178,0100)
27, 2	343.192	6289.178	7.0162E-02	(2004,089,0400)
27, 3	343.192	6289.328	8.0965E-02	(2004,186,0000)
27, 4	343.192	6289.478	8.3353E-02	(2004,182,2200)
27, 5	343.192	6289.628	9.1116E-02	(2004,286,0000)
27, 6	343.192	6289.778	9.2494E-02	(2004,065,0400)
27, 7	343.192	6289.928	9.5029E-02	(2004,069,0300)
27, 8	343.192	6290.078	1.0171E-01	(2004,139,0500)
27, 9	343.192	6290.228	1.1080E-01	(2004,028,2300)
27, 10	343.192	6290.378	1.1420E-01	(2004,237,0400)
27, 11	343.192	6290.528	1.0488E-01	(2004,205,0600)
27, 12	343.192	6290.678	1.0537E-01	(2004,023,0500)
27, 13	343.192	6290.828	1.0486E-01	(2004,209,2200)
27, 14	343.192	6290.978	1.1049E-01	(2004,009,0100)
27, 15	343.192	6291.128	1.0516E-01	(2004,244,2100)
27, 16	343.192	6291.278	1.0112E-01	(2004,008,0300)
27, 17	343.192	6291.428	9.3794E-02	(2004,147,0600)
27, 18	343.192	6291.578	9.0807E-02	(2004,148,0000)
27, 19	343.192	6291.728	8.5043E-02	(2004,203,0600)
27, 20	343.192	6291.878	7.8565E-02	(2004,289,2200)
27, 21	343.192	6292.028	7.7023E-02	(2004,296,0000)
27, 22	343.192	6292.178	7.2623E-02	(2004,164,0000)
27, 23	343.192	6292.328	6.5880E-02	(2004,018,0200)
27, 24	343.192	6292.478	6.4518E-02	(2004,151,1700)
27, 25	343.192	6292.628	6.3535E-02	(2004,043,0200)
27, 26	343.192	6292.778	6.0560E-02	(2004,118,0700)
27, 27	343.192	6292.928	6.1484E-02	(2004,087,0400)
27, 28	343.192	6293.078	5.8257E-02	(2004,118,0600)
27, 29	343.192	6293.228	4.7795E-02	(2004,140,1600)
28, 1	343.342	6289.028	5.4793E-02	(2004,239,2200)
28, 2	343.342	6289.178	7.0522E-02	(2004,114,1700)
28, 3	343.342	6289.328	7.7240E-02	(2004,060,0100)
28, 4	343.342	6289.478	7.9237E-02	(2004,022,0300)
28, 5	343.342	6289.628	8.1851E-02	(2004,114,2000)
28, 6	343.342	6289.778	8.8068E-02	(2004,166,2300)
28, 7	343.342	6289.928	8.8357E-02	(2004,067,2300)
28, 8	343.342	6290.078	9.6546E-02	(2004,160,2200)
28, 9	343.342	6290.228	1.0269E-01	(2004,265,0500)
28, 10	343.342	6290.378	1.0565E-01	(2004,158,0400)
28, 11	343.342	6290.528	9.9028E-02	(2004,031,2200)
28, 12	343.342	6290.678	1.0092E-01	(2004,169,2100)
28, 13	343.342	6290.828	9.7277E-02	(2004,235,2100)
28, 14	343.342	6290.978	9.7166E-02	(2004,240,2300)
28, 15	343.342	6291.128	9.9945E-02	(2004,007,2200)
28, 16	343.342	6291.278	9.9507E-02	(2004,141,0000)
28, 17	343.342	6291.428	9.4005E-02	(2004,210,2000)
28, 18	343.342	6291.578	8.8077E-02	(2004,091,0500)
28, 19	343.342	6291.728	8.3022E-02	(2004,195,0600)
28, 20	343.342	6291.878	7.9561E-02	(2004,262,0500)
28, 21	343.342	6292.028	6.9541E-02	(2004,197,0100)
28, 22	343.342	6292.178	7.0308E-02	(2004,018,0400)
28, 23	343.342	6292.328	6.4820E-02	(2004,061,0100)
28, 24	343.342	6292.478	5.9384E-02	(2004,204,0300)
28, 25	343.342	6292.628	5.6606E-02	(2004,211,2300)
28, 26	343.342	6292.778	5.5124E-02	(2004,203,2300)
28, 27	343.342	6292.928	4.8845E-02	(2004,006,0300)
28, 28	343.342	6293.078	4.8997E-02	(2004,232,0400)
28, 29	343.342	6293.228	4.4237E-02	(2004,296,2000)
29, 1	343.492	6289.028	4.5538E-02	(2004,182,1900)
29, 2	343.492	6289.178	6.0686E-02	(2004,278,2300)
29, 3	343.492	6289.328	6.0669E-02	(2004,266,0300)
29, 4	343.492	6289.478	6.4802E-02	(2004,286,0000)
29, 5	343.492	6289.628	6.8892E-02	(2004,180,1700)
29, 6	343.492	6289.778	7.1015E-02	(2004,154,0000)
29, 7	343.492	6289.928	7.2525E-02	(2004,333,0400)
29, 8	343.492	6290.078	7.9550E-02	(2004,165,0200)

```
 29, 9      343.492  6290.228   8.3918E-02 (2004,128,0100)
 29, 10     343.492  6290.378   8.5863E-02 (2004,238,0400)
 29, 11     343.492  6290.528   8.1059E-02 (2004,198,0600)
 29, 12     343.492  6290.678   8.1580E-02 (2004,225,0300)
 29, 13     343.492  6290.828   8.0275E-02 (2004,199,0000)
 29, 14     343.492  6290.978   8.1560E-02 (2004,092,1900)
 29, 15     343.492  6291.128   8.3937E-02 (2004,151,2300)
 29, 16     343.492  6291.278   8.4045E-02 (2004,194,1900)
 29, 17     343.492  6291.428   7.9098E-02 (2004,030,2200)
 29, 18     343.492  6291.578   7.4660E-02 (2004,263,0600)
 29, 19     343.492  6291.728   7.0343E-02 (2004,135,2200)
 29, 20     343.492  6291.878   6.6621E-02 (2004,203,0600)
 29, 21     343.492  6292.028   6.1588E-02 (2004,241,0500)
 29, 22     343.492  6292.178   5.5920E-02 (2004,135,2000)
 29, 23     343.492  6292.328   5.4635E-02 (2004,288,2100)
 29, 24     343.492  6292.478   4.8211E-02 (2004,093,0400)
 29, 25     343.492  6292.628   4.3844E-02 (2004,268,0300)
 29, 26     343.492  6292.778   4.5085E-02 (2004,163,2100)
 29, 27     343.492  6292.928   3.8594E-02 (2004,054,0200)
 29, 28     343.492  6293.078   3.4822E-02 (2004,208,1800)
 29, 29     343.492  6293.228   3.0030E-02 (2004,151,1500)
```

88 - RANK HIGHEST VALUES FOR PERIOD

Multiply all values by 10 ** -2

```
 29 I    8    11    11    13    14    13    14    14    14    15    16    14     1
    I    +     +     +     +     +     +     +     +     +     +     +     +
 28 I   11    14    16    16    19    18    18    20    17    19    21    19     1
    I    +     +     +     +     +     +     +     +     +     +     +     +
 27 I   12    15    17    19    19    22    21    22    21    22    22    23     2
    I    +     +     +     +     +     +     +     +     +     +     +     +
 26 I   12    15    18    21    23    25    26    25    26    22    24    22     2
    I    +     +     +     +     +     +     +     +     +     +     +     +
 25 I   11    15    18    21    25    27    28    31    32    27    29    28     2
    I    +     +     +     +     +     +     +     +     +     +     +     +
 24 I   14    16    19    22    27    30    33    36    36    34    35    37     3
    I    +     +     +     +     +     +     +     +     +     +     +     +
 23 I   16    20    20    23    27    31    36    40    46    46    41    45     3
    I    +     +     +     +     +     +     +     +     +     +     +     +
 22 I   17    22    23    24    28    36    37    48    50    52    52    52     4
    I    +     +     +     +     +     +     +     +     +     +     +     +
 21 I   17    22    26    29    31    37    42    50    60    65    67    62     5
    I    +     +     +     +     +     +     +     +     +     +     +     +
 20 I   19    24    27    32    36    42    48    51    63    72    78    86     8
    I    +     +     +     +     +     +     +     +     +     +     +     +
 19 I   25    28    29    34    41    44    52    58    54    62    71    80     8
    I    +     +     +     +     +     +     +     +     +     +     +     +
 18 I   28    31    33    37    42    51    57    66    79    89    86    99     7
    I    +     +     +     +     +     +     +     +     +     +     +     +
 17 I   32    32    34    43    49    58    69    85    85   116   135   141    21
    I    +     +     +     +     +     +     +     +     +     +     +     +
 16 I   34    36    31    35    47    63    75    98   131   147   195   244    49
    I    +     +     +     +     +     +     +     +     +     +     +     +
 15 I   36    41    44    42    34    47    84   104   134   173   230   380   116
    I    +     +     +     +     +     +     +     +     +     +     +     +
 14 I   41    44    46    54    36    51    97    89   146   238   327   417    74
    I    +     +     +     +     +     +     +     +     +     +     +     +
 13 I   35    38    36    27    32    44    41    40   116   224   395   496    83
    I    +     +     +     +     +     +     +     +     +     +     +     +
 12 I   29    36    42    35    29    22    29    72   155   244   404   645    48
    I    +     +     +     +     +     +     +     +     +     +     +     +
 11 I   31    36    41    39    52    47    25   105   150   250   420   169   168
    I    +     +     +     +     +     +     +     +     +     +     +     +
 10 I   29    36    45    54    65    73    22   110    64    41    56   120    72
    I    +     +     +     +     +     +     +     +     +     +     +     +
  9 I   32    45    43    41    45    35    16    42    23    69    92   245    36
    I    +     +     +     +     +     +     +     +     +     +     +     +
  8 I   31    37    35    14    26    14    15    17    23   101   100   218    28
    I    +     +     +     +     +     +     +     +     +     +     +     +
  7 I   28    35    13    10    10    11    12    15    36   117   107   180    21
    I    +     +     +     +     +     +     +     +     +     +     +     +
  6 I   29    33    12    10    17    22    21    35   101   129   116   131    15
```



```
    I    +     +     +     +     +     +     +     +     +     +     +     +
  5 I   27    15     9    21    51    59    64    72    90   108   121   117    12
    I    +     +     +     +     +     +     +     +     +     +     +     +
  4 I   27    18     8     8    41    59    64    70    87    96    99   103    10
    I    +     +     +     +     +     +     +     +     +     +     +     +
  3 I   28    29     7    14    32    49    54    66    75    83    81    86     8
    I    +     +     +     +     +     +     +     +     +     +     +     +
  2 I   26    17     7     6    20    41    52    58    60    70    66    72     6
    I    +     +     +     +     +     +     +     +     +     +     +     +
  1 I    8     6     6     9    26    35    45    45    53    53    56    55     5
    I    +     +     +     +     +     +     +     +     +     +     +     +
    -------------------------------------------------------------------------------
         1     2     3     4     5     6     7     8     9    10    11    12     1
```

88 - RANK HIGHEST VALUES FOR PERIOD

Multiply all values by 10 ** -2

```
 29 I   10     7     6     9     7     5     5     4     3
    I    +     +     +     +     +     +     +     +     +
 28 I    7     9     6    10    11     6     6     5     3
    I    +     +     +     +     +     +     +     +     +
 27 I    7     6     5     5     6     6     6     5     4
    I    +     +     +     +     +     +     +     +     +
 26 I   14    11     6     6     6     7     6     6     5
    I    +     +     +     +     +     +     +     +     +
 25 I    6     6     6     6     7     7     6     6     4
    I    +     +     +     +     +     +     +     +     +
 24 I    6     6     6     7     8     7     6     6     5
    I    +     +     +     +     +     +     +     +     +
 23 I    7     6     7     7     8     7     7     6     5
    I    +     +     +     +     +     +     +     +     +
 22 I    9     7     7     7     8     7     7     7     6
    I    +     +     +     +     +     +     +     +     +
 21 I   14     8     8     7     8     8     8     7     6
    I    +     +     +     +     +     +     +     +     +
 20 I   12     8     8     8     9     8     8     8     7
    I    +     +     +     +     +     +     +     +     +
 19 I   11     9     9     9     9     9     9     8     7
    I    +     +     +     +     +     +     +     +     +
 18 I   11     9     9     9     9     9     9     9     7
    I    +     +     +     +     +     +     +     +     +
 17 I   13    10    10     9     9    10     9     9     8
    I    +     +     +     +     +     +     +     +     +
 16 I   13    14    12    11     9    10    10    10     8
    I    +     +     +     +     +     +     +     +     +
 15 I   27    37    17    21    12    10    11    10     8
    I    +     +     +     +     +     +     +     +     +
 14 I   84    78    71    58    28    10    11    10     8
    I    +     +     +     +     +     +     +     +     +
 13 I  117    95    81    61    22    10    10    10     8
    I    +     +     +     +     +     +     +     +     +
 12 I  134    26    22    34    17    10    11    10     8
    I    +     +     +     +     +     +     +     +     +
 11 I   41    15    11    10    12    11    10    10     8
    I    +     +     +     +     +     +     +     +     +
 10 I   14    12    11    12    12    12    11    11     9
    I    +     +     +     +     +     +     +     +     +
  9 I   15    12    11    11    11    11    11    10     8
    I    +     +     +     +     +     +     +     +     +
  8 I   51    13    10    10    10    10    10    10     8
    I    +     +     +     +     +     +     +     +     +
  7 I   53    23    11     9    10    10    10     9     7
    I    +     +     +     +     +     +     +     +     +
  6 I   55    45    15     8     9     9     9     9     7
    I    +     +     +     +     +     +     +     +     +
  5 I   39    28    13    10     8     9     9     8     7
    I    +     +     +     +     +     +     +     +     +
  4 I   12    11     7     8     8     9     8     8     6
    I    +     +     +     +     +     +     +     +     +
  3 I    7     7     7     7     7     8     8     8     6
    I    +     +     +     +     +     +     +     +     +
  2 I    7     7     7     8     7     7     7     7     6
```



```
    I    +     +     +     +     +     +     +     +     +
  1 I    6     6     6     7     6     6     6     5     5
    I    +     +     +     +     +     +     +     +     +
    -----------------------------------------------------
        21    22    23    24    25    26    27    28    29
                                                       ODOR          1
```

```
 1 RANKED     1   HOUR AVERAGE  CONCENTRATION VALUES AT EACH DISCRETE RECEPTOR  (Y

RECEPTOR     COORDINATES (km)          88 RANK
     1       342.046  6291.203   1.1101E+00 (2004,169,1700)
     2       342.180  6290.668   1.7150E+00 (2004,111,0400)
     3       342.112  6290.283   6.8161E-01 (2004,207,2200)
```

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*********************************************************************************
                                                CALPOST  Version 6.132        Level
*********************************************************************************
```

SUMMARY SECTION

ODOR 1

(Odour Units)

RECEPTOR	COORDINATES (km)		TYPE	PEAK (YEAR,DAY,START TIME)		FOR RA
13, 11	341.092	6290.528	GRIDDED	1.6828E+01	(2004,094,0100)	RANK
2	342.180	6290.668	DISCRETE	1.7150E+00	(2004,111,0400)	RANK
13, 11	341.092	6290.528	GRIDDED	1.6828E+01	(2004,094,0100)	RANK
2	342.180	6290.668	DISCRETE	1.7150E+00	(2004,111,0400)	RANK