

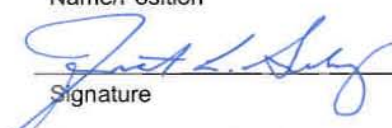
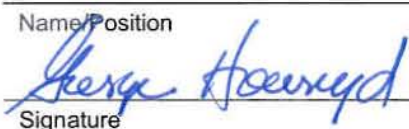

**ATTACHMENT A**  
**Tech Memo Approval Form**

Tech Memo Number: 338884-TMEM-058

Revision: 2

Project: Progress Energy Florida COLA

Review Date: 5-22-2008

<b>Tech Memo Title:</b> LNP - Cooling Tower Plume Deposition Analysis			
<b>Revision History:</b>			
Revision Number	Description	Approval Date	Affected Pages
0	Initial Submittal	3/28/2008	All
1	Response to OAR Comments	4/28/2008	All
2	Response to OAR Comments	5/22/2008	All
<b>Document Review and Approval</b>			
Originator:	Jonathan Subacz/Project Engineer		<u>5/22/08</u>
	Name/Position		Date
			
	Signature		
Reviewer	George Howroyd/Task Lead		<u>5-22-08</u>
	Name/Position		Date
			
	Signature		
Project Manager:	Lorin Young/Design Manager		<u>05/22/2008</u>
	Name/Position		Approval Date
			
	Signature		

PEF505  
 June 26, 2012

# LNP Cooling Tower Deposition Analysis

PREPARED FOR: PEF LNP Project File (Meteorology and Air Quality)  
PREPARED BY: Ronald Vaughn/ATL  
REVIEWED BY: George Howroyd/ATL  
COPIES: Lorin Young/IDF  
Mike Keating/DEN  
DATE: 5/22/2008  
PROJECT NUMBER: 338884

## Purpose

The analysis documented here was designed to assess the potential for adverse off-site impacts to land use from the proposed cooling towers at the Levy Nuclear Plant (LNP). Because the cooling towers will use saltwater from the Cross Florida Barge Canal (CFBC) for cooling, the potential exists for salt deposition to the land surrounding the site from a small amount of the salt containing particles that may become entrained into the cooling tower exhaust as cooling tower "drift". The analysis and results documented in this Technical Memorandum are intended to provide insight into the predicted deposition of salt-containing particles to vegetation and the ground surface from the two mechanical draft cooling towers at LNP.

## Dispersion Model

The American Meteorological Society/U.S. Environmental Protection Agency Regulatory Model (AERMOD), version 07026, was used to predict off-site impacts that could result from the cooling tower operation. The complete AERMOD modeling system is comprised of three parts: the AERMET pre-processor, the AERMAP pre-processor, and the AERMOD model. The AERMET pre-processor compiles the surface and upper-air meteorological data and formats the data for AERMOD input. The AERMAP pre-processor was not used in the analysis due to the generally flat terrain in the area surrounding the proposed site.

## Meteorological Input Data

Five years of meteorological data were obtained from the Florida Department of Environmental Protection (FDEP) in the form of AERMOD-ready AERMET formatted files. The AERMET files consist of five years (2001 - 2005) of surface observations from Gainesville, Florida and upper air data from Jacksonville, Florida. The Profile Base Elevation of the Gainesville, Florida National Weather Station is 46 meters. While one year of on-site meteorological data was available from the on-site monitoring system, this five-year period of data was considered to be more statistically suitable for this analysis since the objective of the analysis was to calculate maximum or "worst-case" off-site deposition rates.

## Receptor Grid

A polar receptor grid was utilized, with a radial spacing of 10 degrees (i.e., 10°, 20°, 30°, etc.). Modeling was performed on a receptor grid beginning at 1000 meters (m) from a point between the two cooling towers, which corresponds to the approximate distance to the nearest property boundary, due west of the cooling towers. Additional receptors were placed on each of the 36 radials at distances of 1100 m, 1200 m, 1300 m, 1400 m, 1500 m, 2000 m, 2500 m, 3000 m, 4000 m, and 5000 m.

## Emissions Data and Other Modeling Considerations

The parameters for the cooling tower that were input into the AERMOD dispersion model are provided in Table 1. The drift emissions from the cooling tower were based on the manufacturer specified drift loss rate ( a function of the mist eliminator efficiency), the circulating water flow rate, and the maximum expected concentration of Total Dissolved Solids (TDS) in the circulating water. The maximum TDS of the makeup water supplied to the cooling towers was conservatively assumed to be 25,000 parts per million (ppm) based on using saltwater from the CFBC. An estimate of the distribution of drift droplet sizes in the cooling tower exhaust stream is presented in Table 2.

**Table 1**  
**AERMOD Dispersion Model Input Data**  
**Levy Nuclear plant**

Parameter	One Tower
<b><u>Physical Data</u></b>	
Number of Cells	44
Number of Cells Modeled <sup>1</sup>	11
Deck Dimensions	
Length, meters	366
Width, meters	29.26
Height, meters	12.80
Stack Dimensions	
Height, meters	16.76
Stack Diameter, meters (per cell)	10
Equivalent Modeling Diameter <sup>1</sup> , meters	20
<b><u>Performance Data</u></b>	
Discharge Velocity, meters /sec	10
Circulating Water Flow Rate (CWFR), gallons/min (normal operation)	531,100 <sup>2</sup>
Hot Water Temperature, °F	117.8

**Table 1**  
**AERMOD Dispersion Model Input Data**  
**Levy Nuclear plant**

Parameter	One Tower
Heat Rejected per Tower, Btu/hr	7,628 E06
Hours of Operation	8,760
Cycles of Concentration (COC)	1.5 – 2.0 <sup>3</sup>
<b><u>Emissions Data</u></b>	
Drift Rate, percent	0.0005
TDS Concentration, ppm	25,000
PM <sup>4</sup> , lb/hr	34.14
tons/yr	149.5
PM-10 <sup>5</sup> , lb/hr	0.375
tons/yr	1.64
<p><sup>1</sup> Each tower will have a total of 44 cooling tower cells. However, the modeling is based on eleven cooling tower cells per cooling tower, with each modeled cell representing 4 combined cells. Therefore, it is necessary to calculate an equivalent diameter of four cooling tower cells. There will be two cooling towers on-site. The calculation is as follows:  Area of Circle = (<math>\pi</math> * square of the diameter)/4. The diameter of cooling tower cell is 10.0 m.  Area of one cooling tower cell = (<math>\pi</math> * square of 10.0)/4 = 78.54 sq meters. The area of four cooling tower cells = 4 * 78.54 sq. meters = 314.16 sq. meters. Equivalent diameter = square root of [(4 * 314.16)/ <math>\pi</math>] = 20 meters.</p> <p><sup>2</sup> The circulating water flow rate of 531,100 gpm is for normal operation. The plant's main condensers are rated for a maximum flow rate of 600,000 gpm. Dispersion modeling analysis was performed on the basis of normal operation and the results should be increased by a factor of 600,000/531,100 to estimate drift deposition for maximum potential flow rates.</p> <p><sup>3</sup> The expected number of cycles of concentration (COC) during normal operation is 1.5, with possible short-term excursions up to 2.0. The dispersion modeling results presented in this document do not account for a COC and the results should be increased by a factor of 1.5 (normal operation) or 2.0 (short-term excursions) to account for recycling of the cooling water in the cooling tower basin.</p> <p><sup>4</sup> The PM emission rate = TDS x draft rate (%) x CWFR x density of salt water x 60 min/hr  PM emission rate = (25,000/10<sup>6</sup>) x (0.0005/100) x 531,100 gal/min x 8.57 lb/gal x 60 min/hr = 34.14 lb/hr</p> <p><sup>5</sup> Particle size distribution is based on the paper, "Calculating Realistic PM-10 Emissions from Cooling Towers", Joel Reisman and Gordon Frisbie, 2001 (See Appendix A).  PM-10 emission rate = PM emission rate x percent of total PM that is PM-10  PM-10 = 34.14 lb/hr x (1.10/100) = 0.375 lb/hr</p>	

<b>Table 2 Estimated Drift Particle Size Distribution <sup>1</sup> Levy Nuclear Plant</b>	
<b>Particle Size Range (<math>\mu\text{m}</math>)</b>	<b>Total in Size Range (percent)</b>
0 - 10	1
10 - 15	15
15 - 20	32
20 - 25	23
25 - 35	17
35 - 65	7
65 - 135	5

<sup>1</sup> Particle size distribution is based on the paper, "Calculating Realistic PM Emissions from Cooling Towers", Joel Reisman and Gordon Frisbie, 2001 (See Appendix A).

The AERMOD model contains options that determine the way in which calculations are made. The options utilized in the analysis included stack tip downwash, PRIME algorithm for sources influenced by building downwash, default wind profile exponents, default vertical potential temperature gradients, rural dispersion coefficient, and non-regulatory default option. Because the population density of Levy County, Florida is less than 750 people per square km, the urban modeling option was not selected, in accordance with USEPA guidance. Building heights and any other significant structures (i.e., the cooling tower structures themselves are the nearest significant structures) were specified for modeling purposes to facilitate the calculation of downwash and building wake effects by the model. The non-regulatory default option allowed for the selection of the dry deposition option so that impacts would be calculated in grams per square meter.

### **Modeling Methodology and Procedures**

As previously discussed, the AERMOD dispersion model was used to predict potential off-site impacts from salt deposition from the proposed LNP cool towers. The AERMOD dispersion model can be configured to predict deposition by using the cooling tower emissions characteristics (see Table 1), particle size distribution (see Table 2), and selection of the non-regulatory default, and dry deposition options.

### **Results**

The results obtained from running AERMOD are presented in Table 3 and show the maximum 1-month deposition rates for normal operation circulating water flow rate (531,100 gpm/tower) and 1.0 cycles of concentration. The results are shown for each of the five years of meteorological data as well as the 1<sup>st</sup> high 1-month deposition rates at distances

of 1000 m, 1500 m, 2000 m, 3000 m, and 5000 m from the center of the grid. The maximum predicted deposition (0.6353 grams/square meter-month) occurs at an on-site location, 1000 meters from the center of the grid, northeast of the cooling towers (2005). The maximum predicted off-site deposition is 0.4024 grams/square meter-month, occurring at the nearest property boundary, due west of the cooling towers (1000 m, 270 degrees, 2002 meteorological data). The maximum off-site deposition rate based on a maximum potential circulating water flow rate of 600,000 gpm and a maximum short-term cycle of concentration of 2.0 can therefore be calculated to be:

$$= 0.4024 \times (600,000/531,100) \times 2.0$$

$$= 0.9092 \text{ grams/square meter-month.}$$

Copies of computer printouts from the modeling runs are included as Appendix B.

<b>Table 3 Predicted Salt Deposition for the LNP Cooling Towers (Normal Operation Flow Rate, 1.0 Cycles of Concentration) Levy Nuclear Plant</b>				
<b>Year</b>	<b>Period</b>	<b>Deposition g/m<sup>2</sup>/month</b>	<b>Location</b>	
			<b>Distance (m)</b>	<b>Direction (Degrees)</b>
2001	Maximum	0.4842	1000	30
	2 <sup>nd</sup> High	0.3970	1000	40
	3 <sup>rd</sup> High	0.3916	1000	40
	1 <sup>st</sup> High	0.3122	1000 <sup>1</sup>	270
	1 <sup>st</sup> High	0.2034	1500 <sup>1</sup>	90
	1 <sup>st</sup> High	0.1962	1500 <sup>1</sup>	110
	1 <sup>st</sup> High	0.1266	1500 <sup>1</sup>	160
	1 <sup>st</sup> High	0.1483	2000	100
	1 <sup>st</sup> High	0.0985	3000	100
	1 <sup>st</sup> High	0.0626	5000	100

**Table 3**  
**Predicted Salt Deposition for the LNP Cooling Towers**  
**(Normal Operation Flow Rate, 1.0 Cycles of Concentration)**  
**Levy Nuclear Plant**

Year	Period	Deposition g/m <sup>2</sup> /month	Location	
			Distance (m)	Direction (Degrees)
2002	Maximum	0.4024	1000	270
	2 <sup>nd</sup> High	0.3526	1000	260
	3 <sup>rd</sup> High	0.3172	1000	300
	1 <sup>st</sup> High	0.4024	1000 <sup>1</sup>	270
2002 (continued)	1 <sup>st</sup> High	0.1422	1500 <sup>1</sup>	90
	1 <sup>st</sup> High	0.1358	1500 <sup>1</sup>	110
	1 <sup>st</sup> High	0.0778	1500 <sup>1</sup>	160
	1 <sup>st</sup> High	0.1498	2000	270
	1 <sup>st</sup> High	0.0921	3000	260
	1 <sup>st</sup> High	0.0591	5000	260
2003	Maximum	0.5610	1000	50
	2 <sup>nd</sup> High	0.3419	1000	60
	3 <sup>rd</sup> High	0.3278	1000	350
	1 <sup>st</sup> High	0.2563	1000 <sup>1</sup>	270
	1 <sup>st</sup> High	0.1825	1500 <sup>1</sup>	90
	1 <sup>st</sup> High	0.1432	1500 <sup>1</sup>	110
	1 <sup>st</sup> High	0.0818	1500 <sup>1</sup>	160

**Table 3**  
**Predicted Salt Deposition for the LNP Cooling Towers**  
**(Normal Operation Flow Rate, 1.0 Cycles of Concentration)**  
**Levy Nuclear Plant**

Year	Period	Deposition g/m <sup>2</sup> /month	Location	
			Distance (m)	Direction (Degrees)
2004	1 <sup>st</sup> High	0.1776	2000	60
	1 <sup>st</sup> High	0.1039	3000	60
	1 <sup>st</sup> High	0.0609	5000	60
	Maximum	0.6015	1000	210
	2 <sup>nd</sup> High	0.3919	1000	360
2004 (continued)	3 <sup>rd</sup> High	0.3362	1000	340
	1 <sup>st</sup> High	0.3214	1000 <sup>1</sup>	270
	1 <sup>st</sup> High	0.1561	1500 <sup>1</sup>	90
	1 <sup>st</sup> High	0.1139	1500 <sup>1</sup>	110
	1 <sup>st</sup> High	0.0819	1500 <sup>1</sup>	160
	1 <sup>st</sup> High	0.2041	2000	210
	1 <sup>st</sup> High	0.1237	3000	210
	1 <sup>st</sup> High	0.0713	5000	210
2005	Maximum	0.6353	1000	40
	2 <sup>nd</sup> High	0.3613	1000	340
	3 <sup>rd</sup> High	0.3279	1000	350
	1 <sup>st</sup> High	0.2997	1000 <sup>1</sup>	270



**Table 3**  
**Predicted Salt Deposition for the LNP Cooling Towers**  
**(Normal Operation Flow Rate, 1.0 Cycles of Concentration)**  
**Levy Nuclear Plant**

Year	Period	Deposition g/m <sup>2</sup> /month	Location	
			Distance (m)	Direction (Degrees)
	1 <sup>st</sup> High	0.1692	1500 <sup>1</sup>	90
	1 <sup>st</sup> High	0.1179	1500 <sup>1</sup>	110
	1 <sup>st</sup> High	0.0972	1500 <sup>1</sup>	160
	1 <sup>st</sup> High	0.1684	2000	60
	1 <sup>st</sup> High	0.0927	3000	190
	1 <sup>st</sup> High	0.0627	5000	190

<sup>1</sup> Nearest offsite receptor in the indicated direction

# Appendix A

## Particulate Matter Size Fraction Distribution

---

# Calculating Realistic PM<sub>10</sub> Emissions from Cooling Towers

Abstract No. 216      Session No. AM-1b

**Joel Reisman and Gordon Frisbie**

Greystone Environmental Consultants, Inc., 650 University Avenue, Suite 100, Sacramento, California 95825

## ABSTRACT

Particulate matter less than 10 micrometers in diameter (PM<sub>10</sub>) emissions from wet cooling towers may be calculated using the methodology presented in EPA's AP-42<sup>1</sup>, which assumes that all total dissolved solids (TDS) emitted in "drift" particles (liquid water entrained in the air stream and carried out of the tower through the induced draft fan stack.) are PM<sub>10</sub>. However, for wet cooling towers with medium to high TDS levels, this method is overly conservative, and predicts significantly higher PM<sub>10</sub> emissions than would actually occur, even for towers equipped with very high efficiency drift eliminators (e.g., 0.0006% drift rate). Such over-prediction may result in unrealistically high PM<sub>10</sub> modeled concentrations and/or the need to purchase expensive Emission Reduction Credits (ERCs) in PM<sub>10</sub> non-attainment areas. Since these towers have fairly low emission points (10 to 15 m above ground), over-predicting PM<sub>10</sub> emission rates can easily result in exceeding federal Prevention of Significant Deterioration (PSD) significance levels at a project's fence line. This paper presents a method for computing realistic PM<sub>10</sub> emissions from cooling towers with medium to high TDS levels.

## INTRODUCTION

Cooling towers are heat exchangers that are used to dissipate large heat loads to the atmosphere. Wet, or evaporative, cooling towers rely on the latent heat of water evaporation to exchange heat between the process and the air passing through the cooling tower. The cooling water may be an integral part of the process or may provide cooling via heat exchangers, for example, steam condensers. Wet cooling towers provide direct contact between the cooling water and air passing through the tower, and as part of normal operation, a very small amount of the circulating water may be entrained in the air stream and be carried out of the tower as "drift" droplets. Because the drift droplets contain the same chemical impurities as the water circulating through the tower, the particulate matter constituent of the drift droplets may be classified as an emission. The magnitude of the drift loss is influenced by the number and size of droplets produced within the tower, which are determined by the tower fill design, tower design, the air and water patterns, and design of the drift eliminators.

## AP-42 METHOD OF CALCULATING DRIFT PARTICULATE

EPA's AP-42<sup>1</sup> provides available particulate emission factors for wet cooling towers, however, these values only have an emission factor rating of "E" (the lowest level of confidence acceptable). They are also rather high, compared to typical present-day manufacturers' guaranteed drift rates, which are on the order of 0.0006%. (Drift emissions are typically

expressed as a percentage of the cooling tower water circulation rate). AP-42 states that “a *conservatively high* PM<sub>10</sub> emission factor can be obtained by (a) multiplying the total liquid drift factor by the TDS fraction in the circulating water, and (b) assuming that once the water evaporates, all remaining solid particles are within the PM<sub>10</sub> range.” (Italics per EPA).

If TDS data for the cooling tower are not available, a source-specific TDS content can be estimated by obtaining the TDS for the make-up water and multiplying it by the cooling tower cycles of concentration. [The cycles of concentration is the ratio of a measured parameter for the cooling tower water (such as conductivity, calcium, chlorides, or phosphate) to that parameter for the make-up water.]

Using AP-42 guidance, the total particulate emissions (PM) (after the pure water has evaporated) can be expressed as:

$$\text{PM} = \text{Water Circulation Rate} \times \text{Drift Rate} \times \text{TDS} \quad [1]$$

For example, for a typical power plant wet cooling tower with a water circulation rate of 146,000 gallons per minute (gpm), drift rate of 0.0006%, and TDS of 7,700 parts per million by weight (ppmw):

$$\text{PM} = 146,000 \text{ gpm} \times 8.34 \text{ lb water/gal} \times 0.0006/100 \times 7,700 \text{ lb solids}/10^6 \text{ lb water} \times 60 \text{ min/hr} = \underline{3.38 \text{ lb/hr}}$$

On an annual basis, this is equivalent to almost 15 tons per year (tpy). Even for a state-of-the-art drift eliminator system, this is not a small number, especially if assumed to all be equal to PM<sub>10</sub>, a regulated criteria pollutant. However, as the following analysis demonstrates, only a very small fraction is actually PM<sub>10</sub>.

## COMPUTING THE PM<sub>10</sub> FRACTION

Based on a representative drift droplet size distribution and TDS in the water, the amount of solid mass in each drop size can be calculated. That is, for a given initial droplet size, assuming that the mass of dissolved solids condenses to a spherical particle after all the water evaporates, and assuming the density of the TDS is equivalent to a representative salt (e.g., sodium chloride), the diameter of the final solid particle can be calculated. Thus, using the drift droplet size distribution, the percentage of drift mass containing particles small enough to produce PM<sub>10</sub> can be calculated. This method is conservative as the final particle is assumed to be perfectly spherical; hence as small a particle as can exist.

The droplet size distribution of the drift emitted from the tower is critical to performing the analysis. Brentwood Industries, a drift eliminator manufacturer, was contacted and agreed to provide drift eliminator test data from a test conducted by Environmental Systems Corporation (ESC) at the Electric Power Research Institute (EPRI) test facility in Houston, Texas in 1988 (Aull<sup>2</sup>, 1999). The data consist of water droplet size distributions for a drift eliminator that achieved a tested drift rate of 0.0003 percent. As we are using a 0.0006 percent drift rate, it is reasonable to expect that the 0.0003 percent drift rate would produce smaller droplets, therefore,

this size distribution data can be assumed to be conservative for predicting the fraction of PM<sub>10</sub> in the total cooling tower PM emissions.

In calculating PM<sub>10</sub> emissions the following assumptions were made:

- Each water droplet was assumed to evaporate shortly after being emitted into ambient air, into a single, solid, spherical particle.
- Drift water droplets have a density ( $\rho_w$ ) of water; 1.0 g/cm<sup>3</sup> or 1.0 \* 10<sup>-6</sup>  $\mu\text{g} / \mu\text{m}^3$ .
- The solid particles were assumed to have the same density ( $\rho_{\text{TDS}}$ ) as sodium chloride, (i.e., 2.2 g/cm<sup>3</sup>).

Using the formula for the volume of a sphere,  $V = 4\pi r^3 / 3$ , and the density of pure water,  $\rho_w = 1.0 \text{ g/cm}^3$ , the following equations can be used to derive the solid particulate diameter,  $D_p$ , as a function of the TDS, the density of the solids, and the initial drift droplet diameter,  $D_d$  :

$$\text{Volume of drift droplet} = (4/3)\pi(D_d/2)^3 \quad [2]$$

$$\text{Mass of solids in drift droplet} = (\text{TDS})(\rho_w)(\text{Volume of drift droplet}) \quad [3]$$

substituting,

$$\text{Mass of solids in drift} = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [4]$$

Assuming the solids remain and coalesce after the water evaporates, the mass of solids can also be expressed as:

$$\text{Mass of solids} = (\rho_{\text{TDS}})(\text{solid particle volume}) = (\rho_{\text{TDS}})(4/3)\pi(D_p/2)^3 \quad [5]$$

Equations [4] and [5] are equivalent:

$$(\rho_{\text{TDS}})(4/3)\pi(D_p/2)^3 = (\text{TDS})(\rho_w)(4/3)\pi(D_d/2)^3 \quad [6]$$

Solving for  $D_p$ :

$$D_p = D_d [(\text{TDS})(\rho_w / \rho_{\text{TDS}})]^{1/3} \quad [7]$$

Where,

TDS is in units of ppmw

$D_p$  = diameter of solid particle, micrometers ( $\mu\text{m}$ )

$D_d$  = diameter of drift droplet,  $\mu\text{m}$

Using formulas [2] – [7] and the particle size distribution test data, Table 1 can be constructed for drift from a wet cooling tower having the same characteristics as our example; 7,700 ppmw TDS and a 0.0006% drift rate. The first and last columns of this table are the particle size distribution derived from test results provided by Brentwood Industries. Using straight-line interpolation for a solid particle size 10  $\mu\text{m}$  in diameter, we conclude that approximately 14.9 percent of the mass emissions are equal to or smaller than PM<sub>10</sub>. The balance of the solid

particulate are particulate greater than 10  $\mu\text{m}$ . Hence,  $\text{PM}_{10}$  emissions from this tower would be equal to PM emissions x 0.149, or 3.38 lb/hr x 0.149 = 0.50 lb/hr. The process is repeated in Table 2, with all parameters equal except that the TDS is 11,000 ppmw. The result is that approximately 5.11 percent are smaller at 11,000 ppm. Thus, while total PM emissions are larger by virtue of a higher TDS, overall  $\text{PM}_{10}$  emissions are actually lower, because more of the solid particles are larger than 10  $\mu\text{m}$ .

**Table 1. Resultant Solid Particulate Size Distribution (TDS = 7700 ppmw)**

EPRI Droplet Diameter ( $\mu\text{m}$ )	Droplet Volume ( $\mu\text{m}^3$ ) [2] <sup>1</sup>	Droplet Mass ( $\mu\text{g}$ ) [3]	Particle Mass (Solids) ( $\mu\text{g}$ ) [4]	Solid Particle Volume ( $\mu\text{m}^3$ )	Solid Particle Diameter ( $\mu\text{m}$ ) [7]	EPRI % Mass Smaller
10	524	5.24E-04	4.03E-06	1.83	1.518	0.000
20	4189	4.19E-03	3.23E-05	14.66	3.037	0.196
30	14137	1.41E-02	1.09E-04	49.48	4.555	0.226
40	33510	3.35E-02	2.58E-04	117.29	6.073	0.514
50	65450	6.54E-02	5.04E-04	229.07	7.591	1.816
60	113097	1.13E-01	8.71E-04	395.84	9.110	5.702
70	179594	1.80E-01	1.38E-03	628.58	10.628	21.348
90	381704	3.82E-01	2.94E-03	1335.96	13.665	49.812
110	696910	6.97E-01	5.37E-03	2439.18	16.701	70.509
130	1150347	1.15E+00	8.86E-03	4026.21	19.738	82.023
150	1767146	1.77E+00	1.36E-02	6185.01	22.774	88.012
180	3053628	3.05E+00	2.35E-02	10687.70	27.329	91.032
210	4849048	4.85E+00	3.73E-02	16971.67	31.884	92.468
240	7238229	7.24E+00	5.57E-02	25333.80	36.439	94.091
270	10305995	1.03E+01	7.94E-02	36070.98	40.994	94.689
300	14137167	1.41E+01	1.09E-01	49480.08	45.549	96.288
350	22449298	2.24E+01	1.73E-01	78572.54	53.140	97.011
400	33510322	3.35E+01	2.58E-01	117286.13	60.732	98.340
450	47712938	4.77E+01	3.67E-01	166995.28	68.323	99.071
500	65449847	6.54E+01	5.04E-01	229074.46	75.915	99.071
600	113097336	1.13E+02	8.71E-01	395840.67	91.098	100.000

<sup>1</sup> Bracketed numbers refer to equation number in text.

The percentage of  $\text{PM}_{10}$ /PM was calculated for cooling tower TDS values from 1000 to 12000 ppmw and the results are plotted in Figure 1. Using these data, Figure 2 presents predicted  $\text{PM}_{10}$  emission rates for the 146,000 gpm example tower. As shown in this figure, the PM emission rate increases in a straight line as TDS increases, however, the  $\text{PM}_{10}$  emission rate increases to a maximum at around a TDS of 4000 ppmw, and then begins to decline. The reason is that at higher TDS, the drift droplets contain more solids and therefore, upon evaporation, result in larger solid particles for any given initial droplet size.

## CONCLUSION

The emission factors and methodology given in EPA's AP-42<sup>1</sup> Chapter 13.4 *Wet Cooling Towers*, do not account for the droplet size distribution of the drift exiting the tower. This is a critical factor, as more than 85% of the mass of particulate in the drift from most cooling towers will result in solid particles larger than  $\text{PM}_{10}$  once the water has evaporated. Particles larger than  $\text{PM}_{10}$  are no longer a regulated air pollutant, because their impact on human health has been shown to be insignificant. Using reasonable, conservative assumptions and a realistic drift

droplet size distribution, a method is now available for calculating realistic PM<sub>10</sub> emission rates from wet mechanical draft cooling towers equipped with modern, high-efficiency drift eliminators and operating at medium to high levels of TDS in the circulating water.

**Table 2. Resultant Solid Particulate Size Distribution (TDS = 11000 ppmw)**

EPRI Droplet Diameter (μm)	Droplet Volume (μm <sup>3</sup> ) [2] <sup>1</sup>	Droplet Mass (μg) [3]	Particle Mass (Solids) (μg) [4]	Solid Particle Volume (μm <sup>3</sup> )	Solid Particle Diameter (μm) [7]	EPRI % Mass Smaller
10	524	5.24E-04	5.76E-06	2.62	1.710	0.000
20	4189	4.19E-03	4.61E-05	20.94	3.420	0.196
30	14137	1.41E-02	1.56E-04	70.69	5.130	0.226
40	33510	3.35E-02	3.69E-04	167.55	6.840	0.514
50	65450	6.54E-02	7.20E-04	327.25	8.550	1.816
60	113097	1.13E-01	1.24E-03	565.49	10.260	5.702
70	179594	1.80E-01	1.98E-03	897.97	11.970	21.348
90	381704	3.82E-01	4.20E-03	1908.52	15.390	49.812
110	696910	6.97E-01	7.67E-03	3484.55	18.810	70.509
130	1150347	1.15E+00	1.27E-02	5751.73	22.230	82.023
150	1767146	1.77E+00	1.94E-02	8835.73	25.650	88.012
180	3053628	3.05E+00	3.36E-02	15268.14	30.780	91.032
210	4849048	4.85E+00	5.33E-02	24245.24	35.909	92.468
240	7238229	7.24E+00	7.96E-02	36191.15	41.039	94.091
270	10305995	1.03E+01	1.13E-01	51529.97	46.169	94.689
300	14137167	1.41E+01	1.56E-01	70685.83	51.299	96.288
350	22449298	2.24E+01	2.47E-01	112246.49	59.849	97.011
400	33510322	3.35E+01	3.69E-01	167551.61	68.399	98.340
450	47712938	4.77E+01	5.25E-01	238564.69	76.949	99.071
500	65449847	6.54E+01	7.20E-01	327249.23	85.499	99.071
600	113097336	1.13E+02	1.24E+00	565486.68	102.599	100.000

**Figure 1: Percentage of Drift PM that Evaporates to PM10**

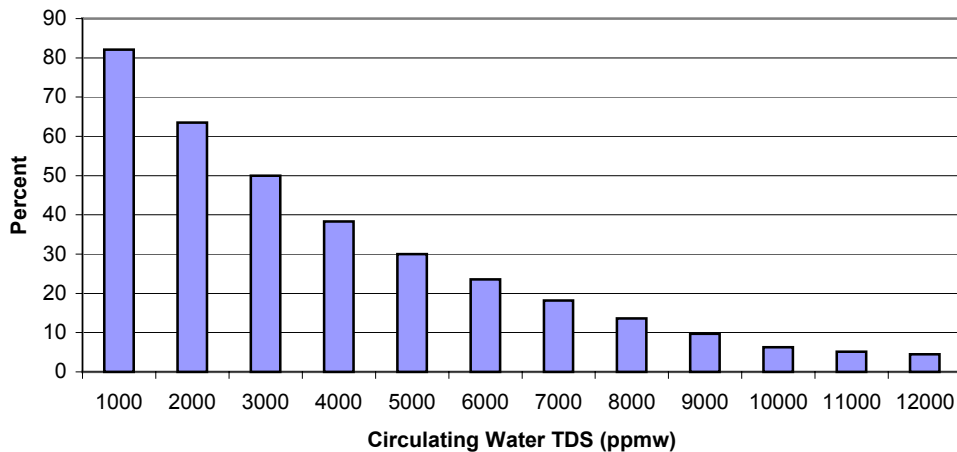
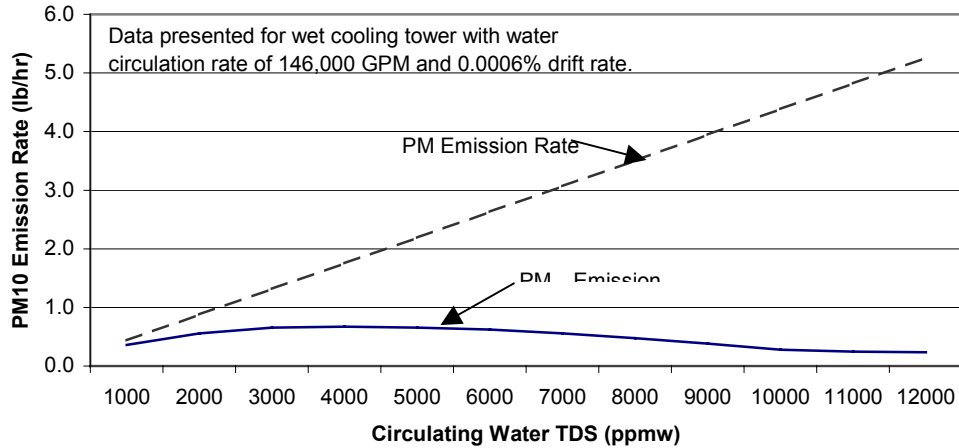


Figure 2: PM<sub>10</sub> Emission Rate vs. TDS



## REFERENCES

1. EPA, 1995. Compilation of Air pollutant Emission Factors, AP-42 Fifth edition, Volume I: *Stationary Point and Area Sources*, Chapter 13.4 Wet Cooling Towers, <http://www.epa.gov/ttn/chief/ap42/>, United States Environmental Protection Agency, Office of Air Quality Planning and Standards, January.
2. Aull, 1999. Memorandum from R. Aull, Brentwood Industries to J. Reisman, Greystone, December 7, 1999.

## KEY WORDS

Drift  
Drift eliminators  
Cooling tower  
PM<sub>10</sub> emissions  
TDS



**Table A-1  
Cooling Tower Emission Calculation  
Progress Energy Levy County**

<b>Parameter</b>	<b>Units</b>	<b>Value</b>
Recirculating Rate Per Unit	gal/min	531,100
Numbers of Units	---	2
Cooling Tower Drift Rate	---	0.0005%
Salt Water Density	lb/gal	8.57
Total Dissolved Solids (TDS)	Concentration, ppm	25,000
Conversion Factor	minutes/hour	60
Cooling Tower PM Emissions	lb/hr	68.27
Cooling Tower PM Emissions	tons/yr	299
Number of Cells used in Modeling		22
Cooling Tower PM Emissions Per Cell	lb/(hr-cell)	3.10
Ratio of PM-10/PM	---	1.10%
Cooling Tower PM-10 Emissions	lb/hr	0.75
Cooling Tower PM-10 Emissions	tons/yr	3.28
Cooling Tower PM Emissions Per Cell	lb/(hr-cell)	0.034

**Table A-1**  
**Estimated Solid Particulate Size Distribution <sup>1</sup>**  
**Levy Nuclear Plant**

TDS = 25000 ppmw  
 Density of Solid Particles (NaCl) = 2.20E-06 (μg)/(μm<sup>3</sup>)

EPRI Droplet Diameter (μm)	Droplet Volume (μm <sup>3</sup> )	Droplet Mass (μg)	Particle Mass (Solids) (μg)	Solid Particle Volume (μm <sup>3</sup> )	Solid Particle Diameter (μm)	EPRI % Mass Smaller
10	524	5.24E-04	1.31E-05	5.95	2.248	0.000
20	4189	4.19E-03	1.05E-04	47.60	4.496	0.196
30	14137	1.41E-02	3.53E-04	160.65	6.745	0.226
40	33510	3.35E-02	8.38E-04	380.80	8.993	0.514
					10.000	1.0972 <b>Note: Value is interpolated (1.1%)</b>
50	65450	6.54E-02	1.64E-03	743.75	11.241	1.816
60	113097	1.13E-01	2.83E-03	1285.20	13.489	5.702
			3.95E-03		15.000	16.216 <b>Note: Value is interpolated</b>
70	179594	1.80E-01	4.49E-03	2040.85	15.738	21.348
					20.000	48.331 <b>Note: Value is interpolated</b>
90	381704	3.82E-01	9.54E-03	4337.54	20.234	49.812
110	696910	6.97E-01	1.74E-02	7919.43	24.730	70.509
			1.81E-02		25.000	71.200 <b>Note: Value is interpolated</b>
130	1150347	1.15E+00	2.88E-02	13072.12	29.227	82.023
150	1767146	1.77E+00	4.42E-02	20081.20	33.723	88.012
					35.000	88.583 <b>Note: Value is interpolated</b>
180	3053628	3.05E+00	7.63E-02	34700.32	40.468	91.032
210	4849048	4.85E+00	1.21E-01	55102.82	47.213	92.468
240	7238229	7.24E+00	1.81E-01	82252.61	53.957	94.091
270	1.03E+07	1.03E+01	2.58E-01	117113.58	60.702	94.689
					65.000	95.708 <b>Note: Value is interpolated</b>
300	1.41E+07	1.41E+01	3.53E-01	160649.62	67.447	96.288
350	2.24E+07	2.24E+01	5.61E-01	255105.65	78.688	97.011
400	3.35E+07	3.35E+01	8.38E-01	380799.11	89.929	98.34
450	4.77E+07	4.77E+01	1.19E+00	542192.48	101.170	99.071
500	6.54E+07	6.54E+01	1.64E+00	743748.26	112.411	99.071
600	1.13E+08	1.13E+02	2.83E+00	1285196.99	134.893	100
Total Sum =			8.18E+00			
Percent PM10 =			1.10%			

**Note:**

<sup>1</sup> Particle size distribution is based on the paper, "Calculating Realistic PM-10 Emissions from Cooling Towers", Joel Reisman and Gordon Frisbie, 2001.

## Example Calculation for 10 µm Droplet Diameter

### 1.0 Droplet Volume

Volume of sphere =  $(4 \times \text{Pi} \times \text{cube of the radius})/3$

Volume of drift droplet =  $(4 \times 3.1416 \times (10 \mu\text{m}/2)^3)/3$

Volume of drift droplet =  $524 \mu\text{m}^3$

### 2.0 Droplet Mass

Mass of droplet = Density of water x droplet volume

Mass of droplet =  $1.0 \text{ E-06 } \mu\text{g}/\mu\text{m}^3 \times 524 \mu\text{m}^3$

Mass of droplet =  $524 \text{ E-06 } \mu\text{g}$

### 3.0 Particle Mass

Particle mass = (Total Dissolved Solids (TDS) in the cooling water x droplet mass)/ $10^6$

Particle mass =  $25,000 \text{ parts per million} \times 524 \text{ E-06 } \mu\text{g})/10^6$

Particle mass =  $1.31 \text{ E-05 } \mu\text{g}$

### 4.0 Solid Particle Volume

Solid particle volume = Particle Mass/Density of particles (NaCl)

The solid particle are assumed to have the same density as sodium chloride (NaCl),  $2.2 \text{ E-06 } \mu\text{g}/\mu\text{m}^3$

Solid particle volume =  $1.31 \text{ E-05 } \mu\text{g}/2.20 \text{ E-06 } \mu\text{g}/\mu\text{m}^3$

Solid particle volume =  $5.95 \mu\text{m}^3$

### 5.0 Solid Particle Diameter

Solid particle diameter =  $2 \times \text{cube root of } (3 \times \text{Pi}/4 \times \text{solid particle volume})$

Solid particle diameter =  $2 \times (3 \times 3.1416/4 \times 5.95 \mu\text{m}^3)^{1/3}$

Solid particle diameter =  $2.248 \mu\text{m}$

# Appendix B

## AERMOD Output Files

---

2001

\*\*BEE-Line Software: BEEST for Windows (Version 9.72) data input file  
\*\* Model: AERMOD.EXE Input File Creation Date: 3/3/2008 Time: 1:31:05 PM  
NO ECHO

BEE-Line AERMOD "BEEST" Version \*\*\*\*

Input File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2001\_PM.DTA

Output File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2001\_PM.LST

Met File - L:\VAUGHN\338884-Progress\Met\_Data\GNV01.SFC

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

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

A Total of 0 Fatal Error Message(s)  
A Total of 22 Warning Message(s)  
A Total of 0 Informational Message(s)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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





\*\*Output Print File:

LEVY3\_2001\_PM.LST

\*\*MODELOPTs:

CONC

DDEP

TOXICS ELEV

DRYDPL WETDPL

\*\*\* POINT SOURCE DATA \*\*\*

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/HOR	EMIS RATE SCALAR VARY BY
SCT1	7	0.39059E+00	342023.1	3216988.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT2	7	0.39059E+00	341994.2	3217005.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT3	7	0.39059E+00	341965.5	3217021.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT4	7	0.39059E+00	341936.7	3217038.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT5	7	0.39059E+00	341907.9	3217054.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT6	7	0.39059E+00	341879.1	3217071.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT7	7	0.39059E+00	341850.3	3217088.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT8	7	0.39059E+00	341821.5	3217104.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT9	7	0.39059E+00	341792.7	3217121.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT10	7	0.39059E+00	341763.9	3217138.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT11	7	0.39059E+00	341735.1	3217154.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT1	7	0.39059E+00	341969.3	3217514.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT2	7	0.39059E+00	341940.5	3217531.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT3	7	0.39059E+00	341911.7	3217547.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT4	7	0.39059E+00	341882.9	3217564.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT5	7	0.39059E+00	341854.1	3217580.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT6	7	0.39059E+00	341825.3	3217597.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT7	7	0.39059E+00	341796.5	3217614.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT8	7	0.39059E+00	341767.7	3217630.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT9	7	0.39059E+00	341738.9	3217647.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT10	7	0.39059E+00	341710.1	3217664.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT11	7	0.39059E+00	341681.3	3217680.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
343128.25	3217449.75	0.24836b	(01033124)	343226.72	3217467.00	0.21611b	(01033124)
343325.22	3217484.50	0.19095b	(01033124)	343817.62	3217571.25	0.11991b	(01033124)
344310.03	3217658.00	0.08745b	(01033124)	344802.41	3217745.00	0.06902b	(01033124)
345787.22	3217918.50	0.04941b	(01033124)	346772.03	3218092.25	0.03912b	(01033124)
342848.00	3217224.00	0.38208b	(01033124)	342948.00	3217224.00	0.32691b	(01033124)
343048.00	3217224.00	0.28424b	(01033124)	343148.00	3217224.00	0.25088b	(01033124)
343248.00	3217224.00	0.22460b	(01033124)	343348.00	3217224.00	0.20344b	(01033124) (1500m, 90°)
343848.00	3217224.00	0.13806b	(01033124)	344348.00	3217224.00	0.10380b	(01033124)
344848.00	3217224.00	0.08296b	(01033124)	345848.00	3217224.00	0.05979b	(01033124)
346848.00	3217224.00	0.04764b	(01033124)	342832.81	3217050.25	0.35505b	(01033124)
342931.28	3217033.00	0.30901b	(01033124)	343029.78	3217015.50	0.27303b	(01033124)
343128.25	3216998.25	0.24462b	(01033124)	343226.72	3216981.00	0.22202b	(01033124)
343325.22	3216963.50	0.20379b	(01033124)	343817.62	3216876.75	0.14832b	(01033124)
344310.03	3216790.00	0.11807b	(01033124)	344802.41	3216703.00	0.09845b	(01033124)
345787.22	3216529.50	0.07566b	(01033124)	346772.03	3216355.75	0.06258b	(01033124)
342787.69	3216882.00	0.37710b	(01033124)	342881.66	3216847.75	0.31833b	(01033124)
342975.62	3216813.50	0.27478b	(01033124)	343069.59	3216779.25	0.24182b	(01033124)
343163.56	3216745.25	0.21638b	(01033124)	343257.53	3216711.00	0.19620b	(01033124) (1500m, 110°)
343727.38	3216540.00	0.13733b	(01033124)	344197.22	3216369.00	0.10667b	(01033124)
344667.09	3216198.00	0.08688b	(01033124)	345606.78	3215856.00	0.06454b	(01033124)
346546.47	3215514.00	0.05259b	(01033124)	342714.03	3216724.00	0.33047b	(01033124)
342800.62	3216674.00	0.26822b	(01033124)	342887.22	3216624.00	0.22417b	(01033124)
342973.84	3216574.00	0.19232b	(01033124)	343060.44	3216524.00	0.16858b	(01033124)
343147.03	3216474.00	0.15027b	(01033124)	343580.06	3216224.00	0.10377b	(01033124)
344013.06	3215974.00	0.08117b	(01033124)	344446.09	3215724.00	0.06738b	(01033124)
345312.09	3215224.00	0.05324b	(01033124)	346178.12	3214724.00	0.04461b	(01033124)
342614.03	3216581.25	0.29908b	(01033124)	342690.66	3216517.00	0.25662b	(01033124)
342767.25	3216452.75	0.22457b	(01033124)	342843.88	3216388.50	0.19956b	(01033124)
342920.47	3216324.00	0.17929b	(01033124)	342997.06	3216259.75	0.16248b	(01033124)
343380.09	3215938.50	0.10902b	(01033124)	343763.12	3215617.00	0.08229b	(01033124)
344146.12	3215295.75	0.06800b	(01033124)	344912.19	3214652.75	0.05402b	(01033124)
345678.22	3214010.00	0.04540b	(01033124)	342490.78	3216458.00	0.25611b	(01033124)
342555.06	3216381.25	0.21169b	(01033124)	342619.34	3216304.75	0.18056b	(01033124)
342683.62	3216228.25	0.15781b	(01033124)	342747.91	3216151.50	0.14022b	(01033124)
342812.19	3216075.00	0.12611b	(01033124)	343133.59	3215692.00	0.08562b	(01033124)
343454.97	3215309.00	0.06740b	(01033124)	343776.38	3214925.75	0.05761b	(01033124)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)
342848.00	3215492.00	0.07630b (01103124)	343098.00	3215059.00	0.06223b (01103124)
343348.00	3214626.00	0.05396b (01103124)	343848.00	3213760.00	0.04414b (01103124)
344348.00	3212893.75	0.03862b (01103124)	342190.03	3216284.25	0.25181b (01103124)
342224.22	3216190.25	0.20981b (01103124)	342258.41	3216096.25	0.17929b (01103124)
342292.62	3216002.50	0.15677b (01103124)	342326.84	3215908.50	0.13965b (01103124)
(1500m, 160°) 342361.03	3215814.50	0.12657b (01103124)	342532.03	3215344.50	0.08992b (01103124)
342703.06	3214874.75	0.07333b (01103124)	342874.06	3214405.00	0.06346b (01103124)
343216.09	3213465.25	0.05312b (01103124)	343558.09	3212525.50	0.04718b (01103124)
342021.66	3216239.25	0.25346b (01103124)	342039.00	3216140.75	0.20590b (01103124)
342056.38	3216042.25	0.17207b (01103124)	342073.75	3215943.75	0.14766b (01103124)
342091.12	3215845.25	0.12978b (01103124)	342108.47	3215746.75	0.11638b (01103124)
342195.31	3215254.50	0.08015b (01103124)	342282.12	3214762.00	0.06396b (01103124)
342368.94	3214269.50	0.05431b (01103124)	342542.59	3213284.75	0.04452b (01103124)
342716.25	3212300.00	0.03879b (01103124)	341848.00	3216224.00	0.29622c (01113024)
341848.00	3216124.00	0.24018c (01113024)	341848.00	3216024.00	0.20116c (01113024)
341848.00	3215924.00	0.17334c (01113024)	341848.00	3215824.00	0.15318c (01113024)
341848.00	3215724.00	0.13827c (01113024)	341848.00	3215224.00	0.09738c (01113024)
341848.00	3214724.00	0.07650c (01113024)	341848.00	3214224.00	0.06440b (01103124)
341848.00	3213224.00	0.05257b (01103124)	341848.00	3212224.00	0.04488b (01103124)
341674.34	3216239.25	0.34868b (01103124)	341657.00	3216140.75	0.28673b (01103124)
341639.62	3216042.25	0.24178b (01103124)	341622.25	3215943.75	0.20843b (01103124)
341604.88	3215845.25	0.18447c (01113024)	341587.53	3215746.75	0.16689c (01113024)
341500.69	3215254.50	0.11801c (01113024)	341413.88	3214762.00	0.09331c (01113024)
341327.06	3214269.50	0.07724c (01113024)	341153.41	3213284.75	0.05890b (01103124)
340979.75	3212300.00	0.04949b (01103124)	341505.97	3216284.25	0.38343b (01103124)
341471.78	3216190.25	0.32063b (01103124)	341437.59	3216096.25	0.27368b (01103124)
341403.38	3216002.50	0.23829b (01103124)	341369.16	3215908.50	0.21133b (01103124)
341334.97	3215814.50	0.19039b (01103124)	341163.97	3215344.50	0.13226b (01103124)
340992.94	3214874.75	0.10489b (01103124)	340821.94	3214405.00	0.08859b (01103124)
340479.91	3213465.25	0.07110b (01103124)	340137.91	3212525.50	0.06122b (01103124)
341348.00	3216358.00	0.39072b (01103124)	341298.00	3216271.25	0.32912b (01103124)
341248.00	3216184.75	0.28255b (01103124)	341198.00	3216098.25	0.24678b (01103124)
341148.00	3216011.50	0.21934b (01103124)	341098.00	3215925.00	0.19820b (01103124)
340848.00	3215492.00	0.13773b (01103124)	340598.00	3215059.00	0.10679b (01103124)
340348.00	3214626.00	0.08847b (01103124)	339848.00	3213760.00	0.06714b (01103124)
339348.00	3212893.75	0.05600b (01103124)	341205.22	3216458.00	0.38422b (01103124)

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH            DRY DEPOSITION            VALUES FOR SOURCE GROUP: ALL            \*\*\*  
INCLUDING SOURCE(S):            SCT1    , SCT2    , SCT3    , SCT4    , SCT5    , SCT6    , SCT7    ,  
SCT8    , SCT9    , SCT10   , SCT11   , NCT1    , NCT2    , NCT3    , NCT4    , NCT5    , NCT6    , NCT7    , NCT8    ,  
NCT9    , NCT10   , NCT11   ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2            \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
339276.84	3214159.75	0.05882b	(01103124)	338634.06	3213393.75	0.04838b	(01103124)
341081.97	3216581.25	0.36345b	(01103124)	341005.34	3216517.00	0.30691b	(01103124)
340928.75	3216452.75	0.26501b	(01103124)	340852.12	3216388.50	0.23280b	(01103124)
340775.53	3216324.00	0.20756b	(01103124)	340698.94	3216259.75	0.18768b	(01103124)
340315.91	3215938.50	0.12707b	(01103124)	339932.88	3215617.00	0.09488b	(01103124)
339549.88	3215295.75	0.07657b	(01103124)	338783.81	3214652.75	0.05677b	(01103124)
338017.78	3214010.00	0.04624b	(01103124)	340981.97	3216724.00	0.32312b	(01103124)
340895.38	3216674.00	0.27265b	(01103124)	340808.78	3216624.00	0.23562b	(01103124)
340722.16	3216574.00	0.20774b	(01103124)	340635.56	3216524.00	0.18594b	(01103124)
340548.97	3216474.00	0.16848b	(01103124)	340115.94	3216224.00	0.11552b	(01103124)
339682.94	3215974.00	0.08779b	(01103124)	339249.91	3215724.00	0.07096b	(01103124)
338383.91	3215224.00	0.05134b	(01103124)	337517.88	3214724.00	0.04195b	(01093024)
340908.31	3216882.00	0.29879b	(01053124)	340814.34	3216847.75	0.25759b	(01053124)
340720.38	3216813.50	0.22594b	(01053124)	340626.41	3216779.25	0.20103b	(01053124)
340532.44	3216745.25	0.18104b	(01053124)	340438.47	3216711.00	0.16453b	(01053124)
339968.62	3216540.00	0.11209b	(01053124)	339498.78	3216369.00	0.08459b	(01053124)
339028.91	3216198.00	0.06876b	(01053124)	338089.22	3215856.00	0.04952b	(01053124)
337149.53	3215514.00	0.03943b	(01053124)	340863.19	3217050.25	0.28838b	(01053124)
340764.72	3217033.00	0.25117b	(01053124)	340666.22	3217015.50	0.22271b	(01053124)
340567.75	3216998.25	0.19982b	(01053124)	340469.28	3216981.00	0.18050b	(01053124)
340370.78	3216963.50	0.16376b	(01053124)	339878.38	3216876.75	0.10884b	(01053124)
339385.97	3216790.00	0.07960b	(01053124)	338893.59	3216703.00	0.06218b	(01053124)
337908.78	3216529.50	0.04374b	(01093024)	336923.97	3216355.75	0.03595b	(01093024)
(1000m, 270°) 340848.00	3217224.00	0.31223b	(01053124)	340748.00	3217224.00	0.26677b	(01053124)
340648.00	3217224.00	0.23030b	(01053124)	340548.00	3217224.00	0.20097b	(01053124)
340448.00	3217224.00	0.17685b	(01053124)	340348.00	3217224.00	0.15669b	(01053124)
339848.00	3217224.00	0.09381b	(01053124)	339348.00	3217224.00	0.06768b	(01043024)
338848.00	3217224.00	0.05388b	(01093024)	337848.00	3217224.00	0.03912b	(01093024)
336848.00	3217224.00	0.03227b	(01093024)	340863.19	3217397.75	0.30369b	(01053124)
340764.72	3217415.00	0.24757b	(01053124)	340666.22	3217432.50	0.20509b	(01053124)
340567.75	3217449.75	0.17297b	(01053124)	340469.28	3217467.00	0.14818b	(01053124)
340370.78	3217484.50	0.12864b	(01053124)	339878.38	3217571.25	0.07726b	(01043024)
339385.97	3217658.00	0.05568b	(01043024)	338893.59	3217745.00	0.04373b	(01043024)
337908.78	3217918.50	0.03182b	(01043024)	336923.97	3218092.25	0.02589b	(01043024)
340908.31	3217566.00	0.26456b	(01053124)	340814.34	3217600.25	0.21202b	(01053124)
340720.38	3217634.50	0.17517b	(01053124)	340626.41	3217668.75	0.14827b	(01053124)

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 13:34:20  
PAGE 68

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV                            DRYDPL WETDPL

\*\*\* THE SUMMARY OF HIGHEST MONTH RESULTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2                            \*\*

GROUP ID		DATE (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK	
					OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	0.48420b ON 01033124: AT (	342348.00, 3218090.00,	15.24,	15.24,	0.00) DC
	HIGH 2ND HIGH VALUE IS	0.39703b ON 01053124: AT (	342490.78, 3217990.00,	15.24,	15.24,	0.00) DC
	HIGH 3RD HIGH VALUE IS	0.39159b ON 01063024: AT (	342490.78, 3217990.00,	15.24,	15.24,	0.00) DC

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

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 13:34:20  
PAGE 69

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV

DRYDPL WETDPL

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

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

A Total of            0 Fatal Error Message(s)  
A Total of            22 Warning Message(s)  
A Total of            2222 Informational Message(s)  
  
A Total of            2138 Calm Hours Identified  
  
A Total of            84 Missing Hours Identified ( 0.96 Percent)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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

2002



\*\*BEE-Line Software: BEEST for Windows (Version 9.72) data input file  
\*\* Model: AERMOD.EXE Input File Creation Date: 3/3/2008 Time: 1:31:07 PM  
NO ECHO

BEE-Line AERMOD "BEEST" Version \*\*\*\*

Input File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2002\_PM.DTA

Output File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2002\_PM.LST

Met File - L:\VAUGHN\338884-Progress\Met\_Data\GNV02.SFC

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

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

A Total of 0 Fatal Error Message(s)  
A Total of 22 Warning Message(s)  
A Total of 0 Informational Message(s)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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



\*\*Output Print File:

LEVY3\_2002\_PM.LST

\*\*MODELOPTs:

CONC

DDEP

TOXICS ELEV

DRYDPL WETDPL

\*\*\* POINT SOURCE DATA \*\*\*

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/HOR	EMIS RATE SCALAR VARY BY
SCT1	7	0.39059E+00	342023.1	3216988.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT2	7	0.39059E+00	341994.2	3217005.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT3	7	0.39059E+00	341965.5	3217021.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT4	7	0.39059E+00	341936.7	3217038.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT5	7	0.39059E+00	341907.9	3217054.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT6	7	0.39059E+00	341879.1	3217071.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT7	7	0.39059E+00	341850.3	3217088.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT8	7	0.39059E+00	341821.5	3217104.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT9	7	0.39059E+00	341792.7	3217121.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT10	7	0.39059E+00	341763.9	3217138.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT11	7	0.39059E+00	341735.1	3217154.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT1	7	0.39059E+00	341969.3	3217514.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT2	7	0.39059E+00	341940.5	3217531.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT3	7	0.39059E+00	341911.7	3217547.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT4	7	0.39059E+00	341882.9	3217564.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT5	7	0.39059E+00	341854.1	3217580.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT6	7	0.39059E+00	341825.3	3217597.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT7	7	0.39059E+00	341796.5	3217614.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT8	7	0.39059E+00	341767.7	3217630.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT9	7	0.39059E+00	341738.9	3217647.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT10	7	0.39059E+00	341710.1	3217664.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT11	7	0.39059E+00	341681.3	3217680.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

   \*\*\* THE 1ST HIGHEST MONTH            DRY DEPOSITION            VALUES FOR SOURCE GROUP: ALL            \*\*\*  
   INCLUDING SOURCE(S):            SCT1    , SCT2    , SCT3    , SCT4    , SCT5    , SCT6    , SCT7    ,  
   SCT8    , SCT9    , SCT10   , SCT11   , NCT1    , NCT2    , NCT3    , NCT4    , NCT5    , NCT6    , NCT7    , NCT8    ,  
   NCT9    , NCT10   , NCT11   ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

   \*\* DEPO OF PM            IN GRAMS/M\*\*2            \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
343128.25	3217449.75	0.15883b	(02123124)	343226.72	3217467.00	0.14487b	(02123124)
343325.22	3217484.50	0.13346b	(02123124)	343817.62	3217571.25	0.09429b	(02123124)
344310.03	3217658.00	0.07291b	(02123124)	344802.41	3217745.00	0.05898b	(02123124)
345787.22	3217918.50	0.04324b	(02043024)	346772.03	3218092.25	0.03567b	(02043024)
342848.00	3217224.00	0.26894b	(02123124)	342948.00	3217224.00	0.23526b	(02123124)
343048.00	3217224.00	0.20493b	(02123124)	343148.00	3217224.00	0.17941b	(02123124)
343248.00	3217224.00	0.15873b	(02123124)	<b>343348.00</b>	<b>3217224.00</b>	<b>0.14215b</b>	<b>(02123124) (1500m, 90°)</b>
343848.00	3217224.00	0.09321b	(02123124)	344348.00	3217224.00	0.07046b	(02123124)
344848.00	3217224.00	0.05665b	(02123124)	345848.00	3217224.00	0.04273b	(02123124)
346848.00	3217224.00	0.03508b	(02123124)	342832.81	3217050.25	0.24906b	(02123124)
342931.28	3217033.00	0.21367b	(02123124)	343029.78	3217015.50	0.18806b	(02123124)
343128.25	3216998.25	0.16810b	(02123124)	343226.72	3216981.00	0.15179b	(02123124)
343325.22	3216963.50	0.13813b	(02123124)	343817.62	3216876.75	0.09226b	(02123124)
344310.03	3216790.00	0.06805b	(02123124)	344802.41	3216703.00	0.05347b	(02123124)
345787.22	3216529.50	0.03709b	(02123124)	346772.03	3216355.75	0.02853b	(02043024)
342787.69	3216882.00	0.25155b	(02022824)	342881.66	3216847.75	0.21590b	(02022824)
342975.62	3216813.50	0.18823b	(02022824)	343069.59	3216779.25	0.16672b	(02022824)
343163.56	3216745.25	0.14963b	(02022824)	<b>343257.53</b>	<b>3216711.00</b>	<b>0.13576b</b>	<b>(02022824) (1500m, 110°)</b>
343727.38	3216540.00	0.09154b	(02022824)	344197.22	3216369.00	0.06848b	(02022824)
344667.09	3216198.00	0.05719b	(02113024)	345606.78	3215856.00	0.04397b	(02113024)
346546.47	3215514.00	0.03548b	(02113024)	342714.03	3216724.00	0.27178b	(02022824)
342800.62	3216674.00	0.23910b	(02022824)	342887.22	3216624.00	0.21341b	(02022824)
342973.84	3216574.00	0.19230b	(02022824)	343060.44	3216524.00	0.17449b	(02022824)
343147.03	3216474.00	0.15945b	(02022824)	343580.06	3216224.00	0.11346b	(02022824)
344013.06	3215974.00	0.09017b	(02022824)	344446.09	3215724.00	0.07678b	(02022824)
345312.09	3215224.00	0.06171b	(02022824)	346178.12	3214724.00	0.05179b	(02022824)
342614.03	3216581.25	0.32067b	(02022824)	342690.66	3216517.00	0.27131b	(02022824)
342767.25	3216452.75	0.23415b	(02022824)	342843.88	3216388.50	0.20513b	(02022824)
342920.47	3216324.00	0.18193b	(02022824)	342997.06	3216259.75	0.16338b	(02022824)
343380.09	3215938.50	0.11200b	(02022824)	343763.12	3215617.00	0.08699b	(02022824)
344146.12	3215295.75	0.07236b	(02022824)	344912.19	3214652.75	0.05751b	(02022824)
345678.22	3214010.00	0.04960b	(02113024)	342490.78	3216458.00	0.28012b	(02022824)
342555.06	3216381.25	0.23297b	(02022824)	342619.34	3216304.75	0.19883b	(02022824)
342683.62	3216228.25	0.17307b	(02022824)	342747.91	3216151.50	0.15286b	(02022824)
342812.19	3216075.00	0.13675b	(02022824)	343133.59	3215692.00	0.09041b	(02022824)
343454.97	3215309.00	0.06758b	(02022824)	343776.38	3214925.75	0.05551b	(02113024)

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH            DRY DEPOSITION            VALUES FOR SOURCE GROUP: ALL            \*\*\*  
INCLUDING SOURCE(S):            SCT1    ,    SCT2    ,    SCT3    ,    SCT4    ,    SCT5    ,    SCT6    ,    SCT7    ,  
SCT8    ,    SCT9    ,    SCT10    ,    SCT11    ,    NCT1    ,    NCT2    ,    NCT3    ,    NCT4    ,    NCT5    ,    NCT6    ,    NCT7    ,    NCT8    ,  
NCT9    ,    NCT10    ,    NCT11    ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2            \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
342848.00	3215492.00	0.07436b	(02022824)	343098.00	3215059.00	0.05721b	(02022824)
343348.00	3214626.00	0.04778b	(02022824)	343848.00	3213760.00	0.03710b	(02022824)
344348.00	3212893.75	0.03081b	(02022824)	342190.03	3216284.25	0.15553b	(02113024)
342224.22	3216190.25	0.13090b	(02113024)	342258.41	3216096.25	0.11263b	(02113024)
342292.62	3216002.50	0.09835b	(02113024)	342326.84	3215908.50	0.08690b	(02113024)
(1500m, 160°) 342361.03	3215814.50	0.07776b	(02113024)	342532.03	3215344.50	0.05227b	(02113024)
342703.06	3214874.75	0.04071b	(02113024)	342874.06	3214405.00	0.03410b	(02113024)
343216.09	3213465.25	0.02681b	(02113024)	343558.09	3212525.50	0.02302b	(02113024)
342021.66	3216239.25	0.14544b	(02113024)	342039.00	3216140.75	0.12471b	(02113024)
342056.38	3216042.25	0.10859b	(02113024)	342073.75	3215943.75	0.09536b	(02113024)
342091.12	3215845.25	0.08446b	(02113024)	342108.47	3215746.75	0.07571b	(02113024)
342195.31	3215254.50	0.05025b	(02113024)	342282.12	3214762.00	0.03920b	(02113024)
342368.94	3214269.50	0.03336b	(02113024)	342542.59	3213284.75	0.02569b	(02113024)
342716.25	3212300.00	0.02135b	(02113024)	341848.00	3216224.00	0.20740b	(02053124)
341848.00	3216124.00	0.17236b	(02053124)	341848.00	3216024.00	0.14600b	(02053124)
341848.00	3215924.00	0.12548b	(02053124)	341848.00	3215824.00	0.10922b	(02053124)
341848.00	3215724.00	0.09647b	(02053124)	341848.00	3215224.00	0.06351b	(02103124)
341848.00	3214724.00	0.04779b	(02103124)	341848.00	3214224.00	0.03986b	(02053124)
341848.00	3213224.00	0.03072b	(02053124)	341848.00	3212224.00	0.02549b	(02103124)
341674.34	3216239.25	0.25736b	(02053124)	341657.00	3216140.75	0.21517b	(02053124)
341639.62	3216042.25	0.18356b	(02053124)	341622.25	3215943.75	0.15880b	(02053124)
341604.88	3215845.25	0.13921b	(02053124)	341587.53	3215746.75	0.12386b	(02053124)
341500.69	3215254.50	0.08195b	(02103124)	341413.88	3214762.00	0.06450b	(02103124)
341327.06	3214269.50	0.05439b	(02103124)	341153.41	3213284.75	0.04355b	(02103124)
340979.75	3212300.00	0.03669b	(02103124)	341505.97	3216284.25	0.27707b	(02053124)
341471.78	3216190.25	0.23041b	(02053124)	341437.59	3216096.25	0.19598b	(02053124)
341403.38	3216002.50	0.16972b	(02053124)	341369.16	3215908.50	0.14909b	(02053124)
341334.97	3215814.50	0.13271b	(02053124)	341163.97	3215344.50	0.08390b	(02053124)
340992.94	3214874.75	0.06085b	(02103124)	340821.94	3214405.00	0.05011b	(02103124)
340479.91	3213465.25	0.03924b	(02103124)	340137.91	3212525.50	0.03310b	(02103124)
341348.00	3216358.00	0.30388b	(02053124)	341298.00	3216271.25	0.25031b	(02053124)
341248.00	3216184.75	0.21147b	(02053124)	341198.00	3216098.25	0.18243b	(02053124)
341148.00	3216011.50	0.15985b	(02053124)	341098.00	3215925.00	0.14190b	(02053124)
340848.00	3215492.00	0.08800b	(02053124)	340598.00	3215059.00	0.06786b	(02103124)
340348.00	3214626.00	0.05744b	(02103124)	339848.00	3213760.00	0.04533b	(02103124)
339348.00	3212893.75	0.03845b	(02103124)	341205.22	3216458.00	0.33668b	(02053124)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO (Y Y M M D D H H)	X-COORD (M)	Y-COORD (M)	DEPO (Y Y M M D D H H)
339276.84	3214159.75	0.04405b (02103124)	338634.06	3213393.75	0.03681b (02103124)
341081.97	3216581.25	0.35515b (02053124)	341005.34	3216517.00	0.29741b (02053124)
340928.75	3216452.75	0.25451b (02053124)	340852.12	3216388.50	0.22177b (02053124)
340775.53	3216324.00	0.19591b (02053124)	340698.94	3216259.75	0.17500b (02053124)
340315.91	3215938.50	0.11081b (02053124)	339932.88	3215617.00	0.07894b (02053124)
339549.88	3215295.75	0.06093b (02053124)	338783.81	3214652.75	0.04335c (02093024)
338017.78	3214010.00	0.03449c (02093024)	340981.97	3216724.00	0.34837b (02053124)
340895.38	3216674.00	0.29607b (02053124)	340808.78	3216624.00	0.25683b (02053124)
340722.16	3216574.00	0.22642b (02053124)	340635.56	3216524.00	0.20211b (02053124)
340548.97	3216474.00	0.18216b (02053124)	340115.94	3216224.00	0.11866b (02053124)
339682.94	3215974.00	0.08543b (02053124)	339249.91	3215724.00	0.06978c (02093024)
338383.91	3215224.00	0.05411c (02093024)	337517.88	3214724.00	0.04444c (02093024)
340908.31	3216882.00	0.38170c (02093024)	340814.34	3216847.75	0.32980c (02093024)
340720.38	3216813.50	0.28904c (02093024)	340626.41	3216779.25	0.25646c (02093024)
340532.44	3216745.25	0.22942c (02093024)	340438.47	3216711.00	0.20667c (02093024)
339968.62	3216540.00	0.13580c (02093024)	339498.78	3216369.00	0.09974c (02093024)
339028.91	3216198.00	0.07906c (02093024)	338089.22	3215856.00	0.05710c (02093024)
337149.53	3215514.00	0.04484c (02093024)	340863.19	3217050.25	0.38422c (02093024)
340764.72	3217033.00	0.33538c (02093024)	340666.22	3217015.50	0.29541c (02093024)
340567.75	3216998.25	0.26242c (02093024)	340469.28	3216981.00	0.23496c (02093024)
340370.78	3216963.50	0.21205c (02093024)	339878.38	3216876.75	0.14295c (02093024)
339385.97	3216790.00	0.10957c (02093024)	338893.59	3216703.00	0.09209c (02093024)
337908.78	3216529.50	0.07038c (02093024)	336923.97	3216355.75	0.05907c (02093024)
(1000m, 270°) 340848.00	3217224.00	0.40240c (02093024)	340748.00	3217224.00	0.35650c (02093024)
340648.00	3217224.00	0.31885c (02093024)	340548.00	3217224.00	0.28604c (02093024)
340448.00	3217224.00	0.25698c (02093024)	340348.00	3217224.00	0.23176c (02093024)
339848.00	3217224.00	0.14983c (02093024)	339348.00	3217224.00	0.10669c (02093024)
338848.00	3217224.00	0.08340c (02093024)	337848.00	3217224.00	0.05796c (02093024)
336848.00	3217224.00	0.04545c (02093024)	340863.19	3217397.75	0.36585c (02093024)
340764.72	3217415.00	0.31588c (02093024)	340666.22	3217432.50	0.27385c (02093024)
340567.75	3217449.75	0.23934c (02093024)	340469.28	3217467.00	0.21112c (02093024)
340370.78	3217484.50	0.18767c (02093024)	339878.38	3217571.25	0.11487c (02093024)
339385.97	3217658.00	0.08180b (02053124)	338893.59	3217745.00	0.06847b (02053124)
337908.78	3217918.50	0.05071b (02053124)	336923.97	3218092.25	0.04192b (02043024)
340908.31	3217566.00	0.34000c (02093024)	340814.34	3217600.25	0.28093c (02093024)
340720.38	3217634.50	0.23977c (02093024)	340626.41	3217668.75	0.21146c (02093024)



\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 16:24:11  
PAGE 68

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

\*\*\* THE SUMMARY OF HIGHEST MONTH RESULTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2            \*\*

GROUP ID	DRY DEPO	DATE	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK		
		(YYMMDDHH)			OF TYPE	GRID-ID	
ALL	HIGH	1ST HIGH VALUE IS	0.40240c ON 02093024: AT (	340848.00, 3217224.00,	15.24,	15.24,	0.00) DC
	HIGH	2ND HIGH VALUE IS	0.35256b ON 02053124: AT (	340863.19, 3217050.25,	15.24,	15.24,	0.00) DC
	HIGH	3RD HIGH VALUE IS	0.31723b ON 02043024: AT (	340981.97, 3217724.00,	15.24,	15.24,	0.00) DC

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

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 16:24:11  
PAGE 69

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV

DRYDPL WETDPL

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

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

A Total of            0 Fatal Error Message(s)  
A Total of            22 Warning Message(s)  
A Total of            2248 Informational Message(s)  
  
A Total of            2184 Calm Hours Identified  
  
A Total of            64 Missing Hours Identified ( 0.73 Percent)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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

2003

\*\*BEE-Line Software: BEEST for Windows (Version 9.72) data input file  
\*\* Model: AERMOD.EXE Input File Creation Date: 3/3/2008 Time: 1:31:07 PM  
NO ECHO

BEE-Line AERMOD "BEEST" Version \*\*\*\*

Input File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2003\_PM.DTA

Output File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2003\_PM.LST

Met File - L:\VAUGHN\338884-Progress\Met\_Data\GNV03.SFC

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

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

A Total of 0 Fatal Error Message(s)  
A Total of 22 Warning Message(s)  
A Total of 0 Informational Message(s)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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



\*\*Output Print File:

LEVY3\_2003\_PM.LST

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV                            DRYDPL WETDPL

\*\*\* POINT SOURCE DATA \*\*\*

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/HOR	EMIS RATE SCALAR VARY BY
SCT1	7	0.39059E+00	342023.1	3216988.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT2	7	0.39059E+00	341994.2	3217005.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT3	7	0.39059E+00	341965.5	3217021.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT4	7	0.39059E+00	341936.7	3217038.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT5	7	0.39059E+00	341907.9	3217054.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT6	7	0.39059E+00	341879.1	3217071.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT7	7	0.39059E+00	341850.3	3217088.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT8	7	0.39059E+00	341821.5	3217104.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT9	7	0.39059E+00	341792.7	3217121.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT10	7	0.39059E+00	341763.9	3217138.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT11	7	0.39059E+00	341735.1	3217154.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT1	7	0.39059E+00	341969.3	3217514.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT2	7	0.39059E+00	341940.5	3217531.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT3	7	0.39059E+00	341911.7	3217547.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT4	7	0.39059E+00	341882.9	3217564.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT5	7	0.39059E+00	341854.1	3217580.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT6	7	0.39059E+00	341825.3	3217597.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT7	7	0.39059E+00	341796.5	3217614.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT8	7	0.39059E+00	341767.7	3217630.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT9	7	0.39059E+00	341738.9	3217647.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT10	7	0.39059E+00	341710.1	3217664.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT11	7	0.39059E+00	341681.3	3217680.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	



\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
343128.25	3217449.75	0.26913b	(03053124)	343226.72	3217467.00	0.23793b	(03053124)
343325.22	3217484.50	0.21295b	(03053124)	343817.62	3217571.25	0.13554b	(03053124)
344310.03	3217658.00	0.09615b	(03053124)	344802.41	3217745.00	0.07389b	(03053124)
345787.22	3217918.50	0.05582b	(03013124)	346772.03	3218092.25	0.04662b	(03013124)
342848.00	3217224.00	0.36546b	(03053124)	342948.00	3217224.00	0.30767b	(03053124)
343048.00	3217224.00	0.26462b	(03053124)	343148.00	3217224.00	0.23137b	(03053124)
343248.00	3217224.00	0.20471b	(03053124)	343348.00	3217224.00	0.18252b	(03053124) (1500m, 90°)
343848.00	3217224.00	0.11232b	(03053124)	344348.00	3217224.00	0.08389b	(03013124)
344848.00	3217224.00	0.06907b	(03013124)	345848.00	3217224.00	0.05283b	(03013124)
346848.00	3217224.00	0.04325b	(03013124)	342832.81	3217050.25	0.31165b	(03013124)
342931.28	3217033.00	0.26199b	(03013124)	343029.78	3217015.50	0.22434b	(03013124)
343128.25	3216998.25	0.19495b	(03013124)	343226.72	3216981.00	0.17185b	(03013124)
343325.22	3216963.50	0.15363b	(03013124)	343817.62	3216876.75	0.10119b	(03013124)
344310.03	3216790.00	0.07656b	(03013124)	344802.41	3216703.00	0.06230b	(03013124)
345787.22	3216529.50	0.04722b	(03013124)	346772.03	3216355.75	0.03814b	(03013124)
342787.69	3216882.00	0.28881b	(03013124)	342881.66	3216847.75	0.24238b	(03013124)
342975.62	3216813.50	0.20794b	(03013124)	343069.59	3216779.25	0.18122b	(03013124)
343163.56	3216745.25	0.16010b	(03013124)	343257.53	3216711.00	0.14321b	(03013124) (1500m, 110°)
343727.38	3216540.00	0.09407b	(03013124)	344197.22	3216369.00	0.07165b	(03013124)
344667.09	3216198.00	0.05955b	(03013124)	345606.78	3215856.00	0.04591b	(03013124)
346546.47	3215514.00	0.03708b	(03013124)	342714.03	3216724.00	0.25695b	(03013124)
342800.62	3216674.00	0.22449b	(03013124)	342887.22	3216624.00	0.20030b	(03013124)
342973.84	3216574.00	0.18064b	(03013124)	343060.44	3216524.00	0.16383b	(03013124)
343147.03	3216474.00	0.14932b	(03013124)	343580.06	3216224.00	0.10379b	(03013124)
344013.06	3215974.00	0.08032b	(03013124)	344446.09	3215724.00	0.06682b	(03013124)
345312.09	3215224.00	0.05195b	(03013124)	346178.12	3214724.00	0.04189b	(03013124)
342614.03	3216581.25	0.26408b	(03013124)	342690.66	3216517.00	0.22352b	(03013124)
342767.25	3216452.75	0.19399b	(03013124)	342843.88	3216388.50	0.17180b	(03013124)
342920.47	3216324.00	0.15444b	(03013124)	342997.06	3216259.75	0.14055b	(03013124)
343380.09	3215938.50	0.10012b	(03013124)	343763.12	3215617.00	0.07923b	(03013124)
344146.12	3215295.75	0.06605b	(03013124)	344912.19	3214652.75	0.05250b	(03013124)
345678.22	3214010.00	0.04528b	(03013124)	342490.78	3216458.00	0.23104b	(03013124)
342555.06	3216381.25	0.18799b	(03013124)	342619.34	3216304.75	0.15830b	(03013124)
342683.62	3216228.25	0.13714b	(03013124)	342747.91	3216151.50	0.12122b	(03013124)
342812.19	3216075.00	0.10888b	(03013124)	343133.59	3215692.00	0.07549b	(03013124)
343454.97	3215309.00	0.06018b	(03013124)	343776.38	3214925.75	0.05323b	(03123124)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
342848.00	3215492.00	0.05841b	(03013124)	343098.00	3215059.00	0.04744b	(03013124)
343348.00	3214626.00	0.04066b	(03013124)	343848.00	3213760.00	0.03254b	(03013124)
344348.00	3212893.75	0.02747b	(03013124)	342190.03	3216284.25	0.15744b	(03103124)
342224.22	3216190.25	0.13338b	(03103124)	342258.41	3216096.25	0.11529b	(03103124)
342292.62	3216002.50	0.10149b	(03103124)	342326.84	3215908.50	0.09055b	(03103124)
(1500m, 160°) 342361.03	3215814.50	0.08175b	(03103124)	342532.03	3215344.50	0.05534b	(03103124)
342703.06	3214874.75	0.04372b	(03103124)	342874.06	3214405.00	0.03789b	(03103124)
343216.09	3213465.25	0.03103b	(03103124)	343558.09	3212525.50	0.02639b	(03103124)
342021.66	3216239.25	0.20465b	(03093024)	342039.00	3216140.75	0.17107b	(03093024)
342056.38	3216042.25	0.14554b	(03093024)	342073.75	3215943.75	0.12531b	(03093024)
342091.12	3215845.25	0.10932b	(03093024)	342108.47	3215746.75	0.09689b	(03093024)
342195.31	3215254.50	0.06224b	(03093024)	342282.12	3214762.00	0.04756b	(03093024)
342368.94	3214269.50	0.03896b	(03093024)	342542.59	3213284.75	0.02972b	(03093024)
342716.25	3212300.00	0.02514b	(03093024)	341848.00	3216224.00	0.24313b	(03093024)
341848.00	3216124.00	0.20531b	(03093024)	341848.00	3216024.00	0.17634b	(03093024)
341848.00	3215924.00	0.15392b	(03093024)	341848.00	3215824.00	0.13668b	(03093024)
341848.00	3215724.00	0.12315b	(03093024)	341848.00	3215224.00	0.08616b	(03093024)
341848.00	3214724.00	0.07044b	(03093024)	341848.00	3214224.00	0.06086b	(03093024)
341848.00	3213224.00	0.04746b	(03093024)	341848.00	3212224.00	0.04080b	(03093024)
341674.34	3216239.25	0.27430b	(03113024)	341657.00	3216140.75	0.23227b	(03113024)
341639.62	3216042.25	0.20041b	(03113024)	341622.25	3215943.75	0.17613b	(03113024)
341604.88	3215845.25	0.15767b	(03113024)	341587.53	3215746.75	0.14322b	(03113024)
341500.69	3215254.50	0.10104b	(03113024)	341413.88	3214762.00	0.08198b	(03113024)
341327.06	3214269.50	0.07037b	(03113024)	341153.41	3213284.75	0.05529b	(03113024)
340979.75	3212300.00	0.04507b	(03113024)	341505.97	3216284.25	0.28846b	(03113024)
341471.78	3216190.25	0.25059b	(03113024)	341437.59	3216096.25	0.22119b	(03113024)
341403.38	3216002.50	0.19829b	(03113024)	341369.16	3215908.50	0.18022b	(03113024)
341334.97	3215814.50	0.16539b	(03113024)	341163.97	3215344.50	0.11767b	(03113024)
340992.94	3214874.75	0.09341b	(03113024)	340821.94	3214405.00	0.07858b	(03113024)
340479.91	3213465.25	0.06051b	(03113024)	340137.91	3212525.50	0.04872b	(03113024)
341348.00	3216358.00	0.26635b	(03093024)	341298.00	3216271.25	0.22283b	(03093024)
341248.00	3216184.75	0.19405b	(03113024)	341198.00	3216098.25	0.17385b	(03113024)
341148.00	3216011.50	0.15754b	(03113024)	341098.00	3215925.00	0.14389b	(03113024)
340848.00	3215492.00	0.09852b	(03113024)	340598.00	3215059.00	0.07494b	(03113024)
340348.00	3214626.00	0.06099b	(03103124)	339848.00	3213760.00	0.04855b	(03103124)
339348.00	3212893.75	0.04215b	(03103124)	341205.22	3216458.00	0.28874b	(03093024)

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH            DRY DEPOSITION            VALUES FOR SOURCE GROUP: ALL            \*\*\*  
INCLUDING SOURCE(S):            SCT1    , SCT2    , SCT3    , SCT4    , SCT5    , SCT6    , SCT7    ,  
SCT8    , SCT9    , SCT10   , SCT11   , NCT1    , NCT2    , NCT3    , NCT4    , NCT5    , NCT6    , NCT7    , NCT8    ,  
NCT9    , NCT10   , NCT11   ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2            \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
339276.84	3214159.75	0.04670b	(03103124)	338634.06	3213393.75	0.03950b	(03103124)
341081.97	3216581.25	0.29775b	(03093024)	341005.34	3216517.00	0.25286b	(03093024)
340928.75	3216452.75	0.21884b	(03093024)	340852.12	3216388.50	0.19291b	(03093024)
340775.53	3216324.00	0.17286b	(03093024)	340698.94	3216259.75	0.15680b	(03093024)
340315.91	3215938.50	0.10566b	(03093024)	339932.88	3215617.00	0.07980b	(03093024)
339549.88	3215295.75	0.06586b	(03093024)	338783.81	3214652.75	0.04896b	(03093024)
338017.78	3214010.00	0.04086b	(03093024)	340981.97	3216724.00	0.29502b	(03093024)
340895.38	3216674.00	0.25486b	(03093024)	340808.78	3216624.00	0.22352b	(03093024)
340722.16	3216574.00	0.19915b	(03093024)	340635.56	3216524.00	0.17983b	(03093024)
340548.97	3216474.00	0.16398b	(03093024)	340115.94	3216224.00	0.11250b	(03093024)
339682.94	3215974.00	0.08471b	(03093024)	339249.91	3215724.00	0.06844b	(03093024)
338383.91	3215224.00	0.05109b	(03093024)	337517.88	3214724.00	0.04225b	(03093024)
340908.31	3216882.00	0.28234b	(03093024)	340814.34	3216847.75	0.24660b	(03093024)
340720.38	3216813.50	0.21811b	(03093024)	340626.41	3216779.25	0.19471b	(03093024)
340532.44	3216745.25	0.17505b	(03093024)	340438.47	3216711.00	0.15860b	(03093024)
339968.62	3216540.00	0.10574b	(03093024)	339498.78	3216369.00	0.07877b	(03093024)
339028.91	3216198.00	0.06483b	(03093024)	338089.22	3215856.00	0.04910b	(03093024)
337149.53	3215514.00	0.04102b	(03093024)	340863.19	3217050.25	0.26526b	(03093024)
340764.72	3217033.00	0.22577b	(03093024)	340666.22	3217015.50	0.19665b	(03093024)
340567.75	3216998.25	0.17401b	(03093024)	340469.28	3216981.00	0.15562b	(03093024)
340370.78	3216963.50	0.14049b	(03093024)	339878.38	3216876.75	0.09470b	(03093024)
339385.97	3216790.00	0.06992b	(03093024)	338893.59	3216703.00	0.05549b	(03093024)
337908.78	3216529.50	0.03962b	(03093024)	336923.97	3216355.75	0.03212b	(03103124)
(1000m, 270°) 340848.00	3217224.00	0.25632b	(03093024)	340748.00	3217224.00	0.21713b	(03093024)
340648.00	3217224.00	0.18642b	(03093024)	340548.00	3217224.00	0.16204b	(03093024)
340448.00	3217224.00	0.14228b	(03093024)	340348.00	3217224.00	0.12603b	(03093024)
339848.00	3217224.00	0.07882c	(03083124)	339348.00	3217224.00	0.05800c	(03083124)
338848.00	3217224.00	0.04612b	(03043024)	337848.00	3217224.00	0.03595b	(03043024)
336848.00	3217224.00	0.03018b	(03043024)	340863.19	3217397.75	0.23640b	(03093024)
340764.72	3217415.00	0.19530b	(03093024)	340666.22	3217432.50	0.16758c	(03083124)
340567.75	3217449.75	0.14841c	(03083124)	340469.28	3217467.00	0.13226c	(03083124)
340370.78	3217484.50	0.11850c	(03083124)	339878.38	3217571.25	0.07651c	(03083124)
339385.97	3217658.00	0.05594c	(03083124)	338893.59	3217745.00	0.04464c	(03083124)
337908.78	3217918.50	0.03137c	(03083124)	336923.97	3218092.25	0.02606c	(03083124)
340908.31	3217566.00	0.22726c	(03083124)	340814.34	3217600.25	0.18916c	(03083124)
340720.38	3217634.50	0.16098c	(03083124)	340626.41	3217668.75	0.13975c	(03083124)



\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 19:17:40  
PAGE 69

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV

DRYDPL WETDPL

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

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

A Total of            0 Fatal Error Message(s)  
A Total of            22 Warning Message(s)  
A Total of            2837 Informational Message(s)  
  
A Total of            2742 Calm Hours Identified  
  
A Total of            95 Missing Hours Identified ( 1.08 Percent)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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

2004

\*\*BEE-Line Software: BEEST for Windows (Version 9.72) data input file  
\*\* Model: AERMOD.EXE Input File Creation Date: 3/3/2008 Time: 1:31:07 PM  
NO ECHO

BEE-Line AERMOD "BEEST" Version \*\*\*\*

Input File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2004\_PM.DTA

Output File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2004\_PM.LST

Met File - L:\VAUGHN\338884-Progress\Met\_Data\GNV04.SFC

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

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

A Total of 0 Fatal Error Message(s)  
A Total of 22 Warning Message(s)  
A Total of 0 Informational Message(s)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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





\*\*Output Print File:

LEVY3\_2004\_PM.LST

\*\*MODELOPTs:

CONC

DDEP

TOXICS ELEV

DRYDPL WETDPL

\*\*\* POINT SOURCE DATA \*\*\*

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/HOR	EMIS RATE SCALAR VARY BY
SCT1	7	0.39059E+00	342023.1	3216988.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT2	7	0.39059E+00	341994.2	3217005.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT3	7	0.39059E+00	341965.5	3217021.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT4	7	0.39059E+00	341936.7	3217038.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT5	7	0.39059E+00	341907.9	3217054.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT6	7	0.39059E+00	341879.1	3217071.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT7	7	0.39059E+00	341850.3	3217088.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT8	7	0.39059E+00	341821.5	3217104.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT9	7	0.39059E+00	341792.7	3217121.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT10	7	0.39059E+00	341763.9	3217138.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT11	7	0.39059E+00	341735.1	3217154.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT1	7	0.39059E+00	341969.3	3217514.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT2	7	0.39059E+00	341940.5	3217531.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT3	7	0.39059E+00	341911.7	3217547.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT4	7	0.39059E+00	341882.9	3217564.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT5	7	0.39059E+00	341854.1	3217580.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT6	7	0.39059E+00	341825.3	3217597.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT7	7	0.39059E+00	341796.5	3217614.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT8	7	0.39059E+00	341767.7	3217630.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT9	7	0.39059E+00	341738.9	3217647.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT10	7	0.39059E+00	341710.1	3217664.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT11	7	0.39059E+00	341681.3	3217680.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
343128.25	3217449.75	0.22484b	(04043024)	343226.72	3217467.00	0.19854b	(04043024)
343325.22	3217484.50	0.17754b	(04043024)	343817.62	3217571.25	0.11386b	(04043024)
344310.03	3217658.00	0.08220b	(04043024)	344802.41	3217745.00	0.06381b	(04043024)
345787.22	3217918.50	0.04457b	(04043024)	346772.03	3218092.25	0.03470b	(04043024)
342848.00	3217224.00	0.30732b	(04043024)	342948.00	3217224.00	0.25756b	(04043024)
343048.00	3217224.00	0.22151b	(04043024)	343148.00	3217224.00	0.19445b	(04043024)
343248.00	3217224.00	0.17328b	(04043024)	343348.00	3217224.00	0.15611b	(04043024) (1500m, 90°)
343848.00	3217224.00	0.10269b	(04043024)	344348.00	3217224.00	0.07459b	(04043024)
344848.00	3217224.00	0.05740b	(04043024)	345848.00	3217224.00	0.04015b	(04043024)
346848.00	3217224.00	0.03215b	(04043024)	342832.81	3217050.25	0.26481b	(04043024)
342931.28	3217033.00	0.22217b	(04043024)	343029.78	3217015.50	0.19132b	(04043024)
343128.25	3216998.25	0.16832b	(04043024)	343226.72	3216981.00	0.15052b	(04043024)
343325.22	3216963.50	0.13618b	(04043024)	343817.62	3216876.75	0.09217b	(04043024)
344310.03	3216790.00	0.06803b	(04043024)	344802.41	3216703.00	0.05310b	(04043024)
345787.22	3216529.50	0.03895b	(04043024)	346772.03	3216355.75	0.03249b	(04043024)
342787.69	3216882.00	0.23413b	(04043024)	342881.66	3216847.75	0.19333b	(04043024)
342975.62	3216813.50	0.16425b	(04043024)	343069.59	3216779.25	0.14286b	(04043024)
343163.56	3216745.25	0.12668b	(04043024)	343257.53	3216711.00	0.11394b	(04043024) (1500m, 110°)
343727.38	3216540.00	0.07601b	(04043024)	344197.22	3216369.00	0.05458b	(04043024)
344667.09	3216198.00	0.04140b	(04043024)	345606.78	3215856.00	0.03238b	(04123124)
346546.47	3215514.00	0.02868b	(04123124)	342714.03	3216724.00	0.20536b	(04073124)
342800.62	3216674.00	0.17150b	(04073124)	342887.22	3216624.00	0.14544b	(04073124)
342973.84	3216574.00	0.12502b	(04073124)	343060.44	3216524.00	0.10881b	(04073124)
343147.03	3216474.00	0.09576b	(04073124)	343580.06	3216224.00	0.06024b	(04123124)
344013.06	3215974.00	0.04952b	(04123124)	344446.09	3215724.00	0.04276b	(04013124)
345312.09	3215224.00	0.03622b	(04013124)	346178.12	3214724.00	0.03089b	(04013124)
342614.03	3216581.25	0.18155b	(04123124)	342690.66	3216517.00	0.15531b	(04123124)
342767.25	3216452.75	0.13558b	(04123124)	342843.88	3216388.50	0.12027b	(04123124)
342920.47	3216324.00	0.10794b	(04123124)	342997.06	3216259.75	0.09782b	(04123124)
343380.09	3215938.50	0.06903b	(04123124)	343763.12	3215617.00	0.05634b	(04123124)
344146.12	3215295.75	0.04918b	(04123124)	344912.19	3214652.75	0.04058b	(04123124)
345678.22	3214010.00	0.03466b	(04123124)	342490.78	3216458.00	0.20295b	(04123124)
342555.06	3216381.25	0.17202b	(04123124)	342619.34	3216304.75	0.14899b	(04123124)
342683.62	3216228.25	0.13118b	(04123124)	342747.91	3216151.50	0.11704b	(04123124)
342812.19	3216075.00	0.10584b	(04123124)	343133.59	3215692.00	0.07548b	(04123124)
343454.97	3215309.00	0.06121b	(04123124)	343776.38	3214925.75	0.05251b	(04123124)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
342848.00	3215492.00	0.06661b	(04123124)	343098.00	3215059.00	0.05270b	(04123124)
343348.00	3214626.00	0.04433b	(04123124)	343848.00	3213760.00	0.03569b	(04123124)
344348.00	3212893.75	0.03110b	(04123124)	342190.03	3216284.25	0.16349b	(04123124)
342224.22	3216190.25	0.13699b	(04123124)	342258.41	3216096.25	0.11801b	(04123124)
342292.62	3216002.50	0.10357b	(04123124)	342326.84	3215908.50	0.09176b	(04123124)
(1500m, 160°) 342361.03	3215814.50	0.08192b	(04123124)	342532.03	3215344.50	0.05465b	(04123124)
342703.06	3214874.75	0.04356b	(04013124)	342874.06	3214405.00	0.03864b	(04013124)
343216.09	3213465.25	0.03277b	(04013124)	343558.09	3212525.50	0.02780b	(04013124)
342021.66	3216239.25	0.15481b	(04123124)	342039.00	3216140.75	0.13191b	(04123124)
342056.38	3216042.25	0.11509b	(04123124)	342073.75	3215943.75	0.10149b	(04123124)
342091.12	3215845.25	0.08964b	(04123124)	342108.47	3215746.75	0.07963b	(04123124)
342195.31	3215254.50	0.05414b	(04013124)	342282.12	3214762.00	0.04492b	(04013124)
342368.94	3214269.50	0.03982b	(04013124)	342542.59	3213284.75	0.03336b	(04013124)
342716.25	3212300.00	0.02853b	(04013124)	341848.00	3216224.00	0.27805c	(04093024)
341848.00	3216124.00	0.22531c	(04093024)	341848.00	3216024.00	0.18699c	(04093024)
341848.00	3215924.00	0.15902c	(04093024)	341848.00	3215824.00	0.13823c	(04093024)
341848.00	3215724.00	0.12245c	(04093024)	341848.00	3215224.00	0.08005c	(04093024)
341848.00	3214724.00	0.06174c	(04093024)	341848.00	3214224.00	0.05090c	(04093024)
341848.00	3213224.00	0.03771c	(04093024)	341848.00	3212224.00	0.03007c	(04093024)
341674.34	3216239.25	0.43376c	(04093024)	341657.00	3216140.75	0.35808c	(04093024)
341639.62	3216042.25	0.30230c	(04093024)	341622.25	3215943.75	0.26030c	(04093024)
341604.88	3215845.25	0.22865c	(04093024)	341587.53	3215746.75	0.20428c	(04093024)
341500.69	3215254.50	0.13663c	(04093024)	341413.88	3214762.00	0.10528c	(04093024)
341327.06	3214269.50	0.08616c	(04093024)	341153.41	3213284.75	0.06279c	(04093024)
340979.75	3212300.00	0.04894c	(04093024)	341505.97	3216284.25	0.54954c	(04093024)
341471.78	3216190.25	0.46072c	(04093024)	341437.59	3216096.25	0.39449c	(04093024)
341403.38	3216002.50	0.34438c	(04093024)	341369.16	3215908.50	0.30600c	(04093024)
341334.97	3215814.50	0.27596c	(04093024)	341163.97	3215344.50	0.18836c	(04093024)
340992.94	3214874.75	0.14609c	(04093024)	340821.94	3214405.00	0.12082c	(04093024)
340479.91	3213465.25	0.08918c	(04093024)	340137.91	3212525.50	0.07072c	(04093024)
341348.00	3216358.00	0.60148c	(04093024)	341298.00	3216271.25	0.50505c	(04093024)
341248.00	3216184.75	0.43305c	(04093024)	341198.00	3216098.25	0.37877c	(04093024)
341148.00	3216011.50	0.33674c	(04093024)	341098.00	3215925.00	0.30352c	(04093024)
340848.00	3215492.00	0.20412c	(04093024)	340598.00	3215059.00	0.15349c	(04093024)
340348.00	3214626.00	0.12365c	(04093024)	339848.00	3213760.00	0.09001c	(04093024)
339348.00	3212893.75	0.07125c	(04093024)	341205.22	3216458.00	0.59617c	(04093024)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO (YMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO (YMMDDHH)
339276.84	3214159.75	0.07889c (04093024)	338634.06	3213393.75	0.06170c (04093024)
341081.97	3216581.25	0.55002c (04093024)	341005.34	3216517.00	0.46285c (04093024)
340928.75	3216452.75	0.39714c (04093024)	340852.12	3216388.50	0.34670c (04093024)
340775.53	3216324.00	0.30715c (04093024)	340698.94	3216259.75	0.27529c (04093024)
340315.91	3215938.50	0.17577c (04093024)	339932.88	3215617.00	0.12592c (04093024)
339549.88	3215295.75	0.09819c (04093024)	338783.81	3214652.75	0.06903c (04093024)
338017.78	3214010.00	0.05370c (04093024)	340981.97	3216724.00	0.48055c (04093024)
340895.38	3216674.00	0.40511c (04093024)	340808.78	3216624.00	0.34793c (04093024)
340722.16	3216574.00	0.30352c (04093024)	340635.56	3216524.00	0.26818c (04093024)
340548.97	3216474.00	0.23966c (04093024)	340115.94	3216224.00	0.15205c (04093024)
339682.94	3215974.00	0.10789c (04093024)	339249.91	3215724.00	0.08332c (04093024)
338383.91	3215224.00	0.05832c (04093024)	337517.88	3214724.00	0.04576c (04093024)
340908.31	3216882.00	0.41522c (04093024)	340814.34	3216847.75	0.34796c (04093024)
340720.38	3216813.50	0.29726c (04093024)	340626.41	3216779.25	0.25803c (04093024)
340532.44	3216745.25	0.22690c (04093024)	340438.47	3216711.00	0.20191c (04093024)
339968.62	3216540.00	0.12731c (04093024)	339498.78	3216369.00	0.08880c (04093024)
339028.91	3216198.00	0.06662c (04093024)	338089.22	3215856.00	0.04469b (04103124)
337149.53	3215514.00	0.03564b (04103124)	340863.19	3217050.25	0.36562c (04093024)
340764.72	3217033.00	0.30073c (04093024)	340666.22	3217015.50	0.25298c (04093024)
340567.75	3216998.25	0.21673c (04093024)	340469.28	3216981.00	0.18838c (04093024)
340370.78	3216963.50	0.16573c (04093024)	339878.38	3216876.75	0.09973c (04093024)
339385.97	3216790.00	0.06837c (04093024)	338893.59	3216703.00	0.05634b (04103124)
337908.78	3216529.50	0.04530b (04103124)	336923.97	3216355.75	0.03886b (04103124)
(1000m, 270°) 340848.00	3217224.00	0.32142c (04093024)	340748.00	3217224.00	0.25906c (04093024)
340648.00	3217224.00	0.21427c (04093024)	340548.00	3217224.00	0.18168c (04093024)
340448.00	3217224.00	0.15718c (04093024)	340348.00	3217224.00	0.13819c (04093024)
339848.00	3217224.00	0.09398b (04053124)	339348.00	3217224.00	0.07451b (04053124)
338848.00	3217224.00	0.06542b (04053124)	337848.00	3217224.00	0.05544b (04053124)
336848.00	3217224.00	0.04963b (04053124)	340863.19	3217397.75	0.28731b (04053124)
340764.72	3217415.00	0.25648b (04053124)	340666.22	3217432.50	0.23180b (04053124)
340567.75	3217449.75	0.21176b (04053124)	340469.28	3217467.00	0.19559b (04053124)
340370.78	3217484.50	0.18238b (04053124)	339878.38	3217571.25	0.13445b (04053124)
339385.97	3217658.00	0.10164b (04053124)	338893.59	3217745.00	0.08333b (04053124)
337908.78	3217918.50	0.06167b (04053124)	336923.97	3218092.25	0.05058b (04053124)
340908.31	3217566.00	0.36670b (04053124)	340814.34	3217600.25	0.32591b (04053124)
340720.38	3217634.50	0.28678b (04053124)	340626.41	3217668.75	0.25181b (04053124)

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 21:53:11  
PAGE 68

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV                            DRYDPL WETDPL

\*\*\* THE SUMMARY OF HIGHEST MONTH RESULTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2                            \*\*

GROUP ID	DRY DEPO	DATE	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK			
		(YYMMDDHH)			OF TYPE	GRID-ID		
ALL	HIGH	1ST HIGH VALUE IS	0.60148c ON 04093024: AT (	341348.00, 3216358.00,	15.24,	15.24,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	0.39189b ON 04063024: AT (	341848.00, 3218224.00,	15.24,	15.24,	0.00)	DC
	HIGH	3RD HIGH VALUE IS	0.33621b ON 04063024: AT (	341505.97, 3218163.75,	15.24,	15.24,	0.00)	DC

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

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/03/08  
\*\*\* 21:53:11  
PAGE 69

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV

DRYDPL WETDPL

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

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

A Total of            0 Fatal Error Message(s)  
A Total of            22 Warning Message(s)  
A Total of            2226 Informational Message(s)  
  
A Total of            2169 Calm Hours Identified  
  
A Total of            57 Missing Hours Identified ( 0.65 Percent)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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



2005

\*\*BEE-Line Software: BEEST for Windows (Version 9.72) data input file  
\*\* Model: AERMOD.EXE Input File Creation Date: 3/3/2008 Time: 1:31:07 PM  
NO ECHO

BEE-Line AERMOD "BEEST" Version \*\*\*\*

Input File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2005\_PM.DTA

Output File - L:\VAUGHN\338884-Progress\Run3\LEVY3\_2005\_PM.LST

Met File - L:\VAUGHN\338884-Progress\Met\_Data\GNV05.SFC

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

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

A Total of 0 Fatal Error Message(s)  
A Total of 22 Warning Message(s)  
A Total of 0 Informational Message(s)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM	:Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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



\*\*Output Print File:

LEVY3\_2005\_PM.LST

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV            DRYDPL WETDPL

\*\*\* POINT SOURCE DATA \*\*\*

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	STACK EXIT VEL. (M/SEC)	STACK DIAMETER (METERS)	BLDG EXISTS	URBAN SOURCE	CAP/HOR	EMIS RATE SCALAR VARY BY
SCT1	7	0.39059E+00	342023.1	3216988.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT2	7	0.39059E+00	341994.2	3217005.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT3	7	0.39059E+00	341965.5	3217021.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT4	7	0.39059E+00	341936.7	3217038.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT5	7	0.39059E+00	341907.9	3217054.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT6	7	0.39059E+00	341879.1	3217071.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT7	7	0.39059E+00	341850.3	3217088.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT8	7	0.39059E+00	341821.5	3217104.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT9	7	0.39059E+00	341792.7	3217121.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT10	7	0.39059E+00	341763.9	3217138.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
SCT11	7	0.39059E+00	341735.1	3217154.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT1	7	0.39059E+00	341969.3	3217514.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT2	7	0.39059E+00	341940.5	3217531.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT3	7	0.39059E+00	341911.7	3217547.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT4	7	0.39059E+00	341882.9	3217564.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT5	7	0.39059E+00	341854.1	3217580.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT6	7	0.39059E+00	341825.3	3217597.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT7	7	0.39059E+00	341796.5	3217614.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT8	7	0.39059E+00	341767.7	3217630.8	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT9	7	0.39059E+00	341738.9	3217647.2	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT10	7	0.39059E+00	341710.1	3217664.0	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	
NCT11	7	0.39059E+00	341681.3	3217680.5	15.2	16.76	320.82	10.00	20.00	YES	NO	NO	

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)
343128.25	3217449.75	0.27845b (05033124)	343226.72	3217467.00	0.24670b (05033124)
343325.22	3217484.50	0.22048b (05033124)	343817.62	3217571.25	0.13935b (05033124)
344310.03	3217658.00	0.10094b (05033124)	344802.41	3217745.00	0.07975b (05033124)
345787.22	3217918.50	0.05689b (05033124)	346772.03	3218092.25	0.04369b (05033124)
342848.00	3217224.00	0.34435b (05033124)	342948.00	3217224.00	0.28597b (05033124)
343048.00	3217224.00	0.24364b (05033124)	343148.00	3217224.00	0.21197b (05033124)
343248.00	3217224.00	0.18792b (05033124)	343348.00	3217224.00	0.16916b (05033124) (1500m, 90°)
343848.00	3217224.00	0.11315b (05033124)	344348.00	3217224.00	0.08517b (05033124)
344848.00	3217224.00	0.06856b (05033124)	345848.00	3217224.00	0.04937b (05033124)
346848.00	3217224.00	0.04033b (05043024)	342832.81	3217050.25	0.28650b (05033124)
342931.28	3217033.00	0.23976b (05033124)	343029.78	3217015.50	0.20459b (05033124)
343128.25	3216998.25	0.17753b (05033124)	343226.72	3216981.00	0.15682b (05043024)
343325.22	3216963.50	0.14155b (05043024)	343817.62	3216876.75	0.09605b (05043024)
344310.03	3216790.00	0.07261b (05043024)	344802.41	3216703.00	0.05826b (05043024)
345787.22	3216529.50	0.04365b (05043024)	346772.03	3216355.75	0.03650b (05043024)
342787.69	3216882.00	0.25721b (05043024)	342881.66	3216847.75	0.21130b (05043024)
342975.62	3216813.50	0.17754b (05043024)	343069.59	3216779.25	0.15221b (05043024)
343163.56	3216745.25	0.13290b (05043024)	343257.53	3216711.00	0.11788b (05043024) (1500m, 110°)
343727.38	3216540.00	0.07641b (05043024)	344197.22	3216369.00	0.05748b (05043024)
344667.09	3216198.00	0.04551b (05043024)	345606.78	3215856.00	0.03207b (05113024)
346546.47	3215514.00	0.02747b (05113024)	342714.03	3216724.00	0.21286b (05043024)
342800.62	3216674.00	0.17505b (05043024)	342887.22	3216624.00	0.14816b (05043024)
342973.84	3216574.00	0.12817b (05043024)	343060.44	3216524.00	0.11273b (05043024)
343147.03	3216474.00	0.10048b (05043024)	343580.06	3216224.00	0.06494b (05043024)
344013.06	3215974.00	0.04809b (05043024)	344446.09	3215724.00	0.04068c (05123124)
345312.09	3215224.00	0.03493c (05123124)	346178.12	3214724.00	0.03030c (05123124)
342614.03	3216581.25	0.19335b (05043024)	342690.66	3216517.00	0.16232b (05043024)
342767.25	3216452.75	0.14042c (05123124)	342843.88	3216388.50	0.12425c (05123124)
342920.47	3216324.00	0.11135c (05123124)	342997.06	3216259.75	0.10106c (05123124)
343380.09	3215938.50	0.07134c (05123124)	343763.12	3215617.00	0.05565c (05123124)
344146.12	3215295.75	0.04612c (05123124)	344912.19	3214652.75	0.03787c (05123124)
345678.22	3214010.00	0.03372c (05123124)	342490.78	3216458.00	0.20106c (05123124)
342555.06	3216381.25	0.16679c (05123124)	342619.34	3216304.75	0.14239c (05123124)
342683.62	3216228.25	0.12488c (05123124)	342747.91	3216151.50	0.11188c (05123124)
342812.19	3216075.00	0.10200c (05123124)	343133.59	3215692.00	0.07394c (05123124)
343454.97	3215309.00	0.05922c (05123124)	343776.38	3214925.75	0.04979c (05123124)

\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO (YYMMDDHH)
342848.00	3215492.00	0.05921b (05093024)	343098.00	3215059.00	0.04635b (05093024)
343348.00	3214626.00	0.03889b (05093024)	343848.00	3213760.00	0.03041b (05093024)
344348.00	3212893.75	0.02525b (05093024)	342190.03	3216284.25	0.20301b (05103124)
342224.22	3216190.25	0.16731b (05103124)	342258.41	3216096.25	0.14151b (05103124)
342292.62	3216002.50	0.12258b (05103124)	342326.84	3215908.50	0.10833b (05103124)
(1500m, 160°) 342361.03	3215814.50	0.09720b (05103124)	342532.03	3215344.50	0.06546b (05103124)
342703.06	3214874.75	0.05031b (05093024)	342874.06	3214405.00	0.04239b (05093024)
343216.09	3213465.25	0.03318b (05093024)	343558.09	3212525.50	0.02731b (05103124)
342021.66	3216239.25	0.25346b (05103124)	342039.00	3216140.75	0.20723b (05103124)
342056.38	3216042.25	0.17397b (05103124)	342073.75	3215943.75	0.14971b (05103124)
342091.12	3215845.25	0.13130b (05103124)	342108.47	3215746.75	0.11703b (05103124)
342195.31	3215254.50	0.07946b (05103124)	342282.12	3214762.00	0.06261b (05103124)
342368.94	3214269.50	0.05239b (05103124)	342542.59	3213284.75	0.04056b (05103124)
342716.25	3212300.00	0.03432b (05103124)	341848.00	3216224.00	0.31890b (05093024)
341848.00	3216124.00	0.26101b (05093024)	341848.00	3216024.00	0.21932b (05103124)
341848.00	3215924.00	0.19043b (05103124)	341848.00	3215824.00	0.16791b (05103124)
341848.00	3215724.00	0.15044b (05103124)	341848.00	3215224.00	0.10604b (05103124)
341848.00	3214724.00	0.08754b (05103124)	341848.00	3214224.00	0.07533b (05103124)
341848.00	3213224.00	0.05876b (05103124)	341848.00	3212224.00	0.04914b (05103124)
341674.34	3216239.25	0.36027b (05093024)	341657.00	3216140.75	0.30112b (05093024)
341639.62	3216042.25	0.25687b (05093024)	341622.25	3215943.75	0.22340b (05093024)
341604.88	3215845.25	0.19779b (05093024)	341587.53	3215746.75	0.17773b (05093024)
341500.69	3215254.50	0.12770b (05103124)	341413.88	3214762.00	0.10693b (05103124)
341327.06	3214269.50	0.09269b (05103124)	341153.41	3213284.75	0.07437b (05103124)
340979.75	3212300.00	0.06267b (05103124)	341505.97	3216284.25	0.35440b (05103124)
341471.78	3216190.25	0.29790b (05103124)	341437.59	3216096.25	0.25651b (05103124)
341403.38	3216002.50	0.22551b (05103124)	341369.16	3215908.50	0.20137b (05103124)
341334.97	3215814.50	0.18252b (05103124)	341163.97	3215344.50	0.13080b (05103124)
340992.94	3214874.75	0.10602b (05103124)	340821.94	3214405.00	0.09092b (05103124)
340479.91	3213465.25	0.07256b (05103124)	340137.91	3212525.50	0.06056b (05103124)
341348.00	3216358.00	0.35883b (05103124)	341298.00	3216271.25	0.30489b (05103124)
341248.00	3216184.75	0.26461b (05103124)	341198.00	3216098.25	0.23421b (05103124)
341148.00	3216011.50	0.21052b (05103124)	341098.00	3215925.00	0.19168b (05103124)
340848.00	3215492.00	0.13422b (05103124)	340598.00	3215059.00	0.10498b (05103124)
340348.00	3214626.00	0.08733b (05103124)	339848.00	3213760.00	0.06730b (05103124)
339348.00	3212893.75	0.05526b (05103124)	341205.22	3216458.00	0.34180b (05103124)



\*\*MODELOPTs:

CONC DDEP TOXICS ELEV DRYDPL WETDPL

\*\*\* THE 1ST HIGHEST MONTH DRY DEPOSITION VALUES FOR SOURCE GROUP: ALL \*\*\*  
INCLUDING SOURCE(S): SCT1 , SCT2 , SCT3 , SCT4 , SCT5 , SCT6 , SCT7 ,  
SCT8 , SCT9 , SCT10 , SCT11 , NCT1 , NCT2 , NCT3 , NCT4 , NCT5 , NCT6 , NCT7 , NCT8 ,  
NCT9 , NCT10 , NCT11 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POINTS \*\*\*

\*\* DEPO OF PM IN GRAMS/M\*\*2 \*\*

X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	DEPO	(YYMMDDHH)
339276.84	3214159.75	0.06236b	(05103124)	338634.06	3213393.75	0.05149b	(05103124)
341081.97	3216581.25	0.31173b	(05093024)	341005.34	3216517.00	0.26335b	(05103124)
340928.75	3216452.75	0.22960b	(05103124)	340852.12	3216388.50	0.20360b	(05103124)
340775.53	3216324.00	0.18291b	(05103124)	340698.94	3216259.75	0.16601b	(05103124)
340315.91	3215938.50	0.11160b	(05103124)	339932.88	3215617.00	0.08128b	(05103124)
339549.88	3215295.75	0.06417b	(05103124)	338783.81	3214652.75	0.04705b	(05103124)
338017.78	3214010.00	0.03732b	(05103124)	340981.97	3216724.00	0.30673b	(05093024)
340895.38	3216674.00	0.25850b	(05093024)	340808.78	3216624.00	0.22293b	(05093024)
340722.16	3216574.00	0.19643b	(05093024)	340635.56	3216524.00	0.17622b	(05093024)
340548.97	3216474.00	0.16023b	(05093024)	340115.94	3216224.00	0.11176b	(05093024)
339682.94	3215974.00	0.08588b	(05093024)	339249.91	3215724.00	0.07002b	(05093024)
338383.91	3215224.00	0.05267b	(05093024)	337517.88	3214724.00	0.04374b	(05093024)
340908.31	3216882.00	0.31734b	(05093024)	340814.34	3216847.75	0.27332b	(05093024)
340720.38	3216813.50	0.23985b	(05093024)	340626.41	3216779.25	0.21402b	(05093024)
340532.44	3216745.25	0.19330b	(05093024)	340438.47	3216711.00	0.17606b	(05093024)
339968.62	3216540.00	0.12020b	(05093024)	339498.78	3216369.00	0.08947b	(05093024)
339028.91	3216198.00	0.07107b	(05093024)	338089.22	3215856.00	0.04992b	(05093024)
337149.53	3215514.00	0.03941b	(05093024)	340863.19	3217050.25	0.31968b	(05093024)
340764.72	3217033.00	0.27352b	(05093024)	340666.22	3217015.50	0.23700b	(05093024)
340567.75	3216998.25	0.20814b	(05093024)	340469.28	3216981.00	0.18495b	(05093024)
340370.78	3216963.50	0.16608b	(05093024)	339878.38	3216876.75	0.11110b	(05093024)
339385.97	3216790.00	0.08597b	(05093024)	338893.59	3216703.00	0.07194b	(05093024)
337908.78	3216529.50	0.05430b	(05093024)	336923.97	3216355.75	0.04605b	(05093024)
(1000m, 270°) 340848.00	3217224.00	0.29971b	(05093024)	340748.00	3217224.00	0.26081b	(05093024)
340648.00	3217224.00	0.23091b	(05093024)	340548.00	3217224.00	0.20692b	(05093024)
340448.00	3217224.00	0.18704b	(05093024)	340348.00	3217224.00	0.17035b	(05093024)
339848.00	3217224.00	0.11567b	(05093024)	339348.00	3217224.00	0.08552b	(05093024)
338848.00	3217224.00	0.06828b	(05093024)	337848.00	3217224.00	0.04558b	(05093024)
336848.00	3217224.00	0.03680b	(05073124)	340863.19	3217397.75	0.26561b	(05093024)
340764.72	3217415.00	0.22534b	(05093024)	340666.22	3217432.50	0.19353b	(05093024)
340567.75	3217449.75	0.16829b	(05073124)	340469.28	3217467.00	0.15365b	(05073124)
340370.78	3217484.50	0.14206b	(05073124)	339878.38	3217571.25	0.10642b	(05073124)
339385.97	3217658.00	0.08334b	(05073124)	338893.59	3217745.00	0.06749b	(05073124)
337908.78	3217918.50	0.04761b	(05073124)	336923.97	3218092.25	0.03900b	(05073124)
340908.31	3217566.00	0.30589b	(05073124)	340814.34	3217600.25	0.27200b	(05073124)
340720.38	3217634.50	0.24203b	(05073124)	340626.41	3217668.75	0.21449b	(05073124)

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/04/08  
\*\*\* 00:44:46  
PAGE 68

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV                            DRYDPL WETDPL

\*\*\* THE SUMMARY OF HIGHEST MONTH RESULTS \*\*\*

\*\* DEPO OF PM            IN GRAMS/M\*\*2                            \*\*

GROUP ID	DRY DEPO	DATE	RECEPTOR	(XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK			
		(YYMMDDHH)			OF TYPE	GRID-ID		
ALL	HIGH	1ST HIGH VALUE IS	0.63526b ON 05033124: AT (	342490.78, 3217990.00,	15.24,	15.24,	0.00)	DC
	HIGH	2ND HIGH VALUE IS	0.36128b ON 05043024: AT (	341505.97, 3218163.75,	15.24,	15.24,	0.00)	DC
	HIGH	3RD HIGH VALUE IS	0.32792b ON 05073124: AT (	341674.34, 3218208.75,	15.24,	15.24,	0.00)	DC

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

\*\*\* AERMOD - VERSION 07026 \*\*\*      \*\*\* Title One  
\*\*\*

\*\*\* 03/04/08  
\*\*\* 00:44:46  
PAGE 69

\*\*MODELOPTs:

CONC            DDEP            TOXICS ELEV

DRYDPL WETDPL

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

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

A Total of            0 Fatal Error Message(s)  
A Total of            22 Warning Message(s)  
A Total of            2167 Informational Message(s)  
  
A Total of            2098 Calm Hours Identified  
  
A Total of            69 Missing Hours Identified ( 0.79 Percent)

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

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*

SO W320	17	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	49	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	81	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	113	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	145	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	177	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	209	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	241	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	273	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	305	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	337	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	369	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	401	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	433	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	465	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	497	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	529	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	561	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	593	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	625	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	657	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS
SO W320	689	PPARM :Input	Parameter	May	Be	Out-of-Range	for	Parameter	DS

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