STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

Office of the
Secretary

Phone: (302) 739-9000
Fax: (302) 739-6242

**Secretary's Order No.: 2018-A-0046**

**RE: Application of Mountaire Farms of Delaware, Inc., to amend its existing Reg. 1102 Natural Minor Permit to allow for replacement of two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pit Nos. 1 and 3 at its Millsboro facility, located at 29106 John J. Williams Highway, Millsboro, in Sussex County, Delaware.**

**Date of Issuance: August 8, 2018**

**Effective Date: August 8, 2018**

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") pursuant to 7 *Del.C.* §§6003, 6004(b), 6006(4), and all other relevant statutory authority, the Department issues this Order, approving a permit to allow Mountaire Farms of Delaware, Inc. ("Mountaire," "Applicant") to amend its current 7 DE Admin. Code 1102 Natural Minor Permit to allow for replacement of two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware ("Application"). The Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, 7 DE Admin. Code 1100, *Air Quality Management Section.*

## BACKGROUND AND FINDINGS OF FACT

This permit application specifically concerns the Applicant's existing baghouses that control particulate matter emissions from Receiving Pits 1 and 3. A baghouse is a dust-filtering system with chambers consisting of fabric filter bags that remove particulates (in this case, grain dust from corn, barley, or wheat) from the air whenever a truck is unloading grain. When a pit is being utilized for receiving grain, the baghouse acts as a vacuum, using reverse air flow, to collect the fine grain dust that becomes airborne during unloading activities. The collected grain dust is then returned to the receiving pit and transferred to an appropriate storage bin. Receiving Pit 1 was installed in the 1980's, and Receiving Pit 3 was installed in the 1970's. The replacement of these baghouses is part of necessary maintenance for the Applicant's existing equipment. The replacement baghouse filters are 99.9% efficient, which is the same level of efficiency as the existing units.

The Application was initially received by the Department on January 22, 2018, and supplemented with additional information by Mountaire on February 22, 2018. Thereafter, the Application was placed on public notice by the Department on March 7, 2018, to open the fifteen day public comment period. During the public notice periods, DAQ received a request for a public hearing regarding this matter. The Department held its public hearing concerning this matter on May 1, 2018, which was attended not only by Department staff and counsel for the Applicant, but also by several individuals from the public, who offered comment regarding this matter for inclusion into the formal hearing record. Proper notice of the hearing was provided as required by law.

Following the public hearing of May 1, 2018, the technical experts in the Department's Division of Air Quality prepared a Technical Response Memorandum ("TRM") to (1) specifically address the public concerns raised at the time of the hearing; (2) provide a formal regulatory review of the Applicant's proposed project; and (3) offer DAQ's conclusions and recommendations with regard to this pending Application for the benefit of the hearing record generated in this matter. This TRM was subsequently received from DAQ for inclusion into the hearing record by Hearing Officer Lisa A. Vest.

Thereafter, Hearing Officer Vest prepared her Hearing Officer's Report ("Report"), which attached DAQ's TRM referenced above, and expressly incorporated the same therein. Ms. Vest's Report set forth the procedural history, summarized and established the record of information ("Record") relied on in the Report, and provided findings of fact, reasons, and conclusions that recommend that the Department approve this Application, subject to the conditions set forth in the draft Permits APC-1987/0020-Construction (Amendment 4) and APC-2014/0092-Construction (Amendment 1) documents. The Report also addressed the public comments received in this matter, and concluded that the same did not warrant the Department's denying this Application, or delaying the permit decision to receive additional information.

## REASONS AND CONCLUSIONS

This application is for a construction permit to replace two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware. I find that the replacement of these two baghouses will require the Applicant to obtain the aforementioned DAQ Construction Permits. I further find that the Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's air quality regulations as set forth in 7 DE Admin. Code 1100, *Air Quality Management Section.*

In reviewing the applicable statutes and regulations, as well as weighing public benefits of this project against potential detriments, the Department's experts in the Division of Air Quality have concluded that the Applicant's aforementioned baghouse replacement complies with all federal and state air pollution control laws and regulations. Permitted emissions will not change, as the replacement baghouses filters are 99.9% efficient, the same efficiency as the existing units. As noted in the Department's TRM, the Applicant's compliance with this requirement can be demonstrated by inspection and record review.

The concerns voiced at the May 1, 2018 public hearing regarding both the particulate emissions and the odor complaints have been addressed in the Department's TRM. With regard to these emissions, the baghouses comply with 7 DE Admin. Code 1105's standard of 0.2 grains PM per standard cubic foot (each baghouse emits 0.00006 grains PM per standard cubic foot). Additionally, to make sure the baghouses comply with the National Ambient Air Quality Standards, dispersion modeling was performed, which revealed that each baghouse far exceeds the Department's standard for Threshold Limit Values/Maximum Downwind Concentration. As such, public health, safety and welfare are presumed to not be adversely impacted by emissions from the receiving pits' baghouses. Moreover, a construction-to-operation inspection will be conducted by the Department at start-up. Opacity is noted at such inspection, and based upon DAQ's experience with similar installations, the Department does not anticipate visible emissions with regard to these baghouses. The Applicant's facility is allowed up to 20% opacity from 7 DE Admin. Code 1114. Natural minor inspections are performed at least every 5 years, partial compliance inspections are every 2-3 years, and inspections may be conducted as issues arise. Mountaire is required to report non-compliance.

With regard to the odor complaints voiced at the aforementioned hearing (and the manner in which the Department processes calls from the public concerning this matter), DAQ subsequently reviewed the protocols of the DNREC 1-800 complaint line with James Faedtke, then-DNREC Chief of Environmental Police. Chief Faedtke clarified to DAQ staff that, when calls are made, they are directed through Kent-Com, Kent County's 911 system. All calls are logged. Odor complaints are directed to DNREC Environmental Police Officers. Calls can be made via cell phones, but these cannot be used for enforcement fines because the fines must be tied to a residence. While Environmental Police Officers may not be available to respond onsite to odor complaints, all complaints are logged, and the Department's Division of Air Quality will follow up on them.

The Department recognizes that the public has voiced concerns associated with both the air quality and odors which are prevalent in the community surrounding Mountaire's complex in Millsboro. However, DAQ permits are issued on the basis of whether an Applicant has met the requirements of all applicable regulations, and through the Department's use of air quality dispersion modeling to verify that the maximum downwind concentration will be within the aforementioned threshold limit values. The record developed in this matter indicates that the Department's experts have considered all statutes and regulations that govern projects such as this proposed baghouse replacement, and have recommended issuance of all permits necessary for the same to the Applicant in this matter.

I find and conclude that the Applicant has adequately demonstrated its compliance with all requirements of the statutes and regulations, as noted herein, and that the record supports approval of the Application submitted by Mountaire Farms of Delaware, Inc. Accordingly, this Order approves and directs all permits required for the replacement of the Applicant's two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware, consistent with the record developed in this matter, be issued by the Department in the customary form, and with appropriate conditions.

Further, the Department concludes and directs the following:

1. The Department has jurisdiction under 7 *Del. C.* §§6003, 6004, 6006(4), and all other relevant statutory authority, to make a final determination on the Application, after holding a public hearing and considering the public comments and all information contained in the Record generated in this matter;
2. The Department provided proper public notices of the Application submitted by Mountaire Farms of Delaware, Inc., and of the public hearing held on May 1, 2018, and held said hearing in a manner required by the law and regulations;
3. The Department considered all timely and relevant public comments in the Record, as established in the Report, prior to issuing this Order as its final decision;

4. The Department has carefully considered the factors required to be weighed in issuing all permits required by the Applicant's proposed baghouse replacement, and finds that the Record supports approval of the Application, and the issuance of all required permits associated with same;

5. The Department shall issue Construction permits to the Applicant for the replacement of its two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware. Furthermore, said permit shall include all conditions as set forth in the Department's draft permit, to ensure that Delaware's environment and public health will be protected from harm;

6. The Department adopts the Report and its attachments as further support for this decision;

7. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and

8. The Department shall serve and publish its Order on its internet site, and shall provide legal notice of the Order in the same manner that the Department provided legal notice of the Application.

8/8/18
Date

Shawn M. Garvin, Secretary
Department of Natural Resources and
Environmental Control

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DATE

**Permit: APC-1987/0020-CONSTRUCTION (Amendment 4) Receiving Pit 1, Emission Unit 9**
**Permit: APC-2014/0092-CONSTRUCTION (Amendment 1) Receiving Pit 3, EU 11**

Mountaire Farms of Delaware, Inc. – Millsboro Complex
P.O. Box 1320
Millsboro, DE 19966

ATTENTION: Mr. Austin Pajda
Environmental Compliance Coordinator

Dear Mr. Pajda:

Pursuant to the 7 **DE Admin. Code** 1102 Section 2 and Section 11, approval by the Department of Natural Resources and Environmental Control is hereby granted for the construction of a CAMCORP Model 12HVP112 reverse air baghouse for Receiving Pit 1, and a CAMCORP Model 12HVP112 reverse air baghouse for Receiving Pit 3, located at the Mountaire Farms of Delaware, Inc. facility in Millsboro, Delaware, in accordance with the application submitted on Forms AQM-1, AQM-2, AQM-4.6 and AQM-5 for each baghouse, dated January 22, 2018, signed by Jimmy Paulakuhn.

This permit is issued subject to the following conditions:

## 1. General Provisions

1.1 This permit expires on March 22, 2019. If the equipment covered by this permit will not be constructed by March 22, 2019, a request to extend this construction permit must be submitted by February 6, 2019.

1.2 The project shall be constructed in accordance with the application described above. If any changes are necessary, revised plans must be submitted and supplemental approval issued prior to actual construction.

1.3 Representatives of the Department may, at any reasonable time, inspect this facility.

1.4 This permit may not be transferred to another location or to another piece of equipment or process.

1.5 This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. Approval (or disapproval) of the permit transfer will be provided by the Department in writing. A request for a permit transfer shall be received by the Department at least thirty (30) days before the date of the requested permit transfer. This request shall include:

1.5.1 Signed letters from each person stating the permit transfer is agreeable to each person; and

1.5.2 An Applicant Background Information Questionnaire pursuant to 7 Del C, Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous five (5) years.

1.6 The applicant shall, upon completion of the construction, installation, or alteration, request that the Department grant approval to operate.

1.6.1 A separate application to operate pursuant to 7 **DE Admin. Code** 1102 does not need to be submitted to the Department for the equipment or process covered by this construction permit. Upon a satisfactory demonstration by an on-site inspection that the equipment or process complies with all of the terms and conditions of this permit, the Department shall issue a 7 **DE Admin. Code** 1102 Operating Permit for this equipment or process.

1.6.2 The applicant shall notify the Department sufficiently in advance of the demonstration and shall obtain the Department's prior concurrence of the operating factors, time period, and other pertinent details relating to the demonstration.

1.6.3 The provisions of 7 **DE Admin. Code** 1102 Sections 2.1 and 11.3 shall not apply to the operation of equipment or processes for the purposes of initially demonstrating satisfactory performance to the Department following construction, installation, modification, or alteration of the equipment or processes.

1.7 The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 **DE Admin. Code** 1102, and, when applicable 7 **DE Admin. Code** 1125, and receiving approval of such application from the Department; except as exempted in 7 **DE Admin. Code** 1102 Section 2.2.

## 2. Emission Limitations

2.1 Air contaminant emission levels shall not exceed those specified in 7 **DE Admin. Code** 1100 and the following:

2.1.1 Particulate Matter (PM10) Emissions
PM10 emissions from each receiving pit shall not exceed 0.001 pounds per hour and 0.0050 ton per twelve (12) month rolling period.

2.1.2 Particulate Matter (PM) Emissions

2.1.2.1 Total combined grain feed receiving pits' PM emissions from Emission Units 9, 10, and 11 shall not exceed 0.10 ton per twelve (12) month rolling period.

2.1.2.2 Air contaminant emission levels from each of the Emission Units 9, 10, and 11 shall not exceed 0.2 grain per standard cubic foot of exhaust air.

2.2 No person shall cause or allow the emission of visible air contaminants and/or smoke from a stationary or mobile source, the shade or appearance of which is greater than twenty percent (20%) opacity for an aggregate of more than three (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (24) hour period.

2.3 Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.

## 3. Operational Limitations

3.1 The owner or operator shall comply with the following operational limits:

3.1.1 The Company shall not move or allow to be moved, chaff, husks, or cobs from any grain, unless precautions are taken to prevent unnecessary escape of these materials during transfer.

3.1.2 The baghouse on each of the Emission Units 9, 10, and 11 shall be operating properly whenever the associated grain-receiving unit is receiving grain.

3.1.3 Proper operation of the differential pressure gauge on each of the baghouses on Emission Units 9, 10, and 11 shall be considered a necessary part of proper operation of the associated baghouse. When the baghouse is not equipped with a pressure differential gauge, pressure can be determined by Department approved methods.

3.1.4 The grain receiving rate shall not exceed 454 tons per hour in Emission Unit 9.

3.1.5 The grain receiving rate shall not exceed 454 tons per hour in Emission Unit 10.

3.1.6 The grain receiving rate shall not exceed 454 tons per hour in Emission Unit 11.

3.1.7 Controlled particulate emissions based upon the process rate equal a maximum of 0.00006 gr/scf. Each emission unit has emissions less than the 0.2 gr/scf standard. Compliance with Condition 2.1.2.2 can be consistently demonstrated when Conditions 3.1.2, 3.1.3, 3.1.4, 3.1.5, and 3.1.6 are met.

3.1.8 At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility, including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determinations of whether acceptable operating procedures are being used will be based on information available to the Department, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

3.1.9 All structural and mechanical components of the equipment covered by this permit and in use shall be maintained in proper operating condition.

## 4. Testing and Monitoring Requirements

4.1 The Department reserves the right to require that the owner or operator perform emission tests using methods approved in advance by the Department.

4.1.1 One (1) original and one (1) copy of the test protocol shall be submitted a minimum of forty-five (45) days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.

4.1.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Source Testing Engineer. The Department must observe the test for the results to be considered for acceptance.

4.1.3 The final results of the testing shall be submitted to the Department within sixty (60) days of the test completion. One (1) original and one (1) copy of the test report shall be submitted to the addresses below:

Original to:
Engineering & Compliance Branch
Attn: Permitting Engineer
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

One (1) Copy to:
Engineering & Compliance Branch
Attn: Source Testing Engineer
715 Grantham Lane
New Castle, DE 19720

4.1.4 The final report of the results must meet the following requirements to be considered valid:

4.1.4.1 The full report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a statement of compliance or non-compliance with permit conditions;

4.1.4.2 Summary of Results and Statement of Compliance or Non-Compliance
The owner or operator shall supplement the report from the emissions testing firm with a summary of results that includes the following information:

4.1.4.2.1 A statement that the owner or operator has reviewed the report from the emissions testing firm and agrees with the findings.

4.1.4.2.2 Permit number(s) and condition(s) which are the basis for the compliance evaluation.

4.1.4.2.3 Summary of results with respect to each permit condition.

4.1.4.2.4 Statement of compliance or non-compliance with each permit condition.

4.1.5 The results must demonstrate to the Department's satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the owner or operator shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.

## 5. Record Keeping Requirements

5.1 The owner or operator shall maintain all records necessary for determining compliance with this permit in a readily accessible location for five (5) years and shall make these records available to the Department upon written or verbal request.

5.2 The following information shall be recorded, initialed and maintained in a log each day, for each of the Emission Units 9, 10, and 11:

5.2.1 Total quantity of grain received.

5.2.2 Hours of grain receiving operations.

5.2.3 Rate of grain receiving in tons per hour.

5.2.4 Pressure drop of the baghouse. When a normal pressure differential operating range is not established, the Company shall establish this operating range based on this monitoring.

5.3 The following information shall be recorded, initialed and maintained in a log each month, for each of the Emission Units 9, 10, and 11:

5.3.1 All routine and non-routine maintenance performed on the baghouse including dates and duration of outages.

5.3.2 Tons of grain received.

5.3.3 Tons of grain received for the twelve (12) month period immediately preceding the date of record.

5.4 The following information shall be recorded, initialed and maintained in a log each month for Emission Units 9, 10, and 11 combined:

5.4.1 Total combined tons of grain received.

5.4.2 Total combined tons of grain received for the twelve (12) month period immediately preceding the date of record.

5.5 A statement of compliance for the operational limitations of Condition 3.1.1.

5.6 The rolling twelve (12) month total emissions shall be calculated and recorded each month in a log for each of the following pollutants.

5.6.1 Particulate Matter (PM10) for each of the Emission Units 9, 10, and 11

5.6.2 Particulate Matter (PM) total combined for Emission Units 9, 10, and 11

## 6. Reporting Requirements

6.1 Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery by calling the Environmental Emergency Notification and Complaint number, (800) 662-8802.

6.2 In addition to complying with condition 6.1 of this permit, any reporting required by 7 **DE Admin. Code** 1203 "**Reporting of Discharge of a Pollutant or an Air Contaminant**", and any other reporting requirements mandated by the State of Delaware, the owner or operator shall for each occurrence of excess emissions, within thirty (30) calendar days of becoming aware of such occurrence, supply the Department in writing with the following information:

6.2.1 The name and location of the facility;

6.2.2 The subject source(s) that caused the excess emissions;

6.2.3 The time and date of the first observation of the excess emissions;

6.2.4 The cause and expected duration of the excess emissions;

6.2.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and

6.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

6.3 One original and one copy of all required reports shall be sent to the address below:

Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

## 7. Administrative Conditions

7.1 This permit shall be made available on the premises.

7.2 Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

Angela D. Marconi, P.E., BCEE
Program Manager
Engineering & Compliance Branch

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pc: Dover File
Melanie Smith

**MEMORANDUM**

TO: Angela D. Marconi, P.E., BCEE

THROUGH: Joanna L. French, P.E.

FROM: Melanie A. Smith, P.E.

**SUBJECT:** **Mountaire Farms of Delaware, Inc.**
**Permit: APC-1987/0020-CONSTRUCTION (Amendment 4) Receiving Pit 1EU9**
**Permit: APC-2014/0092-CONSTRUCTION (Amendment 1) Receiving Pit 3EU11**

DATE: August 1, 2018

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## BACKGROUND

Mountaire Farms of Delaware, Inc. requested construction permits for two identical CAMCORP model 12HVP112 reverse air baghouses, to replace those in Receiving Pits 1 and 3, in an application dated January 22, 2018. After a successful construction-to-operation inspection, the operating permits for Receiving Pits 1, 2, and 3 will be grouped together. The facility is a natural minor.

| Emission Unit | Description |
|---|---|
| 1 | Boiler 1 |
| 2 | Boiler 2 |
| 3 | Boiler 3 |
| 4 | Boiler 4 |
| 5 | Boiler 5 |
| 6 | Front Dryer |
| 7 | Back Dryer |
| 8 | Boiler 6 |
| 9 | Receiving Pit 1 |
| 10 | Receiving Pit 2 |
| 11 | Receiving Pit 3 |
| 12 | Feed Receiving Pit |
| 52 | 10,000 gallon Gasoline Tank |
| 53 | Hammermill |
| 54 | Pellet Cooler 1 |
| 55 | Pellet Cooler 2 |
| 56 | Batching Bin |
| 60 | Hatch. Generator |
| 61 | Wastewater Generator |
| 62 | Picking Generator |
| 63 | Fire Pump |
| 73 | No. 2 Fuel Oil Tank |
| 75 | No. 2 Fuel Oil Tank |
| 76 | No. 2 Fuel Oil Tank |
| 77 | Hatch. Generator |
| 78 | Admin. Generator |
| 79 | Hatch. Generator |
| 80-85 | Resource Recovery |

| Emission Unit | Description |
|---|---|
| 86 | Hatch. Generator |
| 87 | Admin. Generator |
| 88 | Hatch. Generator |

| Pollutant | Facility Wide PTE (tons/year) | Major Source Threshold (tons/year) |
|---|---|---|
| Nitrogen Oxides ($NO_X$) | 71.870 | 100 |
| Volatile Organic Compounds (VOCs) | 10.835 | 50 |
| Carbon Monoxide (CO) | 49.388 | 100 |
| Particulate Matter (PM) | 86.684 | 100 |
| Particulate Matter Less Than 10 Microns ($PM_{10}$) | 86.684 | 100 |
| Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) | | 25 |
| Sulfur Dioxide ($SO_2$) | 51.562 | 100 |
| Lead | | 10 |
| Carbon Dioxide Equivalent ($CO_2e$) | 97,902.175 | 100,000 |
| Other (list) | | |

The Company has not requested confidentiality.
The Company is located within the Coastal Zone, however, a Coastal Zone Permit is not required for construction or operation of the baghouses.
The Company is current with their annual fees and has paid appropriate construction application fees.

**TECHNICAL INFORMATION**

Each baghouse is manufactured by CAMCORP, Inc. and is model 12HVP112. Particulate removal efficiency is 99.9%. The receiving pits receive grain at a rate of 454 TPH. The receiving pits are available for receiving 24 hours/day, 7 days/week, 52 weeks/year.

**Potential to Emit/Permitted Emissions**
In an EPA Guidance Memo, *Definition of Regulated Pollutant for Particulate Matter for Purposes of Title V*, dated October 16, 1995, the EPA concluded that its definition of a regulated air pollutant for particulate matter under Title V applies only to emissions of PM10. Emission factors were taken from AP-42, Table 9.9.1-2, *Particulate Emission Factors For Grain Processing Facilities*, dated March 2003. The factors do not include fabric filter control.

| Pollutant | Emiss. Factor (lb/ton) | Process Rate (TPH) | Efficiency | Emissions (lb/hr) | Emissions (TPY) |
|---|---|---|---|---|---|
| PM10 (each pit) | 0.0025 | 454 | 99.9 | 0.001 | 0.0050 |
| PM (combined)[1] | 0.017 | 454 | 99.9 | --- | 0.10 |

1. Receiving Pits 9, 10, and 11.

| Emission Unit ID | Emission Unit Description | Impacted By Project? | How Impacted? |
|---|---|---|---|
| 9 | Receiving Pit 1 baghouse | Yes | Replaced |
| 11 | Receiving Pit 3 baghouse | Yes | Replaced |

**AERSCREEN Dispersion Modeling**

The effects air contaminant emissions from each baghouse on the public health, safety, and welfare were assessed using Department criteria. The criteria assume no adverse effect when the ratio of the Threshold Limit Value to the Maximum Downwind Concentration (TLV:MDC) is at least 100:1 at the nearest property line and beyond for each air contaminant released. The TLV of each air contaminant was obtained from the pamphlet, 2016 TLVs® and BEIs®, published by the American Conference of Governmental Industrial Hygienists (ACGIH). The MDC of each air contaminant was computed using AERSCREEN air dispersion modeling. AERSCREEN is EPA's recommended screening-level air quality model based on AERMOD (U.S. EPA, 2016a).

AERSCREEN is an interactive command-prompt application that interfaces with MAKEMET for generating the meteorological matrix, but also interfaces with AERMAP and BPIPPRM to automate the processing of terrain and building information, and interfaces with AERMOD model utilizing the SCREEN option to perform the modeling runs. The AERSCREEN program also includes averaging time factors for worst-case 3-hr, 8-hr, 24-hr and annual averages.

In utilizing AERSCREEN, each baghouse stack was treated as a point source. Point source variables in AERSCREEN are air contaminant emission rates (in lb/H), stack height (in ft), stack inside diameter (in inches), stack gas exit velocity (in ft/s) or air flow rate (in acfm), stack gas exit temperature (in °F), receptor height above ground level (in ft), and the urban option. Values input for the stack parameters were the following:

| Source | Stack Height (ft) | Stack Diameter (ft) | Gas Flow Rate (acfm) | Exit Gas Temperature (°F) |
|---|---|---|---|---|
| Receiving Pit 1 | 9 | 2.07 | 14,500 | 70 |
| Receiving Pit 3 | 9 | 2.07 | 14,500 | 70 |

The remaining input values were the minimum distance to ambient air of 3.3ft, maximum distance to probe default value of 5000m, default value of -10 to 100F for minimum and maximum ambient temperature, default wind speed of 0.5 m/s, surface characteristics as grassland, wet conditions as dominant surface profile, a receptor height above ground of 0 ft, anemometer height default of 10.0 m, base elevation of source of 22.97 ft elevation (Millsboro), and the urban option (population of Millsboro in 2016 is 4,293). The nearest property line is 380 feet (115.8 m) for Pit 1 and 990 feet (301.8 m) for Pit 3.

Downwash was considered for both pits. Each pit has a small shed 12 feet from the stack. Pit 1 has 12 silo bins in a common building 75 feet from the center of the building to the stack. Pit 3 has one round silo bin 100 feet from the center of the bin to the stack. AERSCREEN predicts the MDC location for the pollutants for either pit to occur 55.8 ft (17 m) from the exhaust of the stack. The MDC for all four cases was the same.

The MDC results from SCREEN3 adjusted to an 8-hour average along with the associated TLVs and the TLV:MDC for each contaminant are shown below:

| Pollutant | Emission Rate (lb/hr) | TLV (8-hr, mg/m³) | MDC (8-hr, mg/m³) | TLV:MDC |
|---|---|---|---|---|
| PM10 | 0.001135 | 10 | 0.0031 | 3,200 |

**REGULATORY REVIEW**

- ☐ 7 **DE Admin. Code** 1102: Permits
- 7 **DE Admin. Code** 1105: Particulate Emissions from Industrial Process Operations
- ☐ 7 **DE Admin. Code** 1114: Visible Emissions
- ☐ 7 **DE Admin. Code** 1119: Control of Odorous Air Contaminants
- ☐ 7 **DE Admin. Code** 1120: New Source Performance Standards
- ☐ 7 **DE Admin. Code** 1124: Control of Volatile Organic Compound Emissions
- ☐ 7 **DE Admin. Code** 1125: Requirements for Preconstruction Review
- ☐ 7 **DE Admin. Code** 1130: Title V State Operating Permit Program
- ☐ 7 **DE Admin. Code** 1138: Emission Standards for Hazardous Air Pollutants for Source Categories

7 **DE Admin. Code** 1102, Section 2.1: *Permits* The Company is subject to the following requirement, "...no person shall initiate construction, install, alter or initiate operation of any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to receiving approval of his application from the Department."

7 **DE Admin. Code** 1105, Section 2.1: *Particulate Emissions from Industrial Process Operations* The Company is subject to the following emissions limit from industrial process operations, "No person shall cause or allow particulate emissions into the atmosphere from any source not provided for in subsequent sections of this Regulation in excess of 0.2 grains per standard cubic foot." This regulation only applies to point source emissions.

7 **DE Admin. Code** 1105's particulate standard of 0.2 gr/SCF is met in each of the receiving pits. The data below for Emission Unit 10 replicates the "Proposed" **Permit: AQM-005/00004 (Renewal 1)** memo dated September 21, 2004.

(0.017 lb/T x 1 hr/60 min x 454 TPH x (1- 0.999) x 7000 gr/lb)/ 14,500 SCFM= 0.00006 gr/SCF

| Emission Unit | TPH | PM emission factor (lb/T) | Blower (SCFM) | gr/SCF |
|---|---|---|---|---|
| 9 | 454 | 0.017 | 14,500 | 0.00006 |
| 10 | 454 | 0.017 | 19,550 | 0.00005 |
| 11 | 454 | 0.017 | 14,500 | 0.00006 |

CAMCORP, Inc. guaranteed average outlet emissions to not exceed 0.005 grains per dry standard cubic foot on 2 micron and larger by weight dry particulate matter, during the life of the media. Compliance with 7 **DE Admin. Code** 1105 can be shown by baghouse performance. A condition limiting emissions to 0.2 grains per standard cubic foot has been placed in the permit.

7 **DE Admin. Code** 1114, Section 2.1: *Visible Emissions* The facility is subject to the following visible emissions requirement, "No person shall cause or allow the emission of visible air contaminants and/or smoke from a stationary or mobile source, the shade or appearance of which is greater than twenty percent (20%) opacity for an aggregate of more than three (3) minutes in any one (1) hour period, or more than fifteen (15) minutes in any twenty-four (24) hour period." Compliance shall be demonstrated by the Company having no contradictory knowledge of any citizen complaint and by a satisfactory review of complaint history by the Department. This emissions requirement has been placed in the permit along with the associated recordkeeping requirements.

7 **DE Admin. Code** 1119, Section 2.1: *Control of Odorous Air Contaminants* The facility is subject to the following control of odorous air contaminants requirement, "no person shall cause or allow the emission of an odorous air contaminant such as to cause a condition of air pollution." Compliance shall be demonstrated through the Company having no contradictory knowledge of any citizen odor complaint and through a satisfactory review of complaint history by the Department. This emissions requirement has been placed in the permit along with the associated reporting requirements.

7 **DE Admin. Code** 1120: *New Source Performance Standards* This regulation is not applicable to rail/ truck receiving.

7 **DE Admin. Code** 1124, Section 2: *Handling, Storage, and Disposal of Volatile Organic Compounds (VOCs)* is not applicable because particulate is not a VOC.

7 **DE Admin. Code** 1125, Section 4: *Minor New Source Review, Requirements for Preconstruction Review*, is applicable because the equipment is new (applied for after August 11, 2005), the source requires a permit under 7 **DE Admin. Code** 1102, Section 2.1.3, and the source is not covered by the Emission Offset Provisions (EOP) or Prevention of Significant Deterioration of Air Quality (PSD). Each baghouse's potential to emit PM2.5 is less than the threshold limit of 5 TPY (PM10 PTE is 0.0050 TPY).

7 **DE Admin. Code** 1130: *Title V State Operating Permit Program* The facility is a natural minor source.

7 **DE Admin. Code** 1138: *Emission Standards for Hazardous Air Pollutants for Source Categories* 7 **DE Admin. Code** 1138 is not applicable because PM10 is not a Hazardous Air Pollutant (HAP).

**RECOMMENDATIONS**

The application was advertised Wednesday, March 7, 2018. A public hearing was requested and held on May 1, 2018. The technical response document was sent to Lisa Vest the hearing officer on June 15, 2018. The proposed project and attached permit comply with all applicable zoning requirements and federal and state air pollution control laws and regulations. I recommend that **Permits: APC-1987/0020-CONSTRUCTION (Amendment 4)** and **Permit: APC-2014/0092-CONSTRUCTION (Amendment 1)** be issued if approval is granted by the Secretary.

ADM:JLF:MAS
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pc: Dover File
Melanie Smith

# HEARING OFFICER'S REPORT

**TO:** The Honorable Shawn M. Garvin
Cabinet Secretary, Department of Natural Resources and Environmental Control

**FROM:** Lisa A. Vest
Public Hearing Officer, Office of the Secretary
Department of Natural Resources and Environmental Control

**RE:** Application of Mountaire Farms of Delaware, Inc., to amend its existing Reg. No. 1102 Natural Minor Permit to allow for replacement of two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pit Nos. 1 and 3 at its Millsboro facility, located at 29106 John J. Williams Highway, Millsboro, in Sussex County, Delaware.

**DATE:** July 19, 2018

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## I. BACKGROUND AND PROCEDURAL HISTORY:

A public hearing was held on Tuesday, May 1, 2018, at 6:00 p.m. by the Department of Natural Resources and Environmental Control ("DNREC," "Department") at the Indian River Civic (Senior) Center, located at 214 Irons Avenue, Millsboro, Delaware, to receive comment on the application of Mountaire Farms of Delaware, Inc. ("Mountaire," "Applicant") to amend its current 7 DE Admin. Code 1102 Natural Minor Permit to allow for replacement of two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware ("Application"). The Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's air quality regulations, as set forth in 7 DE Admin. Code 1100, *Air Quality Management Section.*

This permit application specifically concerns the Applicant's existing baghouses that control particulate matter emissions from Receiving Pits 1 and 3. A baghouse is a dust-filtering system with chambers consisting of fabric filter bags that remove particulates (in this case, grain

dust from corn, barley, or wheat) from the air whenever a truck is unloading grain. When a pit is being utilized for receiving grain, the baghouse acts as a vacuum, using reverse air flow, to collect the fine grain dust that becomes airborne during unloading activities. The collected grain dust is then returned to the receiving pit and transferred to an appropriate storage bin. Receiving Pit 1 was installed in the 1980's, and Receiving Pit 3 was installed in the 1970's. The replacement of these baghouses is part of necessary maintenance for the Applicant's existing equipment. The replacement baghouse filters are 99.9% efficient, which is the same level of efficiency as the existing units.

The Application was initially received by the Department on January 22, 2018, and supplemented with additional information by Mountaire on February 22, 2018. Thereafter, the Application was placed on public notice by the Department on March 7, 2018 to open the fifteen day public comment period. During the public notice periods, DAQ received a request for a public hearing regarding this matter.

The Department held its public hearing concerning this matter on May 1, 2018, which was attended not only by Department staff and representatives of the Applicant, but also by several individuals from the public. Comment was received from the public at that hearing, and will be discussed in further detail below. Proper notice of the hearing was provided as required by law.

## II. SUMMARY OF THE PUBLIC HEARING RECORD:

The public hearing record consists of the following documents: (1) a verbatim transcript; (2) ten documents representing the Department's Exhibits concerning this permitting matter, introduced by responsible DAQ staff at the public hearing held on May 1, 2018, and marked accordingly by this Hearing Officer as "Dept. Exh. 1-10"; (3) written statement from Elio

Battista, Jr., Esq., counsel for the Applicant, marked as "Battista Exh. #1"; (4) documentation provided by John Austin as a supplement to his verbal comment offered at the public hearing, marked as "Austin Exh. #1"; and (5) Technical Response Memorandum ("TRM") from Melanie Smith, P.E., through DAQ Management, including but not limited to, Angela D. Marconi, P.E., BCEE, Branch Manager, Engineering and Compliance Section, DNREC Division of Air Quality, dated June 15, 2018. The Department's person primarily responsible for reviewing this application, Ms. Marconi, as referenced above, developed the record with the relevant documents in the Department's files.

The hearing record generated in this matter indicates that the comments made during the public hearing were made by citizens who are extremely concerned about the air quality in Sussex County, and, specifically, the impact of the Applicant's operations at its Mountaire complex in Millsboro, Delaware. Specific concerns voiced at the hearing including questions about the level of particulate emissions in Millsboro (and the health impact of the same upon the community) and the strong odors emitting from the Mountaire complex (and the manner in which the Department has been responsive to such complaints). Requests were made by those attending the public hearing that DNREC not issue *any* new permits to this Applicant until such time as the full impact on the community is known, and quality of life has improved over and above the existing units.

Following the public hearing of May 1, 2018 (and in response to the concerns voiced by the public in this matter), the technical experts in the Department's Division of Air Quality prepared a Technical Response Memorandum ("TRM") to (1) specifically address the public concerns raised at the time of the hearing; and (2) offer conclusions and recommendations with regard to this pending Application for the benefit of the hearing record generated in this matter.

In its TRM, DAQ addresses the public's concerns of both the particulate emissions and the odor complaints in this matter. The Department notes that the baghouses comply with 7 DE Admin. Code 1105's standard of 0.2 grains PM per standard cubic foot (each baghouse emits 0.00006 grains PM per standard cubic foot). Additionally, to make sure the baghouses comply with the National Ambient Air Quality Standards, dispersion modeling was performed, which revealed that each baghouse far exceeds the Department's standard for Threshold Limit Values/Maximum Downwind Concentration. As such, the Department states that the public health, safety and welfare are presumed to not be adversely impacted by emissions from the receiving pits' baghouses. Moreover, the Department conducts a construction-to-operation inspection at start-up. Opacity is noted at the inspection, and based upon DAQ's experience with similar installations, the Department does not anticipate visible emissions with regard to these baghouses. The Applicant's facility is allowed up to 20% opacity from 7 DE Admin. Code 1114. Natural minor inspections are performed at least every 5 years, partial compliance inspections are every 2-3 years, and inspections may be conducted as issues arise. Mountaire is required to report non-compliance.

With regard to the odor complaints voiced at the aforementioned hearing (and the manner in which the Department processes calls from the public concerning this matter), DAQ reviewed the protocols of the DNREC 1-800 complaint line with James Faedtke, then-DNREC Chief of Environmental Police. Chief Faedtke clarified to DAQ staff that, when calls are made, they are directed through Kent-Com, Kent County's 911 system. All calls are logged. Odor complaints are directed to DNREC Environmental Police Officers. Calls can be made via cell phones, but these cannot be used for enforcement fines because the fines must be tied to a residence. While

Environmental Police Officers may not be available to respond onsite to odor complaints, all complaints are logged, and the Department's Division of Air Quality will follow up on them.

I find that the Division of Air Quality's TRM offers a detailed review of all aspects of the Applicant's proposed project, identifies all of the concerns raised at the public hearing of May 1, 2018, and responds to them in a balanced manner, accurately reflecting the information contained in the formal hearing record. Thus, the aforementioned TRM is attached hereto as Appendix "A" and expressly incorporated herein as such.

## III. RECOMMENDED FINDINGS AND CONCLUSIONS:

This application is for a construction permit to replace two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware. I find that the replacement of these two baghouses will require the Applicant to obtain a DAQ Construction Permit. I further find that the Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's air quality regulations as set forth in 7 DE Admin. Code 1100, *Air Quality Management Section.*

In reviewing the applicable statutes and regulations, as well as weighing public benefits of this project against potential detriments, the Department's experts in the Division of Air Quality have concluded that the aforementioned replacement of its two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 complies with all federal and state air pollution control laws and regulations. Permitted emissions will not change, as the replacement baghouses filters are 99.9% efficient, the same efficiency as the existing units. As noted in the Department's TRM, the Applicant's compliance with this requirement can be demonstrated by inspection and record review.

The Department recognizes that the public has voiced concerns associated with both the air quality and odors which are prevalent in the community surrounding Mountaire's complex in Millsboro. However, DAQ permits are issued based on applicable regulations (including zoning), and through the use of air quality screening models, which are used to verify that the maximum downwind concentration will be well under threshold limit values. The record developed in this matter indicates that the Department's experts have considered all statutes and regulations that govern projects such as this proposed baghouse replacement, and have recommended issuance of all permits necessary for the same to the Applicant in this matter.

I find and conclude that the Applicant has adequately demonstrated its compliance with all requirements of the statutes and regulations, as noted herein, and that the record supports approval of the Application submitted by Mountaire Farms of Delaware, Inc. In conclusion, I recommend that all permits required for the replacement of the Applicant's two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware, consistent with the record developed in this matter, be issued by the Department in the customary form, and with appropriate conditions.

Further, I recommend the Secretary adopt the following findings and conclusions:

1. The Department has jurisdiction under 7 *Del. C.* §§6003, 6004, 6006(4), and all other relevant statutory authority, to make a final determination on the Application after holding a public hearing, considering the public comments, and all information contained in the Record generated in this matter;

2. The Department provided proper public notice of the Application submitted by Mountaire Farms of Delaware, Inc., and of the public hearing held on May 1, 2018, and held said hearing to consider any public comment that may be offered on the Application, in a manner required by the law and regulations;

3. The Department considered all timely and relevant public comments in the Record, as established in the TRM provided by the Division of Air Quality;

4. The Department has carefully considered the factors required to be weighed in issuing all permits required by the Applicant's proposed baghouse replacement, and finds that the Record supports approval of the Application and the issuance of all required permits associated with same;

5. The Department shall issue a Construction permit to the Applicant for the replacement of its two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at Mountaire's facility located at 29106 John J. Williams Highway, Millsboro, Delaware. Furthermore, said permit shall include all conditions as set forth in the Department's draft permit, to ensure that Delaware's environment and public health will be protected from harm;

6. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and

7. The Department shall serve and publish its Order on its internet site, and shall provide legal notice of the Order in the same manner that the Department provided legal notice of the Application.

LISA A. VEST
Public Hearing Officer

\ahear\Mountaire DAQ Baghouses 1 & 3 2018

Attachment: Appendix A: DAQ TRM (06/15/18)

# APPENDIX "A"

EXHIBIT
tabbies
Exh. #5 (LHM)

# TECHNICAL RESPONSE MEMORANDUM

TO: Lisa A. Vest, Presiding Hearing Officer

THROUGH: David F. Fees, P.E.
Acting Division Director DF

Angela D. Marconi, P.E., BCEE ADM
Branch Manager

Joanna L. French, P.E. JLF
Engineer Program Manager I

RECEIVED
JUN 22 2018
DNREC Hearing Officer

FROM: Melanie A. Smith, P.E. MAS

SUBJECT: **Mountaire Farms of Delaware, Inc.**
**Permit: APC-1987/0020-CONSTRUCTION (Amendment 4) Receiving Pit 1**
**Permit: APC-2014/0092-CONSTRUCTION (Amendment 1) Receiving Pit 3**
**Public Hearing Response Document**

DATE: June 15, 2018

## BACKGROUND

Lisa Vest, Public Hearing Officer, requested a Technical Response Memorandum (TRM) to provide expert technical assistance for the Hearing Officer's Report and recommendations to the Secretary with regard to the pending Division of Air Quality (DAQ) Application for the replacement of two existing baghouses at the Millsboro Complex, Mountaire Farms of Delaware, Inc. The TRM includes a thorough investigation of issues raised by public comments at the hearing conducted on May 1, 2018 and a record of decision to assist and support the Secretary's final decision.

DAQ responses are provided below in *italics* for clarity.

## PUBLIC COMMENT INVESTIGATION

### Mr. John Austin

When Mr. Austin requested the hearing, he raised several questions that had not been answered. The Department entered a response to those questions into the hearing record as Exhibit 5.

Mr. Austin voiced concern over the increased asthma risk (24.3%) among Delaware high school students as reported in the 2017 Youth Risk Behavior Survey Analysis, the incidence of asthma cases in Sussex County (25.2%), disproportionately high asthma hospitalizations and deaths among African Americans, and 29.1% of African American students having been told they have asthma.

*The Division of Air Quality was not able to verify the quoted statistics because we were not able to locate the referenced report. Air permits are not issued based on the health of residents living in the proximity to the source. Rather, air permits are issued based on applicable regulations (including zoning) and through use of air quality screening model. The model is used to verify that the maximum downwind concentration will be at least 100 times less than the worker safety number (threshold limit value, TLV).*

In October and November of 2011, particulate emissions were studied in Millsboro when the Indian River Power Plant was not in operation. Average $PM_{2.5}$ emissions were 17.8 $\mu g/m^3$, exceeding the National Ambient Air Quality standard of 15 $\mu g/m^3$. An average increase of 4.2 $\mu g/m^3$ was observed at the

monitoring station in Seaford, 21 miles west of Mountaire's Millsboro Complex. Mr. Austin believes the Company is the source of emissions.

*The following paragraph is from the Millsboro Inhalation Exposure and Biomonitoring Study which is available at the following web address:*
http://www.dnrec.delaware.gov/Admin/Documents/Millsboro_Inhalation_Exposure_and_Biomonitoring_Study_Final_Repor_05282013.pdf

*"Sampling conducted for $PM_{2.5}$ during the fall of 2011 and 2012 indicated the geometric mean ambient PM2.5 concentrations of the Millsboro area was 9.3 µg/m3. The semi-rural location of Seaford had an average PM2.5 concentration of 8.9 µg/m3, both below the Federal Standard of 15 µg/m3 and were not statistically different at a test value of α=0.01. Sampling conducted outdoors and indoors of 35 distinct participants (32 each season) resulted in average $PM_{2.5}$ concentrations of 11.3 µg/m3 and 11.8 µg/m3 respectively. The higher elevated indoor concentration is expected due to the strength and proximity of $PM_{2.5}$ sources found indoors (e.g. cooking, cleaning, candle burning, smoking, etc.). Personal level sampling conducted during both seasons revealed geometric mean $PM_{2.5}$ concentrations of 20.3 µg/m3 across both seasons. Similar to indoor $PM_{2.5}$ measurements that were elevated with respect outdoor and ambient measurement, higher personal level concentrations were presumably due to personal proximity and strength of sources and is to be expected based on previous studies."*

*Data relating to average $PM_{2.5}$ emissions of 17.8 µg/m$^3$ in the fall of 2011 could not be substantiated in the report. However, the average $PM_{2.5}$ emissions of for the Fall of 2011 and Fall of 2012 were the following: fixed sampling locations 12.1 µg/m$^3$ for Fall 2011, outdoor residential locations 16.2 µg/m$^3$ for Fall 2011, fixed sampling locations 6.5 µg/m$^3$ for Fall 2012, and outdoor residential locations 6.5 µg/m$^3$ for Fall 2012. For the outside residential locations in the Fall of 2011, the NAAQS for $PM_{2.5}$ was exceeded – 16.2 µg/m$^3$ vs. a standard of 15.0 µg/m$^3$. However, the values for the Fall of 2012 were well within the NAAQS standards.*

Mr. Austin requested the exact location of the receiving pits' baghouses.
*Receiving Pit 1 is approximately 380 ft due south of Rt 24. Looking from Rt 24, it is located approximately 100 feet SE of the Feed Mill structure.*

*Receiving Pit 3 is approximately 990 ft due south of Rt 24. Looking from Rt 24, it is located in between the second and third large grain tanks where an access road allows trucks to drive through.*

Mr Austin states he does not have asthma. He says when he drives on Route 24 by Mountaire, two to three times per week, he has difficulty breathing. Mr. Austin also stated there was no ambient air quality monitoring at Millsboro and, in his opinion, testing should be conducted.

**Mr. Tom Brett**
Mr. Brett requested the Division of Air Quality not proceed with the baghouse permits until the impact on the community is known. New permits should not be issued without improving quality of life, over and above the existing units.

*The requested permits are for the replacement of existing control devices which operate with 99.9% control efficiency. The new control devices will also have 99.9% control efficiency. Replacement of the existing control devices is a necessary maintenance activity and the company is being proactive in perusing*

*replacement at this time. The new equipment is necessary to insure that the particulate matter is captured and controlled in accordance with the specified control efficiency.*

**Maria Payan**
Ms. Payan agreed with John Austin, commenting that she gets an immediate headache when she drives by the Millsboro Complex. There are no air quality measurements taken for the emergency sludge pond. She queried about the procedure for using the 800 number for odor complaints. She stated numerous complaints have not been logged.

*During the hearing Angela Marconi responded to questions from the public regarding the DNREC 1-800 number. These statements were made based on her understanding of how the calls are processed. Following the hearing she reviewed the set up with Chief James Faedtke and became aware that the statements made at the hearing were not accurate. Mrs. Marconi thought that during regular business hours, calls were routed directly to DNREC. This is incorrect. To clarify, when calls are made they are directed through Kent-Com, Kent County's 911 system. All calls are logged. Odor complaints are directed to DNREC Environmental Police Officers. Calls can be made via cell phones but these cannot be used for enforcement fines because the fines must be tied to aresidence.*

**Jay Meyer**
Mr. Meyer has been a resident in the area since 1980. He stated he can live with the smell of a chicken plant but present odors are above and beyond tolerance and something is wrong. He states when the smell comes across the river and wakes him from a sound sleep, he closes the windows. He states his eyes, throat and nose burn. Mr. Meyer motioned to Ray Wharton and stated when either of them called the 800 number, an enforcement agent has never come out to witness the problem.

**Joanne Haynes**
Ms. Haynes was told she has to use a landline to make a complaint and that she cannot use a cell phone. That means she has to stay in the house until an enforcement officer calls back. An officer did come out a couple of years ago, and said he could smell it on the bridge coming across but when he reached the development, it was gone. Ms. Haynes appreciated the fact that someone acknowledged the odor. She asked every resident about calls to the 800 number and their complaints were not on record.

*Cell phones may be used to call the Environmental Complaint line. However, as stated above, the complainant must be calling from their residence to lodge and odor complaint. Environmental Police Officers may not be available to respond onsite to odor complaints, however the complaints are logged and DAQ will follow up on them.*

## RECORD OF DECISION

The application is for the replacement of two existing permitted baghouses. These baghouses control particulate matter emissions from Receiving Pits 1 and 3. Receiving Pit 1 was installed in the '80's and Receiving Pit 3 was installed in the '70's. The replacement is part of necessary maintenance for the existing equipment. The existing equipment is still functional but Mountaire is proactively replacing them at this time. The replacement baghouse filters are 99.9% efficient, the same efficiency as the existing units. Hourly particulate emissions are 0.001135 lb/hr $PM_{10}$ from each baghouse.

Each baghouse will emit 0.005 tons of PM10 and 0.034 tons PM per rolling twelve month period. The baghouses comply with 7 **DE Admin. Code** 1105's standard of 0.2 grains PM per standard cubic foot. Each baghouse emits 0.00006 grains PM per standard cubic foot.

To comply with the National Ambient Air Quality Standards, dispersion modeling using AERSCREEN including downwash was performed. Each pit has a small shed 12 feet from the stack. Pit 1 has 12 silo bins in a common building 75 feet from the center of the building to the stack. Pit 3 has one round silo bin 100 feet from the center of the bin to the stack. The Maximum Downwind Concentration (MDC) for all four cases was the same. (Exhibit 6)

AERSCREEN predicts the MDC location for the pollutants for either pit to occur 55.8 ft (17 m) from the exhaust of the stack. The nearest property line for Receiving Pit 1 is 380 feet and 990 feet for Receiving Pit 3. At the property line, Pit 1's PM10 concentration is 0.879 $\mu g/m^3$; Pit 3's PM10 concentration is 0.243 $\mu g/m^3$.

The MDC results from SCREEN3 adjusted to an 8-hour average along with the associated Threshold Limit Values (TLVs) and the TLV:MDC for each contaminant are shown below:

| **Pollutant** | **Emission Rate (lb/hr)** | **TLV (8-hr, $mg/m^3$)** | **MDC (8-hr, $mg/m^3$)** | **TLV:MDC** |
|---|---|---|---|---|
| PM10 | 0.001135 | 10 | 0.0031 | 3,200 |

Each baghouse far exceeds the Department's standard of 100 for TLV/MDC. As such, the public health, safety, and welfare are presumed to not be adversely impacted by emissions from the receiving pits' baghouses.

The Department conducts a construction-to-operation inspection at start-up. Opacity is noted at the inspection and I anticipate no visible emissions from my experience with similar installations. The facility is allowed up to 20% opacity from 7 **DE Admin. Code** 1114. Natural minor inspections are at least every 5 years; partial compliance inspections are every 2 to 3 years, and inspections may be conducted as issues arise. The Company is required to report non-compliance.

## RECOMMENDATIONS

I recommend the construction **Permit: APC-1987/0020-CONSTRUCTION (Amendment 4)** for Receiving Pit 1 and **Permit: APC-2014/0092-CONSTRUCTION (Amendment 1)** for Receiving Pit 3 be issued. I recommend close collaboration with the Environmental Protection Officers, the Division of Air Quality, and Mountaire Farms of Delaware, Inc. to track and respond to odor complaints.

ADM:JLF:MAS
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pc: Dover File

EXHIBIT 2

Phone: 913-831-0740
Fax: 913-831-9271
E-Mail: tracyj@camcorpinc.com
Web Site: www.camcorpinc.com

February 22, 2018

Mr. Austin Pajda
**Mountaire Farms**
P.O. Box 1320
Millsboro, DE 19966-1320

rec. pits 1+3.

Fax: 302-934-3081
Ph: 302-934-3070
Email: apajda@mountaire.com

RE: CAMCORP Model 12HVP112 Filters

Dear Austin:

Per your request, please find following our statement of efficiency for the above referenced filters.

Based on the Baghouse Dust Collector being properly sized & applied, supplied with 16 ounce singed polyester felt filter media, and operated in accordance with the Installation, Operation and Maintenance Manuals, will achieve 99.9% efficiency and the average outlet emissions will not exceed 0.005 grains per dry standard cubic foot (0.622 lbs./hr. at 14,500 cfm each) on 2 micron and larger by weight dry particulate matter, during the life of the media.

CAMCORP, Inc. reserves the right to make any modifications, adjustments or take any other necessary corrective actions, at CAMCORP's expense, should the emissions exceed the stated values by equipment malfunction due to defects in materials and/or workmanship as supplied by CAMCORP, Inc. In no event shall CAMCORP, Inc. be liable for any incidental, special or consequential damages resulting from nonconformity.

Thank you very much Austin. I hope this will be helpful. If I may be of any further immediate service or assistance, please do not hesitate to contact me.

Very truly yours,

CAMCORP, INC.

Tracy Janssen

Tracy Janssen
Vice President - Air Pollution Control

TAJ/taj

EXHIBIT 3

**Ad Number: 0002773560** Run Dates: 03/07/18

**DNREC – Division of Air Quality**

LEGAL NOTICE

7 DE Admin. Code 1102 NATURAL MINOR PERMIT APPLICATIONS

Notice has been given that:

Mountaire Farms of Delaware, Inc., requests a construction permit to replace two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at their 29106 John J. Williams Hwy, Millsboro, Sussex County facility. Permitted emissions will not change. Each baghouse will be permitted to emit 0.005 TPY PM10 and 0.034 TPY PM by Permit# APC-1987/020-CONSTRUCTION(Amendment 4) and Permit# APC-2014/0092-CONSTRUCTION (Amendment 1).

The application for this permit may be reviewed at the offices of the Division of Air Quality, State Street Commons, 100 W. Water Street, Suite 6A, Dover, Delaware or 715 Grantham Lane, New Castle, Delaware. For additional information or for an appointment to review the application, please contact Tracy Mattson at (302) 739-9402.

**A public hearing on any of the above applications will NOT be held unless the Secretary of DNREC receives a request for a hearing regarding that application within 15 days from the date of this notice, ending March 22, 2018. A request for a hearing shall be in writing. The request must also show a familiarity with the application and a reasoned statement of the permit's probable impact.**

**All comments and public hearing requests should be mailed to the following address:**

**DIVISION OF AIR QUALITY**
**STATE STREET COMMONS**
**100 W. WATER STREET, SUITE 6A**
**DOVER, DE 19904**
**(302) 739-9402**

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302 324-2249

SD DNREC AIR RESOURCE
100 W WATER ST # 6A

DOVER, DE 19904
Tracy Mattson

Division of Air Quality
STATE STREET COMMONS, 100 W. WATER STREET, SUITE 6

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**DNREC – Division of Air Quality**

**LEGAL NOTICE**

**7 DE Admin. Code 1102 NATURAL MINOR PERMIT APPLICATIONS**

Notice has been given that:

Mountaire Farms of Delaware, Inc., requests a construction permit to replace two (2) existing baghouses with two (2) new reverse air flow baghouses for Receiving Pits 1 and 3 at their 29106 John J. Williams Hwy, Millsboro, Sussex County facility. Permitted emissions will not change. Each baghouse will be permitted to emit 0.005 TPY PM10 and 0.034 TPY PM by Permit# APC-1987/020-CONSTRUCTION (Amendment 4) and Permit# APC-2014/0092-CONSTRUCTION (Amendment 1).

The application for this permit may be reviewed at the offices of the Division of Air Quality, State Street Commons, 100 W. Water Street, Suite 6A, Dover, Delaware or 715 Grantham Lane, New Castle, Delaware. For additional information or for an appointment to review the application, please contact Tracy Mattson at (302) 739 9402.

**A public hearing on any of the above applications will NOT be held unless the Secretary of DNREC receives a request for a hearing regarding that application within 15 days from the date of this notice, ending March 22, 2018. A request for a hearing shall be in writing. The request must also show a familiarity with the application and a reasoned statement of the permit's probable impact.**

**All comments and public hearing requests should be mailed to the following address:**

DIVISION OF AIR QUALITY
STATE STREET COMMONS
100 W. WATER STREET, SUITE 6A
DOVER, DE 19904
(302) 739-9402

247937 DSN 3/7/2018

State of Delaware:

County of Kent:

Before me, a Notary Public, for the County and [illegible] to me to be such, who being sworn according to law deposes and says that he is President of Independent Newsmedia Inc. USA, the publisher of the **Delaware State News**, a daily newspaper published at Dover, County of Kent, and State of Delaware, and that the notice, a copy of which is hereto attached, as published in the **Delaware State News** in its issue of March 7, 2018.

President
Independent Newsmedia Inc. USA

Sworn to and subscribed before me this 7th

Day of March A.D. 2018

JANET E. LEVY
NOTARY PUBLIC
STATE OF DELAWARE
MY COMM. EXPIRES 09-01-2021

Janet Levy
Notary Public

**MEMO TO FILE** **EXHIBIT 5**

TO: Lisa A. Vest, Presiding Hearing Officer

THROUGH: Angela D. Marconi, P.E., BCEE
Joanna L. French, P.E.

FROM: Melanie A. Smith, P.E.

SUBJECT: **Mountaire Farms of Delaware, Inc.**
**Permit: APC-1987/0020-CONSTRUCTION(Amendment 4) Receiving Pit 1**
**Permit: APC-2014/0092-CONSTRUCTION(Amendment 1) Receiving Pit 3**
**Proposed Project Summary**

DATE: May 1, 2018

## BACKGROUND

John Austin requested a public hearing on March 22, 2018 for the proposed baghouses for Receiving Pits 1 and 3 at the Millsboro Complex, Mountaire Farms of Delaware, Inc. In his request, Mr. Austin had several questions that will be answered in this memo.

## TECHNICAL INFORMATION

1. "Each baghouse" emits 0.005 TPY PM10 & 0.034 TPY PM, so 0.01 TPY PM10 & .068 TPY PM for both baghouses. Emissions have not changed.

2. What will be the resulting particulate concentration in ug/m3 in the surrounding community? Each baghouse 4.486 micrograms/cubic meter PM10 Maximum Downwind Concentration (MDC) at 17m. At the property line (116 m), the concentration for Pit 1 is 0.879 micrograms/cubic meter. At the property line (302 m), the concentration for Pit 3 is 0.243 micrograms/cubic meter.

3. Will the particulate levels in the community meet the National Ambient Air Quality Standards?

### AERSCREEN Dispersion Modeling

The effects air contaminant emissions from each baghouse on the public health, safety, and welfare were assessed using Department criteria. The criteria assume no adverse effect when the ratio of the Threshold Limit Value to the Maximum Downwind Concentration (TLV:MDC) is at least 100:1 at the nearest property line and beyond for each air contaminant released. The TLV of each air contaminant was obtained from the pamphlet, 2016 TLVs® and BEIs®, published by the American Conference of Governmental Industrial Hygienists (ACGIH). The MDC of each air contaminant was computed using AERSCREEN air dispersion modeling. AERSCREEN is EPA's recommended screening-level air quality model based on AERMOD (U.S. EPA, 2016a).

AERSCREEN is an interactive command-prompt application that interfaces with MAKEMET for generating the meteorological matrix, but also interfaces with AERMAP and BPIPPRM to automate the processing of terrain and building information, and interfaces with AERMOD model utilizing the SCREEN option to perform the modeling runs. The AERSCREEN program also includes averaging time factors for worst-case 3-hr, 8-hr, 24-hr and annual averages.

In utilizing AERSCREEN, each baghouse stack was treated as a point source. Point source variables in AERSCREEN are air contaminant emission rates (in lb/H), stack height (in ft), stack inside diameter (in inches), stack gas exit velocity (in ft/s) or air flow rate (in acfm), stack gas exit temperature (in °F),

receptor height above ground level (in ft), and the urban option. Values input for the stack parameters were the following:

| Source | Stack Height (ft) | Stack Diameter (ft) | Gas Flow Rate (acfm) | Exit Gas Temperature (°F) |
|---|---|---|---|---|
| Receiving Pit 1 | 9 | 2.07 | 14,500 | 70 |
| Receiving Pit 3 | 9 | 2.07 | 14,500 | 70 |

The remaining input values were the minimum distance to ambient air of 3.3 ft, maximum distance to probe default value of 5000 m, default value of -10 to 100 F for minimum and maximum ambient temperature, default wind speed of 0.5 m/s, surface characteristics as grassland, wet conditions as dominant surface profile, a receptor height above ground of 0 ft, anemometer height default of 10.0 m, base elevation of source of 22.97 ft elevation (Millsboro), and the urban option (population of Millsboro in 2016 is 4,293). The nearest property line is 380 feet (115.8 m) for Pit 1 and 990 feet (301.8 m) for Pit 3.

Downwash was considered for both pits. Each pit has a small shed 12 feet from the stack. Pit 1 has 12 silo bins in a common building 75 feet from the center of the building to the stack. Pit 3 has one round silo bin 100 feet from the center of the bin to the stack. AERSCREEN predicts the MDC location for the pollutants for either pit to occur 55.8 ft (17 m) from the exhaust of the stack. The MDC for all four cases was the same. (Exhibit 6)

The MDC results from SCREEN3 adjusted to an 8-hour average along with the associated TLVs and the TLV:MDC for each contaminant are shown below:

| Pollutant | Emission Rate (lb/hr) | TLV (8-hr, $mg/m^3$) | MDC (8-hr, $mg/m^3$) | TLV:MDC |
|---|---|---|---|---|
| PM10 | 0.001135 | 10 | 0.0031 | 3,200 |

Each baghouse PM10 TLV/MDC 3200 >> Department standard of 100.

4. Are there ambient air monitors? I presume not. Nearest are Lewes and Seaford as shown on http://apps.dnrec.delaware.gov/AirMonitoring/. (Exhibit 7)

5. With new units why won't there be better performance? Each baghouse will achieve a particulate emission rate of 0.00006 gr/SCF. 7 **DE Admin. Code** 1105 Section 2.0 states, "No person shall cause or allow particulate emissions into the atmosphere from any source not provided for in subsequent sections of this Regulation in excess of 0.2 grains per standard cubic foot."

6. I infer from the requested emission rate that 99% capture efficiency is sought. Based on the manufacturer's specifications of the baghouse filters, the particulate capture rate will be 99.9%. (Exhibit 2)

7. Will that efficiency be maintained? The percent % efficiency is not in permit; however, baghouse performance is monitored by delta P, and emission limits in the permit are based on 99.9% efficiency.

8. How will the community know? Pressure drop across the baghouses indicates the operational status of the filters and is monitored daily. If the pressure drop is outside the acceptable range, the problem is addressed. If opacity is greater than 20%, troubleshooting ensues until the problem is corrected.

9. As a Coastal Zone facility was there an offset of these emissions? I presume no increase would not trigger any additional offset, but was there an initial offset?

The original equipment was installed prior to the Coastal Zone Act. The CZA regulations state that the following are "uses not regulated:"

- "Replacement in-kind of existing equipment or installation of in-line spares for existing equipment"
- "Installation and modification of pollution control and safety equipment...providing that such installation and modification does not result in in any negative environmental impact over and above impacts associated with the present use."

Either way, this change should not be subject to the provisions of CZA. The baghouse replacements meet the definition of both bullets above.

10. Given Mountaire's permit violations and DNREC's failed oversight, what assurance can there be that these pollution control devices will be properly maintained and operated. Who will be inspecting them? How often & if found to be not functioning as designed will the operations be halted???? The Department conducts a construction-to-operation inspection at start-up. Natural minor inspections are at least every 5 years; partial compliance inspections are every 2 to 3 years, and inspections may be conducted as issues arise. The Company is required to report non-compliance.

**RECOMMENDATIONS**

I recommend this memo be submitted as an exhibit for public record at the May 1, 2018 hearing in Millsboro.

ADM:JLF:MAS
F:\EngineeringAndCompliance\MAS\mas18041.doc

pc: Dover File
David Fees, Acting Division Director
Joanna French
Angela Marconi
Melanie Smith

**Mountaire Millsboro Rec. Pits 1 and 3**



| Pollutant | Max. Emission Rate lb/hr | TLV-TWA values (8-hr day) (mg/m3) | ug/m$^3$ (1 hr) | MDC values (from Screen) mg/m$^3$ (8 hr) | ug/m$^3$ (24 hr) | ug/m$^3$ (annual) | TLV/MDC (8 hr values) |
|---|---|---|---|---|---|---|---|
| NOx | | 0.376 | | 0.0000 | 0.00 | 0.00 | #DIV/0! |
| SOx | | 0.48 | | 0.00E+00 | 0.00 | 0.00 | #DIV/0! |
| VOC | | 1.80 | | 0.0000 | 0.00 | 0.00 | #DIV/0! |
| CO | | 28.64 | | 0.0000 | 0.00 | 0.00 | #DIV/0! |
| PM10 Pit 1 | 0.001135 | 10.00 | 4.486 | 0.0031 | 1.93 | 0.45 | 3,226 |
| PM10 Pit 3 | 0.001135 | 10.00 | 4.486 | 0.0031 | 1.93 | 0.45 | 3,226 |
| | | | | 0.0000 | 0.00 | 0.00 | #DIV/0! |
| | | | | 0.00E+00 | 0.00 | 0.00 | #DIV/0! |

downwind distance (from SCREEN3) = 17 m

**point source**, urban

| | | | | | |
|---|---|---|---|---|---|
| stack ht | 9 ft | exit vel | ft/s | exit flow | 14,500 ACFM |
| stack dia | 2.07 ft | receptor height | 0 ft | temp | 70 F |

TLV values are from the 2017 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, published by ACGIH® Worldwide

EXHIBIT 6

MtPit1BIN (2).out

AERSCREEN 16216 / AERMOD 16216r 03/05/18
14:12:21

TITLE: Mountaire Pit 1 BIN

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********** STACK PARAMETERS **********

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| | | | | |
|---|---|---|---|---|
| SOURCE EMISSION RATE: | 0.143E-03 | g/s | 0.114E-02 | lb/hr |
| STACK HEIGHT: | 2.74 | meters | 9.00 | feet |
| STACK INNER DIAMETER: | 0.631 | meters | 24.84 | inches |
| PLUME EXIT TEMPERATURE: | Ambient | | | |
| PLUME EXIT VELOCITY: | 21.888 | m/s | 71.81 | ft/s |
| STACK AIR FLOW RATE: | 14500 | ACFM | | |
| RURAL OR URBAN: | URBAN | | | |
| POPULATION: | 4293 | | | |
| FLAGPOLE RECEPTOR HEIGHT: | 0.00 | meters | 0.00 | feet |
| INITIAL PROBE DISTANCE = | 5000. | meters | 16404. | feet |

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********** BUILDING DOWNWASH PARAMETERS **********

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| | | | |
|---|---|---|---|
| BUILDING HEIGHT: | 18.3 | meters | 60.0 feet |
| MAX BUILDING DIMENSION: | 36.6 | meters | 120.0 feet |
| MIN BUILDING DIMENSION: | 11.0 | meters | 36.0 feet |
| BUILDING ORIENTATION TO NORTH: | 45. | degrees | |
| STACK DIRECTION FROM CENTER: | 135. | degrees | |
| STACK DISTANCE FROM CENTER: | 22.9 | meters | 75.0 feet |

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********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 1. meters - 5000. meters

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| FLOW SECTOR | BUILD WIDTH | BUILD LENGTH | XBADJ | YBADJ | MAX 1-HR CONC | DIST (m) | TEMPORAL PERIOD |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10* | 29.97 | 36.26 | -5.02 | 18.73 | 3.925 | 25.0 | AUT |
| 20 | 25.41 | 37.80 | -9.24 | 20.72 | 3.925 | 25.0 | AUT |
| 30 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 40 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 50 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 60 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 70 | 25.41 | 37.80 | -28.56 | 20.72 | 3.925 | 25.0 | AUT |
| 80 | 29.97 | 36.26 | -31.24 | 18.73 | 3.925 | 25.0 | AUT |
| 90 | 33.63 | 33.63 | -32.98 | 16.16 | 3.925 | 25.0 | AUT |
| 100 | 36.26 | 29.97 | -33.71 | 13.11 | 3.925 | 25.0 | AUT |
| 110 | 37.80 | 25.41 | -33.42 | 9.66 | 3.925 | 25.0 | AUT |
| 120 | 38.18 | 20.07 | -32.12 | 5.92 | 3.925 | 25.0 | AUT |
| 130 | 37.40 | 14.12 | -29.83 | 1.99 | 3.925 | 25.0 | AUT |
| 140 | 37.40 | 14.12 | -29.83 | -1.99 | 3.925 | 25.0 | AUT |
| 150 | 38.18 | 20.07 | -32.12 | -5.92 | 3.925 | 25.0 | AUT |
| 160 | 37.80 | 25.41 | -33.42 | -9.66 | 3.925 | 25.0 | AUT |
| 170 | 36.26 | 29.97 | -33.71 | -13.11 | 3.925 | 25.0 | AUT |
| 180 | 33.63 | 33.63 | -32.98 | -16.17 | 3.925 | 25.0 | AUT |
| 190 | 29.97 | 36.26 | -31.24 | -18.73 | 3.925 | 25.0 | AUT |
| 200 | 25.41 | 37.80 | -28.56 | -20.72 | 3.925 | 25.0 | AUT |
| 210 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 220 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 230 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 240 | 0.00 | 0.00 | 0.00 | 0.00 | 3.925 | 25.0 | AUT |
| 250 | 25.41 | 37.80 | -9.24 | -20.72 | 3.925 | 25.0 | AUT |
| 260 | 29.97 | 36.26 | -5.02 | -18.73 | 3.925 | 25.0 | AUT |
| 270 | 33.63 | 33.63 | -0.65 | -16.16 | 3.925 | 25.0 | AUT |
| 280 | 36.26 | 29.97 | 3.74 | -13.11 | 3.925 | 25.0 | AUT |
| 290 | 37.80 | 25.41 | 8.01 | -9.66 | 3.925 | 25.0 | AUT |
| 300 | 38.18 | 20.07 | 12.05 | -5.92 | 3.925 | 25.0 | AUT |
| 310 | 37.40 | 14.12 | 15.71 | -1.99 | 3.925 | 25.0 | AUT |
| 320 | 37.40 | 14.12 | 15.71 | 1.99 | 3.925 | 25.0 | AUT |
| 330 | 38.18 | 20.07 | 12.05 | 5.92 | 3.925 | 25.0 | AUT |
| 340 | 37.80 | 25.41 | 8.01 | 9.66 | 3.925 | 25.0 | AUT |
| 350 | 36.26 | 29.97 | 3.74 | 13.11 | 3.925 | 25.0 | AUT |
| 360 | 33.63 | 33.63 | -0.65 | 16.17 | 3.925 | 25.0 | AUT |

* = worst case flow sector

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********** MAKEMET METEOROLOGY PARAMETERS **********

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MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
DOMINANT CLIMATE TYPE: Wet Conditions
DOMINANT SEASON: Autumn

ALBEDO: 0.20
BOWEN RATIO: 0.50
ROUGHNESS LENGTH: 0.010 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 01 | 04 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -0.21 | 0.014 | -9.000 | 0.020 | -999. | 4. | 1.1 | 0.010 | 0.50 | 0.20 | 0.50 |

| HT | REF TA | HT |
|---|---|---|
| 10.0 | 249.8 | 2.0 |

WIND SPEED AT STACK HEIGHT (non-downwash): 0.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 12 | 14 | 4 | 12 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| 79.84 | 0.201 | 1.800 | 0.020 | 2242. | 207. | -7.8 | 0.001 | 0.50 | 0.60 | 4.00 |

| HT | REF TA | HT |
|---|---|---|

- - - - - - - - - - -

10.0 249.8 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 3.7 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 11.3 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 14.1 meters

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********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

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| DIST (m) | MAXIMUM 1-HR CONC (ug/m3) | DIST (m) | MAXIMUM 1-HR CONC (ug/m3) |
|---|---|---|---|
| 1.00 | 0.8706E-01 | 2525.00 | 0.1295E-01 |
| 25.00 | 3.925 | 2550.00 | 0.1277E-01 |
| 50.00 | 2.257 | 2575.00 | 0.1260E-01 |
| 75.00 | 1.476 | 2600.00 | 0.1243E-01 |
| 100.00 | 1.044 | 2625.00 | 0.1226E-01 |
| 125.00 | 0.7861 | 2650.00 | 0.1210E-01 |
| 150.00 | 0.6199 | 2675.00 | 0.1194E-01 |
| 175.00 | 0.5055 | 2700.00 | 0.1179E-01 |
| 200.00 | 0.4230 | 2725.00 | 0.1163E-01 |
| 225.00 | 0.3611 | 2750.00 | 0.1149E-01 |
| 250.00 | 0.3132 | 2775.00 | 0.1134E-01 |
| 275.00 | 0.2753 | 2800.00 | 0.1120E-01 |
| 300.00 | 0.2446 | 2825.00 | 0.1106E-01 |
| 325.00 | 0.2194 | 2850.00 | 0.1092E-01 |
| 350.00 | 0.1983 | 2875.00 | 0.1079E-01 |
| 375.00 | 0.1805 | 2900.00 | 0.1066E-01 |
| 400.00 | 0.1653 | 2925.00 | 0.1053E-01 |
| 425.00 | 0.1521 | 2950.00 | 0.1040E-01 |
| 450.00 | 0.1407 | 2975.00 | 0.1028E-01 |
| 475.00 | 0.1307 | 3000.00 | 0.1016E-01 |
| 500.00 | 0.1218 | 3025.00 | 0.1004E-01 |
| 525.00 | 0.1139 | 3050.00 | 0.9926E-02 |
| 550.00 | 0.1069 | 3075.00 | 0.9813E-02 |
| 575.00 | 0.1005 | 3100.00 | 0.9701E-02 |
| 600.00 | 0.9484E-01 | 3125.00 | 0.9592E-02 |
| 625.00 | 0.8967E-01 | 3150.00 | 0.9484E-02 |
| 650.00 | 0.8496E-01 | 3175.00 | 0.9379E-02 |
| 675.00 | 0.8067E-01 | 3200.00 | 0.9276E-02 |

| | | | |
|---|---|---|---|
| 700.00 | 0.7673E-01 | 3225.00 | 0.9174E-02 |
| 725.00 | 0.7311E-01 | 3250.00 | 0.9075E-02 |
| 750.00 | 0.6978E-01 | 3275.00 | 0.8977E-02 |
| 775.00 | 0.6670E-01 | 3300.00 | 0.8881E-02 |
| 800.00 | 0.6385E-01 | 3325.00 | 0.8787E-02 |
| 825.00 | 0.6120E-01 | 3350.00 | 0.8694E-02 |
| 850.00 | 0.5873E-01 | 3375.00 | 0.8603E-02 |
| 875.00 | 0.5643E-01 | 3400.00 | 0.8513E-02 |
| 900.00 | 0.5428E-01 | 3425.00 | 0.8426E-02 |
| 925.00 | 0.5227E-01 | 3450.00 | 0.8339E-02 |
| 950.00 | 0.5038E-01 | 3475.00 | 0.8254E-02 |
| 975.00 | 0.4860E-01 | 3500.00 | 0.8171E-02 |
| 1000.00 | 0.4693E-01 | 3525.00 | 0.8089E-02 |
| 1025.00 | 0.4536E-01 | 3550.00 | 0.8008E-02 |
| 1050.00 | 0.4387E-01 | 3575.00 | 0.7929E-02 |
| 1075.00 | 0.4247E-01 | 3600.00 | 0.7851E-02 |
| 1100.00 | 0.4114E-01 | 3625.00 | 0.7774E-02 |
| 1125.00 | 0.3988E-01 | 3650.00 | 0.7699E-02 |
| 1150.00 | 0.3869E-01 | 3675.00 | 0.7624E-02 |
| 1175.00 | 0.3756E-01 | 3700.00 | 0.7551E-02 |
| 1200.00 | 0.3648E-01 | 3725.00 | 0.7480E-02 |
| 1225.00 | 0.3545E-01 | 3750.00 | 0.7409E-02 |
| 1250.00 | 0.3447E-01 | 3775.00 | 0.7339E-02 |
| 1275.00 | 0.3354E-01 | 3800.00 | 0.7271E-02 |
| 1300.00 | 0.3265E-01 | 3825.00 | 0.7203E-02 |
| 1325.00 | 0.3180E-01 | 3850.00 | 0.7137E-02 |
| 1350.00 | 0.3099E-01 | 3875.00 | 0.7071E-02 |
| 1375.00 | 0.3021E-01 | 3900.00 | 0.7007E-02 |
| 1400.00 | 0.2946E-01 | 3925.00 | 0.6943E-02 |
| 1425.00 | 0.2875E-01 | 3950.00 | 0.6881E-02 |
| 1450.00 | 0.2806E-01 | 3975.00 | 0.6819E-02 |
| 1475.00 | 0.2740E-01 | 4000.00 | 0.6759E-02 |
| 1500.00 | 0.2677E-01 | 4025.00 | 0.6699E-02 |
| 1525.00 | 0.2616E-01 | 4050.00 | 0.6640E-02 |
| 1550.00 | 0.2558E-01 | 4075.00 | 0.6582E-02 |
| 1575.00 | 0.2502E-01 | 4100.00 | 0.6525E-02 |
| 1600.00 | 0.2448E-01 | 4125.00 | 0.6469E-02 |
| 1625.00 | 0.2396E-01 | 4150.00 | 0.6413E-02 |
| 1650.00 | 0.2345E-01 | 4175.00 | 0.6358E-02 |
| 1675.00 | 0.2297E-01 | 4200.00 | 0.6304E-02 |
| 1700.00 | 0.2250E-01 | 4225.00 | 0.6251E-02 |
| 1725.00 | 0.2205E-01 | 4250.00 | 0.6199E-02 |
| 1750.00 | 0.2161E-01 | 4275.00 | 0.6147E-02 |
| 1775.00 | 0.2119E-01 | 4300.00 | 0.6096E-02 |
| 1800.00 | 0.2078E-01 | 4325.00 | 0.6046E-02 |
| 1825.00 | 0.2038E-01 | 4350.00 | 0.5996E-02 |
| 1850.00 | 0.2000E-01 | 4375.00 | 0.5947E-02 |
| 1875.00 | 0.1963E-01 | 4400.00 | 0.5899E-02 |

| | | | |
|---|---|---|---|
| 1900.00 | 0.1927E-01 | 4425.00 | 0.5851E-02 |
| 1925.00 | 0.1892E-01 | 4450.00 | 0.5804E-02 |
| 1950.00 | 0.1859E-01 | 4475.00 | 0.5758E-02 |
| 1975.00 | 0.1826E-01 | 4500.00 | 0.5712E-02 |
| 2000.00 | 0.1794E-01 | 4525.00 | 0.5667E-02 |
| 2025.00 | 0.1763E-01 | 4550.00 | 0.5623E-02 |
| 2050.00 | 0.1733E-01 | 4575.00 | 0.5579E-02 |
| 2075.00 | 0.1704E-01 | 4600.00 | 0.5535E-02 |
| 2100.00 | 0.1676E-01 | 4625.00 | 0.5492E-02 |
| 2125.00 | 0.1649E-01 | 4650.00 | 0.5450E-02 |
| 2150.00 | 0.1622E-01 | 4675.00 | 0.5408E-02 |
| 2175.00 | 0.1596E-01 | 4700.00 | 0.5367E-02 |
| 2200.00 | 0.1570E-01 | 4725.00 | 0.5326E-02 |
| 2225.00 | 0.1546E-01 | 4750.00 | 0.5286E-02 |
| 2250.00 | 0.1522E-01 | 4775.00 | 0.5246E-02 |
| 2275.00 | 0.1499E-01 | 4800.00 | 0.5207E-02 |
| 2300.00 | 0.1476E-01 | 4825.00 | 0.5169E-02 |
| 2325.00 | 0.1454E-01 | 4850.00 | 0.5130E-02 |
| 2350.00 | 0.1432E-01 | 4875.00 | 0.5093E-02 |
| 2375.00 | 0.1411E-01 | 4900.00 | 0.5055E-02 |
| 2400.00 | 0.1390E-01 | 4925.00 | 0.5018E-02 |
| 2425.00 | 0.1370E-01 | 4950.00 | 0.4982E-02 |
| 2450.00 | 0.1351E-01 | 4975.00 | 0.4946E-02 |
| 2475.00 | 0.1332E-01 | 5000.00 | 0.4910E-02 |
| 2500.00 | 0.1313E-01 | | |

---

********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

---

| CALCULATION PROCEDURE | MAXIMUM 1-HOUR CONC (ug/m3) | SCALED 3-HOUR CONC (ug/m3) | SCALED 8-HOUR CONC (ug/m3) | SCALED 24-HOUR CONC (ug/m3) | SCALED ANNUAL CONC (ug/m3) |
|---|---|---|---|---|---|
| FLAT TERRAIN | 4.486 | 4.486 | 4.037 | 2.692 | 0.4486 |

DISTANCE FROM SOURCE 17.00 meters directed toward 10 degrees

| | | | | | |
|---|---|---|---|---|---|
| IMPACT AT THE AMBIENT BOUNDARY | 0.8706E-01 | 0.8706E-01 | 0.7835E-01 | 0.5224E-01 | 0.8706E-02 |

DISTANCE FROM SOURCE 1.00 meters directed toward 130 degrees

AERSCREEN 16216 / AERMOD 16216r 03/05/18
14:23:46

TITLE: Mountaire Pit 1 SHED

---

********** STACK PARAMETERS **********

---

| | | |
|---|---|---|
| SOURCE EMISSION RATE: | 0.143E-03 g/s | 0.114E-02 lb/hr |
| STACK HEIGHT: | 2.74 meters | 9.00 feet |
| STACK INNER DIAMETER: | 0.631 meters | 24.84 inches |
| PLUME EXIT TEMPERATURE: | Ambient | |
| PLUME EXIT VELOCITY: | 21.888 m/s | 71.81 ft/s |
| STACK AIR FLOW RATE: | 14500 ACFM | |
| RURAL OR URBAN: | URBAN | |
| POPULATION: | 4293 | |
| FLAGPOLE RECEPTOR HEIGHT: | 0.00 meters | 0.00 feet |
| INITIAL PROBE DISTANCE = | 5000. meters | 16404. feet |

---

********** BUILDING DOWNWASH PARAMETERS **********

---

| | | |
|---|---|---|
| BUILDING HEIGHT: | 6.1 meters | 20.0 feet |
| MAX BUILDING DIMENSION: | 4.3 meters | 14.0 feet |
| MIN BUILDING DIMENSION: | 4.3 meters | 14.0 feet |
| BUILDING ORIENTATION TO NORTH: | 0. degrees | |
| STACK DIRECTION FROM CENTER: | 0. degrees | |
| STACK DISTANCE FROM CENTER: | 3.7 meters | 12.0 feet |

---

********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 1. meters - 5000. meters

---

| FLOW SECTOR | BUILD WIDTH | BUILD LENGTH | XBADJ | YBADJ | MAX 1-HR CONC | DIST (m) | TEMPORAL PERIOD |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10* | 4.94 | 4.94 | -6.07 | -0.63 | 3.925 | 25.0 | AUT |
| 20 | 5.46 | 5.47 | -6.17 | -1.25 | 3.925 | 25.0 | AUT |
| 30 | 5.82 | 5.83 | -6.08 | -1.83 | 3.925 | 25.0 | AUT |
| 40 | 6.01 | 6.01 | -5.80 | -2.35 | 3.925 | 25.0 | AUT |
| 50 | 6.01 | 6.01 | -5.35 | -2.80 | 3.925 | 25.0 | AUT |
| 60 | 5.83 | 5.82 | -4.74 | -3.17 | 3.925 | 25.0 | AUT |
| 70 | 5.47 | 5.46 | -3.98 | -3.43 | 3.925 | 25.0 | AUT |
| 80 | 4.94 | 4.94 | -3.10 | -3.60 | 3.925 | 25.0 | AUT |
| 90 | 4.27 | 4.26 | -2.13 | -3.66 | 3.925 | 25.0 | AUT |
| 100 | 4.94 | 4.94 | -1.83 | -3.60 | 3.925 | 25.0 | AUT |
| 110 | 5.47 | 5.46 | -1.48 | -3.43 | 3.925 | 25.0 | AUT |
| 120 | 5.83 | 5.82 | -1.08 | -3.17 | 3.925 | 25.0 | AUT |
| 130 | 6.01 | 6.01 | -0.65 | -2.80 | 3.925 | 25.0 | AUT |
| 140 | 6.01 | 6.01 | -0.20 | -2.35 | 3.925 | 25.0 | AUT |
| 150 | 5.82 | 5.83 | 0.25 | -1.83 | 3.925 | 25.0 | AUT |
| 160 | 5.46 | 5.47 | 0.70 | -1.25 | 3.925 | 25.0 | AUT |
| 170 | 4.94 | 4.94 | 1.13 | -0.63 | 3.925 | 25.0 | AUT |
| 180 | 4.26 | 4.27 | 1.52 | 0.00 | 3.925 | 25.0 | AUT |
| 190 | 4.94 | 4.94 | 1.13 | 0.63 | 3.925 | 25.0 | AUT |
| 200 | 5.46 | 5.47 | 0.70 | 1.25 | 3.925 | 25.0 | AUT |
| 210 | 5.82 | 5.83 | 0.25 | 1.83 | 3.925 | 25.0 | AUT |
| 220 | 6.01 | 6.01 | -0.20 | 2.35 | 3.925 | 25.0 | AUT |
| 230 | 6.01 | 6.01 | -0.65 | 2.80 | 3.925 | 25.0 | AUT |
| 240 | 5.83 | 5.82 | -1.08 | 3.17 | 3.925 | 25.0 | AUT |
| 250 | 5.47 | 5.46 | -1.48 | 3.43 | 3.925 | 25.0 | AUT |
| 260 | 4.94 | 4.94 | -1.83 | 3.60 | 3.925 | 25.0 | AUT |
| 270 | 4.27 | 4.26 | -2.13 | 3.65 | 3.925 | 25.0 | AUT |
| 280 | 4.94 | 4.94 | -3.10 | 3.60 | 3.925 | 25.0 | AUT |
| 290 | 5.47 | 5.46 | -3.98 | 3.43 | 3.925 | 25.0 | AUT |
| 300 | 5.83 | 5.82 | -4.74 | 3.17 | 3.925 | 25.0 | AUT |
| 310 | 6.01 | 6.01 | -5.35 | 2.80 | 3.925 | 25.0 | AUT |
| 320 | 6.01 | 6.01 | -5.80 | 2.35 | 3.925 | 25.0 | AUT |
| 330 | 5.82 | 5.83 | -6.08 | 1.83 | 3.925 | 25.0 | AUT |
| 340 | 5.46 | 5.47 | -6.17 | 1.25 | 3.925 | 25.0 | AUT |
| 350 | 4.94 | 4.94 | -6.07 | 0.63 | 3.925 | 25.0 | AUT |
| 360 | 4.26 | 4.27 | -5.79 | 0.00 | 3.925 | 25.0 | AUT |

* = worst case flow sector

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********** MAKEMET METEOROLOGY PARAMETERS **********

---

MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
DOMINANT CLIMATE TYPE: Wet Conditions
DOMINANT SEASON: Autumn

ALBEDO: 0.20
BOWEN RATIO: 0.50
ROUGHNESS LENGTH: 0.010 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 01 | 04 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -0.21 | 0.014 | -9.000 | 0.020 | -999. | 4. | 1.1 | 0.010 | 0.50 | 0.20 | 0.50 |

| HT | REF TA | HT |
|---|---|---|
| 10.0 | 249.8 | 2.0 |

WIND SPEED AT STACK HEIGHT (non-downwash): 0.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 06 | 21 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -64.00 | 1.355 | -9.000 | 0.020 | -999. | 3626. | 2980.2 | 0.050 | 0.30 | 0.18 | 18.00 |

| HT | REF TA | HT |
|---|---|---|

- - - - - - - - - - -

10.0 249.8 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 13.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

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********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

---

| DIST (m) | MAXIMUM 1-HR CONC (ug/m3) | DIST (m) | MAXIMUM 1-HR CONC (ug/m3) |
|---|---|---|---|
| 1.00 | 0.6189 | 2525.00 | 0.1295E-01 |
| 25.00 | 3.925 | 2550.00 | 0.1277E-01 |
| 50.00 | 2.257 | 2575.00 | 0.1260E-01 |
| 75.00 | 1.476 | 2600.00 | 0.1243E-01 |
| 100.00 | 1.044 | 2625.00 | 0.1226E-01 |
| 125.00 | 0.7861 | 2650.00 | 0.1210E-01 |
| 150.00 | 0.6199 | 2675.00 | 0.1194E-01 |
| 175.00 | 0.5055 | 2700.00 | 0.1179E-01 |
| 200.00 | 0.4230 | 2725.00 | 0.1163E-01 |
| 225.00 | 0.3611 | 2750.00 | 0.1149E-01 |
| 250.00 | 0.3132 | 2775.00 | 0.1134E-01 |
| 275.00 | 0.2753 | 2800.00 | 0.1120E-01 |
| 300.00 | 0.2446 | 2825.00 | 0.1106E-01 |
| 325.00 | 0.2194 | 2850.00 | 0.1092E-01 |
| 350.00 | 0.1983 | 2875.00 | 0.1079E-01 |
| 375.00 | 0.1805 | 2900.00 | 0.1066E-01 |
| 400.00 | 0.1653 | 2925.00 | 0.1053E-01 |
| 425.00 | 0.1521 | 2950.00 | 0.1040E-01 |
| 450.00 | 0.1407 | 2975.00 | 0.1028E-01 |
| 475.00 | 0.1307 | 3000.00 | 0.1016E-01 |
| 500.00 | 0.1218 | 3025.00 | 0.1004E-01 |
| 525.00 | 0.1139 | 3050.00 | 0.9926E-02 |
| 550.00 | 0.1069 | 3075.00 | 0.9813E-02 |
| 575.00 | 0.1005 | 3100.00 | 0.9701E-02 |
| 600.00 | 0.9484E-01 | 3125.00 | 0.9592E-02 |
| 625.00 | 0.8967E-01 | 3150.00 | 0.9484E-02 |
| 650.00 | 0.8496E-01 | 3175.00 | 0.9379E-02 |
| 675.00 | 0.8067E-01 | 3200.00 | 0.9276E-02 |

| | | | |
|---|---|---|---|
| 700.00 | 0.7673E-01 | 3225.00 | 0.9174E-02 |
| 725.00 | 0.7311E-01 | 3250.00 | 0.9075E-02 |
| 750.00 | 0.6978E-01 | 3275.00 | 0.8977E-02 |
| 775.00 | 0.6670E-01 | 3300.00 | 0.8881E-02 |
| 800.00 | 0.6385E-01 | 3325.00 | 0.8787E-02 |
| 825.00 | 0.6120E-01 | 3350.00 | 0.8694E-02 |
| 850.00 | 0.5873E-01 | 3375.00 | 0.8603E-02 |
| 875.00 | 0.5643E-01 | 3400.00 | 0.8513E-02 |
| 900.00 | 0.5428E-01 | 3425.00 | 0.8426E-02 |
| 925.00 | 0.5227E-01 | 3450.00 | 0.8339E-02 |
| 950.00 | 0.5038E-01 | 3475.00 | 0.8254E-02 |
| 975.00 | 0.4860E-01 | 3500.00 | 0.8171E-02 |
| 1000.00 | 0.4693E-01 | 3525.00 | 0.8089E-02 |
| 1025.00 | 0.4536E-01 | 3550.00 | 0.8008E-02 |
| 1050.00 | 0.4387E-01 | 3575.00 | 0.7929E-02 |
| 1075.00 | 0.4247E-01 | 3600.00 | 0.7851E-02 |
| 1100.00 | 0.4114E-01 | 3625.00 | 0.7774E-02 |
| 1125.00 | 0.3988E-01 | 3650.00 | 0.7699E-02 |
| 1150.00 | 0.3869E-01 | 3675.00 | 0.7624E-02 |
| 1175.00 | 0.3756E-01 | 3700.00 | 0.7551E-02 |
| 1200.00 | 0.3648E-01 | 3725.00 | 0.7480E-02 |
| 1225.00 | 0.3545E-01 | 3750.00 | 0.7409E-02 |
| 1250.00 | 0.3447E-01 | 3775.00 | 0.7339E-02 |
| 1275.00 | 0.3354E-01 | 3800.00 | 0.7271E-02 |
| 1300.00 | 0.3265E-01 | 3825.00 | 0.7203E-02 |
| 1325.00 | 0.3180E-01 | 3850.00 | 0.7137E-02 |
| 1350.00 | 0.3099E-01 | 3875.00 | 0.7071E-02 |
| 1375.00 | 0.3021E-01 | 3900.00 | 0.7007E-02 |
| 1400.00 | 0.2946E-01 | 3925.00 | 0.6943E-02 |
| 1425.00 | 0.2875E-01 | 3950.00 | 0.6881E-02 |
| 1450.00 | 0.2806E-01 | 3975.00 | 0.6819E-02 |
| 1475.00 | 0.2740E-01 | 4000.00 | 0.6759E-02 |
| 1500.00 | 0.2677E-01 | 4025.00 | 0.6699E-02 |
| 1525.00 | 0.2616E-01 | 4050.00 | 0.6640E-02 |
| 1550.00 | 0.2558E-01 | 4075.00 | 0.6582E-02 |
| 1575.00 | 0.2502E-01 | 4100.00 | 0.6525E-02 |
| 1600.00 | 0.2448E-01 | 4125.00 | 0.6469E-02 |
| 1625.00 | 0.2396E-01 | 4150.00 | 0.6413E-02 |
| 1650.00 | 0.2345E-01 | 4175.00 | 0.6358E-02 |
| 1675.00 | 0.2297E-01 | 4200.00 | 0.6304E-02 |
| 1700.00 | 0.2250E-01 | 4225.00 | 0.6251E-02 |
| 1725.00 | 0.2205E-01 | 4250.00 | 0.6199E-02 |
| 1750.00 | 0.2161E-01 | 4275.00 | 0.6147E-02 |
| 1775.00 | 0.2119E-01 | 4300.00 | 0.6096E-02 |
| 1800.00 | 0.2078E-01 | 4325.00 | 0.6046E-02 |
| 1825.00 | 0.2038E-01 | 4350.00 | 0.5996E-02 |
| 1850.00 | 0.2000E-01 | 4375.00 | 0.5947E-02 |
| 1875.00 | 0.1963E-01 | 4400.00 | 0.5899E-02 |

| | | | |
|---|---|---|---|
| 1900.00 | 0.1927E-01 | 4425.00 | 0.5851E-02 |
| 1925.00 | 0.1892E-01 | 4450.00 | 0.5804E-02 |
| 1950.00 | 0.1859E-01 | 4475.00 | 0.5758E-02 |
| 1975.00 | 0.1826E-01 | 4500.00 | 0.5712E-02 |
| 2000.00 | 0.1794E-01 | 4525.00 | 0.5667E-02 |
| 2025.00 | 0.1763E-01 | 4550.00 | 0.5623E-02 |
| 2050.00 | 0.1733E-01 | 4575.00 | 0.5579E-02 |
| 2075.00 | 0.1704E-01 | 4600.00 | 0.5535E-02 |
| 2100.00 | 0.1676E-01 | 4625.00 | 0.5492E-02 |
| 2125.00 | 0.1649E-01 | 4650.00 | 0.5450E-02 |
| 2150.00 | 0.1622E-01 | 4675.00 | 0.5408E-02 |
| 2175.00 | 0.1596E-01 | 4700.00 | 0.5367E-02 |
| 2200.00 | 0.1570E-01 | 4725.00 | 0.5326E-02 |
| 2225.00 | 0.1546E-01 | 4750.00 | 0.5286E-02 |
| 2250.00 | 0.1522E-01 | 4775.00 | 0.5246E-02 |
| 2275.00 | 0.1499E-01 | 4800.00 | 0.5207E-02 |
| 2300.00 | 0.1476E-01 | 4825.00 | 0.5169E-02 |
| 2325.00 | 0.1454E-01 | 4850.00 | 0.5130E-02 |
| 2350.00 | 0.1432E-01 | 4875.00 | 0.5093E-02 |
| 2375.00 | 0.1411E-01 | 4900.00 | 0.5055E-02 |
| 2400.00 | 0.1390E-01 | 4925.00 | 0.5018E-02 |
| 2425.00 | 0.1370E-01 | 4950.00 | 0.4982E-02 |
| 2450.00 | 0.1351E-01 | 4975.00 | 0.4946E-02 |
| 2475.00 | 0.1332E-01 | 5000.00 | 0.4910E-02 |
| 2500.00 | 0.1313E-01 | | |

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********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

---

| CALCULATION PROCEDURE | MAXIMUM 1-HOUR CONC (ug/m3) | SCALED 3-HOUR CONC (ug/m3) | SCALED 8-HOUR CONC (ug/m3) | SCALED 24-HOUR CONC (ug/m3) | SCALED ANNUAL CONC (ug/m3) |
|---|---|---|---|---|---|
| FLAT TERRAIN | 4.486 | 4.486 | 4.037 | 2.692 | 0.4486 |

DISTANCE FROM SOURCE 17.00 meters directed toward 10 degrees

| | | | | | |
|---|---|---|---|---|---|
| IMPACT AT THE AMBIENT BOUNDARY | 0.6189 | 0.6189 | 0.5570 | 0.3713 | 0.6189E-01 |

DISTANCE FROM SOURCE 1.00 meters directed toward 360 degrees

AERSCREEN 16216 / AERMOD 16216r 03/05/18
14:32:20

TITLE: Mountaire Pit 3 BIN

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********** STACK PARAMETERS **********

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| | | | | |
|---|---|---|---|---|
| SOURCE EMISSION RATE: | 0.143E-03 | g/s | 0.114E-02 | lb/hr |
| STACK HEIGHT: | 2.74 | meters | 9.00 | feet |
| STACK INNER DIAMETER: | 0.631 | meters | 24.84 | inches |
| PLUME EXIT TEMPERATURE: | Ambient | | | |
| PLUME EXIT VELOCITY: | 21.888 | m/s | 71.81 | ft/s |
| STACK AIR FLOW RATE: | 14500 | ACFM | | |
| RURAL OR URBAN: | URBAN | | | |
| POPULATION: | 4293 | | | |
| FLAGPOLE RECEPTOR HEIGHT: | 0.00 | meters | 0.00 | feet |
| INITIAL PROBE DISTANCE = | 5000. | meters | 16404. | feet |

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********** BUILDING DOWNWASH PARAMETERS **********

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| | | | |
|---|---|---|---|
| BUILDING HEIGHT: | 30.5 | meters | 100.0 feet |
| MAX BUILDING DIMENSION: | 51.8 | meters | 170.0 feet |
| MIN BUILDING DIMENSION: | 51.8 | meters | 170.0 feet |
| BUILDING ORIENTATION TO NORTH: | 0. | degrees | |
| STACK DIRECTION FROM CENTER: | 180. | degrees | |
| STACK DISTANCE FROM CENTER: | 30.5 | meters | 100.0 feet |

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********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 1. meters - 5000. meters

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| FLOW SECTOR | BUILD WIDTH | BUILD LENGTH | XBADJ | YBADJ | MAX 1-HR CONC | DIST (m) | TEMPORAL PERIOD |
|---|---|---|---|---|---|---|---|

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10 | 60.03 | 60.03 | 0.00 | 5.29 | 0.1129 | 75.0 | AUT |
| 20 | 66.42 | 66.42 | -4.57 | 10.42 | 0.1104 | 125.0 | AUT |
| 30 | 70.79 | 70.79 | -9.00 | 15.24 | 0.1071 | 125.0 | AUT |
| 40 | 73.01 | 73.01 | -13.15 | 19.59 | 0.9934E-01 | 125.0 | AUT |
| 50 | 73.01 | 73.01 | -16.91 | 23.35 | 0.8785E-01 | 125.0 | AUT |
| 60 | 70.79 | 70.79 | -20.15 | 26.40 | 0.1027 | 100.0 | AUT |
| 70 | 66.42 | 66.42 | -22.78 | 28.64 | 0.9088E-01 | 100.0 | AUT |
| 80 | 60.03 | 60.03 | -24.72 | 30.02 | 0.1004 | 75.0 | SUM |
| 90 | 51.82 | 51.82 | -25.91 | 30.48 | 0.7647 | 25.0 | SPR |
| 100 | 60.03 | 60.03 | -35.31 | 30.02 | 0.7101E-01 | 75.0 | WIN |
| 110 | 66.42 | 66.42 | -43.63 | 28.64 | 0.6295E-01 | 75.0 | WIN |
| 120 | 70.79 | 70.79 | -50.63 | 26.40 | 0.5577E-01 | 75.0 | WIN |
| 130 | 73.01 | 73.01 | -56.10 | 23.35 | 0.4683E-01 | 75.0 | WIN |
| 140 | 73.01 | 73.01 | -59.85 | 19.59 | 0.4210 | 25.0 | SUM |
| 150 | 70.79 | 70.79 | -61.79 | 15.24 | 0.7647 | 25.0 | SPR |
| 160 | 66.42 | 66.42 | -61.85 | 10.42 | 2.793 | 25.0 | SPR |
| 170 | 60.03 | 60.03 | -60.03 | 5.29 | 3.447 | 25.0 | SPR |
| 180* | 51.82 | 51.82 | -56.39 | 0.00 | 3.925 | 25.0 | AUT |
| 190 | 60.03 | 60.03 | -60.03 | -5.29 | 3.447 | 25.0 | SPR |
| 200 | 66.42 | 66.42 | -61.85 | -10.42 | 2.793 | 25.0 | SPR |
| 210 | 70.79 | 70.79 | -61.79 | -15.24 | 0.7647 | 25.0 | SPR |
| 220 | 73.01 | 73.01 | -59.85 | -19.59 | 0.4210 | 25.0 | SUM |
| 230 | 73.01 | 73.01 | -56.09 | -23.35 | 0.4685E-01 | 75.0 | WIN |
| 240 | 70.79 | 70.79 | -50.63 | -26.40 | 0.5577E-01 | 75.0 | WIN |
| 250 | 66.42 | 66.42 | -43.63 | -28.64 | 0.6295E-01 | 75.0 | WIN |
| 260 | 60.03 | 60.03 | -35.31 | -30.02 | 0.7101E-01 | 75.0 | WIN |
| 270 | 51.82 | 51.82 | -25.91 | -30.48 | 0.7647 | 25.0 | SPR |
| 280 | 60.03 | 60.03 | -24.72 | -30.02 | 0.1004 | 75.0 | SUM |
| 290 | 66.42 | 66.42 | -22.78 | -28.64 | 0.9088E-01 | 100.0 | AUT |
| 300 | 70.79 | 70.79 | -20.15 | -26.40 | 0.1027 | 100.0 | AUT |
| 310 | 73.01 | 73.01 | -16.91 | -23.35 | 0.8785E-01 | 125.0 | AUT |
| 320 | 73.01 | 73.01 | -13.15 | -19.59 | 0.9934E-01 | 125.0 | AUT |
| 330 | 70.79 | 70.79 | -9.00 | -15.24 | 0.1071 | 125.0 | AUT |
| 340 | 66.42 | 66.42 | -4.57 | -10.42 | 0.1104 | 125.0 | AUT |
| 350 | 60.03 | 60.03 | 0.00 | -5.29 | 0.1129 | 75.0 | AUT |
| 360 | 51.82 | 51.82 | 4.57 | 0.00 | 0.1191 | 75.0 | AUT |

* = worst case flow sector

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********** MAKEMET METEOROLOGY PARAMETERS **********

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MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
DOMINANT CLIMATE TYPE: Wet Conditions
DOMINANT SEASON: Autumn

ALBEDO: 0.20
BOWEN RATIO: 0.50
ROUGHNESS LENGTH: 0.010 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 01 | 04 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -0.21 | 0.014 | -9.000 | 0.020 | -999. | 4. | 1.1 | 0.010 | 0.50 | 0.20 | 0.50 |

| HT | REF TA | HT |
|---|---|---|
| 10.0 | 249.8 | 2.0 |

WIND SPEED AT STACK HEIGHT (non-downwash): 0.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 10 | 20 | 4 | 12 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| 34.75 | 0.149 | 1.200 | 0.020 | 1900. | 132. | -9.1 | 0.001 | 0.50 | 0.60 | 3.00 |

| HT | REF TA | HT |
|---|---|---|

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

10.0 310.9 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 2.7 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 15.2 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 17.9 meters

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********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

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| DIST (m) | MAXIMUM 1-HR CONC (ug/m3) | DIST (m) | MAXIMUM 1-HR CONC (ug/m3) |
|---|---|---|---|
| 1.00 | 0.5247E-01 | 2525.00 | 0.1295E-01 |
| 25.00 | 3.925 | 2550.00 | 0.1278E-01 |
| 50.00 | 1.940 | 2575.00 | 0.1260E-01 |
| 75.00 | 1.154 | 2600.00 | 0.1243E-01 |
| 100.00 | 0.7851 | 2625.00 | 0.1227E-01 |
| 125.00 | 0.5793 | 2650.00 | 0.1210E-01 |
| 150.00 | 0.4511 | 2675.00 | 0.1194E-01 |
| 175.00 | 0.3648 | 2700.00 | 0.1179E-01 |
| 200.00 | 0.3034 | 2725.00 | 0.1164E-01 |
| 225.00 | 0.2578 | 2750.00 | 0.1149E-01 |
| 250.00 | 0.2228 | 2775.00 | 0.1134E-01 |
| 275.00 | 0.1953 | 2800.00 | 0.1120E-01 |
| 300.00 | 0.1731 | 2825.00 | 0.1106E-01 |
| 325.00 | 0.1550 | 2850.00 | 0.1092E-01 |
| 350.00 | 0.1398 | 2875.00 | 0.1079E-01 |
| 375.00 | 0.1271 | 2900.00 | 0.1066E-01 |
| 400.00 | 0.1162 | 2925.00 | 0.1053E-01 |
| 425.00 | 0.1068 | 2950.00 | 0.1040E-01 |
| 450.00 | 0.9870E-01 | 2975.00 | 0.1028E-01 |
| 475.00 | 0.9157E-01 | 3000.00 | 0.1016E-01 |
| 500.00 | 0.8528E-01 | 3025.00 | 0.1004E-01 |
| 525.00 | 0.7970E-01 | 3050.00 | 0.9927E-02 |
| 550.00 | 0.7471E-01 | 3075.00 | 0.9813E-02 |
| 575.00 | 0.7024E-01 | 3100.00 | 0.9701E-02 |
| 600.00 | 0.6621E-01 | 3125.00 | 0.9592E-02 |
| 625.00 | 0.6256E-01 | 3150.00 | 0.9485E-02 |
| 650.00 | 0.5924E-01 | 3175.00 | 0.9379E-02 |
| 675.00 | 0.5621E-01 | 3200.00 | 0.9276E-02 |

| | | | |
|---|---|---|---|
| 700.00 | 0.5401E-01 | 3225.00 | 0.9174E-02 |
| 725.00 | 0.5264E-01 | 3250.00 | 0.9075E-02 |
| 750.00 | 0.5127E-01 | 3275.00 | 0.8977E-02 |
| 775.00 | 0.4989E-01 | 3300.00 | 0.8881E-02 |
| 800.00 | 0.4850E-01 | 3325.00 | 0.8787E-02 |
| 825.00 | 0.4710E-01 | 3350.00 | 0.8694E-02 |
| 850.00 | 0.4571E-01 | 3375.00 | 0.8603E-02 |
| 875.00 | 0.4431E-01 | 3400.00 | 0.8513E-02 |
| 900.00 | 0.4292E-01 | 3425.00 | 0.8426E-02 |
| 925.00 | 0.4154E-01 | 3450.00 | 0.8339E-02 |
| 950.00 | 0.4016E-01 | 3475.00 | 0.8254E-02 |
| 975.00 | 0.3880E-01 | 3500.00 | 0.8171E-02 |
| 1000.00 | 0.3761E-01 | 3525.00 | 0.8089E-02 |
| 1025.00 | 0.3711E-01 | 3550.00 | 0.8008E-02 |
| 1050.00 | 0.3660E-01 | 3575.00 | 0.7929E-02 |
| 1075.00 | 0.3608E-01 | 3600.00 | 0.7851E-02 |
| 1100.00 | 0.3554E-01 | 3625.00 | 0.7774E-02 |
| 1125.00 | 0.3500E-01 | 3650.00 | 0.7699E-02 |
| 1150.00 | 0.3444E-01 | 3675.00 | 0.7624E-02 |
| 1175.00 | 0.3388E-01 | 3700.00 | 0.7551E-02 |
| 1200.00 | 0.3331E-01 | 3725.00 | 0.7480E-02 |
| 1225.00 | 0.3273E-01 | 3750.00 | 0.7409E-02 |
| 1250.00 | 0.3215E-01 | 3775.00 | 0.7339E-02 |
| 1275.00 | 0.3157E-01 | 3800.00 | 0.7271E-02 |
| 1300.00 | 0.3099E-01 | 3825.00 | 0.7203E-02 |
| 1325.00 | 0.3042E-01 | 3850.00 | 0.7137E-02 |
| 1350.00 | 0.2984E-01 | 3875.00 | 0.7071E-02 |
| 1375.00 | 0.2927E-01 | 3900.00 | 0.7007E-02 |
| 1400.00 | 0.2870E-01 | 3925.00 | 0.6943E-02 |
| 1425.00 | 0.2814E-01 | 3950.00 | 0.6881E-02 |
| 1450.00 | 0.2758E-01 | 3975.00 | 0.6819E-02 |
| 1475.00 | 0.2704E-01 | 4000.00 | 0.6759E-02 |
| 1500.00 | 0.2650E-01 | 4025.00 | 0.6699E-02 |
| 1525.00 | 0.2597E-01 | 4050.00 | 0.6640E-02 |
| 1550.00 | 0.2545E-01 | 4075.00 | 0.6582E-02 |
| 1575.00 | 0.2494E-01 | 4100.00 | 0.6525E-02 |
| 1600.00 | 0.2444E-01 | 4125.00 | 0.6469E-02 |
| 1625.00 | 0.2396E-01 | 4150.00 | 0.6413E-02 |
| 1650.00 | 0.2348E-01 | 4175.00 | 0.6358E-02 |
| 1675.00 | 0.2302E-01 | 4200.00 | 0.6304E-02 |
| 1700.00 | 0.2256E-01 | 4225.00 | 0.6251E-02 |
| 1725.00 | 0.2212E-01 | 4250.00 | 0.6199E-02 |
| 1750.00 | 0.2169E-01 | 4275.00 | 0.6147E-02 |
| 1775.00 | 0.2128E-01 | 4300.00 | 0.6096E-02 |
| 1800.00 | 0.2087E-01 | 4325.00 | 0.6046E-02 |
| 1825.00 | 0.2047E-01 | 4350.00 | 0.5996E-02 |
| 1850.00 | 0.2009E-01 | 4375.00 | 0.5947E-02 |
| 1875.00 | 0.1972E-01 | 4400.00 | 0.5899E-02 |

| | | | |
|---|---|---|---|
| 1900.00 | 0.1936E-01 | 4425.00 | 0.5851E-02 |
| 1925.00 | 0.1900E-01 | 4450.00 | 0.5804E-02 |
| 1950.00 | 0.1866E-01 | 4475.00 | 0.5758E-02 |
| 1975.00 | 0.1833E-01 | 4500.00 | 0.5712E-02 |
| 2000.00 | 0.1801E-01 | 4525.00 | 0.5667E-02 |
| 2025.00 | 0.1769E-01 | 4550.00 | 0.5623E-02 |
| 2050.00 | 0.1739E-01 | 4575.00 | 0.5579E-02 |
| 2075.00 | 0.1709E-01 | 4600.00 | 0.5535E-02 |
| 2100.00 | 0.1680E-01 | 4625.00 | 0.5492E-02 |
| 2125.00 | 0.1653E-01 | 4650.00 | 0.5450E-02 |
| 2150.00 | 0.1625E-01 | 4675.00 | 0.5408E-02 |
| 2175.00 | 0.1599E-01 | 4700.00 | 0.5367E-02 |
| 2200.00 | 0.1573E-01 | 4725.00 | 0.5326E-02 |
| 2225.00 | 0.1548E-01 | 4750.00 | 0.5286E-02 |
| 2250.00 | 0.1524E-01 | 4775.00 | 0.5246E-02 |
| 2275.00 | 0.1501E-01 | 4800.00 | 0.5207E-02 |
| 2300.00 | 0.1478E-01 | 4825.00 | 0.5169E-02 |
| 2325.00 | 0.1455E-01 | 4850.00 | 0.5130E-02 |
| 2350.00 | 0.1434E-01 | 4875.00 | 0.5093E-02 |
| 2375.00 | 0.1412E-01 | 4900.00 | 0.5055E-02 |
| 2400.00 | 0.1392E-01 | 4925.00 | 0.5018E-02 |
| 2425.00 | 0.1371E-01 | 4950.00 | 0.4982E-02 |
| 2450.00 | 0.1352E-01 | 4975.00 | 0.4946E-02 |
| 2475.00 | 0.1333E-01 | 5000.00 | 0.4910E-02 |
| 2500.00 | 0.1314E-01 | | |

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********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

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| CALCULATION PROCEDURE | MAXIMUM 1-HOUR CONC (ug/m3) | SCALED 3-HOUR CONC (ug/m3) | SCALED 8-HOUR CONC (ug/m3) | SCALED 24-HOUR CONC (ug/m3) | SCALED ANNUAL CONC (ug/m3) |
|---|---|---|---|---|---|
| FLAT TERRAIN | 4.486 | 4.486 | 4.037 | 2.692 | 0.4486 |

DISTANCE FROM SOURCE 17.00 meters directed toward 180 degrees

| | | | | | |
|---|---|---|---|---|---|
| IMPACT AT THE AMBIENT BOUNDARY | 0.5247E-01 | 0.5247E-01 | 0.4722E-01 | 0.3148E-01 | 0.5247E-02 |

DISTANCE FROM SOURCE 1.00 meters directed toward 180 degrees

AERSCREEN 16216 / AERMOD 16216r 03/05/18
14:38:41

TITLE: Mountaire Pit 3 SHED

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********** STACK PARAMETERS **********

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| | | |
|---|---|---|
| SOURCE EMISSION RATE: | 0.143E-03 g/s | 0.114E-02 lb/hr |
| STACK HEIGHT: | 2.74 meters | 9.00 feet |
| STACK INNER DIAMETER: | 0.631 meters | 24.84 inches |
| PLUME EXIT TEMPERATURE: | Ambient | |
| PLUME EXIT VELOCITY: | 21.888 m/s | 71.81 ft/s |
| STACK AIR FLOW RATE: | 14500 ACFM | |
| RURAL OR URBAN: | URBAN | |
| POPULATION: | 4293 | |
| FLAGPOLE RECEPTOR HEIGHT: | 0.00 meters | 0.00 feet |
| INITIAL PROBE DISTANCE = | 5000. meters | 16404. feet |

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********** BUILDING DOWNWASH PARAMETERS **********

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| | | |
|---|---|---|
| BUILDING HEIGHT: | 6.1 meters | 20.0 feet |
| MAX BUILDING DIMENSION: | 4.3 meters | 14.0 feet |
| MIN BUILDING DIMENSION: | 4.3 meters | 14.0 feet |
| BUILDING ORIENTATION TO NORTH: | 0. degrees | |
| STACK DIRECTION FROM CENTER: | 180. degrees | |
| STACK DISTANCE FROM CENTER: | 3.7 meters | 12.0 feet |

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********** FLOW SECTOR ANALYSIS **********

25 meter receptor spacing: 1. meters - 5000. meters

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| FLOW SECTOR | BUILD WIDTH | BUILD LENGTH | XBADJ | YBADJ | MAX 1-HR CONC | DIST (m) | TEMPORAL PERIOD |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 10* | 4.94 | 4.94 | 1.13 | 0.63 | 3.925 | 25.0 | AUT |
| 20 | 5.46 | 5.47 | 0.70 | 1.25 | 3.925 | 25.0 | AUT |
| 30 | 5.82 | 5.83 | 0.25 | 1.83 | 3.925 | 25.0 | AUT |
| 40 | 6.01 | 6.01 | -0.20 | 2.35 | 3.925 | 25.0 | AUT |
| 50 | 6.01 | 6.01 | -0.65 | 2.80 | 3.925 | 25.0 | AUT |
| 60 | 5.83 | 5.82 | -1.08 | 3.17 | 3.925 | 25.0 | AUT |
| 70 | 5.47 | 5.46 | -1.48 | 3.43 | 3.925 | 25.0 | AUT |
| 80 | 4.94 | 4.94 | -1.83 | 3.60 | 3.925 | 25.0 | AUT |
| 90 | 4.27 | 4.26 | -2.13 | 3.65 | 3.925 | 25.0 | AUT |
| 100 | 4.94 | 4.94 | -3.10 | 3.60 | 3.925 | 25.0 | AUT |
| 110 | 5.47 | 5.46 | -3.98 | 3.43 | 3.925 | 25.0 | AUT |
| 120 | 5.83 | 5.82 | -4.74 | 3.17 | 3.925 | 25.0 | AUT |
| 130 | 6.01 | 6.01 | -5.35 | 2.80 | 3.925 | 25.0 | AUT |
| 140 | 6.01 | 6.01 | -5.80 | 2.35 | 3.925 | 25.0 | AUT |
| 150 | 5.82 | 5.83 | -6.08 | 1.83 | 3.925 | 25.0 | AUT |
| 160 | 5.46 | 5.47 | -6.17 | 1.25 | 3.925 | 25.0 | AUT |
| 170 | 4.94 | 4.94 | -6.07 | 0.63 | 3.925 | 25.0 | AUT |
| 180 | 4.26 | 4.27 | -5.79 | 0.00 | 3.925 | 25.0 | AUT |
| 190 | 4.94 | 4.94 | -6.07 | -0.63 | 3.925 | 25.0 | AUT |
| 200 | 5.46 | 5.47 | -6.17 | -1.25 | 3.925 | 25.0 | AUT |
| 210 | 5.82 | 5.83 | -6.08 | -1.83 | 3.925 | 25.0 | AUT |
| 220 | 6.01 | 6.01 | -5.80 | -2.35 | 3.925 | 25.0 | AUT |
| 230 | 6.01 | 6.01 | -5.35 | -2.80 | 3.925 | 25.0 | AUT |
| 240 | 5.83 | 5.82 | -4.74 | -3.17 | 3.925 | 25.0 | AUT |
| 250 | 5.47 | 5.46 | -3.98 | -3.43 | 3.925 | 25.0 | AUT |
| 260 | 4.94 | 4.94 | -3.10 | -3.60 | 3.925 | 25.0 | AUT |
| 270 | 4.27 | 4.26 | -2.13 | -3.65 | 3.925 | 25.0 | AUT |
| 280 | 4.94 | 4.94 | -1.83 | -3.60 | 3.925 | 25.0 | AUT |
| 290 | 5.47 | 5.46 | -1.48 | -3.43 | 3.925 | 25.0 | AUT |
| 300 | 5.83 | 5.82 | -1.08 | -3.17 | 3.925 | 25.0 | AUT |
| 310 | 6.01 | 6.01 | -0.65 | -2.80 | 3.925 | 25.0 | AUT |
| 320 | 6.01 | 6.01 | -0.20 | -2.35 | 3.925 | 25.0 | AUT |
| 330 | 5.82 | 5.83 | 0.25 | -1.83 | 3.925 | 25.0 | AUT |
| 340 | 5.46 | 5.47 | 0.70 | -1.25 | 3.925 | 25.0 | AUT |
| 350 | 4.94 | 4.94 | 1.13 | -0.63 | 3.925 | 25.0 | AUT |
| 360 | 4.26 | 4.27 | 1.52 | 0.00 | 3.925 | 25.0 | AUT |

* = worst case flow sector

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********** MAKEMET METEOROLOGY PARAMETERS **********

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MIN/MAX TEMPERATURE: 249.8 / 310.9 (K)

MINIMUM WIND SPEED: 0.5 m/s

ANEMOMETER HEIGHT: 10.000 meters

SURFACE CHARACTERISTICS INPUT: AERMET SEASONAL TABLES

DOMINANT SURFACE PROFILE: Grassland
DOMINANT CLIMATE TYPE: Wet Conditions
DOMINANT SEASON: Autumn

ALBEDO: 0.20
BOWEN RATIO: 0.50
ROUGHNESS LENGTH: 0.010 (meters)

SURFACE FRICTION VELOCITY (U*) NOT ADUSTED

METEOROLOGY CONDITIONS USED TO PREDICT OVERALL MAXIMUM IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 01 | 04 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -0.21 | 0.014 | -9.000 | 0.020 | -999. | 4. | 1.1 | 0.010 | 0.50 | 0.20 | 0.50 |

| HT | REF TA | HT |
|---|---|---|
| 10.0 | 249.8 | 2.0 |

WIND SPEED AT STACK HEIGHT (non-downwash): 0.5 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

METEOROLOGY CONDITIONS USED TO PREDICT AMBIENT BOUNDARY IMPACT

| YR | MO | DY | JDY | HR |
|---|---|---|---|---|
| 10 | 06 | 21 | 4 | 01 |

| H0 | U* | W* | DT/DZ | ZICNV | ZIMCH | M-O LEN | Z0 | BOWEN | ALBEDO | REF WS |
|---|---|---|---|---|---|---|---|---|---|---|
| -64.00 | 1.355 | -9.000 | 0.020 | -999. | 3626. | 2980.2 | 0.050 | 0.30 | 0.18 | 18.00 |

| HT | REF TA | HT |
|---|---|---|

- - - - - - - - - - -

10.0 249.8 2.0

WIND SPEED AT STACK HEIGHT (non-downwash): 13.6 m/s
STACK-TIP DOWNWASH ADJUSTED STACK HEIGHT: 2.7 meters
ESTIMATED FINAL PLUME RISE (non-downwash): 0.0 meters
ESTIMATED FINAL PLUME HEIGHT (non-downwash): 2.7 meters

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********** AERSCREEN AUTOMATED DISTANCES **********
OVERALL MAXIMUM CONCENTRATIONS BY DISTANCE

---

| DIST (m) | MAXIMUM 1-HR CONC (ug/m3) | DIST (m) | MAXIMUM 1-HR CONC (ug/m3) |
|---|---|---|---|
| 1.00 | 0.6189 | 2525.00 | 0.1295E-01 |
| 25.00 | 3.925 | 2550.00 | 0.1277E-01 |
| 50.00 | 2.257 | 2575.00 | 0.1260E-01 |
| 75.00 | 1.476 | 2600.00 | 0.1243E-01 |
| 100.00 | 1.044 | 2625.00 | 0.1226E-01 |
| 125.00 | 0.7861 | 2650.00 | 0.1210E-01 |
| 150.00 | 0.6199 | 2675.00 | 0.1194E-01 |
| 175.00 | 0.5055 | 2700.00 | 0.1179E-01 |
| 200.00 | 0.4230 | 2725.00 | 0.1163E-01 |
| 225.00 | 0.3611 | 2750.00 | 0.1149E-01 |
| 250.00 | 0.3132 | 2775.00 | 0.1134E-01 |
| 275.00 | 0.2753 | 2800.00 | 0.1120E-01 |
| 300.00 | 0.2446 | 2825.00 | 0.1106E-01 |
| 325.00 | 0.2194 | 2850.00 | 0.1092E-01 |
| 350.00 | 0.1983 | 2875.00 | 0.1079E-01 |
| 375.00 | 0.1805 | 2900.00 | 0.1066E-01 |
| 400.00 | 0.1653 | 2925.00 | 0.1053E-01 |
| 425.00 | 0.1521 | 2950.00 | 0.1040E-01 |
| 450.00 | 0.1407 | 2975.00 | 0.1028E-01 |
| 475.00 | 0.1307 | 3000.00 | 0.1016E-01 |
| 500.00 | 0.1218 | 3025.00 | 0.1004E-01 |
| 525.00 | 0.1139 | 3050.00 | 0.9926E-02 |
| 550.00 | 0.1069 | 3075.00 | 0.9813E-02 |
| 575.00 | 0.1005 | 3100.00 | 0.9701E-02 |
| 600.00 | 0.9484E-01 | 3125.00 | 0.9592E-02 |
| 625.00 | 0.8967E-01 | 3150.00 | 0.9484E-02 |
| 650.00 | 0.8496E-01 | 3175.00 | 0.9379E-02 |
| 675.00 | 0.8067E-01 | 3200.00 | 0.9276E-02 |

| | | | |
|---|---|---|---|
| 700.00 | 0.7673E-01 | 3225.00 | 0.9174E-02 |
| 725.00 | 0.7311E-01 | 3250.00 | 0.9075E-02 |
| 750.00 | 0.6978E-01 | 3275.00 | 0.8977E-02 |
| 775.00 | 0.6670E-01 | 3300.00 | 0.8881E-02 |
| 800.00 | 0.6385E-01 | 3325.00 | 0.8787E-02 |
| 825.00 | 0.6120E-01 | 3350.00 | 0.8694E-02 |
| 850.00 | 0.5873E-01 | 3375.00 | 0.8603E-02 |
| 875.00 | 0.5643E-01 | 3400.00 | 0.8513E-02 |
| 900.00 | 0.5428E-01 | 3425.00 | 0.8426E-02 |
| 925.00 | 0.5227E-01 | 3450.00 | 0.8339E-02 |
| 950.00 | 0.5038E-01 | 3475.00 | 0.8254E-02 |
| 975.00 | 0.4860E-01 | 3500.00 | 0.8171E-02 |
| 1000.00 | 0.4693E-01 | 3525.00 | 0.8089E-02 |
| 1025.00 | 0.4536E-01 | 3550.00 | 0.8008E-02 |
| 1050.00 | 0.4387E-01 | 3575.00 | 0.7929E-02 |
| 1075.00 | 0.4247E-01 | 3600.00 | 0.7851E-02 |
| 1100.00 | 0.4114E-01 | 3625.00 | 0.7774E-02 |
| 1125.00 | 0.3988E-01 | 3650.00 | 0.7699E-02 |
| 1150.00 | 0.3869E-01 | 3675.00 | 0.7624E-02 |
| 1175.00 | 0.3756E-01 | 3700.00 | 0.7551E-02 |
| 1200.00 | 0.3648E-01 | 3725.00 | 0.7480E-02 |
| 1225.00 | 0.3545E-01 | 3750.00 | 0.7409E-02 |
| 1250.00 | 0.3447E-01 | 3775.00 | 0.7339E-02 |
| 1275.00 | 0.3354E-01 | 3800.00 | 0.7271E-02 |
| 1300.00 | 0.3265E-01 | 3825.00 | 0.7203E-02 |
| 1325.00 | 0.3180E-01 | 3850.00 | 0.7137E-02 |
| 1350.00 | 0.3099E-01 | 3875.00 | 0.7071E-02 |
| 1375.00 | 0.3021E-01 | 3900.00 | 0.7007E-02 |
| 1400.00 | 0.2946E-01 | 3925.00 | 0.6943E-02 |
| 1425.00 | 0.2875E-01 | 3950.00 | 0.6881E-02 |
| 1450.00 | 0.2806E-01 | 3975.00 | 0.6819E-02 |
| 1475.00 | 0.2740E-01 | 4000.00 | 0.6759E-02 |
| 1500.00 | 0.2677E-01 | 4025.00 | 0.6699E-02 |
| 1525.00 | 0.2616E-01 | 4050.00 | 0.6640E-02 |
| 1550.00 | 0.2558E-01 | 4075.00 | 0.6582E-02 |
| 1575.00 | 0.2502E-01 | 4100.00 | 0.6525E-02 |
| 1600.00 | 0.2448E-01 | 4125.00 | 0.6469E-02 |
| 1625.00 | 0.2396E-01 | 4150.00 | 0.6413E-02 |
| 1650.00 | 0.2345E-01 | 4175.00 | 0.6358E-02 |
| 1675.00 | 0.2297E-01 | 4200.00 | 0.6304E-02 |
| 1700.00 | 0.2250E-01 | 4225.00 | 0.6251E-02 |
| 1725.00 | 0.2205E-01 | 4250.00 | 0.6199E-02 |
| 1750.00 | 0.2161E-01 | 4275.00 | 0.6147E-02 |
| 1775.00 | 0.2119E-01 | 4300.00 | 0.6096E-02 |
| 1800.00 | 0.2078E-01 | 4325.00 | 0.6046E-02 |
| 1825.00 | 0.2038E-01 | 4350.00 | 0.5996E-02 |
| 1850.00 | 0.2000E-01 | 4375.00 | 0.5947E-02 |
| 1875.00 | 0.1963E-01 | 4400.00 | 0.5899E-02 |

| | | | |
|---|---|---|---|
| 1900.00 | 0.1927E-01 | 4425.00 | 0.5851E-02 |
| 1925.00 | 0.1892E-01 | 4450.00 | 0.5804E-02 |
| 1950.00 | 0.1859E-01 | 4475.00 | 0.5758E-02 |
| 1975.00 | 0.1826E-01 | 4500.00 | 0.5712E-02 |
| 2000.00 | 0.1794E-01 | 4525.00 | 0.5667E-02 |
| 2025.00 | 0.1763E-01 | 4550.00 | 0.5623E-02 |
| 2050.00 | 0.1733E-01 | 4575.00 | 0.5579E-02 |
| 2075.00 | 0.1704E-01 | 4600.00 | 0.5535E-02 |
| 2100.00 | 0.1676E-01 | 4625.00 | 0.5492E-02 |
| 2125.00 | 0.1649E-01 | 4650.00 | 0.5450E-02 |
| 2150.00 | 0.1622E-01 | 4675.00 | 0.5408E-02 |
| 2175.00 | 0.1596E-01 | 4700.00 | 0.5367E-02 |
| 2200.00 | 0.1570E-01 | 4725.00 | 0.5326E-02 |
| 2225.00 | 0.1546E-01 | 4750.00 | 0.5286E-02 |
| 2250.00 | 0.1522E-01 | 4775.00 | 0.5246E-02 |
| 2275.00 | 0.1499E-01 | 4800.00 | 0.5207E-02 |
| 2300.00 | 0.1476E-01 | 4825.00 | 0.5169E-02 |
| 2325.00 | 0.1454E-01 | 4850.00 | 0.5130E-02 |
| 2350.00 | 0.1432E-01 | 4875.00 | 0.5093E-02 |
| 2375.00 | 0.1411E-01 | 4900.00 | 0.5055E-02 |
| 2400.00 | 0.1390E-01 | 4925.00 | 0.5018E-02 |
| 2425.00 | 0.1370E-01 | 4950.00 | 0.4982E-02 |
| 2450.00 | 0.1351E-01 | 4975.00 | 0.4946E-02 |
| 2475.00 | 0.1332E-01 | 5000.00 | 0.4910E-02 |
| 2500.00 | 0.1313E-01 | | |

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********** AERSCREEN MAXIMUM IMPACT SUMMARY **********

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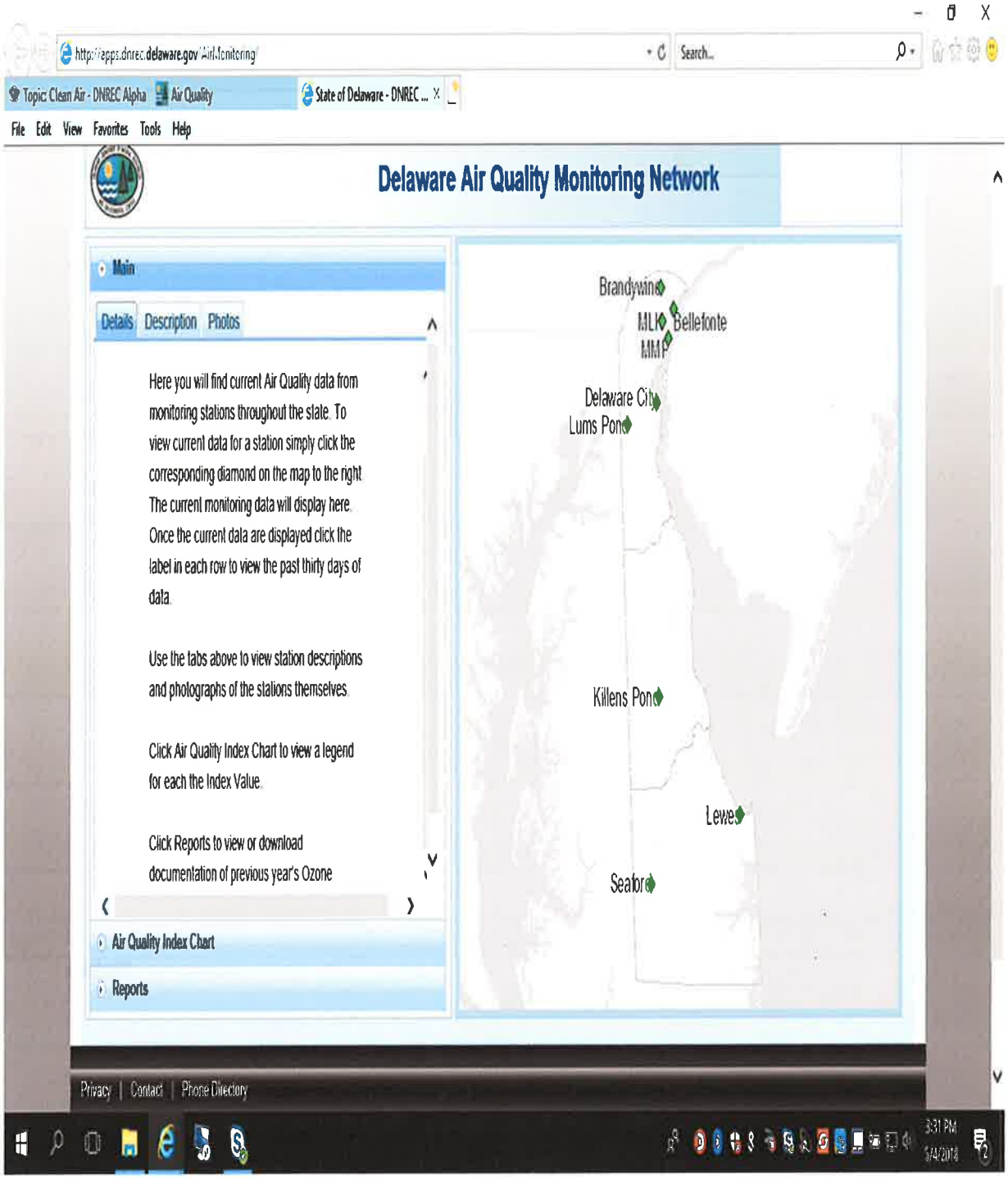
| CALCULATION PROCEDURE | MAXIMUM 1-HOUR CONC (ug/m3) | SCALED 3-HOUR CONC (ug/m3) | SCALED 8-HOUR CONC (ug/m3) | SCALED 24-HOUR CONC (ug/m3) | SCALED ANNUAL CONC (ug/m3) |
|---|---|---|---|---|---|
| FLAT TERRAIN | 4.486 | 4.486 | 4.037 | 2.692 | 0.4486 |

DISTANCE FROM SOURCE 17.00 meters directed toward 10 degrees

| | | | | | |
|---|---|---|---|---|---|
| IMPACT AT THE AMBIENT BOUNDARY | 0.6189 | 0.6189 | 0.5570 | 0.3713 | 0.6189E-01 |

DISTANCE FROM SOURCE 1.00 meters directed toward 180 degrees

EXHIBIT 7


Topic: Clean Air - DNREC Alpha
Air Quality
State of Delaware - DNREC ...
File Edit View Favorites Tools Help
Delaware Air Quality Monitoring Network
Main
Details
Description
Photos
Here you will find current Air Quality data from monitoring stations throughout the state. To view current data for a station simply click the corresponding diamond on the map to the right. The current monitoring data will display here. Once the current data are displayed click the label in each row to view the past thirty days of data.
Use the tabs above to view station descriptions and photographs of the stations themselves.
Click Air Quality Index Chart to view a legend for each the Index Value.
Click Reports to view or download documentation of previous year's Ozone
Air Quality Index Chart
Reports
Brandywine
MLK
Bellefonte
MMP
Delaware City
Lums Pond
Killens Pond
Lewes
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