Statement of Basis

Permit to Construct No. P-2009.0110
Project ID 61069

Seminis Vegetable Seeds
Nampa, Idaho

Facility ID 027-00072

Final

August 13, 2012

Harbi Elshafei HE
Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentrations
AACC	acceptable ambient concentrations for carcinogens
CO_2e	Carbon dioxide gas emissions and its equivalent
CO	Carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
GHG	Greenhouse gases
HAP	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
NAICS	North American Industry Classification System
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
PTC	permit to construct
lb/hr	pounds per hour
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
scf	standard cubic feet
Seminis	Seminis Vegetable Seeds, Inc.
SO_2	sulfur dioxide
TAP	toxic air pollutants
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Seminis Vegetable Seeds, Inc. (Seminis) processes seeds from beans, peas, corn, onion, and carrot. Raw bean and pea seeds are shipped to the facility via flat or hopper bottom trucks. The seeds are transferred from the trucks onto a receiving conveyor which transfers the seeds into a series of steel bins. The seeds are weighed, analyzed for moisture content and product quality, cleaned, and sorted. Then, the seeds are transferred to the seed storage building until product orders are received. Upon customer requests, the seeds are treated and packaged.

Corn is received on the cob. The corn is husked and dried. Then, the kernels are removed from the cob and incorporated into the cleaning and treatment process.

All corn and some seeds (beans, peas, carrot, and onions) are dried using nine identical drying lines composed of nine Maxon natural gas burners. Each drying line uses centrifugal fans to pull large volumes of air across a gas burner, heating the air. During the summer months, the natural gas burners are not used to heat the air. Hot ambient air is simply pulled through the tunnels and is sufficient to dry the product. Hot air is then pushed through underground tunnels, which are equipped with horizontal vent slots at and above ground level.

To summarize, all products go through one or more of the following general steps:

1. Receiving, grading, sorting, testing
2. Cleaning, inspection
3. Chemical treatment
4. Final inspection, testing
5. Threshing and scalping
6. Packaging, storage
7. Shipment off-site

The following additional steps are used for corn:

1. Husking
2. Drying
3. Kernel removal
4. Incorporation into the general process

Fumigation is performed by Seminis to eliminate infestation of boll weevils and other insects that may damage the seeds. Three types of fumigation with phosphine gas occur at the facility: box chamber fumigation, building fumigation, and pea box fumigation. A description of each type of fumigation follows.

New Fumigation Chambers

The new fumigation chambers are located west of the existing Building T. The new chambers are directly adjacent to each other and have a combined dimension of 40 feet x 30 feet x 14 feet that is divided length-wise equally into two separate chambers. Each chamber has its vertical stack from which phosphine emissions are vented to the atmosphere.

Seed product is placed in the fumigation chambers. The chambers are closed and the seed is fumigated with phosphine for three days. At the end of the fumigation, the doors to the chambers are opened and fans draw the phosphine from the chambers and exhaust it out of the stacks. The chambers are then vented for one day.

The maximum fumigations per chamber are 91 (365/4) per year. Each chamber uses nine plates of phosphine per fume. Each plate contains 33 grams of phosphine. During fumigation the phosphine emissions to the atmosphere from each chamber are equal to 297 (9x33) grams (0.655 pounds).

Building Fumigation

Fumigation of the pea harvest occurs in three buildings (L, T, and S Buildings). A fumigant gas mixture containing 2.2% phosphine is used during the fumigation. Each building is sealed and fumigated for 3 days (72 hours). A fumigation contractor monitors the phosphine level to maintain the optimum application rate. Based on the contractor's past experience, approximately 30% of the fumigant is lost during the 3 day process. The remaining 70% of the fumigant is then vented for 24 hours following the 3 day process.

Pea Box Fumigation

Pea boxes are fumigated by placing into each box 6 tablets that each liberate 1 gram of phosphine. The box is then sealed for 7 days. At the end of 7 days, the lids are taken off the boxes by hand and allowed to vent for 4 hours. The maximum number of boxes the site can handle is approximately 4700 per month. However, in order to ensure compliance with the 24-hour average phosphine AAC, the facility is requesting a limit of removing no more than 8 box lids per hour over an 8 hour operating day (64 box lids per day).

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

August 17, 2012	P-2009.0110 Project 61069, This PTC is for a minor modification at an existing minor facility. The PTC modification is to install two new fumigation chambers and remove the existing fumigation chamber from the facility. (A, but will become S upon issuance of this permit).
February 18, 2011	P-2009.0110 Project 60650, PTC modification to increase the chemical application rate to seeds, Permit status (S).
September 9, 2010	P-2009.0110 Project 60519, Increase chemical application rate of Captan 400 and Lorsban from 15.6 lb/hr and 1.04 lb/hr to 30 lb/hr and 36.3 lb/hr, respectively. Reduce associated TAPs emissions by using a less conservative and more realistic calculation methodology, Permit status (S).
October 16, 2009	P-2009.0110, Increase seed throughput from 17,844 T/yr to 50,000 T/yr and increase chemicals used for seed treatment, Permit status (S).
September 21, 2005	P-040023, Initial PTC for existing facility, Permit Status (S).

Application Scope

The purpose of this permitting action is to modify the facility's Permit to Construct (PTC) No. P-2009.0110, issued February 18, 2011. The modification is to install two new fumigation chambers and remove the existing fumigation chamber which will result in an increase in phosphine emissions, a non-carcinogenic toxic air pollutant (TAP) from the facility.

Application Chronology

June 12, 2012	DEQ received a pre-permit construction application and an application fee.
June 19, 2012	DEQ received supplemental information from the applicant.
June 19, 2012	DEQ approved pre-permit construction.
June 20, 2012	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
June 21, 2012	DEQ received a request from the applicant for a copy of the draft PTC for review prior to issuance of the final permit.

July 6, 2012	DEQ received supplemental information from the applicant.
July 10, 2012	DEQ determined the application was incomplete.
July 13, 2012	DEQ received a response to the incompleteness letter from the applicant.
July 17, 2012	DEQ determined that the application was complete.
July 20, 2012	DEQ made available the draft permit and statement of basis for peer and regional office review.
July 25, 2012	DEQ made available the draft permit and statement of basis for applicant review.
August 2, 2012	DEQ received comments from applicant on the draft permit and statement of basis.
August 2, 2012	DEQ received the permit processing fee.
August 17, 2012	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL DEVICE INFORMATION

ID No.	Source Description	Control Equipment Description
2	Seed Processing Operations 1. Seed Receiving (beans, peas, carrot, and onions) 2. Conditioning Line 1 3. Conditioning Line 2 4. Electric Sorting Line 5. Seed Treatment and Packaging Line 1 6. Seed Treatment and Packaging Line 2 7. Corn Sheller Line 8. Mini-pack Line	Baghouse No. 1 for Seed Receiving Manufacturer: Torit/Donaldson Model No.: 4DF32 Serial No.: 193067 PM_{10} control efficiency: 99.99% Type filter: Ultra-web cartridges Air-to-cloth ratio: 1.5:1 Baghouse No. 2 for Conditioning Line 1 and Electric Sorting Line Manufacturer: Alanco Environmental Model No.: 312RLP-10 PM_{10} control efficiency: 99.9% Baghouse No. 3 for Conditioning Line 2 Manufacturer: Alanco Environmental Model No.: 188RLP-10 PM_{10} control efficiency: 99.9% Baghouse No. 4 Seed Treatment and Packaging Line 2 Manufacturer: U.S. Air Filtration, Inc. Model No.: not available PM_{10} control efficiency: 99.9% Baghouse No. 5 for Seed Treatment and Packaging Line 1 Manufacturer: Alanco Environmental Model No.: Not available PM_{10} control efficiency: 99.9% Baghouse No. 6 for Corn Sheller Line Manufacturer: U.S. Air Filtration, Inc. Model No.: Not available PM_{10} control efficiency: 99.9% Baghouse No. 7 for Mini-pack Line Manufacturer: Mac Model No.: 39AVSC25 Serial No.: 94VSF05-016 PM_{10} control efficiency: 99%
3	Corn and Seed Drying Nine identical drying lines (tunnel A to tunnel I) with nine Maxon natural gas burners Total Heat Input Rating: 47 MMBtu/hr	None
4	Fumigation Process New Fumigation Chambers Building Fumigation (Buildings L, S and T) Pea Box Fumigation	None

Emissions Inventories

The only pollutant of concern from the proposed new fumigation chambers is phosphine, which is a state regulated toxic air pollutant (TAP). During fumigations the phosphine emissions estimates from the chambers are

1.31 pounds per day or 0.0545 pounds per hour (lbs/hr) - see emissions estimates in Appendix A of this statement of basis. For this project the maximum fumes that are performed at the facility are 91 fumes per year.

Operations of the new fumigation chambers showed that the amount of phosphine emitted over a 24-hr period exceeded the screening level of 0.027 lb/hr presented in IDAPA 58.01.01.585. Therefore, Seminis conducted a modeling analysis to demonstrate compliance with the acceptable ambient concentration (AAC) of 20 $\mu g/m^3$. The results of the modeling showed compliance with the AAC. The phosphine emissions were modeled to a maximum of 0.0545 lb/hr (24-hour average from both new chambers combined.) However, since phosphine emissions are subject to a 24-hour standard, the hourly emission rate of 0.0545 was adjusted to a daily rate as a permit limit, which is equal to 1.31 lbs of phosphine per day. Therefore, the emission rate of 1.31 pounds of phosphine per day from both chambers is included in the permit.

In accordance with an email received from the applicant on July 6, 2012, the onion and carrot seed scalping line was constructed on May 2012, but was not included in the application. According to that email Seminis was self exempt from the PTC requirements for that process. DEQ requested that Seminis submit the emission rates of PM_{10} and $PM_{2.5}$. On July 13, 2012, DEQ received the requested emission rates for PM_{10} and $PM_{2.5}$ from the onion and carrot scalping process. The modeling review of the emissions indicated that the process did not require modeling because the emissions were below DEQ modeling thresholds. The permittee is required, however, to retain record of the exemption at the site in accordance with IDAPA 58.01.01.220.02. The PM_{10} and $PM_{2.5}$ emission estimates are included in Appendix A in this document. The DEQ modeling memorandum is included in Appendix B of the statement of basis.

Also, the permittee has submitted the emission inventory for the greenhouse gases from the combustion engines existing at the facility and showed that the carbon dioxide gas emissions and its equivalent (CO_2e) is equal to 21,850.80 tons per year (T/yr), which is well below the new major source threshold (100,000 T/yr).

Refer to the permit application for details regarding the emission estimates for this facility.

Ambient Air Quality Impact Analyses

As presented in the modeling memo in Appendix B, the estimated emission rates of phosphine from this project exceeded applicable screening emission levels (EL) and published DEQ modeling thresholds established in IDAPA 58.01.01.585-586 and in the State of Idaho Air Quality Modeling Guideline[1]. Refer to the emissions inventories section for additional information concerning phosphine emission estimates.

The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAPs is provided in Appendix B.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located in Canyon County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

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[1] Criteria pollutant thresholds in Table 1, State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the modified emissions source. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured by Permit Conditions 2.5 and 2.16.

Standards for New Sources (IDAPA 58.01.01.677)

IDAPA 58.01.01.677 Standards for Existing Sources

There are not any pieces of fuel-burning equipment as defined by the state air rules. IDAPA 58.01.01.06 defines fuel-burning equipment in the following manner: *any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer*. All units at the facility transfer heat directly or the source of heat does come into direct contact with process materials. Therefore the appropriate grain-loading standards do not apply to Seminis.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility do not have a potential to emit greater than 100 tons per year for (list pollutants, i.e., PM_{10}, SO_2, NO_X, CO, VOC, and HAP) or 10 tons per year for any one HAP or 25 tons per year for all HAPs combined as demonstrated previously in the Emissions Inventories Section of this analysis.

The greenhouse gases (GHG) from the combustion of the nine dryers existing at the facility showed that the carbon dioxide gas emissions and its equivalent (CO_2e) are equal to 31,027 tons per year (T/yr). The GHG emissions are estimated based on the maximum amount of natural gas combusted at the facility from the nine Maxon dryers, which are permitted not to exceed 514 million standard cubic feet ($MMsft^3$) per any consecutive 12-month period. Thus, the facility's GHG emissions are below the new major source threshold (100,000 T/yr).

Therefore, the facility is not a Tier I source in accordance with IDAPA 58.01.01.006.113 and the requirements of IDAPA 58.01.01.301 do not apply.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1), nor is it undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action. The facility is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

NSPS Applicability (40 CFR 60)

40 CFR 60, Subpart DD **Standards of Performance for Grain Elevators**

In accordance with § 60.300, the provisions of this subpart apply to each affected facility, section which commences construction, modification, or reconstruction after August 3, 1978, at any grain terminal elevator or any grain storage elevator. The affected facilities are each truck unloading station, truck loading station, barge and ship unloading station, barge and ship loading station, railcar loading station, railcar unloading station, grain dryer, and all grain handling operations.

In accordance with § 60.301a and § 60.301b, *grain* means corn, wheat, sorghum, rice, rye, oats, barley, and soybeans and *grain elevator* means any plant or installation at which grain is unloaded, handled, cleaned, dried, stored, or loaded, respectively. Most of the material handled at Seminis are beans, peas, carrot, and onions, therefore, do not meet the definition of "grain" in accordance with § 60.301a and § 60.301b. However, Seminis handles, cleans, and dries some corn (approximately 2,066 T/yr).

In accordance with § 60.301c, *grain terminal elevator* means any grain elevator which has a permanent storage capacity of more than 88,100 m^3 (ca. 2.5 million U.S. bushels), except those located at animal food manufacturers, pet food manufacturers, cereal manufacturers, breweries, and livestock feedlots. The permanent storage capacity of the facility is less than 88,100 m^3. Therefore, Seminis does not meet the definition of grain terminal elevator.

In accordance with § 60.301f, *grain storage elevator* means any grain elevator located at any wheat flour mill, wet corn mill, dry corn mill (human consumption), rice mill, or soybean oil extraction plant which has a permanent grain storage capacity of 35,200 m^3 (ca. 1 million bushels). The Seminis is not one of the sources previously listed. Therefore, Seminis does not meet the definition of grain storage elevator.

Thus, the facility is not subject to any NSPS requirements pursuant to 40 CFR 60.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The facility is not subject to any MACT standards in 40 CFR Part 63.

Permit Conditions Review

This section describes the permit conditions for only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

Modified Permit Condition 4.1

Process description modification to reflect the installation of two new fumigation chambers and removal of the existing fumigation chamber at the facility.

The following is the modified process description for the New Fumigation Chambers:

The new fumigation chambers are located west of the existing Building T. The new chambers are directly adjacent to each other and have a combined dimension of 40 feet x 30 feet x 14 feet that is divided length-wise equally into two separate chambers. Each chamber has its vertical stack from which phosphine emissions are vented to the atmosphere.

Seed product is placed in the fumigation chambers. The chambers are closed and the seed is fumigated with phosphine for three days. At the end of the fumigation, the doors to the chambers are opened and fans draw the phosphine from the chambers and exhaust it out of the stacks. The chambers are then vented for one day.

The maximum fumigations per chamber are 91 (365/4) per year. Each chamber uses nine plates of phosphine per fume. Each plate contains 33 grams of phosphine. During fumigation the phosphine emissions to the atmosphere from each chamber are equal to 297 (9x33) grams (0.655 pounds).

Modified Permit Condition 4.3

This modified permit condition changes the phosphine in Table 4.1from 0.218 lbs/day to 1.31 lbs/day (24-hr average).

Table 4.1 FUMIGATION OPERATIONS of PHOSPHINE USAGE LIMITS[a]

Source Description	Phosphine lb/24-hr[b]
Building Fumigation (Building S)	46.2
Building Fumigation (Building L)	18.5
Building Fumigation (Building T)	13.9
Pea Box Fumigation	0.848
New Fumigation Chambers	1.31

a) In absence of any other credible evidence, compliance is assured by complying with permit operating, monitoring, and record keeping requirements.
b) The maximum allowable amount of phosphine over any 24-hour period.

The emissions limits placed on phosphine for the New Fumigation chambers are defined in this condition. The limits are the maximum amount allowable during any one 24-hr time fumigation period. These rates are based on information submitted by Seminis. Please refer to Appendix A for details on the emissions estimates.

Permit Condition 32 in the PTC issued on February 18, 2011 is revised to read as follows:

Revised Permit Condition 4.6

"Temperature Restriction on Building S

Ventilation of Building S shall only occur when the ambient temperature is above 39° F. The permittee shall install, calibrate, and operate an ambient temperature monitoring device to measure the temperature when Building S is ventilated."

The phosphine fumigation using the two new chambers can be conducted regardless of the ambient temperature.

In accordance with the DEQ's modeling memorandum, compliance with the 24-hr standard for phosphine was demonstrated presuming that fumigation occurs during all hours of the five-year meteorological data period. Maximum modeled phosphine impacts were only 19% of the phosphine AAC increment. Because of the considerably better dispersion from the new chamber stacks compared to the ground-level venting from the existing (to be removed) chamber, the restriction on fumigating only when ambient temperatures are above 39°F is not necessary for the new fumigation chambers.

For more information, refer to Table 1 of DEQ's modeling memorandum.

Added Permit Condition 4.11

"Prior to starting operations of the new fumigation chambers, the permittee shall decommission and cease operation of the existing box fumigation chamber."

The permittee is required to decommission the existing fumigation chamber before the operation of the new chambers.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

APPENDIX A – EMISSIONS INVENTORIES

Calculations of Maximum Uncontrolled Phosphine Emissions

Box Chamber Fumigation Operations

Existing Chamber Fumigation		
3-5 day fume + 1 day vent = 4 – 6 day total	4	days
Maximum Fume per year = 365/4 = 91	91	fumes/year
99 grams (0.218 lbs) per fume	0.218	lbs/fume
Vent for 24 hours	0.0091 (0.218/24)	lbs/hr

Two New Fumigation Chambers		
3-5 day fume + 1 day vent = 4 – 6 day total	4	days
Maximum fume per year = 365/4 = 91	91	fumes/year
Chamber configuration	2	chambers
Plates per chamber	9	plates
Phosphine per plate	33	grams
Phosphine fume per chamber	297 (9 * 33)	grams
Phosphine fume per chamber in pounds	0.655 (297/453.6)	pounds
Phosphine fume for two chambers in pounds	1.31 (0.655 * 2)	pounds
Phosphine vented per chamber (assumes 24 hour vent after fuming)	12.375 (297/24)	grams/hr
	0.0273 (0.655/24)	lbs/hr
Total phosphine for the two fumigation chambers	0.0545 (0.0273 * 2)	lbs/hr
Change in phosphine emissions[1]	0.0454 (0.0545 – 0.0091)	lbs/hr

[1] No credit was taken for the reduction in phosphine emissions associated with decommissioning the existing fumigation chamber.

ATTACHMENT A - Onion / Carrot Scalping Line Process Description

Onion Seed and Carrot Seed production is combined or hand harvested and delivered to the site in bulk truck or steel metal boxes. After drying if needed, the boxes are dumped into the thrashing / scalping line hopper and transferred by elevator to the thrashing / scalping equipment. The thrasher removes the seed from the crop umbles and the scalping equipment will remove the large and small crop trash from the seed. The seed will go back into metal bins or cardboard triwall containers for completion of process. Multiple pick-up points from the baghouse are placed at various points of particulate emissions to control internal fugitive emissions.

ATTACHMENT B - EMISSIONS FROM ONION/CARROT SCALPER LINE

Seminis Vegetable Seeds, Inc.
Nampa, Idaho

Proposed Process Emissions for Onion and Carrot Thresher/Scalper

Emission Unit	Maximum Capacity	Maximum Annual Throughput	Pollutant	Emission Factor	Units	Source of EF	Capture Efficiency (%)[b]	Control Efficiency (%)	PM (lb/hr)	PM10 (lb/hr)	PM2.5 (lb/hr)	PM (TPY)	PM-10 (TPY)	PM2.5 (TPY)
Onion Threshing Equipment (Proposed Baghouse #9)	1.0 tons/hr	50,000.0 tons/yr	PM PM-10 PM2.5	0.075 0.019 0.0032	lbs/ton lbs/ton lbs/ton	AP-42 Table 9.9.1-1 AP-42 Table 9.9.1-1 AP-42 Table 9.9.1-1	100%	99%	0.0008	0.0002	0.0000	0.0188	0.0048	0.0008
Onion Scalping Equipment (Proposed Baghouse #9)	1.0 tons/hr	50,000.0 tons/yr	PM PM-10 PM2.5	0.075 0.019 0.0032	lbs/ton lbs/ton lbs/ton	AP-42 Table 9.9.1-1 AP-42 Table 9.9.1-1 AP-42 Table 9.9.1-1	100%	99%	0.0008	0.0002	0.0000	0.0188	0.0048	0.0008
Total Proposed Emissions									**0.0015**	**0.0004**	**0.0001**	**0.0375**	**0.0095**	**0.0016**
Modeling Threshold										0.2			1.0	
Is Modeling Threshold Exceeded?										**No**			**No**	

Notes:

Maximum Annual Throughput = Potential to Emit

Facility-Wide Maximum Throughput

ATTACHMENT C
Greenhouse Gas Emissions
Seminis Vegatable Seeds
Nampa, Idaho

Source Type	Source Location / Description	Fuel	Minimum Calculation Tier	Fuel Usage for Liduid (gal/yr)	Heat Input for Gas (therms/yr)	CO_2 Emission		CH_4 Emissions		N_2O Emissions		Total CO_2e for Calendar Year
						Emission Factor (kg/MMBTU)	Annual Emissions (tonnes/yr)	Emission Factor (kg/MMBTU)	Annual Emissions (tonnes/yr)	Emission Factor (kg/MMBTU)	Annual Emissions (tonnes/yr)	
9 Dryers	Nampa	Natural Gas	Tier 1	N/A	4,117,200.00	53.02	21,829.4	0.001	0.412	0.0001	0.041	21,850.80
											Total	21,850.80

Pursuant to 40 CFR 98.33(c)(1), equipment may be grouped according to according to equipment type and fuel use for units less than 250 MMBTU/hr each.

Pursuant to 40 CFR 98.33(c)(3), equipment may be grouped according to a common supply line or pipe.

Heat Content monitoring only necessary for times in which it operates.

Emission Factors and Heat Content from Table C-1 and C-2

Fuel Type	Default High Heat Value	High Heating Value Units	Default CO_2 Emission Factor (kg/MMBTU)	Default CH_4 Emission Factor (kg/MMBTU)	Default N_2O Emission Factor (kg/MMBTU)
NG	N/A	MMBTU/scf	53.02	0.001	0.0001
Distillate Fuel Oil No. 2	0.138	MMBTU/gal	73.96	0.003	0.0006

Table A-1

Pollutant	Global Warming Potential
CO_2	1
CH_4	21
N_2O	310

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: July 17, 2012

TO: Harbi Elshafei, Permit Writer, Air Quality Division

FROM: Cheryl Robinson, P.E., Air Quality Engineer/Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-2009.0110 PROJ 61069

SUBJECT: Modeling Review for Seminis Vegetable Seeds, Inc., Nampa, Facility ID 027-00072
Phosphine Fumigation Chamber Replacement

1.0 Summary

On June 6, 2012 DEQ received an application from Seminis Vegetable Seeds, Inc. (Seminis) to construct/install two new fumigation chambers and remove the existing fumigation chamber at their Nampa facility. The application fee was received on June 11, 2012. Supplemental information regarding the stack exhaust parameters was received on June 19, 2012. Supplemental information regarding the installation of the onion and carrot seed scalping line was received on July 13, 2012. The only pollutant of concern is phosphine, a state-regulated toxic air pollutant (TAP).

Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were performed to demonstrate the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 [Idaho Air Rules Section 203.02]) or Toxic Air Pollutant (TAP) increment (Idaho Air Rules Section 203.03). The application and modeling analyses were prepared by the Milwaukee, Wisconsin office of ERM.

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information demonstrated to the satisfaction of the Department that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
• Limit phosphine emissions to a maximum of 0.0545 lb/hr (24-hour average) from both new chambers combined. Phosphine emissions are subject to a 24-hour standard, so this emission rate is equivalent to emitting 594 grams (1.31 lbs) of phosphine in any calendar day.	• Demonstration of compliance with the 24-hr standard for phosphine was based on this assumption. After a hold period of 2 to 3 days, the phosphine gas in the fumigation chambers is vented over a 24-hour period using installed fans.
• Phosphine fumigation using the two new chambers may be conducted regardless of the ambient temperature.	• Compliance with the 24-hr standard for phosphine was demonstrated presuming that fumigation occurs during all hours of the five-year meteorological data period. Maximum modeled phosphine impacts were only 19% of the phosphine AAC increment. Because of the considerably better dispersion from the new chamber stacks compared to the ground-level venting from the existing (to be removed) chamber, the restriction on fumigating only when ambient temperatures are above 39°F is not necessary for the new fumigation chambers.
• Modeling was not required for PM_{10} or $PM_{2.5}$ emissions from the new onion and carrot seed scalping line (production capacity 1 T/hr and 50,000 TPY).	• The increases in PM_{10} and $PM_{2.5}$ emissions associated with the onion and carrot seed scalping line (with baghouse) are below DEQ modeling thresholds.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance for this facility located at 1811 E. Florida Avenue in Nampa, Idaho. Approximate UTM coordinates at the center of this parcel are 536.4 km Easting and 4,822.3 km Northing, in UTM Zone 11 (WGS84). The base elevation at the facility is approximately 764 m (2,506 ft).

2.1.1 Area Classification

The facility is located within Canyon County which is designated as an attainment or unclassifiable area for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone, particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), and sulfur oxides (SO_x). There are no Class I areas within 10 kilometers of this location.

2.1.2 Toxic Air Pollutant Analyses

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

> *Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permit requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

Per Section 210, if the emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

In accordance with Section 210.20 of the Idaho Air Rules, a demonstration of compliance with state-only TAPs standards is not required for any TAP that is regulated at the time of permit issuance under 40 CFR Part 60 (New Source Performance Standards [NSPS]), 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants [NESHAP], or 40 CFR Part 63 (NESHAP for Source Categories / MACT standards).

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

This section describes the modeling methods used by the applicant to demonstrate compliance with applicable air quality standards.

3.1.1 Overview of Analyses

JBR performed air quality analyses using AERMOD in support of the submitted permit application. A brief description of parameters used in the modeling analyses is provided in Table 4.

Table 4. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 12060
Meteorological data	Boise Airport 2005-2009	DEQ provided AERMOD-ready surface (.sfc) and upper air profile (.pfl) files for the years 2005-2009 developed using ASOS and NWS surface data and upper air soundings collected at the Boise Airport.
Terrain	NED 1 arc-sec	AERMAP v. 11103, using 1 arc-second NED terrain data files (NAD83/WGS84).
Building downwash	BPIP-PRIME v. 04274	Building downwash parameters were calculated using the BPIP PRIME algorithm (version 04274).
Receptor Grid	Receptors	Receptor locations were defined in UTM coordinates (NAD83)
	Nested Square Grids	25-meter (m) spacing along the ambient air boundary 50-meter (m) spacing from the facility fence line out to 1,000 m (1 km) 100-meter (m) spacing from the facility fence line between 1 km and 2 km

3.1.2 Modeling Protocol and Methodology

A modeling protocol received by DEQ on April 20, 2012, 2012 was approved with comment on May 3, 2012. Modeling was generally conducted using data described in the protocol and methods described in the *State of Idaho Air Quality Modeling Guideline*. Default rural dispersion was used.

3.1.3 Model Selection

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. EPA provided a one-year transition period during which either ISCST3 or AERMOD could be used at the discretion of the permitting agency. AERMOD must be used for all air impact analyses, performed in support of air quality permitting, conducted after November 2006.

AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD offers the following improvements over ISCST3:

- Improved dispersion in the convective boundary layer and the stable boundary layer.
- Improved plume rise and buoyancy calculations.
- Improved treatment of terrain effects on dispersion.
- New vertical profiles of wind, turbulence, and temperature.

3.1.4 Meteorological Data

DEQ recommended using the AERMOD-ready meteorological data set for the Boise Airport for the years 2005-2009. These data were processed in December 2011 and include 1-minute ASOS and NWS surface and upper air data collected at the Boise Airport.

3.1.5 Terrain Effects

Terrain effects on dispersion were considered in these analyses. ERM used AERMAP v. 11103 to extract the actual elevation of each receptor and determine the controlling hill height elevation from a 1-arc second (about 30 meter resolution) tiff file downloaded from the Seamless National Elevation Database (NED). The NED file encompassed the area between -116.627 and -116.469 degrees longitude and 43.482 and 43.622 degrees north latitude (coordinate system ID NAD83).

3.1.6 Facility Layout

The Seminis facility layout is shown in Figure 3-1 (Figure 2-1 from the submitted application).

3.1.7 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the submitted modeling analyses. The Building Profile Input Program with Plume RIse Model Enhancements (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emission release parameters for input to AERMOD.

Figure 3-1. SEMINIS – NAMPA FACILITY LAYOUT

3.1.8 Ambient Air Boundary

Ambient air is defined in Section 006 of the Idaho Air Rules as "that portion of the atmosphere, external to buildings, to which the general public has access." For area sources, the ambient air boundary is typically defined as the property boundary. The property boundary defined by the receptor grid shown in Figure 3-2 (Figure 3-1 from the modeling report submitted with the application) was used as the ambient air boundary for the dispersion modeling.

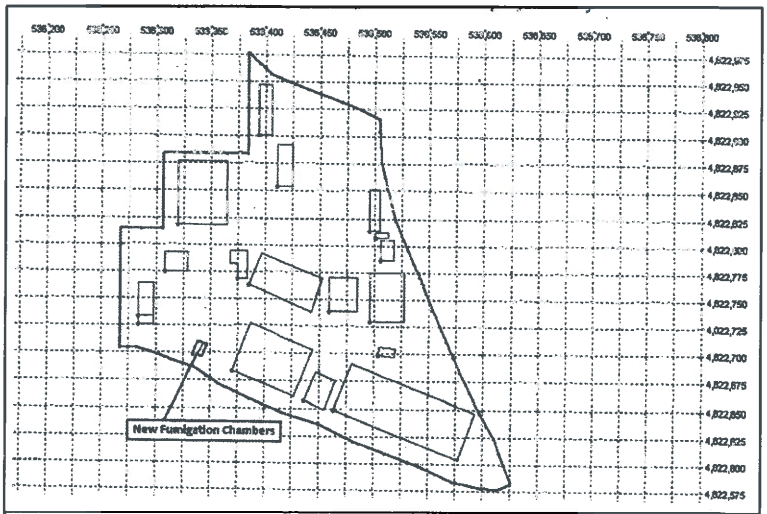

Figure 3-2. SEMINIS – AMBIENT AIR BOUNDARY

3.1.9 *Receptor Network*

The receptor grids used for the submitted modeling analyses are summarized in Table 4, and shown graphically in Figure 3-3.

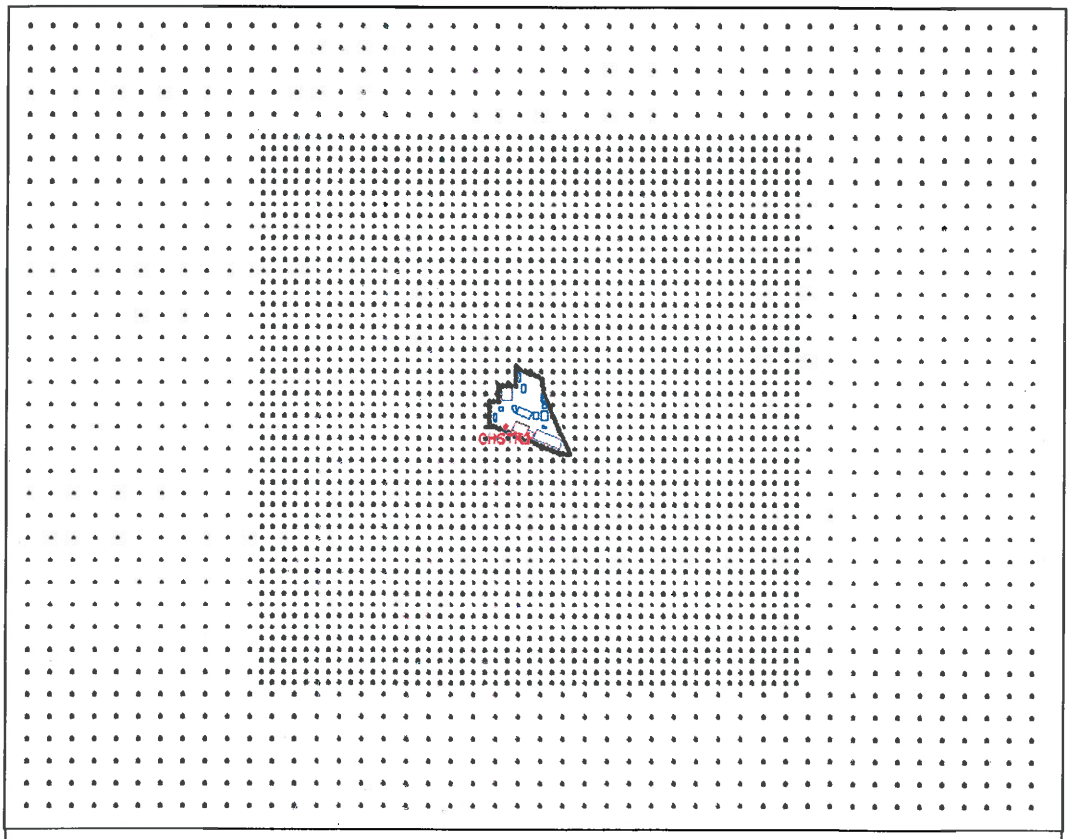

Figure 3-3. AMBIENT AIR RECEPTOR GRID

3.2 Emission Release Parameters and Emission Rates

The emission release parameters and emission rates used in the submitted analysis are shown in Table 5. Phosphine emissions were calculated based on 9 plates per chamber with 33 grams phosphine per plate for a total of 297 grams of phosphine vented from each chamber during a 24-hour period. This is equal to a 24-hour average emission rate of 0.0273 lb/hr from each chamber, for a total 24-hour average emission rate of 0.0545 lb/hr. These emission rates were modeled as occurring 8760 hours per year.

Table 5. EMISSION RELEASE PARAMETERS

Source Description	UTM Zone 11 (NAD83)		Base Elevation (m)	Stack Height (ft)	Exit Temp (K)	Exit Velocity (m/s)	Stack Diameter (ft)	Phosphine Emissions (lb/hr)
	Easting, X (m)	Northing, Y (m)						
CHSTK1, New Fum. Chamber Stack 1	536336.4	4822697.9	759.6	20	Ambient	18.34[a]	0.67	0.02726
CHSTK2, New Fum. Chamber Stack 2	536340.4	4822696.3	759.6	20	Ambient	18.34[a]	0.67	0.02726

[a] Supplemental information from Baxter Air Engineering system description, 5/11/2011, 1,260 acfm fan with 8-inch diameter exhaust ducting.

m = meters, ft = feet, m/sec= meters per second, K = Kelvin

3.3 Modeling Results

The modeled maximum ambient impacts for emissions of phosphine associated with this project are shown in Table 6. Each year of meteorological data was run separately. No credit was taken for the reduction in phosphine emissions associated with decommissioning the existing fumigation chamber. As shown in the table (adapted from Table 4-1 from the submitted modeling report), the maximum impact of 3.8 $\mu g/m^3$ is well below the 20 $\mu g/m^3$ acceptable ambient concentration (AAC) for phosphine.

Table 6. PHOSPHINE (24-HR) MODELING RESULTS

Pollutant	Year	Modeled Maximum Ambient Impact ($\mu g/m^3$)	Easting, X (m)	Northing, Y (m)	MO-DAY	AAC Increment ($\mu g/m^3$)	Percent of AAC Increment
Phosphine	2005	3.25	536267.4	4822748.3	02 23	20.0	19%
	2006	3.40			10 19		
	2007	**3.81**			01 18		
	2008	3.74			10 29		
	2009	3.56			02 04		

4.0 Conclusions

The submitted ambient air impact analyses demonstrated to DEQ's satisfaction that ambient air quality impacts from this project not cause or significantly contribute to a violation of any air quality standard.

APPENDIX C – PROCESSING FEE