Statement of Basis

Permit to Construct No. P-2014.0019
Project ID 61356

Plexus Manufacturing Solutions
Nampa, Idaho

Facility ID 027-00133

Final

April 22, 2016
Kelli Wetzel KW
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
acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
Btu	British thermal units
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CAS No.	Chemical Abstracts Service registry number
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gpd	gallons per calendar day
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
lb/qtr	pound per quarter
m	meters
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
MMscf	million standard cubic feet
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O_2	oxygen
PAH	polyaromatic hydrocarbons
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
POM	polycyclic organic matter
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
PW	process weight rate

RICE	reciprocating internal combustion engines
Rules	*Rules for the Control of Air Pollution in Idaho*
scf	standard cubic feet
SCL	significant contribution limits
SIP	State Implementation Plan
SM	synthetic minor
SMT	surface mount technology
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per consecutive 12 calendar month period
T2	Tier II operating permit
TAP	toxic air pollutants
TEQ	toxicity equivalent
ULSD	ultra-low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compounds

FACILITY INFORMATION

Description

Plexus Manufacturing Solutions develops circuit boards, complex systems integration, and full product builds. The Nampa facility houses a variety of processes, which include conformal coating, flux application, soldering, oven, degreasing, and wash operations in which epoxies and other materials are added or removed from electronics.

Permitting History

This is the initial PTC for an existing facility. Prior to obtaining a PTC, two PTC exemptions concerning surface mount technology (SMT), wave soldering, hand soldering, and conformal coating operations were submitted by the permittee on July 7, 2004 (2014AAG1070), and on June 22, 2011 (2012AAG201). Because these emission sources and activities are included in this PTC, these exemptions are no longer required.

Application Scope

This permit is the initial PTC for this facility.

The applicant has proposed to:

- Operate fuel-burning equipment, including boilers, heaters, and an evaporator.
- Operate process equipment, including conformal coating, flux application, soldering, and wash equipment.

Application Chronology

April 4 – 17, 2014	DEQ received an application and an application fee (2014AAG813, 2014AAG818).
July 8 – 23, 2014	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action (2014AAG806).
May 2, 2014	DEQ determined that the application was incomplete (2014AAG831).
May 29, 2014	DEQ received a request for extension of the incompleteness response deadline (2014AAG1433).
May 30, 2014	DEQ approved extension of the incompleteness response deadline, and completed an inspection of the facility (2014AAI1702).
July 2, 2014	DEQ received supplemental information from the applicant, including emergency generator equipment information, and revised emission inventories and modeling analyses (2014AAG1306, 2014AAG1305).
July 2, 2014	DEQ received supplemental information from the applicant, including emergency generator regulatory analyses and emission estimates (2014AAG1306, 2014AAG1305).
September 8, 2014	DEQ made available the draft permit and statement of basis for peer and regional office review.
January 12, 2015	DEQ determined that the application was complete.
January 14, 2015	DEQ made available the draft permit and statement of basis for applicant review (2014AAG1082[v1], 2014AAG1081[v1]).
January 4, 2016	DEQ received the permit processing fee.
April 22, 2016	DEQ issued the final permit and statement of basis.

TECHNICAL ANALYSIS

Emission Units and Control Equipment

Table 1 Regulated Emission Sources

Source Description		Control Equipment
Fuel-Burning Equipment [a]		
(1) Condensing Boiler #1		None required by this permit
Manufacturer:	Lochinvar	
Model:	KBN 500	
Rated capacity:	0.50 MMBtu/hr	
Fuel consumption:	487 scf/hr	
Fuel:	natural gas	
(3) Condensing Boilers #2 – 4		None required by this permit
Manufacturer:	Kewanee	
Model:	M-505 G	
Rated capacity:	2.0 MMBtu/hr each	
Fuel consumption:	1946 scf/hr each	
Fuel:	natural gas	
(1) Evaporator		None required by this permit
Manufacturer:		
Model:		
Rated capacity:	0.20 MMBtu/hr	
Fuel consumption:	195 scf/hr	
Fuel:	natural gas	
(8) Heaters #1 – 5 and #10 – 12		None required by this permit
Manufacturer:		
Model:		
Rated capacity:	0.09 MMBtu/hr	
Fuel consumption:	88 scf/hr	
Fuel:	natural gas	
Conformal Coating, Flux Application, Soldering, Oven, Degreasing, and Wash Operations [a]		
(4) Grieve Electric Ovens, Model 333		None required by this permit
(1) Vapor degreaser		None required by this permit
(1) Spray booth, with 4-sided enclosure		Filtration system Capture efficiency: ≥ 99.84% of PM_{10}
Emergency Generator [a]		
Manufacturer:	Olympian	None required by this permit
Model:	G100LG 100 kW	
Displacement:	1.12 L/cyl	
Manufacture date:	6/8/11	
Maximum operation:		
Rated capacity:	0.34 MMBtu/hr	
Fuel consumption:	30.2 m^3/hr	
Fuel:	natural gas only	

Emission Inventories

Potential to Emit

IDAPA 58.01.01 defines potential to emit (PTE) as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state- or federally-enforceable. Secondary emissions do not count in determining the PTE of a facility or stationary source.

Using this definition of PTE, an emission inventory was developed for facility-wide emissions from the fuel-burning equipment, from the emergency generator, and from conformal coating, flux application, soldering, oven, degreasing, and wash operations (see Appendix A for potential to emit calculations provided in the application). Criteria pollutant, hazardous air pollutant (HAP), and toxic air pollutant (TAP) PTE were based on worst-case VOC, PM_{10}, HAP, and TAP material weight contents in conformal coatings and in welding and soldering materials obtained from material safety data sheets (MSDS) and manufacturer or vendor information provided in the application, and based on the potential operating hours for each conformal coating activity and each fuel-burning equipment at each location in the facility.[1]

Emissions from natural gas-fired fuel-burning equipment were also based on AP-42 Sections 1.4 and 3.2 emission factors and applying proposed daily and annual hours of operation schedules (e.g., Permit Condition 5.3), and fuel usage limits (Permit Condition 4.2). Particulate capture efficiencies were applied to conformal coating and spray booth particulate pollutant emissions (i.e., $PM_{2.5}$, PM_{10}, particulate TAP, and particulate HAP).[2]

A facility-wide summary of PTE estimates presented in the application and verification calculations developed by DEQ are provided in Appendix A.

Uncontrolled Potential to Emit

Uncontrolled potential to emit is defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall not be treated as part of its design.

The uncontrolled potential to emit is used to determine if a facility is a "synthetic minor" source of emissions. Synthetic minor sources are facilities that have an uncontrolled potential to emit for a criteria pollutant or HAP above an applicable major source threshold without permit limits.

Due to the nature of coating operation emission sources, daily usage and process filtration systems (Permit Conditions 3.3 and 3.4) were required – corresponding to established emission limits (Permit Condition 3.1) – to ensure that VOC and HAP emissions would not exceed major facility thresholds as defined in IDAPA 58.01.01.008.

Non-Carcinogenic and Carcinogenic TAP Potential to Emit

Emission limits and operating limits (Permit Conditions 3.1, 3.3 – 3.4, 4.1, and 4.2) were established to ensure that no applicable screening emission levels (EL) in IDAPA 58.01.01.585-586 would be exceeded by the facility. A facility-wide summary of TAP estimates presented in the application and verification calculations developed by DEQ are provided in Appendix A.

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[1] Potential/maximum operating hours of application for each coating; potential/maximum hours of natural gas combustion for each boiler, evaporator, heater, and generator. For Clean Room, SMT, conformal coating, oven, soldering, degreasing, and wash operation activities and locations (facility-wide).

[2] Compilation of Air Pollutant Emission Factors, AP-42, Volume I, Fifth Edition (AP-42), Section 1.4 – Natural Gas Combustion and Section 3.2 – Natural Gas-Fired Reciprocating Engines, Office of Air Quality Planning and Standards Office of Air and Radiation (OAQPS), EPA, July 1998 and August 2000 (resp.).

Ambient Air Quality Impact Analyses

Emission limits and operating limits (Permit Conditions 3.1, 3.3 – 3.4, 4.1, and 4.2) were established in accordance with IDAPA 58.01.01.203.02 and 58.01.01.210.09. Complying with these requirements, emissions from this facility would not be expected to exceed applicable DEQ modeling guideline thresholds and applicable TAP EL, with the exception of cadmium emissions from natural gas combustion. Therefore, preconstruction modeling demonstrations were not required, with the exception of cadmium.

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 with TAP standards to DEQ's satisfaction.

As presented in the modeling memo in Appendix B, the estimated emission rates of cadmium from this project could exceed applicable screening emission levels (EL) established in IDAPA 58.01.01.585-586. Refer to the emission inventory section for additional information concerning the emission inventories.

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 would 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 TAP is provided in Appendix B.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

Plexus Manufacturing Solutions 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.

Permit to Construct (IDAPA 58.01.01.201)

An application was submitted requesting a permit to construct the proposed facility. Therefore, 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)

An application was submitted for a permit to construct, and an optional Tier II operating permit was not requested. Therefore, the procedures of IDAPA 58.01.01.400-410 were not applicable to this permitting action.

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

As provided in the emissions inventory section, the facility has an uncontrolled PTE for VOC emissions above the major facility threshold of 100 T/yr, an uncontrolled PTE for individual HAP above 10 T/yr, and an uncontrolled PTE for all HAP (combined) above 25 T/yr. Therefore, this facility is classified as a synthetic minor facility (SM).

Due to the nature of coating operation emission sources, daily usage and process filtration systems (Permit Conditions 3.3 and 3.4) were required – corresponding to established emission limits (Permit Condition 3.1) – to ensure that VOC and HAP emissions would not exceed major facility thresholds as defined in IDAPA 58.01.01.008.

PSD Classification (40 CFR 52.21)

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 were not applicable.

NSPS Applicability (40 CFR 60)

The permittee owns and operates an emergency generator constructed after June 12, 2006 (6/8/11), subject to 40 CFR 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (NSPS Subpart JJJJ) and Subpart A - General Provisions (NSPS Subpart A).

40 CFR 60, Subpart JJJJ.....Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

40 CFR 60.4230.....Am I subject to this subpart?

(a) The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary spark ignition (SI) internal combustion engines (ICE) as specified in paragraphs (a)(1) through (6) of this section. For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

...

(4) Owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured:

...

(iii) on or after July 1, 2008, for engines with a maximum engine power less than 500 HP; or

(iv) on or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP).

(5) Owners and operators of stationary SI ICE that are modified or reconstructed after June 12, 2006, and any person that modifies or reconstructs any stationary SI ICE after June 12, 2006.

(6) The provisions of §60.4236 of this subpart are applicable to all owners and operators of stationary SI ICE that commence construction after June 12, 2006.

...

(c) If you are an owner or operator of an area source subject to this subpart, you are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

...

(e) Stationary SI ICE may be eligible for exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C (or the exemptions described in 40 CFR parts 90 and 1048, for engines that would need to be certified to standards in those parts), except that owners and operators, as well as manufacturers, may be eligible to request an exemption for national security.

(f) Owners and operators of facilities with internal combustion engines that are acting as temporary replacement units and that are located at a stationary source for less than 1 year and that have been properly certified as meeting the standards that would be applicable to such engine under the appropriate nonroad engine provisions, are not required to meet any other provisions under this subpart with regard to such engines.

Because the emergency generator has a maximum engine power greater than 19 kW (25 HP) and was manufactured on or after January 1, 2009 (6/8/11), this engine is applicable to NSPS Subpart JJJJ requirements.

...

40 CFR 60.4233.....What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?

...

(e) Owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 75 KW (100 HP) (except gasoline and rich burn engines that use LPG) must comply with the emission standards in Table 1 to this subpart for their stationary SI ICE. For owners and operators of stationary SI ICE with a maximum engine power greater than or equal to 100 HP (except gasoline and rich burn engines that use LPG) manufactured prior to January 1, 2011 that were certified to the certification emission standards in 40 CFR part 1048 applicable to engines that are not severe duty engines, if such stationary SI ICE was certified to a carbon monoxide (CO) standard above the standard in Table 1 to this subpart, then the owners and operators may meet the CO certification (not field testing) standard for which the engine was certified.

Table 1 to Subpart JJJJ of Part 60—NO_x, CO, and VOC Emission Standards for Stationary Non-Emergency SI Engines ≥100 HP (Except Gasoline and Rich Burn LPG), Stationary SI Landfill/Digester Gas Engines, and Stationary Emergency Engines >25 HP

Engine type and fuel	*Maximum engine power*	*Manufacture date*	*Emission standards*[a]					
			g/HP-hr			*ppmvd at 15% O_2*		
			NO_x	*CO*	*VOC*[d]	*NO_x*	*CO*	*VOC*[d]
Non-Emergency SI Natural Gas[b] *and Non-Emergency SI Lean Burn LPG*[b]	*100≤HP<500*	*7/1/2008*	*2.0*	*4.0*	*1.0*	*160*	*540*	*86*
		1/1/2011	*1.0*	*2.0*	*0.7*	*82*	*270*	*60*
Non-Emergency SI Lean Burn Natural Gas and LPG	*500≤HP<1,350*	*1/1/2008*	*2.0*	*4.0*	*1.0*	*160*	*540*	*86*
		7/1/2010	*1.0*	*2.0*	*0.7*	*82*	*270*	*60*
Non-Emergency SI Natural Gas and Non-Emergency SI Lean Burn LPG (except lean burn 500≤HP<1,350)	*HP≥500*	*7/1/2007*	*2.0*	*4.0*	*1.0*	*160*	*540*	*86*
	HP≥500	*7/1/2010*	*1.0*	*2.0*	*0.7*	*82*	*270*	*60*
Landfill/Digester Gas (except lean burn 500≤HP<1,350)	*HP<500*	*7/1/2008*	*3.0*	*5.0*	*1.0*	*220*	*610*	*80*
		1/1/2011	*2.0*	*5.0*	*1.0*	*150*	*610*	*80*
	HP≥500	*7/1/2007*	*3.0*	*5.0*	*1.0*	*220*	*610*	*80*
		7/1/2010	*2.0*	*5.0*	*1.0*	*150*	*610*	*80*
Landfill/Digester Gas Lean Burn	*500≤HP<1,350*	*1/1/2008*	*3.0*	*5.0*	*1.0*	*220*	*610*	*80*
		7/1/2010	*2.0*	*5.0*	*1.0*	*150*	*610*	*80*
Emergency	*25<HP<130*	*1/1/2009*	*[c]10*	*387*	*N/A*	*N/A*	*N/A*	*N/A*
	HP≥130		***2.0***	***4.0***	***1.0***	***160***	***540***	***86***

a. Owners and operators of stationary non-certified SI engines may choose to comply with the emission standards in units of either g/HP-hr or ppmvd at 15 percent O_2.
b. Owners and operators of new or reconstructed non-emergency lean burn SI stationary engines with a site rating of greater than or equal to 250 brake HP located at a major source that are meeting the requirements of 40 CFR part 63, subpart ZZZZ, Table 2a do not have to comply with the CO emission standards of Table 1 of this subpart.
c. The emission standards applicable to emergency engines between 25 HP and 130 HP are in terms of NO_x + HC.
d. For purposes of this subpart, when calculating emissions of volatile organic compounds, emissions of formaldehyde should not be included.

(f) Owners and operators of any modified or reconstructed stationary SI ICE subject to this subpart must meet the requirements as specified in paragraphs (f)(1) through (5) of this section.

...

(4) Owners and operators of stationary SI natural gas and lean burn LPG engines with a maximum engine power greater than 19 KW (25 HP), that are modified or reconstructed after June 12, 2006, must comply with the same emission standards as those specified in paragraph (d) or (e) of this section, except that such owners and operators of non-emergency engines and emergency engines greater than or equal to 130 HP must meet a nitrogen oxides (NO_x) emission standard of 3.0 grams per HP-hour (g/HP-hr), a CO emission standard of 4.0 g/HP-hr (5.0 g/HP-hr for non-emergency engines less than 100 HP), and a volatile organic compounds (VOC) emission standard of 1.0 g/HP-hr, or a NO_x emission standard of 250 ppmvd at 15 percent oxygen (O_2), a CO emission standard 540 ppmvd at 15 percent O_2 (675 ppmvd at 15 percent O_2 for non-emergency engines less than 100 HP), and a VOC emission standard of 86 ppmvd at 15 percent O_2, where the date of manufacture of the engine is:

...

(iii) Prior to January 1, 2009, for emergency engines;

...

(g) Owners and operators of stationary SI wellhead gas ICE engines may petition the Administrator for approval on a case-by-case basis to meet emission standards no less stringent than the emission standards that apply to stationary emergency SI engines greater than 25 HP and less than 130 HP due to the presence of high sulfur levels in the fuel, as specified in Table 1 to this subpart. The request must, at a minimum, demonstrate that the fuel has high sulfur levels that prevent the use of aftertreatment controls and also that the owner has reasonably made all attempts possible to obtain an engine that will meet the standards without the use of aftertreatment controls. The petition must request the most stringent standards reasonably applicable to the engine using the fuel.

(h) Owners and operators of stationary SI ICE that are required to meet standards that reference 40 CFR 1048.101 must, if testing their engines in use, meet the standards in that section applicable to field testing, except as indicated in paragraph (e) of this section.

Because the emergency engine has a maximum engine power greater than 75 kW (100 HP), applicable emission standards are listed in Table 1 to NESHAP ZZZZ.

Permit Condition 5.1 incorporates applicable emission standards in accordance with §63.4233(e).

40 CFR 60.4234.....How long must I meet the emission standards if I am an owner or operator of a stationary SI internal combustion engine?

Owners and operators of stationary SI ICE must operate and maintain stationary SI ICE that achieve the emission standards as required in §60.4233 over the entire life of the engine.

Permit Condition 5.4 incorporates applicable emission standards in accordance with §63.4234.

Other Requirements for Owners and Operators

40 CFR 60.4235.....What fuel requirements must I meet if I am an owner or operator of a stationary SI gasoline fired internal combustion engine subject to this subpart?

Owners and operators of stationary SI ICE subject to this subpart that use gasoline must use gasoline that meets the per gallon sulfur limit in 40 CFR 80.195.

Because the emergency engine is limited to natural gas combustion only (Permit Condition 5.2), this requirement is not applicable.

...

40 CFR 60.4237.....What are the monitoring requirements if I am an owner or operator of an emergency stationary SI internal combustion engine?

...

(b) Starting on January 1, 2011, if the emergency stationary SI internal combustion engine that is greater than or equal to 130 HP and less than 500 HP that was built on or after January 1, 2011, does not meet the standards applicable to non-emergency engines, the owner or operator must install a non-resettable hour meter.

(c) If you are an owner or operator of an emergency stationary SI internal combustion engine that is less than 130 HP, was built on or after July 1, 2008, and does not meet the standards applicable to non-emergency engines, you must install a non-resettable hour meter upon startup of your emergency engine.

Permit Condition 5.6 incorporates applicable monitoring requirements in accordance with §63.4237.

...

Compliance Requirements for Owners and Operators

...

40 CFR 60.4243.....What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?

...

(b) If you are an owner or operator of a stationary SI internal combustion engine and must comply with the emission standards specified in §60.4233(d) or (e), you must demonstrate compliance according to one of the methods specified in paragraphs (b)(1) and (2) of this section.

(1) Purchasing an engine certified according to procedures specified in this subpart, for the same model year and demonstrating compliance according to one of the methods specified in paragraph (a) of this section.

(2) Purchasing a non-certified engine and demonstrating compliance with the emission standards specified in §60.4233(d) or (e) and according to the requirements specified in §60.4244, as applicable, and according to paragraphs (b)(2)(i) and (ii) of this section.

(i) If you are an owner or operator of a stationary SI internal combustion engine greater than 25 HP and less than or equal to 500 HP, you must keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, you must conduct an initial performance test to demonstrate compliance.

...

(c) If you are an owner or operator of a stationary SI internal combustion engine that must comply with the emission standards specified in §60.4233(f), you must demonstrate compliance according paragraph (b)(2)(i) or (ii) of this section, except that if you comply according to paragraph (b)(2)(i) of this section, you demonstrate that your non-certified engine complies with the emission standards specified in §60.4233(f).

(d) If you own or operate an emergency stationary ICE, you must operate the emergency stationary ICE according to the requirements in paragraphs (d)(1) through (3) of this section. In order for the engine to be considered an emergency stationary ICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (d)(1) through (3) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (d)(1) through (3) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary ICE in emergency situations.

(2) You may operate your emergency stationary ICE for any combination of the purposes specified in paragraphs (d)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraph (d)(3) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (d)(2).

(i) Emergency stationary ICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency ICE beyond 100 hours per calendar year.

(ii) Emergency stationary ICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §60.17), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

(iii) Emergency stationary ICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(3) Emergency stationary ICE may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (d)(2) of this section. Except as provided in paragraph (d)(3)(i) of this section, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(i) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator;

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

(ii) [Reserved]

...

(f) If you are an owner or operator of a stationary SI internal combustion engine that is less than or equal to 500 HP and you purchase a non-certified engine or you do not operate and maintain your certified stationary SI internal combustion engine and control device according to the manufacturer's written emission-related instructions, you are required to perform initial performance testing as indicated in this section, but you are not required to conduct subsequent performance testing unless the stationary engine is rebuilt or undergoes major repair or maintenance. A rebuilt stationary SI ICE means an engine that has been rebuilt as that term is defined in 40 CFR 94.11(a).

(g) It is expected that air-to-fuel ratio controllers will be used with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller must be maintained and operated appropriately in order to ensure proper operation of the engine and control device to minimize emissions at all times.

...

(i) If you are an owner or operator of a modified or reconstructed stationary SI internal combustion engine and must comply with the emission standards specified in §60.4233(f), you must demonstrate compliance according to one of the methods specified in paragraphs (i)(1) or (2) of this section.

(1) Purchasing, or otherwise owning or operating, an engine certified to the emission standards in §60.4233(f), as applicable.

(2) Conducting a performance test to demonstrate initial compliance with the emission standards according to the requirements specified in §60.4244. The test must be conducted within 60 days after the engine commences operation after the modification or reconstruction.

Permit Conditions 5.3 and 5.5 incorporate applicable monitoring requirements in accordance with §63.4243.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The stationary RICE (emergency generator) is an area source subject to 40 CFR 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE), because it commenced construction on or after June 12, 2006 (6/8/11). Because this source is also subject to regulation under NSPS Subpart JJJJ, no further requirements are applicable under NESHAP ZZZZ.

The boilers are not subject to 40 CFR 63, Subpart JJJJJJ – NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources (NESHAP JJJJJJ), because they are gas fired (Permit Condition 4.2).

40 CFR 63, Subpart ZZZZ ..... *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

40 CFR 63.6580 ..... *What is the purpose of subpart ZZZZ?*

Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

40 CFR 63.6585 ..... *Am I subject to this subpart?*

You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand.

(a) A stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.

(b) A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons (9.07 megagrams) or more per year or any combination of HAP at a rate of 25 tons (22.68 megagrams) or more per year, except that for oil and gas production facilities, a major source of HAP emissions is determined for each surface site.

(c) An area source of HAP emissions is a source that is not a major source.

(d) If you are an owner or operator of an area source subject to this subpart, your status as an entity subject to a standard or other requirements under this subpart does not subject you to the obligation to obtain a permit under 40 CFR part 70 or 71, provided you are not required to obtain a permit under 40 CFR 70.3(a) or 40 CFR 71.3(a) for a reason other than your status as an area source under this subpart. Notwithstanding the previous sentence, you must continue to comply with the provisions of this subpart as applicable.

(e) If you are an owner or operator of a stationary RICE used for national security purposes, you may be eligible to request an exemption from the requirements of this subpart as described in 40 CFR part 1068, subpart C.

(f) The emergency stationary RICE listed in paragraphs (f)(1) through (3) of this section are not subject to this subpart. The stationary RICE must meet the definition of an emergency stationary RICE in §63.6675, which includes operating according to the provisions specified in §63.6640(f).

(1) Existing residential emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

(2) Existing commercial emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

(3) Existing institutional emergency stationary RICE located at an area source of HAP emissions that do not operate or are not contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §63.6640(f)(2)(ii) and (iii) and that do not operate for the purpose specified in §63.6640(f)(4)(ii).

40 CFR 63.6590 ..... *What parts of my plant does this subpart cover?*

This subpart applies to each affected source.

(a) Affected source. *An affected source is any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions, excluding stationary RICE being tested at a stationary RICE test cell/stand.*

(1) Existing stationary RICE.

(i) For stationary RICE with a site rating of more than 500 brake horsepower (HP) located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before December 19, 2002.

(ii) For stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

(iv) A change in ownership of an existing stationary RICE does not make that stationary RICE a new or reconstructed stationary RICE.

(2) New stationary RICE. *(i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after December 19, 2002.*

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

(3) Reconstructed stationary RICE. *(i) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after December 19, 2002.*

(ii) A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

(iii) A stationary RICE located at an area source of HAP emissions is reconstructed if you meet the definition of reconstruction in §63.2 and reconstruction is commenced on or after June 12, 2006.

...

(c) Stationary RICE subject to Regulations under 40 CFR Part 60. *An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.*

(1) A new or reconstructed stationary RICE located at an area source;

...

40 CFR 63.6640.....How do I demonstrate continuous compliance with the emission limitations, operating limitations, and other requirements?

...

(f) If you own or operate an emergency stationary RICE, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1) through (4) of this section. In order for the engine to be considered an emergency stationary RICE under this subpart, any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (4) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1) through (4) of this section, the engine will not be considered an emergency engine under this subpart and must meet all requirements for non-emergency engines.

(1) There is no time limit on the use of emergency stationary RICE in emergency situations.

(2) You may operate your emergency stationary RICE for any combination of the purposes specified in paragraphs (f)(2)(i) through (iii) of this section for a maximum of 100 hours per calendar year. Any operation for non-emergency situations as allowed by paragraphs (f)(3) and (4) of this section counts as part of the 100 hours per calendar year allowed by this paragraph (f)(2).

(i) Emergency stationary RICE may be operated for maintenance checks and readiness testing, provided that the tests are recommended by federal, state or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that federal, state, or local standards require maintenance and testing of emergency RICE beyond 100 hours per calendar year.

(ii) Emergency stationary RICE may be operated for emergency demand response for periods in which the Reliability Coordinator under the North American Electric Reliability Corporation (NERC) Reliability Standard EOP-002-3, Capacity and Energy Emergencies (incorporated by reference, see §63.14), or other authorized entity as determined by the Reliability Coordinator, has declared an Energy Emergency Alert Level 2 as defined in the NERC Reliability Standard EOP-002-3.

(iii) Emergency stationary RICE may be operated for periods where there is a deviation of voltage or frequency of 5 percent or greater below standard voltage or frequency.

(3) Emergency stationary RICE located at major sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. The 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(4) Emergency stationary RICE located at area sources of HAP may be operated for up to 50 hours per calendar year in non-emergency situations. The 50 hours of operation in non-emergency situations are counted as part of the 100 hours per calendar year for maintenance and testing and emergency demand response provided in paragraph (f)(2) of this section. Except as provided in paragraphs (f)(4)(i) and (ii) of this section, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity.

(i) Prior to May 3, 2014, the 50 hours per year for non-emergency situations can be used for peak shaving or non-emergency demand response to generate income for a facility, or to otherwise supply power as part of a financial arrangement with another entity if the engine is operated as part of a peak shaving (load management program) with the local distribution system operator and the power is provided only to the facility itself or to support the local distribution system.

(ii) The 50 hours per year for non-emergency situations can be used to supply power as part of a financial arrangement with another entity if all of the following conditions are met:

(A) The engine is dispatched by the local balancing authority or local transmission and distribution system operator.

(B) The dispatch is intended to mitigate local transmission and/or distribution limitations so as to avert potential voltage collapse or line overloads that could lead to the interruption of power supply in a local area or region.

(C) The dispatch follows reliability, emergency operation or similar protocols that follow specific NERC, regional, state, public utility commission or local standards or guidelines.

(D) The power is provided only to the facility itself or to support the local transmission and distribution system.

(E) The owner or operator identifies and records the entity that dispatches the engine and the specific NERC, regional, state, public utility commission or local standards or guidelines that are being followed for dispatching the engine. The local balancing authority or local transmission and distribution system operator may keep these records on behalf of the engine owner or operator.

...

40 CFR 63.6675.....What definitions apply to this subpart?

...

Emergency stationary RICE *means any stationary reciprocating internal combustion engine that meets all of the criteria in paragraphs (1) through (3) of this definition. All emergency stationary RICE must comply with the requirements specified in §63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in §63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart.*

(1) The stationary RICE is operated to provide electrical power or mechanical work during an emergency situation. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, etc.

(2) The stationary RICE is operated under limited circumstances for situations not included in paragraph (1) of this definition, as specified in §63.6640(f).

(3) The stationary RICE operates as part of a financial arrangement with another entity in situations not included in paragraph (1) of this definition only as allowed in §63.6640(f)(2)(ii) or (iii) and §63.6640(f)(4)(i) or (ii).

...

Hazardous air pollutants (HAP) *means any air pollutants listed in or pursuant to section 112(b) of the CAA.*

...

Limited use stationary RICE *means any stationary RICE that operates less than 100 hours per year.*

...

Natural gas *means a naturally occurring mixture of hydrocarbon and non-hydrocarbon gases found in geologic formations beneath the Earth's surface, of which the principal constituent is methane. Natural gas may be field or pipeline quality.*

...

Subpart *means 40 CFR part 63, subpart ZZZZ.*

...

Stationary reciprocating internal combustion engine (RICE) *means any reciprocating internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 CFR 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition.*

...

Because the emergency generator is located at an area source of HAP and commenced construction on or after June 12, 2006 (6/8/11) and is required to meet the requirements of NSPS Subpart JJJJ, and because the emergency generator meets the definition of an emergency stationary RICE in §63.6675 in accordance with §63.6585(f)(3) (Permit Condition 5.3), no further requirements are applicable under NESHAP ZZZZ.

40 CFR 63, Subpart JJJJJJ.....National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

40 CFR 63.11193.....Am I subject to this subpart?

You are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler as defined in §63.11237 that is located at, or is part of, an area source of hazardous air pollutants (HAP), as defined in §63.2, except as specified in §63.11195.

...

40 CFR 63.11195.....Are any boilers not subject to this subpart?

The types of boilers listed in paragraphs (a) through (k) of this section are not subject to this subpart and to any requirements in this subpart.

(a) Any boiler specifically listed as, or included in the definition of, an affected source in another standard(s) under this part.

...

(d) A boiler that is used specifically for research and development. This exemption does not include boilers that solely or primarily provide steam (or heat) to a process or for heating at a research and development facility. This exemption does not prohibit the use of the steam (or heat) generated from the boiler during research and development, however, the boiler must be concurrently and primarily engaged in research and development for the exemption to apply.

...

(e) A gas-fired boiler as defined in this subpart.

(f) A hot water heater as defined in this subpart.

...

(h) Temporary boilers as defined in this subpart.

(i) Residential boilers as defined in this subpart.

(j) Electric boilers as defined in this subpart.

...

40 CFR 63.11237 ..... What definitions apply to this subpart?

...

Boiler *means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. A device combusting solid waste, as defined in §241.3 of this chapter, is not a boiler unless the device is exempt from the definition of a solid waste incineration unit as provided in section 129(g)(1) of the Clean Air Act. Waste heat boilers, process heaters, and autoclaves are excluded from the definition of Boiler.*

...

Commercial boiler *means a boiler used in commercial establishments such as hotels, restaurants, and laundries to provide electricity, steam, and/or hot water.*

...

Electric boiler *means a boiler in which electric heating serves as the source of heat. Electric boilers that burn gaseous or liquid fuel during periods of electrical power curtailment or failure are included in this definition.*

...

Gaseous fuels *includes, but is not limited to, natural gas, process gas, landfill gas, coal derived gas, refinery gas, hydrogen, and biogas.*

Gas-fired boiler *includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.*

Heat input *means heat derived from combustion of fuel in a boiler and does not include the heat input from preheated combustion air, recirculated flue gases, returned condensate, or exhaust gases from other sources such as gas turbines, internal combustion engines, kilns.*

Hot water heater *means a closed vessel with a capacity of no more than 120 U.S. gallons in which water is heated by combustion of gaseous, liquid, or biomass fuel and hot water is withdrawn for use external to the vessel. Hot water boilers (i.e., not generating steam) combusting gaseous, liquid, or biomass fuel with a heat input capacity of less than 1.6 million Btu per hour are included in this definition. The 120 U.S. gallon capacity threshold to be considered a hot water heater is independent of the 1.6 million Btu per hour heat input capacity threshold for hot water boilers. Hot water heater also means a tankless unit that provides on-demand hot water.*

Hourly average *means the arithmetic average of at least four CMS data values representing the four 15-minute periods in an hour, or at least two 15-minute data values during an hour when CMS calibration, quality assurance, or maintenance activities are being performed.*

Industrial boiler *means a boiler used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity.*

Institutional boiler *means a boiler used in institutional establishments such as, but not limited to, medical centers, nursing homes, research centers, institutions of higher education, elementary and secondary schools, libraries, religious establishments, and governmental buildings to provide electricity, steam, and/or hot water....*

...

Natural gas *means:*

(1) A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface, of which the principal constituent is methane; or

(2) Liquefied petroleum gas, as defined by the American Society for Testing and Materials in ASTM D1835 (incorporated by reference, see §63.14); or

(3) A mixture of hydrocarbons that maintains a gaseous state at ISO conditions (i.e., a temperature of 288 Kelvin, a relative humidity of 60 percent, and a pressure of 101.3 kilopascals). Additionally, natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 35 and 41 megajoules (MJ) per dry standard cubic meter (950 and 1,100 Btu per dry standard cubic foot); or

(4) Propane or propane-derived synthetic natural gas. Propane means a colorless gas derived from petroleum and natural gas, with the molecular structure C3H8.

...

Process heater *means an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material (e.g., glycol or a mixture of glycol and water) for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not come into direct contact with process materials. Process heaters include units that heat water/water mixtures for pool heating, sidewalk heating, cooling tower water heating, power washing, or oil heating.*

...

Residential boiler *means a boiler used to provide heat and/or hot water and/or as part of a residential combined heat and power system. This definition includes boilers located at an institutional facility (e.g., university campus, military base, church grounds) or commercial/industrial facility (e.g., farm) used primarily to provide heat and/or hot water for:*

(1) A dwelling containing four or fewer families, or

(2) A single unit residence dwelling that has since been converted or subdivided into condominiums or apartments.

...

Temporary boiler *means any gaseous or liquid fuel boiler that is designed to, and is capable of, being carried or moved from one location to another by means of, for example, wheels, skids, carrying handles, dollies, trailers, or platforms. A boiler is not a temporary boiler if any one of the following conditions exists:*

(1) The equipment is attached to a foundation.

(2) The boiler or a replacement remains at a location within the facility and performs the same or similar function for more than 12 consecutive months, unless the regulatory agency approves an extension. An extension may be granted by the regulating agency upon petition by the owner or operator of a unit specifying the basis for such a request. Any temporary boiler that replaces a temporary boiler at a location within the facility and performs the same or similar function will be included in calculating the consecutive time period unless there is a gap in operation of 12 months or more.

(3) The equipment is located at a seasonal facility and operates during the full annual operating period of the seasonal facility, remains at the facility for at least 2 years, and operates at that facility for at least 3 months each year.

(4) The equipment is moved from one location to another within the facility but continues to perform the same or similar function and serve the same electricity, steam, and/or hot water system in an attempt to circumvent the residence time requirements of this definition.

...

Because the permittee owns and operates industrial boilers that burn natural gas only (Permit Condition 4.2), these boilers are not subject to the requirements of NESHAP JJJJJJ in accordance with 40 CFR 63.11195(e).

Permit Conditions Review

This section describes the permit conditions in this initial permit. Where applicable, monitoring, recordkeeping and reporting requirements (MRRR) follow the applicable requirement and state how compliance with the applicable requirement is to be demonstrated.

Permit Conditions 2.1 – 2.3

Permit Condition 2.1 incorporates visible emissions limits in accordance with IDAPA 58.01.01.625.

MRRR include the following (Permit Condition 2.2 – 2.3):

- Inspect potential sources of visible emissions on a quarterly basis.
- Take appropriate corrective actions to eliminate the visible emissions and perform Method 9 opacity testing when appropriate.
- Maintain records of inspection, opacity tests, and corrective actions.

Permit Conditions 2.4 – 2.6

Permit Condition 2.4 incorporates requirements for the control of fugitive dust in accordance with IDAPA 58.01.01.650-651.

MRRR include the following (Permit Conditions 2.5 – 2.6):

- Inspect sources of fugitive emissions on a quarterly basis.
- Take corrective action when appropriate.
- Record fugitive dust complaints received, fugitive dust inspections, and corrective actions.

Permit Conditions 2.7 – 2.8

Permit Condition 2.7 incorporates requirements for the control of odors in accordance with IDAPA 58.01.01.775-776.

MRRR include the following (Permit Condition 2.8):

- Maintain records of all odor complaints received and the corrective action taken in response to the complaint;
- Take appropriate corrective action when appropriate.
- Record corrective actions.

Permit Conditions 3.1 – 3.6

Permit Condition 3.1 establishes process emission limits for conformal coating, flux application, soldering, oven, degreasing, and wash operation activities.

VOC and HAP (individual and combined) hourly emission limits were established as avoidance limits, required to ensure emissions would not exceed applicable major thresholds (refer to the Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70) section for additional discussion).

Short-term $PM_{2.5}$ emission limits were established to ensure that criteria pollutant modeling guideline thresholds would not be exceeded (preconstruction modeling demonstrations were not provided in the application; refer to the Ambient Air Quality Impact Analyses section for additional discussion).

Permit Condition 3.2 establishes process weight-based PM emission limits for process equipment for conformal coating, flux application, soldering, oven, degreasing, and wash operation activities, in accordance with IDAPA 58.01.01.700-703.

Compliance with the $PM_{2.5}$ emission limit and the requirement to use filtration systems (Permit Conditions 3.1 and 3.) were considered adequate to ensure compliance with the process weight-based PM emission limitation; the PM emission estimates (less than 1 lb/hr facility-wide emissions) and the $PM_{2.5}$ emission limit have been determined to be more stringent than the minimum allowable process weight based PM emission limitation (1 lb/hr) as specified in IDAPA 58.01.01.700.02.

MRRR include the following (Permit Conditions 3.3 – 3.4):

- Limit process material usage (Permit Condition 3.3).
- Use equipment filtration at all times when equipment is operated (Permit Conditions 3.4 and 6.2).
- Record process material usage on an annual basis (Permit Condition 3.5).
- Maintain records of all process material MSDS and any emission estimate calculations which demonstrate replacement material equivalency (Permit Condition 3.6).

Use of the filtration system and compliance with minimum capture efficiencies were required to ensure compliance with $PM_{2.5}$ and particulate HAP emissions limits (Permit Condition 3.1), and to ensure that particulate TAP EL and particulate criteria pollutant modeling guideline thresholds would not be exceeded (preconstruction modeling demonstrations were not provided in the application; refer to the Ambient Air Quality Impact Analyses section for additional discussion).

Process material usage limits (Permit Condition 3.3) were required to ensure compliance with $PM_{2.5}$, VOC, and HAP emission limits (Permit Condition 3.1), and to ensure that TAP EL and criteria pollutant modeling guideline thresholds would not be exceeded (preconstruction modeling demonstrations were not provided in the application; refer to the Ambient Air Quality Impact Analyses section for additional discussion).

With the exception of the process weight-based PM emission limit, emission limits and operating limits (Permit Conditions 3.1, 3.3 – 3.4, 4.1, and 4.2) were established in accordance with IDAPA 58.01.01.203.02 and 58.01.01.210.09.

Permit Conditions 4.1– 4.3

Permit Condition 4.1 incorporates PM emission limits for fuel-burning equipment in accordance with IDAPA 58.01.01.676. Fuel-burning equipment has the primary purpose of producing heat by indirect heat transfer, which includes four boilers, an evaporator, and eight heaters at the facility.

MRRR include the following (Permit Condition 4.2 – 4.3):

- Fuel combustion was limited to natural gas to ensure compliance with fuel-burning equipment, annual $PM_{2.5}$ NAAQS, and to ensure that the annual cadmium screening emission level in IDAPA 58.01.01.586 would not be exceeded.
- Record annual natural gas usage on a monthly basis.

Permit Conditions 5.1 and 5.4

These permit conditions incorporate applicable emission standards from NSPS Subpart JJJJ. Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Conditions 5.2 – 5.3, and 5.7

These permit conditions limit the fuel type to ensure compliance with emission limits in accordance with IDAPA 58.01.01.203.02, and operation of the emergency generator to ensure that the generator meets the definition of an emergency generator for the purposes of IDAPA, NSPS, and NESHAP requirements. Permit Condition 5.3 incorporates the definition of emergency generator in accordance with NSPS Subpart JJJJ and NESHAP ZZZZ.

MRRR include the following (Permit Condition 5.7):

- Monitor annual operation of the emergency generator to ensure use for emergency purposes only.

Refer to the NSPS Applicability (40 CFR 60) and NESHAP Applicability (40 CFR 61) sections for additional information.

Permit Conditions 5.4 – 5.5

These permit conditions incorporate potentially-applicable maintenance and operation and AFR controller compliance requirements from NSPS Subpart JJJJ, in accordance with §60.4234.

Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Condition 5.6

This permit condition incorporates applicable other requirements from NSPS Subpart JJJJ, in accordance with §60.4237.

Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Condition 5.8

This permit condition incorporates applicable notification, reporting, and recordkeeping requirements from NSPS Subpart JJJJ, in accordance with §60.4245.

Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Condition 5.9

This permit condition incorporates potentially-applicable testing compliance requirements from NSPS Subpart JJJJ, in accordance with §60.4243.

Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Condition 5.10

This permit condition incorporates potentially-applicable general provisions from NSPS Subpart A, in accordance with §60.4246 and NSPS Subpart A.

Refer to the NSPS Applicability (40 CFR 60) section for additional information.

Permit Condition 5.11

This permit condition incorporates applicable requirements by reference from NSPS Subpart JJJJ, NSPS Subpart A, and NESHAP ZZZZ, in accordance with IDAPA 58.01.01.107.

Permit Condition 5.12

This permit condition establishes a generally applicable MRRR for submittal of reports, certifications, and notifications.

Permit Condition 6.1

The duty to comply general provision requires that the permittee comply with all of the permit terms and conditions pursuant to Idaho Code §39-101.

Permit Condition 6.2

The control equipment maintenance and operation general provision requires that the permittee maintain and operate all treatment and control facilities at the facility in accordance with IDAPA 58.01.01.211.

Permit Condition 6.3

The obligation to comply general provision specifies that no permit condition is intended to relieve or exempt the permittee from compliance with applicable state and federal requirements, in accordance with IDAPA 58.01.01.212.01.

Permit Condition 6.4

The inspection and entry general provision requires that the permittee allow DEQ inspection and entry pursuant to Idaho Code §39-108.

Permit Conditions 6.5 and 6.6

The construction and operation general provisions require that the permittee notify DEQ of the dates of construction, initial startup, and achieving the maximum production rate, in accordance with IDAPA 58.01.01.211.

Permit Conditions 6.7 – 6.9

The performance testing general provisions require notification of intent to test, testing in accordance with the procedures of IDAPA 58.01.0.157, and reporting of test results in accordance with IDAPA 58.01.01.157.

The permittee is encouraged to submit performance test protocol to DEQ for approval prior to any performance testing.

Permit Condition 6.10

The monitoring and recordkeeping general provision requires that the permittee maintain sufficient records to ensure compliance with permit conditions, in accordance with IDAPA 58.01.01.211.

Permit Condition 6.11

The excess emission general provision requires that the permittee comply with the excess emission requirements in accordance with IDAPA 58.01.01.130-136.

Permit Condition 6.12

The certification general provision requires that a responsible official certify all documents submitted to DEQ, in accordance with IDAPA 58.01.01.123.

Permit Condition 6.13

The false statements general provision requires that no person make false statements, representations, or certifications, in accordance with IDAPA 58.01.01.125.

Permit Condition 6.14

The tampering general provision requires that no person render inaccurate any required monitoring device or method, in accordance with IDAPA 58.01.01.126.

Permit Condition 6.15

The transferability general provision specifies that this permit to construct is transferable, in accordance with the procedures of IDAPA 58.01.01.209.06.

Permit Condition 6.16

The severability general provision specifies that permit conditions are severable, in accordance with IDAPA 58.01.01.211.

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 – EMISSION INVENTORIES

IDEQ PTC Forms

Facility Wide Potential to Emit Emission Inventory

Table 1. PRE PROJECT POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

*** Assumed to be Zero because this is the initial PTC for the facility.**

Table 2. POST PROJECT MAXIMUM POTENTIAL TO EMIT FOR NSR REGULATED POLLUTANTS

	Critieria Pollutant Emission Summary												
	NO_x Emissions		CO Emissions		$PM_{2.5}/_{10}$ Emissions		SO_2 Emissions		VOC Emissions		Lead Emissions		GHG Emissions
Description	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	Metric T/yr
Condensing Boiler #1	0.049	0.159	0.041	0.134	0.004	0.012	2.92E-04	9.56E-04	0.003	0.009	2.43E-07	7.97E-07	
Condensing Boiler #2	0.195	0.637	0.163	0.535	0.015	0.048	1.17E-03	3.82E-03	0.011	0.035	9.73E-07	3.19E-06	
Condensing Boiler #3	0.195	0.637	0.163	0.535	0.015	0.048	1.17E-03	3.82E-03	0.011	0.035	9.73E-07	3.19E-06	
Condensing Boiler #4	0.195	0.637	0.163	0.535	0.015	0.048	1.17E-03	3.82E-03	0.011	0.035	9.73E-07	3.19E-06	
Evaporator	0.019	0.003	0.016	0.002	0.001	2.13E-04	1.17E-04	1.68E-05	0.001	0.000	9.73E-08	1.40E-08	
Emergency Generator	0.289	0.072	0.190	0.047	0.000	6.57E-06	2.01E-04	5.01E-05	0.040	0.010	0.00E+00	0.00E+00	
Heater #1	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #2	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	2,366.35
Heater #3	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #4	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #5	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #10	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #11	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Heater #12	8.75E-03	9.59E-03	7.35E-03	8.05E-03	6.65E-04	7.29E-04	5.25E-05	5.75E-05	4.82E-04	5.27E-04	4.38E-08	4.79E-08	
Conformal Coating	–	–	–	–	0.01	0.02	–	–	3.744	0.880	–	–	
SMT Emissions	–	–	–	–	0.11	0.51	–	–	10.310	30.865	0.00E+00	0.00	
Vapor Degreaser	–	–	–	–	–	–	–	–	0.156	1.491	–	–	–
Proposed PTE Total	**1.011**	**2.223**	**0.796**	**1.854**	**0.173**	**0.695**	**0.005**	**0.013**	**14.290**	**33.364**	**3.61E-06**	**1.08E-05**	**2,366.35**

NSR Regulated air Pollutants are defined[1] as: Particulate Matter (PM-10, PM-2.5). Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone (VOC), Sulfur Dioxide, all poilutants regulated by NSPS (40 CFR 60)(i.e. TRS, fluoride, sulfuric acid mist) & Class I & Class II Ozone Depleting Substances (40 CFR 82)(i.e. CFC, HCFC, Halon, etc.)

IDEQ PTC Forms
Facility Wide Hazardous Air Pollutant Potential to Emit

HAP MAXIMUM POTENTIAL TO EMIT EMISSIONS SUMMARY

HAP Pollutants	PTE (T/yr)
Acetone	3.95E-02
Biphenyl	7.94E-07
1,1,2-2-Tetrachloroethane	1.50E-07
1,1,2-Trichloroethane	1.19E-07
1,3-Butadiene	1.37E-06
2,2,4-Triethylpentane	9.36E-07
1,1-Dichloroethane	9.89E-08
Acrolein[1]	1.93E-05
Acetaldehyde[1]	3.13E-05
Methylene Chloride	7.49E-08
Carbon Tetrachloride	1.37E-07
Chlorobenzene	1.14E-07
Chloroform	1.07E-07
Benzene	4.48E-05
Dichlorobenzene	2.47E-05
Formaldehyde	1.74E-03
Hexane	3.70E-02
Naphthalene	1.28E-05
Toluene*	5.49E-01
2-Methylnapthalene[1]	6.18E-07
3-Methylchloranthrene[1]	3.70E-08
7,12-Dimethylbenz(a)anthracene[1]	3.29E-07
Acenaphthene[1]	4.17E-08
Acenaphthylene[1]	5.74E-08
Anthracene[1]	4.94E-08
Benz(a)anthracene[1]	3.70E-08
Benzo(a)pyrene[1]	2.62E-08
Benzo(b)fluoranthene[1]	3.76E-08
Benzo(g,h,i)perylene[1]	2.62E-08
Benzo(k)fluoranthene[1]	3.70E-08
Chrysene[1]	3.96E-08
Dibenzo(a,h)anthracene[1]	2.47E-08
Dichlorobenzene[1]	2.47E-05
Fluoranthene[1]	6.58E-08
Fluorene[1]	7.88E-08
Indeno(1,2,3-cd)pyrene[1]	3.70E-08
Phenanathrene[1]	3.89E-07
Pyrene[1]	1.08E-07
Ethylene Dibromide	1.66E-07
Phenol	8.99E-08
Styrene	8.84E-08
Tetrachloroethane	9.29E-09
Vinyl Chloride	5.58E-08
Methanol	4.03E-02
Ethylbenzene	3.94E-02
Xylene	7.83E-02
Arsenic	4.11E-06
Beryllium	2.47E-07
Cadmium	2.26E-05
Chromium	2.88E-05
Cobalt	1.73E-06
Lead	1.03E-05
Manganese	7.81E-06
Mercury	5.35E-06
Molybdenum	2.26E-05
Nickel	4.32E-05
Selenium	4.94E-07
Total	7.46E-01

* Maximum Individual HAP

1. Considered a HAP because it is polycyclic organic matter

Daily operating hours 21

Note that 21 hours is too high for some rooms such as the clean room, evaporator etc., but still below the EL for the 585 daily
Also note that any pollutant that is included in natural gas combustion assumes 24-hr operation for shortm term
Hence the 1.125 multiplier on occasion in columns "D" and "F" to account for the lb/hr*21/24 calculation in column "H"

	Actual Emissions		PTE Emissions		24-hr/Annual		
Pollutant	lb/hr	tpy	lb/hr	tpy	Avg (lb/hr)	TAP EL (lb/hr)	
Methanol	5.23E-03	0.02	0.01	0.04	8.97E-03	17.3	No
Toluene	0.12	0.28	0.13	0.55	0.12	25	No
Isobutyl Acetate	0.00	0.00	3.54	0.01	3.09	46.7	No
Zinc Oxide (fume)	0.01	0.01	0.02	0.08	0.01	0.333	No
Xylene	0.02	0.06	0.03	0.14	0.03	29	No
Ethylbenzene	1.20E-02	1.51E-02	8.68E-03	3.94E-02	7.60E-03	29	No
Methyl Ethyl Ketone	5.40E-04	2.36E-03	5.40E-04	2.36E-03	4.72E-04	39.3	No
Acetone	0.01	0.02	0.01	0.04	7.89E-03	119	No
Isopropanol	0.50	1.90	0.74	2.85	0.65	65.3	No
n-Butyl Acetate	0.00	0.00	0.00	0.00	9.18E-04	47.3	No
VM&P Naptha	4.34E-03	0.02	0.01	0.02	4.75E-03	91.3	No
Tin	0.00	0.00	0.00	0.00	0.00E+00	0.133	No
Silver	0.00	0.00	0.01	0.01	6.31E-03	0.007	No
Copper	0.00	0.00	0.00	0.00	6.04E-06	0.067	No
Barium	3.18E-05	9.05E-05	3.18E-05	9.05E-05	3.18E-05	0.033	No
Chromium	1.01E-05	2.88E-05	1.01E-05	2.88E-05	1.01E-05	0.033	No
Cobalt	6.06E-07	1.73E-06	6.06E-07	1.73E-06	6.06E-07	0.0033	No
Manganese	2.74E-06	7.81E-06	2.74E-06	7.81E-06	2.74E-06	0.067	No
Molybdenum	7.94E-06	2.26E-05	7.94E-06	2.26E-05	7.94E-06	0.333	No
Selenium	1.73E-07	4.94E-07	1.73E-07	4.94E-07	1.73E-07	0.013	No
Vanadium	1.66E-05	4.73E-05	1.66E-05	4.73E-05	1.66E-05	0.003	No
Zinc	2.09E-04	5.96E-04	2.09E-04	5.96E-04	2.09E-04	0.667	No
Hexane	1.30E-02	3.70E-02	1.30E-02	3.70E-02	1.30E-02	12	No
Pentane	1.88E-02	5.35E-02	1.88E-02	5.35E-02	1.88E-02	118	No
Heptane	1.01E-03	4.44E-03	1.27E-03	5.55E-03	1.11E-03	109	No
Napthalene	2.98E-05	1.28E-05	2.98E-05	1.28E-05	2.98E-05	3.33	No
Amorphous silica fused	0.00E+00	0.00E+00	2.92E-03	3.03E-03	2.55E-03	0.0067	No
Silica Quartz	0.00E+00	0.00E+00	1.32E-03	1.37E-03	1.15E-03	0.0067	No
Carbon Black	0.00E+00	0.00E+00	4.17E-05	4.34E-05	3.65E-05	0.23	No
Cristobalite	0.00E+00	0.00E+00	1.45E-05	1.51E-05	1.27E-05	0.0033	No
N-Butyl Acetate	1.98E-04	2.06E-04	2.57E-04	2.68E-04	2.25E-04	47.3	No
1-methoxy-2-propanol Acetate	2.52E-03	2.62E-03	3.45E-03	3.58E-03	3.02E-03	24	No
Cyclohexanone	8.90E-04	9.25E-04	1.19E-03	1.24E-03	1.04E-03	6.67	No
1,3-Butadiene	1.25E-04	1.37E-06	1.25E-04	1.37E-06	1.25E-04	2.4	No
2-propanol,2-methyl	1.56E-02	5.96E-02	1.56E-02	5.96E-02	1.36E-02	20	No
1,2-epoxybutane	1.56E-02	5.96E-02	1.56E-02	5.96E-02	1.36E-02	0.8	No
N-propyl Alcohol	3.89E-02	1.49E-01	3.89E-02	1.49E-01	3.40E-02	33.3	No
Acrolein	1.75E-03	1.93E-05	1.75E-03	1.93E-05	1.75E-03	0.017	No
Butylglycol Acetate	1.91E-03	1.99E-03	2.62E-03	2.72E-03	2.29E-03	8.33	No
Styrene	8.05E-06	8.84E-08	8.05E-06	8.84E-08	8.05E-06	6.67	No

Benzene	1.65E-04	4.48E-05	1.65E-04	4.48E-05	1.02E-05	8.00E-04	No
POM[1]	8.23E-08	5.97E-07	8.23E-08	5.97E-07	1.36E-07	2.00E-06	No
2-Methylnapthalene[2]	1.15E-05	6.18E-07	1.15E-05	6.18E-07	1.41E-07	9.10E-05	No
3-Methylchloranthrene[2]	1.30E-08	3.70E-08	1.30E-08	3.70E-08	8.45E-09	9.10E-05	No
Acenaphthene[2]	4.39E-07	4.17E-08	4.39E-07	4.17E-08	9.52E-09	9.10E-05	No
Acenaphthylene[2]	1.86E-06	5.74E-08	1.86E-06	5.74E-08	1.31E-08	9.10E-05	No
Anthracene[2]	1.73E-08	4.94E-08	1.73E-08	4.94E-08	1.13E-08	9.10E-05	No
Benzo(g,h,i)perylene[2]	1.50E-07	2.62E-08	1.50E-07	2.62E-08	5.99E-09	9.10E-05	No
Dichlorobenzene[2]	8.66E-06	2.47E-05	8.66E-06	2.47E-05	5.63E-06	9.10E-05	No
Fluoranthene[2]	4.00E-07	6.58E-08	4.00E-07	6.58E-08	1.50E-08	9.10E-05	No
Fluorene[2]	1.95E-06	7.88E-08	1.95E-06	7.88E-08	1.80E-08	9.10E-05	No
Phenanathrene[2]	3.67E-06	3.89E-07	3.67E-06	3.89E-07	8.87E-08	9.10E-05	No
Pyrene[2]	5.00E-07	1.08E-07	5.00E-07	1.08E-07	2.46E-08	9.10E-05	No
Formaldehyde	1.85E-02	1.74E-03	1.85E-02	1.74E-03	3.97E-04	5.10E-04	No
Napthalene	2.98E-05	1.28E-05	2.98E-05	1.28E-05	2.93E-06	9.10E-05	No
Arsenic	1.44E-06	4.11E-06	1.44E-06	4.11E-06	9.39E-07	1.50E-06	No
Beryllium	8.66E-08	2.47E-07	8.66E-08	2.47E-07	5.63E-08	2.80E-05	No
Cadmium	7.94E-06	2.26E-05	7.94E-06	2.26E-05	5.16E-06	3.70E-06	Yes
Nickel	1.52E-05	4.32E-05	1.52E-05	4.32E-05	9.86E-06	2.70E-05	No
Vinyl Chloride	5.08E-06	5.58E-08	5.08E-06	5.58E-08	1.27E-08	9.40E-04	No
Total TAPs	***0.80***	***2.70***	***4.64***	***4.16***			

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM DRAFT

DATE: January 12, 2015

TO: Kelli Wetzel, Permit Writer, Air Program

FROM: Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

PROJECT: P-2014.0019 PROJ 61356, Permit to Construct (PTC) Facility Emission Cap (FEC) Permit

SUBJECT: Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs) as it relates to air quality impact analyses.

Contents

1.0 Summary

Plexus Corporation (Plexus) submitted a Permit to Construct (PTC) application with a Facility Emission Cap (FEC) for operations at their electronics manufacturing facility in Nampa, Idaho. This memorandum provides a summary of the ambient air impact analyses submitted with the permit application. It also describes DEQ's review of those analyses, DEQ's verification analyses, additional clarifications, and conclusions.

Project-specific air quality analyses involving atmospheric dispersion modeling of estimated emissions associated with the facility were submitted to DEQ to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.03 {Idaho Air Rules Section 203.03}).

JBR Environmental Consultants, Inc., on behalf of Plexus, performed the initial ambient air impact analyses for this project to demonstrate compliance with NAAQS and TAPs. Revisions to the impact analyses were performed by Stantec Consulting Services, Inc. (Stantec). The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the air impact analyses used to demonstrate that the estimated emissions associated with operation of the facility will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the main body of the Statement of Basis. Emissions estimates were not reviewed as part of the modeling review described in this modeling review memorandum.

The application was originally received by DEQ on April 18, 2014. DEQ determined the application was incomplete and notified Plexus on May 2, 2014. DEQ received a response from Stantec on July 2, 2014, that included revised air impact analyses.

The submitted air quality impact analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project will not result in increased ambient air impacts exceeding allowable TAP increments.

Table 1 presents key assumptions and results to be considered in the development of the permit.

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 and analyses demonstrated to the satisfaction of the Department that operation of the proposed facility 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**
General Emissions Rates. Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.
Below Regulatory Concern for Criteria Pollutant Emissions. Maximum non-fugitive annual emissions of $PM_{2.5}$, PM_{10}, oxides of nitrogen (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), and lead (Pb) are below levels identified as below regulatory concern (BRC) as per Idaho Air Rules Section 221, and the project would be exempt from permitting if it were not for emissions of volatile organic compounds (VOCs) exceeding BRC levels.	Air impact analyses demonstrating compliance with NAAQS, as required by Idaho Air Rules Section 203.02, are not required for pollutants having an emissions increase that is less than BRC levels, provided the project would have qualified for a BRC permitting exemption except for the emissions levels of another criteria pollutant.

2.0 Background Information

This section provides background information applicable to the project and the site where the facility will be located. It also provides a brief description of the applicable air impact analyses requirements for the project.

2.1 Project Description

Operations at the Plexus facility were previously not subject to DEQ permitting requirements. However, emissions of volatile organic compounds (VOCs) have now exceeded exemption limits and a permit is required. Plexus elected to obtain a PTC with a Facility Emission Cap (FEC), with Toxic Air Pollutants (TAPs) permitted as per Idaho Air Rules Section 210.

2.2 Proposed Location and Area Classification

The Plexus facility is located in Nampa, within Canyon County, Idaho. This area is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers ($PM_{2.5}$). The area is not classified as non-attainment for any criteria pollutants.

2.3 Air Impact Analyses Required for All Permits to Construct

Criteria Pollutant and TAP Impact Analyses for a PTC are addressed in Idaho Air Rules Sections 203.02 and 203.03:

> *No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following:*
>
> ***02. NAAQS.*** *The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.*
>
> ***03. Toxic Air Pollutants.*** *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.

Atmospheric dispersion modeling, using computerized simulations, is used to demonstrate compliance with both NAAQS and TAPs. Idaho Air Rules Section 202.02 states:

> ***Estimates of Ambient Concentrations.*** *All estimates of ambient concentrations shall be based on the applicable air quality models, data bases, and other requirements specified in 40 CFR 51 Appendix W (Guideline on Air Quality Models).*

2.4 Significant Impact Level and Cumulative NAAQS Impact Analyses

The Significant Impact Level (SIL) analysis for a new facility or proposed modification to a facility involves modeling estimated criteria air pollutant emissions from the facility or modification to determine the potential impacts to ambient air. 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.

A facility or modification is considered to have a significant impact on air quality if maximum modeled impacts to ambient air exceed the established SIL listed in Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03.b. Table 2 lists the applicable SILs.

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with a new facility or modification exceed the SILs, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging-period at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis for the modeling domain.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. If the SIL analysis indicates the facility/modification has an impact exceeding the SIL, the facility might not have a significant contribution to a violation if impacts are below the SIL at the specific receptor showing the violation during the time periods when a modeled violation occurred.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Impact Levels[a] ($\mu g/m^3$)[b]**	**Regulatory Limit[c] ($\mu g/m^3$)**	**Modeled Design Value Used[d]**
PM_{10}[e]	24-hour	5.0	150[f]	Maximum 6th highest[g]
$PM_{2.5}$[h]	24-hour	1.2	35[i]	Mean of maximum 8th highest[j]
	Annual	0.3	12[k]	Mean of maximum 1st highest[l]
Carbon monoxide (CO)	1-hour	2,000	40,000[m]	Maximum 2nd highest[n]
	8-hour	500	10,000[m]	Maximum 2nd highest[n]
Sulfur Dioxide (SO_2)	1-hour	3 ppb[o] (7.8 $\mu g/m^3$)	75 ppb[p] (196 $\mu g/m^3$)	Mean of maximum 4th highest[q]
	3-hour	25	1,300[m]	Maximum 2nd highest[n]
	24-hour	5	365[m]	Maximum 2nd highest[n]
	Annual	1.0	80[r]	Maximum 1st highest[n]
Nitrogen Dioxide (NO_2)	1-hour	4 ppb (7.5 $\mu g/m^3$)	100 ppb[s] (188 $\mu g/m^3$)	Mean of maximum 8th highest[t]
	Annual	1.0	100[r]	Maximum 1st highest[n]
Lead (Pb)	3-month[u]	NA	0.15[r]	Maximum 1st highest[n]
	Quarterly	NA	1.5[r]	Maximum 1st highest[n]
Ozone (O_3)	8-hour	40 TPY VOC[v]	75 ppb[w]	Not typically modeled

a. Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
b. Micrograms per cubic meter.
c. Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
d. The maximum 1st highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
e. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
f. Not to be exceeded more than once per year on average over 3 years.
g. Concentration at any modeled receptor when using five years of meteorological data.
h. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
i. 3-year mean of the upper 98th percentile of the annual distribution of 24-hour concentrations.
j. 5-year mean of the 8th highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. For the SIL analysis, the 5-year mean of the 1st highest modeled 24-hour impacts at the modeled receptor for each year.
k. 3-year mean of annual concentration. The NAAQS was revised from 15 $\mu g/m^3$ to12 $\mu g/m^3$ on December 14, 2012. However, this standard will not be applicable for permitting purposes in Idaho until it is incorporated by reference *sine die* into Idaho Air Rules (Spring 2014).
l. 5-year mean of annual averages at the modeled receptor.
m. Not to be exceeded more than once per year.
n. Concentration at any modeled receptor.
o. Interim SIL established by EPA policy memorandum.
p. 3-year mean of the upper 99th percentile of the annual distribution of maximum daily 1-hour concentrations.
q. 5-year mean of the 4th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of 1st highest modeled 1-hour impacts for each year is used.
r. Not to be exceeded in any calendar year.
s. 3-year mean of the upper 98th percentile of the annual distribution of maximum daily 1-hour concentrations.
t. 5-year mean of the 8th highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year mean of maximum modeled 1-hour impacts for each year is used.
u. 3-month rolling average.
v. An annual emissions rate of 40 ton/year of VOCs is considered significant for O_3.
w. Annual 4th highest daily maximum 8-hour concentration averaged over three years.

Compliance with Idaho Air Rules Section 203.02 is generally demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification exceeded the SIL or other identified level of consequence; or c) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential

(typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred.

2.5 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.*

Permitting 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 total project-wide emissions increase of any TAP 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.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

3.0 Analytical Methods and Data

This section describes the methods and data used in analyses to demonstrate compliance with applicable air quality impact requirements.

3.1 Emission Source Data

Emissions rates of criteria pollutants and TAPs for the Plexus facility were provided by JBR/Stantec for various applicable averaging periods. Review and approval of estimated emissions was the responsibility of the DEQ permit writer, and is not addressed in this modeling memorandum. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model. The rates listed represent the maximum allowable rate as averaged over the specified period.

Emissions rates used in the dispersion modeling analyses submitted by JBR/Stantec should be reviewed by the DEQ permit writer against those in the emissions inventory of the permit application. All modeled criteria air pollutant and TAP emissions rates should be equal to or greater than the facility's emissions calculated in other sections of the PTC application or requested permit allowable emission rates.

3.1.1 Criteria Pollutant Emissions Rates and Modeling Applicability

Facility-wide emissions of criteria pollutants would qualify for a below regulatory concern (BRC) permit exemption as per Idaho Air Rules Section 221 if it were not for potential emissions of VOCs. DEQ interpretation of exemption provisions of Idaho Air Rules (Policy on NAAQS Compliance Demonstration Requirements, DEQ policy memorandum, July 11, 2014) is that: "A DEQ NAAQS compliance assertion will not be made by the DEQ modeling group for specific criteria pollutants having a project emissions increase below BRC levels, provided the proposed project would have qualified for a Category I Exemption for BRC emissions quantities except for the emissions of another criteria pollutant."

The revised submitted emissions inventory asserts that facility-wide emissions of criteria pollutants are below BRC levels, as listed in Table 3.

Table 3. CRITERIA POLLUTANT NAAQS COMPLIANCE DEMONSTRATION APPLICABILITY

Criteria Pollutant	BRC Level (ton/year)	Applicable Facility Wide Emissions (ton/year)	Air Impact Analyses Required?
PM_{10} [a]	1.5	0.695	No
$PM_{2.5}$ [b]	1.0	0.695	No
Carbon Monoxide (CO)	10.0	1.854	No
Sulfur Dioxide (SO_2)	4.0	0.013	No
Nitrogen Oxides (NOx)	4.0	2.223	No
Lead (Pb)	0.06	1.08 E-5	No

a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

Ozone (O_3) differs from other criteria pollutants in that it is not typically emitted directly into the atmosphere. O_3 is formed in the atmosphere through reactions of VOCs, NOx, and sunlight. Atmospheric dispersion models used in stationary source air permitting analyses (see Section 3.3.3) cannot be used to estimate O_3 impacts resulting from VOC and NOx emissions from an industrial facility. O_3 concentrations resulting from area-wide emissions are predicted by using more complex airshed models such as the Community Multi-Scale Air Quality (CMAQ) modeling system. Use of the CMAQ model is very resource intensive and DEQ asserts that performing a CMAQ analysis for a particular permit application is not typically a reasonable or necessary requirement for air quality permitting.

Addressing secondary formation of O_3 has been somewhat addressed in EPA regulation and policy. As stated in a letter from Gina McCarthy of EPA to Robert Ukeiley, acting on behalf of the Sierra Club (letter from Gina McCarthy, Assistant Administrator, United States Environmental Protection Agency, to Robert Ukeiley, January 4, 2012):

> *. . . footnote 1 to sections 51.166(I)(5)(I) of the EPA's regulations says the following: "No de minimis air quality level is provided for ozone. However, any net emission increase of 100 tons per year or more of volatile organic compounds or nitrogen oxides subject to PSD would be required to perform an ambient impact analysis, including the gathering of air quality data."*

The EPA believes it unlikely a source emitting below these levels would contribute to such a violation of the 8-hour ozone NAAQS, but consultation with an EPA Regional Office should still be conducted in accordance with section 5.2.1.c. of Appendix W when reviewing an application for sources with emissions of these ozone precursors below 100 TPY."

Allowable emissions estimates of VOCs and NOx are below the 100 tons/year threshold, and DEQ determined it was not appropriate or necessary to require a quantitative source specific O_3 impact analysis.

Secondary Particulate Formation

The impact from secondary particulate formation resulting from emissions of NOx, SO_2, and/or VOCs was assumed by DEQ to be negligible on the basis of the magnitude of emissions and the short distance from emissions sources to modeled receptors where maximum PM_{10} and $PM_{2.5}$ impacts would be anticipated.

3.1.2 Toxic Air Pollutant Emissions Rates

TAP emissions regulations under Idaho Air Rules Section 220 are only applicable for new or modified sources constructed after July 1, 1995. The submitted emissions inventory identified that potential increases of the Idaho Air Rules Section 586 TAP cadmium could exceed screening emissions levels (ELs). Potential increases in emissions of other TAPs were all less than applicable ELs. Table 4 lists modeled emissions of cadmium.

Table 4. MODELED TAP EMISSIONS RATES

Release Point	Description	Cadmium (pounds/hour)[a]
BOILER#2	3.2 MMbtu/hr Lockinvar	4.8 E-6
BOILER#1	0.5 MMbtu/hr Lockinvar	4.0 E-7
EVAPORATOR	0.2 MM btu/hr E&K	7.04 E-9
EMERGEN	90,000 btu/hr unit heater	0.00
HEATER#1	90,000 btu/hr unit heater	2.41 E-8
HEATER#2	90,000 btu/hr unit heater	2.41 E-8
HEATER#3	90,000 btu/hr unit heater	2.41 E-8
HEATER#4	90,000 btu/hr unit heater	2.41 E-8
HEATER#5	90,000 btu/hr unit heater	2.41 E-8
HEATER#10	90,000 btu/hr unit heater	2.41 E-8
HEATER#11	90,000 btu/hr unit heater	2.41 E-8
HEATER#12	90,000 btu/hr unit heater	2.41 E-8

[a] Annual maximum emissions divided over 8,760 hours/year.

3.1.3 Emissions Release Parameters

Table 5 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources.

Stack parameters used in the modeling analyses were not documented/justified in the originally submitted application, as was requested in the DEQ-issued protocol approval notification. A description of release parameters was later provided with the submitted revised analyses. Release parameters appeared within the range of expected values for the type of source modeled.

Table 5. POINT SOURCE STACK PARAMETERS USED IN MODELING							
Release Point	Description	UTM[a] Coordinates		Stack Height (m)	Stack Gas Flow Temp. (K)[c]	Stack Flow Velocity (m/sec)[d]	Stack Dia. (m)
		Easting (m)[b]	Northing (m)				
BOILER#2	3.2 MMbtu/hr Lockinvar	535776.7	4828629.0	7.32	422.0	3.90	0.46
BOILER#1	0.5 MMbtu/hr Lockinvar	535779.7	4828629.3	4.27	366.5	6.59[e]	0.10
EVAPORATOR	0.2 MM btu/hr E&K	535774.5	4828724.0	3.35	373.1	3.55[e]	0.25
EMERGEN	90,000 btu/hr unit heater	535874.4	4828635.8	1.37	922.0	50.51	0.10
HEATER#1	90,000 btu/hr unit heater	535799.7	4828823.3	9.75	435.9	4.08	0.15
HEATER#2	90,000 btu/hr unit heater	535785.8	4828823.3	9.75	435.9	4.08	0.15
HEATER#3	90,000 btu/hr unit heater	535768.7	4828823.0	9.75	435.9	4.08	0.15
HEATER#4	90,000 btu/hr unit heater	535767.2	4828791.1	9.75	435.9	4.08	0.15
HEATER#5	90,000 btu/hr unit heater	535767.4	4828767.2	9.75	435.9	4.08	0.15
HEATER#10	90,000 btu/hr unit heater	535767.7	4828694.7	9.75	435.9	4.08	0.15
HEATER#11	90,000 btu/hr unit heater	535768.1	4828669.5	9.75	435.9	4.08	0.15
HEATER#12	90,000 btu/hr unit heater	535768.3	4828642.1	9.75	435.9	4.08	0.15

a. Universal Transverse Mercator.
b. Meters.
c. Kelvin.
d. Meters per second.
e. Horizontal release, modeled using the AERMOD Beta option for horizontal releases.

3.2 Background Concentrations

Background concentrations were not needed because modeling of NAAQS was not required. NAAQS compliance demonstrations were not required because applicable emissions of criteria pollutants other than VOCs met the requirements for a BRC permitting exemption, as per Idaho Air Rules Section 221.

3.3 Impact Modeling Methodology

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

3.3.1 General Overview of Analyses

JBR/Stantec performed project-specific air impact analyses that were determined by DEQ to be reasonably representative of the proposed facility as described in the application. Results of the submitted analyses demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 6 provides a brief description of parameters used in the modeling analyses.

3.3.2 Modeling protocol and Methodology

JBR submitted a modeling protocol to DEQ on January 28, 2014. DEQ provided a conditional protocol approval notice on February 10, 2014. Project-specific modeling and other required impact analyses were generally conducted using data and methods discussed in preapplication correspondence and in the *Idaho Air Quality Modeling Guideline*[1].

Table 6. MODELING PARAMETERS		
Parameter	**Description/Values**	**Documentation/Addition Description**
General Facility Location	Nampa, Idaho	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 14134.
Meteorological Data	Boise surface data, Boise upper air data	See Section 3.3.4 of this memorandum for additional details of the meteorological data.
Terrain	Considered	3-dimensional receptor coordinates were obtained from USGS National Elevation Dataset (NED) files and were used to establish elevation of ground level receptors. AERMAP was used to determine each receptor elevation and hill height scale.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility. BPIP-PRIME was used to evaluate building dimensions for consideration of downwash effects in AERMOD.
Receptors	Grid 1	15-meter spacing along the ambient air boundary and out to 85 meters.
	Grid 2	25-meter spacing out to 120 meters.
	Grid 3	50-meter spacing out to 220 meters.
	Grid 4	100-meter spacing out to 500 meters.

3.3.3 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. 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 version 14134 was used by JBR/Stantec for the modeling analyses to evaluate impacts of the facility. This version was the current version at the time the application was received by DEQ.

3.3.4 Meteorological Data

DEQ provided JBR with model-ready meteorological data processed from the Boise National Weather Service (NWS) surface and upper air station data for 2008-2012. These data were processed by DEQ using AERMET version 12345, AERMINUTE version 11325, and AERSURFACE version 13016. DEQ determined these data were reasonably representative for the Plexus site.

3.3.5 Effects of Terrain on Modeled Impacts

Terrain data were extracted from United States Geological Survey (USGS) National Elevation Dataset (NED) files in the WGS84 datum (approximately equal to the NAD83 datum). Stantec used 1/3 arc-second (about 10-meter resolution) data files.

The terrain preprocessor AERMAP Version 11103 was used to extract the elevations from the NED files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. AERMOD uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

DEQ reviewed the area surrounding the facility by using the web-based mapping program Google Earth,

which uses the WGS84 datum. The immediate area is effectively flat with regard to dispersion modeling affects and elevations in the modeling domain generally matched those indicated by Google Earth. DEQ determined further verification of proper elevation consideration was not warranted because of the low variability of terrain elevation in the modeled domain and the low magnitude of modeled impacts.

3.3.6 Facility Layout

DEQ verified proper identification of buildings on the site by comparing a graphical representation of the modeling input file to aerial photographs on Google Earth. The modeled layout matched well with aerial photographs in Google Earth.

3.3.7 Effects of Building Downwash on Modeled Impacts

Potential downwash effects on emissions plumes were accounted for in the model by using building dimensions and locations (locations of building corners, base elevation, and building heights). Dimensions and orientation of proposed buildings were used as input to the Building Profile Input Program for the Plume Rise Model Enhancements downwash algorithm (BPIP-PRIME) to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information for input to AERMOD.

3.3.8 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." The originally submitted modeling excluded areas from ambient air that were outside of the facility's security fence and a grassy area immediately west of the main building and loading area. Revised modeling moved the ambient air boundary inward to the security fence and included the area west of the loading area as ambient air.

3.3.9 Receptor Network

Table 5 describes the receptor grid used in the submitted analyses. The receptor grid met the minimum recommendations specified in the *Idaho Air Quality Modeling Guideline*[1]. DEQ determined this grid assured maximum impacts were reasonably resolved by the model considering: 1) types of sources modeled; 2) modeled impacts, and the modeled concentration gradient; 3) conservatism of the methods and data used as inputs to the analyses; 4) potential for continual exposures or exposure to sensitive receptors.

3.3.10 Good Engineering Practice Stack Height

An allowable good engineering practice (GEP) stack height may be established using the following equation in accordance with Idaho Air Rules Section 512.03.b:

$H = S + 1.5L$, where:

H = good engineering practice stack height measured from the ground-level elevation at the base of the stack.

S = height of the nearby structure(s) measured from the ground-level elevation at the base of the stack.

L = lesser dimension, height or projected width, of the nearby structure.

All Plexus point sources were below GEP stack height. Therefore, consideration of downwash caused by nearby buildings was required.

4.0 Impact Modeling Results

4.1 Results for NAAQS Significant Impact Level Analyses

Emissions of all non-fugitive criteria pollutants are below levels identified in Idaho Air Rules as Below Regulatory Concern (BRC). Since the facility would qualify for a BRC permit exemption if it were not for emissions of VOCs exceeding BRC levels, an air impact analysis is not required to demonstrate NAAQS compliance for other criteria pollutants as per Idaho Air Rules Section 203.02.

4.2 Results for TAPs Impact Analyses

Dispersion modeling was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Section 585 and 586 for those TAPs with facility-wide emissions exceeding emissions screening levels (ELs). The results of the TAPs analyses are listed in Table 7. The predicted ambient TAPs impacts were considerably below any TAPs increments.

Table 7. RESULTS OF TAPs ANALYSES

Toxic Air Pollutant	Averaging Period	Maximum Modeled Concentration ($\mu g/m^3$)[a]	AAC/AACC[b] ($\mu g/m^3$)	Percent of AAC/AACC
Carcinogenic TAPs				
Cadmium	Annual	3.5E-04	5.6E-04	63%

[a] Micrograms per cubic meter

[b] Acceptable ambient concentration for non-carcinogens/acceptable ambient concentration for carcinogens

5.0 Conclusions

The ambient air impact analyses and other air quality analyses submitted with the PTC FEC application demonstrated to DEQ's satisfaction that emissions from the Plexus facility will not cause or significantly contribute to a violation of any ambient air quality standard.

References:

1. *State of Idaho Guideline for Performing Air Quality Impact Analyses.* Idaho Department of Environmental Quality. September 2013. State of Idaho DEQ Air Doc. ID AQ-011. Available at http://www.deq.idaho.gov/media/1029/modeling-guideline.pdf.

APPENDIX C – FACILITY DRAFT COMMENTS

The following comments were received from the facility on February 4, 2015:

Facility Comment: Table 3.2 provides specific gallons per day limits for conformal coatings of various types, fluxants, degreasing agents among others. Plexus is most interested in how the limitations were developed; what assumptions went into the calculations. It is Plexus' understanding that the highest emitting toxic air pollutants (TAPs) were established based on the emissions inventory associated with the application. Based on appropriate emission screening levels (ELs) within IDAPA 58.01.01.585 and 586, the assumed usages rates were scaled up to be just below each applicable EL. Is that the case? If not, please provide a detailed explanation as to what methodology was used.

There is currently some concern that some of the limits in Table 3.2 will hinder the facility's ability to meet specific client demands. It may be necessary to increase those rates provided our understanding of their development is correct. Similarly, the 2 gallon daily limit of isocyanates may be troublesome into the future. Again, the assumption is that the limit was determined based on the EL of those particular TAPs. A complete understanding of the calculations is necessary as modeling of some TAPs may become a requirement should the current limits need to be increased.

DEQ Response: Table 3.2 has been removed from the PTC to provide for more flexibility in the chemical types that are used at the facility.

Facility Comment: Permit Condition 3.6 outlines the throughput limit of solder usage on an annual basis. Plexus would like a detailed understanding of what that 6,000 lb/yr equates to. Does that number take in account the amount of material that remains on the products or board? In essence, is the 6,000 lb representative of raw material weight or ultimately, the amount that can be emitted? Documentation was provided in the air permit application indicating the solder is not heated enough to volatilize. Which constituents contained within the solder materials are regulatory concerns?

DEQ Response: Permit Condition 3.6 has been removed from the PTC to provide for more flexibility in the chemical types that are used at the facility. Emission limits for HAPs and VOCs are contained in Permit Condition 3.1.

Facility Comment: What was the rationale for developing a PTC rather than the requested FEC permit? It appears that the structure of the PTC is similar to a FEC in the sense that there are overarching process emission limitations where everything is combined for criteria pollutants.

DEQ Response: DEQ structured the PTC with flexibility that resembles a FEC without the renewal and remodeling that a FEC requires.

Facility Comment: Is there flexibility regarding the requirements of condition 3.7? Chemicals are pulled from storage for consumption rather than at the point of consumption. Care would be taken not to exceed the daily limit, but there may be cases where it's easier to track the chemicals in their original containers versus in small quantities as the chemicals are added to process equipment for consumption.

DEQ Response: The PTC condition has been revised to give the facility the flexibility to use the tracking spreadsheet that they have developed while ensuring that all emission limits are met.

Facility Comment: Permit Condition 3.8 currently allows for any new materials to be used provided the usage rates don't exceed those stated in PC 3.3 and 3.4. Should a new TAP be introduced it is Plexus' understanding that an exemption analysis can be performed. If the TAP is exempt it can be used with appropriate recordkeeping. As part of IDAPA 58.01.01.223, does that also mean that should an EL be exceeded for new a TAP an in-house modeling demonstration can be conducted to show that applicable ambient conditions are not exceeded (i.e. 223.02.b)?

DEQ Response: Several permit conditions were revised to give the facility the flexibility to use new materials provided the emission limits are not exceeded.

Facility Comment: The Statement of Basis indicated that cleanroom chemicals are not listed in Appendix A of the permit because of such small quantities. Does that mean that their usage doesn't need to be tracked with other recordkeeping requirements?

DEQ Response: All chemicals used at the facility need to be tracked and used in amounts that would not exceed emission limits specified in Permit Condition 3.1.

Facility Comment: The Conformal Coating section of the Appendix states that EFI 30027 contains isocyanates. However, Plexus has indicated that it does not. A corrective change is requested.

DEQ Response: The Appendix was removed from the PTC so as to not limit the types of coatings used at the facility and provide more flexibility. All chemicals used at the facility need to be tracked and used in amounts that would not exceed emission limits specified in Permit Condition 3.1.

APPENDIX D – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company: Plexus Manufacturing Solutions
Address: 16399 N. Franklin Boulevard
City: Nampa
State: Idaho
Zip Code: 83687
Facility Contact: Kelli Ullmann
Title:
AIRS No.: 027-00133

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	2.2	0	2.2
SO_2	0.0	0	0.0
CO	1.8	0	1.8
PM10	0.7	0	0.7
VOC	33.4	0	33.4
TAPS/HAPS	4.8	0	4.8
Total:	0.0	0	**42.9**
Fee Due	**$ 5,000.00**		

Comments: