067-48511-00096
AI: 133466

KERAMIDA
GLOBAL SUSTAINABILITY | CLIMATE | EHS

401 North College Avenue
Indianapolis, Indiana 46202
(317) 685-6600 • Fax (317) 685-6610
1-800-508-8034
info@keramida.com • www.keramida.com

November 20, 2024

Ms. Jenny Acker, Chief
Indiana Department of Environmental Management
Permit Administration and Support Section
Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

Received JFJ
State of Indiana
NOV 25 2024
Dept of Environmental Mgmt
Office of Air Quality
HC

Re: Application for Part 70/Title V Significant Source Modification/ Significant Air Permit Modification, Source ID# 067-00096
Addition of TDS-L Conductive Slurry Manufacturing Trains 2 and 3, Diesel Emergency Fire Pump DFP-2, and Incorporation of 40 CFR 60 Subpart NNNa Applicable Requirements
JWA CO., LTD, 1679 East Sparks Road, Kokomo, IN 46901

Dear Ms. Acker:

Enclosed please find a Part 70 Title V air permit Significant Source and Permit Modification application for the JWA CO., LTD. (JWA) facility located at 1679 East Sparks Road, Kokomo, Indiana for addition of TDS-L Conductive Slurry Trains 2 and 3, additional Diesel Fire Pump (DFP-2) and incorporation of 40 CFR Part 60, Subpart NNNa applicable requirements. JWA CO., LTD. (JWA) currently operates under Part 70 permit no. 067-47041-00096 issued 2/20/24 and expiring 2/20/29. An Administrative Amendment for addition of a cathode slurry NMP recovery process, permit 48344, is currently being finalized.

Modification Descriptions:

TDS-L Trains 2 and 3

In order to produce the currently permitted 10,000 cubic meters (m3) per year of TDS-L conductive slurry, the JWA facility needs to install two additional TDS-L production trains. These production trains will be identical to the existing TDS-L production train, and the production capacity of each train will be 3,333 m3 per year. Since the facility is already permitted for 10,000 m3 per year capacity, the addition of these two trains will necessitate a re-apportionment of production across the total of three (3) production trains (TDS-L Trains 1, 2 and 3). Each TDS-L manufacturing process train will consist of individual solids dispensing/material handling processes (SD-1, SD-2 and SD-3), each with separate baghouse control, pre-mixing vessels, impact dispersion vessels, main dispersion/blending vessels, chiller, multi-stage filtration systems, and associated tanks, pumps, mixers, valves, piping, storage, blending and finished product container dispensing, with VOC emissions from all three trains controlled by the existing common recovery condenser and carbon adsorption system. The majority of increased potential emissions from this modification will be in the form of fugitive VOC emissions from a tripling of process equipment and the number of valves, flanges, connectors and pump/agitator seals in the TDS-L manufacturing process associated with the addition of trains 2 and 3. Also included are minor corrections and updates to TDS-L tank sizes and counts.

Diesel Fire Pump DFP-2 and Removal of Gas Fired Space Heaters

The facility needs to add a second diesel emergency fire pump engine and associated diesel storage tank for use in the facility's fire protection system. The increase in emissions from this fire pump addition is partially off-set by the removal of natural gas fired space and water heaters, as these heaters were installed as electric rather than gas-fired units. Updated specifications for the diesel fire pump engines are included in the revised emission calculations.

Incorporation of NSPS Subpart NNNa Requirements

Due to JWA construction start after April of 2023, the facility will be subject to 40 CFR 60 Subpart NNNa—Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023. Subpart NNNa will be applicable to JWA rather than Subpart NNN that is referenced in the current permit. Subpart NNNa had been stayed throughout the permit application process. The stay of Subpart NNNa was ended by a Federal Register Notice issued May 16, 2024 and was retroactively effective to its initial proposed rule publication date of April 25, 2023. This rule will require some changes to the testing, monitoring and record keeping requirements of the JWA facility.

We have prepared an updated FED-01 form to incorporate the Subpart NNNa applicable requirements. The carbon adsorber breakthrough monitoring requirement, in accordance with NNNa, will need to be reduced to approximately 20 ppmvd as methane, propane or isobutylene, to be determined during initial Subpart NNNa performance testing. The actual breakthrough concentration will be determined when JWA tests via Method 18 to demonstrate compliance with the 20 ppmvd, corrected to 3% oxygen, TOC (as n-methyl pyrrolidone) limit. JWA will use Method 21 for carbon adsorber breakthrough monitoring and will conduct breakthrough monitoring on a daily basis. The equivalent VOC emission rate after control will be lower than is reflected in the current emission inventory. We have therefore updated the emission inventory to reflect this lower anticipated emission rate.

The non-regenerative carbon control requirements of Subpart NNNa require the installation of a second carbon adsorber. JWA will therefore be installing a second carbon adsorber that is similar to the current adsorber. In accordance with NNNa, breakthrough monitoring will be conducted after the first adsorber.

Subpart NNNa has specific monitoring requirements for recovery condensers and recovery absorbers that will need to be implemented prior to initial performance testing. We would like to work with IDEM to streamline and align the Part 70 monitoring requirements with those of Subpart NNNa, in order to revise or eliminate redundant and equivalent monitoring requirements.

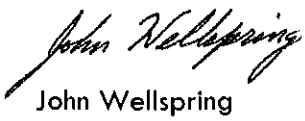
Section 60.670a of Subpart NNNa will require annual (or valve-specific alternative) monitoring for VOC leakage from any closed vent systems not under vacuum service, as well as sight, sound and smell inspections for all closed vent system components. This monitoring will be conducted on an initial and annual basis using Method 21 and a leak definition of 500 ppmv as methane, and any detected leaks will be repaired in accordance with that section. We have applied emission inventory mitigation factors to reflect this additional required monitoring. JWA will implement NNNa required instrument calibrations and monitoring for all recovery condensers, absorption scrubbers and the carbon adsorber control associated within the NMP distillation process. JWA will also conduct initial notification, semi-annual reports and initial performance testing according to Subpart NNNa for submittal via the EPA CDX CEDRI and ERT systems.

The enclosed application includes:

- Completed Air Permit Application Forms (Cover Sheet, General information (GSD) forms and attachments, Process Information (PI) forms, Control Equipment (CE) forms, and Federal rule applicability (FED) forms [Attachment 1]
- Revised Emission Inventory Calculations [Attachment 2]

We appreciate your consideration of the enclosed application and associated attachments. Please expedite the processing of this application to the greatest extent possible, and feel free to contact either Mr. Tom Pritts at JWA or John Wellspring at KERAMIDA with any questions or requests for additional information.

Sincerely,
KERAMIDA, Inc.



John Wellspring
Senior Project Manager
jwellspring@keramida.com
Office Direct: 317-631-9576

Enclosures

cc: Tom Pritts, JWA CO, Ltd, 1679 East Sparks Road, Kokomo, IN 46901
Howard County Public Library, Kokomo, IN

ATTACHMENT 1

Completed Air Permit Application Forms

AIR PERMIT APPLICATION COVER SHEET

State Form 50639 (R4 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this cover sheet is to obtain the core information needed to process the air permit application. This cover sheet is required for all air permit applications submitted to IDEM, OAQ. Place this cover sheet on top of all subsequent forms and attachments that encompass your air permit application packet.
- Submit the completed air permit application packet, including all forms and attachments, to **IDEM Air Permits Administration** using the address in the upper right hand corner of this page.
- IDEM will send a bill to collect the filing fee and any other applicable fees.
- Detailed instructions for this form are available on the Air Permit Application Forms website.

FOR OFFICE USE ONLY

PERMIT NUMBER: AT: 133466

067 - 48511 - 00096

DATE APPLICATION WAS RECEIVED:

Received
State of Indiana
NOV 15 2024 HC
Dept of Environmental Mgmt
Office of Air Quality

1. Tax ID Number:

PART A: Purpose of Application

Part A identifies the purpose of this air permit application. For the purposes of this form, the term "source" refers to the plant site as a whole and NOT to individual emissions units.

2. Source / Company Name: JWA CO., LTD. **3. Plant ID:** –

4. Billing Address: 1510 North Matador Street

City: Peru **State:** IN **ZIP Code:** 46970 –

5. Permit Level: ☐ Exemption ☐ Registration ☐ SSOA ☐ MSOP ☐ FESOP ☒ TVOP ☐ PBR

6. Application Summary: *Check all that apply. Multiple permit numbers may be assigned as needed based on the choices selected below.*

☐ Initial Permit ☐ Renewal of Operating Permit ☐ Asphalt General Permit
☐ Review Request ☐ Revocation of Operating Permit ☐ Alternate Emission Factor Request
☐ Interim Approval ☐ Relocation of Portable Source ☐ Acid Deposition (Phase II)
☐ Site Closure ☐ Emission Reduction Credit Registry

☐ Transition (between permit levels) *From:* *To:*

☐ Administrative Amendment: ☐ *Company Name Change* ☐ *Change of Responsible Official*
☐ *Correction to Non-Technical Information* ☐ *Notice Only Change*
☐ *Other (specify):*

☒ Modification: ☒ *New Emission Unit or Control Device* ☒ *Modified Emission Unit or Control Device*
☐ *New Applicable Permit Requirement* ☐ *Change to Applicability of a Permit Requirement*
☐ *Prevention of Significant Deterioration* ☐ *Emission Offset* ☐ *MACT Preconstruction Review*
☐ *Minor Source Modification* ☒ *Significant Source Modification*
☐ *Minor Permit Modification* ☒ *Significant Permit Modification*
☐ *Other (specify):*

7. Is this an application for an initial construction and/or operating permit for a **"Greenfield" Source?** ☐ Yes ☒ No

8. Is this an application for construction of a new emissions unit at an **Existing Source?** ☒ Yes ☐ No

Continued on Next Page

PART B: Pre-Application Meeting

Part B specifies whether a meeting was held or is being requested to discuss the permit application.

9. Was a meeting held between the company and IDEM prior to submitting this application to discuss the details of the project?

☒ No ☐ Yes: *Date:*

10. Would you like to schedule a meeting with IDEM management and your permit writer to discuss the details of this project?

☒ No ☐ Yes: *Proposed Date for Meeting:*

PART C: Confidential Business Information

Part C identifies permit applications that require special care to ensure that confidential business information is kept separate from the public file.

Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in the Indiana Administrative Code (IAC). To ensure that your information remains confidential, refer to the IDEM, OAQ information regarding submittal of confidential business information. For more information on confidentiality for certain types of business information, please review IDEM's Nonrule Policy Document Air-031-NPD regarding Emission Data.

11. Is any of the information contained within this application being claimed as **Confidential Business Information?**

☒ No ☐ Yes

PART D: Certification Of Truth, Accuracy, and Completeness

Part D is the official certification that the information contained within the air permit application packet is truthful, accurate, and complete. Any air permit application packet that we receive without a signed certification will be deemed incomplete and may result in denial of the permit.

For a Part 70 Operating Permit (TVOP) or a Source Specific Operating Agreement (SSOA), a "responsible official" as defined in 326 IAC 2-7-1(34) must certify the air permit application. For all other applicants, this person is an "authorized Individual" as defined in 326 IAC 2-1.1-1(1).

☒ *I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate, and complete.*

Dave Furnish Name (typed)	Plant Manager Title
Dave Furnish Signature	11-20-24 Date

OAQ GENERAL SOURCE DATA APPLICATION
GSD-01: Basic Source Level Information

State Form 50640 (Revised)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Received
State of Indiana
NOV 15 2024 HC
Dept of Environmental Mgmt
Office of Air Quality

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of GSD-01 is to provide essential information about the entire source of air pollutant emissions. GSD-01 is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

PART A: Source / Company Location Information

1. **Source / Company Name**: JWA CO., LTD. | 2. **Plant ID**: 067 – 00096
3. **Location Address**: 1679 E Sparks Road
   City: Kokomo | **State**: IN | **ZIP Code**: 46901 –
4. **County Name**: Howard | 5. **Township Name**:
6. **Geographic Coordinates**:
   Latitude: 40.512739 | **Longitude**: -86.106332
7. **Universal Transferal Mercadum Coordinates** *(if known)*:
   Zone: | **Horizontal**: | **Vertical**:
8. **Adjacent States**: Is the source located within 50 miles of an adjacent state?
   ☒ No ☐ Yes – *Indicate Adjacent State(s):* ☐ Illinois (IL) ☐ Michigan (MI) ☐ Ohio (OH) ☐ Kentucky (KY)
9. **Attainment Area Designation**: Is the source located within a non-attainment area for any of the criteria air pollutants?
   ☒ No ☐ Yes – *Indicate Nonattainment Pollutant(s):* ☐ CO ☐ Pb ☐ NO_x ☐ O_3 ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ SO_2
10. **Portable / Stationary**: Is this a portable or stationary source? ☐ Portable ☒ Stationary

PART B: Source Summary

11. **Company Internet Address** *(optional)*:
12. **Company Name History**: Has this source operated under any other name(s)?
    ☒ No ☐ Yes – *Provide information regarding past company names in Part I, Company Name History.*
13. **Portable Source Location History**: Will the location of the portable source be changing in the near future?
    ☒ Not Applicable ☐ No ☐ Yes – *Complete Part J, Portable Source Location History, and Part K, Request to Change Location of Portable Source.*
14. **Existing Approvals**: Have any exemptions, registrations, or permits been issued to this source?
    ☐ No ☒ Yes – *List these permits and their corresponding emissions units in Part M, Existing Approvals.*
15. **Unpermitted Emissions Units**: Does this source have any unpermitted emissions units?
    ☒ No ☐ Yes – *List all unpermitted emissions units in Part N, Unpermitted Emissions Units.*
16. **New Source Review**: Is this source proposing to construct or modify any emissions units?
    ☐ No ☒ Yes – *List all proposed new construction in Part O, New or Modified Emissions Units.*
17. **Risk Management Plan**: Has this source submitted a Risk Management Plan?
    ☒ Not Required ☐ No ☐ Yes → Date submitted: EPA Facility Identifier: – –

Continued on Next Page

PART C: Source Contact Information

IDEM will send the original, signed permit decision to the person identified in this section. This person MUST be an employee of the permitted source.

18. Name of Source Contact Person: Tom Pritts

19. Title *(optional)*: EHS/ Logistics Manager

20. Mailing Address: 1510 North Matador Street

City: Peru	**State**: IN	**ZIP Code**: 46970 –

21. Electronic Mail Address *(optional)*: tpritts@jaewon.co.kr

22. Telephone Number: (574) 398 – 7406	**23. Facsimile Number** *(optional)*: ( ) –

PART D: Authorized Individual/Responsible Official Information

IDEM will send a copy of the permit decision to the person indicated in this section, if the Authorized Individual or Responsible Official is different from the Source Contact specified in Part C.

24. Name of Authorized Individual or Responsible Official: Dave Furnish

25. Title: Plant Manager

26. Mailing Address: 1510 North Matador Street

City: Peru	**State**: IN	**ZIP Code**: 46970 –

27. Telephone Number: (765) 689 – 2179	**28. Facsimile Number** *(optional)*: ( ) –

29. Request to Change the Authorized Individual or Responsible Official: Is the source officially requesting to change the person designated as the Authorized Individual or Responsible Official in the official documents issued by IDEM, OAQ? *The permit may list the title of the Authorized Individual or Responsible Official in lieu of a specific name.*

☒ No ☐ Yes – ***Change Responsible Official to:***

PART E: Owner Information

30. Company Name of Owner: JWA CO., LTD.

31. Name of Owner Contact Person: Junho Choi, General Manager

32. Mailing Address: 1510 North Matador Street

City: Peru	**State**: IN	**ZIP Code**: 46970 –

33. Telephone Number: (765) 689 – 2179	**34. Facsimile Number** *(optional)*: ( ) –

34. Operator: Does the "Owner" company also operate the source to which this application applies?

☐ No – *Proceed to Part F below.*	☒ Yes – *Enter "SAME AS OWNER" on line 35 and proceed to Part G below.*

PART F: Operator Information

35. Company Name of Operator: SAME AS OWNER

36. Name of Operator Contact Person:

37. Mailing Address:

City:	**State**:	**ZIP Code**: –

38. Telephone Number: ( ) –	**39. Facsimile Number** *(optional)*: ( ) –

Continued on Next Page

PART G: Agent Information

40. Company Name of Agent: Keramida Environmental, Inc.

41. Type of Agent: ☒ Environmental Consultant ☐ Attorney ☐ Other (specify):

42. Name of Agent Contact Person: John Wellspring

43. Mailing Address: 401 North College Avenue

City: Indianapolis	**State**: IN	**ZIP Code**: 46202 –

44. Electronic Mail Address *(optional)*: jwellspring@keramida.com

45. Telephone Number: (317) 631 – 9576	**46. Facsimile Number** *(optional)*: ( ) –

47. Request for Follow-up: Does the "Agent" wish to receive a copy of the preliminary findings during the public notice period (if applicable) and a copy of the final determination? ☐ No ☒ Yes

PART H: Local Library Information

48. Date application packet was filed with the local library: Within 10 days of application submittal

49. Name of Library: Kokomo-Howard County Public Library

50. Name of Librarian *(optional)*:

51. Mailing Address: 220 North Union Street

City: Kokomo	**State**: IN	**ZIP Code**: 46901 –

52. Internet Address *(optional)*:

53. Electronic Mail Address *(optional)*:

54. Telephone Number: ( ) –	**55. Facsimile Number** *(optional)*: ( ) –

PART I: Company Name History *(if applicable)*

Complete this section only if the source has previously operated under a legal name that is different from the name listed above in Section A.

56. Legal Name of Company	**57. Dates of Use**
	to
	to
	to
	to
	to
	to
	to
	to
	to
	to

58. Company Name Change Request: Is the source officially requesting to change the legal name that will be printed on all official documents issued by IDEM, OAQ?

☒ No ☐ Yes – ***Change Company Name to:***

Continued on Next Page

PART J: Portable Source Location History *(if applicable)*

Complete this section only if the source is portable and the location has changed since the previous permit was issued. The current location of the source should be listed in Section A.

59. Plant ID	60. Location of the Portable Source	61. Dates at this Location
–	NA	to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
–		to
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–		to
–		to
–		to
–		to
–		to
–		to
–		to

PART K: Request to Change Location of Portable Source *(if applicable)*

Complete this section to request a change of location for a portable source.

62. Current Location:

Address:		
City:	**State:**	**ZIP Code:** –
County Name:		

63. New Location:

Address:		
City:	**State:**	**ZIP Code:** –
County Name:		

Continued on Next Page

PART L: Source Process Description

Complete this section to summarize the main processes at the source.

64. Process Description	65. Products	66. SIC Code	67. NAICS Code
Organic Chemicals	NMP & TDS-L	2869	325199

PART M: Existing Approvals *(if applicable)*

Complete this section to summarize the approvals issued to the source since issuance of the main operating permit.

68. Permit ID	69. Emissions Unit IDs	70. Expiration Date
067-47041-00096	NMP-1, TDS-1, TOH-1, DEG-1, DFP-1, SD-1	2/20/2029
067-48344-00096	CS-1 (Pending Issuance)	Pending Issuance

PART N: Unpermitted Emissions Units *(if applicable)*

Complete this section only if the source has emission units that are not listed in any permit issued by IDEM, OAQ.

71. Emissions Unit ID	72. Type of Emissions Unit	73. Actual Dates		
		Began Construction	Completed Construction	Began Operation

PART O: New or Modified Emissions Units *(if applicable)*

Complete this section only if the source is proposing to add new emission units or modify existing emission units.

74. Emissions Unit ID	75. NEW	76. MOD	77. Type of Emissions Unit	78. Estimated Dates		
				Begin Construction	Complete Construction	Begin Operation
TDS-1 Trains 1-3	X	X	TDS-L Slurry Manufacturing Process	3/1/2025	5/1/2025	5/1/2025
DFP-2	X		Diesel Emergency Fire Pump	6/30/2024	12/1/2024	1/1/2025

OAQ GENERAL SOURCE DATA APPLICATION
GSD-02: Plant Layout Diagram

State Form 51605 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of GSD-02 is to provide a diagram of the entire plant site. This form and a Plant Layout diagram are required for all air permit applications. If you do not provide the necessary information, applicable to your source, the application process may be stopped.
- IDEM, OAQ has provided detailed instructions for this form and an example of a basic plant layout diagram on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Basic Plant Layout

Part A provides IDEM, OAQ with the appropriate information about all buildings and access-limiting features in and around the plant site. **Please use this table as a checklist.** You must provide scaled drawings, with the actual scale shown. All dimensions and units must be clearly indicated with a brief explanation of what is being shown. Include the following (*All measurements should be given in feet.*):

1.	☒ Building Location and Dimensions				
2.	☒ Property Lines and Access-Limiting Features				
3.	☒ Surrounding Building Location and Dimensions				
4.	☒ Distances to Property Lines and Access-Limiting Features				
5.	☒ UTM Location Coordinates	6.	☒ Compass (pointing North)	7.	☒ Scale

Part B: Stack Information

Part B provides IDEM, OAQ with the appropriate information about all stacks, roof monitors, control devices, and process vents at the plant site. **Please use this table as a checklist.** You must show the location of all applicable emission points and include all relevant stack and emissions unit identification numbers for each. In addition, you will need to identify each of these emission points under "Stack Identification" on form GSD-04, Stack/Vent Information. Include the following (*All measurements should be in feet.*):

8.	☐ Exhaust Stacks			
9.	☐ Process Vents			
10.	☐ Roof Monitors	☐ *No Roof Monitors*		
11.	☐ Control Devices	☐ *No Control Devices*		
12.	☐ Interior Vents	☐ *No Interior Vents*	☐ Doors and Windows *(for processes vented inside a building)*	

Part C: Roadway Information

Part C provides IDEM, OAQ with the appropriate information about the roadways in and around the plant site. **Please use this table as a checklist.** Include the following (*All measurements should be in feet.*):

13.	☒ Adjacent Roadways	☒ Interior Roadways
14.	☐ Roadway Surface Description (gravel, dirt, paved, etc.)	
15.	☐ Number of Lanes	

Continued on Next Page

Part D: Source Building Information

This table provides detailed information about each building at the plant site that is part of the source. If additional space is needed, you may make a copy of this table. (*All measurements should be given in feet.*)

16. Building ID	17. Building Description	18. Building Dimensions			19. Distance & direction to the nearest property line or access limiting feature (feet & compass coordinate)	20. Distance & direction to the nearest residence (feet & compass coordinate)
		Length (feet)	Width (feet)	Height (feet)		

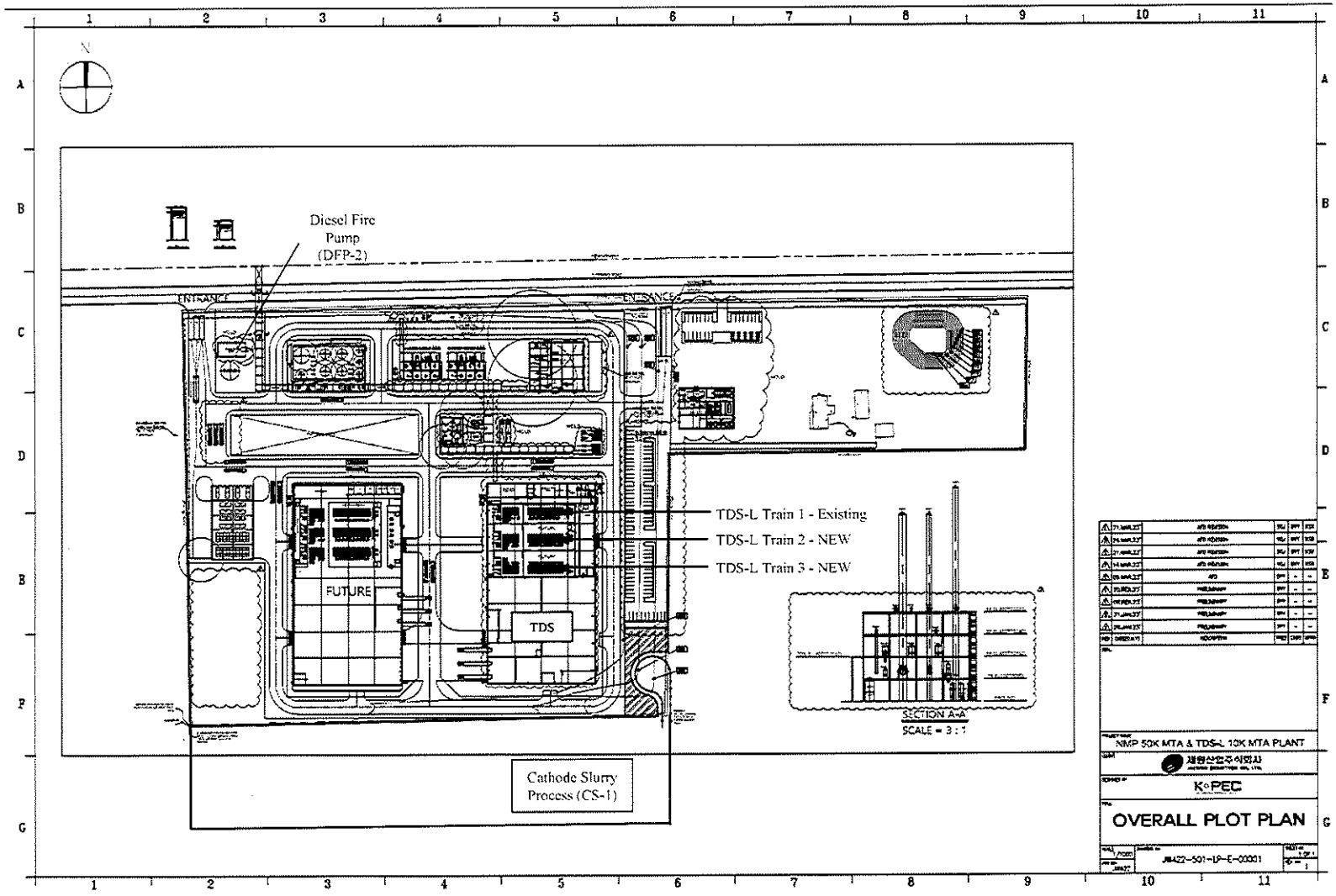
Continued on Next Page

Part E: Surrounding Building / Residence Information

This table provides detailed information about each building or residence surrounding the plant site. If additional space is needed, you may make a copy of this table. (*All measurements should be given in feet.*)

21. Surrounding Building / Residence Description	22. Surrounding Building / Residence Property Dimensions			23. Distance & direction to the nearest property line or access limiting feature (feet & compass coordinate)	24. Building ID of nearest building on the plant site	25. Distance & direction to the nearest building on the plant site (feet & compass coordinate)
	Length (feet)	Width (feet)	Height (feet)			

Continued on Next Page



NMP 50K MTA & TDS-L 10K MTA PLANT

K•PEC

OVERALL PLOT PLAN

JB422-501-LP-E-00001

OAQ GENERAL SOURCE DATA APPLICATION
GSD-03: Process Flow Diagram

State Form 51599 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of GSD-03 is to provide a checklist for identifying the information to be included on each Process Flow diagram.
- Complete this form and submit a process flow diagram for each process included in your air permit application.
- IDEM, OAQ has provided detailed instructions for this form and an example of a basic process flow diagram on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Process Flow Diagram

Part A provides basic information to understanding the nature of the process. Please use this table as a checklist to indicate that you have included the following items on your process flow diagram (*All throughputs should be given in pounds per hour.*):

1. ☒ **Process Description:** TDS-L Slurry Manufacture, Trains 2 and 3

2. ☒ Process Equipment	3. ☒ Raw Material Input	4. ☒ Process Throughput

5. ☐ Additions ☐ Deletions ☐ Modifications

Use the space below to briefly explain the impacts of the additional equipment, the reason for removing any equipment, and/or the reason for the proposed modification. (*If additional space is needed, please attach a separate sheet with the information and indicate in the space below that additional information is attached.*)

Part B: Process Operation Schedule

Part B indicates the actual (or estimated actual) hours of operation for the process.

6. ☒ Process Operation Schedule 24 Hours per Day 7 Days per Week 365 Weeks Per Year

7. **Scheduled Downtime:** Use the space below to include as much information as is known about scheduled periods of downtime for this process. (*If additional space is needed, please attach a separate sheet with the information and indicate in the space below that additional information is attached.*)

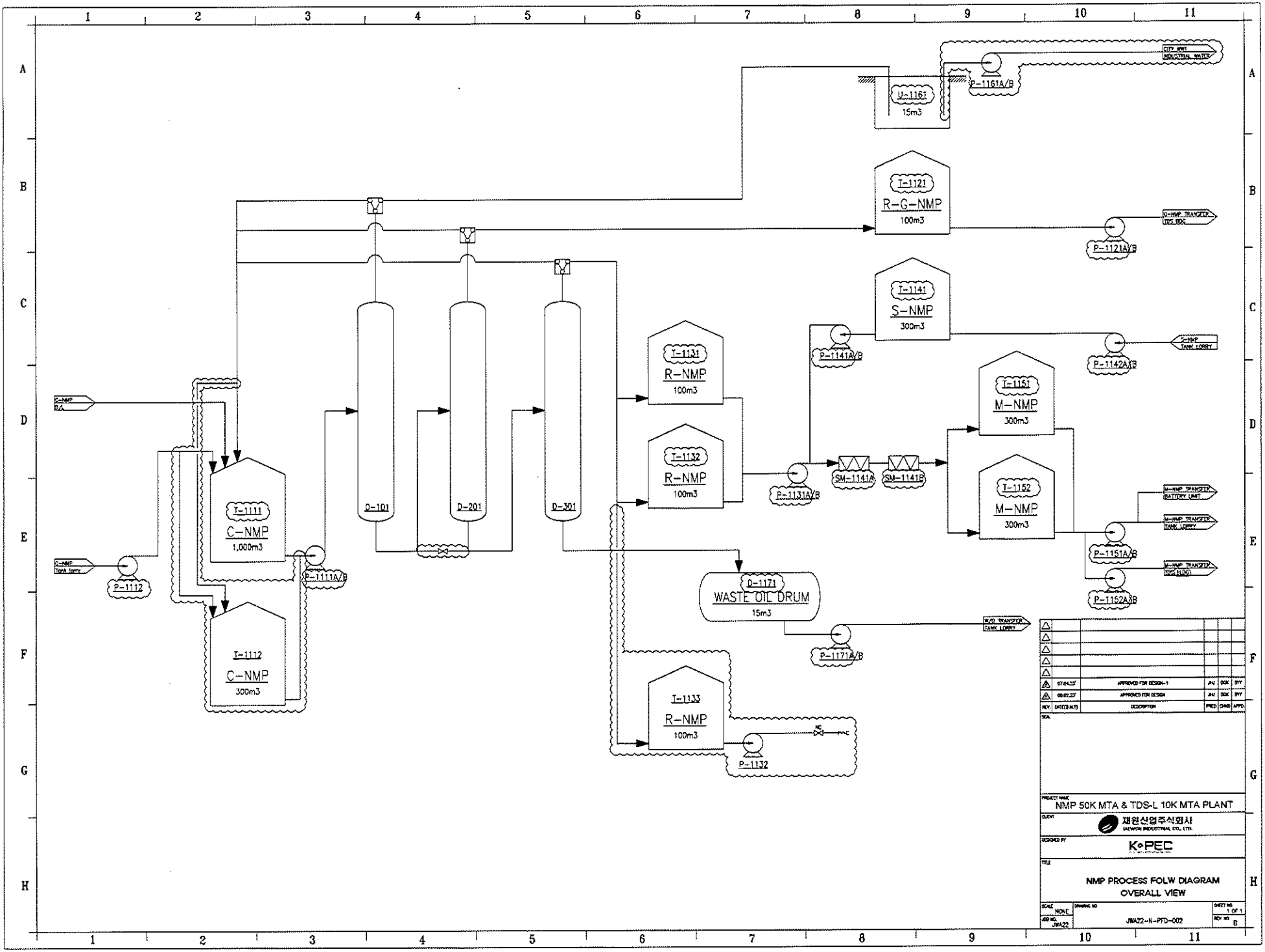
as needed

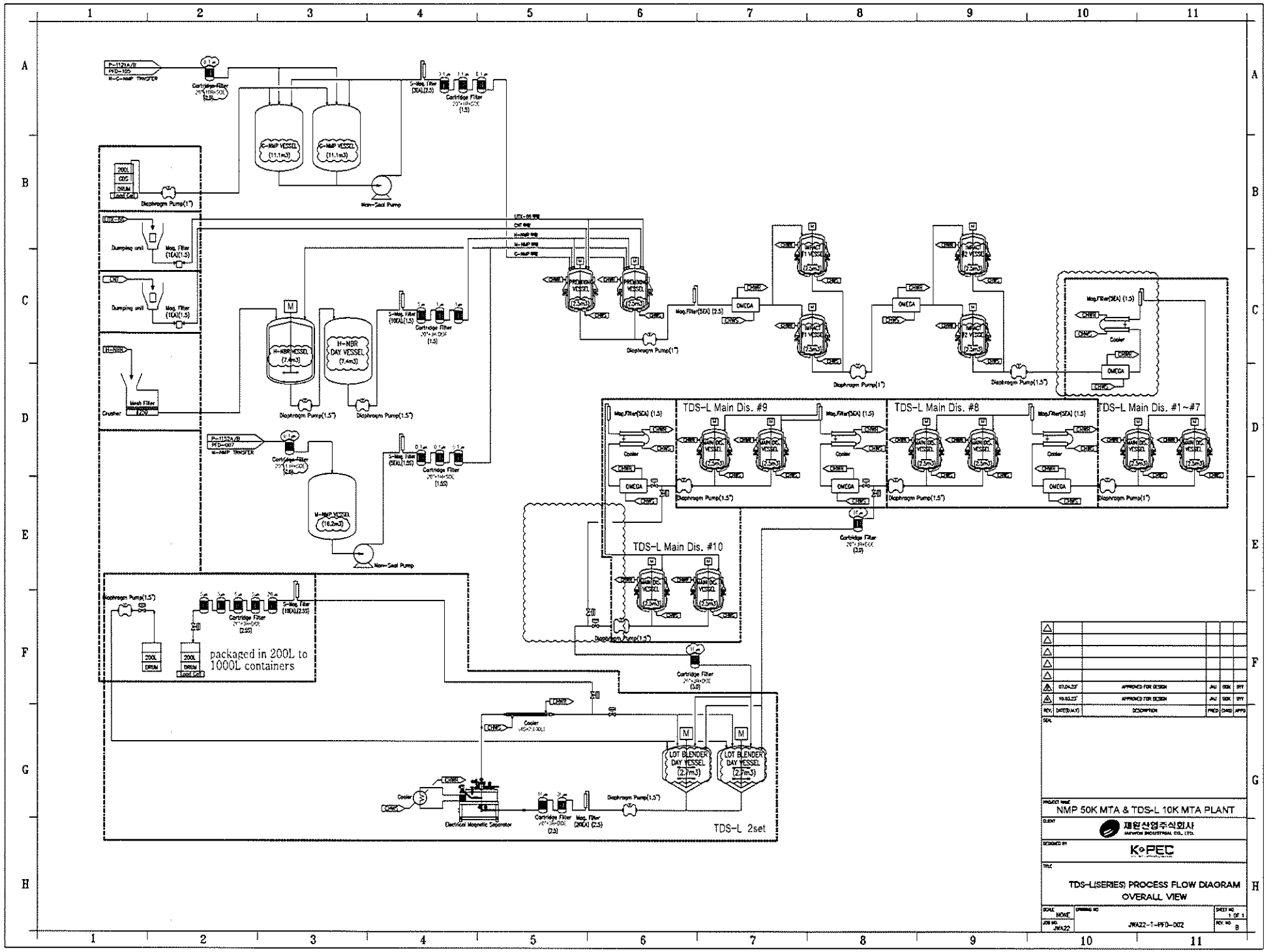
Part C: Emissions Point Information

Part C provides information about each potential outlet of air pollutant emissions to the atmosphere. Please use this table as a checklist to indicate that you have included the following items on your process flow diagram (*All throughputs should be given in pounds per hour.*):

8. ☒ Stack / Vent Information
9. ☒ Pollutants Emitted
10. ☒ Air Pollution Control

Continued on Next Page


T-1161
15m3
P-1161A/B
T-1121
R-G-NMP
100m3
P-1121A/B
T-1141
S-NMP
300m3
P-1141A/B
P-1142A/B
T-1131
R-NMP
100m3
T-1132
R-NMP
100m3
P-1131A/B
SM-1141A
SM-1141B
T-1151
M-NMP
300m3
T-1152
M-NMP
300m3
P-1151A/B
P-1152A/B
T-1111
C-NMP
1,000m3
P-1111A/B
P-1112
T-1112
C-NMP
300m3
D-101
D-201
D-301
D-1171
WASTE OIL DRUM
15m3
P-1171A/B
T-1133
R-NMP
100m3
P-1132
NMP 50K MTA & TDS-L 10K MTA PLANT
NMP PROCESS FOLW DIAGRAM
OVERALL VIEW
JWA22-N-PFD-002


C-NMP VESSEL (11.1m3)
C-NMP VESSEL (11.1m3)
Non-Seal Pump
Diaphragm Pump(1")
Dumping unit
Mag. Filter (10A)(1.5)
Dumping unit
Mag. Filter (10A)(1.5)
H-NBR VESSEL (7.4m3)
H-NBR DAY VESSEL (7.4m3)
Diaphragm Pump(1.5")
Diaphragm Pump(1.5")
Crusher
M-NMP VESSEL (10.2m3)
Non-Seal Pump
packaged in 200L to 1000L containers
Diaphragm Pump(1")
Diaphragm Pump(1")
Diaphragm Pump(1.5")
TDS-L Main Dis. #9
TDS-L Main Dis. #8
TDS-L Main Dis. #1~#7
TDS-L Main Dis. #10
Diaphragm Pump(1.5")
Diaphragm Pump(1.5")
Diaphragm Pump(1")
Diaphragm Pump(1.5")
LOT BLENDER DAY VESSEL (2.7m3)
LOT BLENDER DAY VESSEL (2.7m3)
Cooler
Electrical Magnetic Separator
Diaphragm Pump(1.5")
TDS-L 2set
NMP 50K MTA & TDS-L 10K MTA PLANT
제원산업주식회사
TDS-L(SERIES) PROCESS FLOW DIAGRAM
OVERALL VIEW
JWA22-1-PFD-002

OAQ GENERAL SOURCE DATA APPLICATION
GSD-04: Stack / Vent Information
State Form 51606 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to provide basic information about each stack or vent that has the potential to emit air pollutants. If you do not provide enough information to adequately describe each process vent and/or stack, the application process may be stopped. This form is required for all air permit applications.
- Detailed instructions for this form are available online on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Stack / Vent Information

This table provides detailed information about each stack or vent through which air pollutants could be released into the atmosphere. If an air stream is vented inside a building, the vent does not need to be listed on this form. If additional space is needed, you may make a copy of this form.

1. Stack / Vent ID	2. Type (V H W O)	3. Shape (C R O)	4. Outlet Dimensions (feet)	5. Height (feet)	6. Maximum Outlet Flow Rate (acfm)	7. Outlet Gas Temperature (Degrees F)	8. Related Stacks / Vents (B P O)
S-TDS-DC1	V	C	1.00	25.00	1900.00	72.0	
S-TDS-DC2	V	C	1.00	25.00	1900.00	72.0	
S-TDS-DC3	V	C	1.00	25.00	1900.00	72.0	
S-DFP-2	V	C	0.42	30.00	2500.00	300.0	

OAQ GENERAL SOURCE DATA APPLICATION
GSD-05: Emissions Unit Information

State Form 51610 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to provide basic information about each emissions unit that has the potential to emit air pollutants. This form is required for all air permit applications.
- Detailed instructions for this form are available online on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Emissions Unit Information

This table provides detailed information about each emissions unit that has the potential to emit air pollutants to the atmosphere. Accurate information is needed to determine the total potential to emit. If you do not provide enough information to adequately describe each emissions unit, the application process may be stopped. If additional space is needed, you may make a copy of this form.

1. Unit ID	2. Model Number	3. Serial Number	4. Description	5. Manufacturer	6. Installation Date	7. Maximum Capacity	8. Stack / Vent ID
TDS-1, Trains 2-3	TBD	TBD	TDS-L Slurry Manufacturing Blending/Mixing Process, Trains 2 & 3	TBD	3/1/2025	3.33 KMT/yr each	S-TDS-DC2 S-TDS-DC3
DFP-2	TBD	TBD	300 HP Diesel Emergency Fire Pump	TBD	12/1/2024	400.00 HP	S-DFP-2

OAQ GENERAL SOURCE DATA APPLICATION
GSD-06: Particulate Emissions Summary

State Form 51612 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to provide basic information about each source of particulate emissions. This form is required for all air permit applications.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Particulate Matter Emissions

Part A provides a summary of the type and amount of particulate emissions at the source. The state rules on particulate emissions are found in Title 326 of the Indiana Administrative Code, Article 6, Particulate Rules. If you do not provide enough information to adequately describe each source of particulate emissions, the application process may be stopped. If additional space is needed, you may make a copy of this table.

Emissions Point		Potential To Emit (tons per year)						
1. ID	2. Description	3. PM	4. PM-10	5. PM-2.5	6. TSP	7. Fugitive Dust	8. Fugitive PM	9. HAP PM
	SEE ATTACHED EMISSION CALCULATION SHEETS							

Continued on Next Page

Part B: Control of Particulate Emissions

Part C gathers information about how each source of particulate emissions is controlled. If you do not provide enough information to adequately describe how each source of particulate emissions is controlled, the application process may be stopped. If additional space is needed, you may make a copy of this table.

10. Emissions Point ID	11. Control Measure	12. Control Measure Description	13. Control Plan
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______
	☐ No Control ☐ Dust Suppression ☐ Other: ______		☐ Yes ☐ No Date Submitted: ______

Air Permitting Rules 326 IAC 6-4 and 326 IAC 6-5 require fugitive dust to be controlled as needed to prevent dust from visibly crossing property lines. Parts C and D summarize sources of fugitive particulate emissions from process operations and unpaved roads.

PART C: Fugitive Dust *(if applicable)*

Part C identifies measures implemented for controlling fugitive particulate emissions from process operations and unpaved roads.

14. Dust Control Plans: *Check all that apply.*	**15. Control Measures:**	
☐ Conveying:	☐ Wet	☐ Dry
☐ Stock Piles:	☐ Open	☐ Covered
☐ Unpaved Roads: *Watered?*	☐ Yes	☐ No
☐ Other *(specify)*:		
☐ Other *(specify)*:		
☐ Other *(specify)*:		

PART D: Vehicular Traffic on Unpaved Roads *(if applicable)*

Part D gathers information on vehicular traffic patterns when the site contains unpaved roads. All data should be provided assuming peak hours of vehicular traffic. Two one-way trips equal one round trip. For external traffic (vehicles entering and leaving the property lines), the distance from the plant to the property line is the one-way trip distance.

16. Average Silt Content of Unpaved Roads:

17. Vehicle Description	**18. Max. No. round trips at peak hours** (trips/hr)	**19. Distance of one-way trip** (miles/trip)	**20. Max. vehicle speed** (mph)	**21. Max. gross vehicle weight** *(fully loaded)* (tons)	**22. Tare weight** (tons)	**23. No. of wheels on vehicle** (wheels)

OAQ GENERAL SOURCE DATA APPLICATION
GSD-07: Criteria Pollutant Emissions Summary

State Form 51602 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to provide the actual and potential emissions of each criteria pollutant emitted from the source. This form is required for all air permit applications.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Unit Emissions Summary

Part A provides the actual and potential emissions of each criteria pollutant emitted from each emissions unit. If you do not provide enough information to adequately describe the emissions from each emissions unit, the application process may be stopped.

1. Unit ID	2. Stack / Vent ID	3. Criteria Pollutant	4. Actual Emissions		5. Potential To Emit	
			Standard Units	Tons Per Year	Standard Units	Tons Per Year
	SEE ATTACHED EMISSION CALCULATION SHEETS					

Continued on Next Page

Part B: Pollutant Emissions Summary

Part B provides the total actual and potential emissions of each criteria pollutant emitted from the source (including all emissions units and fugitive emissions at the source). If you do not provide enough information to adequately describe the total source emissions, the application process may be stopped.

6. Criteria Pollutant	7. Actual Emissions		8. Potential To Emit	
	Standard Units	Tons Per Year	Standard Units	Tons Per Year
Carbon Monoxide (CO)				
Lead (Pb)				
Nitrogen Oxides (NO_x)				
Particulate Matter (PM)				
Particulate Matter less than 10µm (PM_{10})				
Particulate Matter less than 2.5µm ($PM_{2.5}$)				
Sulfur Dioxide (SO_2)				
Volatile Organic Compounds (VOC)				
Other *(specify)*:				

Part C: Fugitive VOC Emissions *(if applicable)*

Part C summarizes the sources of fugitive VOC emissions at the source and estimates VOC emissions from these emission points. Complete this table if you are required to provide fugitive emissions data pursuant to 326 IAC 2-2 or 326 IAC 2-3.

9. Fugitive Emissions Source	10. Emission Factor (lb/hr)	11. Number Leaking	12. Uncontrolled Potential To Emit	
			Pounds Per Hour	Tons Per Year
Compressor Seals				
Flanges				
Open-Ended Lines				
Pressure Relief Seals				
Pump Seals				
Sampling Connections				
Valves				
Other *(specify)*:				

OAQ GENERAL SOURCE DATA APPLICATION
GSD-08: Hazardous Air Pollutant Emissions Summary

State Form 51604 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to provide the actual and potential emissions of each hazardous air pollutant emitted from the source. This form is required for all air permit applications.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Unit Emissions Summary

Part A provides the actual and potential emissions of each hazardous air pollutant emitted from each emissions unit. If you do not provide enough information to adequately describe the emissions from each emissions unit, the application process may be stopped.

1. Unit ID	2. Stack / Vent ID	3. Hazardous Air Pollutant	4. CAS Number	5. Actual Emissions		6. Potential To Emit	
				Standard Units	Tons Per Year	Standard Units	Tons Per Year
		SEE ATTACHED EMISSION CALCULATION SHEETS					

Continued on Next Page

Part B: Pollutant Emissions Summary

Part B provides the total actual and potential emissions of each hazardous air pollutant emitted from the source (including all emissions units and fugitive emissions at the source). If you do not provide enough information to adequately describe the total source emissions, the application process may be stopped.

7. Hazardous Air Pollutant	8. CAS Number	9. Actual Emissions		10. Potential To Emit	
		Standard Units	Tons Per Year	Standard Units	Tons Per Year

Part C: Fugitive HAP Emissions *(if applicable)*

Part C summarizes the sources of fugitive HAP emissions at the source and estimates HAP emissions from these emission points. Complete this table if you are required to provide fugitive emissions data pursuant to 326 IAC 2-2 or 326 IAC 2-3.

11. Fugitive Emissions Source	12. Hazardous Air Pollutant	13. Emission Factor (lb/hr)	14. Number Leaking	15. Uncontrolled Potential To Emit	
				Pounds Per Hour	Tons Per Year
Compressor Seals					
Flanges					
Open-Ended Lines					
Pressure Relief Seals					
Pump Seals					
Sampling Connections					
Valves					
Other *(specify)*:					

OAQ GENERAL SOURCE DATA APPLICATION
GSD-10: Insignificant Activities

State Form 51596 (R4 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to identify all trivial and insignificant activities in operation at the source. This form is required for all air permit applications.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Part A: Trivial Activities (Optional)

Part A identifies all trivial activities in operation at the source as defined in 326 IAC 2-7-1(40). **Please use this table as a checklist.** Check each item and sub-item that applies. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Trivial Activity	Citation (326 IAC)
	1. Any activity or emission unit:	2-7-1(40)(A)
	☐ not regulated by a NESHAP, with potential uncontrolled emissions are equal to or less than one (1) pound per day on an emission unit basis for any single HAP or combination of HAPs; and	
	☐ for which the potential uncontrolled emissions meet the exemption levels specified in the following:	
	☐ For lead and lead compounds measured as elemental lead (Pb), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
	☐ For carbon monoxide (CO), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
	☐ For sulfur dioxide (SO_2), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
	☐ For volatile organic compounds (VOC), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
	☐ For nitrogen oxides (NO_X), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
	☐ For particulate matter with an aerodynamic diameter less than or equal to ten (10) micrometers (PM_{10}), potential uncontrolled emissions that are equal to or less than one (1) pound per day	
X	2. Water related activities including:	2-7-1(40)(B)
	☒ Production of hot water for on-site personal use not related to any industrial or production process	
	☒ Water treatment activities used to provide potable and process water for the plant, excluding any activities associated with wastewater treatment	
	☒ Steam traps, vents, leaks and safety relief valves	
	☐ Cooling ponds	
	☐ Laundry operations using only water solutions of bleach or detergents	
	☐ Demineralized water tanks and demineralizer vents	
	☐ Boiler water treatment operations, not including cooling towers	
	☐ Oxygen scavenging (de-aeration) of water	
	☐ Steam cleaning operations and steam sterilizers	
	☐ Pressure washing of equipment	
	☐ Water jet cutting operations	

Continued on Next Page

Part A: Trivial Activities (continued)

Part A identifies all trivial activities in operation at the source as defined in 326 IAC 2-7-1(40). **Please use this table as a checklist.** Check each item and sub-item that applies. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Trivial Activity	Citation (326 IAC)
X	3. Combustion activities including the following:	2-7-1(40)(C)
	☐ Portable electrical generators that can be moved by hand from one location to another. "Moved by hand" means that it can be moved without the assistance of any motorized or non-motorized vehicle, conveyance, or device	
	☒ Combustion emissions from propulsion of mobile sources	
	☐ Fuel use related to food preparation for on-site consumption	
	☐ Tobacco smoking rooms and areas	
	☐ Blacksmith forges	
	☐ Indoor and outdoor kerosene heaters	
X	4. Activities related to ventilation, venting equipment and refrigeration, including the following:	2-7-1(40)(D)
	☒ Ventilation exhaust, central chiller water systems, refrigeration and air conditioning equipment, not related to any industrial or production process, including natural draft hoods or ventilating systems that do not remove air pollutants	
	☒ Stack and vents from plumbing traps used to prevent the discharge of sewer gases, handling domestic sewage only, excluding those at wastewater treatment plants or those handling any industrial waste	
	☐ Vents from continuous emissions monitors and other analyzers	
	☒ Natural gas pressure regulator vents, excluding venting at oil and gas production facilities	
	☒ Air vents from air compressors	
	☐ Vents for air cooling of electric motors provided the air does not commingle with regulated air pollutants	
	☐ Vents from equipment used to air blow water from cooled plastics strands or sheets	
X	5. Activities related to routine fabrication, maintenance and repair of buildings, structures, equipment or vehicles at the source where air emissions from those activities would not be associated with any commercial production process including the following:	2-7-1(40)(E)
	☒ Activities associated with the repair and maintenance of paved and unpaved roads, including paving or sealing, or both, of parking lots and roadways	
	☒ Painting, including interior and exterior painting of buildings, and solvent use, excluding degreasing operations utilizing halogenated organic solvents	
	☒ Brazing, soldering, or welding operations and associated equipment	
	☐ Portable blast-cleaning equipment with enclosures	
	☐ Blast-cleaning equipment using water as the suspension agent and associated equipment	
	☒ Batteries and battery charging stations, except at battery manufacturing plants	
	☐ Lubrication, including hand-held spray can lubrication, dipping metal parts into lubricating oil, and manual or automated addition of cutting oil in machining operations	
	☒ Non-asbestos insulation installation or removal	
	☒ Tarring, retarring and repair of building roofs	
	☐ Bead blasting of heater tubes	
	☒ Instrument air dryer and filter maintenance	
	☒ Manual tank gauging	
	☐ Open tumblers associated with deburring operations in maintenance shops	

Continued on Next Page

Part A: Trivial Activities (continued)

Part A is intended to identify all trivial activities in operation at the source as defined in 326 IAC 2-7-1(40). **Please use this table as a checklist.** Check each item and sub-item that applies. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Trivial Activity	Citation (326 IAC)
	6. Activities performed using hand-held equipment including the following:	2-7-1(40)(F)
	☐ Application of hot melt adhesives with no VOC in the adhesive formulation ☐ Cutting, excluding cutting torches ☐ Buffing ☐ Grinding ☐ Sanding ☐ Machining wood, metal, or plastic ☐ Carving ☐ Polishing ☐ Sawing ☐ Turning wood, metal, or plastic ☐ Drilling ☐ Routing ☐ Surface grinding	
X	7. Housekeeping and janitorial activities and supplies including the following:	2-7-1(40)(G)
	☐ Vacuum cleaning systems used exclusively for housekeeping or custodial activities, or both	
	☐ Steam cleaning activities	
	☒ Rest rooms and associated cleanup operations and supplies	
	☐ Alkaline or phosphate cleaners and associated equipment	
	☒ Mobile floor sweepers and floor scrubbers	
	☐ Pest control fumigation	
X	8. Office related activities including the following:	2-7-1(40)(H)
	☒ Office supplies and equipment	
	☒ Photocopying equipment and associated supplies	
	☒ Paper shredding	
	☐ Blueprint machines, photographic equipment, and associated supplies	
X	9. Lawn care and landscape maintenance activities and equipment, including the storage, spraying or application of insecticides, pesticides and herbicides	2-7-1(40)(I)
	10. Storage equipment and activities including:	2-7-1(40)(J)
X	☒ Pressurized storage tanks and associated piping for the following:	
	☐ Acetylene ☒ Inorganic compounds ☐ Natural gas ☐ Anhydrous ammonia ☐ Liquid petroleum gas (LPG) ☒ Nitrogen dioxide ☐ Carbon Monoxide ☐ Liquid natural gas (LNG) (propane) ☐ Sulfur dioxide ☐ Chlorine	
X	☒ Storage tanks, vessels, and containers holding or storing liquid substances that do not contain any VOC or HAP	
X	☒ Storage tanks, reservoirs, and pumping and handling equipment of any size containing soap, wax, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized	
X	☒ Storage of drums containing maintenance raw materials	
X	☒ Storage of the following:	
	☐ Castings	
	☐ Lance rods	
	☒ Any non-HAP containing material in solid form stored in a sealed or covered container	
X	☒ Portable containers used for the collection, storage, or disposal of materials provided the container capacity is equal to or less than forty-six hundredths (0.46) cubic meters and the container is closed except when the material is added or removed	

Continued on Next Page

Part A: Trivial Activities (continued)

Part A identifies to identify all trivial activities in operation at the source as defined in 326 IAC 2-7-1(40). **Please use this table as a checklist.** Check each item and sub-item that applies. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Trivial Activity	Citation (326 IAC)
X	11. Emergency and standby equipment including:	2-7-1(40)(K)
	☐ Emergency (backup) electrical generators at residential locations, such as dormitories, prisons and hospitals.	
	☐ Safety and emergency equipment, except engine driven fire pumps, including fire suppression systems and emergency road flares.	
	☒ Process safety relief devices installed solely for the purpose of minimizing injury to persons or damage to equipment which could result from abnormal process operating conditions, including the following:	
	☒ Explosion relief vents, diaphragms or panels ☒ Rupture discs ☒ Safety relief valves	
	☐ Activities and equipment associated with on-site medical care not otherwise specifically regulated	
	☐ Vacuum producing devices for the purpose of removing potential accidental releases	
X	12. Sampling and testing equipment and activities including the following:	2-7-1(40)(L)
	☒ Equipment used for quality control/assurance or inspection purposes, including sampling equipment used to withdraw materials for analysis	
	☐ Hydraulic and hydrostatic testing equipment	
	☐ Ground water monitoring wells and associated sample collection equipment	
	☐ Environmental chambers not using hazardous air pollutant (HAP) gases	
	☐ Shock chambers	
	☐ Humidity chambers	
	☐ Solar simulators	
	☒ Sampling activities including	
	☒ Sampling of waste ☐ Glove box sampling, charging, and packaging	
	☒ Instrument air dryers and distribution	
X	13. Use of consumer products and equipment where the product or equipment is used at a source in the same manner as normal consumer use and is not associated with any production process	2-7-1(40)(M)
	14. Equipment and activities related to the handling, treating, and processing of animals including:	2-7-1(40)(N)
	☐ Equipment used exclusively to slaughter animals, but not including the following: Rendering cookers, Boilers, Heating plants, Incinerators, and/or Electrical power generating equipment	
	☐ Veterinary operating rooms	
X	15. Activities generating limited amounts of fugitive dust including:	2-7-1(40)(O)
	☒ Fugitive emissions related to movement of passenger vehicles, provided the emissions are not counted for applicability purposes under 326 IAC 2-7-1(22)(B), and any required fugitive dust control plan or its equivalent is submitted	
	☐ Soil boring	
	☒ Road salting and sanding	

Continued on Next Page

Part A: Trivial Activities (continued)

Part A identifies all trivial activities in operation at the source as defined in 326 IAC 2-7-1(40). **Please use this table as a checklist.** Check each item and sub-item that applies. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Trivial Activity	Citation (326 IAC)
X	16. Activities associated with production including the following:	2-7-1(40)(P)
	☐ Closed, non-vented, tumblers used for cleaning or deburring metal products without abrasive blasting	
	☐ Electrical resistance welding	
	☐ CO_2 lasers, used only on metals and other materials which do not emit HAPs in the process	
	☐ Laser trimmers which do not produce fugitive emissions and are equipped with dust collection devices such as bag filter, cyclone, or equivalent device	
	☐ Application equipment for hot melt adhesives with no VOC in the adhesive formulation	
	☐ Drop hammers or hydraulic presses for forging or metalworking	
	☒ Air compressors and pneumatically operated equipment, including hand tools	
	☐ Compressor or pump lubrication and seal oil systems	
	☐ Equipment used to mix and package soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions, provided appropriate lids and covers are utilized	
	☐ Equipment for washing or drying fabricated glass or metal products, if no VOCs or HAPs are used in the process, and no gas, oil or solid fuel is burned	
	☐ Handling of solid steel, including coils and slabs, excluding scrap burning, scarfing, and charging into steel making furnaces and vessels	
X	17. Miscellaneous equipment, but not emissions associated with the process for which the equipment is used, and activities including the following:	2-7-1(40)(Q)
	☐ Equipment used for surface coating, painting, dipping or spraying operation, except those that will emit VOCs or HAPs	
	☐ Condensate drains for natural gas and landfill gas	
	☐ Electric or steam heated drying ovens and autoclaves, including only the heating emissions and not any associated process emissions	
	☐ Salt baths using nonvolatile salts including caustic solutions that do not result in emissions of any regulated air pollutants	
	☐ Ozone generators	
	☐ Portable dust collectors	
	☐ Scrubber systems circulating water based solutions of inorganic salts or bases which are installed to be available for response to emergency situations	
	☐ Soil borrow pits	
	☐ Manual loading and unloading operations	
	☐ Purging of refrigeration devices using a combination of nitrogen and CFC-22 (R-22) as pressure test media	
	☒ Construction and demolition operations	
	☐ Mechanical equipment gear boxes and vents which are isolated from process materials	
	☐ Non-volatile mold release waxes and agents	

Continued on Next Page

Part B: Insignificant Activities

Part B identifies all insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21)(G). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity	Citation (326 IAC)
X	18. Combustion related activities, including the following:	2-7-1(21)(G)(i)
	☐ Space heaters, process heaters, or boilers using the following fuels	
	☐ Natural gas-fired combustion sources with heat input equal to or less than ten million (10,000,000) Btu per hour	
	☐ Propane or liquified petroleum gas, or butane-fired combustion sources with heat input equal to or less than six million (6,000,000) Btu per hour	
	☐ Fuel oil-fired combustion sources with heat input equal to or less than two million (2,000,000) Btu per hour and firing fuel containing less than five-tenths percent (0.5%) sulfur by weight	
	☐ Wood-fired combustion sources with heat input equal to or less than one million (1,000,000) Btu per hour and not burning wood refuse, treated wood or chemically contaminated wood	
	☐ Equipment powered by diesel fuel fired or natural gas fired internal combustion engines of capacity equal to or less than five hundred thousand (500,000) Btu/hour, except where total capacity of equipment operated by one stationary source exceeds two million (2,000,000) Btu/hour	
	☐ Combustion source flame safety purging on startup	
	19. Fuel dispensing activities, including the following:	2-7-1(21)(G)(ii)
	☐ A gasoline fuel transfer dispensing operation handling less than or equal to one thousand three hundred (1,300) gallons per day and filling storage tanks having a capacity equal to or less than ten thousand five hundred (10,500) gallons. Such storage tanks may be in a fixed location or on mobile equipment	
	☐ A petroleum fuel, other than gasoline, dispensing facility, having a storage tank capacity less than or equal to ten thousand five hundred (10,500) gallons, and dispensing three thousand five hundred (3,500) gallons per day or less	
X	20. The following VOC and HAP storage containers:	2-7-1(21)(G)(iii)
	☒ Storage tanks with capacity less than or equal to one thousand (1,000) gallons and annual throughputs less than twelve thousand (12,000) gallons	
	☐ Vessels storing the following:	
	☐ Hydraulic oils ☐ Lubricating oils ☐ Machining oils ☐ Machining fluids	
	21. Refractory storage not requiring air pollution control equipment	2-7-1(21)(G)(iv)
	22. Equipment used exclusively for the following	2-7-1(21)(G)(v)
	☐ Packaging the following: ☐ Greases ☐ Lubricants	
	☐ Filling drums, pails or other packaging containers with the following:	
	☐ Greases ☐ Lubricating oils ☐ Waxes	

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Part B: Insignificant Activities (continued)

Part B identifies all insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21)(G). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity	Citation (326 IAC)
X	23. Production related activities, including the following:	2-7-1(21)(G)(vi)
	☐ Application of the following as temporary protective coatings:	
	☐ Greases ☐ Lubricants ☐ Nonvolatile materials ☐ Oils	
	☐ Machining where an aqueous cutting coolant continuously floods the machining interface	
	☐ Degreasing operations that do not exceed one hundred forty-five (145) gallons per twelve (12) months, except if subject to 326 IAC 20-6	
	☐ Cleaners and solvents characterized as follows where the use of which, for all cleaners and solvents combined, does not exceed one hundred forty-five (145) gallons per twelve (12) months	
	☐ Having a vapor pressure equal to or less than two kilo Pascals (2.0 kPa) (fifteen millimeters of mercury (15 mm Hg) or three-tenths pound per square inch (0.3 psi)) measured at thirty-eight degrees Centigrade (38°C) (one hundred degrees Fahrenheit (100°F))	
	☐ Having a vapor pressure equal to or less than seven-tenths kilo Pascals (0.7 kPa) (five millimeters of mercury (5 mm Hg) or one-tenth pound per square inch (0.1 psi)) measured at twenty degrees Centigrade (20°C) (sixty-eight degrees Fahrenheit (68°F))	
	☐ The following equipment related to manufacturing activities not resulting in the emission of HAPs:	
	☐ Brazing equipment ☐ Cutting torches ☐ Soldering equipment ☐ Welding equipment	
X	☒ Closed loop heating and cooling systems	
	☐ Infared cure equipment	
	☐ Exposure chambers (towers or columns) for curing of ultraviolet inks and ultra-violet coatings where heat is the intended discharge	
	☐ Any of the following structural steel and bridge fabrication activities:	
	☐ Cutting two hundred thousand (200,000) linear feet or less of one (1) inch plate or equivalent	
	☐ Using eighty (80) tons or less of welding consumables	
	24. Activities associated with the following recovery systems:	2-7-1(21)(G)(vii)
	☐ Rolling oil recovery systems	
	☐ Groundwater oil recovery wells	
	25. Solvent recycling systems with batch capacity less than or equal to one hundred (100) gallons	2-7-1(21)(G)(viii)

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Part B: Insignificant Activities (continued)

Part B is intended to identify all insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21)(G). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity	Citation (326 IAC)
X	26. Water-based activities, including the following:	2-7-1(21)(G)(ix)
	☐ Activities associated with the treatment of wastewater streams with an oil and grease content less than or equal to one percent (1%) by volume	
	☐ Water runoff ponds for petroleum coke-cutting and coke storage piles	
	☐ Activities associated with the transportation and treatment of sanitary sewage, provided discharge to the treatment plant is under the control of the owner/operator, that is, an on-site sewage treatment facility	
	☐ Any operation using aqueous solutions containing less than one percent (1%) by weight of VOCs excluding HAPs	
	☐ Water based adhesives that are less than or equal to five percent (5%) by volume of VOCs excluding HAPs	
CT-1,2	☒ Noncontact cooling tower systems with either of the following:	
	☐ Natural draft cooling towers not regulated under a NESHAP	
	☒ Forced and induced draft cooling tower systems not regulated under a NESHAP	
	☐ Quenching operations used with heat treating processes	
X	27. Repair activities, including the following:	2-7-1(21)(G)(x)
	☒ Replacement or repair of electrostatic precipitators, bags in baghouses and filters in other air filtration equipment	
	☒ Heat exchanger cleaning and repair	
	☒ Process vessel degassing and cleaning to prepare for internal repairs	
	28. Trimmers that do not produce fugitive emissions and that are equipped with a dust collection or trim material recovery device, such as a bag filter or cyclone	2-7-1(21)(G)(xi)
	29. Stockpiled soils from soil remediation activities that are covered and waiting transport for disposal	2-7-1(21)(G)(xii)
PRF-1	30. Paved and unpaved roads and parking lots with public access	2-7-1(21)(G)(xiii)
	31. Conveyors as follows:	2-7-1(21)(G)(xiv)
	☐ Covered conveyors for solid raw material, including the following:	
	☐ Coal or coke conveying of less than or equal to three hundred sixty (360) tons per day	
	☐ Limestone conveying of less than or equal to seven thousand two hundred (7,200) tons per day for sources other than mineral processing plants constructed after August 31, 1983	
	☐ Uncovered coal or coke conveying of less than or equal to one hundred twenty (120) tons per day	
	☐ Underground conveyors	
	☐ Enclosed systems for conveying plastic raw materials and plastic finished goods	
	32. Coal bunker and coal scale exhausts and associated dust collector vents	2-7-1(21)(G)(xv)
	33. Asbestos abatement projects regulated by 326 IAC 14-10	2-7-1(21)(G)(xvi)

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Part B: Insignificant Activities (continued)

Part B is intended to identify all insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21)(G). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity	Citation (326 IAC)
X	34. Routine maintenance and repair of buildings, structures, or vehicles at the source where air emissions from those activities would not be associated with any production process, including the following:	2-7-1(21)(G)(xvii)
	☐ Purging of gas lines ☐ Purging of vessels	
	35. Flue gas conditioning systems and associated chemicals such as the following:	2-7-1(21)(G)(xviii)
	☐ Sodium sulfate ☐ Ammonia ☐ Sulfur trioxide.	
X	36. Equipment used to collect any material that might be released during a malfunction, process upset, or spill cleanup, including the following:	2-7-1(21)(G)(xix)
	☐ Catch tanks ☐ Temporary liquid separators ☐ Tanks ☒ Fluid handling equipment	
X	37. Blowdown for the following:	2-7-1(21)(G)(xx)
	☐ Sight glass ☒ Boiler ☒ Compressors ☐ Pumps ☒ Cooling tower	
	38. Furnaces used for melting metals other than beryllium with a brim full capacity of less than or equal to four hundred fifty (450) cubic inches by volume	2-7-1(21)(G)(xxi)
X	39. Activities associated with emergencies, including the following:	2-7-1(21)(G)(xxii)
	☐ On-site fire training approved by the IDEM	
DEG-1	☒ Emergency generators as follows:	
	☐ Gasoline generators not exceeding one hundred ten (110) horsepower	
	☒ Diesel generators not exceeding one thousand six hundred (1,600) horsepower	
	☐ Natural gas turbines or reciprocating engines not exceeding sixteen thousand (16,000) horsepower	
DFP-2	☒ Stationary fire pump engines	
	40. Grinding and machining operations controlled with fabric filters, scrubbers, mist collectors, wet collectors and electrostatic precipitators with a design grain loading of less than or equal to three one-hundredths grains per actual cubic foot (0.03 gr/acf) and a gas flow rate less than or equal to four thousand actual cubic feet per minute (4,000 acf/min), including the following:	2-7-1(21)(G)(xxiii)
	☐ Deburring ☐ Polishing ☐ Pneumatic conveying ☐ Buffing ☐ Abrasive blasting ☐ Woodworking operations	
X	41. Purge double block and bleed valves	2-7-1(21)(G)(xxiv)
X	42. Filter or coalescer media changeout	2-7-1(21)(G)(xxv)
	43. Vents from ash transport systems not operated at positive pressure	2-7-1(21)(G)(xxvi)
	44. Mold release agents using low volatile products (vapor pressure less than or equal to two kilo Pascals (2kPa) measured at thirty-eight degrees Centigrade (38°C)	2-7-1(21)(G)(xxvii)
	45. Farm operations	2-7-1(21)(G)(xviii)

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Part B: Insignificant Activities (continued)

Part B identifies all insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21)(G). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity	Citation (326 IAC)
	46. Woodworking equipment controlled by a baghouse provided that the following criteria are met:	2-7-1(21)(G)(xxix)
	☐ The baghouse does not exhaust to the atmosphere greater than one hundred twenty-five thousand (125,000) cubic feet per minute	
	☐ The baghouse does not emit particulate matter with a diameter less than ten (10) microns in excess of three-thousandths grains per dry standard cubic feet (0.003 gr/dscf) of outlet air	
	☐ Opacity from the baghouse does not exceed ten percent (10%)	
	☐ The baghouse is in operation at all times the woodworking equipment is in use	
	☐ Visible emissions from the baghouse are observed daily using procedures in accordance with 40 CFR 60, Appendix A, Method 22 and normal or abnormal emissions are recorded. In the event abnormal emissions are observed for greater than six (6) minutes in duration, the following shall occur:	
	☐ The baghouse shall be inspected	
	☐ Corrective actions, such as replacing or reseating bags, are initiated, when necessary	
	☐ The baghouse is inspected quarterly when vented to the atmosphere	
	☐ The owner or operator keeps the following records:	
	☐ Records documenting the date when the baghouse redirected indoors or to the atmosphere	
	☐ Quarterly inspection reports, when vented to the atmosphere	
	☐ Visible observation reports	
	☐ Records of corrective actions	
	47. Woodworking equipment controlled by a baghouse provided that the following criteria are met:	2-7-1(21)(G)(xxx)
	☐ The baghouse does not exhaust to the atmosphere greater than forty thousand (40,000) cubic feet per minute	
	☐ The baghouse does not emit particulate matter with a diameter less than ten (10) microns in excess of one-hundredth grains per dry standard cubic feet (0.01 gr/dscf) of outlet air	
	☐ Opacity from the baghouse does not exceed ten percent (10%)	
	☐ The baghouse is in operation at all times the woodworking equipment is in use	
	☐ Visible emissions from the baghouse are observed daily using procedures in accordance with 40 CFR 60, Appendix A, Method 22 and normal or abnormal emissions are recorded. In the event abnormal emissions are observed for greater than six (6) minutes in duration, the following shall occur:	
	☐ The baghouse shall be inspected	
	☐ Corrective actions, such as replacing or reseating bags, are initiated, when necessary	
	☐ The baghouse is inspected quarterly when vented to the atmosphere	
	☐ The owner or operator keeps the following records:	
	☐ Records documenting the date when the baghouse redirected indoors or to the atmosphere	
	☐ Quarterly inspection reports, when vented to the atmosphere	
	☐ Visible observation reports	
	☐ Records of corrective actions	

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Part C: Insignificant Laboratory, Research, and Educational Activities

Part C identifies insignificant activities in operation at the source as defined in 326 IAC 2-7-1(21), paragraph (D), (E), or (F). **Please use this table as a checklist.** Indicate which activities are present by checking the appropriate box. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Unit ID	Description of Insignificant Activity
LAB-1	48. ☒ Emissions from a laboratory as defined in 2-7-1(21)(D).
	49. ☐ Emissions from research and development activities as defined in 2-7-1(21)(E).
	50. ☐ Emissions from educational and teaching activities as defined in 2-7-1(21)(F).

Part D: Other Insignificant Activities

Part D identifies all other insignificant activities in operation at the source (as defined in 326 IAC 2-7-1(21), paragraphs (A) and (B) as those activities with potential uncontrolled emissions equal to or less than the thresholds listed below) that are not identified above in Parts A, B, or C. If applicable, provide the Emissions Unit Identification number that corresponds to the Plant Layout and Process Flow diagrams.

Carbon Monoxide (CO) ≤ 25 lb/day	Particulate Matter with aerodynamic diameter ≤ 10μm (PM_{10}) ≤ 5 lbs/hr or 25 lb/day
Lead (Pb) ≤ 0.6 ton/yr or 3.29 lb/day	Sulfur Dioxide (SO_2) ≤ 5 lbs/hr or 25 lb/day
Nitrogen Oxides (NO_x) ≤ 5 lbs/hr or 25 lb/day	Volatile Organic Compounds (VOC) ≤ 3 lbs/hr or 15 lb/day

51. **Other Insignificant Activities**: Identify any "other activities", and provide a brief description.

Unit ID	Description of Other Activity
DFP-2	Diesel Emergency Fire Pump, 400 HP

Continued on Next Page

Part E: Insignificant Activities with HAP Emissions

Part D identifies all insignificant activities in operation at the source (as defined in 326 IAC 2-7-1(21)(C)) that have the potential to emit hazardous air pollutants (HAP). These activities may or may not be identified above in Parts A, B, or D. **Activities listed in Part C above, need not be listed in this section.** Indicate which type of "Insignificant HAP Activities" are present by checking the appropriate box, and provide a brief description.

52. **Individual HAP Emissions**:
Identify any emissions unit, not regulated by a NESHAP, emitting greater than 1 pound per day but less than 5 pounds per day or 1 ton per year of a single HAP.

Emissions Unit	HAP	Brief Description	Applicable Requirements

53. **Combination HAP Emissions**:
Identify any emissions unit, not regulated by a NESHAP, emitting greater than 1 pound per day but less than 12.5 pounds per day or 2.5 ton per year of a combination of HAPs.

Emissions Unit	HAPs	Brief Description	Applicable Requirements

Continued on Next Page

Part E: Specifically Regulated Insignificant Activities

Part E identifies all specifically regulated insignificant activities. Examples of specifically regulated activities that may have insignificant emissions include boilers, process heaters, any activity regulated under a federal rule such as MACT or BACT, etc. If you are not sure if an emissions unit would be considered a specifically regulated insignificant activity, contact the Air Permit Reviewer of the Day for additional guidance.

54. Unit ID	55. Stack / Vent ID	56. Pollutant	57. Actual Emissions		58. Potential to Emit		59. Citation
			Standard Units	Tons Per Year	Standard Units	Tons Per Year	

OAQ GENERAL SOURCE DATA APPLICATION
GSD-15: Government Officials Notified

State Form 51608 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of GSD-15 is to identify local government officials that are to be notified that an air permit application has been submitted.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for public inspection.

Government Officials Notified

Use this table to identify local government officials that should be notified pursuant to Indiana Code (IC) 13-15-3-1 that an air permit application has been submitted. If you need additional space, you may make copies of this form.

1. Name: Jack Dodd, Brad Bray, and Jeff Lipinski		**2. Date Notified**:
3. Title: Howard County Commissioner		
4. Address: 220 North Main Street #220		
City: Kokomo	**State**: IN	**ZIP Code**: 46901 –
5. Electronic Mail: Jack.dodd@howardcountyin.gov	**6. Telephone Number**: (765) 456 - 2234	
7. Method of Notification: ☐ **Telephone** ☐ **Electronic Mail** ☐ **Standard Mail** ☐ **Other** *(specify)*:		
Name: Tyler Moore		**Date Notified**:
Title: Mayor of Kokomo, IN		
Address: 100 South Union Street		
City: Kokomo	**State**: IN	**ZIP Code**: 46901 –
Electronic Mail: mayor@cityofkokomo.org	**Telephone Number**: (765) 456 - 7444	
Method of Notification: ☐ **Telephone** ☐ **Electronic Mail** ☐ **Standard Mail** ☐ **Other** *(specify)*:		
Name: Ray Collins		**Date Notified**:
Title: Council President		
Address: 100 South Union Street		
City: Kokomo	**State**: IN	**ZIP Code**: 46901 –
Electronic Mail: rcollins@cityofkokomo.org	**Telephone Number**: (765) 210 - 0032	
Method of Notification: ☐ **Telephone** ☐ **Electronic Mail** ☐ **Standard Mail** ☐ **Other** *(specify)*:		
Name: Mindy Heady		**Date Notified**:
Title: Howard County Assessor		
Address: 220 North Main Street #336		
City: Kokomo	**State**: IN	**ZIP Code**: 46901 –
Electronic Mail: mindy.heady@howardcountyin.gov	**Telephone Number**: (765) 456 - 2211	
Method of Notification: ☐ **Telephone** ☐ **Electronic Mail** ☐ **Standard Mail** ☐ **Other** *(specify)*:		

OAQ PROCESS INFORMATION APPLICATION
PI-01: Miscellaneous Process

State Form 52534 (R2 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to obtain detailed information about the process. Complete one form for each process unit (or group of identical process units). This is a required form.
- Detailed instructions for this form are available online on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for anyone to inspect and photocopy.

PART A: Process Information

Part A identifies the process. If there are multiple process units that are identical in nature, capacity, and use, you may use one form to summarize the data for the identical process units.

1. **Unit ID**: TDS-1, Tains 1, 2 and 3

2. **Installation Date**: *(actual or anticipated)* 3/1/2025

3. **How many *(identical)* process units are identified in this form?** ☐ One ☒ More than one *(specify number)* : 3

4. **Process Description:**

TDS-L Consuductive Slurry manufacturing process involving the blending and mixing of NMP solvent with additives to produce conductive slurry for use in lithium battery manufacture. VOC emissions from Liquid blending and mixing are designated as TDS-1. Trains 2 and 3 will be added and total throughput will be allocated over 3 trains.

5. **Maximum Production Rate** *(specify units)*: 100.00 gallon TDS-L Slurry/hr/train

6. **Fuel Used**: ☐ Not Applicable ☐ Natural Gas Only ☐ Other – *Attach completed PI-02F form.*

7. **Add-On Control Technology**: *Identify all control technologies used for this unit, and attach completed CE-01 (unless "none").*

☐ None
☒ Baghouse / Fabric Filter – *Attach CE-02.*
☐ Cyclone – *Attach CE-03.*
☐ Electrostatic Precipitator – *Attach CE-04.*
☒ Absorption / Wet Collector / Scrubber – *Attach CE-05.*
☐ Oxidizer / Incinerator – *Attach CE-06.*
☒ Adsorber – *Attach CE-07.*
☐ Condenser – *Attach CE-08.*
☐ Reduction – *Attach CE-09.*
☐ Other *(specify)*: – *Attach CE-10.*

8. **Control Techniques**: *Identify all control techniques used for this process.*

NMP solvent emissions from the TDS pre-mix, impact mix, main mix and lot blending vessels are routed to carbon control after recovery by knock-out process condenser and absorption scrubber.

9. **Process Limitations / Additional Information**: *Identify any acceptable process limitations. Attach additional information if necessary.*

Continued on next page

PART B: Emission Factors

Part B identifies all emission factors used to calculate air emissions from this process.

10. Process Unit *(& ID, if applicable)*	11. Air Pollutant	12. Emission Factor		13. Source of Emission Factor *(if not using AP-42, include calculations)*
		value	*units*	
TDS Blend and Mix Tanks	VOC, total facility, prior to control	2.58	ton/yr/ train	☐ AP-42 ☒ Other
				☐ AP-42 ☐ Other
				☐ AP-42 ☐ Other
				☐ AP-42 ☐ Other
				☐ AP-42 ☐ Other
				☐ AP-42 ☐ Other

PART C: Processed Materials

Part C identifies the materials processed and the raw material usage.

14. Materials Processed	15. Raw Materials Usage Rate *(lb/hr)*
N-Methyl Pyrrolidone (NMP) solvent	2330.00
CNT(L) (Solid)	60.00
CNT (Solid)	140.00
GDS (Liquid)	30.00
Rubber (Solid)	40.00

PART D: Federal Rule Applicability

Part D identifies any federal rules that apply to the process.

16. Is a **New Source Performance Standard (NSPS)** applicable to this source? ☐ Yes ☒ No
Attach a completed FED-01 for each rule that applies.

40 CFR Part 60, Subpart _____

17. Is a **National Emission Standard for Hazardous Air Pollutants (NESHAP)** applicable to this source? ☐ Yes ☒ No
Attach a completed FED-01 for each rule that applies.

40 CFR Part 61, Subpart _____

40 CFR Part 63, Subpart _____

18. Non-Applicability Determination: *Provide an explanation if the process unit appears subject to a rule (based on the rule title or the source category), but the rule will not apply.*

Jaewon JWA CO., Ltd.will not be a major source of HAP and will not be subject to NESHAPs. NMP is not a HAP.

OAQ PROCESS INFORMATION APPLICATION
PI-02A: Combustion Unit Summary
State Form 52535 (R2 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to summarize all of the combustion process units.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for anyone to inspect and photocopy.

Form ID	Form Title	Guidance on when to submit the form
PI-02A	Combustion Unit Summary	Complete once for each application.
PI-02B	Boilers & Process Heaters	Complete once for each boiler or process heater.
PI-02C	Turbines & Internal Combustion Engines	Complete once for each turbine or internal combustion engine.
PI-02D	Incinerators & Combustors	Complete once for each incinerator or combustor.
PI-02E	Kilns	Complete once for each kiln.
PI-02F	Fuel Use	Complete once for each emissions unit that burns fuel **other than natural gas.**
PI-02G	Emission Factors	Complete once for each emissions unit.
PI-02H	Federal Rule Applicability	Complete once for each emissions unit.

Summary of Combustion Units

This table summarizes all the combustion units at the source. If there are multiple combustion units that are identical in nature, capacity, and use, you may use one row to summarize the identical units.

1. Combustion Unit Type	2. Number of Identical Units	3. Unit ID(s)	4. Date of Installation or Modification *(actual or anticipated)*	5. Heat Input Rate of each unit *(MMBtu/hr)*	6. Emergency / Back-Up Unit?
Diesel Em Fire Pump	1	DFP-2	12/1/2024	2.80	☒ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

OAQ PROCESS INFORMATION APPLICATION
PI-02C: Combustion – Turbines & Reciprocating Internal Combustion Engines

State Form 52537 (R2 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to specify details that pertain only to turbines and internal combustion engines.
- Complete one PI-02C form for each emissions unit. If there are multiple emission units that are identical in nature, capacity, and use, you may use one PI-02C form to summarize the units.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for anyone to inspect and photocopy.

PART A: Process Unit Details

Part A specifies operating information that is unique to turbines and reciprocating internal combustion engines. Definitions and additional explanation of terminology are included in the instructions for this form.

1. Unit ID: DFP-2 400 HP Diesel Emergency Fire Pump

2. Type of Combustion Unit

☐ Turbine:	☐ Simple Cycle ☐ Regenerative Cycle ☐ Cogeneration ☐ Combined Cycle
☒ Reciprocating Internal Combustion Engine:	☐ 2-stroke lean-burn ☒ 4-stroke lean-burn ☐ 4-stroke rich-burn

3. Combustion Process:
☐ Diffusion Flame Combustion
☐ Lean-Premix Staged Combustion

4. Ignition Type:
☐ Spark
☒ Compression

5. Power Output:
400.00 horsepower (hp)
0.30 megawatts (MW)

6. Duty Cycle: 500 hours per year (hr/yr)

7. Fuel Used:
☐ Natural Gas Only
☒ Other – *Attach completed PI-02F.*

8. Does this combustion unit supply power to an emergency generator? ☐ Yes ☒ No

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PART B: Emission Controls and Limitations

Part B identifies control technology, control techniques or other process limitations that impact air emissions.

9. Add-On Control Technology: *Identify all control technologies used for this process. Attach completed CE-01 (unless "none").*

- ☒ None
- ☐ Catalytic Oxidation – *Attach CE-06*
- ☐ NO_x Reduction – *Attach CE-09*
- ☐ Other *(specify)*: – *Attach CE-10.*

10. Control Techniques: *Identify all control techniques used for this process.*

- ☒ None *(explain)*:
- ☐ Air-To-Fuel Ratio Adjustments
- ☐ Aromatic Content Increase
- ☐ Boiling Point adjusted to 10% and 90%
- ☐ Cetane Number
- ☐ Charge Cooling
- ☐ Combustion Chamber Modifications
- ☐ Derating
- ☐ Electronic Timing & Metering
- ☐ Exhaust Gas Recirculation
- ☐ Fuel Additives
- ☐ Fuel Injection Pressure
- ☐ Injection Rate Control
- ☐ Injection Timing Retard
- ☐ Injector Nozzle Geometry
- ☐ Lean Combustion
- ☐ Low Sulfur Content Fuel
- ☐ Oil Consumption Control
- ☐ Pre-ignition Chamber Combustion
- ☐ Rapid Spill Nozzles
- ☐ Turbocharging
- ☐ Two Stage Lean / Lean Combustion
- ☐ Two Stage Rich / Lean Combustion
- ☐ Water/Fuel Emulsions
- ☐ Water / Steam Injection
- ☐ Other *(specify)*: – *Attach completed GSD-09.*

11. Process Limitations / Additional Information: *Identify any acceptable process limitations. Attach additional information if necessary.*

Will meet applicable NSPS IIII standards and applicable EPA certified engine requirements

OAQ PROCESS INFORMATION APPLICATION
PI-02H: Combustion – Federal Rule Applicability

State Form 52542 (R2 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of this form is to identify any federal rules that apply to the emission unit.
- Complete one PI-02H form for each emissions unit. If there are multiple emission units that are identical in nature, capacity, and use, you may use one PI-02H form to summarize the units.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for anyone to inspect and photocopy.

Federal Rule Applicability

This table identifies any federal rules that apply to the process.

1. Is a **New Source Performance Standard (NSPS)** applicable to this source? ☒ Yes ☐ No *If yes, attach a completed FED-01 for each rule that applies.*		2. **Unit IDs**
☐ 40 CFR Part 60, Subpart Cb	Large Municipal Waste Combustors *(constructed before 9/20/1994)*	
☐ 40 CFR Part 60, Subpart Ce	Hospital/Medical/Infectious Waste Incinerators	
☐ 40 CFR Part 60, Subpart D	Fossil-Fuel-Fired Steam Generators *(constructed after 8/17/1971)*	
☐ 40 CFR Part 60, Subpart Da	Electric Utility Steam Generating Units *(constructed after 9/18/1978)*	
☐ 40 CFR Part 60, Subpart Db	Industrial-Commercial-Institutional Generating Units	
☐ 40 CFR Part 60, Subpart Dc	Small Industrial-Commercial-Institutional Generating Units	
☐ 40 CFR Part 60, Subpart E	Incinerators	
☐ 40 CFR Part 60, Subpart Ea	Municipal Waste Combustors *(constructed after 12/20/1989 and before 9/20/1994)*	
☐ 40 CFR Part 60, Subpart Eb	Large Municipal Waste Combustors *(constructed after 9/20/1994 or modified / reconstructed after 6/19/1996)*	
☐ 40 CFR Part 60, Subpart Ec	Hospital/Medical/Infectious Waste Incinerators *(constructed after 6/20/1996)*	
☐ 40 CFR Part 60, Subpart O	Sewage Treatment Plants *(sludge burners)*	
☐ 40 CFR Part 60, Subpart Y	Coal Preparation Plants	
☐ 40 CFR Part 60, Subpart GG	Stationary Gas Turbines	
☐ 40 CFR Part 60, Subpart AAA	New Residential Wood Heaters	
☐ 40 CFR Part 60, Subpart AAAA	Small Municipal Waste Combustion Units *(constructed after 8/30/1999 or modified / reconstructed after 6/6/2001)*	
☐ 40 CFR Part 60, Subpart BBBB	Small Municipal Waste Combustion Units *(constructed on or before 8/30/1999)*	
☐ 40 CFR Part 60, Subpart CCCC	Commercial and Industrial Solid Waste Incineration Units *(constructed after 11/30/1999 or modified / reconstructed after 6/1/2001)*	
☐ 40 CFR Part 60, Subpart DDDD	Commercial and Industrial Solid Waste Incineration Units *(constructed on or before 11/30/1999)*	
☐ 40 CFR Part 60, Subpart KKKK	Stationary Combustion Turbines	

Continued on Next Page

Federal Rule Applicability *(continued)*

This table identifies any federal rules that apply to the process.

3. Is a **National Emission Standard for Hazardous Air Pollutants (NESHAP)** applicable to this source? ☒ Yes ☐ No *If yes, attach a completed FED-01 for each rule that applies.*		4. **Unit IDs**
☐ 40 CFR Part 63, Subpart MM	Combustion Sources at Kraft, Soda, and Sulfite Pulp & Paper Mills	
☐ 40 CFR Part 63, Subpart EEE	Hazardous Waste Combustion	
☐ 40 CFR Part 63, Subpart YYYY	Stationary Combustion Turbines	
☒ 40 CFR Part 63, Subpart ZZZZ	Reciprocating Internal Combustion Engines (RICE)	DFP-2
☐ 40 CFR Part 63, Subpart DDDDD	Industrial, Commercial, and Institutional Boilers and Process Heaters	

5. **Non-Applicability Determination**: *Provide an explanation if the process unit appears subject to a rule (based on the rule title or the source category), but the rule will not apply.*

The fire pump CI RICE will subject to NESHAPS ZZZZ and will comply with ZZZZ by virtue of compliance with NSPS IIII. The CI RICE will be subject to NSPS IIII. All emergency engines will be manufacturer certified as per the requisite NSPS emission standard.

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OAQ FEDERAL RULE INCORPORATION APPLICATION
FED-01: Summary of Federal Requirements – NSPS & NESHAP

State Form 53512 (R / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53, Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.in.gov/idem

NOTES:

- The purpose of this form is to provide a standardized way for sources to identify the NSPS or NESHAP requirements that are applicable to the regulated source. Complete one (1) form for each federal rule that applies to the source. This is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record.

Part A: Identification of Applicable Standard

Part A identifies the applicable standard and affected source.

1. Type of Standard:	☒ Part 60 NSPS ☐ Part 61 NESHAP ☒ Part 63 NESHAP (MACT)	
2. Subpart Letter:	IIII	
3. Source Category Name:	RICE CI Diesel emergency engines subject to 40 CFR 60 Subpart IIII.	
4. Affected Source *(Include all applicable emission unit IDs)*:	DFP-2	

Part B: Applicable Requirements

Part B specifies the specific requirements of the federal rule that are applicable to the process or emission unit.

5. Applicable Requirements: *Identify the section of the federal standard that is applicable at the lowest subsection level. For example, if all of 40 CFR 63.342(c) is applicable, "40 CFR 63.342(c)" is the appropriate citation. If only paragraph 2 of 40 CFR 63.342(c) is applicable, then the appropriate citation is 40 CFR 63.342(c)(2).*

- per 63 ZZZZ, 63.6590(c)
- per 60 IIII, 60.4205(b) and 60.4206
- per 60 IIII, 60.4202 for use of certified engines
- per 60 IIII, 60.4207(b) for fuel use
- per 60 IIII, 60.4211(a) and (f) for engine hour limits
- 40 CFR 60 IIII Table 8

Continued on Next Page

Part C: Performance Testing Requirements		
Part C identifies the performance testing requirements that are applicable to the process or emission unit.		
6. Performance Testing:	NA	
7. Date of Initial Performance Test:		
8. Test Methods:		
9. Was the initial performance test approved by IDEM?	☐ Yes: *Date approved:* _____	☐ No
10. Did the initial performance test show compliance with the rule?	☐ Yes	☐ No: *Date of next performance test:* _____

Part D: Important Dates		
Part D identifies specific dates associated with the federal standard that are applicable to the process or emission unit.		
11. Date Initial Notification was Submitted:	Not Required	
12. Initial Compliance Date:	☒ Startup: _____	☐ Other: _____
13. Other Dates	Description: _____	Date: _____
	Description: _____	Date: _____
	Description: _____	Date: _____

Part E: Other Information
Part E identifies any additional information pertaining to the applicable federal rule. Attach additional information using form GSD-09 as necessary.
Engines are certified by the engine manufacturer to meet the applicable new engine emission standards of 40 CFR 60 Subparts IIII

OAQ FEDERAL RULE INCORPORATION APPLICATION
FED-01: Summary of Federal Requirements – NSPS & NESHAP

State Form 53512 (R / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53, Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.in.gov/idem

NOTES:

- The purpose of this form is to provide a standardized way for sources to identify the NSPS or NESHAP requirements that are applicable to the regulated source. Complete one (1) form for each federal rule that applies to the source. This is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record.

Part A: Identification of Applicable Standard

Part A identifies the applicable standard and affected source.

1. Type of Standard:	☒ Part 60 NSPS ☐ Part 61 NESHAP ☐ Part 63 NESHAP (MACT)
2. Subpart Letter:	NNNA
3. Source Category Name:	Subpart NNNa—Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023
4. Affected Source *(Include all applicable emission unit IDs)*:	NMP-1

Part B: Applicable Requirements

Part B specifies the specific requirements of the federal rule that are applicable to the process or emission unit.

5. Applicable Requirements: *Identify the section of the federal standard that is applicable at the lowest subsection level. For example, if all of 40 CFR 63.342(c) is applicable, "40 CFR 63.342(c)" is the appropriate citation. If only paragraph 2 of 40 CFR 63.342(c) is applicable, then the appropriate citation is 40 CFR 63.342(c)(2).*

• 60.660a	• Table 4 (1,4)	•
• 60.661a	•	•
• 60.662	•	•
• 60.663a(a)(1-4, and 6)	•	•
• 60.664(a),(b)	•	•
• 60.665(a-d, g, j-n,q-r)	•	•
• 60.666a	•	•
• 60.667a	•	•
• 60.670a(a-i)	•	•
• Table 1(a)	•	•
• Table 2 (1,2,6,7)	•	•
• Table 3 (1,2,9,10	•	•

Continued on Next Page

Part C: Performance Testing Requirements		
Part C identifies the performance testing requirements that are applicable to the process or emission unit.		
6. Performance Testing:	within 180 days after start-up, test date to be determined after start-up	
7. Date of Initial Performance Test:		
8. Test Methods:	1, 2, 3A, 4, 18	
9. Was the initial performance test approved by IDEM?	☐ Yes: *Date approved:* _____	☐ No
10. Did the initial performance test show compliance with the rule?	☐ Yes	☐ No: *Date of next performance test:* _____

Part D: Important Dates		
Part D identifies specific dates associated with the federal standard that are applicable to the process or emission unit.		
11. Date Initial Notification was Submitted:		
12. Initial Compliance Date:	☒ Startup: _____	☐ Other: _____
13. Other Dates	Description: _____	Date: _____
	Description: _____	Date: _____
	Description: _____	Date: _____

Part E: Other Information
Part E identifies any additional information pertaining to the applicable federal rule. Attach additional information using form GSD-09 as necessary.
Initial notification will be submitted at intial start-up of the distillation process.

PART A: Tank Identification													PART B: Emission Controls and Limitations			Part C identifies the physical properties of the tank.				
Part A identifies and describes the tank. Duplicate this form as necessary to include all applicable tanks.													Part B identifies control technology, control techniques or other process limitations that impact air emissions.							
1. Tank / Unit ID:	2. Installation / Modification Date:	3. Tank Location:	4. Tank Type	5. Is the tank Above Ground?	6. Tank Orientation:	7. Tank Color:	8. Materials Stored:	9. True Vapor Pressure:	10. Vapor Molecular Weight:	11. Annual Throughput:	12. Venting Method:	13. Filling Method:	14. Control Technology: *Identify all control technologies used for this process, and attach completed CE-01 (unless "none")*	15. Control Techniques: *Identify all control techniques used for this process*	16. Process Limitations / Additional Information: *Identify any acceptable process limitations. Attach additional information if necessary.*	17. Tank Diameter:	18. Tank Height:	19. Tank Volume / Capacity:	20. Maximum Liquid Height:	21. External F
							(include MSDS)	(PVA)	(Mv)							(D)	(Hs)	(V)	(Hlx)	a. Average Liquid Density (Wl)
								pounds per square inch (psia)	gallons (pounds per mole)	gallons per year (gal/yr)						feet (ft)	feet (ft)	gallons (gal)	feet (ft)	pounds per gallon (lb/gal)
T-1111		Outside		Yes	Vertical	White	Crude NMP & Water	0.01	78.14	13318629.27			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		36	36	264172		
T-1112		Outside		Yes	Vertical	White	Crude NMP& Water	0.01	78.14	3751963.919			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				79251		
T-1121		Inside		Yes	Vertical	White	NMP	0.01	78.14	2219099.115			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		13	26	26417		
T-1131-1133		Inside		Yes	Vertical	White	NMP	0.01	78.14	8705696.529			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				26417		
T-1151-1152		Inside		Yes	Vertical	White	NMP	0.01	78.14	11266195.51			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		22	28	79252		
T-1141		Inside		Yes	Vertical	White	NMP	0.01	78.14	2560498.979			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				79252		
U-1161		Inside		Yes	Vertical	White	Wastewater	0.01	78.14	5974497.618			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3963		
D-1171		Inside		Yes	Horizontal	White	NMP	0.01	78.14	177527.9292			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3963		
V2110		Inside		Yes	Vertical	White	NMP	0.01	78.14	375539.8503			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V2120-1&2		Inside		Yes	Vertical	White	NMP + GDG	0.01	78.14	739699.7051			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V2130-1		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				2034.109		
V2130-2		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V2210-1&2		Inside		Yes	Vertical	White	M-NMP + Rubber + CNT + CNT(L) +	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V2220-1&2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		4	4.8	554.757		
V2230-1&2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		4	4.8	554.757		
V2300-2390-1&2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System		4	4.8	554.757		
V2410-2420-1,2 &		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
DEG-1		Outside		Yes	Horizontal	White	Diesel	0.01	200.00	13500			Other: (specify) – Attach completed ZCE-10.	None				1000		
DFP-1 & 2		Outside		Yes	Horizontal	White	Diesel	0.01	200.00	10000			Other: (specify) – Attach completed ZCE-10.	None				500		
V3110		Inside		Yes	Vertical	White	NMP	0.01	78.14	375539.8503			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V3120-1 & 2		Inside		Yes	Vertical	White	NMP + GDG	0.01	78.14	739699.7051			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V3130-1		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				2034.109		
V3130-2		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V3210-1 & 2		Inside		Yes	Vertical	White	M-NMP + Rubber + CNT + CNT(L) +	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V3220-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V3230-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V3300-3390-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V3410-3420-1, 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V4110		Inside		Yes	Vertical	White	NMP	0.01	78.14	375539.8503			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V4120-1 & 2		Inside		Yes	Vertical	White	NMP + GDG	0.01	78.14	739699.7051			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V4130-1		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				2034.109		
V4130-2		Inside		Yes	Vertical	White	NMP & Rubber	0.01	78.14	176113.3333			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3328.542		
V4210-1 & 2		Inside		Yes	Vertical	White	M-NMP + Rubber + CNT + CNT(L) +	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V4220-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V4230-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V4300-4390-1 & 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V4410-4420-1, 2		Inside		Yes	Vertical	White	TDG-L	0.01	78.14	880566.6667			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				554.757		
V5110	3/1/2025	Inside		Yes	Vertical	White	Black Mass + NMP	0.01	78.14	1172141.94			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3275.7		
V5120	3/1/2025	Inside		Yes	Vertical	White	Black Mass + NMP	0.01	78.14	1172141.94			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				3275.7		
V5130	3/1/2025	Inside		Yes	Vertical	White	Crude NMP Unfiltered	0.01	78.14	1054927.74			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				2905.9		
V5140	3/1/2025	Inside		Yes	Vertical	White	Black Mass + NMP	0.01	78.14	117214.19			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				322.3		
V5150	3/1/2025	Inside		Yes	Vertical	White	Crude NMP Filtered	0.01	78.14	1054927.74			Other: (specify) – Attach completed ZCE-10.	Vapor Recovery System				2905.9		

PART C: Information Specific to Tank Type															Part D: Emission Factors					PART E: Federal Rule Applicability	
															Part D identifies all emission factors used to calculate air					Part E identifies any federal rules that apply to the process. *Attach a completed FED-01 for each rule that applies.*	
1. Tank / Unit ID:	Floating Roof: *Complete only if applicable.*				22. Internal Floating Roof: *Complete only if applicable.*							23. Variable Vapor Space: *Complete only if applicable.*			24. Air Pollutant:		25. Emission Factor		26. Source of Emission Factor	27. Is a New Source Performance Standard (NSPS) applicable to this source?	28. Is a National Emission Standard for Hazardous Air Pollutants (NESHAP) applicable to this source? *Attach a completed FED-01 for each rule that applies.*
	b. Roof Type:	c. Tank Construction:	d. Primary Rim Seal:	e. Secondary Rim Seal:	a. Average Liquid Density (Wl)	b. Roof Type	c. Self-supported fixed roof	d. Number of columns supporting the fixed roof	e. Deck Construction:	f. Primary Rim Seal:	g. Is there a Secondary Rim Seal?	a. Volume of liquid pumped into the system (V1):	b. Volume expansion capacity of system (V2):	c. Number of Transfers into the System (N2)	HAP / VOC / OTHER	Specify (if HAP or Other)	value	units	(If not using AP-42, include calculations)		
					pounds per gallon (lb/gal)							gallons per year (gal/yr)	gallons (gal)	per year (/yr)							
T-1111															VOC		21	lb/yr	AP-42		
T-1112															VOC		6.3	lb/yr	AP-42		
T-1121															VOC		5.8	lb/yr	AP-42		
T-1131-1133															VOC		22.4	lb/yr	AP-42		
T-1151-1152															VOC		29.8	lb/yr	AP-42		
T-1141															VOC		16.6	lb/yr	AP-42		
U-1161															VOC		0.1	lb/yr	AP-42		
D-1171															VOC		0.7	lb/yr	AP-42		
V2110															VOC		2.1	lb/yr	AP-42		
V2120-1&2															VOC		221.08	lb/yr	AP-42		
V2130-1															VOC		186.25	lb/yr	AP-42		
V2130-2															VOC		89.45	lb/yr	AP-42		
V2210-1&2															VOC		1521.71	lb/yr	AP-42		
V2220-1&2															VOC		1174.89	lb/yr	AP-42		
V2230-1&2															VOC		1174.89	lb/yr	AP-42		
V2300-2390-1&2															VOC		117.49	lb/yr	AP-42		
V2410-2420-1,2 &															VOC		126.24	lb/yr	AP-42		
DEG-1															VOC		2	lb/yr	AP-42		
DFP-1 & 2															VOC			lb/yr	AP-42		
V3110															VOC		2.1	lb/yr	AP-42		
V3120-1 & 2															VOC		221.08	lb/yr	AP-42		
V3130-1															VOC		186.25	lb/yr	AP-42		
V3130-2															VOC		89.45	lb/yr	AP-42		
V3210-1 & 2															VOC		1521.71	lb/yr	AP-42		
V3220-1 & 2															VOC		1174.89	lb/yr	AP-42		
V3230-1 & 2															VOC		1174.89	lb/yr	AP-42		
V3300-3390-1 & 2															VOC		117.49	lb/yr	AP-42		
V3410-3420-1, 2															VOC		126.24	lb/yr	AP-42		
V4110															VOC		2.1	lb/yr	AP-42		
V4120-1 & 2															VOC		221.08	lb/yr	AP-42		
V4130-1															VOC		186.25	lb/yr	AP-42		
V4130-2															VOC		89.45	lb/yr	AP-42		
V4210-1 & 2															VOC		1521.71	lb/yr	AP-42		
V4220-1 & 2															VOC		1174.89	lb/yr	AP-42		
V4230-1 & 2															VOC		1174.89	lb/yr	AP-42		
V4300-4390-1 & 2															VOC		117.49	lb/yr	AP-42		
V4410-4420-1, 2															VOC		126.24	lb/yr	AP-42		
V5110															VOC		316.11	lb/yr	AP-42		
V5120															VOC		414.88	lb/yr	AP-42		
V5130															VOC		360.91	lb/yr	AP-42		
V5140															VOC		21.26	lb/yr	AP-42		
V5150															VOC		360.91	lb/yr	AP-42		

1. Tank / Unit ID:	29. Non-Applicability Determination: Provide an explanation if the process unit appears subject to a rule (based on the rule title or the source category), but the rule will not apply.
T-1111	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
T-1112	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
T-1121	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
T-1131-1133	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
T-1151-1152	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
T-1141	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
U-1161	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
D-1171	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V2110	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V2120-1&2	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V2130-1	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2130-2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2210-1&2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2220-1&2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2230-1&2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2300-2300-1&2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V2410-2420-1,2 & DEG-1	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
DFP-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3110	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V3120-1 & 2	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V3130-1	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3130-2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3210-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3220-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3230-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3300-3300-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V3410-3420-1, 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4110	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V4120-1 & 2	Tank is not subject to Subpart Kb since the tank maximum true vapor pressure is less than 3.5 kPa. Tank is not subject to NESHAP Subpart
V4130-1	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4130-2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4210-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4220-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4230-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4300-4300-1 & 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V4410-4420-1, 2	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V5110	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V5120	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V5130	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V5140	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not
V5150	Tank is not subject to Subpart Kb since the tank size is less than 75 m3 and the maximum true vapor pressure is less than 3.5 kPa. Tank is not

OAQ CONTROL EQUIPMENT APPLICATION
CE-01: Control Equipment Summary

State Form 51904 (R3 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of CE-01 is to summarize all of the equipment used to control emissions. This is a required form.
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for any one to inspect and photocopy.

Summary of Control Equipment

This table summarizes all of the equipment used to control air pollutant emissions. The identification numbers listed on this form should correspond to the emissions unit identified on the Plant Layout diagram and Process Flow diagram.

1. Control Equipment ID	2. Control Equipment Description	3. Pollutant Controlled	4. Emission Unit ID	5. Stack / Vent ID	6. Applicable Rule
TDS-DC2	TDS-L Train 2 Solids handling duct collector	PM	TDS SD-2	S-TDS-DC2	
TDS-DC3	TDS-L Train 2 Solids handling duct collector	PM	TDS SD-3	S-TDS-DC3	

OAQ CONTROL EQUIPMENT APPLICATION
CE-02: Particulate Control – Baghouse / Fabric Filter

State Form 51953 (R2 / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of CE-02 is to identify all the parameters that describe the baghouse or fabric filter. This is a required form.
- Complete this form once for each baghouse or fabric filter (or once for each set of identical baghouses or fabric filters).
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for any one to inspect and photocopy.

PART A: Identification and Description of Control Equipment

Part A identifies the particulate control device and describes its physical properties.

1. Control Equipment ID:	DC-2, DC-3 TDD-L Solids Dispensing and Handling Dust Collector (2 identical units for trains 2 and 3)
2. Installation Date:	3/1/2025
3. Bags or Cartridges?	☐ Bags ☒ Cartridges
4. Filter Material:	Polyester
5. Number of Bags/Cartridges per Compartment:	9
6. Number of Compartments:	1
7. Mode of Operation:	☒ Intermittent ☐ Periodic ☐ Continuous
8. Cleaning Method:	☐ Shaking ☐ Reverse Pulse ☐ Reverse Air ☒ Jet Pulse
9. Cleaning Cycle / Frequency *(specify units)*:	1.00 30 minutes
10. Is a bag leak detector installed on this device?	☐ Yes ☒ No
11. Type / Description of Bag Leak Detector:	☐ Positive Pressure ☐ Negative Pressure
12. Air to Cloth Ratio *(Ex: 1.3 : 1.0)*:	10.0 : 1.0
13. Is Lime Injection used on this device?	☐ Yes ☒ No
14. Is Carbon Injection used on this device?	☐ Yes ☒ No

PART B: Operational Parameters

Part B provides the operational parameters of the control device and the pollutant laden gas stream. Appropriate units must be included if the standard units are not used. For each applicable parameter, provide the inlet and outlet values or provide the differential value.

	A. Units	B. Inlet	C. Outlet	D. Differential
15. Gas Stream Flow Rate	ACFM	2000.00	2000.00	
16. Gas Stream Temperature	°F	72.00	72.00	
17. Gas Stream Pressure	inches of water	6.00	1.00	0.50 to 6.00
18. Moisture Content	%	0.05%	0.05%	
19. Particle Size Range	micrometers	100.00	10.00	to
20. Lime Injection Rate *(if applicable)*	lb/hr			
21. Carbon Injection Rate *(if applicable)*	lb/hr			
22. Other *(specify)*:				

Continued on Next Page

PART C: Pollutant Concentrations

Part C provides the pollutant concentrations of the pollutant laden gas stream.

	23. Units	24. Inlet	25. Outlet	26. Efficiency (%):	
				Capture	Control
☐ a. Lead (Pb)					
☐ b. Hazardous Air Pollutant (HAP) *(specify)*:					
☒ c. Particulate Matter (PM)	ton/yr	5.21	0.104	100.00%	98.00%
☒ d. Particulate Matter less than 10μm (PM_{10})	ton/yr	5.21	0.10	100.00%	98.00%
☒ e. Particulate Matter less than 2.5μm ($PM_{2.5}$)					
☐ f. Other Pollutant *(specify)*:					

PART D: Monitoring, Record Keeping, & Testing Procedures

Part D identifies any existing or proposed monitoring, record keeping, & testing procedures that may need to be included in the permit.

27. Item(s) Monitored:	Pressure drop			
28. Monitoring Frequency:	Daily			
29. Item(s) Recorded:	Pressure Drop			
30. Record Keeping Frequency:	Daily			
31. Pollutant(s) Tested:				
32. Test Method(s):				
33. Testing Frequency:				

PART E: Preventive Maintenance Plan

Part E verifies that a complete Preventive Maintenance Plan (PMP) has been prepared for the control device, if applicable. Use this table as a checklist to ensure that the PMP is complete.

34. Do you have a Preventive Maintenance Plan (PMP)?

☐ No PMP is needed. ☒ Yes – the following items are identified on the PMP:

- ☒ **A.** Identification of the individual(s) responsible for inspecting, maintaining and repairing emission control devices.
- ☒ **B.** Description of the items or conditions that will be inspected.
- ☒ **C.** Schedule for inspection of items or conditions described above.
- ☒ **D.** Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

PART F: Determination of Integral Control

Part F provides explanation to determine whether the control device should be considered integral to the process.

35. Has IDEM already made an integral control determination for this device? ☒ No ☐ Yes
If "Yes", provide the following:

Permit Number:	**Issuance Date:**	**Determination:** ☐ Integral ☐ Not Integral

36. Is this device integral to the process? ☐ No ☐ Yes
If "Yes", provide the reason(s) why the device is integral.

OAQ CONTROL EQUIPMENT APPLICATION
CE-07: Organics – Adsorber

State Form 52624 (R / 1-10)
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

IDEM – Office of Air Quality – Permits Branch
100 N. Senate Avenue, MC 61-53 Room 1003
Indianapolis, IN 46204-2251
Telephone: (317) 233-0178 or
Toll Free: 1-800-451-6027 x30178 (within Indiana)
Facsimile Number: (317) 232-6749
www.IN.gov/idem

NOTES:

- The purpose of CE-07 is to identify all the parameters that describe the adsorber. This is a required form.
- Complete this form once for each adsorber (or once for each set of identical adsorbers).
- Detailed instructions for this form are available on the Air Permit Application Forms website.
- All information submitted to IDEM will be made available to the public unless it is submitted under a claim of confidentiality. Claims of confidentiality must be made at the time the information is submitted to IDEM, and must follow the requirements set out in 326 IAC 17.1-4-1. Failure to follow these requirements exactly will result in your information becoming a public record, available for any one to inspect and photocopy.

PART A: Identification and Description of Control Equipment

Part A identifies the control device and describes its physical properties.

1. **Control Equipment ID:** NMP-CA2 (This will be a second adsorber to be installed in series with the 1st)
2. **Installation Date:**
3. **Adsorption Method:** ☐ Chemical ☒ Physical ☐ Other *(specify)*:
4. **Adsorbent Material:** ☐ Silica Gel ☐ Activated Alumina ☐ Molecular Sieve ☒ Activated Carbon ☐ Polymer *(specify)*: ☐ Other *(specify)*:
5. **Adsorption Design:** ☒ Fixed Bed ☐ On-site Regeneration ☒ Off-site Regeneration ☐ Other *(specify)*:
6. **Saturation Capacity** *(include units – Ex. Lbs contaminant / 100 lbs adsorbent)*: 15.00
7. **Breakthrough Capacity** *(include units – Ex. Lbs contaminant / 100 lbs adsorbent)*: 16.00
8. **Heel Capacity** *(include units – Ex. Lbs contaminant / 100 lbs adsorbent)*: 1.00
9. **Working Capacity** *(include units – Ex. Lbs contaminant / 100 lbs adsorbent)*: 15.00
10. Is this a **Dual System?** ☐ Yes ☒ No ☐ *Not Applicable*
11. Is there a **System Bypass during the Regeneration/Purge Cycle?** ☐ Yes ☒ No ☐ *Not Applicable*
12. **Regeneration Frequency** *(specify units)*: Change out monthly or as needed ☐ *Not Applicable*

PART B: Operational Parameters

Part B provides the operational parameters of the control device and the pollutant laden gas stream.

	A. Units	B. Inlet	C. Outlet	D. Differential
13. Organic Vapor Concentration *(by volume)*	ppmv	1000.00	20.00	
14. Gas Stream Flow Rate	ACFM	3000.00	3000.00	
15. Gas Stream Temperature	°F	73.00	73.00	
16. Gas Stream Pressure	inches of water			to
17. Moisture Content	%	0.04%	0.04%	
18. Other *(specify)*:				

Continued on Next Page

PART C: Pollutant Concentrations

Part C provides the pollutant concentrations of the pollutant laden gas stream.

	19. Units	20. Inlet	21. Outlet	22. Efficiency (%):	
				Capture	Control
☐ a. Hazardous Air Pollutant (HAP) *(specify)*:					
☒ b. Volatile Organic Compounds (VOC)	ton/yr	8.54	0.17	100.00%	98.00%
☐ c. Other Pollutant *(specify)*:					

PART D: Monitoring, Record Keeping, & Testing Procedures

Part D identifies any existing or proposed monitoring, record keeping, & testing procedures that may need to be included in the permit.

23. Item(s) Monitored:	VOC Breakthrough			
24. Monitoring Frequency:	Daily			
25. Item(s) Recorded:	TOC concentration			
26. Record Keeping Frequency:	Daily			
27. Pollutant(s) Tested:				
28. Test Method(s):				
29. Testing Frequency:				

PART E: Preventive Maintenance Plan

Part E verifies that a complete Preventive Maintenance Plan (PMP) has been prepared for the control device, if applicable. Use this table as a checklist to ensure that the PMP is complete.

30. Do you have a Preventive Maintenance Plan (PMP)?

☐ No PMP is needed. ☒ Yes – the following items are identified on the PMP:

- ☒ **A.** Identification of the individual(s) responsible for inspecting, maintaining and repairing emission control devices.
- ☒ **B.** Description of the items or conditions that will be inspected.
- ☒ **C.** Schedule for inspection of items or conditions described above.
- ☒ **D.** Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

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ATTACHMENT 2

Emission Inventory Calculations

Appendix A: Emissions Calculations

Pre-modification PTE Summary Nested Source

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Unrestricted Potential to Emit of the Nested Source (tons/yr)											
Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-	0.090	-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-	8.450	-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-	11.66	-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks)	-	-	-	-	-	6.638	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, V-1)	15.64	15.64	15.64	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through	0.11	0.43	0.43	0.03	5.64	0.310	4.74	0.11	0.10	Hexane
Natural Gas Thermal Oil System Heater	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.156	0.148	Hexane
VOC Laboratory Operations	LAB-1	-	-	-	-	-	16.39	-	-	-	N/A
Diesel Emergency Generation	DEG-1, DFP-1	0.53	0.53	0.53	0.50	7.52	0.61	1.62	0.0066	0.0020	Formaldehyde
Cooling Towers	CT-2301A, CT-230	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						1.04				
JWA CO., LTD. (067-00096) Total PTE Excluding Fugitive		**22.16**	**22.95**	**22.95**	**0.58**	**17.28**	**45.64**	**13.28**	**0.27**	**0.25**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fug	NMP-1	-	-	-	-	-	0.068	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fug	TDS-1	-	-	-	-	-	0.067	-	-	-	N/A
Organic Liquid Filter Changeout Fugitives	--	-	-	-	-	-	0.73	-	-	-	N/A
NMP - Pipeline Fugitive Components	--	-	-	-	-	-	8.23	-	-	-	N/A
TDS - Pipeline Fugitive Components	--	-	-	-	-	-	14.63	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.54				
Paved Roads	--	1.12	0.22	0.06	-	-	-	-	-	-	N/A
JWA CO., LTD. (067-00096) Total PTE Including Fugitive		**23.27**	**23.17**	**23.00**	**0.58**	**17.28**	**69.90**	**13.28**	**0.27**	**0.25**	**Hexane**

Limited Potential to Emit of the Nested Source (tons/yr)											
Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-	5.04	-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-		-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-		-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks)	-	-	-	-	-	6.64	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, V-1)	0.31	0.31	0.31	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through	0.11	0.43	0.43	0.03	5.64	0.31	4.74	0.11	0.10	Hexane
Natural Gas Thermal Oil System Heater	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.16	0.15	Hexane
VOC Laboratory Operations (insig)	LAB-1	-	-	-	-	-	3.28	-	-	-	N/A
Diesel Emergency Generation (DEG-1, DFP	DEG-1, DFP-1	0.53	0.53	0.53	0.50	7.52	0.61	1.62	0.01	0.00	Formaldehyde
Cooling Towers	CT-2301A, CT-230	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						1.04				
JWA CO., LTD. (067-00096) Total PTE Excluding Fugitive		**6.83**	**7.62**	**7.62**	**0.58**	**17.28**	**17.37**	**13.28**	**0.27**	**0.25**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fug	NMP-1	-	-	-	-	-	0.068	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fug	TDS-1	-	-	-	-	-	0.067	-	-	-	N/A
Organic Liquid Filter Changeout Fugitives	--	-	-	-	-	-	0.731	-	-	-	N/A
NMP - Pipeline Fugitive Components	--	-	-	-	-	-	8.227	-	-	-	N/A
TDS - Pipeline Fugitive Components	--	-	-	-	-	-	14.627	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.543				N/A
Paved Roads	--	1.118	0.224	0.055	-	-	-	-	-	-	N/A
JWA CO., LTD. (067-00096) Total PTE Including Fugitive		**7.94**	**7.84**	**7.67**	**0.58**	**17.28**	**41.63**	**13.28**	**0.27**	**0.25**	**Hexane**

Note: Green shading indicates where control devices have been applied for a limit.

Controlled Potential to Emit of the Nested Source (tons/yr)											
Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-	0.002	-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-	0.169	-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-	0.23	-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks)	-	-	-	-	-	0.133	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, V-1)	0.31	0.31	0.31	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through	0.11	0.43	0.43	0.03	5.64	0.31	4.74	0.11	0.10	Hexane
Natural Gas Thermal Oil System Heater	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.16	0.15	Hexane
VOC Laboratory Operations (insig)	LAB-1	-	-	-	-	-	3.28	-	-	-	N/A
Diesel Emergency Generation (DEG-1, DFP	DEG-1, DFP-1	0.53	0.53	0.53	0.50	7.52	0.61	1.62	0.01	0.00	Formaldehyde
Cooling Towers	CT-2301A, CT-230	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						0.07				
JWA CO., LTD. (067-00096) Total PTE Excluding Fugitive		**6.83**	**7.62**	**7.62**	**0.58**	**17.28**	**5.26**	**13.28**	**0.27**	**0.25**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fug	NMP-1	-	-	-	-	-	0.068	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fug	TDS-1	-	-	-	-	-	0.067	-	-	-	N/A
Organic Liquid Filter Changeout Fugitives	--	-	-	-	-	-	0.731	-	-	-	N/A
NMP - Pipeline Fugitive Components	--	-	-	-	-	-	8.227	-	-	-	N/A
TDS - Pipeline Fugitive Components	--	-	-	-	-	-	14.627	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.362				N/A
Paved Roads	--	1.118	0.224	0.055	-	-	-	-	-	-	N/A
JWA CO., LTD. (067-00096) Total PTE Including Fugitives		**7.94**	**7.84**	**7.67**	**0.58**	**17.28**	**29.34**	**13.28**	**0.27**	**0.25**	**Hexane**

Appendix A: Emissions Calculation
PTE Summary Nested Source
Modification of Emission Inventory due to addition of TDS Trains 2 and 3
Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-44344-00096
Reviewer: Bruce Farrar

Unrestricted Potential to Emit of the Nested Source (tons/yr)

Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-	0.090	-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-	8.450	-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-	11.66	-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks), Trains 1-3	-	-	-	-	-	7.74	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, SD-2, SD-3, V-1, V-2, V-3)	15.64	15.64	15.64	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through 3	0.00	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	Hexane
Natural Gas Thermal Oil System Heate	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.156	0.148	Hexane
VOC Laboratory Operations	LAB-1	-	-	-	-	-	16.39	-	-	-	N/A
Diesel Emergency Generation	DEG-1, DFP-1, DFP-2	0.81	0.81	0.81	0.75	11.38	0.92	2.45	0.0100	0.0030	Formaldehyde
Cooling Towers	CT-7141A, CT-7141B	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						1.04				
Total PTE Excluding Fugitive	**JWA CO., LTD. (067-00096)**	**22.32**	**22.79**	**22.79**	**0.80**	**15.50**	**46.74**	**9.38**	**0.17**	**0.15**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fugitive	NMP-1	-	-	-	-	-	0.071	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fugitive	TDS-1	-	-	-	-	-	0.065	-	-	-	N/A
Organic Liquid Filter Changeout Fugitive	--	-	-	-	-	-	1.98	-	-	-	N/A
NMP - Pipeline Fugitive Component	--	-	-	-	-	-	8.23	-	-	-	N/A
TDS - Pipeline Fugitive Components	Trains 1, 2 and 3	-	-	-	-	-	43.88	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.54				
Paved Roads	--	1.118	0.224	0.055	-	-	-	-	-	-	N/A
Total PTE Including Fugitive	**JWA CO., LTD. (067-00096)**	**23.44**	**23.02**	**22.85**	**0.80**	**15.50**	**101.51**	**9.38**	**0.17**	**0.15**	**Hexane**

Changes to unrestricted Potential Emissions

Increased Mixing Loss from adding Train 2 and 3 vessels
Added solids handling operations for trains 2 and 3, including new baghouses for each
All of this equipment was installed as electric. Removed natural gas emissions
Increased combustion emissions from addition of DFP-
Changed ID numbers for cooling towers
Emissions from Cathode Slurry Process AA
Increased number of filter units by adding Train 2 and
Increased uncontrolled potential fugitive VOC from adding TDS Train 2 and 3 Valves, Flanges and seal
Emissions from Cathode Slurry Process AA

Limited Potential to Emit of the Nested Source (tons/yr)

Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-		-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-	1.66	-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-		-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks), Trains 1-3	-	-	-	-	-	7.74	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, SD-2, SD-3, V-1, V-2, V-3)	0.31	0.31	0.31	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Hexane
Natural Gas Thermal Oil System Heater	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.16	0.15	Hexane
VOC Laboratory Operations (insig)	LAB-1	-	-	-	-	-	3.28	-	-	-	N/A
Diesel Emergency Generation (DEG-1, DFP-1)	DEG-1, DFP-1, DFP-2	0.81	0.81	0.81	0.75	11.38	0.92	2.45	0.01	0.00	Formaldehyde
Cooling Towers	CT-7141A, CT-7141B	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						1.04				
Total PTE Excluding Fugitive	**JWA CO., LTD. (067-00096)**	**6.99**	**7.46**	**7.46**	**0.80**	**15.50**	**15.09**	**9.38**	**0.17**	**0.15**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fugitives	NMP-1	-	-	-	-	-	0.071	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fugitives	TDS-1	-	-	-	-	-	0.065	-	-	-	N/A
Organic Liquid Filter Changeout Fugitives	--	-	-	-	-	-	1.981	-	-	-	N/A
NMP - Pipeline Fugitive Component	--	-	-	-	-	-	7.914	-	-	-	N/A
TDS - Pipeline Fugitive Components	Trains 1, 2 and 3	-	-	-	-	-	43.881	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.54				
Paved Roads	--	1.118	0.224	0.055	-	-	-	-	-	-	N/A
Total PTE Including Fugitive	**JWA CO., LTD. (067-00096)**	**8.11**	**7.69**	**7.52**	**0.80**	**15.50**	**69.55**	**9.38**	**0.17**	**0.15**	**Hexane**

Changes to Limited Emissions

Reduced limited allowable to reflect equivalent of 20 ppmv as propane as required by NSPS 40 CFR 60 Subpart NNNa
Increased Mixing Loss from adding TDS Train 2 and 3 vessels
Added solids handling operations for trains 2 and 3, including new baghouses for each
All of this equipment was installed as electric. Removed natural gas emissions
Added Emissions from Cathode Slurry Process tanks
Increased number of Filter units by adding Train 2 and 3
Also added CS process filter changes
decreased by addition of NSPS NNNa LDAR on closed vent
Increased fugitive VOC from Adding Train 2 and 3 Valves
Flanges and seals - Reduced increase by addition of LDA
Emissions from Cathode Slurry Process AA

Note: Green shading indicates where control devices have been applied for a limit.

Controlled Potential to Emit of the Nested Source (tons/yr)

Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP	
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)	-	-	-	-	-	0.002	-	-	-	N/A
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)	-	-	-	-	-	0.169	-	-	-	N/A
NMP - Pipeline Pressure Reliefs	--	-	-	-	-	-	0.23	-	-	-	N/A
TDS Product Storage, Mixing and Blending	TDS-1 (tanks), Trains 1-3	-	-	-	-	-	0.155	-	-	-	N/A
TDS Solids Handling	TDS-1 (SD-1, SD-2, SD-3, V-1)	0.31	0.31	0.31	-	-	-	-	-	-	N/A
Natural Gas Heaters	HVAC-1 through 19, WH-1 through 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Hexane
Natural Gas Thermal Oil System Heate	BO-7151	0.16	0.63	0.63	0.05	4.12	0.45	6.93	0.16	0.15	Hexane
VOC Laboratory Operations (insig	LAB-1	-	-	-	-	-	3.28	-	-	-	N/A
Diesel Emergency Generation (DEG-1, DFP-1)	DEG-1, DFP-1, DFP-2	0.81	0.81	0.81	0.75	11.38	0.92	2.45	0.01	0.00	Formaldehyde
Cooling Towers	CT-7141A, CT-7141B	5.72	5.72	5.72	-	-	-	-	-	-	N/A
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						0.07				
Total PTE Excluding Fugitive	**JWA CO., LTD. (067-00096)**	**6.99**	**7.46**	**7.46**	**0.80**	**15.50**	**5.38**	**9.38**	**0.17**	**0.15**	**Hexane**
NMP Organic Liquid Loading/ Unloading Fugitive	NMP-1	-	-	-	-	-	0.071	-	-	-	N/A
TDS Organic Liquid Loading/ Unloading Fugitive	TDS-1	-	-	-	-	-	0.065	-	-	-	N/A
Organic Liquid Filter Changeout Fugitives	--	-	-	-	-	-	1.981	-	-	-	N/A
NMP - Pipeline Fugitive Component	--	-	-	-	-	-	7.914	-	-	-	N/A
TDS - Pipeline Fugitive Components	Trains 1, 2 and 3	-	-	-	-	-	43.681	-	-	-	N/A
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.362				
Paved Roads	--	1.118	0.224	0.055	-	-	-	-	-	-	N/A
Total PTE Including Fugitive	**JWA CO., LTD. (067-00096)**	**8.11**	**7.69**	**7.52**	**0.80**	**15.50**	**59.56**	**9.38**	**0.17**	**0.15**	**Hexane**

Changes to Controlled PTE Emissions

Increased Mixing Loss from adding TDS Train 2 and 3 vessels
Added solids handling operations for trains 2 and 3, including new baghouses for each
All of this equipment was installed as electric. Removed natural gas emissions
Increased combustion emissions from addition of DFP-
Changed ID numbers for cooling towers
Added Emissions from Cathode Slurry Process tanks
Increased number of Filter units by adding Train 2 and 3
decreased by addition of NSPS NNNa LDAR on closed vent
Increased fugitive VOC from Adding Train 2 and 3 Valves, Flanges and seals; reduction in emissions from LDAI
Increased fugitive VOC from Adding Cathode Slurry (CS; Valves, Flanges and seals

Appendix A: Emissions Calculations

Modification Summary Nested Source; Increase or decrease in emissions by unit

Company Name: JWA CO., LTD
Source Address: 1878 E Sparks Road, Kokomo, IN 46901
Permit Number:
Reviewer:

Modification Increase in Potential to Emit of the Nested Source (tons/yr)

Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP		Summary of change
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)						0.00				N/A	
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)						0.00				N/A	
NMP - Pipeline Pressure Reliefs	–						0.00				N/A	
TDS Product Storage, Mixing and Blending	TDS-1 (tanks) Trains 1-3						1.10				N/A	but number of tanks, tank sizes and turnovers are revised
TDS Solids Handling	TDS-1 (SD-1, SD-2, SD-3, V-1, V-2, V-	0.00	0.00	0.00							N/A	baghouses are added and throughput
Natural Gas Heaters	HVAC-1 through 19, WH-1 through 3	-0.11	-0.43	-0.43	-0.03	-5.64	-0.31	-4.74	-0.11	-0.10	Hexane	All of the equipment was installed as electric and not gas-fired
Natural Gas Thermal Oil System Heater	BO-7151	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Hexane	
VOC Laboratory Operations	LAS-1						0.00				N/A	
Diesel Emergency Generation	DEG-1, DFP-1, DFP	0.27	0.27	0.27	0.26	3.86	0.31	0.83	0.003	0.001	Formaldehyde	One new Diesel Fire pump (DFP-2) is added
Cooling Towers	CT-2301A, CT-2301	0.00	0.00	0.00							N/A	Cooling Tower IDs are changed
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						0.00					
Total PTE Excluding Fugitives	**JWA CO., LTD (067-00096)**	**0.17**	**-0.16**	**-0.16**	**0.22**	**-1.78**	**1.10**	**-4.90**	**-0.10**	**-0.10**	**Hexane**	[illegible]
NMP Organic Liquid Loading/ Unloading Fugitive	NMP-1						0.00				N/A	
TDS Organic Liquid Loading/ Unloading Fugitive	TDS-1						0.00				N/A	
Organic Liquid Filter Changeout Fugitives	–						1.25				N/A	trains 2 and 3 and includes filter change for the new CS process
NMP - Pipeline Fugitive Components	–						0.00				N/A	
TDS - Pipeline Fugitive Components	–						29.25				N/A	[illegible] due to addition of 2 new trains
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.00					
Paved Roads	–	0.00	0.00	0.00							N/A	
Total PTE Including Fugitives	**JWA CO., LTD (067-00096)**	**0.17**	**-0.16**	**-0.16**	**0.22**	**-1.78**	**31.61**	**-4.90**	**-0.10**	**-0.10**	**Hexane**	[illegible]

Modification Increase in Limited Potential to Emit of the Nested Source (tons/yr)

Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP		
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)						-3.58				N/A	Reduced limited allowable to reflect equivalent of 20 ppmv as propane as required by NSPS 40 CFR 60 Subpart NNNa
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)										N/A	
NMP - Pipeline Pressure Reliefs	–										N/A	
TDS Product Storage, Mixing and Blending	TDS-1 (tanks) Trains 1-3						1.10				N/A	unchanged, but number of tanks, tank sizes and turnovers are revised
TDS Solids Handling	[illegible] SD-3, V-1, V-2, V-	0.00	0.00	0.00							N/A	baghouses are added and throughput reallocated to 3 lines
Natural Gas Heaters	HVAC-1 through 19, WH-1 through 3	-0.11	-0.43	-0.43	-0.03	-5.64	-0.31	-4.74	-0.11	-0.10	Hexane	All of the equipment was installed as electric and not gas-fired
Natural Gas Thermal Oil System Heater	BO-7151	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Hexane	
VOC Laboratory Operations (neg)	LAS-1						0.00				N/A	
Diesel Emergency Generation (DEG-1, DFP-1)	DEG-1, DFP-1, DFP	0.27	0.27	0.27	0.26	3.86	0.31	0.83	0.003	0.0010	Formaldehyde	One new Diesel Fire pump (DFP-2) is added
Cooling Towers	CT-2301A, CT-2301	0.00	0.00	0.00							N/A	Cooling Tower IDs are changed
Cathode Slurry Storage and Processing	CS-1 (Tanks & FPS)						0.00					
Total PTE Excluding Fugitives	**JWA CO., LTD (067-00096)**	**0.17**	**-0.15**	**-0.15**	**0.22**	**-1.78**	**-2.28**	**-3.90**	**-0.10**	**-0.10**	**Hexane**	[illegible]
NMP Organic Liquid Loading/ Unloading Fugitive	NMP-1						0.00				N/A	
TDS Organic Liquid Loading/ Unloading Fugitive	TDS-1						0.00				N/A	
Organic Liquid Filter Changeout Fugitives	–						1.25				N/A	trains 2 and 3 and added filter change for the new CS process
NMP - Pipeline Fugitive Components	–						-0.31				N/A	Decreased due to required NNNa LDAR
TDS - Pipeline Fugitive Components	–						29.25				N/A	[illegible] due to addition of 2 new trains
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.00					
Paved Roads	–	0.00	0.00	0.00							N/A	
Total PTE Including Fugitives	**JWA CO., LTD (067-00096)**	**0.17**	**-0.15**	**-0.15**	**0.22**	**-1.78**	**27.81**	**-3.90**	**-0.10**	**-0.10**	**Hexane**	[illegible]

Note: Green shading indicates where control devices have been applied for a limit.

Modification Increase in Controlled Potential to Emit of the Knotted Source (tons/yr)												
Emission Units	ID	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP		
NMP Fixed Roof Storage Tank Losses	NMP-1 (tanks)						0.00				N/A	
NMP Distillation Column Vacuum System	NMP-1 (Tower #1 through #4)						0.00				N/A	
NMP - Pipeline Pressure Relefs	–						0.00				N/A	
TDS Product Storage, Mixing and Blending	TDS-1 (tanks) Trains 1-3						0.02				N/A	Overall production volume is unchanged, but number of tanks, tank sizes and baghouses are added and throughput reallocated to 3 lines
TDS Solids Handling	TDS-1 (SD-1, SD-2, SD-3, V-1)	0.00	0.00	0.00							N/A	
Natural Gas Heaters	TH-1, TH-2 through 19, WH-1 through 3	-0.11	-0.43	-0.43	-0.03	-5.64	-0.31	-4.74	-0.11	-0.10	Hexane	All of this equipment was installed as electric and not gas-fired
Natural Gas Thermal Oil System Heater	BO-7151	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Hexane	
VOC Laboratory Operations (misc)	LAB-1						0.00				N/A	
Diesel Emergency Generators (DEG-1, DFP-1)	DEG-1, DFP-1, DFP-2	0.27	0.27	0.27	0.26	3.84	0.31	0.83	0.003	0.001	Formaldehyde	One new Diesel Fire pump (DFP-2) is added
Cooling Towers	CT-7141A, CT-7141B	0.00	0.00	0.00							N/A	Cooling Tower IDs are changed
Cathode Slurry Storage and Processing	CS-1 (Tanks & FF-2)						0.00					
Total PTE Excluding Fugitives	**JWA CO., LTD (067-0009K)**	**0.17**	**-0.16**	**-0.16**	**0.22**	**-1.79**	**0.02**	**-3.90**	**-0.10**	**-0.10**	**Hexane**	net facility increases shown in red
NMP Organic Liquid Loading/ Unloading Fugitives	NMP-1						0.00				N/A	
TDS Organic Liquid Loading/ Unloading Fugitives	TDS-1						0.00				N/A	
Organic Liquid Filter Changeout Fugitives	–						1.25				N/A	Added additional filter changes on Trains 2 and 3 and added filter change for
NMP - Pipeline Fugitive Components	–						-0.31				N/A	Decreased due to required NNN LDAR
TDS - Pipeline Fugitive Components	Trains 1, 2 and 3						29.25				N/A	Organic liquid components are higher due to addition of 2 new trains
CS- Organic Liquid Filter Change and Pipeline Fugitives	CS-1 (fugitives)						0.00					
Paved Roads	–	0.00	0.00	0.00							N/A	
Total PTE Including Fugitives	**JWA CO., LTD (067-0009K)**	**0.17**	**-0.16**	**-0.16**	**0.22**	**-1.79**	**30.22**	**-3.90**	**-0.10**	**-0.10**	**Hexane**	net facility increases shown in red

Appendix A: Emissions Calculations
PTE Summary Entire Source

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number:
Reviewer:

Unrestricted Potential to Emit the Entire Source (tons/yr)												
	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP		Worst Single HAP	
JWA CO., LTD. (067-00096) Total PTE Excluding Fugitives	22.32	22.79	22.79	0.80	15.50	46.74	9.38	0.166	-	Nickel	-	Cobalt
StarPlus Energy LLC (067-00093) Total PTE Excluding Fugitives	841.72	835.20	821.11	2.47	106.56	127.63	140.15	145.90	94.50	Nickel	49.50	Cobalt
Total PTE of Entire Source	864.04	857.99	843.90	3.27	122.06	174.37	149.52	146.06	94.50	Nickel	49.50	Cobalt

Note: The emissions for StarPlus Energy LLC (067-00093) are based on the ATSD of TV SPM No. 067-47628-00093, issued on June 18, 2024.

Source-Wide Emissions of the Entire Source After Issuance (ton/year)												
	PM	PM10	PM2.5	SO2	NOx	VOC	CO	Total HAPs	Worst Single HAP		Worst Single HAP	
JWA CO., LTD. (067-00096) Total PTE Excluding Fugitives	6.99	7.46	7.46	0.80	15.50	15.09	9.38	0.17	-	Nickel	-	Cobalt
StarPlus Energy LLC (067-00093) Total PTE Excluding Fugitives	204.31	197.79	183.70	2.47	106.56	209.25	140.15	17.02	9.92	Nickel	5.20	Cobalt
Total PTE of Entire Source After Issuance	211.30	205.26	191.17	3.27	122.06	224.34	149.52	17.18	9.92	Nickel	5.20	Cobalt
Title V Major Source Thresholds	NA	100	100	100	100	100	100	25	10	-	10	-
PSD Major Source Thresholds	250	250	250	250	250	250	250	-	-	-	-	-

Note: The emissions for StarPlus Energy LLC (067-00093) are based on the ATSD of TV SPM No. 067-47628-00093, issued on June 18, 2024.

Appendix A: Emissions Calculations
NMP and TDS Throughput

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Total Plant Throughput

Unlimited Potential Throughput	Total Batch Volume	Specific Gravity of Batch	Total Batch Weight	Batches per day per mixer	Hours/day	Operating schedule	Throughput per hr	Throughput per day	Unlimited Throughput per year	Throughput per year
	Liters/ batch	relative to H2O, 25C	kg/Batch	each	each	Days per year	kg/hr	kg/day	kg/yr	Mg/yr
Crude-NMP (35% Water)		1.00	0	0	24	365	8781.173165	210,748.2	76923076.92	76,923.1
							M3/hr	M3/day	M3/yr	M3/yr
nmp		1.03					8.781173165	210.748156	76,923.08	76,923.1
water		1.00					lb/hr	lb/day	lb/yr	English Ton/yr
							19362.48683	464,699.7	169,615,384.6	84,810.4
							liters/hr	liters/day	Liters/yr	
							8781.173165	210,748.2	76,923,076.9	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							2319.99291	**55,679.8**	**20,323,137.9**	
					Pipeline	80%	US gal/hr	US gal/day	US gal/yr	
							1855.994328	44,543.9	16,258,510.3	
					Truckloads	20%	20K L loads/hr	20K L loads/day	20K L loads/yr	
							0.087811732	2.1	769.2	

Unlimited Potential Throughput	Liters/ batch	relative to H2O, 25C	kg/Batch	each	each	Days per year	kg/hr	kg/day	kg/yr	Mg/yr
NMP		1.03	0	0	24	365	5707.762557	136,986.3	50000000	50,000.0
							M3/hr	M3/day	M3/yr	M3/yr
							5.707762557	136.9863014	50,000.00	**50,000.0**
							lb/hr	lb/day	lb/yr	English Ton/yr
							12585.61644	302,054.8	110,250,000.0	55,126.8
							liters/hr	liters/day	Liters/yr	
							5707.762557	136,986.3	50,000,000.0	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							1507.995392	**36,191.9**	**13,210,039.6**	

Unlimited Potential Throughput	Liters/ batch	relative to H2O, 25C	kg/Batch	each	each	Days per year	kg/hr	kg/day	kg/yr	Mg/yr
TDS-L		1.03	0	0	24	365	1175.799087	28,219.2	10300000	10,300.0
							M3/hr	M3/day	M3/yr	M3/yr
							1.175799087	28.21917808	10,000.00	**10,000.0**
							lb/hr	lb/day	lb/yr	English Ton/yr
							2592.636986	62,223.3	22,711,500.0	11,356.1
							liters/hr	liters/day	Liters/yr	
							1141.552511	27,397.3	10,000,000.0	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							301.5990783	**7,238.4**	**2,642,007.9**	

Appendix A: Emissions Calculations
Cathode Slurry Throughput

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Total Plant Throughput

Unlimited Potential Throughput	Total Batch Volume Liters/ batch	Specific Gravity of Batch relative to H2O, 25C	Total Batch Weight kg/Batch	Batches per day per mixer each	Hours/day each	Operating schedule Days per year	Throughput per hr kg/hr	Throughput per day kg/day	Unlimited Throughput per year kg/yr	Throughput per year Mg/yr
CS Cathode Slurry Solution		1.13	0	0	24	365	570.7762557	13,698.6	5000000	5,000.0
							M3/hr	M3/day	M3/yr	M3/yr
							0.506456305	12.15495132	4436.56	4,436.6
							lb/hr	lb/day	lb/yr	English Ton/yr
							1258.561644	30,205.5	11,025,000.0	5,512.7
							liters/hr	liters/day	Liters/yr	
							506.456305	12,155.0	4,436,557.2	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							133.8061572	**3,211.3**	**1,172,141.9**	
					Pipeline	0%	US gal/hr	US gal/day	US gal/yr	
							0	0.0	0.0	
					Truckloads	100%	20K L loads/hr	20K L loads/day	20K L loads/yr	
							0.025322815	0.6	221.8	

		Density	vol%	wt of 1 l mix	wt%
nmp	1	1.03	90%	0.927	82%
black mass	1	2.00	10%	0.20	18%
		sum	**100%**	**1.127**	**100%**

Unlimited Potential Throughput	Liters/ batch	relative to H2O, 25C	kg/Batch	each	each	Days per year	kg/hr	kg/day	kg/yr	Mg/yr
NMP		1.03	0	0	24	365	469.4849947	11,267.6	4112688.554	4,112.7
							M3/hr	M3/day	M3/yr	M3/yr
							0.455810674	10.93945619	3992.90	3,992.9
							lb/hr	lb/day	lb/yr	English Ton/yr
							1035.214413	24,845.1	9,068,478.3	4,534.4
							liters/hr	liters/day	Liters/yr	
							455.8106745	10,939.5	3,992,901.5	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							120.4255415	**2,890.2**	**1,054,927.7**	

Unlimited Potential Throughput	Liters/ batch	relative to H2O, 25C	kg/Batch	each	each	Days per year	kg/hr	kg/day	kg/yr	Mg/yr
black mass		2.00	0	0	24	365	101.291261	2,431.0	887311.4463	887.3
							M3/hr	M3/day	M3/yr	M3/yr
							0.05064563	1.215495132	443.66	**443.7**
							lb/hr	lb/day	lb/yr	English Ton/yr
							223.3472305	5,360.3	1,956,521.7	978.3
							liters/hr	liters/day	Liters/yr	
							50.6456305	1,215.5	443,655.7	
					Total	100%	US gal/hr	US gal/day	US gal/yr	
							13.38061572	**321.1**	**117,214.2**	

Appendix A: Emissions Calculations

NMP Process - Organic Liquid Tanker Truck Transfer Emissions

Company Name: JVA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 087-48344-00094
Reviewer: Bruce Farrar

NMP Process System

C-NMP Grade, M-NMP Product, and Distillation Residuals Tanker Truck Loading; Submerged Fill; Controlled by Scrubber and Carbon Adsorber

Emission Unit	Portion of Product handled by tanker truck or shipping container	Product Throughput	VOC Emission Factor[1]	Uncontrolled VOC Emissions	VOC Overall Control Efficiency	Controlled VOC Emissions
	%	(gallons/yr)	(lbs/1000 gallons)	(lbs/yr)	(%)	(lbs/yr)
Incoming C-NMP Tanker Tank Loading	20.0%	2,663,606	0.0178	47.4	88.2%	5.6
Outgoing M-NMP Tanker Truck Product Loading	25.0%	2,816,549	0.0178	50.1	88.2%	5.9
Incoming C-NMP for 4th Tower Feed (drum/tote)	100.0%	2,315,268	0.0178	41.2	88.2%	4.9
Outgoing Residuals Tank Truck Loading	100.0%	177,528	0.0178	3.2	88.2%	0.4
			Total Load/ Unload Fugitives (lbs/yr)	142.0		16.8
			Total Load/ Unload Fugitives (tons/yr):	0.071		0.008

Notes:

(1) Since there is no emission factor available for loading losses of NMP, the loading loss equation with *Section 4.2 Transportation And Marketing of Petroleum Liquids* used to estimate emissions

(2) Submerged loading - clean tank

(3) Equation parameters for Waste at 25 C average temperature

Methodology

VOC Emission factor = (12.46) * (Saturation factor) * (Vapor pressure [psia]) * (Molecular weight [lb/lb-mole]) /(Temperature [deg R])

saturation factor (Table 5.2.1)=	S Factor, Dedicated Vapor Balance	1
vapor pressure (psia) =	True Vapor Pressure NMP	0.00774
molecular weight (lb/lb-mole) =	N-Methyl Pyrrolidone	99.13
temperature (deg. R) =	77 F	537

R= 460 + F

Annual Fugitive VOC Emissions (lbs) = (Annual truck throughput [gallons/yr]) * (M gallons/1,000 gallons) * (VOC emission factor [lbs VOC/10^3 gallons]) * (1 - Overall Reduction EF/100)

Overall Reduction efficiency (%) = 90% vapor capture and 98% control = 88.2%

Material Profile: NMP Loading

Constituents	Liquid Mass Fraction weight %	Liquid mol wt. [M]	liq Mol Fraction [x]	Vapor Pressure (mmHg) @25C [VP]	Partial Vapor Pressure (mmHg [Px]	Vapor Mole fraction [y]	Vapor Molecular Weights	Vapor Mass fraction (%) [z]	Speciated VOC Emissions: Uncontrolled (ton/yr)	Speciated VOC Emissions: Controlled (ton/yr)
N-Methyl pyrrolidone (NMP)	100.0%	99.13	1.0000	0.40	0.40033	100.00%	99.13000	100.00%	0.071	0.008
Totals:	100.0%		1.0000			100.00%		100.00% total Emissions		
				Sum of Px = Total VP (mmHg) [P]:	0.40033	Sum of Vapor Mol Wt [M]:	99.13000	(Ton/yr)	0.071	0.008
	Sum of [liq mass fraction/liq mol wt]	0.010087764		Total VP (psia)[P]	0.00774					

Appendix A: Emissions Calculations

TDS Process - Organic Liquid Tanker Truck Transfer Emissions

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

TDS Process System

TDS Additive (Rubber, CNT(L), CNT and GDS) Transfer from Container to Raw Material Mix and Premix Loading Emissions: Closed tank, Nitrogen Blanketed, Routed to Control

Dispensing and Mixing Process	per train: TDS-L Process throughput (gal/yr)	% by Weight in TDS-L Mixture	per train: Weight of Additive Matl dispensed (lb/yr)	Equivalent Volume of Additive (gal/yr)	per train: Mix tank process throughput (gal/yr	Additive percent by Volume in Mix tank	
Rubber loading to Rubber Mix Tank	880,566.7	1.5%	113,463.7	13,208.5	176,113.3	7.50%	*Solids Transfer*
CNT(L) Loading to Pre-mix Tank	880,566.7	2.3%	173,977.6	10,979.3	880,566.7	1.25%	*Solids Transfer*
CNT Loading to Pre-mix Tank	880,566.7	5.3%	400,904.9	21,850.1	880,566.7	2.48%	*Solids Transfer*
GDS Loading to G-NMP Mix tank	880,566.7	1.1%	83,206.7	10,681.8	739,699.7	1.44%	*Organic Liquid*
		Sum of Solids Additives (lb/yr)	689,348.2			Total	
		Sum of Solids Additives (ton/yr)	344.2				

Emission Unit	per train: Maximum Raw Throughput	NMP Emission Factor[1]	per train: Uncontrolled VOC Emissions	VOC Overall Control Efficiency	per train: Controlled VOC Emissions	
	(gallons/yr)	(lbs/10^3 gallons)	(lbs/yr)	(%)	(lbs/yr)	
Rubber loading to Rubber Mix Tank	13,209	0.0466	0.61	98.0%	0.07	*Solids Transfer*
CNT(L) Loading to Pre-mix Tank	10,979	0.0466	0.51	98.0%	0.06	*Solids Transfer*
CNT Loading to Pre-mix Tank	21,850	0.0466	1.02	98.0%	0.12	*Solids Transfer*
GDS Loading to G-NMP Mix tank	10,682	0.0466	0.50	88.2%	0.06	*Organic Liquid Transfer*
TDS-L Product Dispensing into drums	880,567	0.0466	40.99	88.2%	4.84	*Organic Liquid Transfer*
Totals:	937,286					
		Total Load/ Unload Fugitives (lb/yr):	43.63		5.15	
		Total Load/ Unload Fugitives (ton/yr):	0.0218		0.0026	
		Total for Trains 1, 2 & 3 (lb/yr)	**130.89**		**15.45**	
		Total for Trains 1, 2 & 3 (ton/yr)	**0.0654**		**0.0077**	

Notes

(1) Since there is no emission factor available for loading losses of NMP, the loading loss equation with Section 4.2 *Transportation And Marketing of Petroleum Liquids* used to estimate emissions

(2) Submerged loading - saturated tank

(3) Equation parameters for Waste at 25 C average temperature

Methodology

VOC Emission factor = (12.46) x (Saturation factor) x (Vapor pressure [psia]) x (Molecular weight [lb/lb-mole]) /(Temperature [deg R])

saturation factor (Table 5.2.1)=	S Factor, Dedicated Vapor Balance	1.45
vapor pressure (psia) =	True Vapor Pressure NMP	0.01430
molecular weight (lb/lb-mole) =	N-Methyl Pyrrolidone	99.13
temperature (deg R) =	90 F	550

R= 460 + F

Annual Fugitive VOC Emissions (lbs) = (Annual truck throughput [gallons/yr]) * (10^3 gallons/1,000 gallons) * (VOC emission factor [lbs VOC/10^3 gallons]) * (1 - Overall Reduction EF/100)

Overall Reduction efficiency (%) for Volatile Organic liquid Additive = 90% vapor capture and 86% control = 88.2%

Overall Reduction efficiency for solids displacement (%) = 100% vapor capture and 86% control = 98.0%

Worst Case Material Profile: TDS Additives Loading

Constituents	Liquid Mass Fraction weight %	Liquid mol wt. [M]	liq Mol Fraction [e]	Vapor Pressure (mmHg) @35C [VR]	Partial Vapor Pressure (mmHg) [Px]	Vapor Mole fraction [y]	Vapor Molecular Weights	Vapor Mass fraction (%) [z]	Speciated VOC Emissions: Uncontrolled (ton/yr)	Controlled (ton/yr)
N-Methyl pyrrolidone (NMP)	100.0%	99.13	1.0000	0.74	0.73929	100.00%	99.13000	100.00%	0.022	0.003
Totals:	100.0%		1.0000			100.00%		100.00% total		
				Sum of Px = Total Vt (mmHg) [P]:	0.73929	Sum of Vapor Mol Wt [M]:	99.13000	Emissions (Ton/yr)	0.022	0.003
	Sum of [liq mass fraction/liq mol wt]	0.010087764		Total VP (psia)[P]:	0.01430					

Appendix A: Emissions Calculations
NMP Organic Liquid Distillation

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

NMP Process System

NMP Vacuum Distillation Distillation Processes; Closed Nitrogen Blanketed Reactors, Controlled by Knock-out condenser, Scrubber and Carbon Adsorber

Distillation Tower	Material throughput (gal/yr)	Material throughput (1000 l or m3/yr)	AP-42 Conversion to vacuum feed	Vacuum Feed Rate (1000 L [m3])	Emission Factor (kg VOC/m3 Vacuum Feed) (1)(2)	Potential VOC Emissions (kg/yr)	Potential VOC Emissions (lb/yr)	VOC Overall Control Efficiency (2) (%)	Unlimited Controlled VOC Emissions (lbs/yr)
C-NMP Bulk Feed to Distillation Tower 1	16,985,708.3	64298.4	36%	23.147	0.14	3240.6	7145.6	98.0%	142.9
NMP Feed to Distillation Tower 2	11,825,200.2	44763.6	36%	16.115	0.14	2256.1	4974.7	98.0%	99.5
NMP Feed to Distillation Tower 3	9,048,245.2	34251.6	36%	12.331	0.14	1726.3	3806.4	98.0%	76.1
C-NMP Container Feed to Distillation Tower 4	2,315,268.0	8764.3	36%	3.155	0.14	441.7	974.0	98.0%	19.5
					Total Lb/yr		**16900.7**		**338.0**
							Ton/yr		Ton/yr
							8.450		**0.169**

Notes:
(1) Emission Factor form AP-42 5.1, Petroleum Refining, Table 5.1-1, 1/95
(2) Regarding the use of this emission factor for NMP Distillation, see the Compliance Determination section of the TSD for permit T067-47041-00096.

Methodology
Vacuum Feed Rate (m^3 per year) = 36% * Material Throughput (m^3 per year)
Uncontrolled VOC Emissions (lbs/year) = (Annual Feed rate [m3/yr]) * 36% (AP-42 conversion of liquid to vacuum feed) * (VOC emission factor [kg VOC/m3 of vacuum feed]) * 2.205 lb/kg
Uncontrolled VOC Emissions (ton/year) = Uncontrolled (lbs/yr) / 2000 lb/ton
Controlled Annual VOC Emissions (lbs/yr) = (1- VOC Overall Control Efficiency)* Uncontrolled PTE (lb/yr)
Controlled Annual VOC Emissions (ton/yr) = (1- VOC Overall Control Efficiency)* Uncontrolled PTE (ton/yr)
Overall Reduction efficiency (%) = 100% vapor capture and 98% control = **98.0%**

Limited Emission Rate at 20 ppmvd TOC (as NMP)

Carbon Control Std. ft3/min	NSPS NNNa TOC Conc. (ppmvd @3% O2)	as isobutylene ! lb/ft3 @20 ppmvd	lb/min	lb/hr	TOC rate as isobutylene ton/yr	TOC Rate as NMP* ton/yr
1960	20	**2.91405E-06**	0.005711535	0.34269208	1.50099131	**1.425941745**

! mol wt isobutylene = 56.11

***RAE PID NMP relative response factor**

Appendix A: Emissions Calculations
Finished Product and Wastewater Storage Tank Working and Breathing Losses

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Tank ID	Material	Worst Case Content Description	Tank Size (m3)	Tank Size (Gal)	Number of tanks	Max Turnovers per day per tank	Max Turnovers per year per tank	Max Total Throughput per day (gal)	Maximum Gallons per year per tank	Maximum Gallons per year total	Max Temp of Contents (Deg. C)	Tank Orientation
	NMP Process System											
T-1111	C-NMP Storage Tank	Crude NMP & Water Mixture	1000	264,170	1	0.138	50.41	36488	13,318,029	13,318,029	25	Vertical
T-1112	C-NMP Storage Tank	Crude NMP & Water Mixture	300	79,251	1	0.130	47.34	10279	3,751,964	3,751,964	25	Vertical
T-1121	R-G-NMP Process Tank	NMP	100	26,417	1	0.230	84.00	6080	2,219,099	2,219,099	45	Vertical
T-1131-1133	R-NMP Storage Tank	NMP	100	26,417	3	0.301	109.85	23851	2,901,899	8,705,697	45	Vertical
T-1151-1152	M-NMP Storage Tank	NMP	300	79,251	2	0.195	71.08	30866	5,633,098	11,266,196	35	Vertical
T-1141	S-NMP Storage Tank	NMP	300	79,251	1	0.089	32.31	7015	2,560,499	2,560,499	25	Vertical
U-1161	Waste Water Process Tank	Waste water	15	3,963	1	4.131	1507.74	16368	5,974,498	5,974,498	44	Vertical
D-1171	Waste Oil Process Tank (Horizontal)	NMP	15	3,963	1	0.123	44.80	486	177,528	177,528	60	Horizontal
	TDS Process System	**Train 1**	Note: Throughput was reallocated to reflect 3 production trains, rather than 1 single train. Total throughput remains the same. Quantity of Equipment has been tripled.									
V2110	M-NMP Feed Storage Tank	M-NMP	12.6	3,329	1	0.309	112.82	1029	375,540	375,540	25	Vertical
V2120-1 & 2	G-NMP Tanks	NMP + GDS (G-NMP)	12.6	3,329	2	0.304	111.11	2027	369,850	739,700	25	Vertical
V2130-1	H-NBR Tank Mix Tank	NMP & Rubber	7.7	2,034	1	0.237	86.58	483	176,113	176,113	50	Vertical
V2130-2	H-NBR Tank Day Tank	NMP & Rubber	12.6	3,329	1	0.145	52.91	483	176,113	176,113	50	Vertical
V2210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	2.174	793.65	2413	440,283	880,567	35	Vertical
V2220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	2.174	793.65	2413	440,283	880,567	35	Vertical
V2230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	2.174	793.65	2413	440,283	880,567	35	Vertical
V2300-2390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	0.217	79.37	2413	44,028	880,567	35	Vertical
V2410-2420-1, 2 & 3	Day Tanks	TDS-L	2.1	555	6	0.725	264.55	2413	146,761	880,567	35	Vertical
	TDS Process System	**Train 2**										
V3110	M-NMP Feed Storage Tank	M-NMP	12.6	3,329	1	0.309	112.82	1029	375,540	375,540	25	Vertical
V3120-1 & 2	G-NMP Tanks	NMP + GDS	12.6	3,329	2	0.304	111.11	2027	369,850	739,700	25	Vertical
V3130-1	H-NBR Tank Mix Tank	NMP & Rubber	7.7	2,034	1	0.237	86.59	483	176,134	176,134	50	Vertical
V3130-2	H-NBR Tank Day Tank	NMP & Rubber	12.6	3,329	1	0.145	52.92	483	176,134	176,134	50	Vertical
V3210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V3220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V3230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V3300-3390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	0.217	79.37	2413	44,033	880,669	35	Vertical
V3410-3420-1, 2 & 3	Day Tanks	TDS-L	2.1	555	6	0.725	264.58	2413	146,778	880,669	35	Vertical
	TDS Process System	**Train 3**										
V4110	M-NMP Feed Storage Tank	M-NMP	12.6	3,329	1	0.309	112.82	1029	375,540	375,540	25	Vertical
V4120-1 & 2	G-NMP Tanks	NMP + GDS	12.6	3,329	2	0.304	111.11	2027	369,850	739,700	25	Vertical
V4130-1	H-NBR Tank Mix Tank	NMP & Rubber	7.7	2,034	1	0.237	86.59	483	176,134	176,134	50	Vertical
V4130-2	H-NBR Tank Day Tank	NMP & Rubber	12.6	3,329	1	0.145	52.92	483	176,134	176,134	50	Vertical
V4210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V4220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V4230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	2.175	793.74	2413	440,335	880,669	35	Vertical
V4300-4390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	0.217	79.37	2413	44,033	880,669	35	Vertical
V4410-4420-1, 2 & 3	Day Tanks	TDS-L	2.1	555	6	0.725	264.58	2413	146,778	880,669	35	Vertical
	Cathode Slurry NMP Recovery	**New Process**										
V5110	CS Feed Tote and Transfer	Black Mass + NMP	12.4	3,276	1	0.980	357.83	3211	1,172,142	1,172,142	25	Vertical
V5120	CS Solids Settling Tank	Black Mass + NMP	12.4	3,276	1	0.980	357.83	3211	1,172,142	1,172,142	25	Vertical
V5130	CS Liquid Decant Tank	Crude NMP	11	2,906	1	0.995	363.03	2890	1,054,928	1,054,928	25	Vertical
V5140	CS Solids Slurry Concentrate	Black Mass + NMP	1.22	322	1	0.996	363.69	321	117,214	117,214	25	Vertical
V5150	CS NMP Recovery Tank	Crude NMP	11	2,906	1	0.995	363.03	2890	1,054,928	1,054,928	25	Vertical
	Fuel Tanks											
DEG-1 Fuel tank	**Diesel**	Emergency Electric Generator		1,000	1	0.037	13.50	643	13,500	13,500	25	rectangular
DFP-1 Fuel tank	**Diesel**	Emergency fire Pump		500	1	0.027	10.00	238	5,000	5,000	25	rectangular
DFP-2 Fuel tank	**Diesel**	Emergency fire Pump		500	1	0.027	10.00	238	5,000	5,000	25	rectangular

Summary of Tanks 4.09(d) Model Runs

						Tanks 4.09(d)				Per Tank	All Tanks	
Tank ID	Emissions Source		Tank Size (m3)	Tank Size (Gal)	Number of tanks	Uncontrolled VOC Emissions per tank (lbs/yr)	Total VOC Emissions from all tanks (lb/yr)	Emissions Routed to Control Device	Control Efficiency(%)	Emissions to Atmosphere After Control (lb/yr)	Emissions to Atmosphere After Control (lb/yr)	Calculation Method
NMP	**NMP Process System**											
T-1111	C-NMP Storage Tank	NMP & Water Mixture (Crude NMP)	1000	264,170	1	21.0	21.00	Yes	98.0%	0.42	0.42	Tanks 4.09(d)
T-1112	C-NMP Storage Tank	NMP & Water Mixture (Crude NMP)	300	79,251	1	6.3	6.30	Yes	98.0%	0.13	0.13	Tanks 4.09(d)
T-1121	R-G-NMP Process Tank	NMP	100	26,417	1	5.8	5.80	Yes	98.0%	0.12	0.12	Tanks 4.09(d)
T-1131-1133	R-NMP Storage Tank	NMP	100	26,417	3	22.4	67.20	Yes	98.0%	0.45	1.34	Tanks 4.09(d)
T-1151-1152	M-NMP Storage Tank	NMP	300	79,251	2	29.8	59.60	Yes	98.0%	0.60	1.19	Tanks 4.09(d)
T-1141	S-NMP Storage Tank	NMP	300	79,251	1	18.6	18.60	Yes	98.0%	0.37	0.37	Tanks 4.09(d)
U-1161	Waste Water Process Tank	Waste water, 100 ppm NMP	15	3,963	1	0.1	0.10	Yes	98.0%	0.00	0.00	Tanks 4.09(d)
D-1171	Waste Oil Process Tank	NMP, 70% by wt	15	3,963	1	0.7	0.70	Yes	98.0%	0.01	0.01	Tanks 4.09(d)
						Totals (lb/yr)	**179.30**			**Totals (lb/yr)**	**3.59**	
						Totals (ton/yr)	**0.090**			**Totals (ton/yr)**	**0.002**	
TDS - Train 1	**TDS Process System Storage and Mixing (see Organic Liquid Transfer and Mix tank Heat-up, Surface Evaporation and Purge for Emission details as noted)[included]**											
V2110	M-NMP Feed Storage Tank	NMP	12.6	3,329	1	2.1	2.10	Yes	98.0%	0.04	0.04	Tanks 4.09(d)
V2120-1 & 2	G-NMP Tank Recirc Tank	NMP + GDS	12.6	3,329	2	94.33	188.67	Yes	98.0%	1.89	3.77	Transfer, Evap, Purge
V2130-1	Rubber Tank Mix Tank	NMP & Rubber	7.7	2,034	1	81.70	81.70	Yes	98.0%	1.63	1.63	Transfer, Evap, Purge, Heat
V2130-2	Rubber Tank Day Tank	NMP & Rubber	12.6	3,329	1	26.46	26.46	Yes	98.0%	0.53	0.53	Transfer, Evap, Purge
V2210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	719.51	1439.02	Yes	98.0%	14.39	28.78	Transfer, Evap, Purge
V2220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V2230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V2300-2390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	52.75	1055.06	Yes	98.0%	1.06	21.10	Transfer, Evap, Purge
V2410-2420-1, 2 & 3	Day Tank	TDS-L	2.1	555	6	42.57	255.40	Yes	98.0%	0.85	5.11	Transfer, Evap, Purge
						TDS Train 1 Totals (lb/yr)	**5158.52**			**Totals (lb/yr)**	**103.17**	
						Totals (ton/yr)	**2.579**			**Totals (ton/yr)**	**0.052**	
TDS - Train 2	**TDS Process System Storage and Mixing (see Organic Liquid Transfer and Mix tank Heat-up, Surface Evaporation and Purge for Emission details as noted)[included]**											
V3110	M-NMP Feed Storage Tank	NMP	12.6	3,329	1	2.1	2.10	Yes	98.0%	0.04	0.04	Tanks 4.09(d)
V3120-1 & 2	G-NMP Tank Recirc Tank	NMP + GDS	12.6	3,329	2	94.33	188.67	Yes	98.0%	1.89	3.77	Transfer, Evap, Purge
V3130-1	Rubber Tank Mix Tank	NMP & Rubber	7.7	2,034	1	81.70	81.70	Yes	98.0%	1.63	1.63	Transfer, Evap, Purge, Heat
V3130-2	Rubber Tank Day Tank	NMP & Rubber	12.6	3,329	1	26.46	26.46	Yes	98.0%	0.53	0.53	Transfer, Evap, Purge
V3210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	719.51	1439.02	Yes	98.0%	14.39	28.78	Transfer, Evap, Purge
V3220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V3230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V3300-3390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	52.75	1055.06	Yes	98.0%	1.06	21.10	Transfer, Evap, Purge
V3410-3420-1, 2 & 3	Day Tank	TDS-L	2.1	555	6	42.57	255.40	Yes	98.0%	0.85	5.11	Transfer, Evap, Purge
						TDS Train 2 Totals (lb/yr)	**5158.52**			**Totals (lb/yr)**	**103.17**	
						Totals (ton/yr)	**2.579**			**Totals (ton/yr)**	**0.052**	
TDS - Train 3	**TDS Process System Storage and Mixing (see Organic Liquid Transfer and Mix tank Heat-up, Surface Evaporation and Purge for Emission details as noted)[included]**											
V4110	M-NMP Feed Storage Tank	NMP	12.6	3,329	1	2.1	2.10	Yes	98.0%	0.04	0.04	Tanks 4.09(d)
V4120-1 & 2	G-NMP Tank Recirc Tank	NMP + GDS	12.6	3,329	2	94.33	188.67	Yes	98.0%	1.89	3.77	Transfer, Evap, Purge
V4130-1	Rubber Tank Mix Tank	NMP & Rubber	7.7	2,034	1	81.70	81.70	Yes	98.0%	1.63	1.63	Transfer, Evap, Purge, Heat
V4130-2	Rubber Tank Day Tank	NMP & Rubber	12.6	3,329	1	26.46	26.46	Yes	98.0%	0.53	0.53	Transfer, Evap, Purge
V4210-1 & 2	Premixing Tank	M-NMP + CNT(L) + CNT + Rubber + G-NMP	2.1	555	2	719.51	1439.02	Yes	98.0%	14.39	28.78	Transfer, Evap, Purge
V4220-1 & 2	Impact Tank #1	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V4230-1 & 2	Impact Tank #2	TDS-L	2.1	555	2	527.53	1055.06	Yes	98.0%	10.55	21.10	Transfer, Evap, Purge
V4300-4390-1 & 2	Main Dispersing Tank	TDS-L	2.1	555	20	52.75	1055.06	Yes	98.0%	1.06	21.10	Transfer, Evap, Purge
V4410-4420-1, 2 & 3	Day Tank	TDS-L	2.1	555	6	42.57	255.40	Yes	98.0%	0.85	5.11	Transfer, Evap, Purge
						TDS Train 3 Totals (lb/yr)	**5158.52**			**Totals (lb/yr)**	**103.17**	
						Totals (ton/yr)	**2.579**			**Totals (ton/yr)**	**0.052**	
						TDS Totals (all trains)	**15475.564**			**TDS Totals (all trains)**	**309.511**	
						Totals (ton/yr)	**7.738**			**Totals (ton/yr)**	**0.155**	

CS-1	Cathode Slurry NMP Recovery	New Process										
V5110	CS Feed Tote and Transfer	Black Mass + NMP	12.4	3276	1	207.69	207.69	Yes	98.0%	4.15	4.15	Transfer, Evap, Purge
V5120	CS Solids Settling Tank	Black Mass + NMP	12.4	3276	1	306.46	306.46	Yes	98.0%	6.13	6.13	Transfer, Evap, Purge
V5130	CS Liquid Decant Tank	Crude NMP	11	2906	1	280.61	280.61	Yes	98.0%	5.61	5.61	Transfer, Evap, Purge
V5140	CS Solids Slurry Concentrate	Black Mass + NMP	1.22	322	1	17.50	17.50	Yes	98.0%	0.35	0.35	Transfer, Evap, Purge
V5150	CS NMP Recovery Tank	Crude NMP	11	2906	1	280.61	280.61	Yes	98.0%	5.61	5.61	Transfer, Evap, Purge
						Cathode Slurry (CS) Total	**1092.875**			**Cathode Slurry (CS) Total**	**21.857**	
						CS Total (ton/yr)	**0.546**			**CS Total (ton/yr)**	**0.011**	
	Diesel											
DEG-1 Fuel tank	Diesel Tank for DEG-1	Emergency Electric Generator Fuel Tank	3.8	1,000	1	0.20	0.20	No	0.0%	0.20	0.20	Tanks 4.09(d)
DFP-1 Fuel tank	Diesel Tank for DFP-1	Emergency fire Pump	1.9	460	1	0.20	0.20	No	0.0%	0.20	0.20	Tanks 4.09(d)
DFP-2 Fuel tank	Diesel Tank for DFP-2	Emergency fire Pump	1.9	460	1	0.20	0.20	No	0.0%	0.20	0.20	Tanks 4.09(d)
		Total VOC Emissions (lb/yr)					**15655.46**				**313.70**	
		Total Emissions (ton/yr)					**7.828**				**0.157**	

Appendix A: Emissions Calculations
Organic Liquid Tanker Truck Transfer Emissions from Product Mix Tank Loading and Waste Tanker Truck Loading

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-45344-00096
Reviewer: Bruce Farrar

TDS Process System
TDS Process Tank Transfer Emissions: Covered Tanks, Controlled by Knock-out condenser and Carbon Adsorber

Tank Name	Train 1	Train 2	Train 3	Per train Product Throughput, per Train	VOC Emission Factor[1]	Per train Uncontrolled VOC Emissions	VOC Overall Control Efficiency	Per train Controlled VOC Emissions
	Tank ID	Tank ID	Tank ID	(gallons/yr)	(lbs/10^3 gallons)	(lbs/yr)	(%)	(lbs/yr)
G-NMP Tanks	V2120-1 & 2	V3120-1 & 2	V4120-1 & 2	739,700	0.0461	34.123	98.0%	4.0
Rubber Tank Mix Tank	V2130-1	V3130-1	V4130-1	176,113	0.0461	8.124	98.0%	1.0
Rubber Tank Day Tank	V2130-2	V3130-2	V4130-2	176,113	0.0461	8.124	98.0%	1.0
Premixing Tank	V2210-1 & 2	V3210-1 & 2	V4210-1 & 2	880,567	0.0461	40.622	98.0%	4.8
Impact Tank #1	V2220-1 & 2	V3220-1 & 2	V4220-1 & 2	880,567	0.0461	40.622	98.0%	4.8
Impact Tank #2	V2230-1 & 2	V3230-1 & 2	V4230-1 & 2	880,567	0.0461	40.622	98.0%	4.8
Main Dispersing Tanks	V2300-2390-1 & 2	V3300-3390-1 & 2	V4300-4390-1 & 2	880,567	0.0461	40.622	98.0%	4.8
TDS-L Day Tanks	V2410-2420-1, 2 & 3	V3410-3420-1, 2 & 3	V4410-4420-1, 2 & 3	880,567	0.0461	40.622	98.0%	4.8
					Total Load/ Unload Fugitives (lb/yr)	253.481		29.911
					Total Load/ Unload Fugitives (ton/yr)	0.127		0.0150

Notes:
(1) Since there is no emission factor available for loading losses of NMP, the loading loss equation from *AP 42 Section 4.2: Transportation And Marketing of Petroleum Liquids* was used to estimate emissions.

Methodology
VOC Emission factor = (12.46) * (Saturation factor) * (Vapor pressure [psia]) * (Molecular weight [lb/lb-mole]) / (Temperature [deg R])

saturation factor (Table 5.2.1)=	S Factor, Dedicated Vapor Balance	1.45
vapor pressure (psia) =	True Vapor Pressure NMP Blend	0.01430
molecular weight (lb/lb-mole) =	N-Methyl Pyrrolidone	99.13
temperature (deg. R) =	95 F = 35 C	555

R= 460 + F

Annual Fugitive VOC Emissions (lbs) = (Annual truck throughput [gallons/yr]) * (M gallons/1,000 gallons) * (VOC emission factor [lbs VOC/M gallons]) * (1 - Overall Reduction Efficiency)

Overall Reduction efficiency (%) = 100% vapor capture **98.0%** and 98% control =

Catode Slurry (CS) Process System
Cathode Slurry Process Tank Transfer Emissions: Covered Tanks, Controlled by Knock-out condenser and Carbon Adsorber

Tank Name	Vessel	Product Throughput, per Train	VOC Emission Factor[1]	Uncontrolled VOC Emissions	VOC Overall Control Efficiency	Controlled VOC Emissions
	Tank ID	(gallons/yr)	(lbs/10^3 gallons)	(lbs/yr)	(%)	(lbs/yr)
CS Feed Tote and Transfer	V5110	1,172,142	**0.0258**	30.262	98.0%	0.6
CS Solids Settling Tank	V5120	1,172,142	**0.0258**	30.262	98.0%	0.6
CS Liquid Decant Tank	V5130	1,054,928	**0.0258**	27.236	98.0%	0.5
CS Solids Slurry Concentrate	V5140	117,214	**0.0258**	3.026	98.0%	0.1
CS NMP Recovery Tank	V5150	1,054,928	**0.0258**	27.236	98.0%	0.5
			Total Load/ Unload Fugitives (lb/yr)	118.021		2.360
			Total Load/ Unload Fugitives (ton/yr)	**0.059**		**0.0012**

Notes:
(1) Since there is no emission factor available for loading losses of NMP, the loading loss equation from *AP 42 Section 4.2: Transportation And Marketing of Petroleum Liquids* was used to estimate emissions.

Methodology
VOC Emission factor = (12.46) * (Saturation factor) * (Vapor pressure [psia]) * (Molecular weight [lb/lb-mole]) / (Temperature [deg R])

saturation factor (Table 5.2.1)=	S Factor, Dedicated Vapor Balance	1.45
vapor pressure (psia) =	True Vapor Pressure NMP Blend	0.00774
molecular weight (lb/lb-mole) =	N-Methyl Pyrrolidone	99.13
temperature (deg. R) =	77 F = 25 C	537

R= 460 + F

Annual Fugitive VOC Emissions (lbs) = (Annual truck throughput [gallons/yr]) * (M gallons/1,000 gallons) * (VOC emission factor [lbs VOC/M gallons]) * (1 - Overall Reduction Efficiency)

Overall Reduction efficiency (%) = 100% vapor capture **98.0%** and 98% control =

Appendix A: Emissions Calculations

Organic Liquid Emissions from Product Mix Tank Surface Evaporation

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00098
Reviewer: Bruce Farrar

TDS Process System

Evaporative losses during Tank Mixing Activities

Tank Description	Train 1 Tank ID	Train 2 Tank ID	Train 3 Tank ID	Solvent Mol Wt Mv lb/lb-mole	Mass Xfer Coeff. Kc ft/sec	Tank Surface Area A ft2	Vapor Pressure P psia	Batch Time H hr	Universal Gas Const R psia-ft3/R-lbmol	Liquid Temp T °R	per Train Potential Batches /yr B #	per Train Limited Batches /yr B #	per Train Number of tanks #	per Train Potential Emissions per year Ex lb/yr	per Train Limited Emissions per year Ex lb/yr	Control Efficiency (%)	per Train Controlled Potential VOC (lbs/yr)	per Train Controlled Limited VOC (lbs/yr)
G-NM P Tanks	V2120-1 & 2	V3120-1 & 2	V4120-1 & 2	99.13	0.000707	40.92	0.0143	24	10.73	555	111.11	111.11	2	132.2	132.2	98.0%	2,643	2,643
H-NBR Tank Mix Tank	V2130-1	V3130-1	V4130-1	99.13	0.000707	33.82	0.0143	36	10.73	555	66.58	66.58	1	63.8	63.8	98.0%	1,277	1,277
H-NBR Tank Day Tank	V2130-2	V3130-2	V4130-2	99.13	0.000707	33.82	0.0143	12	10.73	555	52.91	52.91	1	13.0	13.0	98.0%	0.260	0.260
Premixing Tank	V2210-1 & 2	V3210-1 & 2	V4210-1 & 2	99.13	0.000707	19.02	0.0143	24	10.73	555	793.65	793.65	2	438.8	438.8	98.0%	8,776	8,776
Impact Tank #1	V2220-1 & 2	V3220-1 & 2	V4220-1 & 2	99.13	0.000707	19.02	0.0143	3	10.73	555	793.65	793.65	2	54.9	54.9	98.0%	1,097	1,097
Impact Tank #2	V2230-1 & 2	V3230-1 & 2	V4230-1 & 2	99.13	0.000707	19.02	0.0143	3	10.73	555	793.65	793.65	2	54.9	54.9	98.0%	1,097	1,097
Main Dispersing Tank	V2300-2390-1 & 2	V3300-3390-1 &	V4300-4390-1 &	99.13	0.000707	19.02	0.0143	3	10.73	555	79.37	79.37	20	54.9	54.9	98.0%	1,097	1,097
Day Tank	V2410-2420-1, 2 &	V3410-3420-1,	V4410-4420-1, 2	99.13	0.000707	19.02	0.0143	3	10.73	555	264.55	264.55	6	54.9	54.9	98.0%	1,097	1,097
													Totals	867.2	867.2		17.3	17.3
														ton/yr	ton/yr		ton/yr	ton/yr
														0.43	0.43	98.0%	0.009	0.009

Methodology

	Constants	
Partial Pressure of NMP @ 35C (psia)	0.0143	
Molecular Weight of NMP (lb/lbmol)	99.13	
Universal Gas Constant (psia-ft3/R-lbmol)	10.73	
Liquid Temperature (Rankine)	554.67	= 35 C
Vessel Pressure (psia)	14.7	= 1 atm

*Potential Batches per year per tank (batches/yr each) => calculated on "Storage Tank Emissions" Tab

Controlled PTE (lb/yr) = Uncontrolled PTE (lb/yr) * (1 - Control Eff)

Controlled PTE (ton/yr) = Controlled PTE (lb/yr) / (2000 lb/ton)

Gas-phase Mass Transfer Coefficient (Kc)

$$K_c = 0.00438 \times U^{0.78} \times \left(\frac{18}{M_v}\right)^{1/3}$$

Wind Speed U mph	Solvent Mol Wt Mv lb/lb-mole	Mass Xfer Coeff Kc ft/sec
0.2	99.13	0.000707

Wind Speed U ft/min
17.6

Uncontrolled PTE (lb VOC / year) =

$$E_x = \frac{M_x \times K_c \times A \times P_x \times 3600 \times H}{R \times T} \times B$$

Ex = emissions of VOC species x, lb/yr
Mx = molecular weight of VOC species x (lb/lb-mole)
Kc = gas-phase mass transfer coefficient for VOC species x, ft/sec
A = surface area of exposure or opening of tank (ft2)
3600 = 3600 sec/hr
Px = true vapor pressure of VOC x (if a pure chemical is used) or the partial pressure of chemical x (if a mixture of VOCs is used) at temperature T (psia)2
H = batch time (hr/batch)
R = universal gas constant at 1 atmosphere of pressure, 10.73 psia-ft3 /Rlb mole,
T = temperature of the liquid, °R (°F+460)
B = number of batches per year (batches/yr).

EPA (2005). Volume II: Chapter 8 Section 4.4 Emission Model for Surface Evaporation. *Methods for Estimating Air Emissions From Paint, Ink, and Other Coating Manufacturing Facilities.*

https://www.epa.gov/sites/production/files/2015-08/documents/ch08_feb2005.pdf

Cathode Slurry (CS) Process System

Evaporative losses during Tank Mixing Activities

Tank Description	Tank ID	Solvent Mol Wt Mx lb/lb-mole	Mass Xfer Coeff Kc ft/sec	Surface Area A ft2	Mixture Vapor Pressure P psia	Batch Time H hr	Universal Gas Const R lbmol	Liquid Temp T °R	Batches /yr n #	Batches /hr n #	Number of tanks #	Emissions per year Ex lb/yr	Emissions per year Ex lb/yr	Control Efficiency (%)	Controlled Potential VOC (lbs/yr)	Controlled Limited VOC (lbs/yr)
CS Feed Tote and Transfer	V5110	99.13	0.000707	44.00	0.0077	24	10.73	537	357.82	357.82	1	128.0	128.0	98.0%	2.561	2.561
CS Solids Settling Tank	V5120	99.13	0.000707	44.00	0.0077	24	10.73	537	357.82	357.82	1	128.0	128.0	98.0%	2.561	2.561
CS Liquid Decant Tank	V5130	99.13	0.000707	40.09	0.0077	24	10.73	537	363.03	363.03	1	116.1	116.1	98.0%	2.362	2.362
CS Solids Slurry Concentrate	V5140	99.13	0.000707	12.06	0.0077	3	10.73	537	363.69	363.69	1	4.4	4.4	98.0%	0.089	0.089
CS NMP Recovery Tank	V5150	99.13	0.000707	40.06	0.0077	24	10.73	537	363.03	363.03	1	116.1	116.1	98.0%	2.362	2.362
											Totals	496.7	496.7		9.9	9.9
												ton/yr	ton/yr		ton/yr	ton/yr
												0.25	0.25	98.0%	0.005	0.005

Methodology

	Constants	
Partial Pressure of NMP @ 25C (psia)	0.0077	
Molecular Weight of NMP (lb/lbmol)	99.13	
Universal Gas Constant (psia*ft3/R-lbmol)	10.73	
Liquid Temperature (Rankine)	537.67	= 25 C
Vessel Pressure (psia)	14.7	= 1 atm

*Potential Batches per year per tank (batches/yr each) => calculated on "Storage Tank Emissions" Tab

Controlled PTE (lb/yr) = Uncontrolled PTE (lb/yr) * (1 - Control Eff.)

Controlled PTE (tons/yr) = Controlled PTE (lb/yr) / (2000 lb/ton)

Gas-phase Mass Transfer Coefficient (Kc)

$$K_c = 0.00438 \times U^{0.78} \times \left(\frac{18}{M_c}\right)^{1/3}$$

Speed U mph	Mol Wt Mc lb/lb-mole	Coeff Kc ft/sec
0.2	99.13	0.000707

ft/min

17.6

Uncontrolled PTE (lb VOC / year) =

$$E_x = \frac{M_x \times K_c \times A \times P_x \times 3600 \times H}{R \times T} \times B$$

Ex = emissions of VOC species x, lb/yr

Mx = molecular weight of VOC species x (lb/lb-mole)

Kc = gas-phase mass transfer coefficient for VOC species x (ft/sec)

A = surface area of evaporative opening of tank (ft2)

3600 = 3600 sec/hr

Px = true vapor pressure of VOC x (if a pure chemical is used) or the partial pressure of chemical x (if a mixture of VOCs is used) at temperature T (psia)

H = batch time (h/batch)

R = universal gas constant at 1 atmosphere of pressure, 10.73 psia-ft3 /R-lb mole,

T = temperature of the liquid, °R (°F+460)

B = number of batches per year (batches/yr)

EPA (2020) Volume II: Chapter 7: Section 4.4 Emission Mode for Surface Evaporation. *Methods for Estimating Air Emissions from Paint, Ink, and Other Coating Manufacturing Facilities*

https://www.epa.gov/sites/default/files/2015-08/documents/ch07s_feb2020.pdf

Appendix A: Emissions Calculations

Organic Liquid Emissions from Product Mix Tank Surface Evaporation

Company Name: JWA CO., LTD.

Source Address: 1679 E Sparks Road, Kokomo, IN 46901

Permit Number: 067-46344-00096

Reviewer: Bruce Farrar

TDS Process System:

Mix Tank - Gas Sweep or Purge

Tank Desc	Train 1 Tank ID	Train 2 Tank ID	Train 3 Tank ID	Total of Partial Pressure [1] P_x psia	Vessel Flow rate [2] Fnc ft3/min	Vapor Molecular Weight Mx lb/lb-mole	Purge Hours per batch [3] OH hr/batch	Annual Purge Hours [4] OH hr/yr-vessel	Universal Gas Const R psia-ft3/R-lbmol	Liquid Temp T °R	System Pressure PT psia	Sum of Partial Pressures ΣP_x	per Train Total # Product mix tank vessels #	per Train Potential Emissions per year Ex lb/yr	per Train Limited Emissions per year Ex lb/yr	Overall VOC Control Efficiency (%)	per Train Controlled Potential VOC (lbs/yr)	per Train Controlled Limited VOC (lbs/yr)
G-NMP Tank Recirc Tank	V2120-1 & 2	V3120-1 & 2	V4120-1 & 2	0.0143	14.1	99.13	0.5	55.56	10.73	555	14.7	0.0143	2	22.4	22.4	98.0%	0.4	0.4
Rubber Tank Mix Tank	V2130-1	V3130-1	V4130-1	0.0143	14.1	99.13	0.5	43.29	10.73	555	14.7	0.0143	1	8.7	8.7	98.0%	0.2	0.2
Rubber Tank Day Tank	V2130-2	V3130-2	V4130-2	0.0143	14.1	99.13	0.5	26.46	10.73	555	14.7	0.0143	1	5.3	5.3	98.0%	0.1	0.1
Premixing Tank	V2210-1 & 2	V3210-1 & 2	V4210-1 & 2	0.0143	14.1	99.13	3	2380.95	10.73	555	14.7	0.0143	2	959.6	959.6	98.0%	19.2	19.2
Impact Tank #1	V2220-1 & 2	V3220-1 & 2	V4220-1 & 2	0.0143	14.1	99.13	3	2380.95	10.73	555	14.7	0.0143	2	959.6	959.6	98.0%	19.2	19.2
Impact Tank #2	V2230-1 & 2	V3230-1 & 2	V4230-1 & 2	0.0143	14.1	99.13	3	2380.95	10.73	555	14.7	0.0143	2	959.6	959.6	98.0%	19.2	19.2
Main Dispersing Tank	V2300-2360-1 & 2	V3300-3360-1 & 2	V4300-4360-1 & 2	0.0143	14.1	99.13	3	238.10	10.73	555	14.7	0.0143	20	959.6	959.6	98.0%	19.2	19.2
Day Tank	V2410-2420-1, 2 & 3	V3410-3420-1, 2 & 3	V4410-4420-1, 2 & 3	0.0143	14.1	99.13	0.5	132.28	10.73	555	14.7	0.0143	6	159.9	159.9	98.0%	3.2	3.2
													Totals	4034.7	4034.7		80.7	80.7
														tons/yr	tons/yr		tons/yr	tons/yr
													2.02	2.02	2.02	98.0%	0.040	0.040

Notes:

[1] Substituted Total of Partial Pressures for individual compound partial pressure in order to calculate total VOC emissions

[2] Based on addition of 4 MB (141 ft3) of solids in 20 minutes time. Purge flow estimated at twice the rate of solids feed.

[3] Includes purge during mixing and cleaning operations

[4] Based on purge time per batch as shown, and total number of batches per year per vessel during 365 days per year of potential operations

Methodology

	Constants	
Partial Pressure of NMP @ 35C (psia)	0.01430	
Vessel Flow Rate (ft^3 per min)	14.1	:= (141 ft^3 per 20 minutes) * 2
Molecular Weight of NMP (lb/lbmol)	99.13	
Universal Gas Constant (psia-ft3/R-lbmol)	10.73	
Liquid Temperature (Rankine)	554.67	:= 35 C
Vessel Pressure (psia)	14.7	:= 1 atm

Annual Purge Hours (purge hours per year per vessel) = Purge hours per batch * Potential batches per vessel

Controlled PTE (lb/yr) = Uncontrolled PTE (lb/yr) * (1 - Control EF)

Controlled PTE (tons/yr) = Controlled PTE (lb/yr) / (2000 lb/ton)

Uncontrolled PTE (lb VOC / year) =

$$E_x = \frac{P_x \times F_{nr} \times M_x \times 60 \times OH}{R \times T} \times \frac{P_T}{P_T - \Sigma P_x}$$

Ex = emissions of VOC species x, lb/yr

Px = partial pressure of VOC species x, psia

Fnc = flow rate into the vessel, ft3/min

Mx = molecular weight of VOC species x, lb/lbmole

60 = 60 min/hr

OH = hours that the gas sweep or purge operates, hr/yr

R = universal gas constant (10.73 psia ft3/lbmole °R)

T = temperature of the exhaust gas, °R

PT = total system pressure, psia.

EPA (2005). Volume II: Chapter 8 Section 4.5 Gas Sweep or Purge. *Methods for Estimating Air Emissions From Paint, Ink, and Other Coating Manufacturing Facilities.*

https://www.epa.gov/sites/default/files/2015-08/documents/8th_feb2005.pdf

Cathode Slurry (CS) Process System

Mix Tank - Gas Sweep or Purge

Tank Desc	Train 1 Tank ID	Total of Partial Pressure [1] Px psia	Vessel Flow rate [2] Fnc ft3/min	Vapor Molecular Weight Mx lb/lb-mole	Purge Hours per batch [3] OH hr/batch	Batches per year [4] OH hrs/vessel	Annual Purge Hours [4] OH hrs/vessel	Universal Gas Const R psia-ft3/R-lbmol	Liquid Temp T °R	System Pressure PT psia	Sum of Partial Pressures ΣPx	Total # Product mix tank vessels #	Potential Emissions per year Ex lb/yr	Limited Emissions per year Ex lb/yr	Overall VOC Control Efficiency (%)	Controlled Potential VOC (lbs/yr)	Controlled Limited VOC (lbs/yr)
CS Feed Tote and Transfer	V5110	0.0077	2.2	99.13	8	357.83	2862.63	10.73	555	14.7	0.0077	1	49.4	49.4	98.0%	1.0	1.0
CS Solids Settling Tank	V5120	0.0077	2.2	99.13	24	357.83	8587.89	10.73	555	14.7	0.0077	1	148.1	148.1	98.0%	3.0	3.0
CS Liquid Decant Tank	V5130	0.0077	2.0	99.13	24	363.03	8712.80	10.73	555	14.7	0.0077	1	135.3	135.3	98.0%	2.7	2.7
CS Solids Slurry Concentrate Tote	V5140	0.0077	0.2	99.13	16	363.69	5819.11	10.73	556	14.7	0.0077	1	10.0	10.0	98.0%	0.2	0.2
CS NMP Recovery Tank	V5150	0.0077	2.0	99.13	24	363.03	8712.80	10.73	556	14.7	0.0077	1	135.3	135.3	98.0%	2.7	2.7
												Totals	478.1	478.1		9.6	9.6
													ton/yr	ton/yr		ton/yr	ton/yr
												0.24	0.24	98.0%	0.005	0.005	

Notes:

[1] Substituted Total of Partial Pressures for individual compound partial pressure in order to calculate total VOC emissions

[2] Based on addition of 4 M3 (141 ft3) of solids in 20 minutes time. Purge flow estimated at twice the rate of solids feed.

[3] Includes purge during mixing and cleaning operations

[4] Based on purge time per batch as shown, and total number of batches per year per vessel during 365 days per year of potential operations

Methodology

	Constants	
Partial Pressure of NMP @ 25C (psia)	0.00774	
Vessel Flow Rate (ft^3 per min)	14.1	;= (141 ft^3 per 20 minutes) * 2
Molecular Weight of NMP (lb/lbmol)	99.13	
Universal Gas Constant (psia-ft3/R-lbmol)	10.73	
Liquid Temperature (Rankine)	537	;= 25 C
Vessel Pressure (psia)	14.7	;= 1 atm

Annual Purge Hours (purge hours per year per vessel) = Purge hours per batch * Potential batches per vessel

Controlled PTE (lb/yr) = Uncontrolled PTE (lb/yr) * (1 - Control EF)

Controlled PTE (tons/yr) = Controlled PTE (lb/yr) / (2000 lb/ton)

Uncontrolled PTE (lb VOC / year) =

$$E_x = \frac{P_x \times F_{nc} \times M_x \times 60 \times OH}{R \times T} \times \frac{P_T}{P_T - \Sigma P_x}$$

Ex = emissions of VOC species x, lb/yr

Px = partial pressure of VOC species x, psia

Fnc = flow rate into the vessel, ft3/min

Mx = molecular weight of VOC species x, lb/lbmole

60 = 60 min/hr

OH = hours that the gas sweep or purge operates, hr/yr

R = universal gas constant (10.73 psia ft3 /lbmole °R)

T = temperature of the exhaust gas, °R

PT = total system pressure, psia.

EPA (2005) Volume II: Chapter 8 Section 4.5 Gas Sweep or Purge. *Methods for Estimating Air Emissions From Paint, Ink, and Other Coating Manufacturing Facilities*

https://www.epa.gov/sites/default/files/2015-08/documents/ii08_feb2005.pdf

Appendix A. Emissions Calculations

Organic Liquid Emissions from NMP Product Mix Tank Heat-up

Company Name: JWACO, LTD

Source Address: 1878 E Sparks Road, Kokomo, IN 46901

Permit Number: 067-48344-00066

Reviewer: Bruce Farrar

T06 Process System

Heatup Losses of Rubber-1 V2130-1, V3130-1 and V4130-1 from 25 to 50 degrees C during Mixing

	N [illegible]	Vapor Mol Wt	VOC	Potential	Limited	Uncontrolled Potential VOC (per Train, Organic Compounds)	Uncontrolled Limited VOC (per Train, Organic Compounds)	Uncontrolled VOC (per Train, Organic Compounds)	Overall VOC Control Efficiency	Controlled Potential VOC (per Train, Organic Compounds)	Controlled Limited VOC (per Train, Organic Compounds)	Controlled VOC (per Train, Organic Compounds)
Vessel Heat-up emissions	lbmole	lb/lbmol	lb/batch	Batches/yr	Batches/yr	(lbs/yr)	(lbs/yr)	(ton/yr)	(%)	(lbs/yr)	(lbs/yr)	(ton/yr)
Rubber, V2130-1, V3130-1 and V4130	0.00012	99.13	0.012	86.55	86.55	1.024	1.024	0.001	98.0%	0.020	0.020	0.001

Methodology

	Constants
Molecular Weight of NMP (lb/lbmol)	99.13
Universal Gas Constant (psia-ft3/R-lbmol)	10.73
Vessel Pressure (psia)	14.7 = 1 atm

VOC Emissions (lb/batch) = NMP Emissions (lbmole/batch) * Molecular Weight NMP (lb/lbmol)

*Potential Batches per year per tank (batches/yr each) => calculated on "Storage Tank Emissions" Tab

Uncontrolled PTE (lb/yr) = Potential Batches per year per tank (batches/year) * NMP Emissions (lb/batch)

Uncontrolled PTE (tons/yr) = Uncontrolled PTE (lb/yr) / (2000 lb/ton)

Controlled PTE (lb/yr) = Uncontrolled PTE (lb/yr) * (1 - Control EF)

Controlled PTE (tons/yr) = Uncontrolled PTE (ton/yr) * (1 - Control EF)

Calculate Total Moles of Gas in Headspace (N1 and N2) – Noncondensables and Condensables

$$n_1 = \frac{P_1 V}{R T_1}$$

$$n_2 = \frac{P_2 V}{R T_2}$$

P1	P2	V	R	T1	T2	N1	N2	Navg
psia	psia	ft3	ft3-psia/	°R	°R	lbmole	lbmole	lbmole
14.7	14.7	271.934	10.73	536.67	581.67	0.694	0.641	0.667
atm	atm	m3		°C	°C			
1.0	1.0	7.7		25	50			

Clausius-Clapeyron Equation, Calculate Vapor Pressure of NMP at Different Temperatures

[illegible]

NMP:	
P1 (mmHg)=	0.29
T1 (C)=	20
P2 (mmHg)=	0.99
T2 (C)=	40
R (J / (K*mol))	8.3144626
Vaporization (J/mole) =	46557.87919

Temp Deg (K)	298.15	303.15	308.15	313.15	323.15	333.15	373.15	403.15	423.15
Temp Deg (C)	25	30	35	40	50	60	100	130	150
(mmHg)	0.40	0.55	0.74	0.99	1.73	2.92	17.88	55.01	106.52
P of NMP (psia)	0.008	0.011	0.014	0.019	0.033	0.056	0.346	1.064	2.060

Note: (P1, T1) and (P2, T2) sourced from https://www.sigmaaldrich.com/US/en/product/sial/328634

Vapor Pressure of NMP at Initial and Final Temperature

Constituents	Liquid Mass Fraction weight %	Liquid mol wt (Mᵢ)	liq Mol Fraction (mᵢ)	Pressure (mmHg) @25C (VPᵢ)	Partial Vapor Pressure (mmHg) (Pᵢ)	Pressure (mmHg) @50C (VPᵢ)	Vapor Pressure (mmHg) (Pᵢ)
N-Methyl pyrrolidone (NMP)	100.0%	99.13	1.0000	0.40	0.40033	1.73	1.72783
Totals:	100.0%		1.0000				

Sum of [liq mass fraction/liq mol wt]: 0.010087764

Sum of Pᵢ @ T1 = Total VP (mmHg) [F]: 0.40033 — (psia) [F]: 0.00774

@ T2 = Total VP (mmHg) [F]: 1.72783 — (psia) [F]: 0.03341

Pa1 and Pa2 = Vessel Pressure without NMP – Noncondensables

$$Pa_1 = 14.7 - \Sigma(P_i)_{T1}$$

$$Pa_2 = 14.7 - \Sigma(P_i)_{T2}$$

Sum Pᵢ T1	Sum Pᵢ T2	Pa1	Pa2
psia	psia	psia	psia
0.00774	0.03341	14.69226	14.66659

Calculate Moles of NMP in Headspace (n1 and n2) – Condensables

$$n_{i1} = \frac{(\Sigma(P_i)_{T1})(V)}{R T_1}$$

$$n_{i2} = \frac{(\Sigma(P_i)_{T2})(V)}{R T_2}$$

Sum Pᵢ T1	Sum Pᵢ T2	V	R	T1	T2	Ni 1	Ni 2
psia	psia	ft3	lbmole-R	°R	°R	lbmole	lbmole
0.008	0.033	261.355	10.73	536.67	581.67	0.0004	0.0014
		m3		°C	°C		
		7.4		25	50		

Calculate Total Moles of NMP Emissions

$$N_{emi} = N_{avg} \ln\left(\frac{Pa_1}{Pa_2}\right) - (n_{i2} - n_{i1})_{total}$$

Navg	Pa1	Pa2	Ni 1	Ni 2	N emi
lbmole	psia	psia	lbmole	lbmole	lbmole
0.6674	14.6923	14.6666	0.0004	0.0014	0.00012

EPA (2005) Volume II: Chapter 8 Section 4.2 Emission Model for Surface Evaporation, Methods for Estimating Air Emissions From Paint, Ink, and Other Coating Manufacturing Facilities

https://www.epa.gov/sites/default/files/2015-08/documents/ii08_feb2005.pdf

Appendix A: Emissions Calculations
Insignificant Activities
Particulate Matter
TDS Solids Handling and Dispensing (SD-1) Controlled by DC-1 Dust Collector

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

TDS Solids Material Handling and Dispensing: Bulk and Minor additives

	Unit	Maximum Throughput *	Maximum Throughput	Emission Factor	Maximum Potential PM/PM10/PM2.5 Emissions					
Unit ID	*Description*	lb/hr	ton/hr	lb/ton	lb/hr	lb/day	lb/yr	ton/yr Uncontrolled	Control Eff	ton/yr Controlled
SD-1	Solids Dispensing and Handling Operation, Train 1	117.87	0.059	20.00	1.179	28.29	10325.2	5.163	98%	0.103
SD-2	Solids Dispensing and Handling Operation, Train 2	117.87	0.059	20.00	1.179	28.29	10325.2	5.163	98%	0.103
SD-3	Solids Dispensing and Handling Operation, Train 3	117.87	0.059	20.00	1.179	28.29	10325.2	5.163	98%	0.103
V-1	Central Vacuum/Dust Collection	3.54	0.002	20.00	0.035	0.85	309.8	0.155	98%	0.003
	Totals:	**357.14**	**0.179**		**3.571**	**85.71**	**31285.3**	**15.643**		**0.313**

* Basis of Estimate:
Solids Dispensing: Highest amount of solids material to be dispensed in any given hour (assuming all dispensing is completed within 16 hour/day): = 353.6 pound per hour
Central Vacuum: Highest estimated quantity of material to be vacuumed in any given 8 hour shift: 1% of hourly throughput

METHODOLOGY

Emission factor from AP-42, Chapter 6.4, Table 6.4-1 were used.
Emission Factor (lbs PM/ton of pigment) = 20.0 lbs PM/ton of pigment
Uncontrolled PM Emissions (lbs/yr) = Maximum Throughput (tons/yr) * Emission Factor (lbs/ton)
Uncontrolled PM Emissions (tons/yr) = Uncontrolled PM Emissions (lbs/yr) / 2,000 lbs/ton
Controlled PM Emissions (lbs/yr) = Uncontrolled PM Emissions (lbs/yr) * (1- Control Efficiency)
Controlled PM Emissions (tons/yr) = Controlled PM Emissions/2,000 lbs/ton
Assume PM = PM10 = PM2.5

Appendix A: Emissions Calculations
VOC Emissions from Liquid Filter Servicing

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Material	Density (lbs/gal)	Worst Case Weight % VOC	Maximum Material Loss per Service Event - (L/event)*	Maximum Number of Service Events per year (Events/year/ Unit)	Number of Units to be serviced (# Units)	Max Duration of Service Event (Hr/Event)	Maximum Total Service hours (hr/yr)	Maximum emission rate (Gal/yr)	Maximum VOC emission rate (lb/day)	Maximum Uncontrolled VOC emission rate (lb/yr)	Overall Control Efficiency % (90% Capture, 98% Control)	Maximum Controlled VOC emission rate (lb/yr)	Weight % HAP	PTE HAP (tons/yr)
VOC from Strainer and Cartridge Filter Maintenance- NMP Process														
VOC Constituents	8.50	100.00%	0.5	12	15	0.20	36.000	23.78	0.55	202.114	88.20%	23.849	0%	0.000
VOC from Magnetic Filter Change - NMP Process														
VOC Constituents	8.50	100.00%	0.2	12	2	0.20	4.800	1.27	0.03	10.779	88.20%	1.272	0%	0.000
VOC from Magnetic and Electromagnetic Filter Maintenance- TDS-L Process, Total for Trains 1, 2 & 3														
VOC Constituents	8.50	100.00%	0.2	52	63	0.20	655.200	173.10	4.03	1471.387	88.20%	173.624	0%	0.000
VOC from Cartridge Filter Change - TDS-L Process, Total for Trains 1, 2 & 3														
VOC Constituents	8.50	100.00%	0.5	52	39	0.20	405.600	267.90	6.24	2277.147	88.20%	268.703	0%	0.000
VOC from Cartridge Filter Change - Cathode Slurry (CS) Liquid Decant Filtration														
VOC Constituents	8.50	100.00%	0.5	365	1	0.20	73.000	48.22	1.12	409.841	88.20%	48.361	0%	0.000
Total for Filter Changes				128	119		1174.600		11.98	4371.268		515.810		0.000
						Subtotal for CS Filter Changes:			1.12	409.841		48.361		0.000
										Ton/yr		Ton/yr		Ton/yr
										0.205		0.024		0.000
						Total for All Filter Changes:			11.98	4371.268		515.810		0.000
										Ton/yr		Ton/yr		Ton/yr
										2.186		0.258		0.000
														Total Combined HAPs

* The calculations above represent the maximum VOC loss from each filter service event. Service frequencies represent maximum number of service events per year.

Methodology
Max. Material Emission Rate (gal/yr) = Max. Potential Material loss (gal/yr) * VOC Density (lbs/gal)
Max. Material Usage (lbs/day) = Max. VOC emission rate (lbs/yr) / 365 days/year
Potential to Emit VOC (lbs/day) = Potential to Emit VOC (lbs/hr) * 24 hr/1 day
Potential to Emit VOC (tons/yr) = Potential to Emit VOC (lbs/hr) * 8760hr/1 year * 1ton/2000lbs
Potential to Emit HAPs (tons/yr) = Maximum Material Usage (lbs/hr) * Weight % HAP * 8,760 hrs/yr * 1 ton/2,000 lbs

Appendix A: Emissions Calculations
VOC Emissions from Cathode Slurry Solids Concentrate Filter pressing and Handling

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Material	CS Slurry Conc Throughput (lb/yr)	Worst Case Weight % VOC	Total Annual VOC throughput (lb/yr)	Maximum VOC Loss during handling - (%)*	Worst Case VOC Loss (lb/yr)	Maximum Operating hours (hr/yr)	Maximum VOC emission rate (lb/hr)	Maximum VOC emission rate (lb/day)	Maximum Uncontrolled VOC emission rate (lb/yr)	Overall Control Efficiency % (90% Capture, 95% Control)	Maximum Controlled VOC emission rate (lb/yr)	Weight % HAP	PTE HAP (tons/yr)
VOC from Cathode Slurry (CS) Concentrate Filter Press Solids Handling													
CS Slurry Concentrate	1955521.74	5.00%	97826.09	1.00%	978.26	8760	0.11	2.68	978.261	88.20%	115.435	0%	0.000
Total for Filter Changes						8760.000		2.68	978.261		115.435		0.000
						Total (lbs)		2.68	978.261		115.435		0.000
									Ton/yr		Ton/yr		Ton/yr
									0.489		0.058		0.000
													Total Combined HAPs

* The calculations above represent the maximum VOC loss from each filter service event. Service frequencies represent maximum number of service events per year.

Methodology
Max. Material Emission Rate (gal/yr) = Max. Potential Material loss (gal/yr) * VOC Density (lbs/gal)
Max. Material Usage (lbs/day) = Max. VOC emission rate (lbs/yr) / 365 days/year
Potential to Emit VOC (lbs/day) = Potential to Emit VOC (lbs/hr) * 24 hr/1 day
Potential to Emit VOC (tons/yr) = Potential to Emit VOC (lbs/hr) * 8760hr/1 year * 1ton/2000lbs
Potential to Emit HAPs (tons/yr) = Maximum Material Usage (lbs/hr) * Weight % HAP * 8,760 hrs/yr * 1 ton/2,000 lbs

Appendix A: Emissions Calculations
VOC Emissions from Laboratory Activities

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Material	Density (lbs/gal)	Weight % VOC	Maximum Projected Material Usage - Lab (L/year)*	Maximum Projected Lab Material Usage (gal/month)	Projected Worst Case Material Usage - Labs (lbs/yr)	Maximum lb/hr Material Usage Rate @6000 hr/yr	Percentage of Material Collected as Waste for Disposal	Potential to Emit VOC (lbs/hr)	Potential to Emit VOC (lbs/day) @ 24 hr/day	Unlimited PTE VOC (tons/yr) @ 8760 hr/yr	Limited PTE VOC (tons/yr) @ 8760 hr/yr	Weight % HAP	PTE HAP (tons/yr)
VOC & HAP from Lab Operations - Material Balance, Prior to add-on control													
NMP Lab VOC Solvent - LAB-1	8.50	100.00%	2500	55.04	5614.27	0.936	80.0%	0.1871	4.491	4.098	0.820	0%	0.000
TDS Lab VOC Solvent - LAB-1	8.50	100.00%	7500	165.13	16842.80	2.807	80.0%	0.5614	13.474	12.295	2.459	0%	0.000
Total VOC Loss for Lab			10000	220.17	22457.07	3.74		0.7486	17.966	16.394	3.279		0.000
					Total	3.74				16.394	3.279		0.000

* The calculations above represent the emissions from worst case projected usage of above chemicals. Basis of Actual Annual Estimates are as follows. All Projected actual usages are on a 6000 hour per year basis (3 shift operation) and are extrapolated to 8760 hours per year to represent Potential to emit.

VOC Lab chemicals: Projected annual lab solvent purchases per year in Liters as shown

Methodology
Max. Material Usage (lbs/mo) = Max. Potential Material Usage (gal/month) * Density (lbs/gal)
Max. Material Usage (lbs/hr) = Max. Material Usage (lbs/mo) * 1 month/720 hours
Potential to Emit VOC (lbs/hr) = Max. Material Usage (lbs/hr) * Weight % VOC
Potential to Emit VOC (lbs/day) = Potential to Emit VOC (lbs/hr) * 24 hr/1 day
Potential to Emit VOC (tons/yr) = Potential to Emit VOC (lbs/hr) * 8760hr/1 year * 1ton/2000lbs
Potential to Emit HAPs (tons/yr) = Maximum Material Usage (lbs/hr) * Weight % HAP * 8,760 hrs/yr * 1 ton/2,000 lbs

Appendix A: Emissions Calculations
VOC Estimated Valve, Flange and Seal Fugitive Emissions - NMP Process

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

					Uncontrolled		NSPS NNNa		Controlled	
NMP Equipment Type	Service	SOCMI <10,000 ppm Screening Emission Factor * (Kg/hr)	Equipment Count	Operating Hours (hr/yr)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr	LDAR Equivalent Reduction Efficiency ** (%)	SOCMI **Controlled** Average Emission Factor ** (Kg/hr)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr
VOC Equipment Components -Fugitive										
Valves	Heavy Liquid	0.000230	1256	8760	2531.0	5,580.8	7%	0.000214	2353.8	5190.2
Flanges / Connectors (Storage)	Any	0.000081	1228	8760	871.0	1,920.5	0%	0.000081	871.0	1920.5
Flanges / Connectors (Process)	Any	0.000081	2154	8760	1528.2	3,369.7	7%	0.000075	1421.2	3133.8
Open Lines/ Sampling Points	Any	0.001500	134	8760	1763.4	3,888.3	0%	0.001500	1763.4	3888.3
Pump Seals/ Agitator Seals	Heavy Liquid	0.002100	42	8760	769.0	1,695.5	0%	0.002100	769.0	1695.5
		Total Emissions:			7462.5	16,454.9			7178.4	15,828.3
					Ton/yr	**8.23**			Ton/yr	**7.91**
VOC Equipment Components -Controlled							Carbon Adsorption control			
Pressure Reliefs	Gas/Vapor	0.044700	27	8760	10572.4	23,312.2	98.0%		211.4	466.2
					Ton/yr	**11.66**			Ton/yr	**0.23**
					Total (ton/yr)	**19.88**			**Total (ton/yr)**	**8.15**

* all valves are assumed to be non-leaking at the 10,000 ppm definition.
** All closed vent valves, flanges and seals not in vacuum service will be monitored anually at a 500 ppm leak definiton and repaired within 15 days. All pressure relief valves are routed to controls.
** ~10 % of NMP valves and flanges (those closed vent valves not in vacuum service) will be monitored per NNNa. Annual LDAR Monitoring at 500 ppm reduces emissions by 7

Methodology
Annual Emissions (kg/yr) = Screening Factor (kg/hr) * Equipment Count * Operating Hours (8760 hrs/yr)
Annual Emissions (tons/yr) = Annual emissions (kg/yr) * (2.205 lbs/ 1 kg) *(1 ton/2000 lb)

Appendix A: Emissions Calculations
VOC Estimated Valve, Flange and Seal Fugitive Emissions - TDS Process

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

					per Train Uncontrolled	per Train Uncontrolled			per Train Controlled	per Train Controlled
TDS Equipment Type	Service	SOCMI <10,000 ppm Screening Emission Factor * (Kg/hr)	Equipment Count Totals For Each Train	2018 Operating Hours (hr/yr)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr	LDAR Equivalent Reduction Efficiency (%)	SOCMI **Controlled** Average Emission Factor * (Kg/hr)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr
VOC Equipment Components -Fugitive										
Valves	Heavy Liquid	0.000230	1260	8760	2537.6	5,595.5	0%	0.000230	2537.6	5595.5
Flanges / Connectors (Storage)	Heavy Liquid	0.000081	654	8760	463.9	1,022.8	0%	0.000081	463.9	1022.8
Flanges / Connectors (Process)	Heavy Liquid	0.000081	2836	8760	2012.5	4,437.5	0%	0.000081	2012.5	4437.5
Open Lines/ Sampling Points	Heavy Liquid	0.001500	574.2	8760	7545.0	16,636.7	0%	0.001500	7545.0	16636.7
Pump Seals/ Agitator Seals	Heavy Liquid	0.002100	38.5	8760	708.2	1,561.7	0%	0.002100	708.2	1561.7
		Total Emissions:			13267.2	29,254.3			13267.2	29,254.3
						Ton/yr **14.63**				Ton/yr **14.63**
VOC Equipment Components -Controlled							Carbon Adsorption control			
Pressure Reliefs	Gas/Vapor	0.044700	0	8760	0.0	0.0	98.0%	0.000894	0.0	0.0
						Ton/yr **0.00**				Ton/yr **0.00**
						Total per train (Ton/yr) **14.63**				**Total (Ton/yr)** **14.63**
						Total for 3 trains [Trains 1, 2 & 3] (Ton/yr) **43.88**				**43.88**

* all valves are assumed to be non-leaking at the 10,000 ppm definition.
All valves, flanges and seals will be visibly, audibly and olfactory monitored and measured anually at a 500 ppm leak definiton and repaired within 15 days.

Methodology
Annual Emissions (kg/yr) = Screening Factor (kg/hr) * Equipment Count * Operating Hours (8760 hrs/yr)
Annual Emissions (tons/yr) = Annual emissions (kg/yr) * (2.205 lbs/ 1 kg) *(1 ton/2000 lb)

Appendix A: Emissions Calculations
VOC Estimated Valve, Flange and Seal Fugitive Emissions - TDS Process

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

					Uncontrolled			Controlled	
TDS Equipment Type	Service	SOCMI <10,000 ppm Screening Emission Factor * (Kg/hr)	Equipment Count Totals	2018 Operating Hours (hr/yr)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr	Overall Control Efficiency (%)	Annual Emissions (Kg/yr)	Annual Emissions lb/yr
VOC Equipment Components -Fugitive									
Valves	Heavy Liquid	0.000230	25	8760	50.4	111.1	-	50.4	111.1
Flanges / Connectors (Process)	Any	0.000081	80	8760	56.8	125.2	-	56.8	125.2
Open Lines/ Sampling Points	Any	0.001500	4	8760	52.6	115.9	-	52.6	115.9
Pump Seals/ Agitator Seals	Heavy Liquid	0.002100	8	8760	147.2	324.5	-	147.2	324.5
		Total Emissions:			306.9	676.6		306.9	676.6
					Ton/yr	**0.34**		Ton/yr	**0.34**
VOC Equipment Components -Controlled									
Pressure Reliefs	Gas/Vapor	0.044700	0	8760	0.0	0.0	98.0%	0.0	0.0
					Ton/yr	**0.00**		Ton/yr	**0.00**
				Total per train (Ton/yr)		**0.34**		**Total (Ton/yr)**	**0.34**

* all valves are assumed to be non-leaking at the 10,000 ppm definition. All valves, flanges and seals will be monitored periodically at a 500 ppm leak definiton and repaired within 15 days. All pressure relief vallves are routed to RTO control

Methodology
Annual Emissions (kg/yr) = Screening Factor (kg/hr) * Equipment Count * Operating Hours (8760 hrs/yr)
Annual Emissions (tons/yr) = Annual emissions (kg/yr) * (2.205 lbs/ 1 kg) *(1 ton/2000 lb)

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Natural Gas fired Equipment

Type of Unit	Emission Unit ID	MMBtu/hr
TDS Building		
HVAC Unit	HVAC-1	0.904
	HVAC-2	0.785
	HVAC-3	0.113
	HVAC-4	0.222
	HVAC-5	0.222
	HVAC-6	0.222
	HVAC-7	0.304
	HVAC-8	0.423
	HVAC-9	0.778
	HVAC-10	1.587
	HVAC-11	1.399
NMP Building		
HVAC Unit	HVAC-12	0.444
	HVAC-13	0.392
	HVAC-14	1.740
	HVAC-15	1.257
Office Building/F.F. Building		
HVAC Unit	HVAC-16	0.386
	HVAC-17	0.874
	HVAC-18	0.409
	HVAC-19	0.068
Gas Water Heaters	WH-1	0.200
Gas Water Heaters	WH-2	0.200
Gas Water Heaters	WH-3	0.200
Total		**13.129**

All of this equipment was installed as electric equipment. No natural gas fired comfort heaters or water heaters were installed

Electric Heat

Heat Input Capacity MMBtu/hr	HHV mmBtu/mmscf	Potential Throughput MMCF/yr
0.00	1020	0.0

	Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	direct PM2.5* 7.6	SO2 0.6	NOx 100 **see below	VOC 5.5	CO 84
Potential Emission in tons/yr	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combinec
PM2.5 emission factor is filterable and condensable PM2.5 combined
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 3:

Methodology
All emission factors are based on normal firing
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-0:
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBt
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/to

Hazardous Air Pollutants (HAPs)

	HAPs - Organics					
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene	Total - Organics
Emission Factor in lb/MMcf	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03	
Potential Emission in tons/yr	0.0E+00	0.0E+00	0.0E+00	0.000	0.0E+00	0.00

	HAPs - Metals					
	Lead	Cadmium	Chromium	Manganese	Nickel	Total - Metals
Emission Factor in lb/MMcf	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
					Total HAPs	0.000
					Worst HAP	0.000 Hexane

Methodology
Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Thermal Oil Heater - Natural gas fired

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Heat Input Capacity MMBtu/hr	HHV mmBtu / mmscf	Potential Throughput MMCF/yr
19.2	1020	164.9
		164.9

Emission Unit	ID	MMBtu/hr
Thermal Oil Heater	B-7151	19.2
	Total	19.2

	Pollutant						
Emission Factor in lb/MMCF	PM* 1.9	PM10* 7.6	direct PM2.5* 7.6	SO2 0.6	NOx 50 **see below	VOC 5.5	CO 84
Potential Emission in tons/yr	0.2	0.6	0.6	0.05	4.1	0.5	6.9

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined
PM2.5 emission factor is filterable and condensable PM2.5 combined
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology
All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-0
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

HAPS Calculations

	HAPs - Organics					
Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03	Total - Organics
Potential Emission in tons/yr	1.731E-04	9.894E-05	6.184E-03	1.484E-01	2.803E-04	**1.551E-01**

	HAPs - Metals					
Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03	Total - Metals
Potential Emission in tons/yr	4.122E-05	9.069E-05	1.154E-04	3.133E-05	1.731E-04	**4.618E-04**
					Total HAPs	1.556E-01
					Worst HAP	1.484E-01

Methodology
Methodology is the same as above.
The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emission Calculations
Reciprocating Internal Combustion Engines - Diesel Fuel
Output Rating (<=600 HP)
Maximum Input Rate (<=4.2 MMBtu/hr)

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Output Horsepower Rating (hp)	1468.0
Maximum Heat Input (MMBtu/hr)	10.3
Maximum Hours Operated per Year	500
Potential Throughput (hp-hr/yr)	734,000

Emission Unit ID	Max KW Output	Max HP output	Install Date	Make
DFP-1	-	399.0	2024	Clarke
DFP-2	-	399.0	2024	Clarke
DEG-1	500	670.0	2025	
	Total	**1468.0**		

	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
Emission Factor in lb/hp-hr	0.0022	0.0022	0.0022	0.0021	0.0310	0.0025	0.0067
Potential Emission in tons/yr	**0.81**	**0.81**	**0.81**	**0.75**	**11.38**	**0.92**	**2.45**

*PM and PM2.5 emission factors are assumed to be equivalent to PM10 emission factors. No information was given regarding which method was used to determine the factor or the fraction of PM10 which is condensable.

Hazardous Air Pollutants (HAPs)

	Pollutant							
	Benzene	Toluene	Xylene	1,3-Butadiene	Formaldehyde	Acetaldehyde	Acrolein	Total PAH HAPs***
Emission Factor in lb/hp-hr****	6.53E-06	2.86E-06	2.00E-06	2.74E-07	8.26E-06	5.37E-06	6.48E-07	1.18E-06
Potential Emission in tons/yr	**2.40E-03**	**1.05E-03**	**7.32E-04**	**1.00E-04**	**3.03E-03**	**1.97E-03**	**2.38E-04**	**4.32E-04**

***PAH = Polyaromatic Hydrocarbon (PAHs are considered HAPs, since they are considered Polycyclic Organic Matter)
****Emission factors in lb/hp-hr were calculated using emission factors in lb/MMBtu and a brake specific fuel consumption of 7,000 Btu / hp-hr (AP-42 Table 3.3-1).

Potential Emission of Total HAPs (tons/yr)	**9.95E-03**

Methodology
Emission Factors are from AP 42 (Supplement B 10/96) Tables 3.3-1 and 3.3-2.
Potential Throughput (hp-hr/yr) = [Output Horsepower Rating (hp)] * [Maximum Hours Operated per Year]
Potential Emission (tons/yr) = [Potential Throughput (hp-hr/yr)] * [Emission Factor (lb/hp-hr)] / [2,000 lb/ton]

Appendix A: Emissions Calculations
Insignificant Activities
Cooling Towers

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Cooling Tower (Installation Date)	Potential	Maximum Cooling Tower Water Recirculation Rate	Maximum Total Dissolved Solids Content of blowdown	Operating Hours	Maximum Uncontrolled Potential PM/PM10 Emissions			
Unit	Pollutant(s)	(gal/hr)	(ppm)*	(hr/yr)	lb/hr	lb/day	lb/yr	ton/yr
CT-7141A (2024)	PM/PM10/PM2.5	171,700	2,000	8,760	0.65	15.66	5,716	2.86
CT-7141B (2024)	PM/PM10/PM2.5	171,700	2,000	8,760	0.65	15.66	5,716	2.86
				Total =	**1.30**	**31.32**	**11431**	**5.72**

TDS = total dissolved solids
*TDS content of blowdown = 2000 ppm

Methodology
PM10 (lb/hr) = =(Emission Factor (lb PM/PM10 per 1000 gal recirculated) /1000) * Maximum Recirculation Rate (gal per hr) * (TDS Content of Blowdown (ppm) / EPA TDS content (ppm))
PM10 = PM/PM2.5

AP-42 Emission Factor, Chapter 13.4, 1/95 version	
lb PM/ PM10 per 1000 gallons recirculated	0.019

at 10,000 ppm Total Dissolved Solids (TDS)

Appendix A: Emission Calculations
Fugitive Dust Emissions from Paved Roads PRF-1

Company Name: JWA CO., LTD.
Source Address: 1679 E Sparks Road, Kokomo, IN 46901
Permit Number: 067-48344-00096
Reviewer: Bruce Farrar

Paved Roads at Industrial Site
The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (1/2011)

Vehicle Informtation (provided by source)

Type	Maximum number of vehicles per day	Number of one way trips per day per vehicle	Maximum trips per day (trip/day)	Maximum Weight (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Semi-Trailer or Large Box Truck Full	4	1.00	4	32.0	128.0	800	0.152	0.6	221.2
Semi-Trailer or Large Box Truck Empty	4	1.00	4	12.0	48.0	800	0.152	0.6	221.2
Small Box Truck or Small tank truck Full	2	1.00	2	12.0	24.0	600	0.114	0.2	83.0
Small Box Truck or Small tank truck Full	2	1.00	2	4.0	8.0	600	0.114	0.2	83.0
ISO Tanker Trailers Full	5	1.00	5	35.0	175.0	1000	0.189	0.95	345.6
ISO Tanker Trailers Empty	5	1.00	5	13.0	65.0	1000	0.189	0.95	345.6
		Totals	**22**		**448.0**			**3.6**	**1,299.6**

Average Vehicle Weight Per Trip = 20.4 tons/trip
Average Miles Per Trip = 0.16 miles/trip

Includes increase for Cathode Slurry (CS-1) from AA

Unmitigated Emission Factor, Ef = [k * (sL)^0.91 * (W)^1.02] (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5	
where k =	0.011	0.0022	0.00054	lb/VMT = particle size multiplier (AP-42 Table 13.2.1-1)
W =	20.4	20.4	20.4	tons = average vehicle weight (provided by source)
sL =	9.7	9.7	9.7	g/m^2 = silt loading value for paved roads at iron and steel production facilities - Table 13.2.1-3

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, Eext = E * [1 - (p/4N)] (Equation 2 from AP-42 13.2.1)
Mitigated Emission Factor, Eext = Ef * [1 - (p/4N)]
where p = 125 days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
N = 365 days per year

	PM	PM10	PM2.5	
Unmitigated Emission Factor, Ef =	1.881	0.376	0.0923	lb/mile
Mitigated Emission Factor, Eext =	1.720	0.344	0.0844	lb/mile
Dust Control Efficiency =	0%	0%	0%	(pursuant to control measures outlined in fugitive dust control plan)

Process	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)	Controlled PTE of PM (tons/yr)	Controlled PTE of PM10 (tons/yr)	Controlled PTE of PM2.5 (tons/yr)
Semi-Trailer or Large Box Truck Full	0.21	0.04	1.02E-02	0.19	0.04	9.34E-03	0.19	0.04	9.34E-03
Semi-Trailer or Large Box Truck Empty	0.21	0.04	1.02E-02	0.19	0.04	9.34E-03	0.19	0.04	9.34E-03
Small Box Truck or Small tank truck Full	0.08	0.02	3.83E-03	0.07	0.01	3.50E-03	0.07	0.01	3.50E-03
Small Box Truck or Small tank truck Full	0.08	0.02	3.83E-03	0.07	0.01	3.50E-03	0.07	0.01	3.50E-03
ISO Tanker Trailers Full	0.33	0.07	1.60E-02	0.30	0.06	1.46E-02	0.30	0.06	1.46E-02
ISO Tanker Trailers Empty	0.33	0.07	1.60E-02	0.30	0.06	1.46E-02	0.30	0.06	1.46E-02
Totals	**1.22**	**0.24**	**0.06**	**1.12**	**0.22**	**0.05**	**1.12**	**0.22**	**0.05**

Methodology

Total Weight driven per day (ton/day)	= [Maximum Weight of Loaded Vehicle (tons/trip)] * [Maximum trips per day (trip/day)]
Maximum one-way distance (mi/trip)	= [Maximum one-way distance (feet/trip) / [5280 ft/mile]
Maximum one-way miles (miles/day)	= [Maximum trips per year (trip/day)] * [Maximum one-way distance (mi/trip)
Average Vehicle Weight Per Trip (ton/trip)	= SUM[Total Weight driven per day (ton/day)] / SUM[Maximum trips per day (trip/day)]
Average Miles Per Trip (miles/trip)	= SUM[Maximum one-way miles (miles/day)] / SUM[Maximum trips per year (trip/day)]
Unmitigated PTE (tons/yr)	= [Maximum one-way miles (miles/yr)] * [Unmitigated Emission Factor (lb/mile)] * (ton/2000 lbs
Mitigated PTE (Before Control) (tons/yr)	= [Maximum one-way miles (miles/yr)] * [Mitigated Emission Factor (lb/mile)] * (ton/2000 lbs
Mitigated PTE (After Control) (tons/yr)	= [Mitigated PTE (Before Control) (tons/yr)] * [1 - Dust Control Efficiency]

Abbreviations
PM = Particulate Matter
PM10 = Particulate Matter (<10 um)
PM2.5 = Particle Matter (<2.5 um)
PTE = Potential to Emit

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