

April 22, 2025

Mr. Justin Crenshaw
Operation Manager
Covanta Tulsa Renewable Energy, LLC
2122 S. Yukon Avenue
Tulsa, OK 74107

Re: Technical Review Complete and Tier III Draft Solid Waste Permit Modification
Reworld Tulsa, Tulsa County
Solid Waste Permit No. 3572033

Dear Mr. Crenshaw:

On November 12, 2023, the Oklahoma Department of Environmental Quality (“DEQ”) received a Tier III Permit Modification Application (“Application”), submitted by Third Branch Engineering, on behalf of Reworld Tulsa LLC (“Reworld”), formerly known as Covanta. The purpose of the submittal is to accept regulated medical waste at the waste incineration facility. In accordance with Oklahoma Administrative Code (“OAC”) 252:4-7-60(3), the application was processed as a Tier III permit modification due to the inclusion of variance requests.

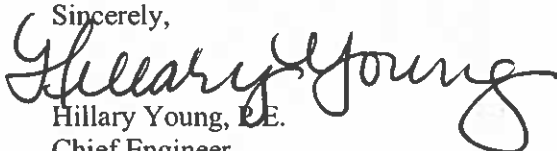
Pursuant to 27A O.S. § 2-14-301(A) and (B), the notice of filing of the application was published in *Tulsa World* on February 21, 2024, providing a 30-day notice of the date, time, and place for the process meeting. In accordance with OAC 252:4-7-13(d), the affidavit of publication was submitted to DEQ on February 22, 2024, within 20 days after the date of publication. The process meeting was held at the Tulsa City County Library, on March 5, 2024, at 6:00pm.

On March 6, 2024, DEQ issued a letter stating the Application was found to be administratively complete. After conducting a technical review of the Application, DEQ issued a Notice of Deficiency (“NOD”) on June 27, 2024. DEQ received the response to NOD on November 27, 2024. Additionally, DEQ received supplemental information on December 13, 2024, and February 27, 2025. At this time, all NOD items have been resolved, and the Application is considered technically complete. The Draft Solid Waste Permit Modification was prepared on March 14, 2025.

Reworld submitted comments on the Draft Permit Modification on April 7, 2025. DEQ determined the comments to be non-substantive and have incorporated them into the enclosed Draft Permit Modification.

Should you have any questions regarding this letter, please contact Kaylee Daneshmand at (405) 702-5196 or kaylee.daneshmand@deq.ok.gov.

Sincerely,



Hillary Young, P.E.
Chief Engineer
Land Protection Division

HY/kd

cc: Deanne Hughes, P.E., Third Branch Engineering

Enclosed: Solid Waste Draft Permit Modification

SOLID WASTE DRAFT PERMIT MODIFICATION

The Oklahoma Department of Environmental Quality hereby approves the following permit modification:

Permit Number: 3572033
Facility: Reworld Tulsa
Facility Type: Waste Incinerator
County: Tulsa County

Modification:

Modification to the existing permit to authorize the addition of untreated regulated medical waste (“RMW”) as a waste stream for processing in the three (3) existing incineration units. Reworld Tulsa (“Reworld”) may receive and process up to 40,000 tons of RMW per year. The RMW will be mixed with municipal solid waste and/or other nonhazardous industrial waste within the feed chute prior to processing in the units.

The RMW processing operations will be supported with the construction of the following:

Profiled Waste Processing Building – to allow the unloading and transfer of material to conveyors indoors.

Conveyors and Lifts – conveyors and a lift will be installed to deliver the contained RMW material directly to the feed hoppers.

Tipping Building Modifications – including the addition of a push wall and modifications to columns for access.

Refuse Building Modifications – primarily associated with connecting the roof of the Transfer building to the Refuse building’s structure.

Staging Parking Area – to allow trucks to be received and safely located away from the processing areas until the facility is ready to receive the delivered material.

Incorporation by Reference:

1. The Tier III Permit Modification Application (“Application”), dated November 12, 2023, submitted by Third Branch Engineering, LLC and stamped by Deanne Huges, P.E. on November 12, 2023, and William R. Swain, P.E., on June 4, 2013, inclusive of Appendices A-U.
2. Response to Notice of Deficiency, dated November 27, 2024, and supplemental information dated December 13, 2024, and February 27, 2025.

SOLID WASTE DRAFT PERMIT MODIFICATION (CONTINUED)

Variances:

Applicants may, in a permit application, request a variance from applicable rules in accordance with Oklahoma Administrative Code (“OAC”) 252:515-3-32 and 27A O.S. § 2-10-304. In accordance with OAC 252:515-3-32(b), “Applicants requesting a variance must demonstrate that operations under the variance will equal or exceed the protection accorded by the particular rule for which the variance is being requested, and will not result in a hazard to the health, environment or safety of the people of this State or their property.” The following variance requests were included in the Application and are approved as a part of this Permit Modification:

1. **OAC 252:515-23-32(c). Radiation**

Interlock system. Automated waste processing units must have an interlock system to automatically stop upon detection of radiation.

The Application includes a variance request from the interlock system requirements for automated waste processing units (OAC 252:515-23-32). Incoming waste is monitored for radioactivity by fixed radiation detection monitors at the incoming scales to ensure no radioactive material will be accepted. After the incoming RMW is screened for radiation at the scales, personnel will manually unload the RMW from the trucks/trailers. Personnel will then manually transfer the RMW utilizing a forklift to a conveyor system which transports the RMW to the feed chutes of the incineration unit. If radiation is detected at the scale, the vehicle will be directed to pass through the fixed monitors slowly a second time. If no alarm sounds, the vehicle will be directed to pass through the fixed monitors a third time. If the monitor detects radiation on either the second or third pass through, the vehicle will not be permitted to enter and will be isolated to the designated holding area. Once the vehicle has been isolated hand-held radiation monitors will be used to determine the location of the source within the vehicle. Vehicles showing radiation above allowable levels will be managed in accordance with the Radiation Management Plan in the Application and all applicable state and federal regulations.

Therefore, by conducting radiation monitoring at the incoming scales, Reworld demonstrates that no radioactive materials are unloaded or accepted for processing.

2. **OAC 252:515-23-51. Time and temperature**

Incinerators must maintain a minimum temperature of:

- (1) 1400°F, ± 25°F, in the primary chamber for sufficient time to achieve microbial inactivation; and
- (2) 2000°F, ± 25°F, in the secondary chamber for a minimum residence time of two (2) seconds.

The Application includes a variance request from the time and temperature operational requirements for commercial regulated medical waste incinerators (OAC 252:515-23-51). The time and temperature requirements are outlined for two-chamber incineration units. Reworld’s units are a single chamber design. The Application provides a temperature profile study that utilizes operating data to determine the temperatures and residence times at different elevations

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in the unit. The Application and temperature profile study detail that the temperature in the combustion zone of the grate of the unit exceeds 2,500°F. The reciprocating grate will agitate the waste for a residence time of approximately 45 minutes. The flue gas will then have a retention time of 1.9 to 2.1 seconds at temperatures between 1,975°F-2,000°F. To ensure the units achieve microbial inactivation, as defined in OAC 252:515-23-2, the Application provides destruction efficiency calculations for monochlorobenze utilizing the Thermal Stability Ranking model, the design temperature profile, and actual operating data. The Thermal Stability Ranking model predicts the destruction removal efficiency of monochlorobenzene. Monochlorobenzene was utilized in the model as it is a thermally stable principal hazardous constituent meaning it resists decomposition or significant changes when exposed to elevated temperatures. The Application and temperature profile study detail that the temperature in the combustion zone of the grate of the unit exceeds 2,500°F. The result of the model indicates that the destruction removal efficiency of monochlorobenzene is 99.9999% at a flue gas temperature of 1,974°F for a residence time of two (2) seconds.

Therefore, under normal operating conditions the temperature at the grate of 2,500°F for 45 minutes and the flue gas temperatures between 1,975°F-2,000°F for 1.9-2.1 seconds demonstrates the units are capable of achieving microbial inactivation. Additionally, Reworld's Title V Permit issued by DEQ's Air Quality Division contains emission limitations and monitoring and testing requirements designed to achieve complete combustion and to operate the facility with good combustion practices.

3. OAC 252:515-23-53. Interlocks

Incinerators must be equipped with automatic loading and protective interlocks to prevent waste from entering the secondary chamber when the temperature is below 2,000°F.

The Application includes a variance request from the automatic loading and protective interlock requirement for commercial regulated medical waste incinerators (OAC 252:515-23-53). The automatic loading and protective interlock requirement is outlined for two-chamber incineration units. Reworld's units are a single chamber design. Reworld will install an interlock between the upper furnace and the RMW feed system so that if the flue gas temperature in the upper furnace falls below the minimum of 1,305°F, the RMW feed system will cease operation until the flue gas temperature in the upper furnace is above the required minimum temperature. Continuous flue gas temperature monitoring by Infrared Pyrometers is conducted in the upper furnace at 70 feet, which is 40 feet above grate level. In the event that the upper furnace temperature 1-minute average drops below 1,305°F, the RMW feed system interlock will be activated to prevent the charging of additional RMW to the combustion unit. This minimum temperature was correlated to a minimum temperature of 2,000°F at the grate. The correlation was determined based on modeling, manufacturer data, and actual operating data provided in the Application. The minimum flue gas temperature of 1,305°F in the upper furnace ensures a minimum temperature of 2,000°F at grate level.

Therefore, by installing an interlock between the upper furnace and RMW feed system based on

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the minimum temperature of 1,305°F, Reworld demonstrates that RMW will be prevented from entering the incineration unit when temperatures are below 2,000°F at the grate.

4. OAC 252:515-23-54. Tests

(a) **Routine periodic tests.** The incinerator design must provide sample injection and collection ports to enable the owner/operator or the DEQ to conduct periodic tests.

The Application includes a variance request from the sample injection and collection ports design requirement to conduct periodic testing for commercial regulated medical waste incinerators (OAC 252:515-23-54(a)). The design of the incineration units at Reworld do not safely lend themselves to adding sample collection points where representative samples can be safely collected during operation prior to ash discharge. However, the exhaust stacks on Reworld's units already include sample ports for periodic air quality testing in accordance with the Title V Permit. Additionally, Reworld will conduct monthly visual inspections of ash following the processing of RMW to look for indications of incomplete combustion. If unburned RMW material or other indicators of incomplete combustion are observed during visual inspection, Reworld must follow the RMW Processing SOP which includes reprocessing of the identified material.

Therefore, by conducting periodic visual inspections of the ash each month following the processing of RMW, Reworld demonstrates that complete combustion is verified. Additionally, Reworld's Title V Permit, issued by DEQ's Air Quality Division, contains emission limitations and monitoring and testing requirements.

5. OAC 252:515-23-54. Tests

(b) **Demonstration.** Prior to operation, the owner/operator must conduct a demonstration showing complete destruction of a chemical which requires 2000°F for destruction and which is introduced into the unit under normal operating procedures.

The Application includes a variance request from the demonstration of a complete destruction of a chemical requirement for commercial regulated medical waste incinerators (OAC 252:515-23-54(b)). The design of the incineration units at Reworld do not lend themselves to adding sample collection points where representative samples can be safely collected during operation prior to ash discharge. The Application provides destruction efficiency calculations for monochlorobenze utilizing the Thermal Stability Ranking model, the design temperature profile, and actual operating data. Monochlorobenze was selected for destruction efficiency calculations as it is a thermally stable principal hazardous constituent meaning it resists decomposition or significant changes when exposed to elevated temperatures. The Thermal Stability Ranking model predicts the destruction removal efficiency of monochlorobenze.. The result of the model indicates that the destruction removal efficiency of monochlorobenze is 99.9999% at a flue gas temperature of 1,974°F for a residence time of two (2) seconds. Furthermore, under operating conditions, the waste will be exposed to 2,500°F for a portion of

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its approximate 45-minute duration on the grate in addition to the elevated flue gas temperatures in the upper furnace.

Therefore, the units are capable of achieving complete destruction of monochlorobenzene under normal operating conditions. Reworld will also conduct a visual inspection of the ash after processing the first load of waste that contains RMW in accordance with Permit Condition 8.

Conditions:

1. Reworld shall operate in compliance with the Oklahoma Clean Air Act, rules of the Air Quality Division of DEQ, and any requirements of an approved State Implementation Plan.
2. Reworld shall construct any facility modifications in accordance with the data, design criteria, plans, and specifications in the Application, documents incorporated by reference, the Act and Rules, and the specific conditions set forth in this permit for individual components of construction. Any substantive changes to the design must be submitted to DEQ for approval prior to construction.
3. Upon completion of construction, Reworld shall submit to DEQ a certification of construction including detailed as-built drawings, details of any minor deviations from the approved design, and a certification that the facility additions to support the receipt and processing of RMW were constructed in accordance with the approved plans and specifications. The certification of construction must be prepared and stamped or sealed by a professional engineer licensed in the State of Oklahoma.
4. Once available, Reworld must submit the manufacturer calibration data for the fixed radiation monitors to DEQ for review and approval to ensure compliance with OAC 252:515-23-32(b).
5. Reworld shall not accept RMW waste until DEQ approves the manufacturer calibration data and the certification of construction and provides written authorization of RMW acceptance.
6. The amount of RMW, as defined in OAC 252:515-1-2, received and processed at Reworld is limited to 40,000 tons of per year.
7. Prior to initiating RMW processing, the unit must be operational for four hours and have a grate temperature of at least 2,000°F.
8. Reworld shall conduct an initial visual inspection of the ash after processing the first load of waste that contains RMW.
9. Reworld shall calibrate the fixed radiation monitors annually and maintain records of calibration in the operating record kept at or near the facility.

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10. Visual inspection of the ash must be conducted monthly to determine the presence of any unburned RMW material following the processing of RMW. Records of monthly visual inspections must be maintained in the operating record kept at or near the facility. If unburned RMW material or other indications of incomplete RMW combustion are observed during visual inspection, Reworld must follow the RMW Processing SOP and conduct a visual inspection after processing the next load containing RMW. If unburned RMW material, or other indicators of incomplete RMW combustion, are observed during the follow-up visual inspection, Reworld must cease processing RMW and notify DEQ.
11. In the event the interlock system is triggered in an incineration unit, Reworld must conduct a visual inspection of the ash from the unit, notify DEQ, and follow the RMW Processing SOP.
12. Reworld shall submit a written request for DEQ approval or submit a permit modification application if any additions or changes to the approved Permit or this Permit Modification occur.
13. This permit modification is based on data, design criteria, plans, and specifications presented in the documents incorporated by reference. Any inaccuracies found in the Application or other documents incorporated by reference may provide cause for potential enforcement action against Reworld and the amendment, modification, or revocation of this Permit Modification.
14. This Permit Modification may be further modified, revoked and reissued, or terminated for cause as specified in 27A O.S. § 2-3-502 and OAC 252:4. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of Reworld does not stay the applicability or enforceability of any Permit Condition or any other law providing for protection of public health or the environment from an imminent or substantial endangerment.
15. Issuance of this Permit Modification does not convey any property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local laws or regulations.
16. The provisions of this Permit Modification are severable. If any part or provision of this Permit Modification or the application of any provision of this Permit Modification to any circumstance is held invalid by a court of competent jurisdiction, the decision of that court or the application of such provision to other circumstances shall not affect the remainder of this Permit Modification.
17. Reworld shall comply with the Oklahoma Solid Waste Management Act, the Environmental Quality Code, and rules promulgated thereunder, including provisions of the Oklahoma Administrative Code, and all conditions of the Solid Waste Permit. Any permit noncompliance constitutes a violation of the Solid Waste Permit and is grounds for enforcement action, including: permit modification, administrative civil penalties, suspension

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or revocation, and denial of a pending permit modification application.

The permittee is authorized to operate in conformity with the documents incorporated by reference. Commencing operations under this modification constitutes acceptance of, and consent to, the conditions contained herein.

Hillary Young, P.E.
Chief Engineer
Land Protection Division

Date: _____

Kelly Dixon
Division Director
Land Protection Division

Date: _____

Robert Singletary
Executive Director
Oklahoma Department of Environmental Quality

Date: _____