State of Utah

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Department of
Environmental Quality

Kimberly D. Shelley
*Executive Director*

DIVISION OF AIR QUALITY
Bryce C. Bird
*Director*

DAQE-IN104140016-24

January 9, 2025

Bryan Mansell
Central Valley Water Reclamation Facility
800 West Central Valley Road
Salt Lake City, UT 84119-3379
MansellB@cvwrf.org

Dear Mr. Mansell:

Re: Intent to Approve: Modification to Approval Order DAQE-AN104140015-21 to Update Engines
Project Number: N104140016

The attached document is the Intent to Approve (ITA) for the above-referenced project. The ITA is subject to public review. Any comments received shall be considered before an Approval Order (AO) is issued. The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. An invoice will follow upon issuance of the final AO.

Future correspondence on this ITA should include the engineer's name, **John Persons,** as well as the DAQE number as shown on the upper right-hand corner of this letter. John Persons, can be reached at (385) 306-6503 or jpersons@utah.gov, if you have any questions.

Sincerely,

Jon L. Black
Jon Black (Jan 7, 2025 14:56 MST)

Jon L. Black, Manager
New Source Review Section

JLB:JP:jg

cc: Salt Lake County Health Department
EPA Region 8

**STATE OF UTAH**
**Department of Environmental Quality**
**Division of Air Quality**

# INTENT TO APPROVE
# DAQE-IN104140016-24
# Modification to Approval Order DAQE-AN104140015-21 to Update Engines

**Prepared By**
**John Persons, Engineer**
**(385) 306-6503**
**jpersons@utah.gov**

**Issued to**
**Central Valley Water Reclamation Facility - Wastewater Treatment Plant**

**Issued On**
**January 9, 2025**

Jon Black (Jan 7, 2025 14:56 MST)

**New Source Review Section Manager**
**Jon L. Black**

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# GENERAL INFORMATION

## CONTACT/LOCATION INFORMATION

**Owner Name**
Central Valley Water Reclamation Facility

**Source Name**
Central Valley Water Reclamation Facility - Wastewater Treatment Plant

**Mailing Address**
800 West Central Valley Road
Salt Lake City, UT 84119-3379

**Physical Address**
800 W Central Valley Road
Salt Lake City, UT 84119-3379

**Source Contact**
Name: Bryan Mansell
Phone: (801) 973-9100
Email: MansellB@cvwrf.org

**UTM Coordinates**
422600 m Easting
4506500 m Northing
Datum NAD27
UTM Zone 12

**SIC code** 4952 (Sewerage Systems)

## SOURCE INFORMATION

General Description
The Central Valley Water Reclamation Facility (CVWRF) employs primary sedimentation tanks, trickling filters, aeration tanks, secondary sedimentation tanks, and ultraviolet light disinfection. The treated water is then discharged into Mill Creek. CVWRF also treats the waste materials removed from the water using anaerobic digesters, which reduces the solids by converting them to water, methane gas, and a residual called bio-solids. The water is pressed out of the bio-solids and returned to the liquid portion of the plant for treatment. The bio-solids are taken and applied to the ground for beneficial agricultural use or composting. The methane gas is used to fuel engine generators to power the plant. Equipment at the site consists of digester gas/natural gas-fired engines, emergency generator engines, digester gas flares, small boilers, and waste oil heaters.

NSR Classification
Minor Modification at Major Source

Source Classification
Located in Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County $SO_2$ NAA
Salt Lake County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

NSPS (Part 60), JJJJ: Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
MACT (Part 63), A: General Provisions
MACT (Part 63), ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
Title V (Part 70) Major Source

Project Description
CVWRF requested a modification for:

1- The addition of three (3) 2-MW diesel-fired emergency engines to ensure adequate backup power in the event of a power outage.
2- The removal of the Waukesha 5 engine, off-site since 2021.
3- Addition of previously permitted Waste Oil Heater emissions.

## SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

| Criteria Pollutant | Change (TPY) | Total (TPY) |
|---|---|---|
| Ammonia | 0 | 0.17 |
| $CO_2$ Equivalent | 621.82 | 50831.13 |
| Carbon Monoxide | -1.81 | 248.65 |
| Nitrogen Oxides | 4.47 | 68.29 |
| Particulate Matter - $PM_{10}$ | 0.20 | 3.68 |
| Particulate Matter - $PM_{2.5}$ | 0.20 | 2.71 |
| Sulfur Oxides | 0.20 | 0.42 |
| Volatile Organic Compounds | -4.49 | 30.06 |

| Hazardous Air Pollutant | Change (lbs/yr) | Total (lbs/yr) |
|---|---|---|
| Acetaldehyde (CAS #75070) | 0 | 5140 |
| Acrolein (CAS #107028) | 0 | 3160 |
| Benzene (Including Benzene From Gasoline) (CAS #71432) | 0 | 280 |
| Formaldehyde (CAS #50000) | 0 | 32500 |
| Generic HAPs (CAS #GHAPS) | 60 | 1200 |
| Hexane (CAS #110543) | 0 | 880 |
| Methanol (CAS #67561) | 0 | 1540 |
| | **Change (TPY)** | **Total (TPY)** |
| Total HAPs | 0.03 | 22.35 |

# PUBLIC NOTICE STATEMENT

The NOI for the above-referenced project has been evaluated and has been found to be consistent with the requirements of UAC R307. Air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an AO by the Director.

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notification of the intent to approve will be published in the Salt Lake Tribune and Deseret News on January 12, 2025. During the public comment period the proposal and the evaluation of its impact on air quality will be available for the public to review and provide comment. If anyone so requests a public hearing within 15 days of publication, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and the hearing will be evaluated. The proposed conditions of the AO may be changed as a result of the comments received.

# SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

| | |
|---|---|
| I.1 | All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101] |
| I.2 | The limits set forth in this AO shall not be exceeded without prior approval. [R307-401] |
| I.3 | Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1] |
| I.4 | All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the five-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-401-8] |
| I.5 | At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4] |
| I.6 | The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107] |
| I.7 | The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150] |

| | |
|---|---|
| I.8 | The owner/operator shall submit documentation of the status of construction or modification of Emergency Engines #9-#11 to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO, if construction is discontinued for 18 months or more, or if construction extends beyond the anticipated schedule. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18] |

# SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

## II.A THE APPROVED EQUIPMENT

| | |
|---|---|
| II.A.1 | **Wastewater Treatment Plant**<br>Source Wide |
| II.A.2 | **JMS Engines #1 & #2**<br>Two (2) GE Jenbacher Model JMS 612-F28F02 generator engines<br>Rating: 2,509 hp (each)<br>Fuel Type: Natural Gas/Digester Gas<br>NSPS Applicability: 40 CFR 60 Subpart JJJJ<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |
| II.A.3 | **JMS Engines #3 & #4**<br>Two (2) GE Jenbacher Model JMS 612-F28F02 generator engines<br>Rating: 2,509 hp (each)<br>Fuel Type: Natural Gas/Digester Gas<br>NSPS Applicability: 40 CFR 60 Subpart JJJJ<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |
| II.A.4 | **$H_2S$ Removal Vessel**<br>$H_2S$ removal vessel upstream of the engines used to treat digester gas. |
| II.A.5 | **Emergency Generator Engines #2 & #3**<br>Rating: 896 hp each<br>Quantity: Two (2)<br>Fuel: Diesel<br>NSPS Applicability: None<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |
| II.A.6 | **Emergency Generator Engines #4**<br>Rating: 349 hp<br>Quantity: 1<br>Fuel: Diesel<br>NSPS Applicability: None<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |

| | |
|---|---|
| II.A.7 | **Emergency Generator Engines #5 and #6**<br>Rating: 800 hp each<br>Quantity: 2<br>Fuel: Diesel<br>Manufacture Date: 2016<br>NSPS Applicability: 40 CFR 60 Subpart IIII<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |
| II.A.8 | **Emergency Generator Engines #7 and #8**<br>Rating: 1,341 hp each<br>Quantity: 2<br>Fuel: Diesel<br>Manufacture Date: 2015<br>NSPS Applicability: 40 CFR 60 Subpart IIII<br>MACT Applicability: 40 CFR 63 Subpart ZZZZ |
| II.A.9 | **Three (3) Waste Oil Heaters**<br>Rating: 0.28, 0.33, and 0.35 MMBtu/hr each<br>Fuel: Used Oil |
| II.A.10 | **Two (2) Digester Gas Flares**<br>Fuel Type: Digester Gas |
| II.A.11 | **Boiler #1**<br>Rating: 6.05 MMBtu/hr<br>Fuel: Natural Gas<br>NSPS Applicability: None<br>MACT Applicability: None |
| II.A.12 | **Boiler #2**<br>Rating: 6.28 MMBtu/hr<br>Fuel: Natural Gas<br>NSPS Applicability: None<br>MACT Applicability: None |
| II.A.13 | **Emergency Engines #9-#11 (NEW)**<br>Fuel: Diesel<br>Rating: 2,680 hp or 6,000 kW each<br><br>NSPS Applicability: Subpart IIII<br>MACT Applicability: Subpart ZZZZ |

# SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO.

## II.B REQUIREMENTS AND LIMITATIONS

| | |
|---|---|
| II.B.1 | **Site Wide Requirements** |
| II.B.1.a | Visible emissions from the following emission points shall not exceed the following values:<br><br>A. Digester Gas/Natural Gas Engines - 10% opacity<br><br>B. Diesel Generators - 20% opacity<br><br>C. Boilers - 10% opacity<br><br>D. Fugitive Emissions - 15% opacity<br><br>E. Digester Gas Flare - 10% opacity.<br><br>[R307-401-8] |
| II.B.1.a.1 | Opacity observations of emissions shall be conducted according to 40 CFR 60, Appendix A, Method 9. [R307-401-8] |
| II.B.1.b | The owner/operator shall not allow the $NO_x$ emissions from the operation of all non-emergency engines at the plant to exceed 0.648 tons per day. [R307-401-8, SIP Section IX.H.2] |
| II.B.1.b.1 | The owner/operator shall demonstrate compliance with the emission limitation by summing the emissions from all the non-emergency engines. [R307-401-8, SIP Section IX.H.2] |
| II.B.2 | **Waukesha Digester Gas/Natural Gas Engines Requirements** |
| II.B.2.a | The owner/operator shall use only natural gas and/or digester gas as fuel in all Waukesha and JMS generator engines. [R307-401-8] |
| II.B.2.b | The owner/operator shall limit emissions from all Waukesha and JMS generator engines to 53 tons of $NO_x$ per rolling 12-month period. [R307-401-8] |
| II.B.2.b.1 | The owner/operator shall determine compliance with a rolling 12-month total by calculating a new 12-month total using data from the previous 12 months. Monthly calculations shall be made no later than 20 days after the end of each calendar month. The owner/operator shall demonstrate compliance with the rolling 12-month limit by using the following equation for each engine and the appropriate conversion factors:<br><br>$NO_x$ = [Emission rate of engine] x [Hours of operation of engine].<br><br>[R307-401-8] |
| II.B.2.b.2 | Records of hours of operation shall be kept for all periods when the engines are in operation. Continuous recording is required. Records shall be kept on a daily basis. [R307-401-8] |

II.B.2.b.3 The owner/operator shall use the most recent stack test data as the emission rates for the rolling 12-month total calculations.

Emission rates for the JMS engines shall be measured as required in II.B.3.a. The most recent stack test data shall be used to determine compliance with the rolling 12-month $NO_x$ limit. For the period between installation and the initial stack test, the $NO_x$ emission limit in II.B.3.a shall be used.

A stack test of the Waukesha engine shall be conducted on an annual basis for as long as the engine remains in operation. Testing shall be performed in accordance with the requirements in II.B.3.a.2 through II.B.3.a.5 and II.B.3.a.8 through II.B.3.a.11 of this AO. The source may be tested at any time if directed by the Director.

[R307-401-8]

II.B.3 **JMS Digester Gas/Natural Gas Engines Requirements**

II.B.3.a Emissions to the atmosphere from each of the natural gas/digester gas-fired engines shall not exceed the following rates:

Source: Digester Gas/Natural Gas Engines (Each Stack)

| **Pollutant** | **Limit (g/bhp-hr)** |
|---|---|
| $NO_x$ | 0.55 |
| CO | 2.50 |
| VOCs (NMHC) | 0.3 |

[R307-401-8]

II.B.3.a.1 Frequency

| **Emission Point** | **Pollutant** | **Status** | **Test Frequency** |
|---|---|---|---|
| JMS Engine #1 | $NO_x$ | * | + |
| | CO | * | + |
| | VOC | * | + |
| JMS Engine #2 | $NO_x$ | * | + |
| | CO | * | + |
| | VOC | * | + |
| JMS Engine #3 | $NO_x$ | * | + |
| | CO | * | + |
| | VOC | * | + |
| JMS Engine #4 | $NO_x$ | * | + |
| | CO | * | + |
| | VOC | * | + |

* Initial compliance testing was required and completed.
+ Test every three (3) years. The Director may require testing at any time.

[R307-401-8]

| | |
|---|---|
| II.B.3.a.2 | Notification<br>The Director shall be notified at least 30 days prior to conducting any required emission testing. A source test protocol shall be submitted to DAQ when the testing notification is submitted to the Director. The source test protocol shall be approved by the Director prior to performing the test(s). The source test protocol shall outline the proposed test methodologies, stack(s) to be tested, and procedures to be used. A pretest conference shall be held, if directed by the Director. [R307-401-8] |
| II.B.3.a.3 | Sample Location<br>The sampling location shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, or other methods as approved by EPA and acceptable to the Director. An Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approved access shall be provided to the test location. [R307-401-8] |
| II.B.3.a.4 | Volumetric Flow Rate Test Methods<br>40 CFR 60, Appendix A, Method 2, or other EPA-approved testing methods acceptable to the Director. [R307-401-8] |
| II.B.3.a.5 | $NO_x$ Test Methods<br>40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D, 7E, or other EPA-approved testing methods acceptable to the Director. [R307-401-8] |
| II.B.3.a.6 | CO Test Methods<br>40 CFR 60, Appendix A, Method 10, or other EPA-approved testing methods acceptable to the Director. [R307-401-8] |
| II.B.3.a.7 | VOC Test Method<br>40 CFR 60, Appendix A, Method 18, or other EPA-approved testing methods acceptable to the Director. [R307-401-8] |
| II.B.3.a.8 | Calculations<br>To determine mass emission rates (lb./hr., etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Director to give the results in the specified units of the emission limitation. [R307-401-8] |
| II.B.3.a.9 | New Source Operation<br>For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate listed in this AO. If the maximum AO allowable production rate has not been achieved at the time of the test, the following procedure shall be followed:<br><br>1) Testing shall be at no less than 90% of the production rate achieved to date.<br><br>2) If the test is passed, the new maximum allowable production rate shall be 110% of the tested achieved rate, but not more than the maximum allowable production rate. This new allowable maximum production rate shall remain in effect until successfully tested at a higher rate.<br><br>3) The owner/operator shall request a higher production rate when necessary. Testing at no less than 90% of the higher rate shall be conducted. A new maximum production rate (110% of the new rate) will then be allowed if the test is successful. This process may be repeated until the maximum AO production rate is achieved.<br><br>[R307-401-8] |

| | |
|---|---|
| II.B.3.a.10 | Existing Source Operation<br>For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years. [R307-401-8] |
| II.B.3.a.11 | The results of stack testing shall be submitted to the Director within 60 days of completion of the testing. Reports shall clearly identify results as compared to permit limits and indicate compliance status. [R307-401-8] |
| II.B.4 | **Emergency Generator Engines Requirements** |
| II.B.4.a | The owner/operator shall not test Emergency #9-#11 concurrently or when any other emergency engine is being tested. [R307-401-8, R307-410-4] |
| II.B.4.b | The owner/operator shall not exceed 52 tests per engine for emergency engines #9-#11 per rolling 12-month period. [R307-401-8, R307-410-4] |
| II.B.4.c | Each emergency generator engine shall not exceed 100 hours of operation for testing and maintenance per rolling 12-month period. The 100 hours of operation for testing and maintenance purposes may include up to 50 hours per calendar year for operation in nonemergency situations as provided in 40 CFR 60.4211(f). [R307-401-8] |
| II.B.4.c.1 | Compliance with the limit of the hours of operation shall be determined by installation of an hour meter on the emergency generator engine. Records documenting the operation of the emergency generator engine shall be kept in a log and shall include the following:<br><br>A. The date the emergency generator engine was used;<br><br>B. The duration of operation each day in hours; and<br><br>C. The reason for the emergency generator engine usage.<br><br>[R307-401-8] |
| II.B.4.c.2 | To determine compliance with the rolling 12-month total, the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. [R307-401-8] |
| II.B.4.c.3 | Records of hours of operation shall be determined by installing a non-resettable hour meter for the emergency generator engine. [40 CFR 63 Subpart ZZZZ] |
| II.B.5 | **Fuel Requirements** |
| II.B.5.a | The owner/operator shall only use diesel fuel (fuel oil #1, #2, or diesel fuel oil additives) in the emergency generator engines. All diesel burned shall meet the definition of ultra-low sulfur diesel (ULSD) and contain no more than 15 ppm sulfur. [R307-401-8] |
| II.B.5.a.1 | To demonstrate compliance with the diesel fuel requirements for any diesel fuel purchased, the owner/operator shall keep and maintain fuel purchase invoices. The fuel purchase invoices shall indicate that the diesel fuel meets the ULSD requirements, or the owner/operator shall obtain certification of sulfur content from the fuel supplier. [R307-401-8] |

# PERMIT HISTORY

This Approval Order shall supersede (if a modification) or will be based on the following documents:

| | |
|---|---|
| Supersedes | AO DAQE-AN104140015-21 dated July 2, 2021 |
| Is Derived From | NOI dated May 4, 2023 |
| Incorporates | Additional Information dated July 7, 2023 |
| Incorporates | Additional Information dated January 4, 2024 |
| Incorporates | Additional Information dated June 13, 2024 |

# ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

| | |
|---|---|
| 40 CFR | Title 40 of the Code of Federal Regulations |
| AO | Approval Order |
| BACT | Best Available Control Technology |
| CAA | Clean Air Act |
| CAAA | Clean Air Act Amendments |
| CDS | Classification Data System (used by Environmental Protection Agency to classify sources by size/type) |
| CEM | Continuous emissions monitor |
| CEMS | Continuous emissions monitoring system |
| CFR | Code of Federal Regulations |
| CMS | Continuous monitoring system |
| CO | Carbon monoxide |
| $CO_2$ | Carbon Dioxide |
| $CO_2e$ | Carbon Dioxide Equivalent - Title 40 of the Code of Federal Regulations Part 98, Subpart A, Table A-1 |
| COM | Continuous opacity monitor |
| DAQ/UDAQ | Division of Air Quality |
| DAQE | This is a document tracking code for internal Division of Air Quality use |
| EPA | Environmental Protection Agency |
| FDCP | Fugitive dust control plan |
| GHG | Greenhouse Gas(es) - Title 40 of the Code of Federal Regulations 52.21 (b)(49)(i) |
| GWP | Global Warming Potential - Title 40 of the Code of Federal Regulations Part 86.1818-12(a) |
| HAP or HAPs | Hazardous air pollutant(s) |
| ITA | Intent to Approve |
| LB/YR | Pounds per year |
| MACT | Maximum Achievable Control Technology |
| MMBTU | Million British Thermal Units |
| NAA | Nonattainment Area |
| NAAQS | National Ambient Air Quality Standards |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| NOI | Notice of Intent |
| $NO_x$ | Oxides of nitrogen |
| NSPS | New Source Performance Standard |
| NSR | New Source Review |
| $PM_{10}$ | Particulate matter less than 10 microns in size |
| $PM_{2.5}$ | Particulate matter less than 2.5 microns in size |
| PSD | Prevention of Significant Deterioration |
| PTE | Potential to Emit |
| R307 | Rules Series 307 |
| R307-401 | Rules Series 307 - Section 401 |
| $SO_2$ | Sulfur dioxide |
| Title IV | Title IV of the Clean Air Act |
| Title V | Title V of the Clean Air Act |
| TPY | Tons per year |
| UAC | Utah Administrative Code |
| VOC | Volatile organic compounds |