State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN109460006

December 11, 2023

James Dixon
Central Weber Sewer Improvement District
2618 West Pioneer Road
Ogden, UT 84404
jamesd@centralweber.com

Dear James Dixon,

Re: Engineer Review:
Modification of Approval Order DAQE-AN109460004-21 to Increase Digester Gas Production and Remove Generator Engines
Project Number: N109460006

The DAQ requests a company representative review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Central Weber Sewer Improvement District should complete this review within **10 business days** of receipt.

Central Weber Sewer Improvement District should contact **Christine Bodell** at (385) 290-2690 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email **Christine Bodell** at **cbodell@utah.gov** the signed cover letter. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an Approval Order (AO) for signature by the DAQ Director.

If Central Weber Sewer Improvement District does not respond to this letter within **10 business days,** the project will move forward without source concurrence. If Central Weber Sewer Improvement District has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature _____
(Signature & Date)

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N109460006
Owner Name	Central Weber Sewer Improvement District
Mailing Address	2618 West Pioneer Road Ogden, UT, 84404
Source Name	Central Weber Sewer Improvement District- Wastewater Treatment Plant
Source Location	2618 West Pioneer Road Ogden, UT 84404
UTM Projection	412,680 m Easting, 4,569,516 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	4952 (Sewerage Systems)
Source Contact	James Dixon
Phone Number	(801) 731-3011
Email	jamesd@centralweber.com
Billing Contact	James Dixon
Phone Number	801-731-3011
Email	jamesd@centralweber.com
Project Engineer	Christine Bodell, Engineer
Phone Number	(385) 290-2690
Email	cbodell@utah.gov
Notice of Intent (NOI) Submitted	October 27, 2023
Date of Accepted Application	November 20, 2023

SOURCE DESCRIPTION

General Description
Central Weber Sewer Improvement District treats wastewater and anaerobically digests the produced sludge. The facility operates several generators and boilers. Boilers are used to supply heat for the digesters and the buildings on site. Generators are used to provide power to critical equipment during emergencies when power from the utility provider is interrupted. Equipment is powered by diesel, natural gas, and digester gas. The facility is set up to allow for multiple operating configurations which are determined by weather, equipment, maintenance schedules, equipment failure, wastewater influent quality, and power availability.

NSR Classification:
Minor Modification at Minor Source

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

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Dc: Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
NSPS (Part 60), IIII: Standards of Performance for Stationary Compression 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

Project Proposal
Modification of Approval Order DAQE-AN109460004-21 to Increase Digester Gas Production and Remove Generator Engines

Project Description
Central Weber Sewer Improvement District has requested the following changes to its current Approval Order:

1. Remove two (2) 525 kW, natural/digester gas-fired engine generators (listed as equipment ID II.A.2 in Approval Order DAQE-AN109460004-21),
2. Remove one (1) 60 kW, diesel-fired emergency generator engine (listed as equipment ID II.A.4 in Approval Order DAQE-AN109460004-21), and
3. Increase the maximum annual digester gas production from 74,000 Dekatherms (Dth) to 101,985 Dth.

EMISSION IMPACT ANALYSIS

The criteria and HAPs emission increases do not exceed any thresholds outlined in UAC Rule R307-410. Therefore, modeling is not required at this time. [Last updated November 16, 2023]

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)
CO_2 Equivalent	-7914	34890.00
Carbon Monoxide	-41.76	22.71
Nitrogen Oxides	-46.10	19.42
Particulate Matter - PM_{10}	0.43	2.43
Particulate Matter - $PM_{2.5}$	0.43	2.43
Sulfur Dioxide	-1	0.73
Volatile Organic Compounds	1	8.60

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Acetaldehyde (CAS #75070)	-886	0
Formaldehyde (CAS #50000)	-5604	36
Generic HAPs (CAS #GHAPS)	-828	12
Hexane (CAS #110543)	-136	850
Methanol (CAS #67561)	-264	0
	Change (TPY)	**Total (TPY)**
Total HAPs	-3.86	0.45

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding Increase in Digester Gas Production**

The source is increasing digester gas production from 74,000 Dth/yr to 101,895 Dth/yr. The primary pollutants associated with increased digester gas production are VOCs. Flares are used to control VOCs for this type of application and have a typical control efficiency of 97.7%. To reduce VOC emissions, the source will capture all produced digester gas and combust it using a flare prior to releasing it to the atmosphere. This is considered BACT.
[Last updated December 6, 2023]

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. **(New or Modified conditions are indicated as "New" in the Outline Label):**

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 two-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 two (2) 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]

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. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.A THE APPROVED EQUIPMENT

II.A.1	**Central Weber Sewer Improvement District** A wastewater treatment facility
II.A.2	**2000 kW Emergency Generator Engine** Fuel: Diesel Manufacture Date: 2012 Location: Blower Building NSPS Applicability: 40 CFR 60 Subpart IIII NESHAP Applicability: 40 CFR 63 Subpart ZZZZ
II.A.3	**2250 kW (3280 hp) Emergency Generator Engine** Fuel: Diesel Manufacture Date: 2020 Location: Blower Building NSPS Applicability: 40 CFR 60 Subpart IIII NESHAP Applicability: 40 CFR 63 Subpart ZZZZ
II.A.4	**Backup Boilers** Quantity: 2 Maximum Heat Input Capacity: 5.2 MM/Btu/hr Fuel: Natural gas Location: Digester Building NSPS/NESHAP Applicability: None
II.A.5	**Boilers** Quantity: 3 Maximum Heat Input Capacity: 12.5 MMBtu/hr each Control Technology: Low NO_x burners Fuel: Natural gas Location: New Digester Control Building NSPS Applicability: 40 CFR 60 Subpart Dc
II.A.6	**Several Boilers/Furnaces/Heaters** Fuel: Natural Gas Maximum heat input Capacity: Less than 5 MMBtu/hr each *Listed form informational purposes only

II.A.7	**Digester Gas Flare** Smokeless type flare Location: Maintenance Building

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. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	**Source-Wide Requirements**
II.B.1.a NEW	The owner/operator shall not allow visible emissions from the following emission points to exceed the following values: A. All boiler exhaust stacks - 10% B. All diesel-fired emergency generator exhaust stacks - 20% C. All engine-generator sets exhaust - 10% D. Digester gas flare - 10% E. All other points - 20% . [R307-201, R307-401-8]
II.B.1.a.1	Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. Opacity observations of emissions from flares shall be conducted according to 40 CFR 60 Appendix A, Method 22. [R307-201]
II.B.1.b NEW	The owner/operator shall continue with an annual service program for the gas system and carburetor system by a certified service representative. The exhaust emissions shall be checked once every 12 months and the carburetor system readjusted as required every 12 months. The system shall be readjusted any time the system is altered or repaired. Records of all adjustments shall be kept and made available to the Director for their inspection. [R307-401-8]
II.B.1.c NEW	All emissions from the production of digester gas shall be routed through the digester gas flare before being vented to the atmosphere. [R307-401-8]
II.B.2	**Emergency Generator Requirements**
II.B.2.a NEW	The owner/operator shall only operate one emergency engine at a time during non-emergency situations. [R307-401-8]

II.B.2.b NEW	The owner/operator shall not operate each emergency engine on site for more than 100 hours per calendar year during non-emergency situations. There is no time limit on the use of the engines during emergencies. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.b.1 NEW	To determine compliance with a calendar year total, the owner/operator shall calculate a new yearly total by January 31st using data from the previous calendar year. Records documenting the operation of each emergency engine shall be kept in a log and shall include the following: A. The date the emergency engine was used B. The duration of operation in hours C. The reason for the emergency engine usage . [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.b.2 NEW	To determine the duration of operation, the owner/operator shall install a non-resettable hour meter for each emergency engine. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.c NEW	The owner/operator shall only use diesel fuel (fuel oil #1, #2 or diesel fuel oil additives) in the diesel-fired emergency 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.2.c.1 NEW	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

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	AO DAQE-AN109460004-21 dated August 19, 2021
Is Derived From	NOI dated October 27, 2023

REVIEWER COMMENTS

1. **Comment regarding Source Emission Estimates and DAQ Acceptance:**
The source is removing three (3) engines and increasing digester gas production. These changes will result in a net decrease in NO_x, CO, SO_2, HAPs, and CO_2e emissions and a net increase in PM_{10}, $PM_{2.5}$, and VOC emissions.

Flare
The VOC emission factor was taken from AP-42 Tables 13.5-1 for Industrial Flares. CO, NO_x, and $PM_{10}/PM_{2.5}$ emission factors were taken from AP-42 Table 2.4-4 for Municipal Solid Waste Landfills with flare control. The emission factor for SO_2 assumed a concentration of 150 ppm of H_2S in the gas stream and is equivalent to 0.0114 lbs of SO_2 per Dth.

Emergency Engines
Each emergency engine is fueled by diesel. Emission factors were obtained from AP-42 Section 3.4 for Large Stationary Diesel and All Stationary Dual-fuel Engines. The 2,250 kW (3,280 hp) emergency generator engine (Equipment ID# II.A.3) is de-rated to 2,000 kW.

Boilers/Heaters
Emissions from the natural gas-fired boilers/heaters were calculated using emission factors from AP-42 Section 1.4 for Natural Gas Combustion. All boilers/heaters are assumed to run 8,760 hours annually. [Last updated December 6, 2023]

2. **Comment regarding NSPS and MACT Applicability:**
40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)
The provisions of this subpart apply to owners and operators of steam generating units which commenced after June 9, 1989, rated above 10 MMBtu.hr. Steam generating unit means a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. Three (3) 12.5 MMBtu/hr boilers are subject to the recordkeeping and reporting requirements of Subpart Dc.

40 CFR 60 NSPS Subpart IIII - Standards of Performance or Stationary Compression Ignition Internal Combustion Engines
The provisions of this subpart apply to owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006. The two (2) diesel-fired emergency stationary engines at this facility were constructed after this date and are therefore subject to NSPS Subpart IIII.

40 CFR 63 Subpart ZZZZ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
The provisions of this subpart are applicable to owners/operators of stationary RICE at a major or

area sources of HAP emissions. The facility includes (2) diesel-fired emergency stationary engines. The provisions of MACT Subpart ZZZZ apply as the stationary reciprocating internal combustion engine (RICE) is at an area source of HAP emissions. The engines are not designated as nonroad and are not exempt are affected sources under this regulation. Therefore, MACT Subpart ZZZZ applies to this facility.
[Last updated November 16, 2023]

3. **Comment regarding Title V Applicability:**
Title V of the 1990 Clean Air Act (Title V) applies to the following:

1. Any major source
2. Any source subject to a standard, limitation, or other requirement under Section 111 of the Act, Standards of Performance for New Stationary Sources;
3. Any source subject to a standard or other requirement under Section 112 of the Act, Hazardous Air Pollutants.
4. Any Title IV affected source.

This facility is not a major source and is not a Title IV source. The facility is not subject to 40 CFR 61 (NESHAP) regulations. The facility is subject to 40 CFR 60 (NSPS) and 40 CFR 63 (MACT) regulations. The facility is subject to the provisions of NSPS Subparts Dc and IIII, and MACT Subpart ZZZZ. NSPS Subpart IIII and MACT Subpart ZZZZ each exempt sources from the obligation to obtain a permit under 40 CFR part 70 (Title V permit) if the source is not otherwise required by law to obtain a permit. NSPS Subpart Dc does not include this exemption. However, the facility is only subject to record-keeping requirements under NSPS Subpart Dc, and is not subject to a standard or limitation. Therefore, this facility is not a Title V source. [Last updated November 16, 2023]

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 EPA 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 - 40 CFR 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 UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
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

State of Utah

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Approval Signature 12/21/23
(Signature & Date)

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

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Review of BACT for New/Modified Emission Units

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II.A.7	**Digester Gas Flare** Smokeless type flare Location: Maintenance Building

SECTION II: SPECIAL PROVISIONS

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II.B.1.b NEW	The owner/operator shall continue with an annual service program for the gas system and carburetor system by a certified service representative. The exhaust emissions shall be checked once every 12 months and the carburetor system readjusted as required every 12 months. The system shall be readjusted any time the system is altered or repaired. Records of all adjustments shall be kept and made available to the Director for their inspection. [R307-401-8]
II.B.1.c NEW	All emissions from the production of digester gas shall be routed through the digester gas flare before being vented to the atmosphere. [R307-401-8]
II.B.2	**Emergency Generator Requirements**
II.B.2.a NEW	The owner/operator shall only operate one emergency engine at a time during non-emergency situations. [R307-401-8]

II.B.2.b NEW	The owner/operator shall not operate each emergency engine on site for more than 100 hours per calendar year during non-emergency situations. There is no time limit on the use of the engines during emergencies. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.b.1 NEW	To determine compliance with a calendar year total, the owner/operator shall calculate a new yearly total by January 31st using data from the previous calendar year. Records documenting the operation of each emergency engine shall be kept in a log and shall include the following: A. The date the emergency engine was used B. The duration of operation in hours C. The reason for the emergency engine usage . [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.b.2 NEW	To determine the duration of operation, the owner/operator shall install a non-resettable hour meter for each emergency engine. [40 CFR 63 Subpart ZZZZ, R307-401-8]
II.B.2.c NEW	The owner/operator shall only use diesel fuel (fuel oil #1, #2 or diesel fuel oil additives) in the diesel-fired emergency 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.2.c.1 NEW	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

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	AO DAQE-AN109460004-21 dated August 19, 2021
Is Derived From	NOI dated October 27, 2023

REVIEWER COMMENTS

1. **Comment regarding Source Emission Estimates and DAQ Acceptance:**
The source is removing three (3) engines and increasing digester gas production. These changes will result in a net decrease in NO_x, CO, SO_2, HAPs, and CO_2e emissions and a net increase in PM_{10}, $PM_{2.5}$, and VOC emissions.

Flare
The VOC emission factor was taken from AP-42 Tables 13.5-1 for Industrial Flares. CO, NO_x, and $PM_{10}/PM_{2.5}$ emission factors were taken from AP-42 Table 2.4-4 for Municipal Solid Waste Landfills with flare control. The emission factor for SO_2 assumed a concentration of 150 ppm of H_2S in the gas stream and is equivalent to 0.0114 lbs of SO_2 per Dth.

Emergency Engines
Each emergency engine is fueled by diesel. Emission factors were obtained from AP-42 Section 3.4 for Large Stationary Diesel and All Stationary Dual-fuel Engines. The 2,250 kW (3,280 hp) emergency generator engine (Equipment ID# II.A.3) is de-rated to 2,000 kW.

Boilers/Heaters
Emissions from the natural gas-fired boilers/heaters were calculated using emission factors from AP-42 Section 1.4 for Natural Gas Combustion. All boilers/heaters are assumed to run 8,760 hours annually. [Last updated December 6, 2023]

2. **Comment regarding NSPS and MACT Applicability:**
40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)
The provisions of this subpart apply to owners and operators of steam generating units which commenced after June 9, 1989, rated above 10 MMBtu.hr. Steam generating unit means a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. Three (3) 12.5 MMBtu/hr boilers are subject to the recordkeeping and reporting requirements of Subpart Dc.

40 CFR 60 NSPS Subpart IIII - Standards of Performance or Stationary Compression Ignition Internal Combustion Engines
The provisions of this subpart apply to owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006. The two (2) diesel-fired emergency stationary engines at this facility were constructed after this date and are therefore subject to NSPS Subpart IIII.

40 CFR 63 Subpart ZZZZ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
The provisions of this subpart are applicable to owners/operators of stationary RICE at a major or

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 EPA 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 - 40 CFR 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 UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
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

Natural Gas-Fired Boilers & Heaters

Equipment Details		
Rating	55	MMBtu/hour
Operational Hours	8,760	hours/year
Firing	Normal	

3 Bryan Boilers 12.5 MMBtu/hr
2 Bryan Boilers 5.20 MMBtu/hr
1 Comfort Heater 7.12 MMBtu/hr

Criteria Pollutant	Concentration (ppm)	Emission Factor (lb/10^6 scf)	Emission Rate (lbs/hr)	Emission Total (tons/year)	Reference
NO_X		50	2.70	11.81	Manufacturer Data or AP-42 Table 1.4-1
CO		84	4.53	19.85	
PM_{10}		7.6	0.41	1.80	AP-42 Table 1.4-2
$PM_{2.5}$		7.6	0.41	1.80	
SO_2		0.6	0.03	0.14	
VOC		5.5	0.30	1.30	
Lead		0.0005	0.00	0.00	
HAP			0.10	0.45	See Below

Green House Gas Pollutant	Global Warming Potential	Emission Factor (lb/10^6 scf)	Emission Rate (lbs/hr)	Emission Total (tons/year)	Reference
CO_2 (mass basis)	1	120,000	6,473	28,351	AP-42 Table 1.4-2 & Table A-1 to Subpart A of Part 98
Methane (mass basis)	25	2.3	0.12	0.54	
N_2O (mass basis)	298	2.2	0.12	0.52	
CO_2e				28,520	

Hazardous Air Pollutant	Emission Factor (lb/10^6 scf)	Emission Rate (lbs/hr)	Emission Total (tons/year)	Reference
2-Methylnaphthalene	2.40E-05	1.29E-06	5.67E-06	AP-42 Table 1.4-3
3-Methylchloranthrene	1.80E-06	9.71E-08	4.25E-07	
7,12-Dimethylbenz(a)anthracene	1.60E-05	8.63E-07	3.78E-06	
Acenaphthene	1.80E-06	9.71E-08	4.25E-07	
Acenaphthylene	1.80E-06	9.71E-08	4.25E-07	
Anthracene	2.40E-06	1.29E-07	5.67E-07	
Benz(a)anthracene	1.80E-06	9.71E-08	4.25E-07	
Benzene	2.10E-03	1.13E-04	4.96E-04	
Benzo(a)pyrene	1.20E-06	6.47E-08	2.84E-07	
Benzo(b)fluoranthene	1.80E-06	9.71E-08	4.25E-07	
Benzo(g,h,i)perylene	1.20E-06	6.47E-08	2.84E-07	
Benzo(k)fluoranthene	1.80E-06	9.71E-08	4.25E-07	
Chrysene	1.80E-06	9.71E-08	4.25E-07	
Dibenzo(a,h)anthracene	1.20E-06	6.47E-08	2.84E-07	
Dichlorobenzene	1.20E-03	6.47E-05	2.84E-04	
Fluoranthene	3.00E-06	1.62E-07	7.09E-07	
Fluorene	2.80E-06	1.51E-07	6.62E-07	
Formaldehyde	7.50E-02	4.05E-03	1.77E-02	
Hexane	1.80E+00	9.71E-02	4.25E-01	
Indeno(1,2,3-cd)pyrene	1.80E-06	9.71E-08	4.25E-07	
Naphthalene	6.10E-04	3.29E-05	1.44E-04	
Phenanathrene	1.70E-05	9.17E-07	4.02E-06	
Pyrene	5.00E-06	2.70E-07	1.18E-06	
Toluene	3.40E-03	1.83E-04	8.03E-04	
Arsenic	2.00E-04	1.08E-05	4.73E-05	AP-42 Table 1.4-4
Beryllium	1.20E-05	6.47E-07	2.84E-06	
Cadmium	1.10E-03	5.93E-05	2.60E-04	
Chromium	1.40E-03	7.55E-05	3.31E-04	
Cobalt	8.40E-05	4.53E-06	1.98E-05	
Manganese	3.80E-04	2.05E-05	8.98E-05	
Mercury	2.60E-04	1.40E-05	6.14E-05	
Nickel	2.10E-03	1.13E-04	4.96E-04	
Selenium	2.40E-05	1.29E-06	5.67E-06	

Equipment Details		
Flow Rate	191	SCFM
Operational Hous	8760	Hrs
Fuel Usage	101,895	Dth
Expected CH4 Content	60%	%

Pollutant	Emission Factor	Source	Hourly
CO	46	EPA2.4_2008 Draft, Table 2.4-4	0.316296
NOx	39	EPA2.4_2008 Draft, Table 2.4-4	0.268164
PM2.5/10	15	EPA2.4_2008 Draft, Table 2.4-4	0.10314

	1 MMBtu = 1 Dth		
Pollutant	Emission Factor	Source	Hourly
SO2	0.0114	Previous NOI (assumes 150 ppm H2S)	0.13
VOCs	0.14	Previous NOI (taken from AP 42 Table 13.5 -	1.63

Green House Gas Pollutant	Global Warming Potential	Emission Factor (lb/10^6 scf)	Emission Rate
CO_2 (mass basis)	1	120000	1,375
Methane (mass basis)	25	2.3	0
N_2O (mass basis)	298	2.2	0
CO_2e			

***gas production increased from
74,000 Dth/yr to 101,895 Dth/yr

**for submission, see pages 266-277 of
https://acrobat.adobe.com/link/review?uri=urn%3Aaaid%3Ascds%3AUS%3A1956947b-35c7-4ff3-9019-7a

Annual
1.39
1.17
0.45

Annual
0.58
7.13

Emission Total	Reference
6,023	AP-42 Table 1.4-2 & Table A-1 to Subpart A of Part 98
0.12	
0.11	
6,059	

Diesel-Fired Engines

Equipment Details			
Rating	5,360	hp = (4000 kw)	Emergency Engines should equal 100 hours of operation per year
Operational Hours	100	hours/year	
Sulfur Content	15	ppm or 0.0015%	

**Equipment II.A.2 (2000 kW) and Equipment II.A.5 (2,250 k

Criteria Pollutant	Standards (g/hp-hr)	Emission Factor (lb/hp-hr)	Rate (lbs/hr)	Total (tons/yea	Reference
NOX		0.024	128.64	6.43	Manufacturer Data, AP-42 Table 3.3-1, & Table 3.4-1
CO		5.50E-03	29.48	1.47	
PM10		7.00E-04	3.75	0.19	
PM2.5		7.00E-04	3.75	0.19	
VOC		6.42E-04	3.44	0.17	
SO2		1.21E-05	0.07	0.00	AP-42 Table 3.4-1
HAP			0.06	0.00	See Below

Pollutant	Potential	(lb/hp-hr)	Rate	Total	Reference
CO2 (mass basis)	1	1.16	6,218	311	AP-42 Table 3.3-1 & Table 3.4-1
Methane (mass basis)	25	6.35E-05	0	0	
CO2e				311	

Hazardous Air Pollutant	(lb/MMBtu)	Rate	Total	Reference
Benzene	7.76E-04	2.91E-02	1.46E-03	AP-42 Table 3.3-2, Table 3.4-3, & Table 3.4-4
Toluene	2.81E-04	1.05E-02	5.27E-04	
Xylenes	1.93E-04	7.24E-03	3.62E-04	
Formaldehyde	7.89E-05	2.96E-03	1.48E-04	
Acetaldehyde	2.52E-05	9.46E-04	4.73E-05	
Acrolein	7.88E-06	2.96E-04	1.48E-05	
Naphthalene	1.30E-04	4.88E-03	2.44E-04	
Acenaphthylene	9.23E-06	3.46E-04	1.73E-05	
Acenaphthene	4.68E-06	1.76E-04	8.78E-06	
Fluorene	1.28E-05	4.80E-04	2.40E-05	

Phenanthrene	4.08E-05	1.53E-03	7.65E-05	(1,3-Butadiene will not popluate if the engine size is greater than 600 hp. AP-42 does not list 1,3-Butadiene for engines greater than 600 hp.)
Anthracene	1.23E-06	4.61E-05	2.31E-06	
Fluoranthene	4.03E-06	1.51E-04	7.56E-06	
Pyrene	3.71E-06	1.39E-04	6.96E-06	
Benz(a)anthracene	6.22E-07	2.33E-05	1.17E-06	
Chrysene	1.53E-06	5.74E-05	2.87E-06	
Benzo(b)fluoranthene	1.11E-06	4.16E-05	2.08E-06	
Benzo(k)fluoranthene	2.18E-07	8.18E-06	4.09E-07	
Benzo(a)pyrene	2.57E-07	9.64E-06	4.82E-07	
Indeno(1,2,3-cd)pyrene	4.14E-07	1.55E-05	7.77E-07	
Dibenz(a,h)anthracene	3.46E-07	1.30E-05	6.49E-07	
Benzo(g,h,l)perylene	5.56E-07	2.09E-05	1.04E-06	

Pollutant	Current PTE Emissions (*)	Updated Emissions	Δ
PM2.5	2	2.43	0.43
PM10	2	2.43	0.43
SO2	1.73	0.73	-1.00
NOx	65.52	19.42	-46.10
CO	64.47	22.71	-41.76
VOC	7.6	8.60	1.00
HAPs	4.31	0.45	-3.86
Acetaldehyde	0.443	4.73E-05	-0.44
Formaldehyde	2.82	1.79E-02	-2.80
Hexane	0.493	4.25E-01	-0.07
Methanol	0.132	#######	-0.132
Generic HAPs	0.42	5.94E-03	-0.41
CO2e	42,804	34,890	-7913.56

*DAQE-AN109460004-21

Increase
Increase
Reduction *increases are due to 40% increase in flared biogas production
Reduction
Reduction
Increase
Reduction

Reduction

Form 2
Company Information/Notice of Intent (NOI)

Date 09/29/2023

Utah Division of Air Quality
New Source Review Section

Application for: ☐ **Initial Approval Order** ☑ **Approval Order Modification**

General Owner and Source Information

1. Company name and mailing address:
Central Weber Sewer Improvement District
2618 W. Pioneer Rd.
Ogden, UT 84404
Phone No.: (801) 731-3011
Fax No.: ( )

2. Company** contact for environmental matters:
James Dixon
Phone no.: (801) 731-3011
Email: jamesd@centralweber.com
** Company contact only; consultant or independent contractor contact information can be provided in a cover letter

3. Source name and physical address (if different from above):
Phone no.: ( )
Fax no.: ( )

4. Source Property Universal Transverse Mercator coordinates (UTM), including System and Datum:
UTM: 12
X: 412650 m Easting
Y: 4,569,380 m Northing

5. The Source is located in: Weber County

6. Standard Industrial Classification Code (SIC)
4952

7. If request for modification, AO# to be modified: DAQE # AN0109460003-11 DATED: 08 / 19 / 21

8. Brief (50 words or less) description of process.
Removal of existing generators for wastewater treatment.

Electronic NOI

9. A complete and accurate electronic NOI submitted to DAQ Permitting Mangers Jon Black (*jlblack@utah.gov*) or Alan Humpherys (ahumpherys@utah.gov) can expedite review process. Please mark application type.

Hard Copy Submittal ☐ Electronic Copy Submittal ☑ Both ☐

Authorization/Signature

I hereby certify that the information and data submitted in and with this application is completely true, accurate and complete, based on reasonable inquiry made by me and to the best of my knowledge and belief.

Signature: Title: Technical Director

James Dixon Name (Type or print)	Telephone Number: (801) 731-3011 Email: jamesd@centralweber.com	Date: 09/29/2023

Form 4
Project Information

Company Central Weber Sewer Improvement District

Site 10946

Utah Division of Air Quality
New Source Review Section

AIR QUALITY

Process Data - For Modification/Amendment ONLY

1. Permit Number DAQE-AN0109460003-11

If submitting a new permit, then use Form 3

Requested Changes

2. Name of process to be modified/added:

Wastewater Treatment

End product of this process:

Water treated to UDWQ requirements

3. Permit Change Type:

	New	Increase*
Equipment	☐	☐
Process	☐	☐

Condition Change: Removal of lean-burn engines

Other _____

Other _____

Other _____

4. Does new emission unit affect existing permitted process limits?

Yes ☑ No ☐

5. Condition(s) Changing:

Reduction of emissions

6. Description of Permit/Process Change**

Removal of lean-burn engines and updates to run hours for other existing equipment.

7. New or modified materials and quantities used in process. **

Material	Quantity Annually

8. New or modified process emitting units **

Emitting Unit(s)	Capacity(s)	Manufacture Date(s)
Removal of Lean-Burn Engines	525 kW	2001

**If the permit being modified does not include CO_2e or $PM_{2.5}$, the emissions need to be calculated and submitted to DAQ, which may result in an emissions increase and a public comment period.*

***If additional space is required, please generate a document to accommodate and attach to form.*

Form 5
Emissions Information
Criteria/GHGs/ HAP's
Utah Division of Air Quality
New Source Review Section

Company: Central Weber Sewer Improvement District

Site: 10946

Potential to Emit* Criteria Pollutants & GHGs			
Criteria Pollutants	**Permitted Emissions (tons/yr)**	**Emissions Increases (tons/yr)**	**Proposed Emissions (tons/yr)**
PM_{10} Total	2.00	-0.1	1.9
PM_{10} Fugitive			
$PM_{2.5}$	2.00	-0.1	1.9
NO_x	65.52	-39.33	26.19
SO_2	1.73	-1.01	0.72
CO	64.47	-23.98	40.49
VOC	7.60	0.83	8.43
VOC Fugitive			
NH_3			
Greenhouse Gases	**CO_2e**	**CO_2e**	**CO_2e**
CO_2	-	-	-
CH_4	-	-	-
N_2O	-	-	-
HFCs	-	-	-
PFCs	-	-	-
SF_6	-	-	-
Total CO2e	42,804.00	-14,104.32	28,699.68

**Potential to emit to include pollution control equipment as defined by R307-401-2.*

Hazardous Air Pollutants** (***Defined in Section 112(b) of the Clean Air Act)*				
Hazardous Air Pollutant***	**Permitted Emissions (tons/yr)**	**Emission Increase (tons/yr)**	**Proposed Emission (tons/yr)**	**Emission Increase (lbs/hr)**
Acetaldehyde (CAS #75070)	0.44	-	-	-
Formaldehyde (CAS #50000)	2.82	-	-	-
Generic HAPs (CAS #GHAPS)	0.42	-	-	-
Hexane (CAS #110543)	0.49	-	-	-
Methanol (CAS #67561)	0.13	-	-	-
Total HAP	4.31	-0.95	3.36	-

**** Use additional sheets for pollutants if needed*

Potential Emission Calculations

Central Weber Sewer Improvement District - Ogden Utah

Name and Description of Source

Existing Cumulative Natural Gas Fired Boilers and Smaller Space Heating Units, Combined.

3	Bryan Boilers	12.5 MMBtu/	8760	HR/YR	328,500.00	MMBtu/YR
2	Bryan Boilers	5.20 MMBtu/	8760	HR/YR	91,104.00	MMBtu/YR
1	Comfort Heater	7.12 MMBtu/	8760	HR/YR	62,371.20	MMBtu/YR

Estimated Annual Emissions from this Source

Note that production from this facility is shared with the same site co-generation facility and the Old Digester Control Boiler facility, but this boiler installation may be called on to carry the entire campus heating load if the other facilities are in standby, or out of service.

Estimated maximum annual natural gas input to this facility

481,975 MMBtu/YR

(85 - 90,000 Dth x 10**3 SCF/year max. to start, load growth anticipated over time.)

Maximum may be reduced by a contribution from the engine generator reject heat, up to 10 - 15,000 Dth/year.

Pollutant

Calculation

Source Dth/year x EPA Factor = xxxx lbs/year

========== xxxx tons /year

Criteria Pollutants	**EPA Emissions Factor** (lb/10**6 SCF)	**x**	**Ann Fuel Use** MMBtu/YR	**Yields**	**Estimated Annual Emissions** Lbs/Year	Tons/Year
CO2	120,000.00	x	481,975	=	56,702,965	28351.48
CO	84.00		481,975		39,692.08	19.85
Lead	0.0005	x	481,975	=	0.24	0.00
NOx	50.00	x	481,975	=	23,626.24	11.81
N2O Controlled	0.64	x	481,975	=	302.42	0.15
PM Total	7.60	x	481,975	=	3,591.19	1.80
SO2	0.60	x	481,975	=	283.51	0.14
TOC	11.00	x	481,975	=	5,197.77	2.60
Methane (CH4)	2.30	x	481,975	=	1,086.81	0.54
VOC	5.50	x	481,975	=	2,598.89	1.30
			Page Column Total		56,779,344 lb	28389.67 Tons
			Less CO2		76,379 lb	38.19 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 1.4-6 through 8

Organic Compound Pollutants

	(lb/10**6 SCF)		MMBtu/YR		Lbs/Year	Tons/Year
2-Methylnaphthalene	2.40E-05	x	481,975	=	0.01	5.67E-06
3-Methylchloranthrene	1.80E-06	x	481,975	=	0.00	4.25E-07
7,12-Dimethylbenz(a)anthracene	1.60E-05	x	481,975	=	0.01	3.78E-06
Acenaphthene	1.80E-06	x	481,975	=	0.00	4.25E-07
Acenaphthylene	1.80E-06	x	481,975	=	0.00	4.25E-07
Anthracene	2.40E-06	x	481,975	=	0.00	5.67E-07
Benz(a)anthracene	1.80E-06	x	481,975	=	0.00	4.25E-07
Benzene	2.10E-03	x	481,975	=	0.99	0.000496
Benzopyrene	1.20E-06	x	481,975	=	0.00	2.84E-07
Benzo(b)fluoranthene	1.80E-06	x	481,975	=	0.00	4.25E-07
Benzo(g,h,i)perylene	1.20E-06	x	481,975	=	0.00	2.84E-07
Benzo(k)fluoranthene	1.80E-06	x	481,975	=	0.00	4.25E-07
Butane	2.10E+00	x	481,975	=	992.30	0.496151
Chrysene	1.80E-06	x	481,975	=	0.00	4.25E-07
Dibenzo(a,h)anthracene	1.20E-06	x	481,975	=	0.00	2.84E-07
Diclorobenzene	1.20E-03	x	481,975	=	0.57	0.000284
Ethane	3.10E+00	x	481,975	=	1,464.83	0.732413
Fluoroanthene	3.00E-06	x	481,975	=	0.00	7.09E-07
Fluorene	2.80E-06	x	481,975	=	0.00	6.62E-07
Formaldehyde	7.50E-02	x	481,975	=	35.44	0.01772
Hexane	1.80E+00	x	481,975	=	850.54	0.425272
Indeno(1,2,3-cd)pyrene	1.80E-06	x	481,975	=	0.00	4.25E-07
Naphthalene	6.10E-04	x	481,975	=	0.29	0.000144
Pentane	2.60E+00	x	481,975	=	1,228.56	0.614282
Phenanathrene	1.70E-05	x	481,975	=	0.01	4.02E-06
Propane	1.60E+00	x	481,975	=	756.04	0.37802
Pyrene	5.00E-06	x	481,975	=	0.00	1.18E-06
Toluene	3.40E-03	x	481,975	=	1.61	0.000803
					---	---
			Page Column Total		5,331 lb	2.666 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 1.4-6 through 8

Potential Emission Calculations

Central Weber Sewer Improvement District - Ogden Utah

Name and Description of Source

525 kW Lean-Burn Engines

Engines require 96 SCFM of natural gas for the max output of 525 kW. Assume 1,050 btu/CF of natural gas and 0.00105 Dth/CF of natural gas.

96 SCFM x 60 min/hr x 0.00105 Dth/CF = 6.05 Dth/HR

0	Waukesha VHP3600	6.048	Dth/H	8760	HR/YR	0.00	Dth/YR

Estimated Annual Emissions from this Source

These existing engines have been removed from service.

Estimated maximum annual natural gas input to this facility

0 MMBTU per year

(85 - 90,000 Dth x 10**3 SCF/year max. to start, load growth anticipated over time.)

Maximum may be reduced by a contribution from the engine generator reject heat, up to 10 - 15,000 Dth/year.

Pollutant — Calculation

Source Dth/year x EPA Factor = xxxx lbs/year

========== xxxx tons /year

Criteria Pollutants		**EPA Emissions Factor** (lb/MMBtu)	**x**	**Ann Fuel Use** MMBtu/year	**Yields**	**Estimated Annual Emissions** Lbs/Year	Tons/Year
CO2		1.10E+02	x	0	=	0	0
CO		5.57E-01		0		0	0
NOx		8.47E-01	x	0	=	0	0
PM10		7.71E-05	x	0	=	0.00	0
PM2.5		7.71E-05	x	0	=	0	0
PM Condensible	Inc w/PM Total	9.91E-03	x	0	=	0.00	0
SO2		5.88E-04	x	0	=	0.00	0
TOC		1.47E+00	x	0	=	0.00	0
Methane (CH4)		1.25E+00	x	0	=	0.00	0
VOC		1.18E-01	x	0	=	0.00	0
						---	---
				Page Column Total		0 lb	0.000 Tons
				Less CO2		0 lb	0.00 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 1.4-6 through 8

Organic Compound Pollutants

	(lb/MMBtu)		MMBtu/year		Lbs/Year	Tons/Year
1,1,2,2-Tetrachloroethanek	4.00E-05	x	0	=	0.00	0
1,1,2-Trichloroethanek	3.18E-05	x	0	=	0.00	0
1,1-Dichloroethane	2.36E-05	x	0	=	0.00	0
1,2,3-Trimethylbenzene	2.30E-05	x	0	=	0.00	0
1,2,4-Trimethylbenzene	1.43E-05	x	0	=	0.00	0
1,2-Dichloroethane	2.36E-05	x	0	=	0.00	0
1,2-Dichloropropane	2.69E-05	x	0	=	0.00	0
1,3,5-Trimethylbenzene	3.38E-05	x	0	=	0.00	0
1,3-Butadienek	2.67E-04	x	0	=	0.00	0
1,3-Dichloropropenek	2.64E-05	x	0	=	0.00	0
2-Methylnaphthalenek	3.32E-05	x	0	=	0.00	0
2,2,4-Trimethylpentanek	2.50E-04	x	0	=	0.00	0
Acenaphthenek	1.25E-06	x	0	=	0.00	0
Acenaphthylenek	5.53E-06	x	0	=	0.00	0
Acetaldehydek,l	8.36E-03	x	0	=	0.00	0
Acroleink,l	5.14E-03	x	0	=	0.00	0
Benzenek	4.40E-04	x	0	=	0.00	0
Benzo(b)fluoranthenek	1.66E-07	x	0	=	0.00	0
Benzo(e)pyrenek	4.15E-07	x	0	=	0.00	0
Benzo(g,h,i)perylenek	4.14E-07	x	0	=	0.00	0
Biphenylk	2.12E-04	x	0	=	0.00	0
Butane	5.41E-04	x	0	=	0.00	0
Butyr/Isobutyraldehyde	1.01E-04	x	0	=	0.00	0
Carbon Tetrachloridek	3.67E-05	x	0	=	0.00	0
Chlorobenzenek	3.04E-05	x	0	=	0.00	0
Chloroethane	1.87E-06	x	0	=	0.00	0
Chloroformk	2.85E-05	x	0	=	0.00	0
Chrysenek	6.93E-07	x	0	=	0.00	0
Cyclopentane	2.27E-04	x	0	=	0.00	0
Ethane	1.05E-01	x	0	=	0.00	0
Ethylbenzenek	3.97E-05	x	0	=	0.00	0
Ethylene Dibromidek	4.43E-05	x	0	=	0.00	0
Fluoranthenek	1.11E-06	x	0	=	0.00	0
Fluorenek	5.67E-06	x	0	=	0.00	0

Formaldehydek,l	5.28E-02	x	0	=	0.00	0
Methanolk	2.50E-03	x	0	=	0.00	0
Methylcyclohexane	1.23E-03	x	0	=	0.00	0
Methylene Chloridek	2.00E-05	x	0	=	0.00	0
n-Hexanek	1.11E-03	x	0	=	0.00	0
n-Nonane	1.10E-04	x	0	=	0.00	0
n-Octane	3.51E-04	x	0	=	0.00	0
n-Pentane	2.60E-03	x	0	=	0.00	0
Naphthalenek	7.44E-05	x	0	=	0.00	0
PAHk	2.69E-05	x	0	=	0.00	0
Phenanthrenek	1.04E-05	x	0	=	0.00	0
Phenolk	2.40E-05	x	0	=	0.00	0
Propane	4.19E-02	x	0	=	0.00	0
Pyrenek	1.36E-06	x	0	=	0.00	0
Styrenek	2.36E-05	x	0	=	0.00	0
Tetrachloroethanek	2.48E-06	x	0	=	0.00	0
Toluenek	4.08E-04	x	0	=	0.00	0
Vinyl Chloridek	1.49E-05	x	0	=	0.00	0
Xylenek	1.84E-04	x	0	=	0.00	0
					---	---
			Page Column Total		0 lb	0.00 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, Table 3.2-2

Potential Emission Calculations

Central Weber Sewer Improvement District - Ogden Utah

Name and Description of Source

Digester Gas Flare

Assume that all of the maximum anticipated production of digester gas (plant sludge design capacity were to be flared, with no use by the Co-gen facility

Estimated Annual Emissions from this Source

The sludge handling and processing capacity of the new treatment facility is 59,111 lbs of sludge solids per day which have the potential at 60% yield to generate 18 cubic feet of gas per pound, testing at up to 60% methane (CH4) by volume. This equates to 11.6 Dth/hr, 101,895 Dth/yr.

Estimated maximum annual methane gas input to this facility

101,895 Dth/yr

This page includes the parallel production of CO2 which accompanies methane production.

Pollutant — Calculation

Source Dth/year x EPA Factor = xxxx lbs/year

==========/2000 = xxxx tons /year

Criteria Pollutants		**EPA Emissions Factor** (lb/10**6 SCF)	**x**	**Ann Fuel Use** Dth/year	**Yields**	**Estimated Annual Emissions** Lbs/Year	Tons/Year
CO		0.37	x	101,895	=	37,701.16	18.85
NOx		0.0680	x	101,895	=	6,928.86	3.46
PM Total (Non-smoking flare)		0.0000	x	101,895	=	0.00	0.00
SO2	*150 ppm +/- H2S is worst case	0.0114	x	101,895	=	1,161.60	0.58
VOC	Total Hydrocarbons	0.1400	x	101,895	=	14,265.30	7.13
				Page Column Total		60,057 lb	30 Tons

*Emissions data for digester gas is not listed in AP 42, Fifth Edition, June 10, 2010, Table 13.5-2

Organic Compound Pollutants

	(lb/10**9 Dth)		Dth/year		Lbs/Year	Tons/Year
2-Methylnaphthalene	0.0000240	x	101,895	=	0.00	1.22274E-06
3-Methylchloranthrene	0.0000018	x	101,895	=	0.00	9.17055E-08
7,12-Dimethylbenz(a)anthracene	0.0000160	x	101,895	=	0.00	8.1516E-07
Acenaphthene	0.0000018	x	101,895	=	0.00	9.17055E-08
Acenaphthylene	0.0000018	x	101,895	=	0.00	9.17055E-08
Anthracene	0.0000024	x	101,895	=	0.00	1.22274E-07
Benz(a)anthracene	0.0000018	x	101,895	=	0.00	9.17055E-08
Benzene	2.1000000	x	101,895	=	213.98	0.10698978
Benzopyrene	0.0000012	x	101,895	=	0.00	6.1137E-08
Benzo(b)fluoranthene	0.0000018	x	101,895	=	0.00	9.17055E-08
Benzo(g,h,i)perylene	0.0000012	x	101,895	=	0.00	6.1137E-08
Benzo(k)fluoranthene	0.0000018	x	101,895	=	0.00	9.17055E-08
Butane	2.1000000	x	101,895	=	213.98	0.10698978
Chrysene	0.0000018	x	101,895	=	0.00	9.17055E-08
Dibenzo(a,h)anthracene	0.0000012	x	101,895	=	0.00	6.1137E-08
Diclorobenzene	0.0012000	x	101,895	=	0.12	6.1137E-05
Ethane	3.1000000	x	101,895	=	315.87	0.157937294
Fluoroanthene	0.0000030	x	101,895	=	0.00	1.52843E-07
Fluorene	0.0000028	x	101,895	=	0.00	1.42653E-07
Formaldehyde	0.0750000	x	101,895	=	7.64	0.003821064
Hexane	1.8000000	x	101,895	=	183.41	0.091705526
Indeno(1,2,3-cd)pyrene	0.0000018	x	101,895	=	0.00	9.17055E-08
Naphthalene	0.0006100	x	101,895	=	0.06	3.1078E-05
Pentane	2.6000000	x	101,895	=	264.93	0.132463537
Phenanathrene	0.0000170	x	101,895	=	0.00	8.66108E-07
Propane	1.6000000	x	101,895	=	163.03	0.081516023
Pyrene	0.0000050	x	101,895	=	0.00	2.54738E-07
Toluene	0.0034000	x	101,895	=	0.35	0.000173222
			Page Column Total		1,363 lb	0.68 Tons

*Emissions data for digester gas is not listed in AP 42, Fifth Edition, June 10, 2010. Factors for Natural Gas Combustion are indicated.

Potential Emission Calculations

Central Weber Sewer Improvement District - Ogden Utah

Name and Description of Source
Oil Fired Generator Sets

There are two 2 mW gen set in the new Blower Building. All sets serve in standby only and are expected to be exercised on the order of 2 hours per week, not more than 100 hours per year, plus whatever time is spent in emergency service keeping the plant in continuous operation.

Assume 140 - 145,000 Btu/Gallon of diesel fuel, use 140,000 Btu/gal

Estimated Annual Emissions from this Source

Typical hourly fuel oil consumption of the generator sets in standby service is 0.075 - 0.080 gallons/hr per kWH. Use 0.08.

The two machines would probably be exercised at different times, but a worst case for permitting would have both running at the same time.

154 gal/hr x 1 generators = 154 gal/hr
Total is 154 gal/hr.

Hourly emissions: 154 gal/hr +/-
Calculate annual emissions: 154 gal/hr x 100 hrs/year =15,400 gal/yr +/-

Estimated maximum annual diesel fuel input to this facility
15,400 Gal/yr x 137,030 Btu/gal x 2 generators =
4,221 MMBtu per year

Pollutant Calculation
Source Dth/year x EPA Factor = xxxx lbs/year
==========/2000 = xxxx tons /year

Criteria Pollutants		**EPA Emissions Factor** lb/MMBtu	**x**	**Output** MMBtu/YR	**Yields**	**Estimated Annual Emissions** Lbs/Year	Tons/Year
CO2	From Combustion	165.00	x	4,221	=	696,386	348
CO		0.850		4,221	=	3,587	1.794
NOx (Uncontrolled)		3.200	x	4,221	=	13,506	6.753
NOx Controlled		1.900	x	4,221	=	8,019	4.009
PM Total		0.100	x	4,221	=	422	0.211
SOx		0.000015	x	4,221	=	0	0.000
TOC	(91% non-methane, 9% methan	0.082	x	4,221	=	346	0.173
Methane (CH4)		0.0081	x	4,221	=	34	0.017
VOC			x	4,221	=	0	0.000
				Page Column Total		722,301 lb	361.15 Tons
				Less CO2		25,914 lb	12.96 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 3.3-6 through 7

Organic Compound Pollutants

	lb/MMBtu		MMBtu/YR		Lbs/Year	Tons/Year
Acenaphthene	4.70E-06	x	4,221	=	0.0198365	9.91823E-06
Acenaphthylene	9.23E-06	x	4,221	=	0.0389554	1.94777E-05
Acetaldehyde	2.52E-05	x	4,221	=	0.1063572	5.31786E-05
Acrolein	7.88E-06	x	4,221	=	0.0332577	1.66289E-05
Anthracene	1.23E-06	x	4,221	=	0.0051912	2.59562E-06
Benz(a)anthracene	6.22E-07	x	4,221	=	0.0026252	1.31258E-06
Benzene	7.76E-04	x	4,221	=	3.2751266	0.001637563
Benzo(a)pyrene	2.57E-07	x	4,221	=	0.0010847	5.42337E-07
Benzo(b)fluoranthene	1.11E-06	x	4,221	=	0.0046848	2.34239E-06
Benzo(g,h,i)perylene	5.56E-07	x	4,221	=	0.0023466	1.17331E-06
Benzo(k)fluoranthene	2.18E-07	x	4,221	=	0.0009201	4.60037E-07
Chrysene	1.53E-06	x	4,221	=	0.0064574	3.2287E-06
Dibenzo(a,h)anthracene	3.46E-07	x	4,221	=	0.0014603	7.30151E-07
Fluoroanthene	4.03E-06	x	4,221	=	0.0170087	8.50436E-06
Fluorene	1.28E-05	x	4,221	=	0.0540227	2.70114E-05
Formaldehyde	7.89E-05	x	4,221	=	0.3329993	0.0001665
Indeno(1,2,3-cd)pyrene	4.14E-07	x	4,221	=	0.0017473	8.73648E-07
Naphthalene	1.30E-04	x	4,221	=	0.5486681	0.000274334
Phenanathrene	4.08E-05	x	4,221	=	0.1721974	8.60987E-05
Propylene	2.79E-03	x	4,221	=	11.7752620	0.005887631
Pyrene	3.71E-06	x	4,221	=	0.0156581	7.82907E-06
Toluene	2.81E-04	x	4,221	=	1.1859672	0.000592984
Xylenes	1.93E-04	x	4,221	=	0.8145611	0.000407281
					---	---
			Page Column Total		18.357604 lb	0.009179 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 3.3-6 through 7
Shaded areas are void of Factor

Potential Emission Calculations - Totals
Central Weber Sewer Improvement District - Ogden Utah

Summary of Emissions Totals

Criteria Pollutants	**Estimated Annual Emissions**	
	Lbs/Year	Tons/Year
CO2	57,399,351	28699.68
CO	80,980.68	40.49
Lead	0.24	0.00
NOx	52,079.77	26.04
N2O Controlled	302.42	0.15
PM Total	4,013.24	2.01
SO2	1,445.18	0.72
TOC	5,543.43	2.77
Methane (CH4)	1,120.99	0.56
VOC	16,864.19	8.43
Page Column Total	57,561,701 lb	28780.85 Tons
Less CO2	162,350 lb	81.18 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 1.4-6 through 8

Organic Compound Pollutants

	Lbs/Year	Tons/Year
1,1,2,2-Tetrachloroethanek	0.00	0
1,1,2-Trichloroethanek	0.00	0
1,1-Dichloroethane	0.00	0
1,2,3-Trimethylbenzene	0.00	0
1,2,4-Trimethylbenzene	0.00	0
1,2-Dichloroethane	0.00	0
1,2-Dichloropropane	0.00	0
1,3,5-Trimethylbenzene	0.00	0
1,3-Butadienek	0.00	0
1,3-Dichloropropenek	0.00	0
2,2,4-Trimethylpentanek	0.00	0
2-Methylnaphthalene	0.01	6.89E-06
2-Methylnaphthalenek	0.00	0
3-Methylchloranthrene	0.00	5.17E-07
7,12-Dimethylbenz(a)anthracene	0.01	4.6E-06
Acenaphthene	0.02	1.04E-05
Acenaphthenek	0.00	0
Acenaphthylene	0.04	2E-05
Acenaphthylenek	0.00	0
Acetaldehyde	0.11	5.32E-05
Acetaldehydek,l	0.00	0
Acrolein	0.03	1.66E-05
Acroleink,l	0.00	0
Anthracene	0.01	3.28E-06
Benz(a)anthracene	0.00	1.83E-06
Benzene	218.25	0.109123
Benzenek	0.00	0
Benzo(a)pyrene	0.00	5.42E-07
Benzo(b)fluoranthene	0.01	2.86E-06
Benzo(b)fluoranthenek	0.00	0
Benzo(e)pyrenek	0.00	0
Benzo(g,h,i)perylene	0.00	1.52E-06
Benzo(g,h,i)perylenek	0.00	0
Benzo(k)fluoranthene	0.00	9.77E-07
Benzopyrene	0.00	3.45E-07
Biphenylk	0.00	0

Butane	1,206.28	0.603141
Butyr/Isobutyraldehyde	0.00	0
Carbon Tetrachloridek	0.00	0
Chlorobenzenek	0.00	0
Chloroethane	0.00	0
Chloroformk	0.00	0
Chrysene	0.01	3.75E-06
Chrysenek	0.00	0
Cyclopentane	0.00	0
Dibenzo(a,h)anthracene	0.00	1.07E-06
Diclorobenzene	0.69	0.000345
Ethane	1,780.70	0.890351
Ethylbenzenek	0.00	0
Ethylene Dibromidek	0.00	0
Fluoranthenek	0.00	0
Fluorene	0.06	2.78E-05
Fluorenek	0.00	0
Fluoroanthene	0.02	9.37E-06
Formaldehyde	43.41	0.021707
Formaldehydek,l	0.00	0
Hexane	1,033.96	0.516978
Indeno(1,2,3-cd)pyrene	0.00	1.39E-06
Methanolk	0.00	0
Methylcyclohexane	0.00	0
Methylene Chloridek	0.00	0
Naphthalene	0.90	0.00045
Naphthalenek	0.00	0
n-Hexanek	0.00	0
n-Nonane	0.00	0
n-Octane	0.00	0
n-Pentane	0.00	0
PAHk	0.00	0
Pentane	1,493.49	0.746746
Phenanathrene	0.18	9.1E-05
Phenanthrenek	0.00	0
Phenolk	0.00	0
Propane	919.07	0.459536
Propylene	11.78	0.005888

Pyrene			0.02	9.27E-06
Pyrenek			0.00	0
Styrenek			0.00	0
Tetrachloroethanek			0.00	0
Toluene			3.14	0.001569
Toluenek			0.00	0
Vinyl Chloridek			0.00	0
Xylenek			0.00	0
Xylenes			0.81	0.000407
	Page Column Total		6,713 lb	3.357 Tons

*Emission Factors are taken from AP 42, Fifth Edition, June 10, 2010, pages 1.4-6 through 8