TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR A SIGNIFICANT REVISION
TO A MAJOR PART 70 PERMIT

APPLICATION SUBMITTED BY

Golder Associates, Inc.
on behalf of:

Republic Dumpco, Inc.
770 East Sahara Avenue
Las Vegas, Nevada 89104

For

Apex Waste Management Center
13550 US Highway 93 North
Apex, Nevada 89124

Part 70 Operating Permit Number: 395
(Revision)

SIC Code – 1442: Construction Sand and Gravel
SIC Code - 4953: Refuse Systems

Clark County
Department of Air Quality and Environmental Management
Permitting Section

February 2016

Acronyms and Abbreviations

	Term
Air Quality	Clark County Department of Air Quality
AQR	Clark County Air Quality Regulations
ATC	Authority to Construct
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
EF	Emission Factor
EU	Emission Unit
HAP	Hazardous Air Pollutant
H_2S	Hydrogen Sulfide
LFG	Landfill Gas
NAICS	North American Industry Classification System
NO_X	Oxides of Nitrogen
NSR	New Source Review
PM_{10}	Particulate Matter of Ten Microns or Less
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
SCC	Source Classification Codes
SCF	Standard Cubic Feet
SCFM	Standard Cubic Feet Per Minute
SIC	Standard Industrial Classification
SO_2	Sulfur Dioxide
TCS	Toxic Chemical Substance
TSD	Technical Support Document
VOC	Volatile Organic Compound

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Technical Support Document

Preparer: Eugen Avram
Date: March 19, 2015
Company: Republic Dumpco, Inc.
Submitter: Golder Associates / Catherine MacDougall
Source: 395
Application Date: August 20, 2014
Hydrographic Area: 216
Subject: Apex Regional Landfill
13550 US Highway 93 North
Apex, Nevada 89124
T18S, R64E, S18, 19 and 20, and
T18S, R63E, S13 and 24

A. Source Description

Republic Dumpco, Inc. Apex Regional Landfill is a municipal solid waste landfill and a producer of construction sand and gravel. The source operates under Standard Industrial Classification (SIC) Code 4953: Refuse Systems and SIC 1442: Construction Sand and Gravel and North American Industrial Classification System (NAICS) Code 562212: Solid Waste Landfill and NAICS 212321: Construction Sand and Gravel Mining.

Apex Regional Landfill meets or exceeds the major stationary source thresholds for PM_{10} and the major Part 70 source thresholds for NO_X, CO, SO_X, HAP, and TCS (H_2S). Apex Regional Landfill is a minor source for $PM_{2.5}$ and VOC in the Apex hydrographic basin.

The following table summarizes the source PTE for each regulated air pollutant for all emission units addressed by this Part 70 operating permit:

Table 1: Source PTE (tons per year)

	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
Non-fugitive PTE	275.06	17.58	93.99[1]	113.14	126.65	22.32	1.58	0.44
Landfill – Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	32.89	32.16[2]	147.27
Source PTE	275.06	17.58	93.99	113.14	126.65	55.21	33.74	147.71

[1]The NO_X emissions exceed 100 tons per year when insignificant emissions are included, as declared by the source.
[2]Fugitive emissions from the source are not considered in determining whether it is a major Part 70 source of HAP.

B. Permitting Action

This permitting action consists of an application for a significant revision, received August 20, 2014, that proposes the integration of 1,920 scfm candlestick (open) flare (EU: G27) into the existing Part 70 Operating Permit.

The 1,920 scfm candlestick (open) flare (EU: G27) was installed and became operational on October 4, 2013 (as indicated in the Semi-Annual Report July 1, 2013

through December 31, 2013), after an ATC was issued on September 12, 2013. The emissions calculations, BACT analysis, monitoring requirements and testing requirements remain unchanged from the ATC.

The source had proposed the construction of a candlestick flare that would operate only when the landfill gas flow rate is low or when the desulphurization plant is offline. The landfill gas generation rate fluctuates over time and it may result in flow rates below the optimal flow rate required for the proper operation of the existing 5,000 scfm flare. Additionally, since the existing 5,000 scfm flare cannot be operated when the sulfur treatment system is not operating, the new 1,920 scfm flare will be used at such times when the sulfur treatment system is offline.

At this time, the Permittee proposes maintaining the throughput limit of the landfill gas to be combusted in the newly constructed 1,920 scfm flare to 187,200,000 scf per year, as the landfill does not currently generate enough gas for both flares to be operated at full capacity. Due to the throughput limitation of the gas to be combusted in the 1,920 scfm flare, the source stated in its application that it understands and agrees that the flare cannot combust more than 187,200,000 scf per year without proper regulatory review.

Miscellaneous Revisions

Various revisions were made during this permitting action that may not have been directly related to the revisions proposed by the applicant. These additional permit revisions were deemed appropriate to maintain completeness, intent and accuracy of the applicable requirements. Additional revisions are summarized as follows:

1. The General Conditions were updated to be consistent with Air Quality's standard practice and interpretation of the applicable requirements.
2. Two references to semi-annual reporting were changed to be consistent with other conditions that require reporting on a quarterly basis. The General Conditions referred to semi-annual reporting for deviations that did not result in excess emissions. However, elsewhere in the permit these deviations are required to be reported quarterly.

   Additionally, the reporting summary table (Table III-F-1) referred to semi-annual reporting for deviations along with quarterly reporting, which effectively served as a redundant reporting requirement.
3. References to "12-month rolling basis" in the Operational Limits were revised to say "any consecutive 12-month period" to be consistent with other conditions.
4. The naming convention of the enclosed flare (EU: W11) was changed from "combustor flare" to "combustion flare" to be consistent with the naming of the proposed flare (EU: G27).
5. The conditions within the Emissions Control section were re-ordered to provide a logical order and grouping of requirements.
6. Operational condition III-B-3(cc) for the proposed flare (EU: G27) was revised to expand the CFR citations to a full description of the applicable regulations.

C. Permitting History

Apex Regional Landfill is regulated by the Clark County Department of Air Quality and has a Title V permit. The initial Part 70 Operating Permit was issued September 17, 2002. The Part 70 Operating Permit was last renewed on 12/31/2010.

Table 2: Permits Issued to Apex Regional Landfill

Date Issued	Description
Current Action	Significant Revision to the Title V OP: integration of an ATC for 1,920 scfm open landfill gas flare (EU: G27) into the Operating Permit. Application date 08/08/2014.
09/10/2014	ATC for new rental non-emergency diesel powered genset. Application date 9/16/2013.
08/11/2014	Minor Revision to the Title V OP - addition of two new Evaporative Units (Landsharks). Application date 8/13/2013.
08/11/2014	Significant Revision to the Title V OP: integration of an ATC for the new 5,000 scfm enclosed landfill gas flare (EU: W11) into the Operating Permit and the removal of the enclosed combustion LFG flare (EU: W07) from the Part 70 Operating Permit. Source total PTE correction for action of 12/14/2010. Application date 07/12/2013.
12/23/2013	Termination of H_2S ambient air monitoring and incorporation of several off-permit revisions. Application date 02/26/2013.
09/12/2013	ATC for 1,920 scfm open landfill gas flare (EU: G27). Application date 10/19/2012.
01/10/2012	ATC for 5,000 scfm enclosed landfill gas flare (EU: W11). Application date 02/01/2011.
11/09/2011	Revision to the Title V Renewal: removing EUs: W210, W211 and 212; and adding 4 non-emergency engines, EUs: W214, W215, W216 and W217. Also, addition of the John Deere diesel tipper engine (EU: W213) from Mod 5 ATC. Application dated 12/14/2010.
12/31/2010	Part 70 Operating Permit Renewal.
12/31/2010	Mod 5: ATC to update the Aggregate Plant and consolidation of the haul roads, waste placement, stockpiles, and to change the nomenclature of all emission units assigned to the MSWL.
12/21/2010	Mod 9: ATC for candlestick flare and desulfurization system.
05/13/2010	Mod 8, Rev 1: ATC to remove Section 52 language and add applicability date for 40 CFR 63, Subpart CCCCCC.
02/01/2010	Mod 8: ATC to install Phase I equipment on the aboveground gasoline tank.
Cancelled	Mod 7: ATC to update 40 CFR 60 Subpart WWW language.
02/27/2009	Mod 6: ATC to replace engine.
11/04/2008	Mod 4, Rev 1: ATC/OP administrative revisions.
02/14/2008	Mod 4: ATC/OP reconfiguration of aggregate plant and consolidation of all previously issued ATC/Ops.
12/29/2006	Mod 3: ATC/OP to replace engines.
12/27/2004	Mod 2, Rev 1: ATC/OP to incorporate revised emission calculations that result in a net emission decrease from ATC/OP-B issued 07/10/2002.
09/17/2002	Part 70 Operating Permit.
07/10/2002	Mod 2, Rev 1: ATC/OP to incorporate revised emission calculations that result in a net emission decrease from ATC/OP-A issued 04/03/2002.
04/03/2002	Mod 2, Rev 1: ATC/OP for all emission units at the facility.
12/27/2001	Mod 2, Rev 1: ATC/OP administrative changes.
10/24/2000	Mod 1: ATC/OP for Alternative Operating Scenario at Aggregate Plant.
09/16/1997	Mod 2: Modification to Aggregate Plant ATC/OP.
08/13/1997	Mod 1: ATC/OP for Aggregate Plant.
05/21/1996	Mod 0: Interim OP issued for Aggregate Plant.

Date Issued	Description
02/04/1995	ATC cancelled due to 18-mo. expiration to commence construction.
10/04/1993	Mod 0, Rev 0: ATC/OP.
05/11/1992	ATC cancelled due to 18-mo. expiration to commence construction.
11/01/1990	Mod 1: Modification to increase throughputs.
05/02/1990	Mod 0: Issuance of initial Authority to Construct.

D. Emission Units

Table 3: New Emissions Unit List

EU	Rating	Description	Make	Model No	Serial No	SCC
G27	1,920 scfm	Low Flow Open Flare	John Zink	Elevated ZEF Gas Flare and Blower Skid	BF9113501	50100410

Table 4: New Emission Unit Stack Parameters

EU	Description	Stack Diameter	Exhaust Flow Rate	Exhaust Temperature
G27	John Zink Low Flow Open Flare	0.83 feet	1,920 scfm	1,250 °F

E. Project Emissions / Source PTE

Project Emissions

At the request of Air Quality during the ATC evaluation process, the source submitted potential emissions of all regulated pollutants from the new LFG flare on the basis of 8,760 hours per year with no emission controls. The evaluation is summarized in Table 5 below:

Table 5: Unrestricted Flare Emissions (tons per rolling 12- months)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
G27	57.6 MMBtu/hr	1,009,152,000 scf/yr	4.29	4.29	17.17	93.34	332.58	2.85	1.26	0.05

The source asserted the existing 5,000 scfm flare was permitted at a capacity that satisfied all current production of LFG at Apex Regional Landfill. Therefore, the maximum capacity of the new LFG flare is not reflective of unrestrictive operation because there is not enough gas produced to operate both flares at full capacity. The source proposed an inherent limit for the John Zink open flare to combust only 187,200,000 scf of landfill gas per year. The project emissions calculations associated with the inherent limit are summarized in Table 6:

Table 6: Flare PTE (tons per rolling 12- months)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
G27	57.6 MMBtu/hr	187,200,000 scf/yr	0.80	0.80	3.18	17.32	61.68	0.52	0.23	0.01

Table 7: Hourly Emissions from the 1,920 Open Flare (pounds per hour)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
G27	57.6 MMBtu/hr	1,920 scfm	1.96	1.96	3.92	21.31	76	0.65	0.27	0.0002

F. Operational Limits

The source proposes to maintain the limit of landfill gas flow to the new LFG 1,920 scfm flare to 187,200,000 scf per year based on its use as a secondary flare. The existing 5,000 scfm flare is permitted at a capacity that satisfies Apex Regional Landfill current production of landfill gas.

The landfill gas throughput limitation was accepted by DAQ as proposed in the application with the condition that the new LFG 1,920 scfm flare will utilize the existing desulphurization plant. Otherwise, the new flare can only be operated when the desulphurization plant is offline (as presented in the ATC application and the RACT analysis).

G. Review of Applicable Regulations

The new LFG flare is subject to the requirements of 40 CFR 60, Subpart WWW, as it commenced construction after May 30, 1991.

The new LFG flare was subject to the NSR process outlined in AQR 12.4.3.2(a).

H. Control Technology

The conclusion of the source proposed RACT analysis for SO_2 is presented below:

Based on the technologies available and cost effectiveness, the Permittee considers ensuring proper maintenance and operation of the new LFG flare as RACT. Proper maintenance of the flare will include monitoring for the presence of the flame, the LFG flow rate to the flare, zero percent opacity, and measuring the percent methane in the LFG. The Permittee will monitor methane quarterly and conduct a visual observation daily. Additionally, as the existing desulphurization unit can effectively treat SO_2 emissions from the new LFG flare, the source will be required to treat the LFG for SO_2 prior to oxidation when the existing desulphurization unit is available.

I. Monitoring

1. The Permittee shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment on the open combustion flare (EU: G27) *[40 CFR 60.756(c)]*:
    a. A heat sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.
    b. A device that records flow to or bypass of the flare:
        i. install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or
        ii. secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the value is maintained in the closed position and that the gas flow is not diverted through the bypass line.

2. The Permittee shall monitor on a quarterly basis, the visible emissions from the flare (EU: G27) by employing 40 CFR 60 Appendix A, Method 22. The observation period is 2 hours and shall be used according to Method 22. *[40 CFR 60.18(f)(1)]*
3. The Permittee shall conduct on a quarterly basis, a heating value analysis (Btu content) on the landfill gas consistent with EPA approved methods (or equivalent) or a net heating value analysis of the combustion landfill gas as outlined in 40 CFR 60.18(f)(3). The concentration of methane in the landfill gas shall be determined by using 40 CFR 60 Appendix A: Method 3C. A minimum of three 30-minute Method 3C samples shall be determined. The measurement of other organic components, hydrogen, and carbon monoxide shall not be applicable. Method 3C may be used to determine the landfill gas molecular weight for calculating the flare gas exit velocity under 40 CFR 60.18(f)(4). *[40 CFR 60.18(f)(3) and 40 CFR 60.754(e)]*
4. The Permittee shall perform at least one visual emissions check on the open combustion flare (EU: G27) each day upon commencing operation, while operating to demonstrate compliance with the opacity limit. If the open combustion flare does not operate during the calendar quarter, then no observation of that unit shall be required. If visible emissions are observed, then corrective actions shall be taken to minimize the emissions and, if practicable, the opacity of emissions shall be visually determined in accordance with 40 CFR 60 Appendix A: Reference Method 9. *[AQR 12.4.3.1(e)(10) and AQR 26]*

J. Testing

No performance testing requirements have been identified for the open combustion flare.

K. Mitigation

The Permittee has no Federal offset obligation.

L. Increment

Apex Regional Landfill is a major source in the Hydrographic Area 216 (Garnet Valley) that has applied for a significant revision. Permitted emission units include municipal solid waste landfill operations. Since minor source baseline dates for PM_{10} (December 31, 1980), NO_2 (January 24, 1991) and SO_2 (December 31, 1980) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

Air Quality modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were used in the model. Five years (1999 to 2003) of meteorological data from the McCarran station and Desert Rock station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) was used to calculate elevations. Table 8 presents the results of the modeling.

Table 8: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source (μg/m^3)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	162.57[1]	691600	4029200
SO_2	24-hour	42.17[1]	691500	4029000
SO_2	Annual	6.67	691500	4029000
PM_{10}	24-hour	26.28[1]	691536	4027155
PM_{10}	Annual	5.78	691536	4027155
NO_X	Annual	1.48	691521	4027959

[1]Modeled High 2nd High Concentration

Table 8 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

M. Public Notice

This permitting action is categorized as a significant revision to a major Part 70 Operating Permit, and subsequently a newspaper Notice of Public Action is required.

N. Permitting History

1. The last revision to the Title V Operating Permit was issued on August 11, 2014.
2. The application was received on August 20, 2014.
3. The application was deemed complete on October 10, 2014.
4. The TSD and draft permit were submitted for review on March 19, 2015.

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TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN APPLICATION FOR AN "AUTHORITY TO CONSTRUCT" PERMIT FOR A MODIFIED STATIONARY SOURCE

APPLICATION SUBMITTED BY

CH2M Hill, Inc.
on behalf of:

Republic Dumpco, Inc.
770 East Sahara Avenue
Las Vegas, Nevada 89104

For

Apex Waste Management Center
13550 US Highway 93 North
Apex, Nevada 89124

Part 70 Operating Permit Number: 395
(ATC)

SIC Code – 1442: Construction Sand and Gravel
SIC Code - 4953: Refuse Systems

Clark County
Department of Air Quality and Environmental Management
Permitting Section

March 2014

Technical Support Document

Preparer:	Eugen Avram
Date:	March 21, 2014
Company:	Republic Dumpco, Inc.
Submitter:	CH2M Hill, Inc. / Catherine MacDougall
Source:	395
Action Requested:	September 16, 2013
Hydrographic Area:	216
Subject:	Apex Regional Landfill 13550 US Highway 93 North Apex, Nevada 89124 T18S, R64E, S18, 19 and 20, and T18S, R63E, S 13 and 24

A. Source Description

Republic Dumpco, Inc. Apex Waste Management Center is a municipal solid waste landfill and a producer of construction sand and gravel. The source operates under Standard Industrial Classification (SIC) Code 4953: Refuse Systems and SIC 1442: Construction Sand and Gravel and North American Industrial Classification System (NAICS) Code 562212: Solid Waste Landfill and NAICS 212321: Construction Sand and Gravel Mining.

Apex Waste Management Center meets or exceeds the major stationary source threshold for PM_{10} and is a minor stationary source for NO_X, CO, $SO_{X,}$ VOC, $PM_{2.5}$, HAP and H_2S in the Garnet Valley hydrographic basin 216.

B. Permitting Action

On September 19, 2013, Republic Dumpco, Inc. applied for an ATC requesting the removal of emission units W200, W201, W203 and W204, an increase in hours of operation for emission units W205 and W207 to 8,760 hours per year, and the installation of a rental non-emergency use diesel powered generator to be used in cell construction on a “as needed” basis.

The removal of EUs: W200, W201, W203 and W204 is not included as part of this permitting action as these emissions units were removed during a previous permitting action (application date 02/26/2013 and Title V Operating Permit issued 12/23/2013) with the corresponding source PTE updated to reflect their removal.

For the proposed modifications, Air Quality will issue an ATC consistent with AQR 12.4.3.2(a). Specifically, this permitting action will authorize:

- The increase in hours of operation for emissions units W205 and W207 from 4,380 hours/year, and 4,387 hours/year, respectively, to 8,760 hours per year; and
- The addition of one new rental non-emergency use diesel powered generator with a maximum rating of 1,500 kW.

The source-proposed rental non-emergency generator will be brought on site during

construction time periods and will not be a permanent emission unit. The source estimated that the non-emergency generator will have less than 10 liters in cylinder displacement and will be needed for up to 1,760 hours per any rolling twelve months period of time.

Table 1: Acronyms and Abbreviations

Air Quality	Clark County Department of Air Quality
AQR	Clark County Air Quality Regulations
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
EF	Emission Factor
EI	Emission Increase
EU	Emission Unit
HAP	Hazardous Air Pollutant
H_2S	Hydrogen Sulfide
NAICS	North American Industry Classification System
NO_X	Oxides of Nitrogen
PM_{10}	Particulate Matter of Ten Microns
PTE	Potential to Emit
SCC	Source Classification Codes
SIC	Standard Industrial Classification
SO_X	Oxides of Sulfur
TSD	Technical Support Document
VOC	Volatile Organic Compound

C. Emission Units

Table 2: New and Modified Emission Units List

EU	Rating	Description	Make	Model No	Serial No	SCC
W205[M]	150 hp	Engine – Diesel Tipper, DOM pre 2006	CAT	3208	35601941	20200102
W207[M]	188 hp	Generator – Diesel, DOM pre 2006	Cummins	6CT8.3-G2	F99093315	20200102
W218[N]	1,500 kW	Electrical Generator – Continuous Duty	TBD[1]	TBD[1]	TBD[1]	20200102
	TBD[1] hp	Engine – Diesel, DOM post 2007	TBD[1]	TBD[1]	TBD[1]	

[1] The manufacturer, model, rating, serial number and stack parameters will be provided to DAQ at the time of each rental period.
[M] Modified emission unit
[N] New emission unit

D. Affected Emission Units, Project Emissions Analyses and Source PTE

1. New Emission Unit PTE

The rental generator will have less than 10 liters in cylinder displacement and will be 40 CFR 60, Subpart IIII compliant. In determining the PTE of the new diesel powered non-emergency generator the interim Tier 4 emission factors were used:

a. The emission factors $EF_{(PM10)}$, $EF_{(PM2.5)}$, $EF_{(NOX)}$ and $EF_{(CO)}$ were obtained from the emission standards listed in Tables 7 and 8 of §1039.102 as required by 40 CFR 60, Subpart IIII for 2011 through 2014 model year non-emergency engines.

b. The emission factor for SO_2 was obtained from AP-42 Chapter 3, Section 3.4. The

SO_2 emission factor is expressed in lbs/hour; EF = 0.00809 x 0.0015 (maximum sulfur content of diesel fuel) = 0.0000121 lbs/hp-hr (assumes that all sulfur in the fuel is converted to SO_2).

c. Emission factor of 0.40 g/kW-hr for VOC was obtained from AP-42 Chapter 3, Section 3.4 Table 3.4-1.

The emissions associated with the new diesel powered non-emergency generator are summarized in Table 3:

Table 3: New Emission Unit PTE (tons per rolling 12- months)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
$W218^N$	1,500 kW	1,760 hours/year	0.59	0.59	18.03	10.19	0.02	1.25	0.05

2. Modified Emission Units PTE and Actuals

Emission units W205 and W207 are currently permitted to operate 4,380 hours/year and 4,387 hours/year, respectively. This permitting action proposes that these two emission units be operated without restrictions, or 8,760 hours/year. Tables 4, 5 and 6 reflect the current PTE of the EUs W205 and W207, their new modified PTE, and their averaged actual emissions derived from a representative 24 month period:

Table 4: W205 and W207 Permitted PTE (tons per rolling 12- months)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W205	150 hp	4,380 hrs/year	0.55	0.55	7.83	1.69	1.09	0.67	0.13
W207	188 hp	4,387 hrs/year	0.20	0.20	5.47	0.45	0.14	0.14	0.20
Modified Emission Units PTE Total			**0.75**	**0.75**	**13.30**	**2.14**	**1.23**	**0.81**	**0.33**

Table 5: W205 and W207 Modified PTE (tons per rolling 12- months)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
$W205^M$	150 hp	8,760 hrs/year	1.10	1.10	15.64	3.37	2.19	1.36	0.26
$W207^M$	188 hp	8,760 hrs/year	0.39	0.39	10.91	0.92	0.26	0.26	0.39
Modified Emission Units PTE Total			**1.49**	**1.49**	**26.55**	**4.29**	**2.45**	**1.62**	**0.65**

Table 6: W205 and W207 Actual Emissions (tons per rolling 12- months)

EU	Rating	Conditions[1]	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W205	150 hp	5,353 hrs/24 months	0.67	0.67	9.58	2.06	1.34	0.83	0.02
W207	188 hp	5,034 hrs/24 months	0.23	0.23	6.27	0.53	0.15	0.15	0.02
24 Months Actual Emissions Total			0.90	0.90	15.85	2.59	1.49	0.98	0.04
12 Months Actual Emissions Average Total			**0.45**	**0.45**	**7.92**	**1.30**	**0.75**	**0.49**	**0.02**

[1] Reported actual hours of operation for the 24 rolling months period from 12/31/2011 to 12/31/2013.

Tables 7 and 8 summarize the emissions increase for EUs: W205 and W207 (PTE to PTE and Actuals to PTE, respectively) to be used in project emissions increase analyses:

Table 7: W205 and W207 PTE to PTE Increase (tons per rolling 12 months)

	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W205 and W207 Modified PTE (Table 5)	1.49	1.49	26.55	4.29	2.45	1.62	0.65
W205 and W207 PTE (as permitted, Table 4)	0.75	0.75	13.30	2.14	1.23	0.81	0.33
W205 and W207 Emissions Increase[1]	**0.74**	**0.74**	**13.25**	**2.15**	**1.22**	**0.81**	**0.32**

[1] Calculated as the difference between the values listed above.

Table 8: W205 and W207 Actuals to PTE Increase (tons per rolling 12- months)

	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W205 and W207 Modified PTE (Table 5)	1.49	1.49	26.55	4.29	2.45	1.62	0.65
W205 and W207 Actuals (Table 6)	0.45	0.45	7.92	1.30	0.75	0.49	0.02
W205 and W207 Emissions Increase[1]	**1.04**	**1.04**	**18.63**	**2.99**	**1.70**	**1.13**	**0.63**

[1] Calculated as the difference between the values listed above.

3. Project Emissions Increase Analyses

The proposed project is not a major modification as it does not cause a significant emissions increase (does not trigger AQR 12.2 major NSR significance for any pollutant) as reflected in Table 9:

Table 9: AQR 12.2 Summary of Requirements (tons per rolling 12- months)

Permitting Action / Thresholds	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W218 (New Generator) PTE	0.59	0.59	18.03	10.19	0.02	1.25	0.05
W205 and W207 (Actuals to PTE at 8,760 hrs/yr)	1.04	1.04	18.63	2.99	1.70	1.13	0.63
Project Emissions[1]	**1.63**	**1.63**	**36.66**	**13.18**	**1.72**	**2.38**	**0.68**
AQR 12.2 PSD Significance Thresholds	15	10	40	100	40	40	10/25

[1] Calculated as the sum of the values listed above.

As specified by AQR 12.4.2.1(b), the proposed project triggers significance for NO_X, as indicated in Table 10:

Table 10: AQR 12.4 Summary of Requirements (tons per rolling 12- months)

Thresholds	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP
W218 (New Generator) PTE	0.59	0.59	18.03	10.19	0.02	1.25	0.05
W205 and W207 (PTE to PTE at 8,760 hrs/yr)	0.74	0.74	13.25	2.15	1.22	0.81	0.32
Project Emissions[1]	**1.33**	**1.33**	**31.28**	**12.34**	**1.24**	**2.06**	**0.37**
Minor Significance AQR 12.4.2.1(b)	7.5	5	20	50	20	20	N/A
Control Technology	N/A	N/A	**RACT**	N/A	N/A	N/A	N/A

[1] Calculated as the sum of the values listed above.

E. Operational Limits

1. The proposed rental generator (EU: W218) will be brought onsite during construction time periods and is not a permanent emission unit. The source has estimated that the rental generator will be needed for up to 1,760 hours per rolling 12 months period. Therefore, this generator will be permitted with a corresponding operational limit.
2. EUs W205 and W207 will be permitted without any operational limitations.

F. Review of Applicable Regulations

1. The proposed rental generator (EU: W218) is subject to the provisions of 40 CFR 60, Subpart IIII as the Permittee will ensure that only units with less than 10 liters in cylinder displacement manufactured in the year 2007 or later will be used.
2. Continuous duty electric engine (EU: W205) and generator (EU: W207) are subject to the provisions of 40 CFR 63, Subpart ZZZZ as their year of manufacture is pre-June, 2006.

G. Control Technology

1. The project emissions exceed the minor NSR significance threshold as specified in AQR 12.4.2.1(b) and subsequently, a RACT analysis is required. Internal combustion engines used for emission units W205, W207 and W218 are each equipped with a turbocharger and aftercooler. Also, these engines will comply with the respective control standards of the applicable NESHAP and NSPS. DAQ agrees that such control technologies meet RACT requirements for this emissions unit type.
2. The proposed and existing diesel powered non-emergency generators (EUs: W207 and W218) and the tipper engine (EU: W205) will only combust low sulfur diesel fuel with a sulfur content less than 15 ppm and with a minimum cetane index or a maximum aromatic content of 35 volume percent.

H. Monitoring

1. The Permittee shall notify DAQ when the rental generator is operated on site. The notification shall be received by Air Quality within 72 hours of its arrival and include the engine specifications and anticipated duration of operation. The Permittee shall provide an actual emissions inventory for each rental episode as part of the annual emissions reporting requirements. The Permittee shall keep records of operation and engine specifications onsite as demonstration of compliance with the operating requirements of the ATC.

I. Testing

1. The diesel powered electric generators (EUs: W206 and W207) and the tipper engine (EU: W205) are subject to the initial performance testing requirements of 40 CFR §63.6612. The Permittee selected to comply with the emission limitation to reduce CO without the use of an oxidative catalyst and submitted a “Notification of Intent” to conduct a performance test as required by 40 CFR §63.7(b)(1).
2. On July 22-23, 2013, the Permittee successfully conducted a DAQ-approved initial performance test, and demonstrated that EUs: W205 and W207 meet the applicable emission limitations without the use of an oxidative catalyst. *[40 CFR §63.6612]*.

J. Increment

Apex Regional Landfill is a major source in the Hydrographic Area 216 (Garnet Valley).

Permitted emission units include municipal solid waste landfill operations. Since minor source baseline dates for PM_{10} (December 31, 1980), NO_2 (January 24, 1991) and SO_2 (December 31, 1980) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

Air Quality modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were used in the model. Five years (1999 to 2003) of meteorological data from the McCarran station and Desert Rock station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) was used to calculate elevations. Table 12 presents the results of the modeling.

Table 12: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source (μg/m^3)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	9.73[1]	691503	4028158
SO_2	24-hour	1.75[1]	691700	4028700
SO_2	Annual	0.21	691413	4029151
PM_{10}	24-hour	22.86[1]	691536	4027155
PM_{10}	Annual	4.91	691536	4027155
NO_X	Annual	0.76	689391	4028536

[1] Second High Concentration

Table 12 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

K. Public Notice

Pursuant to AQR 12.4.3.2(a)(3) a Notice of Public Action will be posted in the local newspaper.

L. Permitting History

1. The last permit was issued on December 31, 2010.
2. An application was received on September 16, 2013.
3. The application was deemed complete on November 18, 2013.
4. The draft permit and TSD was sent for review on March 21, 2014.

M. Attachments

EU#	W218		**Horsepower:**	2,012		Emission Factor	Potential Emissions			
Make:	TBD		**Hours/Day:**			(lb/hp-hr)		lb/hr	lb/day	ton/yr
Model:	TBD		**Hours/Year**	1760	PM10	3.31E-04	0.66536	0.67	0.00	0.59
S/N:	TBD				NOx	1.02E-02	20.49304	20.49	0.00	18.03
					CO	5.75E-03	11.57724	11.58	0.00	10.19
Manufacturer Guarantees					SOx	1.21E-05	0.02435	0.02	0.00	0.02
PM10	0.15	g/hp-hr			VOC	7.05E-04	1.41846	1.42	0.00	1.25
NOx	4.62	g/hp-hr			HAP	3.05E-05	0.06146	0.06	0.00	0.05
CO	2.61	g/hp-hr								
SOx	0.0000121	lb/hp-hr								
VOC	0.000705	lb/hp-hr								
Engine Type:	Diesel				Diesel Fuel Sulfur Content is 15 ppm (0.0015%)					

EU#	W205		**Horsepower:**	150		Emission Factor	Control	Potential Emissions		
Make:	CAT		**Hours/Day:**			(lb/hp-hr)	Efficiency	lb/hr	lb/day	ton/yr
Model:	3208		**Hours/Year**	8760	PM10	1.67E-03	0.00%	0.25	0.00	1.10
S/N:	35601941				NOx	2.39E-02	0.00%	3.58	0.00	15.68
					CO	5.13E-03	0.00%	0.77	0.00	3.37
Manufacturer Guarantees					SOx	3.33E-03	0.00%	0.50	0.00	2.19
PM10	0.25	lb/hr			VOC	2.07E-03	0.00%	0.31	0.00	1.36
NOx	3.58	lb/hr			HAP	4.52E-05	0.00%	0.01	0.00	0.03
CO	0.77	lb/hr								
SOx	0.5	lb/hr								
VOC	0.31	lb/hr								
Engine Type:	Diesel									

EU#	W207		**Horsepower:**	188		Emission Factor	Control	Potential Emissions		
Make:	Cummins		**Hours/Day:**			(lb/hp-hr)	Efficiency	lb/hr	lb/day	ton/yr
Model:	6CT8.3-G2		**Hours/Year**	8760	PM10	4.79E-04	0.00%	0.09	0.00	0.39
S/N:	F99093315				NOx	1.32E-02	0.00%	2.49	0.00	10.91
					CO	1.12E-03	0.00%	0.21	0.00	0.92
Manufacturer Guarantees					SOx	3.19E-04	0.00%	0.06	0.00	0.26
PM10	0.09	lb/hr			VOC	3.19E-04	0.00%	0.06	0.00	0.26
NOx	2.49	lb/hr			HAP	4.52E-05	0.00%	0.01	0.00	0.04
CO	0.21	lb/hr								
SOx	0.06	lb/hr								
VOC	0.06	lb/hr								
Engine Type:	Diesel									

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR A MINOR REVISON TO A
PART 70 OPERATING PERMIT

APPLICATION SUBMITTED BY

Todd Whittle
Republic Dumpco, Inc.
770 East Sahara Avenue
Las Vegas, Nevada 89104

APPLICATION SUBMITTED IN CONSULTATION WITH

Catherine MacDougall
CH2M Hill, Inc.

For

Apex Regional Landfill
13550 US Highway 93 North
Apex, Nevada 89124

Part 70 Operating Permit Number: 395

SIC Code – 1442: Construction Sand and Gravel
SIC Code - 4953: Refuse Systems

Clark County
Department of Air Quality
Permitting Section

Technical Support Document

Preparer:	Eugen Avram
Date:	February 11, 2014
Company:	Republic Dumpco, Inc.
Submitter:	Todd Whittle
Consultant:	Catherine MacDougall with CH2M Hill, Inc.
Source:	395
Application Received:	August 13, 2013
Hydrographic Area:	216
Subject:	Addition of two Evaporation Units (Land Shark LS)
Source Location:	Apex Regional Landfill 13550 US Highway 93 North Apex, Nevada 89124 T18S, R64E, S18,19 and 20, and T18S, R63E, S 13 and 24

A. Source Description

Republic Dumpco, Inc. Apex Waste Management Center is a municipal solid waste landfill and a producer of construction sand and gravel. The source operates under Standard Industrial Classification (SIC) Code 4953: Refuse Systems and SIC 1442: Construction Sand and Gravel and North American Industrial Classification System (NAICS) Code 562212: Solid Waste Landfill and NAICS 212321: Construction Sand and Gravel Mining.

Apex Waste Management Center meets or exceeds the major Part 70 source threshold for PM_{10}, CO, SO_2. The source has been a major Part 70 source of NO_x and believes that, based on its forthcoming analysis of insignificant activities and the pending ATC for internal combustion engines; it will continue to be a major Part 70 source for NO_x in the near future. Therefore, the source has voluntarily identified itself as major for NO_x during this interim period where its NO_x PTE is below the 100 tpy threshold. The source is a minor source for $PM_{2.5}$, VOC, HAP and H_2S in the Garnet Valley hydrographic basin 216. As the source is neither a pre-defined Categorical Stationary Source, nor a source category that, as of August 7, 1980, is being regulated under Section 111 or 112 of the CAA, fugitive emissions are not included in the evaluation of whether the source is major for any pollutant.

B. Permitting Action

On August 13, 2013, Republic Dumpco, Inc. submitted an application for a minor revision to the Title V Operating Permit, in accordance with AQR 12.4.3.2(b), to add two Land Shark LS evaporation units. These are used to expedite the evaporation process by releasing a flow of pond water from the unit and using a fan with an airflow that exceeds 100 miles per hour to allow the water spray exiting the unit to remain suspended for evaporation. These emissions units are designed with a maximum

capacity of 123 gallons per minute and emit PM_{10} and $PM_{2.5}$ due to the evaporation of overspray containing particulate matter. A value of 70,000 ppm is considered a reasonable TDS value (the highest representative TDS value for the ponds was used to calculate the PTE for the evaporation units) for the purposes of this evaluation.

This is a minor revision to the Part 70 Operating Permit.

Table 1: Acronyms and Abbreviations

Air Quality	Clark County Department of Air Quality
AQR	Clark County Air Quality Regulations
CFR	United States Code of Federal Regulations
HAP	Hazardous Air Pollutant
H_2S	Hydrogen Sulfide
$PM_{2.5}$	Particulate Matter (2.5 microns)
PM_{10}	Particulate Matter (ten microns)
NAICS	North American Industry Classification System
NO_X	Oxides of Nitrogen
SIC	Standard Industrial Classification
SO_X	Oxides of Sulfur
TCS	Toxic Chemical Substance
TDS	Total Dissolved Solids
TSD	Technical Support Document
VOC	Volatile Organic Compounds

C. Calculation of PTE and Emission Increases

The source-proposed emissions units are listed in Table 2:

Table 2: Emission Units List

EU	Rating	Description	Make	Model No.	Serial No.	SCC
G01	123 gal/min	Evaporation Unit #1	Land Shark	LS	RW-103	38500110
G02	123 gal/min	Evaporation Unit #2	Land Shark	LS	RW-128	38500110

The PTE for the new Land Shark Evaporation Units is based on a maximum flow rate of 123 gal/min, a TDS value of 70,000 ppm, and 8,184 hours of operation per year. The operational hours are considered an inherent limitation as the manufacturer requires that the units be disconnected each month for maintenance. This maintenance includes inspection of scale build-up, the cleaning of nozzles, inspection for leaks, etc., and is estimated to take two days (i.e. 48 hours) per month.

The PM_{10} emission factors were obtained from “Compilation of Air Pollutant Emission Factors” Volume 1: Stationary Point and Area Sources (AP-42) Chapter 13, Section 13.4, Table 13.4-1 published January 1995. The calculation of the PTE is attached at the end of this document.

Additionally, it was assumed that 60 percent of PM_{10} emissions are $PM_{2.5}$ emissions in accordance with the California Emission Inventory Development and Reporting System database.

A lab test conducted on December 16, 2013, indicated the presence of arsenic and chromium concentrations above detection levels. The highest measured concentrations (for arsenic and chromium) were used in conjunction with the maximum flow rate, with both units operated continually for 12 months, to determine a very conservative HAP emission estimate of 0.84 tons per year. Table 3 summarizes the PTE of the two new land based evaporation units:

Table 3: Project Emission Increase (tons per year)

EU	Rating	Conditions	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_X	VOC	HAP	H_2S
G01	123 gal/min	8,760 hrs/yr	3.59	2.16	0.00	0.00	0.00	0.00	0.42	0.00
G02	123 gal/min	8,760 hrs/yr	3.59	2.16	0.00	0.00	0.00	0.00	0.42	0.00
Project Emissions Increase			7.18	4.32	0.00	0.00	0.00	0.00	0.84	0.00
Current Source PTE			256.91	11.13	59.53	83.48	63.73	52.63	33.14	147.70
New Title V PTE			**264.09**	**15.45**	**59.53**	**83.48**	**63.73**	**52.63**	**33.98**	**147.70**

D. Operational Limits

There are no operational limitations for the new evaporation units G01 and G02. A monthly maintenance schedule is integral to the operation of these units and does not warrant an operational limitation specified in the operating permit.

E. Review of Applicable Regulations

Table 4: Summary of Requirements (tons per year)

	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_X	VOC	HAP	H_2S	Pb
Project Emissions Increase	7.18	4.32	0.00	0.00	0.00	0.00	0.84	0.00	0.00
Significant Revision	7.5	5	20	35	40	20	N/A	5	0.6
Public Notice PTE (initial 12.1)	15	N/A	40	50	40	40	N/A	5	0.6
Minor Source	5	5	5	25	25	5	N/A	1	0.3
Major Stationary Source (Non-Attainment)	70	100	100	100	100	100	N/A	1	1
Major Stationary Source (Attainment PSD)	250	250	250	250	250	250	10/25	1	1
Control Requirements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

F. Control Technology

The PTE associated with this permitting action is below the minor NSR significant levels (as presented in Table 4) for all regulated pollutants and subsequently a control technology analysis is not required.

G. Monitoring

The Permittee shall monitor the pond water TDS monthly and maintain records for emissions evaluation purposes.

H. Testing

No performance testing requirements were identified for this permitting action.

I. Increment

An increment analysis is not required for this permitting action.

J. Public Notice

This permitting action will not be subject to public participation required by AQR 12.4.3.2(a)(3), because this revision PTE does not meet or exceed the minor NSR significance levels and is not a major modification.

Public participation under AQR 12.5.2.17 is not required because this permitting action is not an initial issuance, significant revision, reopened for cause or renewal.

K. Permitting History

1. The application was received on August 13, 2013.
2. Supplemental information was received on September 16, 2013.
3. Draft TSD and permit were sent for review on February 11, 2014.

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR AN AUTHORITY TO CONSTRUCT PERMIT

APPLICATION SUBMITTED BY

CH2M Hill, Inc.
on behalf of:

Republic Dumpco, Inc.
770 East Sahara Avenue
Las Vegas, Nevada 89104

For

Apex Waste Management Center
13550 US Highway 93 North
Apex, Nevada 89124

Part 70 Operating Permit Number: 395
(ATC)

SIC Code – 1442: Construction Sand and Gravel
SIC Code - 4953: Refuse Systems

Clark County
Department of Air Quality and Environmental Management
Permitting Section

11/15/2011

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Source Information

Preparer:	Beth Davis-Schaedler
Date:	May 27, 2011
Company:	Republic Dumpco, Inc.
Submitter:	CH2M Hill, Inc.: Catherine MacDougall
Source:	395
Action Requested:	February 1, 2011
Hydrographic Area:	216 & 217
Subject:	Apex Waste Management Center 13550 US Highway 93 North Apex, Nevada 89124 T18S, R64E, S10 &18 and T18S, R63E, S24

Source Description

Republic Dumpco, Inc. (Republic) is a municipal solid waste landfill and a producer of construction sand and gravel. The source operates under Standard Industrial Classification (SIC) Code 4953: Refuse Systems and SIC 1442: Construction Sand and Gravel and North American Industrial Classification System (NAICS) Code 562212: Solid Waste Landfill and NAICS 212321: Construction Sand and Gravel Mining. The source meets or exceeds the major source thresholds for PM_{10}, NO_x, CO, SO_x, HAP, and TCS (H_2S) and is a minor source for $PM_{2.5}$ and VOC in the Apex hydrographic basin.

Permitting Action

Republic Dumpco, Inc. applied for an AQR Section 12.4 Authority to Construct. The source has requested the installation of a John Zink 5,000 standard cubic feet per minute (scfm) enclosed combustion flare (flare) at the Municipal Solid Waste Landfill. The new flare will burn-off landfill gases and will be in compliance with 40 CFR 60 Subpart WWW. Republic will control the emission of SO_2 from the flare by having the landfill gas (LFG) go through a Paques THIOPAQ desulfurization system to remove H_2S from the LFG prior to the LFG going to the flare, which will reduce the SO_2 emissions from the flare stack. The 5,000 scfm flare will replace emission units G07, a 1,000 scfm Callidus enclosed LFG Flare, and G26, a 1,400 scfm John Zink LFG flare.

Acronyms

Table 1: Acronyms

Acronym	Term
AQR	Clark County Air Quality Regulations
ATC	Authority to Construct
Btu	British Thermal Unit
°C	Degrees Celsius
CAAA	Clean Air Act, as amended
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
DAQEM	Clark County Department of Air Quality & Environmental Management
EPA	United States Environmental Protection Agency
EU	Emission Unit
°F	Degrees Fahrenheit
ft^3/yr	Cubic foot per year
GCCS	Gas Collection and Control System
HAP	Hazardous Air Pollutant
HP	Horse Power
H_2S	Hydrogen Sulfide
kW	kilowatt
LANDGem	Landfill Gas Emissions Model
LFG	Landfill Gas
m^3/yr	Cubic meter per year
Mg/yr	Megagram per year
MMBtu	Millions of British Thermal Units
MMscf	Million Standard Cubic Foot
M/N	Model Number
MSWL	Municipal Solid Waste Landfill
N/A	Not Applicable
NAICS	North American Industry Classification System
NMOC	Non-Methane Organic Compounds
NO_x	Nitrogen Oxides
NRS	Nevada Revised Statutes
OP	Operating Permit
PM_{10}	Particulate Matter less than 10 microns
ppm	Parts per Million
ppmvd	Parts per Million, Volumetric Dry
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RBLC	EPA's RACT/BACT/LAER Clearinghouse database
RMP	Risk Management Plan
SCC	Source Classification Codes
scfm	Standard Cubic Feet per minute
SIC	Standard Industrial Classification
SIP	State Implementation Plan
S/N	Serial Number
SO_x	Sulfur Oxides
SSM	Startup, Shutdown, and Malfunction
TCS	Toxic Chemical Substance
TRS	Total Reduced Sulfur
VOC	Volatile Organic Compound

Emission Units

Table 2: Summary of Emission Units

EU	Description	Model No.	Serial No.[1]	SCC
W11	John Zink Enclosed Combustion Flare, 5,000 scfm LFG Flow	Zule Zink Low Emission Flare	TBD	50100410

[1]TBD = To Be Determined.

Calculation of PTE and NEI

The NO_x and CO emission factors are supplied by the manufacturer of the flare.

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*

$$\boldsymbol{Manufacturer's\ Maximum\ Flare\ Rate\ = 136.605\ \frac{MMBtu}{hr}}$$

Note the flow rate capacity of the flare is limited by its rated Btu capacity. Therefore, the flare may not achieve the rated flow rate if the heat value of the landfill gas is too high. All calculations associated with emission potentials are based on the limiting factor (i.e. 136.605 MMBtu/hr).

- *Using requested Flare Flow Rate of 2,099,246,400 scf per year for basis for yearly calculations*

$$\boldsymbol{Requested\ Yearly\ Calculations\ } = (2{,}099{,}246{,}400\ cf/yr)/\left(\left(8{,}760\ \frac{hrs}{yr}\right)\left(60\ \frac{mins}{hr}\right)\right)$$
$$= \boldsymbol{3{,}994\ cfm}$$

$$\boldsymbol{Flare\ Flow\ Rate\ } = (3{,}994\ cfm)\left(525{,}600\frac{mins}{yr}\right)\left(0.0005\frac{MMBtu}{ft^3}\right)\left(\frac{1\ yr}{8{,}760\ hrs}\right)$$
$$= \boldsymbol{119.82\ \frac{MMBtu}{hr}}$$

<u>NO_x Calculations</u>:

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*

$$\boldsymbol{NO_x\ \frac{lbs}{hr}} = \left(NO_x\ EF\ \frac{lb}{MMBtu}\right)\left(Flare\ Flow\ Rate\ \frac{MMBtu}{hr}\right) =$$

$$NO_x\ \frac{lbs}{hr} = \left(0.025\ \frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right) = \boldsymbol{3.42\ \frac{lbs}{hr}}$$

$$\boldsymbol{NO_x}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}} = \left(3.42\frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{14.98}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

- *Using requested Flare Flow Rate of 2,099,246,400 scf per year for basis for yearly calculations*

$$\boldsymbol{NO_x}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}} = \left(NO_x\ EF\ \frac{lb}{MMBtu}\right)\left(Flare\ Flow\ Rate\ \frac{MMBtu}{hr}\right) =$$

$$NO_x\ \frac{lbs}{hr} = \left(0.025\ \frac{lbs}{MMBtu}\right)\left(119.82\ \frac{MMBtu}{hr}\right) = \mathbf{3.00}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}}$$

$$\boldsymbol{NO_x}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}} = \left(2.9955\frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{13.12}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

CO Calculations:

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*

$$CO\ \frac{lbs}{hr} = \left(CO\ EF\ \frac{lb}{MMBtu}\right)\left(Flare\ Flow\ Rate\ \frac{MMBtu}{hr}\right) =$$

$$CO\ \frac{lbs}{hr} = \left(0.06\frac{lbs}{MMBtu}\right)\left(136.605\frac{MMBtu}{hr}\right) = \mathbf{8.20}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}}$$

$$CO\ \frac{tons}{yr} = \left(8.20\frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{35.90}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

- *Using requested Flare Flow Rate of 2,099,246,400 scf per year for basis for yearly calculations*

$$CO\ \frac{lbs}{hr} = \left(CO\ EF\ \frac{lb}{MMBtu}\right)\left(Flare\ Flow\ Rate\ \frac{MMBtu}{hr}\right) =$$

$$CO\ \frac{lbs}{hr} = \left(0.06\frac{lbs}{MMBtu}\right)\left(119.82\ \frac{MMBtu}{hr}\right) = \mathbf{7.19}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}}$$

$$CO\ \frac{tons}{yr} = \left(7.1892\frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{31.49}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

SO_x Calculations:

SO_x EF (Uncontrolled H_2S):

Concentration of Reduced Sulfur Compounds C_s

Reduced Sulfur Compound Concentration obtained from the June 2005 LFG test for Sulfur Gases Using ASTM 4404.
$C_s = \Sigma C_p x S_p$
C_s = Concentration of Reduced Sulfur Compounds, ppmv as Sulfur (S)
C_p = Concentration of each Reduced Sulfur Compounds, ppmv
S_p = Number of moles of S produced form the Combustion of each Reduced Sulfur Compound (i.e., 1 for Sulfides, 2 for Disulfides)

Concentration of Reduced Sulfur Compounds C_s = 3,094 ppm or 3.094E-03 $\frac{lb-mol(S)}{lb-mol\ LFG}$

Reduced Sulfur Compounds detected in the June 2005 LFG sampling are Carbonyl sulfide, Hydrogen Sulfide, Methyl Mercaptan, and Dimethyl Sulfide, ppmv or ppmv/1E6 = lb-mol S
<u>SO_x EF:</u>

$$SO_2\ EF\ \frac{lbs}{scf} = \left(TRS\ Concentration\ \left[\frac{lb-mol}{lb-mol\ LFG}\right]\right)\left(\frac{lb-mol\ LFG}{386\ scf}\right)\left(Molecular\ Weight\ of\ \ (S)\right)$$

$$(Ratio\ of\ SO_x{:}S)$$

Where Sulfur (S) Molecular Weight $= 32\ \frac{lb}{lb-mol}$ and the ratio of SO_x:S = $\frac{2\ lbs\ SOx}{1\ lb\ S}$

$$SO_2\ EF\ \frac{lbs}{scf} = \left(3.975E-03\frac{lb-mol(S)}{lb-mol\ LFG}\right)\left(\frac{lb-mol\ LFG}{386\ scf}\right)\left(\frac{32\ lbs}{lb-mol}\right)\left(\frac{2\ lbs\ SO_x}{lb\ S}\right)$$

$$= 6.59067E-04\frac{lbs\ SO_x}{scf}$$

$$\text{Or}\ \left(6.59067E-04\frac{lbs}{scf}\right)\left(\frac{scf}{0.0005\ MMBtu}\right) = 1.3181347\ \frac{lbs}{MMBtu}$$

<u>SO_x EF (Uncontrolled H_2S):</u>

- *<u>Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)</u>*

$$SO_x\ \frac{lbs}{hr} = \left(SO_x\ EF\ \left[\frac{lb}{MMBtu}\right]\right)\left(Flare\ Flow\ Rate\ \left[\frac{MMBtu}{hr}\right]\right)$$

$$SO_x\ \frac{lbs}{hr} = \left(1.32\ \frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right) = \mathbf{180.32\ \frac{lbs}{hr}}$$

$$SO_x\ \frac{tons}{yr} = \left(1.32\frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{789.80\frac{tons}{yr}}$$

<u>SO_x EF (Controlled 92.2% of H_2S by Desulfurization Process):</u>

The ppm for controlled H_2S is calculated to be 304 ppm.

$$SO_2\ EF\ \frac{lbs}{scf} = \left(TRS\ Concentration\ \left[\frac{lb-mol}{lb-mol\ LFG}\right]\right)\left(\frac{lb-mol\ LFG}{386\ scf}\right)\left(Molecular\ Weight\ of\ \ (S)\right)$$

$$(Ratio\ of\ SO_x{:}S)$$

Where Sulfur (S) Molecular Weight $= 32\ \frac{lb}{lb-mol}$ and the ratio of SO_x:S = $\frac{2\ lbs\ SOx}{1\ lb\ S}$

$$SO_2\ EF\ \frac{lbs}{scf} = \left(3.094E-04\frac{lb-mol(S)}{lb-mol\ LFG}\right)\left(\frac{lb-mol\ LFG}{386\ scf}\right)\left(\frac{32\ lbs}{lb-mol}\right)\left(\frac{2\ lbs\ SO_x}{lb\ S}\right)$$

$$= 5.13E-05\frac{lbs\ SO_x}{scf}$$

Or $\left(5.13E-05\ \frac{lbs}{scf}\right)\left(\frac{scf}{0.0005\ MMBtu}\right) = 0.1026\ \frac{lbs}{MMBtu}$

- *<u>Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)</u>*

$$SO_x\ \frac{lbs}{hr} = \left(SO_x\ EF\ \left[\frac{lb}{MMBtu}\right]\right)\left(Flare\ Flow\ Rate\ \left[\frac{MMBtu}{hr}\right]\right)$$

$$SO_x\ \frac{lbs}{hr} = \left(0.1026\ \frac{lbs}{MMBtu}\right)\left(136.605\frac{MMBtu}{hr}\right) = \mathbf{14.02\ \frac{lbs}{hr}}$$

$$SO_x\ \frac{tons}{yr} = \left(0.1026\ \frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{61.39\ \frac{tons}{yr}}$$

- *<u>Using requested Flare Flow Rate of 2,099,246,400 scf per year for basis for yearly calculations</u>*

$$SO_x\ \frac{lbs}{hr} = \left(SO_x\ EF\ \left[\frac{lb}{MMBtu}\right]\right)\left(Flare\ Flow\ Rate\ \left[\frac{MMBtu}{hr}\right]\right)$$

$$SO_x\ \frac{lbs}{hr} = \left(0.1026\ \frac{lbs}{MMBtu}\right)\left(119.82\ \frac{MMBtu}{hr}\right) = \mathbf{12.29\ \frac{lbs}{hr}}$$

$$SO_x\ \frac{tons}{yr} = \left(0.1026\ \frac{lbs}{MMBtu}\right)\left(119.82\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{53.85\ \frac{tons}{yr}}$$

<u>PM Calculations</u>:

Emission Factor of 17 lbs/MMSCF for PM_{10} was obtained from AP-42 Chapter 2, Section 2.4, Table 2.4-5 (11/1998). The calculation is based on the amount of methane in the landfill gas; methane only 50% of the total landfill gas.

$$PM_{10}\ EF\ \frac{lbs}{MMBtu} = \left(PM_{10}\ EF\ \frac{lbs}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{5{,}000\ scf}{minute}\right)\left(\frac{60\ minutes}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(PM_{10}\ EF\ \frac{lb}{MMBtu}\right) = \left(\left(17\ \frac{lb}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{5{,}000\ scf}{minute}\right)\left(\frac{60\ minutes}{hr}\right)\right)\left(\frac{hr}{136.605\ MMBtu}\right)$$
$$= \mathbf{0.0373\ \frac{lbs}{MMBtu}}$$

$$\left(\mathbf{0.0373\ \frac{lbs}{MMBtu}}\right)(\mathbf{50\%}) = \mathbf{0.01865\ \frac{lbs}{MMBtu}}$$

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare):*

$$PM_{10}\ \frac{lbs}{hr} = \left(PM_{10}\ EF\ \frac{lb}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)(Flare\ Capacity\ [scfm])\left(\frac{60\ minutes}{hr}\right)$$

$$PM_{10}\ \frac{lbs}{hr} = \left(17\ \frac{lb}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{5{,}000\ scf}{minute}\right)\left(\frac{60\ minutes}{hr}\right) = \mathbf{5.10\ \frac{lbs}{hr}}$$

$$\left(\mathbf{5.10\ \frac{lbs}{hr}}\right)(\mathbf{50\%}) = \mathbf{2.55\ \frac{lbs}{hr}}$$

$$PM_{10}\ \frac{ton}{yr} = \left(5.10\ \frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{22.32\ \frac{tons}{yr}}$$

$$\left(\mathbf{22.32\ \frac{tons}{yr}}\right)(\mathbf{50\%}) = \mathbf{11.16\ \frac{tons}{yr}}$$

- *Using requested Flare Flow Rate of 2,099,246,400 scf per year for basis for yearly calculations*

$$PM_{10}\ \frac{lbs}{hr} = \left(PM_{10}\ EF\ \frac{lb}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)(Flare\ Capacity\ [scfm])\left(\frac{60\ minutes}{hr}\right)$$

$$PM_{10}\ \frac{lbs}{hr} = \left(17\ \frac{lb}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{3{,}994\ scf}{minute}\right)\left(\frac{60\ minutes}{hr}\right) = \mathbf{4.07\ \frac{lbs}{hr}}$$

$$\left(\mathbf{4.07\ \frac{lbs}{hr}}\right)(\mathbf{50\%}) = \mathbf{2.04\ \frac{lbs}{hr}}$$

$$PM_{10}\ \frac{ton}{yr} = \left(4.07\ \frac{lbs}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{17.83\ \frac{tons}{yr}}$$

$$\left(\mathbf{17.83}\,\frac{\boldsymbol{tons}}{\boldsymbol{yr}}\right)(\mathbf{50\%}) = \mathbf{8.92}\,\frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

VOC Calculations:

The Emission Factor of 5.6 lbs/MMSCF for VOC were obtained from Michigan Department of Environmental Quality's "*Emission Calculation Fact Sheet for Municipal Solid Waste Landfills".*

$$VOC\ \frac{lbs}{hr} = \left(VOC\ EF\ \left[\frac{lb}{MMscf}\right]\right)\left(\frac{MMscf}{1E6\ scf}\right)(Flare\ Capacity\ [scfm])\left(\frac{60\ minutes}{hr}\right)$$

- <u>*Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*</u>

$$VOC\ \frac{lbs}{hr} = \left(5.6\ \frac{lbs}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{5{,}000\ scf}{minutes}\right)\left(\frac{60\ minutes}{hr}\right) = \mathbf{1.68}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}}$$

$$VOC\ EF\ \frac{lbs}{MMBtu} = \left(VOC\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(VOC\ EF\ \frac{lb}{MMBtu}\right) = \left(1.68\ \frac{lbs}{hr}\right)\left(\frac{hr}{136.605\ MMBtu}\right) = \mathbf{0.012298}\ \frac{\boldsymbol{lbs}}{\boldsymbol{MMBtu}}$$

$$VOC\ \frac{ton}{yr} = \left(0.012298\ \frac{lbs}{MMBtu}\right)\left(136.605\,\frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{7.36}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

- <u>*Using requested Flare Flow Rate of 2,099,246,400 scfm for basis for yearly calculations*</u>

$$VOC\ \frac{lbs}{hr} = \left(5.6\ \frac{lbs}{MMscf}\right)\left(\frac{MMscf}{1E6\ scf}\right)\left(\frac{3{,}994\ scf}{minutes}\right)\left(\frac{60\ minutes}{hr}\right) = \mathbf{1.34}\ \frac{\boldsymbol{lbs}}{\boldsymbol{hr}}$$

$$VOC\ EF\ \frac{lbs}{MMBtu} = \left(VOC\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(VOC\ EF\ \frac{lb}{MMBtu}\right) = \left(1.34\ \frac{lbs}{hr}\right)\left(\frac{hr}{109.12\ MMBtu}\right) = \mathbf{0.012298}\ \frac{\boldsymbol{lbs}}{\boldsymbol{MMBtu}}$$

$$VOC\ \frac{ton}{yr} = \left(0.012298\ \frac{lbs}{MMBtu}\right)\left(109.12\,\frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{5.88}\ \frac{\boldsymbol{tons}}{\boldsymbol{yr}}$$

HAP Calculations:

HAP $\frac{lbs}{hr}$ PTE estimated by summing each individual HAP $\frac{lbs}{hr}$. A value of 0.01 $\frac{lbs}{hr}$ was assumed for any individual HAP PTE <0.01 $\frac{ton}{yr}$.

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*

$$HAP\ EF\ \frac{lbs}{MMBtu} = \left(HAP\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(HAP\ EF\ \frac{lb}{MMBtu}\right) = \left(0.1279\ \frac{lbs}{hr}\right)\left(\frac{hr}{136.605\ MMBtu}\right) = \mathbf{0.00094\ \frac{lbs}{MMBtu}}$$

$$HAP\ \frac{ton}{yr} = \left(0.00094\ \frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{0.56\ \frac{tons}{yr}}$$

- *Using requested Flare Flow Rate of 2,099,246,400 scfm for basis for yearly calculations*

$$HAP\ EF\ \frac{lbs}{MMBtu} = \left(HAP\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(HAP\ EF\ \frac{lb}{MMBtu}\right) = \left(0.1279\ \frac{lbs}{hr}\right)\left(\frac{hr}{119.12\ MMBtu}\right) = \mathbf{0.00107\ \frac{lbs}{MMBtu}}$$

$$HAP\ \frac{ton}{yr} = \left(0.00107\ \frac{lbs}{MMBtu}\right)\left(119.12\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{0.56\ \frac{tons}{yr}}$$

When calculating TCS it was assumed that 100% of H_2S is converted to SO_x during the combustion process; therefore, it is anticipated that TCS emissions, as H_2S, will not exceed $0.01\frac{lbs}{hr}$ and $0.04\ \frac{tons}{yr}$.

- *Using Flare Flow Rate of 5,000 scfm (Maximum rated capacity for Flare)*

$$TCS\ EF\ \frac{lbs}{MMBtu} = \left(TCS\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(TCS\ EF\ \frac{lb}{MMBtu}\right) = \left(0.1126\frac{lbs}{hr}\right)\left(\frac{hr}{136.605\ MMBtu}\right) = 8.241E-04\ \mathbf{\frac{lbs}{MMBtu}}$$

$$TCS\ \frac{ton}{yr} = \left(8.241E-04\ \frac{lbs}{MMBtu}\right)\left(136.605\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{0.49\ \frac{tons}{yr}}$$

- *Using requested Flare Flow Rate of 2,099,246,400 scfm for basis for yearly calculations*

$$TCS\ EF\ \frac{lbs}{MMBtu} = \left(TCS\ \frac{lbs}{hr}\right)\left(Flare\ Flow\ Rate\ \left[\frac{hr}{MMBtu}\right]\right)$$

$$\left(TCS\ EF\ \frac{lb}{MMBtu}\right) = \left(0.098\ \frac{lbs}{hr}\right)\left(\frac{hr}{119.12\ MMBtu}\right) = 8.241E-04\ \frac{lbs}{MMBtu}$$

$$TCS\ \frac{ton}{yr} = \left(8.241E-04\ \frac{lbs}{MMBtu}\right)\left(119.12\ \frac{MMBtu}{hr}\right)\left(\frac{8{,}760\ hrs}{yr}\right)\left(\frac{ton}{2{,}000\ lbs}\right) = \mathbf{0.43\ \frac{tons}{yr}}$$

AQR Section 12.2 and 12.3 permitting applicability is determined by calculating the PTE for all emission units as unlimited operation, 8,760 hours per year and 2,628,000,000 scf per year and applying the uncontrolled emission factors provided by the manufacturer, EPA AP-42, etc.

The emission calculations for the 5,000 scfm John Zink enclosed combustion flare used manufacturer's information emission factors for NO_X and CO; PM_{10} was obtained from AP-42 Chapter 2, Section 2.4, Table 2.4-5 (11/1998); and the VOC emissions factor was based on Michigan Department of Environmental Quality "*Emission Calculations Fact For Municipal Solid Waste Landfills*". The SO_2 (controlled) emissions factor was based on Michigan Department of Environmental Quality "*Emission Calculations Fact For Municipal Solid Waste Landfills*" and "*Onsite Reduced Sulfur Compounds Concentrations*" summarized in the June 2005 LFG Test for Sulfur gases using ASTM 4404.

Table 3: Uncontrolled PTE of the 5,000 John Zink Enclosed Combustion Flare

EU	Flare Rate (MMBtu/hr)	LFG Flow	EF (lb/MMBtu)	Pollutant	PTE (tons/yr)
W11	136.605	5,000 scfm and 2,628,000,000 ft^3/yr	3.73E-02	**PM_{10} Total**	**11.16**
			3.73E-02	**$PM_{2.5}$ Total**	**11.16**
			2.50E-02	**NO_X Total**	**14.98**
			6.00E-02	**CO Total**	**35.90**
			1.32	**SO_X Total**	**789.80**
			1.23E-02	**VOC Total**	**7.36**
			9.40E-04	**HAP Total**	**0.56**
			8.24E-04	**TCS Total**	**0.49**

Table 4: Summary of Control Requirements per Uncontrolled PTE for the Flare

Pollutant	Source Status for Pollutant	Attainment Status	Significant Levels[1]	Thresholds (tons/year)	Control Requirement	Sources Control Requirements
PM_{10}	Major	PSD	Minor	7.5	RACT	No
			Major	15	BACT	**No**
$PM_{2.5}$	Minor	PSD	Minor	5.0	RACT	No
			Major	**10**	**BACT**	**Yes**
NO_X	Major	Non-Attainment[2]	Minor	20	RACT	No
			Major	40	BACT	No
CO	Major	PSD	Minor	50	RACT	No
			Major	100	BACT	No
SO_2	Major	PSD	Minor	20	RACT	No
			Major	**40**	**BACT**	**Yes**
VOC	Minor	Non-Attainment[2]	Minor	20	RACT	No
			Major	40	BACT	No

[1]Minor NSR Significant Levels or Major Significant Levels.

[2]Pollutant NO_X and VOC is nonattainment for ozone (O_3)

Republic has requested a reduction in total flow to the flare per year. They have requested that the flare be permitted to operate at 5,000 scfm, but be limited to 2,099,246,400 standard cubic foot per year.

Table 5: Controlled with Operational Limit PTE for the 5,000 scfm Flare

EU	Flare Rate (MMBtu/hr)	LFG Flow	EF (lb/ MMBtu)	Pollutant	PTE	
					lbs/hr	tons/yr
W11	136.605	5,000 scfm and 2,099,246,400 ft^3/yr	3.73E-02	**PM_{10} Total**	2.04	8.92
			3.73E-02	**$PM_{2.5}$Total**	2.04	8.92
			2.50E-02	**NO_X Total**	3.00	13.12
			6.00E-02	**CO Total**	7.19	31.49
			1.026E-03	**SO_X Total**	12.29	53.85
			1.23E-02	**VOC Total**	1.34	5.88
			9.40E-04	**HAP Total**	0.13	0.56
			8.24E-04	**TCS Total**	0.10	0.43

Operational Limits

1. The Permittee shall limit the actual flow of landfill gas to the enclosed combustor flare (EU: W11) to 5,000 scfm and 2,099,246,400 ft^3/yr. *[AQR 12.4.3.1(e)(10))]*
2. The Permittee shall operate the desulfurization system control device when the enclosed combustor flare (EU: W11) is in operation. *[AQR 12.4.3.1(e)(10)]*
3. The Permittee shall operate the 5,000 scfm enclosed combustor flare (EU: W11) to replace the 1,000 scfm Callidus flare (EU: W07) and 1,400 scfm candlestick flare (EU: G26). Upon commencement of operation of the 5,000 scfm flare (EU: W11), the Permitee shall disable the 1,000 scfm flare (EU: W07) and 1,400 Scfm flare (EU: G26) such that they may be regarded as inoperable. *[AQR 12.4.3.1(e)(10)]*

Production limits were submitted by the source.

Review of Applicable Regulations

The NEI and PTE were calculate and assessed starting with Modification 3 issued in December 2006 and including Modification 4, 5, 6, 8, 9 and any revisions to the Title V Operating Permit. Actual annual emission data was not considered in the NEI calculations for the last five years because the fact that there have not been two consecutive and representative years of actual data collected between modifications.

Table 6: Five Year Permitting Action NEI Summary and 12.4 ATC PTE

	PM_{10}	$PM_{2.5}$	NOx	CO	SOx	VOC	HAP	TCS (H_2S)
Modification 4, Revision 1 NEI	-66.52	0.00	2.07	-0.69	3.95	-0.67	2.88	0.00

	PM_{10}	$PM_{2.5}$	NOx	CO	SOx	VOC	HAP	TCS (H_2S)
Modification 6 NEI	-0.08	-0.08	0.09	-0.08	0.97	-0.04	-0.03	0.00
Modification 8 NEI	0.00	0.00	0.00	0.00	0.00	0.10	0.01	0.00
Modification 9 NEI	6.26	6.26	12.52	68.07	18.40	8.29	7.33	0.05
Modification 5 NEI	2.30	0.24	9.81	33.25	1.03	0.32	0.02	0.00
Title V Revision NEI	0.73	0.73	10.58	18.33	4.52	8.65	-0.28	0.00
12.4 ATC February 1, 2011 NEI	-5.71	-5.71	-4.29	-36.85	-134.53	3.56	-0.63	0.38
Total NEI [5 year look back]	**-63.02**	**1.44**	**30.78**	**82.03**	**-105.66**	**20.21**	**9.30**	**0.43**
Modification 3 PTE Non-Fugitives: Issued 12/2006	322.76	12.35	106.65	31.88	172.28	10.73	0.43	0.00
Total PTE for 12.4 ATC	**259.74**	**13.79**	**137.43**	**113.91**	**66.62**	**30.94**	**9.72**	**0.43**

Table 7: Summary of Requirements in AQR Sections 12 (tpy)

	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	H_2S
Non-Fugitive PTE (tpy)	**259.74**	**13.79**	**137.43**	**113.91**	**66.62**	**30.94**	**9.72**	**0.43**
Landfill Fugitive (tpy)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**32.16**	**147.27**
NEI for AQR 12.4 Project	-5.71	-5.71	-4.29	-36.85	-134.53	3.56	-0.63	0.38
Total NEI for 5 years	-63.02	13.79	30.78	82.03	-105.66	20.21	9.30	0.43
AQR 12.2 Significant Thresholds	15	10	40	100	40	40	10/25	10
Major Source Threshold Non-Attainment Area	70	100	100	100	100	100	10/25	100
Major Source Threshold PSD Area	100/ 250	100/ 250	100/ 250	100/ 250	100/ 250	100/ 250	10/25	100/ 250
Control Technology	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Applicable Regulations:

The 5,000 scfm John Zink enclosed combustion flare is applicable to AQR Sections 4, 5, 6, 8, 9, 12, 13, 14, 18, 25, 26, 40, 43, 70, and 80.

Republic is subject to 40 CFR 60 Subpart WWW – Standards of Performance for Municipal Solid Waste Landfills because the source commenced construction of a MSWL on or after the May 30, 1991, applicability date. The source is also subject to 40 CFR 63 Subpart AAAA – National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills.

Control Technology

The proposed action exceeded the NSR significance level for $PM_{2.5}$ and SO_X as defined in AQR 12.2.2(uu). The source is required to install controls that satisfy BACT for PM_{10}, $PM_{2.5}$ and SO_X.

The source proposed an AQR 12.2 analysis for the noted criteria pollutants, which satisfied the level of control required for this permitting action.

PM_{10} and $PM_{2.5}$ Control Technology:

The source will control PM_{10}/$PM_{2.5}$ for the enclosed combustion flare by maintaining good combustion practices, including proper maintenance and operation. Republic proposes to implement the only identified control option of good combustion practices and proper maintenance and operation, including monitoring for the presence of a flame, the LFG flow rate to the flare, zero percent (0%) opacity, and measuring the percent methane in the LFG as BACT. This was the only control technology identified.

SO_2 Control Technology:

The two controls identified for SO_2 are:

1. Desulfurization System/scrubbing for hydrogen sulfide removal
2. Proper maintenance and operation, including monitoring for the presence of a flame, operational temperature, the LFG flow rate to the flare, zero percent (0%) opacity, and measuring the percent methane in the LFG.

It is technically feasible to use both the desulfurization system and proper maintenance and operation to reduce SO_2 emissions from the flare. The most effective technology is a desulfurization system and then proper maintenance and operation. The top ranking technology in the evaluation of economic, environmental, and energy impacts is a desulfurization system, with the cost per ton of SO_2 removed is $310 per ton. Therefore, Republic elects to use the Paques THIOPAQ desulfurization system/LFG scrubbing system for hydrogen sulfide removal from the LFG to reduce SO_2 emission from the new LFG flare, as well as ensuring proper maintenance and operation of the new LFG flare as BACT. Proper maintenance and operation of the flare will include monitoring for the presence of a flame, the LFG flow rate to the flare, 0% opacity, and measuring the percent methane in the LFG. Republic will monitor methane quarterly and conduct a visual observation weekly.

Monitoring

1. The Permittee shall conduct a daily visual emissions check for visible emissions from the enclosed combustor flare (EU: W11) while they are in operation. *[AQR 12.4.3.1(e)(10)]*
2. If the Permittee, during the visible emissions check, does not see any plume that, on an instantaneous basis, appears to exceed the opacity standard, then the observer shall keep a record of the name of the observer, the date on which the observation was made, the location, and the results of the observation. *[AQR 12.4.3.1(e)(10)]*
3. If the Permittee sees a plume that, on an instantaneous basis, appears to exceed the opacity standard, the Permittee shall: *[AQR 12.4.3.1(e)(10)]*
    a. take immediate action to correct causes of fugitive/stack emissions that appear to exceed allowable opacity limits; or
    b. if practical, have a certified VE observer take an EPA Method 9 observation of the plume and record the results, and take immediate action to correct causes of fugitive

emissions in excess of allowable opacity limits in accordance with 40 CFR 60 Appendix A: Reference Method 9.

4. Visible emissions checks do not require a certified VE observer, except where visible emissions appear to exceed the allowable opacity limit and exceed 30 seconds in duration, and an EPA Method 9 observation is made to establish it does not exceed the standard. *[AQR 12. 4.3.1(e)(10)]*

5. The Permittee shall monitor the time and date of operation of the desulfurization system control device. *[AQR 12. 4.3.1(e)(10)]*

6. The Permittee shall monitor the LFG throughput, in standard cubic feet, to the desulfurization system control device, and calculate monthly the annual volume as a 12-month rolling total. *[AQR 12. 4.3.1(e)(10)]*

7. The Permittee shall monitor the time and date of operation of the enclosed combustor flare (EU: W11). *[AQR 12. 4.3.1(e)(10)]*

8. The Permittee shall monitor the LFG throughput, in standard cubic feet, to the enclosed combustor flare (EU: W11), and calculate monthly the annual volume as a 12-month rolling total. *[AQR 12. 4.3.1(e)(10)]*

9. The Permittee shall calibrate, maintain, and operate according to the manufacturer's specifications the following equipment on the enclosed combustion flare (EU: W11): *[40 CFR 60.756(b)(1) and (2)]*

   a. A temperature monitoring device equipped with a continuous recorder and having a minimum accuracy of ±1 percent of the temperature being measured expressed in degrees Celsius or ±0.5 degrees Celsius, whichever is greater.

   b. A device that records flow to or bypass of the control device. The Permittee shall either:

      i. install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or

      ii. secure the bypass line valve in the closed position with a car-seal or a lock-and key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the value is maintained in the closed position and that the gas flow is not diverted through the bypass line.

Testing

1. Performance testing for the enclosed combustor flare (EU: W11) and desulfurization system control device is subject to 40 CFR 60 Subpart A §60.8; 40 CFR Part 60 Subpart WWW and DAQEM's Guideline on Source Testing. *[AQR 12.4.3.1(a)(9), 40 CFR Part 60 Subpart A and 40 CFR 60.754(d)]*

2. The Permittee shall demonstrate initial compliance with the NMOC reduction requirements and H_2S control efficiencies by conducting performance testing no later than 180 days after initial startup and within 60 days after achieving the maximum production rate at which the enclosed combustor flare will be operated. *[AQR 12.4.3.1(a)(9) and 40 CFR 60.754(d)]*

3. The Permittee shall submit for approval a performance testing protocol which contains testing, reporting, and notification schedules, test protocols, and anticipated test dates to the

Control Officer not less than 45 nor more than 90 days prior to the anticipated date of the performance test. [12.4.3.1(a)(9)].

4. The Permittee shall conduct subsequent performance testing on the enclosed combustor flare (EU: W11) for NMOC reduction on or before the anniversary date of the previous performance test. *[AQR 12.4.3.1(a)(9)]*

5. The Permittee shall demonstrate compliance with the 40 CFR 60 Subpart WWW standard by reducing NMOC by 98 weight-percent or by reducing the outlet concentration of NMOC to less than 20 ppmv for the enclosed combustor flare (EU: W11) in accordance with 40 CFR 60 Appendix A: Method 25, 25C, or 18. Method 3 or 3A shall be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), Method 25A should be used in place of Method 25. If using Method 18, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant emission Factors (AP-42). *[40 CFR 60.754(d)]*.

6. The Permittee shall demonstrate compliance with the desulfurization control device control efficiency in accordance with 40 CFR 60 Appendix A: Method 15 – Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources. *[AQR 12.4.3.1(a)(9)]*

7. The Permittee shall submit a complete and comprehensive final performance test report to the Control Officer within 60 days from the end of each performance test. *[AQR 12.4.3.1(e)(15)].*

Mitigation

1. The Permittee has no Federal offset obligation.

Increment

Apex Waste Management Center is a major source in the Hydrographic Area 216 (Garnet Valley) that has applied for a minor modification. Permitted emission units include municipal solid waste landfill operations. Since minor source baseline dates for PM_{10} (December 31, 1980), NO_2 (January 24, 1991) and SO_2 (December 31, 1980) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

DAQEM modeled the source using AERMOD to track the increment consumption. Stack data submitted by the applicant were used in the model. Five years (1999 to 2003) of meteorological data from the McCarran station and Desert Rock station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) was used to calculate elevations. Table 8 presents the results of the modeling.

Table 8: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source (μg/m^3)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	9.67[1]	691503	4028158
SO_2	24-hour	1.93[1]	691700	4028700
SO_2	Annual	0.31	691413	4029151

PM_{10}	24-hour	28.23[1]	691536	4027155
PM_{10}	Annual	6.56	691536	4027155
NO_X	Annual	1.57	691521	4027959

[1]Modeled High 2nd High Concentration

Table 8 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

Public Notice

This ATC for a 5,000 scfm John Zink enclosed combustion flare is required go to Public Noticed because the source's uncontrolled SO_2 thresholds were above the 250 tons per year for a project for a PSD area, which requires an AQR 12.2 analysis.

Permitting History

1. The last permit was issued on December 31, 2010.
2. The last revision to the Title V Operating Permit was issued on November 9, 2011.
3. The application was received by DAQEM on February 1, 2011.
4. The application was assigned to the Air Quality Specialist on February 10, 2011.
5. The application was deemed complete on April 19, 2011.
6. The TSD and draft permit were submitted for review on May 31, 2011.

Attachments

NEI for Flare Project (tons/year)								
	PM_{10}	**$PM_{2.5}$**	**NOx**	**CO**	**SOx**	**VOC**	**HAP**	**TCS (H_2S)**
1,000 scfm Callidus Enclosed Combustor Flare EU: W07	8.37	8.37	4.89	0.27	169.98	0.26	0.09	0.01
1,400 scfm John Zink Candlestick Flare EU: W10	6.26	6.26	12.52	68.07	18.40	2.06	1.10	0.04
PTE Subtotals - Removing	**14.63**	**14.63**	**17.41**	**68.34**	**188.38**	**2.32**	**1.19**	**0.05**
5,000 scfm John Zink Enclosed Combustor Flare EU: W11	8.92	8.92	13.12	31.49	53.85	5.88	0.56	0.43
PTE Total for Project	**-5.71**	**-5.71**	**-4.29**	**-36.85**	**-134.53**	**3.56**	**-0.63**	**0.38**

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR A PART 70 OPERATING PERMIT

APPLICATION SUBMITTED BY

Republic Services

For

Republic Dumpco, Inc.

Part 70 Operating Permit Number: 395
(Renewal)

SIC Code - 4953: Refuse Systems
SIC Code – 1442: Construction Sand and Gravel

Clark County
Department of Air Quality and Environmental Management
Permitting Section

November 2010

This Technical Support Document (TSD) accompanies the proposed Part 70 Operating Permit for Republic Dumpco, Inc.

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I. ACRONYMS

Table I-1: List of Acronyms

Acronym	Term
AQR	Clark County Air Quality Regulations
A/L	Air to Liquid Ratio
ATC	Authority to Construct
bhp	Brake Horse Power
°C	Degrees Celsius
CAAA	Clean Air Act, as amended
CARB	California Air Resources Board
CEMS	Continuous Emissions Monitoring System
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
DAQEM	Clark County Department of Air Quality & Environmental Management
EPA	United States Environmental Protection Agency
EF	Emission Factor
EO	Executive Order
EU	Emission Unit
EVR	Enhanced Vapor Recovery
°F	Degrees Fahrenheit
GDO	Gasoline Dispensing Operation
GPM	Gallons per Minute
HAP	Hazardous Air Pollutant
HP	Horse Power
H_2S	Hydrogen Sulfide
kW	kilowatt
LANDGem	Landfill Gas Emissions Model
LFG	Landfill Gas
m^3/yr	Cubic meter per year
Mg/yr	Megagram per year
MMBtu	Millions of British Thermal Units
MMscf	Million Standard Cubic Foot
M/N	Model Number
MSWL	Municipal Solid Waste Landfill
NAICS	North American Industry Classification System
NMOC	Non-Methane Organic Compounds
NO_x	Nitrogen Oxides
NRS	Nevada Revised Statutes
OP	Operating Permit
$PM_{2.5}$	Particulate Matter less than 2.5 microns
PM_{10}	Particulate Matter less than 10 microns
ppm	Parts per Million
ppmvd	Parts per Million, Volumetric Dry
PTE	Potential to Emit
QA/AC	Quality Assurance/Quality Control
RMP	Risk Management Plan
SCC	Source Classification Codes
scf	Standard Cubic Feet
scfm	Standard Cubic Feet per minute
SIC	Standard Industrial Classification
SIP	State Implementation Plan
S/N	Serial Number

Acronym	Term
SO_x	Sulfur Oxides
SSM	Startup, Shutdown, and Malfunction
TCS	Toxic Chemical Substance
tpy	Tons per Year
TRS	Total Reduced Sulfur
VEE	Visible Emission Evaluation
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

II. EXECUTIVE SUMMARY

Republic Services – Republic Dumpco, Inc. (Republic) is under SIC Codes 4953 – Refuse System and 1442 – Construction Sand and Gravel and NAICS Codes 562212 – Solid Waste Landfill and 212321 – Construction Sand and Gravel Mining. Republic is located in Apex, East of Interstate 15/US 93 Junction. The legal description of the source's location is as follows: portions of T18S, R64E, Section 18 and 19 and T18S, R63E, Section 24 in Apex Valley, Clark County, Apex, Nevada. Republic is situated in Hydrographic Areas 216 and 217 (Apex Valley: Garnet Valley and North Hidden Valley). Apex Valley is designated as an unclassified non attainment area for 8-hour ozone (regulated through NO_x and VOC) and is PSD for PM_{10}, CO, SO_2.

The following table summarizes the source PTE for each regulated air pollutant for all emission units addressed by this Part 70 operating permit:

	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_x	VOC	HAP	TCS (H_2S)
Non-fugitive PTE	**266.89**	**12.27**	**112.03**	**59.72**	**177.18**	**9.93**	**3.32**	**0.00**
Landfill – Fugitive Emissions	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**32.89**	**32.16**	**147.27**

Republic is a major source for PM_{10}, NO_x, SO_x, HAP, H_2S and minor source for $PM_{2.5}$, CO and VOC. Republic serves as the primary municipal solid waste landfill for Clark County since October of 1993. The types of material the landfill accepts included municipal solid waste, petroleum contaminated soil, asbestos, construction debris, sewage sludge, septic waste, medical waste and dead animal waste. Republic has a gas collection and control system with an internal combustion flare capable of burning at 1,000 cubic foot per minute (EU: W07). The landfill gas collection and control system is designed to capture approximately 75% of the landfill gas generated, leaving approximately 25% as fugitive emissions. This Part 70 Operating Permit is issued based on the Title V Renewal application submitted on January 30, 2007.

Based on the information submitted by the applicant and a technical review performed by the DAQEM staff, the DAQEM proposes the renewal of a Part 70 Operating Permit to Republic Dumpco, Inc.

III. SOURCE INFORMATION

A. General

Permittee	Republic Services, Republic Dumpco, Inc.
Mailing Address	Republic Services 770 East Sahara Avenue Las Vegas, Nevada 89104
Contacts	Todd Whittle
Phone Number	(702) 599-5537
Fax Number	(702) 599-5585
Source Location	Apex Waste Management Center East of Interstate 15/US 93 Junction Apex, Nevada 89124
Hydrographic Area	216 and 217
Township, Range, Section	T18S, R64E, Section 18 and 19 T18S, R63E, Section 24
SIC Codes	4953: Refuse Systems 1442: Construction Sand and Gravel
NAICS Codes	562212: Solid Waste Landfill 212321: Construction Sand and Gravel Mining

B. Description of Process

Aggregate Plant

Mined stone is fed into the primary plant by end loader where it undergoes initial size reduction before being transported over a series of overland conveyors to the secondary, cone, sand and wash plants for further processing. The material is processed through screening, crushing and washing operations to produce various construction aggregates for onsite use as cover material or wholesale delivery to the construction industry.

The operations are divided into: 1) Primary Plant, 2) Gabion Plant, 3) Secondary Plant, 4) Sand Plant, 5) Cone Plant, 6) Wash Plant and 7) Landfill Cover Plant. Each plant has the capability to run independently from the primary feed plant and from one another.

MSWL

Republic serves as the primary municipal solid waste landfill for Clark County since October of 1993. The types of material the landfill accepts include municipal solid waste, petroleum contaminated soil, asbestos, construction debris, sewage sludge, septic waste, medical waste and dead animal waste. The Municipal Solid Waste Landfill will be open to public waste delivery 24 hours a day, 365 days per year, closing only on recognized holidays.

Container trucks carrying municipal solid waste enter from I-15. Trucks are weighed or measured as they enter the facility by driving over scales. Waste trucks then drive down a paved and an unpaved road before entering the landfill disposal area. Once at the disposal area, trucks are either unloaded using engine driven tippers or are end dumped. The tippers advance across the width of active cells until a new lift is started on top of the completed one in a stacking manner. Empty trucks exit the facility the same way they came in.

Republic has a gas collection and control system with an internal combustion enclosed combustor (Callidus Flare) capable of burning at 1,000 cubic foot per minute (EU: W07). The landfill gas collection and control system is designed to capture approximately 75% of the landfill gas generated, leaving approximately 25% as fugitive emissions.

Cover material is excavated from the next disposal cell or from borrow areas and processed by Las Vegas Paving through a crusher to meet landfill specifications. It is then transported to the active cell where it is used as cover material. Cover material is transported from the Las Vegas Paving aggregate plant as needed. Water is used during excavating and various processing activities to control particulate matter. Baghouses are used at each crusher.

C. Permitting History

Republic is regulated by the Clark County Department of Air Quality and Environmental Management (DAQEM) and has a Title V permit. The initial Part 70 Operating Permit was issued September 17, 2002.

Table III-C-1: Permits Issued to Republic Dumpco, Inc.

Date Issued	Permit Number	Description
12/31/2010	Modification 5	ATC to update the Aggregate Plant and consolidation of the haul roads, waste placement, stockpiles, and to change the nomenclature of all emission units assigned to the MSWL
05/13/2010	Modification 8, Revision 1	ATC to remove Section 52 language and add applicability date for 40 CFR 63, Subpart CCCCCC
02/01/2010	Modification 8	ATC to install Phase I equipment on the aboveground gasoline tank.
Cancelled	Modification 7	ATC to update 40 CFR 60 Subpart WWW language
02/27/2009	Modification 6	ATC to replace engine
11/04/2008	Modification 4, Revision 1	ATC/OP administrative revisions
02/14/2008	Modification 4	ATC/OP reconfiguration of aggregate plant and consolidation of all previously issued ATC/OPs
12/29/2006	Modification 3	ATC/OP to replace engines
12/27/2004	Modification 2, Revision 1, ATC/OP-C	ATC/OP to incorporate revised emission calculations that result in a net emission decrease from ATC/OP-B issued 07/10/2002
09/17/2002	N/A	Part 70 Operating Permit
07/10/2002	Modification 2, Revision 1, ATC/OP-B	ATC/OP to incorporate revised emission calculations that result in a net emission decrease from ATC/OP-A issued 04/03/2002
04/03/2002	Modification 2, Revision 1 ATC/OP-A	ATC/OP for all emission units at the facility
12/27/2001	Modification 2, Revision 1	ATC/OP administrative changes

Date Issued	Permit Number	Description
10/24/2000	Modification 1	ATC/OP for Alternative Operating Scenario at Aggregate Plant
09/16/1997	Modification 2	Modification to Aggregate Plant ATC/OP
08/13/1997	Modification 1	ATC/OP for Aggregate Plant
05/21/1996	Modification 0	Interim OP issued for Aggregate Plant
02/04/1995	---	ATC cancelled due to 18-mo. expiration to commence construction
10/04/1993	Modification 0, Revision 0	ATC/OP
05/11/1992	---	ATC cancelled due to 18-mo. expiration to commence construction
11/01/1990	Modification 1	Modification to increase throughputs
05/02/1990	Modification 0	Issuance of initial authority to construct

On January 30, 2007, DAQEM received an application to revise the Part 70 OP. The source requested that DAQEM incorporate modifications that had recently been made through the following ATC permits:

1. Modification 5: Updated the Aggregate Plant throughputs and emission factors for hard rock mining, installed blasting and consolidated hauls roads. Installed waste placement, stockpiles (active/inactive), tipper engines and changed the nomenclature of all emission units assigned to the MSWL.

Table III-C-2: Updated Nomenclature for the Emission Units of the MSWL

NEW EU#	OLD EU#	Description	Model No.	Serial No.
H01	F01	Haul Road, Paved (2.0 miles Round Trip)		
H02	D05	Waste Soil Truck Road, Unpaved		
	D06	Petroleum Contaminated Liquid Haul Road, Unpaved		
	E04	Waste Truck Haul Road, Unpaved		
	E05	Cover Material Truck Haul Road, Unpaved		
	G01	Waste Truck Haul Road, Unpaved		
	G02	Septic Truck Haul Road, Unpaved		
	G03	Cover Material Hauling from Aggregate Plant, Unpaved		
	G04	Cover Material Hauling from Excavation, Unpaved		
W01	D01	Soil Treatment Bulk Material Unloading		
	D02	Stationary Grizzly Deck		
	D03	Material Transfer to Soil Treatment Cell		
	D04	Soil Trans from Soil Treatment Cell		
W02	D07	Soil Treatment Waste Processing		
W03	E01	Industrial Waste Cover Material Dumping		
	E02	Transfer to Face Cover Material		
W04	E03	Industrial Waste VOC from Landfill Gas		
W05	G05	Cover Material Handing for Waste Placement		
W06	G08	1-2,500 aboveground gasoline storage tank, Regular		
W07	G09	LFG Flare, Callidus, Enclosed Combustion	G8844	
W100	G22	Fugitive Emissions from Landfill (based on 2006 Estimates)		
W200	W200	Caterpillar Diesel Generator:	3516	5SJ00130

NEW EU#	OLD EU#	Description	Model No.	Serial No.
W201	W201	Caterpillar Diesel Generator:	3516	7RN00440
W203	W203	Caterpillar Diesel Generator:	3412CDITA	WJ02059
W204	W204	Caterpillar Diesel Generator:	3412CDITA	WJ01887
W205	G10	Caterpillar Diesel Tipper Engine	3208	35601941
W206	G14	Cummins Diesel Generator	6CT8.3-G2	F99093314
W207	G15	Cummins Diesel Generator	6CT8.3-G2	F99093315
W208	G16	Isuzu Diesel Generator	QD145 ”6BD1”	3647886
W209	G17	Caterpillar Diesel Generator	3406	90U16559
W210	G23	Caterpillar Diesel Tipper Engine	3056E	35603786
W211	G24	Caterpillar Diesel Tipper Engine	3056E	35603782
W212	G25	John Deere Diesel Tipper Engine	4045H	PE4045H638663

2. Modification 8, Revision 1: Amended the permit to remove AQR Section 52 language and add the applicability date for 40 CFR 63 Subpart CCCCCC. This ATC was issued and signed by Republic.
3. Modification 8: Installed Phase I equipment to the gasoline storage tank (EU: W06). This ATC was issued but not signed by Republic.
4. Modification 7: Updated 40 CFR 60 Subpart WWW language. This ATC was cancelled by the Republic.
5. Modification 6: Replaced a 115 hp Caterpillar tipper engine (EU: G12) with a 115 hp John Deere tipper engine (EU: G25). This ATC was issued and signed by Republic.
6. Modification 4, Revision 1: Amended the ATC/OP to incorporate requested changes from Republic Services. This ATC/OP was issued and signed by Republic.
7. Modification 4: Changed the configuration of the Aggregate Plant and exempted three diesel storage tanks and four 11.5 kW mobile light plants. This ATC/OP was issued and signed by Republic.
8. Modification 3: Incorporated an alternative operating scenario for the Aggregate Plant and installed a new generator that did not increase throughput. This ATC/OP was issued and signed by Republic.
9. Modification 2, Revision 1-C: Incorporated revised emission calculations which resulted in a net emissions decrease from the Modification 2-B ATC/OP issued 07/10/2002. The ATC/OP was issued and signed by Republic.

<u>Submittals and Communications History</u>

- November 2, 2004 – DAQEM received a letter from Republic requesting a revision Modification 2, Revision 1-B, by consolidating all the equipment into the permit.
- January 24, 2006 – DAQEM received an amendment to the 2002 Title V permit.
- June 6, 2006 – DAQEM received an application for a Modification 3 to replace two diesel tipper engines with two new diesel tipper engines.
- October 10, 2006 – Republic received a communication from DAQEM stating that the portable light plants shall be categorically exempted.
- December 20, 2006 – DAQEM received two applications for modifications. Modification 4 was to update and add emission units to the Aggregate Plant and Modification 5 was to install twelve Landfill gas engines at the MSWL.
- January 29, 2007 – Republic submitted a letter reminding DAQEM to categorically exempt the diesel tanks and diesel mobile lights.

- January 30, 2007 – Republic submitted the Part 70 Operating Permit Renewal application.
- March 2, 2007 – Republic submitted the reconfiguration of emission units at the Aggregate Plant for Modification 4.
- May 10, 2007 – DAQEM sent a Letter of Incompleteness to Republic requesting information on the aggregate plant.
- June 11, 2007 – Republic submitted submittal information requested in the Letter of Incompleteness.
- October 24, 2007 – Republic submitted an amendment to the December 20, 2006 Modification 5 application to construction of two Waste Sorting Lines at the site.
- February 14, 2008 – Modification 4 was issued.
- March 5, 2008 – DAQEM's Compliance Division confirmed Republic's request for a Hearing before the Clark County Air Pollution Control Hearing Board.
- April 16, 2008 – A meeting was held with Republic and DAQEM in regards to Modification 4 issues.
- August 14, 2008 – DAQEM sent a Letter of Incompleteness to Republic for Modification 5 requesting supplemental information.
- September 30, 2008 – Republic submitted requested information per August 14, 2008 Letter of Incompleteness.
- September 30, 2008 – Republic submitted an amendment to Modification 5 requesting that a diesel tipper engine, stockpiles, waste placement, blasting, and all unpaved haul roads be under one emission unit be added to the Modification 5 application submittal.
- September 30, 2008 – Republic submitted a revision for Modification 4 to amend the operation of emission unit: W201 diesel generator.
- September 30, 2008 – Republic submitted an application for Modification 6 to install two diesel generators.
- October 13, 2008 – Republic submitted corrections and comments to Modification 4, Revision 1 draft permit.
- October 20, 2008 – Republic submitted a request to amend language in Modification 4.
- November 4, 2008 – Modification 4, Revision 1 was issued.
- November 19, 2008 – Republic submitted an amendment to the Title V renewal application updating the Responsible Official.
- December 2, 2008 – DAQEM sent a Letter of Incompleteness for Modification 5 and 6.
- December 9, 2008 – Republic received a letter about the day and time of Air Pollution Control Hearing that they requested.
- December 18, 2008 – Republic submitted a letter stating that the source would not be able to submit the requested information for the December 9th Letter of Incompleteness because they were in the process of a merger with another company (Allied Assests) and the source requested an additional 30 days to submit requested information. Republic also submitted a request a postponement of one month for the Air Pollution Control Hearing scheduled on January 22, 2009.
- December 19, 2008 – Republic submitted an amendment to the Title V renewal application updating the Responsible Official to Mark Clinker.
- December 23, 2008 – DAQEM sent a letter to Republic to extent the submittal of supplemental information by 30 days.
- January 23, 2009 – DAQEM received a letter from Republic stating that due to the merger that they would not be able to submit requested information by January 2009 and requested additional 30 days to submit.

- February 27, 2009 – Republic submitted requested information for the Letter of Incompleteness dated December 2, 2008.
- February 27, 2009 – Modification 6 was issued.
- March 13, 2009 – Republic submitted an amendment to Modification 4, Revision requesting language changes.
- March 30, 2009 – Republic submitted a letter to withdrawal the language changes to Modification 4, Revision 1.
- July 30, 2009 – Republic submitted an amendment to the Modification 5 application to include a new diesel tipper engine.
- September 14, 2009 – Republic submitted an amendment to the Title V renewal application requesting that the updates to the aggregate plant be incorporated into the Operating Permit.
- December 8, 2009 – Republic submitted an application for Modification 8 to install Phase I equipment on the 2,500 aboveground gasoline tank.
- February 1, 2010 – Modification 8 was issued.
- February 16, 2010 – Republic submitted an application for Modification 9 to install a 1,400 scfm candlestick flare.
- March 3, 2010 – Republic submitted an amendment to Modification 8 requesting that the applicability date for 40 CFR 63 Subpart CCCCCC be installed in the permit.
- May 10, 2010 – DAQEM sent a Letter of Incompleteness to resolve issues with the Modification 5 application.
- May 13, 2010 – Modification 8, Revision 1 was issued.
- May 25, 2010 – Republic submitted an application for Modification 10 to install a desulfurization system for the candlestick flare.
- June 11, 2010 – DAQEM sent a Letter of Incompleteness for outstanding information for Modification 5.
- June 14, 2010 – Republic submitted outstanding information for Modification 5.
- June 10, 2010 – Republic submitted an amendment to the Title V renewal application updating the Responsible Official to Todd Whittle.
- June 29, 2010 – Republic submitted response to the June 11, 2010 Letter of Incompleteness.
- August 26, 2010 – Republic submitted an amendment to Modification 9 to include Modification 10 as BACT for the 1,400 scfm candlestick flare.
- September 13, 2010 – Republic submitted an amendment to Modification 9 for an alternative scenario to operate the candlestick flare without the desulfurization system.
- September 21, 2010 – DAQEM requested additional information for Modification 5.
- October 1, 2010 – Republic submitted the requested information for Modification 5.
- October 28, 2010 – Republic submitted manufacturer's guarantees for the John Zink 1,400 scfm candlestick flare.
- November 1, 2010 – Republic submitted requested information updating the Aggregate Plant emission factors and rated capacity for the crushers.
- November 12, 2010 – Republic submitted updated information for the Aggregate Plant.
- November 12, 2010 – Republic submitted corrections and comments on the draft Title V – Operating Permit renewal

Changes from Title V OP issued in September 2002

Emission Limits:

Aggregate Plant

- Appropriate and current emission limitations regarding opacity were added to the permit in accordance with AQR Section 26 and 40 CFR 60, Subpart OOO. This affected Conditions C-6, C-8, C-9 and C-18 of the Title V OP issued September 2002.

MSWL

- Appropriate and current emission limitations for the diesel engines (NSR ATC Modification 5) subject to 40 CFR 60, Subpart IIII and 40 CFR 63, Subpart ZZZZ were added.

Production Limits:

Aggregate Plant

- The limits on hours of operation in Condition B-2 of the Title V OP issued in September 2002 were removed since the aggregate plant is no longer limited by hours (NSR ATC Modification 5).
- The production limits outlined in Conditions B-3 and B-4 of the Title V OP issued in September 2002 were modified and updated appropriately (NSR ATC Modification 5).
- Blasting was added to EU: A127 as part of Modification 5 and production limits were added appropriately.

MSWL

- Production limitations for the vehicle miles traveled was added as requested in Modification 5 and updated from the format as presented in Conditions B-10 and B-11 of the Title V issued in September 2002.
- Condition B-9 of the Title V OP issued in September of 2002 was removed because the hazardous waste facility was never installed.
- Condition B-10 and B-11 of the Title V OP issued in September of 2002 was removed because the limit should be based on vehicle miles traveled for the entire site.
- A production limitation for the cover material (EU: W05) was added because there is an emission limitation that must be enforced.
- A production limitation for the GDO has been added to the current Title V OP renewal as part of Modification 8.
- A production limitation for Waste Placement (EU: W08) and stockpiles (EU: W09) have been added to the current Title V OP renewal as part of Modification 5.
- The limitations on the diesel generators have been updated from fuel usage to hourly usage. Therefore, production limitations for the diesel generators (EUs: W200, W201 and W203 through W209) have been updated to the current Title V OP renewal as part of Modification 5.

Emission Controls:

Aggregate Plant

- Condition C-7 of the Title V OP issued in September 2002 was removed based on authority matters. It was an unenforceable condition.
- Conditions C-12, C-13, C-14, C-15 of the Title V OP issued in September 2002 were removed since the emission and control factors were updated as part of Modification 5.

MSWL

- Condition C-29 of the Title V OP issued in September of 2002 was removed based on authority matters. It was an unenforceable condition.
- Condition C-33 of the Title V OP issued in September of 2002 was removed since the hazardous waste facility was never installed.
- Condition C-34 of the Title V issued in September of 2002 was removed. Compliance has indicated that the condition is unrealistic and unenforceable. This condition serves no purpose since the VMT are already limited.
- New conditions were added with regard to the GDO (EU: W06) which received an ATC (Modification 8).
- New condition III-B-3(o) added as required by 40 CFR 60, Subpart WWW.
- Condition C-43 of the Title V OP issued in September of 2002 was removed because it was redundant and covered by other 40 CFR 60, Subpart WWW conditions.
- Condition III-B-3(y) was added as required by 40 CFR 60, Subpart WWW.
- New conditions were added as required by 40 CFR 63, Subpart AAAA and Subpart ZZZZ.

D. Operating Scenario

Aggregate Plant

There is no limit on the hours of operation of the aggregate plant. Production is limited to the following annual throughputs, based on the rated capacities of primary pieces of equipment:

Table III-D-1: Maximum Allowable Production Throughputs

EU	Description	Plant	tons/year
A01	Mining/ Excavation	Primary Plant	7,000,000
A25	Gabion Screen	Gabion Plant	1,000,000
A37	Triple Deck Screen SC2	Secondary Plant	3,300,000
A38	Triple Deck Screen SC3	Secondary Plant	3,300,000
A62	VSI Crusher	Sand Plant	1,600,000
A79	Cone Crusher 1	Cone Plant	2,000,000
A108	Triple Deck Screen SC7	Wash Plant	3,500,000
A109	Triple Deck Screen SC8	Wash Plant	3,500,000
A130	Primary Crusher 2	Landfill Cover Plant	1,000,000
A136	Screen SC9	Landfill Cover Plant	3,000,000

Blasting is limited to 1,733,886 ft^2 of surface area blasted per rolling 12-month period.

MSWL

The Part 70 Operating Permit lists all of the limits for each emission unit which has a throughput limit and/or limits on the hours of operation.

Republic is a Municipal Solid Waste Landfill that has been accepting waste from Clark County since 1993. Waste is delivered to the site by trucks and distributed according to the type of waste; general, contaminated soil, and industrial waste. The source has a soil treatment facility, an industrial waste facility, and the general waste area that accepts over 13 million tons of waste a year. The waste from the trucks that are operated by the source are placed by diesel tipper engine into the open layer of a cell and then aggregate cover material, from the aggregate plant, is place over the waste until the cell layer is completely filled to a specified high and width. Once a cell is completely filled and new cell is opened and within a calculated timeframe the

closed cell has vertical and horizontal wells installed to capture the fugitive emissions of non-methane organic compounds, methane, and sulfur dioxide. The collection and control system then conveys the landfill gas (LFG) to the enclosed combustor (LFG Flare) that is rated for 1,000 scfm flow rate. The collection and control system is assumed to collect approximately 75 percent of the LFG, leaving 25 percent at fugitive emission of the landfill surface. Republic is responsible for all diesel generators that are used to maintain the wells on the site, as well as, for the aggregate plant.

E. Proposed Exemptions

Exemptions have not been proposed by the source.

IV. EMISSIONS INFORMATION

A. Total Source Potential to Emit

Table IV-A-1 reflects the sum of the PTEs of all permitted emission units. The source is major for PM_{10}, NO_X, SO_X, HAP and H_2S and minor for CO and VOC.

Table IV-A-1: Total Source PTE (tons per rolling 12-months)[1]

	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_x	VOC	HAP	TCS (H_2S)
Non-fugitive PTE	**266.89**	**12.27**	**112.03**	**59.72**	**177.18**	**9.93**	**3.32**	**0.00**
Landfill Fugitive Emissions	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**32.89**	**32.16**	**147.27**
Major Source Thresholds	**100**	**100**	**100**	**100**	**100**	**100**	**10/25[2]**	**1[3]**

[1]Not a source-wide emission limit; values are used for determining the major source status.
[2]Ten (10) tons for any individual HAP or 25 tons for combination of all HAPs.
[3]H_2S is major at stated thresholds per AQR 12.2.19 (amended 10/07/04).

B. Equipment Description

The air emission source equipment and associated major equipment are listed below.

Aggregate Plant

- Primary Plant material processing emission units (EUs: A01, A02, A04, A07, A08, A09, A12, A16, A17 and A22)
- Gabion Plant material processing emission units (EUs: A23, A25, A27, A28, A30, A31, A33 and A34)
- Secondary Plant material processing emission units (EUs: A35, A37, A38, A40, A42, A44, A46, A47, A49, A51, A52, A58 and A60)
- Sand Plant material processing emission units (EUs: A62, A65, A69, A72, A74 and A77)
- Cone Plant material processing emission units (EUs: A79, A82, A83, A85, A87, A89, A93, A95, A98, A102 and A104a)
- Wash Plant material processing emission units (EUs: A106, A108, A109, A112, A113, A114, A116, A118, A119, A122, A124, A125 and A126)
- Landfill Cover Plant material processing emission units (EUs: A127, A128, A130, A133, A136, A138, A141, A145, A147, A149 and A151)

MSWL

- Paved Haul Road (EU: H01)

- Unpaved Haul Road (EU: H02)
- Soil Treatment Bulk Material Unloading (EU: W01)
- Soil Treatment Waste Processing (EU: W02)
- Industrial Waste Cover Material Dumping and Transfer (EU: W03)
- Industrial Waste VOC from Landfill Gas (EU: W04)
- Cover Material Handling (EU: W05)
- 2,500 gallon Gasoline Storage Tank (EU:W06)
- Enclosed Combustor LFG Flare (EU: W07)
- Waste Placement (EU: W08)
- Stockpiles (EU: W09)
- Fugitive Emissions from Landfill (EU: W100)
- Diesel Generators and Tipper Engines (EUs: W200, W201, W203 through W212)

C. Emission Units, Emission Limitations and PTE

Aggregate Plant

Table IV-C-1: List of Emission Units for the Aggregate Plant

EU	Description	Rating (tph)	Make	Model #	Serial #	SCC
Primary Plant						
A01	Mining/Excavation	4,825				30502033
A02	Grizzly 1	1,650				30502013
A04	Grizzly to Primary Crusher 1	600	Crush Boss	HSI 400	6356511	30502001
	Primary Crusher 1					
	Primary Crusher 1 to Belt 1					
A07	2 Belt System (Drop from Grizzly and Belt 1 to Belt 2)	1,650				30502006
A08	Grizzly 2	600				30502013
A09	Grizzly 2 to Primary Crusher 2	600	Crush Boss	HSI 400	6356536	30502001
	Primary Crusher 2					
	Primary Crusher 2 to Belt 3					
A12	3 Belt System (Grizzly to Belt 2, Belt 3 to Belt 4 and Belt 4 to Belt 5)	1,650				30502006
	2 Belt Transfers (Belt 2 to Belt 5 and Belt 5 to Stacker S1)	2,500				30502006
A16	Stacker S1	2,500				30502006
A17	7 Belt System (Belt Feeders 6, 7 and 8 to Belt 9, Belt 9 to Belt 10, Belt 10 to Belt 11, Belt 11 to Belt 12 and Belt 12 to Stacker S2)	2,500				30502006
A22	Stacker S2	2,500				30502006
Gabion Plant						
A23	Belt 12 to Belt 13 (From Primary Plant)	415				30502006
A25	Belt 13 to Gabion Screen	415	Telsmith	6x16 TD	275M101	30502002

EU	Description	Rating (tph)	Make	Model #	Serial #	SCC
	SC1				C1607	
	Gabion Screen SC1					
	Gabion Screen SC1 to Belt 14					
	Gabion Screen SC1 to Belt 15					
	Gabion Screen SC1 to Belt 16					
A27	Belt 14	210				30502006
A28	Stacker S3	210				30502006
A30	Belt 15	105				30502006
A31	Stacker S4	105				30502006
A33	Belt 16	105				30502006
A34	Stacker S5	105				30502006
Secondary Plant						
A35	Belt Feeder 17 to Belt 18	1,525				30502006
A37	Belt 18 to Triple Deck Screens SC2 and SC3	900	JCI	6x20 TD	SAD155 4A	30502002
	Triple Deck Screen SC2					
	Screen SC2 to Belt 19					
	Screen SC2 to Belt 21					
	Screen SC2 to Belt 26					
	Screen SC2 to Belt 31					
A38	Triple Deck Screen SC3	900	JCI	6x20 TD	96H02B3 2	30502002
	Screen SC3 to Belt 21					
	Screen SC3 to Belt 32					
A40	2 Belt System (Belt 19 to Belt 20 and Belt 20 to Stacker S6)	900				30502006
	Belt 32 to Belt 20	900				
A42	Stacker S6	900				30502006
A44	2 Belt System (Belt 21 to Belt 22 and Belt 22 to Stacker S7)	300				30502006
	Additional Transfer from SC3 (via Belt 21) Included					
A46	Stacker S7	300				30502006
A47	2 Belt Feeders to Belt 25	500				30502006
A49	2 Belt System (Belt 26 to Belt 27 and Belt 27 to Stacker S8)	500				30502006
A51	Stacker S8	500				30502006
A52	2 Belt Feeders to Belt 30	500				30502006
A58	Belt 31 to HSI 1 Crusher	600	Crush Boss	HSI 400	101400	30502002
	HSI 1 Crusher					
	HSI 1 Crusher to Belt 33					

EU	Description	Rating (tph)	Make	Model #	Serial #	SCC
A60	Recirculation Belt 33					30502006
Sand Plant						
A62	Belt 25 to VSI Crusher 1	200	CEMCO	70	AVE019 5170	30502003
	Belt 35 to VSI Crusher 1					
	VSI Crusher 1					
	VSI Crusher 1 to Belt 34					
A65	Belt 34 to Screen SC4	300	JCI	6x20 TD	96H05D 32	30502003
	Screen SC4					
	Screen SC4 to Belt 35					
	Screen SC4 to Belt 39					
A69	3 Belt System (Belt 36 to Belt 37, Belt 37 to Belt 38 and Belt 38 to Stacker S9)	210				30502006
A72	Stacker S9	210				30502006
A74	3 Belt System (Belt 39 to Belt 40, Belt 40 to Belt 41 and Belt 41 to Stacker S10)	200				30502006
A77	Stacker S10	200				30502006
Cone Plant						
A79	Belt 30 to Cone Crusher 1	300	Nordberg	HP 300	3031065 7	30502003
	Cone Crusher 1					
	Cone Crusher 1 to Belt 42					
A82	Belt 42 to Screens SC5 and SC6	450	JCI	6x20 TD	99H03K3 2	30502003
	Triple Deck Screen SC5					
	Screen SC5 to Belt 43					
	Screen SC5 to Belt 49					
	Screen SC5 to Belt 51					
A83	Triple Deck Screen SC6	450	JCI	7x20 TD	43J0491	30502003
	Screen SC6 to Belt 45					
A85	2 Belt System (Belt 43 to Belt 44 and Belt 44 to Stacker S11)	210				30502006
A87	Stacker S11	210				30502006
A89	4 Belt System (Belt 45 to Belt 46, Belt 46 to Belt 47, Belt 47 to Belt 48 and Belt 48 to Stacker S12)	300				30502006
A93	Stacker S12	300				30502006
A95	2 Belt System (Belt 49 to Belt 50 and Belt 50 to Belt 30)	250				30502006
A98	4 Belt System (Belt 51 to Belt 52, Belt 52 to Belt 53, Belt 53 to Belt 54 and Belt 54 to Stacker S13)	450				30502006
	Belt 53 to Belt 55	150				30502006
A102	Stacker S13	450				30502006

EU	Description	Rating (tph)	Make	Model #	Serial #	SCC
A104a	Belt 55 to VSI Crusher 2	150	CEMCO	80	ADEV03 99180V	30502003
	VSI Crusher 2					
	VSI Crusher 2 to Belt 39					
Wash Plant						
A106	Belt Feeder 56 to Belt 57	1,200				30502006
A108	Belt 57 to Screens SC7 and SC8	605	JCI	6x20 TD	96H01B3 2	30502003
	Triple Deck Screen SC7					
	Screen SC7 to Sand Screw 1					
	Screen SC7 to Belt 61					
A109	Triple Deck Screen SC8	605	Cedar Rapids	TSS 6203-32	54400	30502003
	Screen SC8 to Sand Screw 2					
	Screen SC8 to Belt 60					
	Screen SC8 to Belt 61					
A112	Sand Screw 1 to Belt 58	70				30502006
A113	Sand Screw 2 to Belt 58	70				30502006
A114	2 Belt System (Belt 58 to Belt 59 and Belt 59 to Stacker S14)	140				30502006
A116	Stacker S14	140				30502006
A118	Belt 60 to Stacker S15	550				30502006
A119	Stacker S15	550				30502006
A122	2 Belt System (Belt 61 to Belt 62 and Belt 62 to Storage Hopper)	415				30502006
A124	Storage Hopper to Belt 63	415				30502007
A125	Belt 63 to Rock Truck	415				30502006
A126	Rock Truck Dumping	415				30502031
Landfill Cover Plant						
A127	Blasting	24,200 ft^2/hr				30502009
A128	Grizzly 3	1,800				30502013
A130	Grizzly 3 to Primary Crusher 2	400	Crush Boss	400	400504	30502001
	Primary Crusher 2					
	Primary Crusher 2 to Belt 64					
A133	Grizzly 3 to Belt 64	1,400				30502006
	2 Belt System (Belt 64 to Belt 65 and Belt 65 to Belt 66)	1,800				
A136	Belt 66 to Screen SC9	1,800	Cedar Rapids	8x20 TD	46531	30502003
	Belt 75 to Screen SC9					
	Screen SC9					
	Screen SC9 to Belt 67					
	Screen SC9 to Belt 70					
	Screen SC9 to Belt 72					

EU	Description	Rating (tph)	Make	Model #	Serial #	SCC
	Screen SC9 to Belt 74					
A138	3 Belt System (Belt 67 to Belt 68, Belt 68 to Belt 69 and Belt 69 to Stacker S16)	1,000				30502006
A141	Stacker S16	1,000				30502006
A143	2 Belt System (Belt 70 to Belt 71 and Belt 71 to Stacker S17)	500				30502006
A145	Stacker S17	500				30502006
A147	2 Belt System (Belt 72 to Belt 73 and Belt 73 to Stacker S18)	300				30502006
A149	Stacker S18	300				30502006
A151	Belt 74 to Cone Crusher 2	200	Svedala	S-3000	03JA088 02	30502002
	Cone Crusher 2					
	Cone Crusher 2 to Belt 75					

Table IV-C-2: PTE Aggregate Plant (tons per year)

EU	PM_{10}	EU	PM_{10}	EU	PM_{10}
A01	0.32	A46	0.03	A106	0.12
A02	0.03	A47	0.07	A108	0.01
A04	0.04	A49	0.09	A109	0.01
A07	0.18	A51	0.05	A112	0.01
A08	0.02	A52	0.09	A113	0.01
A09	0.04	A58	0.02	A114	0.01
A12	0.46	A60	0.05	A116	0.01
A16	0.16	A62	0.02	A118	0.01
A17	1.13	A65	0.59	A119	0.01
A22	0.16	A69	0.03	A122	0.01
A23	0.02	A72	0.01	A124	0.01
A25	0.37	A74	0.07	A125	0.01
A27	0.01	A77	0.02	A126	0.01
A28	0.01	A79	0.02	A128	0.02
A30	0.01	A82	0.74	A130	0.01
A31	0.01	A83	0.74	A133	0.19
A33	0.01	A85	0.03	A136	1.11
A34	0.01	A87	0.01	A138	0.14
A35	0.14	A89	0.14	A141	0.05
A37	1.22	A93	0.03	A143	0.05
A38	1.22	A95	0.05	A145	0.02
A40	0.21	A98	0.15	A147	0.02
A42	0.07	A102	0.03	A149	0.01
A44	0.10	A104a	0.01	A151	0.01

Table IV-C-3: PTE Blasting (tons per year)

EU	PM_{10}	NO_x	CO
A127	8.31	5.50	29.11

Table IV-C-4: Emission Rates and Concentrations Aggregate Plant

EU	PM_{10} Mass Emission Rate (pounds per hour)	PM Stack Emission Concentrations	
		(g/dscm)	(gr/dscf)
A04	0.01	0.032	0.014
A09	0.01	0.032	0.014
A58	0.01	0.032	0.014
A62	0.01	0.032	0.014
A79	0.01	0.032	0.014
A104a	0.01	0.032	0.014
A130	0.01	0.032	0.014
A151	0.01	0.032	0.014

Discussion of Emission Calculations for Aggregate Plant

All emission factors in the aggregate plant are taken from AP-42 Table 11.19.2-2 unless otherwise stated here. The mining/excavation (EU A01) emission factor is estimated from adding together two controlled conveyor drop points (0.000046*2 = 0.00092 lb/ton). The grizzly emission factors are estimated from the truck unloading factor of 11.19.2-2. The blasting (EU A127) emission factor for PM_{10} is taken from AP-42 Table 11.9-1 for blasting. CO and NOx emission factors for blasting were determined by using Table 1 from the Summary of Data for Shots of ANFO from "*A Technique for Measuring Toxic Gases Produced by Blasting Agents"* (Mainiero, Richard J., 23rd Annual Conference on Explosives and Blasting Technique, February 1997). In the study, emissions were studied by various techniques for measuring toxic gases produced by blasting agents, which resulted in emission factors for the range of percent fuel oil from 5.0 percent to 7.0 percent. Las Vegas Paving uses 5.8 percent fuel oil in the ANFO when blasting. Because there are numerous emissions for 5 percent and 6 percent, the emissions were averaged for each percent and calculated to get the correct emissions rate for 5.8 percent. The detailed emission factor calculations are as follows:

Emission Factor for NO_x:

There are 22.4 liters in a mole ($\frac{L}{mole}$)

The molecular weight of CO is 46.00 $\frac{g}{mole}$ assuming that NO_x is NO_2

$$\left(46.00\frac{g}{mole}\right)\left(\frac{1\ mole}{22.4\ L}\right) = 2.05\frac{g}{L}$$

$$\left(\frac{g}{kg}\right) = \left(\frac{L}{kg}\right)\left(\frac{g}{L}\right)$$

Where 5% averaged = 4.35$\frac{L}{kg}$ and 6% averaged = 1.27$\frac{L}{kg}$

Assuming the percent of Fuel Oil in ANFO used is 5.8% then 5.8% would equal 1.89$\frac{L}{kg}$

$$\left(1.89\frac{L}{kg}\right)\left(2.05\frac{g}{L}\right) = 3.87\frac{g}{kg}$$

Using $3.87\frac{g}{kg}$ to get the Emission Factor of NO_x

$$\left(\frac{lb}{ton}\right) = \left(3.87\frac{g}{kg}\right)\left(\frac{1\ lb}{453.59\ g}\right)\left(\frac{1\ kg}{0.0011\ ton}\right) = 7.76\ \frac{lb}{ton}\ NO_x\ emission\ factor$$

Emission Factor for CO:

There are 22.4 liters in a mole = $(22.4\frac{L}{mole})$

The molecular weight of CO is 28.01 $\frac{g}{mole}$

$$\left(28.01\frac{g}{mole}\right)\left(\frac{1\ mole}{22.4\ L}\right) = 1.25\frac{g}{L}$$

$$\left(\frac{g}{kg}\right) = \left(\frac{L}{kg}\right)\left(\frac{g}{L}\right)$$

Where 5% averaged = 8.09$\frac{L}{kg}$ and 6% averaged = 18.47$\frac{L}{kg}$

Assuming the percent of Fuel Oil in ANFO used is 5.8% then 5.8% would equal 16.39$\frac{L}{kg}$

$$\left(16.39\frac{L}{kg}\right)\left(1.25\frac{g}{L}\right) = 20.49\frac{g}{kg}$$

Using $20.49\frac{g}{kg}$ to get the Emission Factor of CO

$$\left(\frac{lb}{ton}\right) = \left(20.49\frac{g}{kg}\right)\left(\frac{1\ lb}{453.59\ g}\right)\left(\frac{1\ kg}{0.0011\ ton}\right) = 41.06\ \frac{lb}{ton}\ CO\ emission\ factor$$

MSWL

Table IV-C-5: List of Emission Units for the MSWL

EU	Description	Rating	Make	Model #	Serial #	SCC
H01	Haul Road, Paved (2.0 miles Round Trip)	1,237,592 VMT/yr				30502011
H02	Haul Road, Unpaved	321,920 VMT/yr				30502011
W01	Soil Treatment Bulk Material Unloading	20,000 tpy				30510499
	Stationary Grizzly Deck					30504034
	Material Transfer to Soil Treatment Cell					30510199
	Soil Transfer from Soil Treatment Cell					30510199
W02	Soil Treatment Waste Processing	20,000 tpy				50100402
W03	Industrial Waste Cover Material Dumping	435,000 tpy				30510499
	Transfer to Face Cover Material					30510199
W04	Industrial Waste VOC from Landfill Gas	200,000 tpy				50100402
W05	Cover Material Handing for Waste Placement	1,090,951 tpy				30502512
W06	1-2,500 aboveground	61,771 gal/yr				40600306

EU	Description	Rating	Make	Model #	Serial #	SCC
	gasoline storage tank, Regular					
W07	Enclosed Combustion LFG Flare	1,000 scfm	Callidus	G8844		50100410
W08	Waste Placement	13,008,600 tpy				50200602
W09	Stockpiles: Active/Inactive (cover material)	123.11 acres				30502507
W100	Fugitive Emissions from Landfill (based on 2006 Estimates)	N/A				50100402
W200	Diesel Generator: DOM 1994	2,593 hp	CAT	3516	5SJ00130	20200102
W201	Diesel Generator: DOM 1996	2,593 hp	CAT	3516	7RN00440	20200102
W203	Diesel Generator: DOM 1998	1,072 hp	CAT	3412CDITA	WJ05059	20200102
W204	Diesel Generator: DOM 1998	1,108 hp	CAT	3412CDITA	WJ01887	20200102
W205	Diesel Tipper Engine: DOM Pre-2006	150 hp	CAT	3208	35601941	20200102
W206	Diesel Generator: DOM Pre-2006	188 bhp	Cummins	6CT8.3-G2	F99093314	20200102
W207	Diesel Generator: DOM Pre-2006	188 bhp	Cummins	6CT8.3-G2	F99093315	20200102
W208	Diesel Generator: DOM Pre-2006	77 bhp	Isuzu	QD145 ”6BD1”	3647886	20200102
W209	Diesel Generator: DOM Pre-2006	315 hp	CAT	3406	90U16559	20200102
W210	Diesel Tipper Engine: DOM 2007	173 bhp	CAT	3056E	35603786	20200102
W211	Diesel Tipper Engine: DOM 2007	173 bhp	CAT	3056E	35603782	20200102
W212	Diesel Tipper Engine: DOM 2007	115 hp	John Deere	4045H	PE4045H638663	20200102

Table IV-C-6: PTE MSWL (tons per year)

EU	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_x	VOC	HAP
H01	93.69	0.00	0.00	0.00	0.00	0.00	0.00
H02	121.85	0.00	0.00	0.00	0.00	0.00	0.00
W01	0.26	0.00	0.00	0.00	0.00	0.00	0.00
W02	0.00	0.00	0.00	0.00	0.00	2.78	0.00
W03	2.18	0.00	0.00	0.00	0.00	0.00	0.00
W04	0.00	0.00	0.00	0.00	0.00	0.19	0.00
W05	3.97	0.00	0.00	0.00	0.00	0.00	0.00
W06	0.00	0.00	0.00	0.00	0.00	0.40	0.10
W07	8.37	8.37	4.89	0.27	169.98	0.26	0.09
W08	1.04	0.00	0.00	0.00	0.00	0.00	0.00
W09	3.58	0.00	0.00	0.00	0.00	0.00	0.00
W200	0.02	0.02	2.77	0.25	0.02	0.08	0.03
W201	1.38	1.38	37.54	20.90	1.11	3.54	1.53
W203	0.50	0.50	15.23	2.44	0.33	0.40	0.45

EU	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_x	VOC	HAP
W204	0.29	0.29	9.93	1.67	0.22	0.26	0.30
W205	0.55	0.55	7.83	1.69	1.09	0.67	0.13
W206	0.20	0.20	5.47	0.45	0.14	0.14	0.20
W207	0.20	0.20	5.47	0.45	0.14	0.14	0.20
W208	0.01	0.01	0.07	0.02	0.01	0.01	0.01
W209	0.02	0.02	0.30	0.06	0.01	0.03	0.01
W210	0.26	0.26	6.35	0.79	1.55	0.35	0.17
W211	0.26	0.26	6.35	0.79	1.55	0.35	0.17
W212	0.21	0.21	4.33	0.83	1.03	0.33	0.02

Table IV-C-7: PTE MSWL Fugitive Emissions (tons per year)

EU	Description	Pollutant	Maximum Emissions tons/year
W100	Fugitive Emissions from Landfill (based on 2006 Estimates)	VOC (including HAP)	32.89
		HAP (Not including H_2S)	32.16
		TCS (only H_2S)	147.27

Table IV-C-8: Emission Rates MSWL (pounds per hour)

EU	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_x	VOC	HAP
W07	1.91	1.91	1.12	0.06	38.81	0.06	0.01

Discussion of Emission Calculations for MSWL

Modification 5

The emission factors for the paved and unpaved haul roads are based on and DAQEM defaults derived using AP-42 Section 13.2.1 and 13.2.2.

Table IV-C-9: PTE MSWL Haul Roads (tons per rolling 12-months)

EU	Description	VMT/hr	VMT/yr	lbs/VMT	CF	PTE lbs/hr	PTE tons/yr
H01	Haul Road: Paved	141.00	1,237,592	7.57	0.02	21.35	93.69
H02	Haul Road: Unpaved	37.00	321,920	7.57	0.10	28.01	121.85
PM_{10} Subtotal						**49.36**	**215.53**

Vehicle traffic entering and leaving the site is controlled at the main gate of the source. Waste and rock hauling vehicles entering the site are counted and the destination of each truck noted (i.e. municipal waste, septic, rock). The routes these vehicles use are documented and the distance measured using satellite imagery. The miles on paved and unpaved roads are then calculated by multiplying the number of vehicles by the miles of the truck route.

Other routine operations within the site have been monitored and conservative estimates developed. These estimates are designed to over report the actual vehicle miles traveled to ensure compliance. The conservative approach is cost effective for Republic to demonstrated compliance without spending high labor cost. Assumptions will be periodically verified. The activities, which are conservatively high estimates, are listed in Table IV-C-10.

Table IV-C-10: Routine Operations at Republic Dumpco – Apex Waste Management Center

Activity	Available Data	Activity Reported for Emissions Tracking
Employee and Visitor Access	Approximately 100 employees enter and leave the site on week days and 50 employees work on Saturday and Sunday. Very few deliveries occur on weekends and typically no visitors	Calculate emissions based on 150 employee/visitor trips on week days, 75 employee/visitor trips on weekends. All travel on paved road.
Water Trucks	Republic reviewed the water use for the last two years and the highest rate of use was 160,000 gallons in one day. Smallest water truck is 8,000 gallons. Based on aerial map, approximately 2.6 miles of unpaved road on longest water truck trip.	Calculate emissions based on 20 round trip loads per day, 4 miles on unpaved roads per trip.
Cover Material Hauling	Republic tracks cover material placement. Average number of loads per day is 30. Longest trip from source to working face is 0.75 miles paved and 0.75 miles unpaved.	Calculated emission based on 45 trips per day assuming 0.75 miles on paved road and 0.75 miles on unpaved road.
Generator Servicing	One trip per day to each of the two generators for fueling and servicing. Longest distance to generator is 3 miles unpaved, 2 miles paved.	Calculate emission based on 3 trips per day, 3 miles unpaved and 2 miles paved.
Utility Crew	Typically 8 trips each week day on 2 miles of paved road and 0.50 miles unpaved roads.	Calculate emission based on 3 shifts, 4 trips per shift on 0.50 miles of unpaved road and 2 miles of paved roads.

The emission factors in the waste placement (EU: W08) were taken from EPA AP-42, Section 11.19.2 and Table 11.19.2-2 were Republic took a conservative approach by applying a ten times higher emission factor.

Table IV-C-11: PTE MSWL Waste Placement (tons per year)

EU	Description	Throughput		EF	CF	PTE	
		tons/hr	tons/yr			lbs/hr	tons/yr
W08	Waste Placement	3,000	13,008,600	0.00016	N/A	0.48	1.04

The cover material stockpiles (EU: W09) were derived using on AP-42 13.2.4 referenced C. Cowherd, Jr., et al Fu., "*Control of Open Fugitive Dust Sources*", EPA-450/3-88-008 and the Western Regional Air Partnership (WRAP), "*Fugitive Dust Handbook*".

Table IV-C-12: PTE Stockpiles (tons per year)

EU	Description	Throughput	EF (lbs/ ton)	CF	PTE	
					lbs/ hour	tons/ year
W09	Stockpiles - Active	77.03 acres	0.01 lb/acre-hour		0.77	3.37
	Stockpiles - Inactive	46.08 acres	0.001 lb/acre-hour		0.05	0.20

Note: Emission Factor[1] = 1.7(s/1.5)(365-p/235)(f/15)(ratio of PM_{10} to PM) where,

S[2] = silt content % = 9% for active storage piles and 1.8% for inactive storage piles (assumes inactive stockpiles are stabilized to 80% control).
P[3] = number of days with >0.01 inches of precipitation per year = 30 days
F[4] = percentage of time that wind speed exceeds 5.4 m/s at mean pile height = 25%
Ration of PM_{10} to PM = 0.50
Emission Factor[5] = 0.12 PM_{10} per day per acre, Emission Factor = 0.01 lb PM_{10} per hour per acre (based on 24 hours/day)

[1]Emission Factor Calculation reference: *Control of Open Fugitive Dust Sources*, Section 4.1.3, EPA-450/3-98-008.
[2]Silt content obtained from AP-42 Table 13.2.4-1 for the average silt content for Municipal Solid Waste Landfill Cover).
[3]Number of days with >0.01 inches of precipitation per year obtained from AP-42 Figure 13.2.2-1.
[4]Based on Reid Gardner, Moapa Windrose.
[5]PM_{10} to PM ratio of 0.5 is based on AP-42 14.2.5.

Example Calculation: PM_{10} Emissions, lb/hour = Emission Factor, lb PM_{10} per day per acre X Maximum Area of Stockpile, acres.

Modification 8, Revision 1
Installed a date in which the source was subject to the 40 CFR 63 Subpart CCCCCC (EU: G06).

Modification 8
The emission factor for Phase I equipment on the gasoline storage tank was based on DAQEM default emission factors.

Table IV-C-13: PTE GDO (tons per rolling 12-months)

EU	Throughput (gals/year)	EF[1] (tons/gal)	CE[2]	PTE (tons/year)	
				VOC	HAP
W06	26,400	0.013 (VOC)[3]	95.0	0.17	N/A
W06	26,400	0.000000008 (HAP)[3]	95.0	N/A	0.01

[1]DAQEM default emission factors are used throughout.
[2]Control efficiencies are rule based and shall be a minimum of 95.0 percent for Phase I.
[3]Controlled (95.0 percent control) emission factor.

The diesel generators and tipper engines (EUs: W200, W201, W203, and W204 through W209 have been updated from fuel usage to hours of operations based on the fuel usage. The emissions have not changed as a result of this update.

Modification 6
The source removed a 115 horsepower Caterpillar diesel tipper engine (EU: G12) and replaced it with a 115 horsepower John Deere diesel tipper engine (EU: W212). The emission factors for PM_{10}, NO_x, CO, and SO_x were based on manufacturer's emission guarantees and VOC and HAPs were based on AP-42 emission factors.

The Aggregate Plant's emission list was updated to be consistent with DAQEM's standard of emission units being placed into processes instead of separate line items. There was no increase to emissions.

Modification 4, Revision 0
The source changed the operation of the Aggregate Plant, by adding new emission units, increasing the throughputs, and re-configuring the existing emission units. The emission factors used for the aggregate plant were changed from AP-42 Chapter 11.19.1 – Sand and Gravel Processing emission factors to AP-42 Chapter 11.19.2 – Crushed Stone Processing and Pulverized mineral Processing emission factors. The source requested to have three diesel storage tank and four 11.5 kW mobile diesel light plants categorically exempted. The four generators (EUs: W200, W201, W203, and W204) were changed from the aggregate plant (Las Vegas Paving's) responsibility to under the control of Republic. The four generators still are utilized at the Aggregate Plant, but Republic assumed responsibility of them. The generators also are employed at the Aggregate Plants to run the equipment as needed.

Modification 4, Revision 1
The previous permit was updated to make corrections to language per submitted request on March 5, 2008.

Modification 3
The source replaced 2 – 210 horsepower Caterpillar diesel engines (EUs: G11 and G13) with two 173 horsepower Caterpillar engines (EUs: W210 and W211) The emission factors for the two Caterpillar diesel generators emission factors for PM_{10}, NO_x, CO, SO_x, VOC and HAP were based on AP-42 emission factors.

D. Testing

Aggregate Plant
Performance testing is subject to 40 CFR 60 Subpart A, 40 CFR 60 Subpart OOO and DAQEM's Guideline of Performance Testing.

Required testing on the aggregate plant will be performed using the following methods:

Table IV-D-1: Performance Testing Requirements Aggregate Plant

Emission Units	Description	Test Method	Pollutant	Frequency
A02, A04, A07, A08, A09, A12, A16, A17, A22, A23, A25, A27, A28, A30, A31, A33, A34, A35, A37, A38, A40, A42, A44, A46, A47, A49, A51, A52, A58, A60, A62, A65, A69, A72, A74, A77, A79, A82, A83, A85, A87, A89, A93, A95, A98, A102, A104a, A106, A128, A130, A133, A136, A138, A141, A143, A145, A147, A149 and A151	Aggregate Plant	EPA Method 9	Opacity	Initially and every 5 years
A04, A09, A58, A62, A79, A104a, A130 and A151	Aggregate Plant Crushers	EPA Method 5 or Method 17	PM	Initially and every 5 years

Changes from Title V OP issued in September 2002

- The previous Title V permit and most recent ATC required Method 9 testing to be performed on mining/excavation, which included blasting (EUs: A01 and A127). This requirement was removed as this is not part of Subpart OOO or AQR Sections 26 or 34.

- The previous Title V permit required annual Method 9 testing. Compliance determined this was not necessary and that testing every 5 years would be sufficient.

MSWL

Performance testing is subject to 40 CFR 60 Subpart A, 40 CFR 60 Subpart WWW, 40 CFR 63, Subpart ZZZZ and DAQEM's Guideline of Performance Testing.

Table IV-D-2: Performance Testing Requirements MSWL

Emission Units	Description	Test Method	Pollutant	Frequency
W06	GDO	CARB TP-201.3	VOC and HAP	Initially and annually
W07	Callidus Flare with the Collection and Control System	EPA Method 2E, 25, 25C or 18	Flare Control Efficiency (NMOC)	Initially and annually
		EPA Method 9	Opacity	Initially and annually
		EPA Method 3C	Levels less than 20% Nitrogen or 5% Oxygen at each well	Monthly
W100	Fugitive Emissions from the Landfill	Method 21	Methane	Quarterly
		Method 21	Chemical analysis of landfill gases	Annually
W200, W201, W203, W204 through W209 inclusive (Applicable: May 3, 2013)	Engines	EPA Method 10 or ASTM Method D6522-00 and Method 320 or ASTM D6348-03	CO and HAPs	Initially and every 8,760 hours or every 3 years whichever comes first

The enclosed combustor (Callidus Flare) includes the Collection and Control System.

Subsequent performance testing of the GDO and the enclosed combustor (Callidus Flare) shall be conducted every year.

Republic is not required to performance test for CO or HAP in generators/engines (EUs: W200, W201, W203, W204 through W209) until May 3, 2013 with the requirements in 40 CFR 63, Subpart ZZZZ.

Changes from Title V OP issued in September 2002

- Conditions III-D-6 through 9 were added as required by 40 CFR 63, Subpart CCCCCC.
- Conditions III-D-13 through 19 were added as required by 40 CFR 63, Subpart ZZZZ.

E. Monitoring

Aggregate Plant

Republic is required to comply with local monitoring requirements and the monitoring requirements in 40 CFR 60, Subpart OOO.

Daily visual opacity observations shall be made on the aggregate plant including the control device stacks (baghouses). The water spray system will be inspected daily. The baghouses will be monitored daily and inspected at least monthly.

Changes from Title V OP issued in September 2002

- The requirement to perform bi-weekly moisture sampling was removed since the aggregate plant is no longer limited to a moisture requirement.

MSWL

Republic is required to comply with local monitoring requirements and the monitoring requirements of 40 CFR 60, Subpart WWW and Subpart IIII, 40 CFR 63, Subpart AAAA, Subpart ZZZZ and Subpart CCCCCC.

Daily visual opacity observations shall be made and will include each emission unit in the MSWL. Daily inspection of the GDO (EU: W06) to ensure that the equipment is maintained and operated per manufacturer's specifications. Bi-weekly sampling and analysis shall be conduction on the Soil Treatment Waste Processing. On a monthly basis the gauge pressure in the gas collection header shall be measured, and nitrogen and oxygen levels and the temperature of the landfill gas shall be monitored at each wellhead. A visual inspection of seal and closure mechanism shall be performed. The surface concentrations of methane and the PM_{10} and H_2S Ambient Air shall be monitored and reported on a quarterly basis. On an annual basis the VOC emission for the Soil Treatment facility will be calculated, the amount of biogradable waste in the Industrial Waste facility will be monitored, and the NMOC emission rate for the Industrial Waste facility shall be calculated.

Changes from Title V OP issued in September 2002

- Condition D-11 of the Title V OP issued in September of 2002 was removed since the hazardous waste facility was never installed.
- Updated GDO monitoring conditions to be compliant with 40 CFR 63, Subpart CCCCCC.
- Updated Surface Methane Monitoring conditions to be compliant with 40 CFR 60, Subpart WWW.
- A new condition regarding the implementation of a cover integrity monitoring program was added to this OP as required by 40 CFR 60, Subpart WWW.
- New conditions regarding the collection and control system were added as required by 40 CFR 60, Subpart WWW.
- Condition III-C-24 was added as required by 40 CFR 60, Subpart WWW.
- Condition III-C-25 was added as required by 40 CFR 60, Subpart IIII.

V. REGULATORY REVIEW

DAQEM has determined that the following public law, statutes and associated regulations apply:

1. CAAA, Authority: 42 U.S.C. § 7401, et seq.;
2. Title 40 of the CFR;
3. NRS, Chapter 445B;

4. Portions of the AQR included in the SIP for Clark County, Nevada. SIP requirements are federally enforceable. All requirements from ATC permits issued by DAQEM are federally enforceable because these permits were issued pursuant to SIP-included sections of the AQR; and
5. Portions of the AQR not included in the SIP. These locally applicable requirements are locally enforceable only.

A. Local Regulatory Requirements

The NRS and the CAAA are public laws that establish the general authority for the Regulations mentioned.

The DAQEM Part 70 (Title V) Program received Final Approval on November 30, 2001 with publication of that approval appearing in the Federal Register December 5, 2001 Vol. 66, No. 234. AQR Section 19 - Part 70 Operating Permits details the Clark County Part 70 Operating Permit Program. These regulations may be accessed on the Internet at: http://www.accessclarkcounty.com/depts/daqem/aq/rules/pages/regs.aspx

Local regulations contain sections that are federally enforceable and sections that are locally enforceable only. Locally enforceable only rules have not been approved by EPA for inclusion into the SIP. Requirements and conditions that appear in the Part 70 Operating Permit which are related only to non-SIP rules are notated below as locally enforceable only.

Table V-A-1: AQR Section 12 and 55 Summary Table for This Source (As Addressed by Part 70 OP)

	PM_{10}	$PM_{2.5}$	NO_x	CO	SO_2	VOC	HAP	H_2S
Air Quality Area	PSD	PSD	Nonattainment (ozone)	PSD	PSD	Nonattainment (ozone)	PSD	PSD
Non-Fugitive Source PTE (tpy)	266.89	12.27	112.03	59.72	177.18	9.93	3.32	0.00
Landfill: Fugitive PTE	0.00	0.00	0.00	0.00	0.00	32.89	32.16	147.27
Major Source	≥ 100 tpy	≥ 100 tpy	≥ 100 tpy	≥ 100 tpy	≥ 100 tpy	≥ 100 tpy	10/25[1]	1[2]

[1]Ten (10) tons for any individual HAP or 25 tons for combination of all HAPs.
[2]H_2S major threshold per AQR 12.2.19 (amended 10/07/04).

Discussion: Republic is a major source of PM_{10}, NO_x, SO_x, HAP, and H_2S. As part of the original NSR Analysis all of these emissions triggered notice of proposed action.

Table V-A-2: Clark County DAQEM – AQR with Source Compliance or Requirement

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
0. Definitions	applicable definitions	yes	entire source
1. Definitions	applicable definitions – "Affected Facility", "Air Contaminant", "Air Pollution Control Committee", "Area Source", "Atmosphere", "Board", "Commercial Off-Road Vehicle Racing", "Dust", "Existing Facility", "Existing Gasoline Station", "Fixed Capital Cost", "Fumes", "Health District", "Hearing Board", "Integrated Sampling", "Minor Source", "Mist", "New Gasoline Station", "New Source", "NIC", "Point Source", "Shutdown", "Significant", "Single Source", "Smoke", "Source of Air Contaminant", "Special Mobile Equipment", "Standard Commercial Equipment", "Standard Conditions", "Start Up", "Stop Order", "Uncombined Water", and "Vapor Disposal System"	yes	entire source
2. Air Pollution Control Board	all subsections	yes	entire source
4. Control Officer	all subsections	yes	entire source
5. Interference with Control Officer	all subsections	yes	entire source
6. Injunctive Relief	all subsections	yes	entire source
8. Persons Liable for Penalties - Punishment: Defense	all subsections	yes	entire source
9. Civil Penalties	all subsections	yes	entire source
10. Compliance Schedule	when applicable; applicable subsections	yes	entire source
11. Ambient Air Quality Standards	applicable subsections	yes	entire source
Through June 30, 2010: 12. Preconstruction Review for New or Modified Stationary Sources (Amended 10/07/04)	All subsections <u>except</u> the following: 12.2.18 HAP Sources in Clark County. 12.2.20 Additional Requirements for STATIONARY SOURCEs with Beryllium, Mercury, Vinyl Chloride, or Asbestos EMISSIONS in Clark County	Yes except 12.2.18 and 12.2.20	entire source
12.5. Part 70 Operating Permit Requirements	applicable subsections	yes	entire source
13. National Emission Standards for Hazardous Air Pollutants	CCAQR Section 13.2.62: Subpart AAAA Municipal Solid Waste Landfills CCAQR Section 13.2.85: Subpart ZZZZ Stationary Reciprocating Internal Combustion Engines CCAQR Section 13.2.109: Subpart CCCCCC Gasoline Dispensing Facilities	no	MSWL, diesel engines (EUs: W200, W201, W203 and W204 through W209), and GDO

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
14. New Source Performance Standards	CCAQR Section 14.1.74: Subpart OOO Standards of Performance for Nonmetallic Mineral Processing Plants CCAQR Section 14.1.82: Subpart WWW Standards of Performance for Municipal Solid Waste Landfills CCAQR Section 14.1.90: Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	no	Aggregate Plant, MSWL, diesel engines (EUs W210, W211 and W212)
18. Permit and Technical Service Fees	18.1 Operating Permit Fees 18.2 Annual Emission Unit Fees 18.4 New Source Review Application Review Fee 18.5 Part 70 Application Review Fee 18.6 Annual Part 70 Emission Fee 18.14 Billing Procedures	yes	entire source
Through June 30, 2010: 19. Part 70 Operating Permit FEDERAL APPROVAL (11/25/01)	19.2 Applicability 19.3 Part 70 Permit Applications 19.4 Part 70 Permit Content 19.5 Permit Issuance, Renewal, Re-openings, and Revisions 19.6 Permit Renewal by the EPA and Affected States 19.7 Fee Determination and Certification	N/A	entire source
24. Sampling and Testing - Records and Reports (Through June 30, 2010)	24.1 Requirements for installation and maintenance of sampling and testing facilities 24.2 Requirements for emissions record keeping 24.3 Requirements for the record format 24.4 Requirements for the retention of records by the emission sources	yes	entire source
25. Affirmative Defense for Excess Emissions due to Malfunctions, Startup and Shutdown	applicable subsections	yes	entire source
26. Emission of Visible Air Contaminants	26.1 Limit on opacity (≤ 20 percent for 3 minutes in a 60-minute period)	yes	entire source
28. Fuel Burning Equipment	Emission Limitations for PM	yes	entire source
29. Sulfur Contents of Fuel Oil	Sulfur content shall be equal to or less than 0.05 percent sulfur by weight	no	Diesel engines
40. Prohibitions of Nuisance Conditions	40.1 Prohibitions	no	entire source
41. Fugitive Dust	41.1 Prohibitions	yes	entire source
42. Open Burning	42.2	no	entire source
43. Odors In the Ambient Air	43.1 Prohibitions coded as Section 29	no	entire source

Applicable Section – Title	Applicable Subsection - Title	SIP	Affected Emission Unit
55. Preconstruction Review for New or Modified Stationary Sources in the 8-hour Ozone Nonattainment Area (Through June 30, 2010)	all subsections	no	entire source
60. Evaporation and Leakage	all subsections	yes	entire source
70. Emergency Procedures	all subsections	yes	entire source
80. Circumvention	all subsections	yes	entire source
81. Provisions of Regulations Severable	all subsections	yes	entire source

AQR SECTION 11 - AMBIENT AIR QUALITY STANDARDS *(in part)*

Table V-A-3: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source (µg/m^3)	Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO_2	3-hour	23.86[1]	691820	4027161
SO_2	24-hour	5.81[1]	691512	4028059
SO_2	Annual	1.11	691485	4028356
PM_{10}	24-hour	25.14[1]	691616	4027961
PM_{10}	Annual	5.81	691536	4027155
NO_X	Annual	1.88	691467	4028555

[1]Modeled High 2nd High Concentration

Table V-A-3 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

B. Federally Applicable Regulations

40 CFR 60-STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES:

Subpart A – General Provisions

40 CFR 60.7 – Notification and record keeping

Discussion: This regulation requires notification to DAQEM of modifications, opacity testing, records of malfunctions of process equipment and/or continuous monitoring device, CEMS data, and performance test data. These requirements are found in the Part 70 OP. DAQEM requires records to be maintained for five years, a more stringent requirement than the two years required by 40 CFR 60.7.

40 CFR 60.8 – Performance tests

Discussion: These requirements are found in the Part 70 OP in Section IV-D. Notice of intent to test, the applicable test methods, acceptable test method operating conditions, and the requirement for three runs are outlined in this regulation. DAQEM requirements for initial performance testing are identical to AQR Section 60.8. DAQEM also requires

periodic performance testing on emission units based upon throughput or usage. More discussion is in this document under the compliance section.

40 CFR 60.11 – Compliance with standards and maintenance requirements

Discussion: Compliance with various applicable standards will be demonstrated by performance tests unless otherwise specified in the standard. The source is subject to 40 CFR 60 Subpart GG which requires fuel monitoring and sampling to meet a standard. Subpart GG requirements are addressed in the Part 70 OP. AQR Section 26 is more stringent than the federal opacity standards, setting a maximum of 20 percent opacity for a period of more than 6 consecutive minutes. Republic shall operate in a manner consistent with this section of the regulation.

40 CFR 60.12 – Circumvention

Discussion: This prohibition is addressed in the Part 70 OP. This is also local rule AQR 80.1.

40 CFR 60.13 – Monitoring requirements

Discussion: This section requires that CEMS meet 40 CFR 75 Appendix B and 40 CFR 60 Appendix F standards of operation, testing and performance criteria. The Part 70 OP contains the CEMS conditions and citations to 40 CFR 75 Appendix B and 40 CFR 60 Appendix F. In addition, the QA plan approved for the CEMS follows the requirements outlined including span time and recording time.

Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants

40 CFR 60.670 – Applicability

Discussion: All emission units in the aggregate processing plant except the mining and blasting are applicable to this Subpart.

40 CFR 60.672 – Standard for Particulate Matter

Discussion: The Permittee is subject to the requirements of particulate matter standards and emission limits, including the PM limit and opacity limits, as described in Tables 2 and 3 of the Subpart. These requirements are found in the Part 70 OP. The source did not document when construction commenced for the aggregate plant after the issuance of MOD 4, which was the last modification for the aggregate process. It only documented when the new configuration commenced operation, which was after April 2008. 40 CFR 60 Subpart OOO was revised to require more stringent standards for equipment that was constructed, modified or reconstructed after April 2008. Since the source could not demonstrate they commenced construction prior to this date, they proposed the more stringent standard.

40 CFR 60.675 – Test Methods and Procedures

Discussion: The Permittee shall determine compliance with the PM standards using test methods described in this subsection. Opacity standards to be demonstrated using Method 9, every five years, and the PM emission standards are to be demonstrated using Method 5, every five years. These requirements are found in the Part 70 OP.

40 CFR 60.676 – Reporting and Recordkeeping

Discussion: The Permittee shall submit to the Administrator and to the Control Officer information required by this subsection. Specific record keeping and reporting requirements are identified in the Part 70 OP.

Subpart WWW – Standards of Performance for Municipal Solid Waste Landfill

40 CFR 60.750 – Applicability

Discussion: The Enclosed Combustor (Callidus Flare), the Collection and control system, and the Landfill fugitive emission are subject to this subpart.

40 CFR 60.752 – Standard for Air Emission from Municipal Solid Waste Landfills

Discussion: The Permittee is subject to the requirements of the standards and emission limits. The source calculated the estimated NMOC in 2006, in which they demonstrated that the collection and control system with a control device must continue to operate.

40 CFR 60.753 – Operational Standards for Collection and Control Systems

Discussion: The Permittee is subject to the requirement of the operational standards for the collection and control system. The source has to maintain and operate the collection and control system to continue a 75% collection rate of Landfill gas with a control efficiency of 98% at the enclose combustor (Callidus flare).

40 CFR 60.754 – Test Methods and Procedures

Discussion: The Permittee is subject to the requirements of the test methods and procedures. The source shall calculate the NMOC emission rate every five (5) years using the actual year-to-year solid waste acceptance rate. The source will also determine the NMOC concentration by sampling the any cell that has retained waster for at least two (2) years. Once the set NMOC concentration level has been reached the source shall install a collection system.

40 CFR 60.755 – Compliance Provisions

Discussion: The Permittee is subject to the requirements of the compliance provision. The source shall calculate the maximum expected gas generation flow rate from the landfill. The collection and control system that is installed, it shall be monitored, tested, maintained and operated in accordance with Subpart WWW to demonstration compliance. The Permittee shall demonstrate compliance with the surface methane operational standards of 500 parts per million or less. The source shall monitor the integrity of the landfill cover.

40 CFR 60.756 – Monitoring of Operations

Discussion: The Permittee is subject to the requirements of the monitoring of operations. The source shall monitor the temperature of the landfill gas and the levels of nitrogen and oxygen in the landfill gas at the wellheads and measure the gauge pressure at the collection header. The enclosed combustor shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications.

40 CFR 60.757 - Reporting Requirements

Discussion: The Permittee is subject to the requirements of the reporting requirements. The source shall submit the initial design report. The source shall submit the NMOC emission rate report, and shall submit a closure report to the Administrator within 30 days of waste acceptance cessation.

40 CFR 60.758 – Recordkeeping Requirements

Discussion: The Permittee is subject to the requirements of the recording requirements. The Permittee shall keep up-to-date records of the controlled landfill and the records shall be readily accessible. The Permittee shall maintain records for a minimum of 5 years.

Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60.4200 – Applicability Determination

Discussion: The provisions of this subpart are applicable to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines (ICE) with a displacement less than 30 liters per cylinder where the model year is 2007 or later, for engines that are not fire pumps, and July 1, 2006, for ICE certified by National Fire Protection Association as fire pump engines. This subpart applies to diesel engines (EUs: W210, W211 and W212).

40 CFR 60.4202 and 40 CFR 60.4205 – Emission Standards for Owners and Operators

Discussion: The operator of the stationary CI ICE must provide the manufacturer certification of the emission standard specified in this subpart. These requirements are addressed in the Part 70 OP.

40 CFR 60.4206 and 40 CFR 60.4211 – Compliance Requirements

Discussion: The operator of the stationary CI ICE must operate and maintain CI ICE that achieve the emission standards according to the manufacturer's written instructions and procedures developed by the owner or operator that are approved by the engine manufacturer, over the entire life of the engine. These requirements are addressed in the Part 70 OP.

40 CFR 60.4214 – Reporting and Recordkeeping Requirements

Discussion: The operator of the CI ICE shall keep records that include: engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; emission control equipment; and fuel used. If the stationary CI internal combustion is a certified engine, the owner or operator shall keep documentation from the manufacturer that the engine is certified to meet the emission standards. These requirements are addressed in the Part 70 OP.

40 CFR 63-NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES:

Subpart AAAA – National Emission Standard for Hazardous Air Pollutants for Municipal Solid Waste Landfills

40 CFR 63.1935 – Applicability

Discussion: The Permittee is subject to the applicability of this subpart. The Permittee has a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters and has estimated uncontrolled emissions equal to or greater than 20 megagrams per year of NMOC as calculated in accordance with 40 CFR 60.754(a).

40 CFR 63.1945 – Date of Compliance

Discussion: The Permittee shall comply to this subpart by January 16, 2003. The Permittee has submitted a SSM Plan on January 16, 2004.

40 CFR 63.1955 – Standards

Discussion: The Permittee shall comply with the requirements of 40 CFR 60, subpart WWW. The Permittee shall demonstrate compliance by complying with 40 CFR 60, subpart WWW requirements and developing a SSM Plan according to the provisions in 40 CFR 63.6(e)(3). The Permittee must maintain on copy of the SSM Plan on site.

40 CFR 63.1980 – Notifications, Records, and Reports

Discussion: The Permittee is subject to the requirements of notifications, records, and reports. The Permittee shall keep records and reports as specified in 40 CFR 60, subpart WWW.

Subpart ZZZZ – National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

40 CFR 63.6585 – Applicability

Discussion: Subpart ZZZZ applies to the several engines at this source (EUs: W200, W201, W203, W204 through W209).

40 CFR 63.6595 – Date of Compliance

Discussion: The applicable emission units must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.

40 CFR 63.6603 – Emission Limitations and Operating Limitations

Discussion: The requirements are stipulated in the Part 70 OP.

40 CFR 63.6625 – Monitoring, Installation, Collection, Operation and Maintenance Requirements

Discussion: The source must install a non-resettable hour meter if one is not already installed. The source must operate and maintain the stationary RICE and after-treatment control device (if any) according to the manufacturer's emission-related written instructions or develop their own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Subpart CCCCCC – National Emission Standard for Hazardous Air Pollutants for Gasoline Dispensing Facilities

40 CFR 63.11111 – Applicability

Discussion: The Permittee is subject to the requirements of §63.1116 for facilities with a monthly throughput of less than 10,000 gallons of gasoline (EUs: W06).

40 CFR 63.11113 – Compliance timelines

Discussion: The Permittee is required to comply with this subpart on January 10, 2011.

40 CFR 63.11116 – Requirements for facilities with monthly throughput of less than 10,000 gallons gasoline

Discussion: The Permittee is subject to the requirements of this section. The Permittee shall not allow gasoline to be handles in a manner that would result in vapor release to the atmosphere for extended periods of time. The Permittee shall minimize and clean all gasoline spills, cover open gasoline containers, and minimize gasoline sent to open waste collection system.

40 CFR 63.11120 – Testing and Monitoring Requirements

Discussion: The requirements are stipulated in the Part 70 OP.

40 CFR 63.11124 – Notifications Requirements

Discussion: The Permittee is subject to the notifications, records, and reports. The Permittee shall submit a Notification of Compliance Status to the applicable EPA Regional Office and the delegated State authority by January 10, 2011.

40 CFR 63.11125 – Recordkeeping Requirements

Discussion: The Permittee is subject to the recordkeeping requirements. The Permittee shall keep records for a period of five (5) years and the records shall be made available for inspection during the course of a site visit.

40 CFR 63.11126 – Reporting Requirements

Discussion: The requirements are stipulated in the Part 70 OP.

VI. COMPLIANCE

A. Compliance Certification

19.3.3.9 Requirements for compliance certification:

(a) Regardless of the date of issuance of this Part 70 OP, the schedule for the submittal of reports to the DAQEM shall be as follows:

Table VI-A-1: Reporting Schedule

Required Report	Applicable Period	Due Date[1]
Quarterly Report for 1st Calendar Quarter	January, February, March	April 30 each year
Quarterly Report for 2nd Calendar Quarter	April, May, June	July 30 each year
Quarterly Report for 3rd Calendar Quarter	July, August, September	October 30 each year
Quarterly Report for 4th Calendar Quarter, Any additional annual records required.	October, November, December	January 30 each year
Annual Compliance Certification Report	12 Months	30 days after the Operating Permit issuance anniversary date
Annual Emission Inventory Report	Calendar Year	March 31 each year
Excess Emission Notification	As Required	Within 24 hours of the time the Permittee first learns of the excess emissions
Excess Emission Report	As Required	Within 72 hours of the Excess Emission Notification

Required Report	Applicable Period	Due Date[1]
Deviation Report	As Required	Along with semi-annual reports
Performance Testing	As Required	Within 60 days from the end of the test

[1] Each report shall be received by DAQEM on or before the due date listed. If the due date falls on a Saturday, Sunday or a Federal or Nevada holiday, then the submittal is due on the next regularly scheduled business day.

(b) A statement of methods used for determining compliance, including a description of monitoring, recordkeeping, and reporting requirements and test methods.
(c) A schedule for submission of compliance certifications during the permit term.
(d) A statement indicating the source's compliance status with any applicable enhanced monitoring and compliance certification requirements of the Act.

B. Compliance Summary

Table VI-B-1: AQR Applicable to Republic Dumpco, Inc.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 0	Definitions	Applicable – Republic will comply with all applicable definitions as they apply.	Republic will meet all applicable test methods should new definitions apply.	Republic complies with applicable requirements.
AQR Section 4	Control Officer	Applicable – The Control Officer or his representative may enter into Republic property, with or without prior notice, at any reasonable time for purpose of establishing compliance with permit regulations	Republic will allow Control Officer to enter property as required.	Republic complies with applicable requirements.
AQR Section 11	Ambient Air Quality Standards	Applicable – Republic is a source of air pollutants.	Republic demonstrated compliance in the ATC permit application with air dispersion modeling.	Republic complies with applicable requirements.
Through June 30, 2010: AQR Section 12.1 (Amended 10/07/04)	General application requirements for construction of new and modified sources of air pollution	Applicable – Republic applied for and the ATC certificate was issued before commencing construction.	Republic. received the ATC permit to construct.	Republic complies with applicable requirements.
Through June 30, 2010: AQR Section 12.2.5 (Amended 10/07/04)	Requirements for specific air pollutants: PM_{10} emission source located in the PSD area	Applicable – Republic is a major source of PM_{10} emissions.	The Part 70 permit has relevant compliance, record keeping and reporting requirements.	Republic complies with applicable requirements for PM_{10}.
Through June 30, 2010: AQR Section 12.2.8 (Amended 10/07/04)	Requirements for specific air pollutants: Minor CO emission source located in the PSD area.	Applicable – Republic is a minor CO source with CO emission units located in Hydrographic Basin 216 and 217.	The Part 70 permit has relevant compliance, record keeping and reporting requirements.	Republic complies with applicable control technology requirements for CO.
Through June 30, 2010: AQR Section 12.2.11 (Amended 10/07/04)	Requirements for specific air pollutants: Minor VOC sources located in the VOC Management Area.	Applicable – Republic is a minor VOC source with VOC emissions units located in Hydrographic Basin 216 and 217.	The Republic VOC controls meet BACT as applicable for Hydrographic Basin 216 and 217. The Part 70 permit has relevant compliance, record keeping and reporting requirements.	Republic complies with applicable control technology requirements for VOC.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
Through June 30, 2010: AQR Section 12.2.14 (Amended 10/07/04)	Requirements for specific air pollutants: NO_X sources located in the NO_X Management Area.	Applicable – Republic has NO_X PTE > 100 TPY.	The Republic NO_X controls meet BACT as applicable for Hydrographic Basin 216 and 217. The Part 70 permit has relevant compliance, record keeping and reporting requirements.	Republic complies with applicable control technology requirements for NO_X.
Through June 30, 2010: AQR Section 12.2.16 (Amended 10/07/04)	Requirements for specific air pollutants: SO_X sources located in the PSD area.	Applicable – Republic is a major SO_X source with SO_X emission units located in Hydrographic Basin 216 and 217.	The Republic stationary gas turbines meet BACT as applicable for Hydrographic Basin 216 and 217. The Part 70 permit has relevant compliance, record keeping and reporting requirements.	Republic complies with applicable control technology requirements for SO_X.
Through June 30, 2010: AQR Section 12.5 (Amended 10/07/04)	Air Quality Models	Applicable – Dispersion modeling will be performed as required for any future major modifications.	As applicable, if any future dispersion modeling is performed in response to a request for any ATC permit modifications, it will be in accordance with provisions of 40 CFR 51, Appendix W.	Republic complies with applicable requirements.
AQR Section 12.5	Part 70 Operating Permits	Applicable – Republic is a major stationary source and under Part 70. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months of commencing operation of the new emission unit.	Republic submitted the initial Part 70 permit application within 12 months of startup. The renewal application was submitted within the appropriate timeframe.	Republic complies with applicable requirements.
AQR Section 13.2.62 Subpart AAAA	NESHAP – Municipal Solid Waste Landfills	Applicable – The Republic facility is subject to this subpart	Applicable requirements.	Republic complies with applicable requirements.
AQR Section 13.2.85 Subpart ZZZZ	NESHAP – Stationary Reciprocating Internal Combustion Engines	Applicable – The Republic fire pump is an affected unit.	Applicable monitoring requirements.	Republic must be in compliance with the applicable requirements on and after May 3, 2013.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 13.2.109 Subpart CCCCCC	NESHAP – Gasoline Dispensing Facilities	Applicable – The Republic gasoline tank is an affected unit.	Applicable monitoring requirements.	Republic Dumpco, Inc. complies with applicable requirements.
AQR Section 14.1.1 Subpart A	NSPS – General Provisions	Applicable – Republic. is an affected facility under the regulations. Sec. 14 is locally enforceable; however, the NSPS standards they reference are federally enforceable.	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
AQR Section 14.1.74 Subpart OOO	NSPS – Standards of Performance for Nonmetallic Mineral Processing Plants	Applicable –Republic has emission units processing more than 25 tons per hour of mineral material.	Applicable performance tests, opacity tests, monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
AQR Section 14.1.82 Subpart WWW	NSPS – Standards of Performance for Municipal Solid Waste Landfills	Applicable – Republic has a collection and control system and fugitive emissions from the landfill	Applicable performance tests, monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
AQR Section 14.1.90 Subpart IIII	NSPS – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines	Applicable – Several of the Republic engines are subject to this Subpart	Applicable monitoring, recordkeeping and reporting.	Republic complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 18	Permit and Technical Service Fees	Applicable – Republic will be required to pay all required/applicable permit and technical service fees.	Republic. is required to pay all required/applicable permit and technical service fees.	Republic. complies with applicable requirements.
Through June 30, 2010: AQR Section 19	40 CFR 70 Operating Permits	Applicable – Republic. is a major stationary source and under Part 70 the initial Title V permit application will be submitted within 12 months of startup. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months of commencing operation of the new emission unit. Section 19 is both federally and locally enforceable.	Republic submitted the initial Part 70 permit application within 12 months of startup. The renewal application was submitted within the appropriate timeframe.	Republic complies with applicable requirements.
AQR Section 21	Acid Rain Permits	Not Applicable	Not applicable.	Not applicable.
AQR Section 22	Acid Rain Continuous Emission Monitoring	Not Applicable	Not applicable.	Not applicable.
AQR Section 25	Affirmative Defense for Excess Emissions due to Malfunctions, Startup and Shutdown	Applicable – Any upset, breakdown, emergency condition, or malfunction which causes emissions of regulated air pollutants in excess of any permit limits shall be reported to Control Officer.	Any upset, breakdown, emergency condition, or malfunction in which emissions exceed any permit limit shall be reported to the Control Officer within 24 hours of the time the Permittee first learns of the excess emissions.	The Republic currently complies with applicable requirements.
AQR Section 26	Emissions of Visible Air Contaminants	Applicable – Opacity for any emission unit may not exceed 20 percent for more than 6 consecutive minutes.	Compliance determined by EPA Method 9 or visible emission observations.	Republic complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 29	Sulfur Content of Fuel Oil	Applicable – If fuel oil is used it must be low sulfur fuel with sulfur content less than 0.05 percent by weight. Section 29 is locally enforceable only.	Fuel sulfur content verification obtained from fuel oil supplier.	Republic complies with applicable requirements.
AQR Section 40	Prohibition of Nuisance Conditions	Applicable – No person shall cause, suffer or allow the discharge from any source whatsoever such quantities of air contaminants or other material which cause a nuisance. Section 40 is locally enforceable only.	Republic air contaminant emissions controlled by pollution control devices or good combustion and thus will not cause a nuisance.	Republic complies with applicable requirements.
AQR Section 41	Fugitive Dust	Applicable – Republic shall take necessary actions to abate fugitive dust from becoming airborne.	Republic utilizes appropriate best practices to not allow airborne fugitive dust.	Republic complies with applicable requirements.
AQR Section 42	Open Burning	Applicable – In event Republic. burns combustible material in any open areas, such burning activity will have been approved by Control Officer in advance. Section 42 is a locally enforceable rule only.	Republic will contact the DAQEM and obtain approval in advance for applicable burning activities as identified in the rule.	Republic complies with applicable requirements.
AQR Section 43	Odors in the Ambient Air	Applicable – An odor occurrence is a violation if the Control Officer is able to detect the odor twice within a period of an hour, if the odor causes a nuisance, and if the detection of odors is separated by at least 15 minutes. Section 43 is a local enforceable rule only.	Republic is a predominantly natural gas-fired facility and is not expected to cause odors.	Republic complies with applicable requirements.
Through June 30, 2010: AQR Section 55	Preconstruction review for New or Modified Stationary Sources in the 8-Hour Ozone Nonattainment Area	Applicable – Republic is located in Hydrographic areas 216 and 217 and will need to meet the applicable emission control requirements at times of future modifications.	In the event Republic undertakes any modification, the facility will have to apply proper control technologies and meet offset requirements as applicable.	Republic complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
AQR Section 70.4	Emergency Procedures	Applicable – Republic. submitted an emergency standby plan for reducing or eliminating air pollutant emissions in the Section 16 Operating Permit Application.	Republic submitted an emergency standby plan and received the Section 16 Operating Permit.	Republic complies with applicable requirements.

Table VI-B-2: Federal Air Quality Regulations Applicable to Republic Dumpco, Inc.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
40 CFR Part 51.165	Nonattainment NSR requirements.	Applicable – Republic is a major source for a nonattainment pollutant in a nonattainment area.	In the event Republic undertakes any modification, they will have to apply proper control technologies as applicable.	Republic complies with applicable requirements.
40 CFR Part 52.21	Prevention of Significant Deterioration (PSD)	Applicable – Republic PTE > 100 TPY and is listed as one of the 28 source categories.	BACT analysis, air quality analysis using modeling, and visibility and additional impact analysis performed for original ATC permits.	Republic complies with applicable sections as required by PSD regulations.
40 CFR Part 52.1470	SIP Rules	Applicable – Republic is classified as a Title V source, and SIP rules apply.	Applicable monitoring and record keeping of emissions data.	Republic is in compliance with applicable state SIP requirements including monitoring and record keeping of emissions data.
40 CFR Part 60, Subpart A	Standards of Performance for New Stationary Sources (NSPS) – General Provisions	Applicable – Republic is an affected facility under the regulations.	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
40 CFR Part 60, Subpart OOO	Standards of Performance for Nonmetallic Mineral Processing Plants	Applicable – The Republic aggregate plant is subject to the requirements of this Subpart.	Applicable monitoring, performance testing, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
40 CFR Part 60, Subpart WWW	Standards of Performance for Municipal Solid Waste Landfills	Applicable –Republic is subject to the requirements of this Subpart.	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
40 CFR Part 60, Subpart IIII	Standards of Performance for New Stationary Sources for Stationary Compression Ignition Internal Combustion Engines	Applicable – Several of the Republic. engines are subject to this Subpart.	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.

Citation	Title	Applicability	Applicable Test Method	Compliance Status
40 CFR Part 60	Appendix A, Method 9 or equivalent, (Opacity)	Applicable – Emissions from stacks are subject to opacity standards.	Opacity determined by EPA Method 9.	Republic complies with applicable requirements.
40 CFR Part 63, Subpart AAAA	Emission Standards for Hazardous Air Pollutants – Municipal Solid Waste Landfills	Applicable –Republic is subject to the requirements of this Subpart	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
40 CFR Part 63, Subpart ZZZZ	Emission Standards for Hazardous Air Pollutants – Stationary Reciprocating Internal Combustion Engines	Applicable – Several of the Republic diesel engines are subject to the requirements of this Subpart.	Applicable monitoring, performance testing, recordkeeping and reporting requirements.	Republic must be in compliance with the applicable requirements on and after May 3, 2013.
40 CFR Part 63, Subpart CCCCCC	Emission Standards for Hazardous Air Pollutants – Gasoline Dispensing Facilities	Applicable – Republic gasoline tank is subject to the requirements of this Subpart	Applicable monitoring, recordkeeping and reporting requirements.	Republic complies with applicable requirements.
40 CFR Part 64	Compliance Assurance Monitoring	Not Applicable.	Not Applicable.	Not Applicable.
40 CFR Part 70	Federally Mandated Operating Permits	Applicable – Republic is a major stationary source and under Part 70 the initial Title V permit application was submitted as required. Renewal applications are due between 6 and 18 months prior to expiration. Revision applications will be submitted within 12 months or commencing operation of any new emission unit.	Republic submitted a timely renewal application. Applications for new units will be submitted within 12 months of startup.	Republic complies with applicable requirements.
40 CFR Part 72	Acid Rain Permits Regulation	Not Applicable.	Not Applicable.	Not Applicable.
40 CFR Part 73	Acid Rain Sulfur Dioxide Allowance System	Not Applicable.	Not Applicable.	Not Applicable.
40 CFR Part 75	Acid Rain CEMS	Not Applicable.	Not Applicable.	Not Applicable.
40 CFR Part 82	Protection of Stratospheric Ozone	Applicable – Republic is subject to stratospheric ozone regulations based on 40 CFR 82.4.	Applicable.	Applicable.

C. Permit Shield

A permit shield was not requested by the source.

D. Streamlining Demonstration

Table VI-D-1: Aggregate Plant Streamlining Demonstration

EU	Regulation (40 CFR)	Regulatory Standard	Permit Limit	Value Comparison (in Units of the Permit Limit)			Averaging Period Comparison			Streamlining Statement for Shielding Purposes
				Standard Value	Permit Limit Value	Is Permit Limit Equal or More Stringent?	Standard Averaging Period	Permit Limit Averaging Period	Is Permit Limit Equal or More Stringent?	
A02, A07, A08, A12, A16, A17, A22, A23, A25, A27, A28, A30, A31, A33, A34, A35, A37, A38, A40, A42, A44, A46, A47, A49, A51, A52, A60, A65, A69, A72, A74, A77, A82, A83, A85, A87, A89, A93, A95, A98, A102, A106, A128, A133, A136, A138, A141, A143, A145, A147 and A149	60.672 (OOO)	7 percent opacity	7 percent opacity	7 percent opacity	7 percent opacity	Yes	6 consecutive minutes	6 consecutive minutes	Yes	The permit limit is equal to the standard. Compliance with permit demonstrates compliance with the standard.
A04, A09, A58, A62, A79, A104a, A130 and A151	60.672 (OOO)	0.032 g/dscm PM	0.032 g/dscm PM	0.032 g/dscm PM	0.032 g/dscm PM	Yes	N/A	N/A	N/A	The permit limit is equal to the standard. Compliance with permit demonstrates compliance with the standard.
		12 percent opacity	12 percent opacity	12 percent opacity	12 percent opacity	Yes	6 consecutive minutes	6 consecutive minutes	Yes	

Table VI-D-1: MSWL Streamlining Demonstration

EU	Regulation (40 CFR)	Regulatory Standard	Permit Limit	Value Comparison (in Units of the Permit Limit)			Averaging Period Comparison			Streamlining Statement for Shielding Purposes
				Standard Value	Permit Limit Value	Is Permit Limit Equal or More Stringent?	Standard Averag-ing Period	Permit Limit Averagin g Period	Is Permit Limit Equal or More Stringent?	
W06	60.11116 CCCCCC	Initial 2” wc	Initial 2” wc	Initial 2” wc	Initial 2” wc	Yes	N/A	N/A	N/A	The permit limit is equal to the standard. Compliance with permit demonstrates compliance with the standard.
W07	60.754(d) (WWW)	98 weight-percent or outlet of 50 ppm NMOC as carbon or less	98 weight-percent or outlet of 50 ppm NMOC as carbon or less	98 weight-percent or outlet of 50 ppm NMOC as carbon or less	98 weight-percent or outlet of 50 ppm NMOC as carbon or less	Yes	N/A	N/A	N/A	The permit limits are equal to the standard. Compliance with the permit demonstrates compliance with the standard
W07	AQR 26	20 percent opacity	20 percent opacity	20 percent opacity	20 percent opacity	Yes	6 consecutive minutes	6 consecutive minutes	Yes	The permit limits are more stringent than the standard. Compliance with the permit demonstrates compliance with the standard.
W210, W211 and W212	60.4204 (IIII)	9.2 g/kW-hr (6.9 g/hp-hr) NO_X	9.2 g/kW-hr (6.9 g/hp-hr) NO_X	9.2 g/kW-hr (6.9 g/hp-hr) NO_X	9.2 g/kW-hr (6.9 g/hp-hr) NO_X	Yes	N/A	N/A	N/A	The permit limits are equal to the standard. Compliance with the permit demonstrates compliance with the standard.

EU	Regulation (40 CFR)	Regulatory Standard	Permit Limit	Value Comparison (in Units of the Permit Limit)			Averaging Period Comparison			Streamlining Statement for Shielding Purposes
				Standard Value	Permit Limit Value	Is Permit Limit Equal or More Stringent?	Standard Averag-ing Period	Permit Limit Averagin g Period	Is Permit Limit Equal or More Stringent?	
W200, W201, W203, and W204	63.6600 (ZZZZ)	23 ppmvd CO @ 15 % O_2	23 ppmvd	23 ppmvd	23 ppmvd	Yes	4-hour averaging period	4-hour averaging period	Equal	The permit limits are equal to the standard. Compliance with the permit demonstrates compliance with the standard.
W205, W206, and W207	63.6600 (ZZZZ)	230 ppmvd CO @ 15 % O_2	230 ppmvd	230 ppmvd	230 ppmvd	Yes	4-hour averaging period	4-hour averaging period	Equal	The permit limits are equal to the standard. Compliance with the permit demonstrates compliance with the standard.
W209	63.6600 (ZZZZ)	49 ppmvd CO @ 15 % O_2	49 ppmvd	49 ppmvd	49 ppmvd	Yes	4-hour averaging period	4-hour averaging period	Equal	The permit limits are equal to the standard. Compliance with the permit demonstrates compliance with the standard.

E. Summary of Monitoring for Compliance

Table VI-E-1: Summary of Monitoring for Compliance

Emission Unit	Process Description	Monitored Pollutants	Applicable Subsection Title	Requirements	Compliance Monitoring
A01	Mining	Opacity	AQR Section 26	No greater than 20 percent opacity.	Visual emission observations
A02, A07, A08, A12, A16, A17, A22, A23, A25, A27, A28, A30, A31, A33, A34, A35, A37, A38, A40, A42, A44, A46, A47, A49, A51, A52, A60, A65, A69, A72, A74, A77, A82, A83, A85, A87, A89, A93, A95, A98, A102, A106, A128, A133, A136, A138, A141, A143, A145, A147 and A149	Aggregate Processing	Opacity	40 CFR 60, Subpart OOO	No greater than seven percent opacity.	Visual emission observations. Method 9 testing every five years.
A04, A09, A58, A62, A79, A104a, A130 and A151	Crushers with Baghouse Control	Opacity	40 CFR 60, Subpart OOO	Less than 12 percent opacity	Visual emission observations. Method 5 or 17 testing every five years.
		PM	40 CFR 60, Subpart OOO	Less than 0.032 g/dscm (0.014 gr/dscf)	
A127	Blasting	Opacity	AQR Section 26	No greater than twenty percent opacity.	Visual emission observations.
H01	Paved Haul Road	Opacity	AQR Section 26	No greater than twenty percent opacity.	Visual emission observations.
H02	Unpaved Haul Road	Opacity	AQR Section 26	No greater than twenty percent opacity.	Visual emission observations.
W01	Bulk Material Unloading	Opacity	AQR Section 26	No greater than twenty percent opacity.	Bi-weekly sampling and analysis of materials less than 0.25 inch in diameter
W02	Waste Processing	VOC	AQR Section 12 (amended 10/4/04)	Maximum VOC emissions	Calculating VOC emission using “Chemdat8” emission factors
W03	Cover Material	Opacity	AQR Section 26	No greater than twenty percent opacity.	Best management practices
W04	VOC from Landfill Gas	NMOC	40 CFR 60, Subpart WWW	No greater than 50 megagrams per year	Calculated NMOC mass emission rate
W05	Cover Material Handling	Opacity	AQR Section 26	No greater than twenty percent opacity.	Best management practices
W06	Gasoline Tank	VOC and HAP	40 CFR 63, Subpart CCCCCC	Vapor leaks	Daily inspection to GDO equipment

Emission Unit	Process Description	Monitored Pollutants	Applicable Subsection Title	Requirements	Compliance Monitoring
W07	Enclosed Combustor (Callidus Flare)	Opacity NMOC	AQR 26 40 CFR 60, Subpart WWW	No greater than twenty percent opacity. Concentration of NMOC	Visual emission observations. NMOC concentration by collection and analyzing LFG.
W08	Waste Placement	Opacity	AQR Section 26	No greater than twenty percent opacity.	Best management practices
W09	Stockpiles	Opacity	AQR Section 26	No greater than twenty percent opacity.	At least 70% moisture content when active and dust palliative when inactive
W100	Fugitive Landfill Emissions	Methane	40 CFR 60, Subpart WWW	No greater than 500 ppm	Quarterly surface testing
W200, W201, W203, W204 through W209	Diesel Generators and Tipper Engines	Opacity	AQR Section 26	No greater than twenty percent opacity.	Visual emission observations.

VII. EMISSION REDUCTION CREDITS (OFFSETS)

The source is subject to offset requirements in accordance with AQR Section 59. Offset requirements and associated mitigation are pollutant-specific.

VIII. ADMINISTRATIVE REQUIREMENTS

AQR Section 19 requires that DAQEM identify the original authority for each term or condition in the Part 70 Operating Permit. Such reference of origin or citation is denoted by [italic text in brackets] after each Part 70 Permit condition.

DAQEM proposes to issue the Part 70 Operating Permit conditions on the following basis:

Legal:
On December 5, 2001 in Federal Register Volume 66, Number 234 FR30097 the EPA fully approved the Title V Operating Permit Program submitted for the purpose of complying with the Title V requirements of the 1990 CAAA and implementing 40 CFR 70.

Factual:
Republic. has supplied all the necessary information for DAQEM to draft Part 70 Operating Permit conditions encompassing all applicable requirements and corresponding compliance.

Conclusion:
DAQEM has determined that Republic will continue to determine compliance through the use of performance testing, quarterly reporting, daily recordkeeping, coupled with annual certifications of compliance. DAQEM proceeds with the preliminary decision that a Part 70 Operating Permit should be issued as drafted to Republic for a period not to exceed five years.