Division Information

Engineer:	Stephanie Chaousy, PE
Control Engineer:	Chris Laplante
Review Date:	11/05/2014
Application Date:	06/27/2014

Attainment Status

PM10	Attainment
PM2.5	Attainment
SOx	Attainment
NOx	Attainment
VOC	Attainment
CO	Attainment

Facility Information

	Permit No.	14LI1168			
AIRs	County #	073	Lincoln		
	Facility #	0085			
	Point #	014			
Facility Equipment ID					
Company Name:		Wiepking-Fullerton LLC			
Source Name:		Aloha Mula Gas Plant			
Source Location:		SESW Section 19, T10S, R55W			
SIC:		1311			
Elevation (feet)		5250			
X	**New Permit (CP1)**		Modification (Issuance #)		APEN Required/Permit Exempt
			Transfer of Ownership		APEN Exempt/Permit Exempt
Notes					

Equipment Description

This source vents natural gas from:	a well head separator
Emissions from this source are:	routed to an enclosed flare

Natural gas venting from a well head separator. Emissions from this source are routed to an enclosed flare.

Emission Calculation Method

EPA Emission Inventory Improvement Program Publication: Volume II, Chapter 10 - Displacement Equation (10.4-3)

Ex = Q * MW * Xx / C

Ex = emissions of pollutant x
Q = Volumetric flow rate/volume of gas processed
MW = Molecular weight of gas = SG of gas * MW of air
Xx = mass fraction of x in gas
C = molar volume of ideal gas (379 scf/lb-mol) at 60F and 1 atm

Throughput (Q)	42	MMscf/yr	4794.5	scf/hr	3.57 MMscf/mo
MW	25.740	lb/lb-mol	0.001	MMscf/d	

	mole %	MW	lbx/lbmol	mass fraction	E	lb/hr	lb/yr	tpy
Helium	0.34	4.0026	0.014	0.001	Helium	0.2	1508	0.75
CO2	0.43	44.01	0.189	0.007	CO2	2.4	20972	10.49
N2	20.94	28.013	5.866	0.228	N2	74.2	650049	325.02
methane	48.4396	16.041	7.770	0.302	methane	98.3	861077	430.54
ethane	13.8556	30.063	4.165	0.162	ethane	52.7	461602	230.80
propane	11.5386	44.092	5.0876	0.198	propane	64.4	563797	281.90
isobutane	1.2252	58.118	0.7121	0.028	isobutane	9.0	78909	39.45
n-butane	2.541	58.118	1.4768	0.057	n-butane	18.7	163654	81.83
isopentane	0.3011	72.114	0.2171	0.008	isopentane	2.7	24062	12.03
n-pentane	0.233	72.114	0.1680	0.007	n-pentane	2.1	18620	9.31
cyclopentane	0.0145	70.13	0.0102	0.000	cyclopentane	0.1	1127	0.56
n-Hexane	0.0117	86.18	0.0101	0.000	n-Hexane	0.1	1117	0.56
cyclohexane	0.0030	84.16	0.0025	0.000	cyclohexane	0.0	280	0.14
Other hexanes	0.0422	86.18	0.0364	0.001	Other hexanes	0.5	4030	2.02
heptanes	0.0046	100.21	0.0046	0.000	heptanes	0.1	511	0.26
methylcyclohexane	0.0007	98.19	0.0007	0.000	methylcyclohexane	0.0	76	0.04
224-TMP	0	114.23	0.0000	0.000	224-TMP	0.0	0	0.00
Benzene	0.0076	78.12	0.0059	0.000	Benzene	0.1	658	0.33
Toluene	0.0008	92.15	0.0007	0.000	Toluene	0.0	82	0.04
Ethylbenzene	0	106.17	0.0000	0.000	Ethylbenzene	0.0	0	0.00
Xylenes	0	106.17	0.0000	0.000	Xylenes	0.0	0	0.00
C8+ Heavies	0.0003	968.071	0.0029	0.000	C8+ Heavies	0.0	322	0.16
			VOC mass fraction:	0.3005	Total VOC Emissions (Uncontrolled)			428.6
			25.740		annual limit assuming 95% control			21.4
Notes					monthly limit assuming 95% control (lb/mo.)			3640.4

Mole %, MW, and mass fractions from Critter Creek 2-03H gas analysis.
Emissions are based on 8760 hours of operation per year.
I calculated the average MW of C8+ based on the average MW on the analysis for the gas.

Flaring Information

Equipment Description

Flare to combust produced gas until pipeline is available at this wellhead facility.

Manufacturer	Leed	
Model	L-30-007-000	
Serial Number		
Gas Heating Value	1068	Btu/scf
Throughput	44856	MMBtu/yr

Combustion emission factor source: AP-42: Chapter 13.5

0.068	lb NOX/MMBtu	0.37	lb CO/MMBtu
1.53	tpy NOX	8.30	tpy CO

Emissions Summary

Uncontrolled/PTE	1.53	tpy NOX
	8.30	tpy CO
	428.623	tpy VOC
Controlled	21.431	tpy VOC

	Uncontrolled Total (lb/yr)	Bin	Scenario A Reportable?	Controlled Total (lb/yr)
Benzene	658	A	Yes	33
Toluene	82	C	No	4
Ethylbenzene	0	C	No	0
Xylenes	0	C	No	0
n-hexane	1117	C	Yes	56
224-TMP	0	C	No	0

Regulatory Applicability

AQCC Regulation 1

This source is subject to the opacity requirements for flares in Section II.A.5:'No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity.'

AQCC Regulation 2

Section I.A applies to all emission sources. "No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air."

AQCC Regulation 3

Part A:	An APEN is required for this source because uncontrolled VOC emissions exceed two tons per year in an attainment area.
Part B:	A permit is required for this source because uncontrolled VOC emissions from this facility exceed five tons per year in an attainment area.
	This source is not subject to Section III.D.2 (Minor Source RACT) because it is not located in a nonattainment area.
Is public comment required?	Public Comment Required

Facility Status

This facility is a synthetic minorof VOC for Title V applicability.
This facility is a synthetic minor source of VOC for PSD applicability.

Division Information

Engineer:	Stephanie Chaousy, PE
Control Engineer:	Chris Laplante
Review Date:	11/10/2014
Application Date:	06/27/2014

Attainment Status

PM10	Attainment
PM2.5	Attainment
SOx	Attainment
NOx	Attainment
VOC	Attainment
CO	Attainment

Facility Information

	Permit No.	14LI1178			
AIRs	County #	073	Lincoln		
	Facility #	0099			
	Point #	003			
Facility Equipment ID					
Company Name:		Wiepking-Fullerton LLC			
Source Name:		Kauai #2			
Source Location:		SWNE Section 6, T10S, R55W			
SIC:		211111			
Elevation (feet)		5262			
X	**New Permit (CP1)**		Modification (Issuance #)		APEN Required/Permit Exempt
			Transfer of Ownership		APEN Exempt/Permit Exempt
Notes					

Equipment Description

This source vents natural gas from:	a well head separator
Emissions from this source are:	routed to an enclosed flare

Natural gas venting from a well head separator. Emissions from this source are routed to an enclosed flare.

Emission Calculation Method
EPA Emission Inventory Improvement Program Publication: Volume II, Chapter 10 - Displacement Equation (10.4-3)

Ex = Q * MW * Xx / C

Ex = emissions of pollutant x
Q = Volumetric flow rate/volume of gas processed
MW = Molecular weight of gas = SG of gas * MW of air
Xx = mass fraction of x in gas
C = molar volume of ideal gas (379 scf/lb-mol) at 60F and 1 atm

Throughput (Q)	15	MMscf/yr	1712.3	scf/hr	1.27 MMscf/mo
MW	25.740	lb/lb-mol	0.000	MMscf/d	

	mole %	MW	lbx/lbmol	mass fraction	E	lb/hr	lb/yr	tpy
Helium	0.4105	4.0026	0.016	0.001	Helium	0.1	650	0.33
CO2	0.43	44.01	0.189	0.007	CO2	0.9	7490	3.74
N2	20.94	28.013	5.866	0.228	N2	26.5	232161	116.08
methane	48.4396	16.041	7.770	0.302	methane	35.1	307528	153.76
ethane	13.8556	30.063	4.165	0.162	ethane	18.8	164858	82.43
propane	11.5386	44.092	5.0876	0.198	propane	23.0	201356	100.68
isobutane	1.2252	58.118	0.7121	0.028	isobutane	3.2	28182	14.09
n-butane	2.541	58.118	1.4768	0.057	n-butane	6.7	58448	29.22
isopentane	0.3011	72.114	0.2171	0.008	isopentane	1.0	8594	4.30
n-pentane	0.2475	72.114	0.1785	0.007	n-pentane	0.8	7064	3.53
cyclopentane	0	70.13	0.0000	0.000	cyclopentane	0.0	0	0.00
n-Hexane	0.0117	86.18	0.0101	0.000	n-Hexane	0.0	399	0.20
cyclohexane	0.0000	84.16	0.0000	0.000	cyclohexane	0.0	0	0.00
Other hexanes	0.0452	86.18	0.0390	0.002	Other hexanes	0.2	1542	0.77
heptanes	0.0053	100.21	0.0053	0.000	heptanes	0.0	210	0.11
methylcyclohexane	0	98.19	0.0000	0.000	methylcyclohexane	0.0	0	0.00
224-TMP	0	114.23	0.0000	0.000	224-TMP	0.0	0	0.00
Benzene	0.0076	78.12	0.0059	0.000	Benzene	0.0	235	0.12
Toluene	0.0008	92.15	0.0007	0.000	Toluene	0.0	29	0.01
Ethylbenzene	0	106.17	0.0000	0.000	Ethylbenzene	0.0	0	0.00
Xylenes	0	106.17	0.0000	0.000	Xylenes	0.0	0	0.00
C8+ Heavies	0.0003	-93.346	-0.0003	0.000	C8+ Heavies	0.0	-11	-0.01
			VOC mass fraction:	0.3004	Total VOC Emissions (Uncontrolled)			153.0
			25.740		annual limit assuming 95% control			7.7
Notes					monthly limit assuming 95% control (lb/mo.)			1299.7

Mole %, MW, and mass fractions from Aloha Mula Gas Plant (4/11/2013) gas analysis.
Emissions are based on 8760 hours of operation per year.
I calculated the average MW of C8+ based on the average MW on the analysis for the gas.

Flaring Information

Equipment Description
Flare to combust produced gas until pipeline is available at this wellhead facility.

Manufacturer	Leed	
Model	TBD	
Serial Number	TBD	
Gas Heating Value	1068	Btu/scf
Throughput	16020	MMBtu/yr

Combustion emission factor source: AP-42: Chapter 13.5

0.068	lb NOX/MMBtu	0.37	lb CO/MMBtu
0.54	tpy NOX	2.96	tpy CO

Emissions Summary

			Operator
Uncontrolled/PTE	0.54	tpy NOX	0.53
	2.96	tpy CO	2.88
	153.024	tpy VOC	148.78
Controlled	7.651	tpy VOC	7.4

*I believe the difference in calculations is a rounding issue. I will permit operator's calculations

	Uncontrolled Total (lb/yr)	Operator uncontrolle	Scenario A Reportable?	Controlled Total (lb/yr)	Operator controlled
Benzene	235	228	Yes	12	11
Toluene	29	28	No	1	1
Ethylbenzene	0	-	No	0	-
Xylenes	0	-	No	0	-
n-hexane	399	388	No	20	19
224-TMP	0	-	No	0	-

Regulatory Applicability

AQCC Regulation 1

This source is subject to the opacity requirements for flares in Section II.A.5:'No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity.'

AQCC Regulation 2

Section I.A applies to all emission sources. "No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air."

AQCC Regulation 3

Part A:	An APEN is required for this source because uncontrolled VOC emissions exceed two tons per year in an attainment area.
Part B:	A permit is required for this source because uncontrolled VOC emissions from this facility exceed five tons per year in an attainment area.
	This source is not subject to Section III.D.2 (Minor Source RACT) because it is not located in a nonattainment area.
Is public comment required?	Public Comment Required

Facility Status

This facility is a synthetic minorof VOC for Title V applicability.
This facility is a synthetic minor source of VOC for PSD applicability.