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March 19, 2018

Illinois Environmental Protection Agency  
Bureau of Air  
Air Quality Planning Section (#39)  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276

Attn: Annual Emission Report

**Re: Annual Emissions Report, Reporting Year 2017  
Shell Oil Products US  
Roxana Site, I.D. No. 119090AAO**

To whom it may concern:

AECOM Technical Services, Inc. (AECOM), on behalf of Shell Oil Products US, is submitting the enclosed Annual Emissions Report for activities at the Roxana Site. If you have any questions or need any additional information, please contact Robert E. Mooshegian at (314) 429-0100 or via email at robert.mooshegian@aecom.com.

Sincerely,  
AECOM

Robert E. Mooshegian, STS  
Senior Program Manager

Enclosures: Annual Emission Report, Reporting Year 2017

cc: Mr. Kevin E, Dyer, Shell Oil Products US  
Project File

119090AAO - Shell Oil Products US

- SOURCE DATA -


SOURCE IDS AND LOCATION	AIRS:	17-119-0044	IEPA USE ONLY	SIC 1:	4613	NAICS 1:	486910
	FINDS:		IEPA USE ONLY	SIC 2:		NAICS 2:	
	FEIN:	522074528		SIC 3:		NAICS 3:	
	D&B:			SIC 4:		NAICS 4:	
	LATITUDE:	38:50:42.3168		SIC 5:		NAICS 5:	
	LONGITUDE:	90:04:34.0752		SIC 6:		NAICS 6:	

SOURCE ADDRESS	Shell Oil Products US	CONTACT: Kevin E. Dyer
	Chaffer St. and 8th St. Roxana, IL 62084	PHONE: 618-288-7237 EXT: Fax: E-mail: kevin.dyer@shell.com

ANNUAL EMISSION REPORT MAILING ADDRESS	AECOM	CONTACT: <del>John Carrow</del> Laura Faletto
	100 N. Broadway 20th Floor St. Louis, MO 63102	PHONE: 314-429-0100 FAX: 314-429-0462 E-Mail: <del>john.carrow@aecom.com</del> laura.faletto@aecom.com

Any person who knowingly makes a false, fictitious, or fraudulent material statement, orally or in writing, to the Illinois EPA commits a Class 4 felony. A second or subsequent offense after conviction is a Class 3 felony. (415 ILCS 5/44 (h))

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete.

 _____ AUTHORIZED SIGNATURE	03/09/18 _____ DATE
Kevin E. Dyer, Sr. Principal Program Manager _____ TYPED OR PRINTED NAME AND TITLE	(618) 288-7237 _____ TELEPHONE NUMBER

The Illinois EPA is authorized to require, and you must disclose, the information on this form pursuant to 35 Ill. Adm. Code 201.302 (a,b) and 254. It is not necessary to use this form in providing the information. Failure to disclose the information may result in penalties as provided for in the Environmental Protection Act, 415 ILCS 5/24-45.

## 119090AAO - Shell Oil Products US

## - ANNUAL SOURCE EMISSIONS -

POLLUTANT CODE	SOURCE REPORTED EMISSIONS FOR 2017 (TONS/YEAR)	EMISSIONS REPORTED FOR 2016 (TONS/YEAR)	IEPA 2017 ESTIMATED EMISSIONS (TONS/YEAR)
CO	0.424740	0.668759	0.421949
CO <sub>2</sub>	606.771370	955.369339	602.784000
Methane	0.011630	0.018311	0.011553
N <sub>2</sub> O	0.011124	0.017515	0.011051
NH <sub>3</sub>	0.016181	0.025477	0.016074
NO <sub>x</sub>	0.505643	0.796141	0.502320
Part	0.038429	0.060507	0.038176
PM <sub>10</sub>	0.038429	0.060507	0.038176
PM <sub>2.5</sub>	0.038429	0.060507	0.038176
SO <sub>2</sub>	0.003034	0.004777	0.003014
VOM	1.860240	4.258340	11.503708

## 119090AAO - Shell Oil Products US

## - PERMIT LISTING -

PERMIT NUMBER	TYPE OF PERMIT	OPERATION NAME	STATUS	STATUS DATE	EXPIRES
10120040	CONSTRUCTION	Soil Vapor Extraction Treatment System	GRANTED	03-01-2011	04-01-2012
11050032	CONSTRUCTION	Soil Vapor Extraction Treatment System w/Dual ICE	GRANTED	05-31-2011	05-31-2012
11060036	LIFETIME	SVE Treatment System	GRANTED	07-14-2011	07-14-2012
12040025 *	TITLE V	Treatment of Contaminated Soil Vapor			

\* A renewal application was submitted to IEPA in April 2012.

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer  
 BEGAN OPERATION: 01/2012 \_\_\_\_\_  
 CEASED OPERATION: / \_\_\_\_\_  
 MODE 01 - Natural gas combustion

PERMIT: 11060036

SCC: 40290013

DESCRIPTION CORRECTION:

PERCENT THROUGHPUTS: DEC - FEB: ~~38.82 %~~ 27.23 % MAR - MAY: ~~21.69 %~~ 25.32 %  
 BEGAN OPERATION: ~~06/2011~~ 01/2012 JUN - AUG: ~~16.49 %~~ 24.50 % SEP - NOV: ~~23.00 %~~ 22.95 %  
 CEASED OPERATION: \_\_\_\_\_

FUEL TYPE: 1 NATURAL GAS HEAT CONTENT: Natural Gas 1,000 Btu/ft3  
 INPUT (MMBTU/HR): 1.4 \_\_\_\_\_  
 SULFUR CONTENT (%): \_\_\_\_\_  
 ASH CONTENT (%): \_\_\_\_\_  
 NITROGEN CONTENT (%): \_\_\_\_\_

UNITS: ~~MILLION CUBIC FEET BURNED~~ MILLION BTU BURNED

UNITS: ~~MILLION CUBIC FEET BURNED~~ MILLION BTU BURNED

ANNUAL OPERATION			PEAK OZONE SEASON OPERATION		
HOURS/DAY:	24.0	<u>24.0</u>	HOURS/DAY:	24.0	<u>24.0</u>
DAYS/WEEK:	7.0	<u>7.0</u>	DAYS/WEEK:	7.0	<u>7.0</u>
WEEKS/YEAR:	<del>45</del>	<u>48</u>	WEEKS/YEAR:	<del>12</del>	<u>13</u>
HOURS/YEAR:	<del>7,611</del>	<u>8,143</u>	HOURS/YEAR:	<del>1,971</del>	<u>2,181</u>
			START TIME:		<u>00:00</u>
			END TIME:		<u>23:59</u>
RATE/HR:	<del>0.0003</del>	<u>0.32</u>	RATE/HR:	<del>0.0002</del>	<u>0.29</u>

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: 11060036

BEGAN OPERATION: 01/2012 \_\_\_\_\_

CEASED OPERATION: / \_\_\_\_\_

SCC: 40290013

MODE 01 - Natural Gas Combustion

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
CO	3	3	84	84 lbs/10 <sup>6</sup> scf	<del>0.1092</del>	0.0260
CO <sub>2</sub>	3	3	120,000	120000 lbs/10 <sup>6</sup> scf	<del>156</del>	37.1781
Methane	3	3	2.3	2.3 lbs/10 <sup>6</sup> scf	<del>0.00299</del>	0.0007
N <sub>2</sub> O	3	3	2.2	2.2 lbs/10 <sup>6</sup> scf	<del>0.00286</del>	0.0007
NH <sub>3</sub>	3	3	3.2	3.2 lbs/10 <sup>6</sup> scf	<del>0.00416</del>	0.0010
NO <sub>x</sub>	3	3	100	100 lbs/10 <sup>6</sup> scf	<del>0.13</del>	0.0310
PART	3	3	7.6	7.6 lbs/10 <sup>6</sup> scf	<del>0.00988</del>	0.0024
PM <sub>10</sub>	3	3	7.6	7.6 lbs/10 <sup>6</sup> scf	<del>0.00988</del>	0.0024
PM <sub>2.5</sub>	3	3	7.6	7.6 lbs/10 <sup>6</sup> scf	<del>0.00988</del>	0.0024
SO <sub>2</sub>	3	3	0.6	0.6 lb/10 <sup>6</sup> scf	<del>0.00078</del>	0.0002
VOM*	3	NA	<del>5.5</del>	NA lbs/10 <sup>6</sup> scf	<del>0.00715</del>	NA

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
NO <sub>x</sub>	3	3	100	100 lbs/10 <sup>6</sup> scf	<del>0.0172</del>	0.0283
VOM*	3	NA		NA lbs/10 <sup>6</sup> scf	<del>0</del>	NA

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 % 100.00 %

\*VOM emissions from combustion are accounted for in the SVE emissions on page 9.

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer

PERMIT: 11060036

BEGAN OPERATION: / 01/2012

CEASED OPERATION: / \_\_\_\_\_

SCC: 40290013

MODE 02 - Soil Vapor Combustion

DESCRIPTION CORRECTION:

PERCENT THROUGHPUTS: DEC - FEB:

19.62 % MAR - MAY:

31.25 %

BEGAN OPERATION: / 01/2012

JUN - AUG:

24.59 % SEP - NOV:

24.54 %

CEASED OPERATION: / \_\_\_\_\_

FUEL TYPE: 9 OTHER GASEOUS FUEL-SOIL VAPORS

HEAT CONTENT:

Soil Vapors

21,070 Btu/lb

INPUT (MMBTU/HR): \_\_\_\_\_

SULFUR CONTENT (%): \_\_\_\_\_

ASH CONTENT (%): \_\_\_\_\_

NITROGEN CONTENT (%): \_\_\_\_\_

UNITS: MILLION BTU BURNED

UNITS: MILLION BTU BURNED

ANNUAL OPERATION		PEAK OZONE SEASON OPERATION	
HOURS/DAY:	<u>24.0</u>	HOURS/DAY:	<u>24.0</u>
DAYS/WEEK:	<u>7.0</u>	DAYS/WEEK:	<u>7.0</u>
WEEKS/YEAR:	<u>48</u>	WEEKS/YEAR:	<u>13</u>
HOURS/YEAR:	<u>8,143</u>	HOURS/YEAR:	<u>2,181</u>
		START TIME:	<u>00:00</u>
		END TIME:	<u>23:59</u>
RATE/HR:	<u>0.95</u>	RATE/HR:	<u>0.87</u>

119090AAO - Shell Oil Products US

- FUEL COMBUSTION DATA -

POINT 0003 - Regenerative Thermal Oxidizer PERMIT: 11060036  
 BEGAN OPERATION: / 01/2012  
 CEASED OPERATION: /

SCC: 40290013

MODE 02 - Soil Vapor Combustion

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
CO		3		84 lbs/10 <sup>6</sup> scf		0.0783
CO <sub>2</sub>		3		120,000 lbs/10 <sup>6</sup> scf		111.8509
Methane		3		2.3 lbs/10 <sup>6</sup> scf		0.0021
N <sub>2</sub> O		3		2.2 lbs/10 <sup>6</sup> scf		0.0021
NH <sub>3</sub>		3		3.2 lbs/10 <sup>6</sup> scf		0.0030
NO <sub>x</sub>		3		100 lbs/10 <sup>6</sup> scf		0.0932
PM		3		7.6 lbs/10 <sup>6</sup> scf		0.0071
PM <sub>10</sub>		3		7.6 lbs/10 <sup>6</sup> scf		0.0071
PM <sub>2.5</sub>		3		7.6 lbs/10 <sup>6</sup> scf		0.0071
SO <sub>2</sub>		3		0.6 lb/10 <sup>6</sup> scf		0.0006
VOM*		NA		NA lbs/10 <sup>6</sup> scf		NA

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
NO <sub>x</sub>		3		100 lbs/10 <sup>6</sup> scf		0.09

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 %

\*VOM emissions from combustion are accounted for in the SVE emissions on page 9.



119090AAO - Shell Oil Products US

- OTHER SOURCE DATA -

POINT 001 - Soil vapor extraction system

PERMIT: 11060036

BEGAN OPERATION: 05/2011 \_\_\_\_\_

CEASED OPERATION: / \_\_\_\_\_

SCC: 50410310

MODE: 01 -

DESCRIPTION CORRECTION:

	PERCENT THROUGHPUTS:	DEC - FEB: <del>24.20 %</del> <u>23.38 %</u>	MAR - MAY: <del>26.16 %</del> <u>25.47 %</u>
BEGAN OPERATION:	<del>12/2010</del> <u>05/2011</u>	JUN - AUG: <del>25.90 %</del> <u>26.78 %</u>	SEP - NOV: <del>23.74 %</del> <u>24.36 %</u>
CEASED OPERATION:	/ _____		

UNITS: HOURS OPERATED

UNITS: HOURS OPERATED

ANNUAL OPERATION			PEAK OZONE SEASON OPERATION		
HOURS/DAY:	24.0	<u>24.0</u>	HOURS/DAY:	24.0	<u>24.0</u>
DAYS/WEEK:	7.0	<u>7.0</u>	DAYS/WEEK:	7.0	<u>7.0</u>
WEEKS/YEAR:	45	<u>48</u>	WEEKS/YEAR:	<del>12</del>	<u>13</u>
HOURS/YEAR:	<del>7,611</del>	<u>8,143</u>	HOURS/YEAR:	<del>1,971</del>	<u>2,181</u>
			START TIME:		<u>00:00</u>
			END TIME:		<u>23:59</u>
RATE/HR:	<del>1.0000</del>	<u>NA*</u>	RATE/HR:	<del>1.0000</del>	<u>NA*</u>

\*The rate/hr is not applicable because emissions are estimated using a measured emissions rate (lb/hr) and the system operating hours.

119090AAO - Shell Oil Products US

- OTHER SOURCE DATA -

POINT 001 - Soil vapor extraction system PERMIT: 11060036

BEGAN OPERATION: 05/2011 \_\_\_\_\_  
 CEASED OPERATION: \_\_\_\_\_

SCC: 50410310

MODE: 01 -

POLLUTANT CODE	METHOD		EMISSION FACTOR		EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
VOM	2	1		NA*	<del>2.97</del>	0.46

POLLUTANT CODE	METHOD		EMISSION FACTOR		OZONE SEASON EMISSION RATE (LB/HR)	
	IEPA	REP	IEPA	REPORTED	IEPA	REPORTED
VOM	1	1		NA*	<del>0.78</del>	0.38

CAPTURING CONTROLS:

CONTROL 0001 CAPTURE EFFICIENCY: 100.00 % 100.00 %

CAPTURING STACKS:

STACK 0003

\*The rate/hr is not applicable because emissions are estimated using a measured emissions rate (lb/hr) and the system operating hours.

119090AAO - Shell Oil Products US

- CONTROL DEVICE DATA -

CONTROL 0001 - Regenerative Thermal Oxidizer PERMIT: 11060036  
 BEGAN OPERATION: ~~06/2011~~ 01/2012  
 CEASED OPERATION: /                      CONTROL CODE: 319

DESCRIPTION CORRECTION:

REMOVAL EFFICIENCY

POLLUTANT	ANNUAL OPERATION				PEAK OZONE SEASON OPERATION			
	EFFICIENCY		METHOD		EFFICIENCY		METHOD	
	IEPA	REPORTED	IEPA	REPORTED	IEPA	REPORTED	IEPA	REPORTED
VOM	97.00 %	<u>99.3%*</u>		<u>1</u>		<u>99.3%</u>		<u>1</u>

CAPTURING CONTROLS:

CAPTURING STACKS:

STACK 0003 CAPTURE EFFICIENCY: 100.00 % 100.00 %

\*The RTO was tested for VOM destruction efficiency on June 25 and June 26, 2013.

- STACK DATA -

STACK	DIAMETER (FT)	HEIGHT (FT)	FLOW RATE (ACFM)	TEMPERATURE (°F)
0003 - Regenerative Thermal Oxidizer	2.50 <u>2.5</u>	<del>19</del> <u>18.5</u>	10,000 <u>10,000</u>	200 <u>200</u>