ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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May 28, 2015

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RECEIVED
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BY:_____

Shell Oil Products US
Attn: Mr. Kevin Dyer
17 Junction Drive
PMB #399
Glen Carbon, Illinois 62034

WRB Refining LP
Attn: Mr. Brian Wolf
900 South Central Avenue
P.O. Box 76
Roxana, Illinois 62084

Re: 1191150002 -- Madison County
Equilon Enterprises LLC d/b/a Shell Oil Products US
ILD080012305
Log No. B-43R-CA-66 and 84
Received: August 19, 2013 and March 5, 2015
RCRA Permits

Dear Mr. Dyer and Mr. Wolf:

This is in response to two documents submitted on your behalf on August 16, 2013 and March 4, 2015 regarding certain aspects of the RCRA corrective action program being carried at the above-referenced facility. The August 16, 2013 submittal included a document entitled "Air Sparging and Soil Vapor Extraction Pilot Test" and the March 4, 2015 submittal included a document entitled "SVE System Construction Completion Report Addendum No. 3: 4th Street SVE System Extension".

The two submittals mentioned above address certain aspects of remediation efforts being conducted by Equilon Enterprises (d/b/a Shell Oil Products US) in accordance with the corrective action provision of the RCRA permit issued for the above-referenced facility and addresses contamination present along/near the west property line of the North property of the WRB Refining LP Wood River Refinery in Roxana, Illinois (Equilon Enterprises is contractually responsible for implementing the RCRA corrective action program at this facility). In general, the area of concern for this remediation effort is bounded by First Street to the north, the Village of Roxana's Public Works property to the south (located just south of Eighth Street), Chaffer Street to the east and Central Avenue (Highway 111) to the west.

Among other things, contaminated soil vapors have been encountered near the southern and eastern boundaries of the above-described area within the Village of Roxana. These vapors have the potential for migrating into the homes present with this area and adversely impacting the indoor air quality in these areas. Shell has been addressing this contamination by: (1) monitoring

the quality of the soil vapors within the area of concern; (2) assessing the quality of the air within and below several homes in the area; and (3) operating a small soil vapor extraction system (SVE) from May 2011 to January 2012 to remove a localized area of contaminated soil vapors near the corner of 4th Street and Chaffer Street; and (4) operating a larger scale (SVE) system within the area of concern since January 2012.

The August 16, 2013 submittal contains proposed activities to study potential enhancement of the existing SVE system near the corner of Fourth and Chaffer Streets while the March 4, 2015 submittal provides documentation of the extension of the Soil Vapor Extraction system, including the installation of six additional soil vapor wells on three vacant parcels owned by SOPUS located near the corner of Fourth and Chaffer Streets. The documents were reviewed as corrective action modification requests and are hereby approved subject to the following conditions and modifications:

1. The installed SVE system now consists of forty-five vapor extraction wells (referred to as SVE-3 through SVE-47), associated piping, two condensate tanks, a blower and a thermal oxidizer (it must be noted that not all of these wells may be operational at any one time to allow for the optimal operation of the overall system). In addition, many vapor monitoring points (VMPs) are in place to monitor the effectiveness of the SVE system.

    a. Twenty-eight SVE wells became operational in January 2012 (SVE-3 thru SVE-20; SVE-25; and SVE-28 thru SVE-36).

    b. Six SVE wells became operational in December 2012 (SVE-21 thru SVE-24; SVE-26 and SVE-27).

    c. Five SVE wells became operational in late October to early November 2013 (SVE-37 thru SVE-41).

    d. Six SVE wells became operational in November 2014 (SVE-42 thru SVE-47)

2. Operation of the subject SVE system must be carried out in accordance with the plan contained in Appendix J of the March 14, 2015 submittal and this letter. Illinois EPA previously approved various aspects of this system in letters dated September 13, 2012; July 22, 2013 and April 9, 2014.

3. The approximate screened interval (based upon the depth below ground surface) from which soil gas will be removed from each SVE well is as follows:

Well	Screened Interval	Well	Screened Interval	Well	Screened Interval
SVE-3	5-10	SVE-14	10-20	SVE-25	10-25
SVE-4	5-15	SVE-15	10-20	SVE-26	25-35
SVE-5	10-20	SVE-16	10-20	SVE-27	20-30
SVE-6	10-20	SVE-17	10-20	SVE-28	41-51
SVE-7	10-20	SVE-18	8-18	SVE-29	21-31
SVE-8	9-19	SVE-19	11-21	SVE-30	25-35
SVE-9	10-20	SVE-20	25-35	SVE-31	25-35
SVE-10	10-20	SVE-21	25-35	SVE-32	25-35
SVE-11	10-20	SVE-22	25-35	SVE-33	25-35
SVE-12	10-20	SVE-23	25-35	SVE-34	25-45
SVE-13	10-20	SVE-24	25-35	SVE-35	31-41
SVE-36	10-20	SVE-37	25-35	SVE-38	25-35
SVE-39	25-35	SVE-40	25-35	SVE-41	20-30
SVE-42	25-35	SVE-43	25-35	SVE-44	25-35
SVE-45	37-42	SVE-46	15-25	SVE-47	15-25

4. The SVE wells identified above are connected to be to one of six header lines which are in turn connected to the blower which creates the vacuum necessary to extract contaminated vapors from the subsurface. For ease in the field, each header line has been assigned a certain color. A summary of the wells associated with each header line and the general location of each set of wells is as follows:

Header	***SVE Wells Attached to Header***	***Description of Wells***
Blue Line	3, 4, 10, 11, 12, 25, 42-47	Wells 3, 4, 25 and 42-47 are along 4th Street; Wells 10-12 are along Chaffer Street
Green Line	13, 14, 15, 16, 17, 18, 19, 36	Southernmost wells along Chaffer Street
Brown Line	34 and 35	Deep wells between 5th and 6th Streets
Red Line	5, 6, 7, 8, 9, 37, 38, 39, 40, 41	Far northern wells along Chaffer Street
Purple Line	28, 29, 30, 31, 32, 33	Deeper Wells North of Fifth Street
Teal Line	20, 21, 22, 23, 24, 26, 27	Well 20 is within the refinery, but near the Roxana Public Works area. The other wells are within the public works area.

5. The SVE system identified in Condition 1 above must be expanded, if necessary, if the proposed system does not appear to be adequately removing the contaminated soil vapors

from the subsurface within the study area. Such a determination will be based on many factors, such as system performance and potential risks posed by soil vapors.

6. Appropriate information and data must be collected to ensure the system identified in Condition 1 above is properly operating. Documentation of the results of all observations made and data collected in this evaluation must be recorded in the operating record for the system. Documentation of observed deficiencies in the operation of the systems must also be placed in this record, as well as documentation of the tasks carried out to correct these deficiencies. One of the important items that must be documented is when a thermal treatment unit, blower or individual SVE well is not in operation.

   a. Operation, maintenance and monitoring of the system must be carried out in accordance with: (1) the manufacturer's specifications/recommendations; (2) the permit issued by Illinois EPA's Bureau of Air permit for the system; and (3) this letter.

   b. The system must be appropriately monitored to ensure it is properly operating. Appropriate meters and other equipment must be available at the site to collect the data specified in Condition 9 below.

7. Illinois EPA, Bureau of Land, Permit Section and Collinsville Field Office must be notified via e-mail any time the full-scale SVE system is down for more than seventy-two continuous hours.

8. Vapor monitoring points have been installed at locations VMP-1 thru VMP-55. Multiple monitoring points are installed at most of these locations; an attachment to this letter identifies the vertical intervals where soil vapor samples can be collected at each location. VMP-1 thru VMP-32 have been installed and sampled for some time. VMP 33 through VMP-46 were installed such that they could be sampled, as appropriate, starting with the third quarter sampling event in 2012. VMP-47 through VMP-55 were installed such that they could be sampled, as appropriate starting with the first quarter sample event in 2013.

9. The following must be carried out on a monthly basis to monitor the general operational effectiveness of the SVE system:

   a. At each SVE well, the vacuum within well and the depth to any water present in the well must be measured.

   b. At each VMP well, the initial vacuum within the well must be measured as well as the vacuum in the well after the well has been allowed to stabilize.

   c. The general chemical composition of the vapor with each SVE and VMP well must be determined using the following instruments:

(1) A photoionization detector;

(2) A flame ionization detector;

(3) A gas meter that can detect oxygen and carbon dioxide; this meter must also report the relative amount of any ignitable vapors in the well (typically referred to as determining the amount of vapor relative to the lower explosive limit (LEL);

d. The amount of methane present in each VMP well.

10. On a quarterly basis, soil vapor samples must be collected for analysis from all nested wells at the following vapor monitoring point locations:

a. VMP-1 thru VMP-25;

b. VMP-29 thru VMP-32;

c. VMP-41 thru VMP-45

d. VMP-47 thru VMP-55

11. A report summarizing/documenting the results of all monitoring and remedial efforts associated with operation of this SVE system must be developed on a quarterly basis and submitted to Illinois EPA for review. This report must contain:

a. A discussion of the system's operation during the quarter, including deviations from the system's design parameters (such as problems maintain an adequate vacuum, down time due to equipment failure or other reasons);

b. A discussion of any maintenance carried out on the system during the quarter;

c. A summary/discussion/evaluation of the results of all monitoring efforts carried out during the quarter, especially those carried out monthly in accordance with Condition 9 above;

d. An estimate of the amount of hydrocarbon removed from the subsurface by the system during the quarter;

e. An evaluation of the subsurface vacuum maintained by the system during the quarter, supported as appropriate with data and calculations;

f. An overall evaluation of the system's operation during the quarter; and

g. Recommended changes, if any, which need to be made to improve the effectiveness or the operation of the system.

h. The results of the soil vapor monitoring program conducted in accordance with Condition 10 above and an evaluation of these result.

12. The quarterly reports required by Condition 11 above must be prepared and submitted to the Illinois EPA in accordance with the following table:

Quarter of Calendar year	Report for the Months of	Report to the Illinois EPA by the following
1st quarter	January-March	May 1st
2nd quarter	April-June	August 1st
3rd quarter	July-September	November 1st
4th quarter	October-December	February 1st

13. The March 4, 2015 submittal contained information regarding the pilot test efforts proposed in the August 16, 2013 submittal. These results indicated that the geology near the corner of 4th and Chaffer Streets was not conducive to air sparging and thus additional SVE wells were installed in this area.

14. RCRA corrective action activities carried out at the Equilon facility including off-site activities as necessary must meet the requirements of: (1) 35 Ill. Admin. Code 724.201; (2) the facility's RCRA permit; and (3) Illinois EPA letters regarding such activities.

Work required by this letter, your submittal, or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Act of 1989, the Professional Geologist Licensing Act and the Structural Engineering Act of 1989. This letter does not relieve anyone from compliance with these laws. All work that falls within the scope and definition of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation to the appropriate regulating authority.

Should you have any questions regarding groundwater related aspects of the corrective action efforts being carried out at this facility, please contact Amy Boley at 217/558-4716. If you have questions regarding other aspects of the corrective action efforts being carried out at this facility, please contact William T. Sinnott, II at 217/524-3310.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

SFN:WTS:1191150002-RCRA-B43R-CA-84
JKH

Attachment: Summary of VMP Screen Depths

Summary of VMP Screen Depths
Equilon Enterprises (dba Shell Oil Products US)
Illinois EPA ID No. 1191150002
RCRA Permit Log No. B-43R and Associated Modifications

Notes:

1. VMPs 26, 27, 28, and 31 have integrity problems and are not sampled. These VMPs remain in the table to provide for overall continuity.

   a. VMPs 26, 27, and 28 are located within the refinery and have VMPs nearby to collect the data typically obtained at these three locations.

   b. VMP-31 has been replaced by VMP-56

2. The VMPs in the table below each have a six inch long screen

Location ID Number	Depth to Top of Screen for Each Nested VMP				
	Screen 1	Screen 2	Screen 3	Screen 4	Screen 5
VMP-1	5	8.5	23.5	38.5	
VMP-2	5	8.5	22	42	
VMP-3	5	10	22	31.5	39
VMP-4	5	12	23.5	39	
VMP-5	5	12.5	31	40	
VMP-6	5	10	31.5	39	
VMP-7	5	13.5	29.5	38	
VMP-8	5	9.5	23.5		
VMP-9	5	11.5	25.5	38.5	
VMP-10	5	10	20	30	
VMP-11	5	8	29	38	
VMP-12	5	11.5	25	39	
VMP-13	5	10.5	21.5	29.5	
VMP-14	5	11.5	20	29	
VMP-15	5	21.5	25.5	29	
VMP-16	5	13.5	19	31	
VMP-17	5				
VMP-18	8.5				
VMP-19	5				
VMP-20	5	10	25		
VMP-21	5	10	25	33	
VMP-22	5	10	18	38	
VMP-23	5	10	25		
VMP-24	5	10	22	34	
VMP-25	5	21			
VMP-26	10	20	30	38	

VMP-27	10	20	30	38	
VMP-28	10	20	30	37	
VMP-29	10	18	26	40	
VMP-30	10	18	26	40	
VMP-31	5	10	20	30	
VMP-32	5	10	20	30	
VMP-33		10	20	30	
VMP-34		10	20	30	
VMP-35		10	20	30	
VMP-36		10	20	30	
VMP-37		10	20	30	
VMP-38		10	20	27	
VMP-39		10	20	30	
VMP-40		10	20	30	
VMP-41		10	20	26	
VMP-42		10	20	30	
VMP-43		10	20	30	
VMP-44		10	20	30	
VMP-45		10	20	30	
VMP-46		10	20	30	
VMP-47	5	10	20	30	
VMP-48	5	10	20	30	
VMP-49	5	10	20	30	
VMP-50	5	10	20	30	
VMP-51	5	10	20	30	
VMP-52	5	10	20	30	
VMP-53	5	10	20	30	
VMP-54	5	10	20	30	
VMP-55	5	10	20	30	
VMP-56	10	25	38.5		
VMP-57	5	10	20		
VMP-58	5	10	20	30	
VMP-59	5	10	20	30	
VMP-60	5	10	20	33.5	
VMP-61	5	10	20		
VMP-62	5	10	20	30	
VMP-63	5	10	20	30	
VMP-64	5	10	20	28	