



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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DOUGLAS P. SCOTT, DIRECTOR

217/524-3300 URS CORPORATION

May 12, 2009

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RECEIVED

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

WRB Refining LLC Wood River Refinery
Attn: David Dunn
900 South Central Avenue
P.O. Box 76
Roxana, Illinois 62084

RE: 1191150002 - Madison County
Equilon Enterprises
Log No. B-43-CA-12
RCRA Permit

Dear Mr. Dyer:

This is in response to Mr. Dyer's April 27, 2009 submittal and a January 21, 2009 submittal made on behalf of Shell Oil Products US (SOPUS) by Robert B. Billman, URS. These submittals included: (1) revised text (Executive Summary, Table of Contents and Sections 1 thru 6) for a document originally submitted August 19, 2008 entitled "Report, Subsurface Investigation, Route 111/Rand Avenue Vicinity Investigation, Roxana, Illinois; and (2) a document entitled "Work Plan Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation, Roxana, Illinois." These documents did not identify any permit or regulations which are applicable to them and only the April 27, 2009 letter identified an Illinois EPA site number of the facility associated with the documents.

A review of Illinois EPA's files indicates that these documents apparently address: (1) a portion of the groundwater monitoring/remediation program required for Illinois EPA Site No. 1191150002 under a RCRA permit issued to that facility (Illinois EPA Log No. B-43 and associated modifications); and (2) groundwater contamination beneath a portion of the Village of Roxana which appears to be associated with a 1986 release of benzene from an underground piping associated with Illinois EPA Site No. 119115002 (the level of benzene at one location in the groundwater in the area of concern was more than 200,000 times the Class I groundwater standard). It must be noted these documents made no commitment to properly address/remediate the contamination present in the areas where the proposed investigation efforts are to take place.

Illinois EPA Site Number 1191150002 is physically located at the WRB Refining, LLC Wood River Refinery in Roxana, Illinois (WRR) and the refinery itself has a separate Illinois EPA Identification Number. Shell Oil Products U.S. is "operator" for Site Number 119115002 and is carrying out certain remedial activities at the refinery (Shell Oil Company actually owned and

operated this refinery until 2000 at which time Shell sold the refinery to another entity; the refinery was subsequently sold several other times and is now owned by WRB Refining LLC).

As its name implies, the submitted subsurface investigation report contains the results of an investigation of the soil and groundwater contamination in the vicinity of Illinois Route 111 and Rand Avenue in Roxana, Illinois (this is the area where a release of benzene occurred from an underground pipeline in 1986). The submitted workplan then contains: (1) procedures for conducting additional investigation efforts in the vicinity of the aforementioned release; and (2) procedures for conducting investigation of the contamination (free product, groundwater, soil and soil vapor) present in the vicinity of a groundwater monitoring well referred to as "P-60" located along the western property boundary of the Main Plant portion of the subject facility, between Third and Fourth Streets in Roxana, Illinois (the results of a 2006 investigation conducted in this area were also presented in the workplan as part of the foundation for these proposed efforts).

The report and workplan referenced above are hereby approved subject to the following conditions and modifications:

1. The issuance of this letter will not: (1) resolve any of the facility's alleged violations of the Illinois Environmental Protection Act and/or 35 Ill. Admin. Code 620 regulations as set forth in Violation Notice L-2008-01134; and (2) prevent the USEPA or Illinois EPA from pursuing enforcement proceedings and monetary penalties as a result of the aforementioned alleged violations.
2. The groundwater related Conditions of the November 25, 2008 Illinois EPA letter (Log No. B-43-CA-10) have been satisfied.
3. The following conditions and modifications apply to the groundwater-related aspects of the Revised Workplan dated January 21, 2009:
 - a. The following comments address the revised analytical approach:
 - (1) The exact source of the mixed hydrocarbon plume is unknown, and based on analytical results collected in the investigation area to date, groundwater must be analyzed for the full list of Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), and Polycyclic Aromatic Hydrocarbons (PAHs).
 - (2) The Illinois EPA can approve the proposed sampling analytical approach, as described in Section 4.2 and Section 7 of the Revised Workplan, which includes but is not limited to:

- a. The collection of samples for VOC analysis at all profiling locations;
 - b. Analysis of SVOCs at all sampling locations along the Primary transect, at a minimum; and
 - c. If the SVOC analytical results are less than the respective 35 Ill. Adm. Code Part 620, Class I Groundwater Quality Standards (GQSs), then the samples from the locations directly to the west, i.e. Secondary and Tertiary transects, will not be analyzed for SVOCs.
- (3) The sampling analytical approach approved in Condition 3.a.ii above must also include analysis of PAHs where SVOC analysis is conducted.
 - (4) SOPUS must use an approved USEPA analytical method that is capable of obtaining appropriate detection limits required for a 35 Ill. Adm. Code, Part 620, Class I Groundwater.
- b. The Illinois EPA acknowledges that free product removal via the pump installed at well P-60 is serving as an interim measure at this time.
 - (1) The pump at well P-60 must be maintained until such time that a permanent product recovery system(s) is installed at the site, or the Illinois EPA determines product removal is no longer necessary.
 - (2) Pursuant to 35 Ill. Adm. Code 724.201(c), SOPUS is not relieved of addressing potentially impacted groundwater conditions beyond the facility boundary, subsequent to any investigation of the WRR property. If needed, the facility must implement corrective action beyond the facility property boundary, where necessary to protect human health and the environment and will not be relieved of responsibility to cleanup a release that has migrated beyond the facility boundary where off-site access is denied.
 - c. If free product is discovered by SOPUS outside of the WRR property boundaries:
 - (1) the Illinois EPA must be notified in writing within seven (7) days; (2) the notification must also include a timeline for submittal of a remediation method proposal; and (3) a request to meet with the Illinois EPA to discuss the issue within thirty (30) days of the completion of field activities.

- d. The Illinois EPA considers the proposed technologies adequate, at this time, to investigate groundwater and detect free product contamination.
- e. The Illinois EPA has determined that the locations identified as ROST-1 through ROST-18, as shown on Figure 7 of the subject submittal, can be approved, with the following conditions and modifications:
 - (1) In an effort to better define the shallow geology and the extent of shallow groundwater, borings must be continuously logged for each ROST location;
 - (2) As described in Section 4.5 of the P-60 Workplan, shallow piezometers must be installed “based on the potential presence of a shallower silty clay layer in the lithologic borings, and the potential presence of free product on this less permeable layer.”
 - (3) Due to the free product present in P-56 and P-59, ROST probes must also be completed on Sixth Street near GWP-10 and on Fifth Street near GWP-8.
 - (4) Additional ROST probes are needed near the groundwater profiling locations along the alley between Third and Fourth Streets at GWP-13 and GWP-18.
 - (5) Depending upon field investigation results, more investigation may be necessary to define the extent of this zone and determine the extent of contamination in groundwater.
- f. SOPUS must contact the Field Operations Section in Collinsville, Illinois at least two (2) weeks prior to conducting field activities.
- g. The Illinois EPA can approve the facility request to submit a report and discuss the planned perimeter monitoring well locations within 45 days of the approval of this Revised Workplan. The report must also discuss planned perimeter monitoring well locations for shallow groundwater encountered during investigations.
- h. The area of concern has expanded since the Water Well Survey (WWS) dated June 16, 2008 was approved. Therefore, an additional WWS must be completed to encompass 2,500 feet from the area of concern. The WWS must be conducted

in accordance with 35 Ill. Adm. Code, Part 1600 regulations, and the guidance document entitled, "Well Survey Procedures at RCRA Facilities."

4. The results of the soil vapor sampling/analysis effort described in the investigation report referenced above cannot be accepted by Illinois EPA for the following reasons:
 - a. No information was provided regarding the construction of these wells and whether they are adequately sealed to prevent short circuiting.
 - b. No leak detection methods were followed to ensure ambient air was not drawn into the sample collection equipment.
 - c. An insufficient amount of air was purged from each sampling point before a sample was collected (it is important that sampling points be properly purged before a vapor sample is collected to ensure the vapor is representative of the in-situ soil gas).
 - d. No information was provided to demonstrate that the laboratory conducting the analysis of the soil vapor samples was qualified to conduct such analyses (laboratories analyzing soil gas samples must be certified for such activities by NELAP and follow the procedures approved by this certification).

In addition to the above deficiencies, the report did not contain any information regarding the goals of the reported soil investigation effort, nor did it contain any information about the procedures used to collect/analyze these samples. Of special concern is the fact that volatile organic compounds are of concern and no information was provided indicating the proper procedures were followed during the collection of the soil samples to ensure any contamination in them did not volatilize during these efforts.

5. The following procedures must be utilized in the collection of all soil samples at locations GP-1 through GP-5 proposed in the workplan:
 - a. The efforts used to advance the soil investigation/collection equipment must be carried out in accordance with ASTM procedures. Acceptable ASTM procedures include:
 - (1) Method 420 (Standard Guide for Investigating and Sampling Soil and Rock);
 - (2) Method D 4700-91 (Method for Soil Sampling from the Vadose Zone);

- (3) Method D 6001-96 (Guide for Direct-Push Sampling for Geoenvironmental Investigations); and
 - (4) Method 6169-97 (Guide for Selection of Soil and Rock Sampling Devices Used with Drill Rigs for Environmental Investigations).
 - b. Soil samples must be obtained continuously at each location to provide information regarding the shallow geology of the area where the investigation is being conducted.
 - c. All soil encountered during the sampling effort must be field classified in accordance with ASTM D-2488.
 - d. As appropriate, select soil samples must be sent to a laboratory and properly classified in accordance with ASTM D-2487; this information will verify the visual classifications efforts conducted in the field.
 - e. Soil samples collected for volatile organic compound (VOCs) analysis require specialized sampling and handling procedures, as specified in Attachment A of Illinois EPA's RCRA closure plan guidance document or Method 5035 of SW-846.
 - f. All soil must be field-screened for VOCs. However, the actual samples collected for analysis at the laboratory must not be field-screened.
6. Quality assurance/quality control procedures which meet the requirements of SW-846 must be implemented during all required sampling/analysis efforts.
 7. All soil samples identified in Condition 5 shall be analyzed individually (i.e., no compositing). Analytical procedures shall be conducted in accordance with Test Methods for Evaluating Solid Wastes (SW-846), Third Edition and Finalized Updates. Apparent visually contaminated material within a sampling interval shall be included in the sample portion of the interval to be analyzed. Each soil sample must be analyzed for: the contaminants listed in Table 5 of the workplan.
 8. A report documenting the results of the soil sampling/analysis investigation required by Condition 5, 6 and 7 above must be submitted to the Illinois EPA. This report must include:
 - a. Background information which provides the foundation for the approved investigation efforts. This should include: pertinent historical information, a

discussion of the geology of the area, and a summary of previous investigation efforts.

- b. identification of the reason for the sampling/analysis effort and the goals of the effort;
 - c. A discussion of the procedures used in carrying out the investigation.
 - d. a scaled drawing showing the location of all borings;
 - e. Logs of each boring made, including the results of all field observations.
 - f. The results of all laboratory analyses conducted to classify the soils present at the facility.
 - g. identification of the depth and vertical interval from which each sample was collected for laboratory analysis;
 - h. a summary in tabular form of all analytical data, including all quality assurance/quality control data;
 - i. a description of the soil sampling procedures, sample preservation procedures and chain of custody procedures used during the investigation;
 - j. identification of the analytical test method used and detection limits achieved, including sample preparation, sample dilution (if necessary) and analytical interferences;
 - k. copies of the final laboratory report sheets, including final sheets reporting all quality assurance/quality control data;
 - l. a summary of all procedures used for quality assurance/quality control, including the results of these procedures; and
 - m. a discussion of all evaluation data collected during the investigation;
 - n. An overall evaluation of all available information regarding the areas and recommendations as to the next steps required to be taken.
9. The workplan proposes that soil vapor sampling points be installed at nine locations. Due to the presence of free phase hydrocarbon or high levels of dissolved benzene, nested

soil vapor sampling points must be installed near the following locations: P-66, P-58, COP B-5, P-93-02; P-93-05; P-93-06; and P-93-11. In addition, if the proposed field screening of soil vapor samples indicate the soil gas contains volatile organic compounds, then additional soil gas sampling points must be installed, as necessary to determine the extent of soil vapor containing contaminants at levels greater than those in Table 7 of the workplan

10. The procedures set forth in Condition 5 above must be followed while boring the holes necessary to install the required Vapor Monitoring Points.
11. The following procedures shall be followed in the installation of the soil vapor sampling points:
 - a. The workplan indicates that there will be four sampling points installed in each bore hole at nine location (VMP1 thru 9). One point shall be screened approximately 5' below the ground surface and one point approximately five feet above the water table in the main aquifer of the area. In addition, one point shall be screened just below the interface of shallow clay/sand interface (the upper bentonite seal of this point must be below this interface). Finally, one sampling point must be screened in the sand approximately half way between these two latter points.
 - b. The portions of sampling points installed in the ground must be made of threaded stainless steel pipe. A combination shut-off valve and coupling must be installed at the top of each in-ground point.
 - c. The end of each sampling point at a given location must be appropriately covered to ensure they are not compromised between sampling events.
 - d. All coupling devices must be made of stainless steel. If a coupling device is not threaded, then appropriate clamps must be used to adequately seal the connection.
 - e. Teflon tape must be used at all threaded connections. All such connections must be head-tightened until they can be tightened no more.
 - f. Rigid wall nylon or Teflon tubing, along with the appropriate connections/couplings shall be used to allow soil gas to flow from the sampling point to the sample collection container.

- g. The sampling port at each sample point shall consist of a 6" Geoprobe stainless steel screen. A sand pack shall be placed in the annular space of the borehole which extends no more than 6" above or below the screen.
- h. To ensure a given well will provide representative soil gas samples, they must first be developed by removing a minimum of three volumes of the pore space present in the sand pack around the well screen. It will only be necessary to do this when the well is first installed.
- i. All connections must be "leak proof" to the maximum extent possible. Teflon tape must be used to seal all threaded connection
- j. Gas-tight, inert containers must be used to obtain and hold the vapor samples.
- k. All connections must have a isopropyl alcohol soaked cloth wrapped around them when collecting soil vapor samples. All collected vapor samples must be analyzed for isopropyl alcohol along with the other contaminants of concern. If isopropyl alcohol is found to be present in the sample at a level greater than 0.17, then the sampling train was compromised in the field and the results are not representative of the contaminant levels in the soil vapor. It must be noted insufficient information was provided regarding the adequacy of the proposed leak detection system using helium.
- l. To ensure a representative soil vapor sample is collected, a minimum of three volumes of the entire sampling train (starting from the screened portion of the sampling point and ending at the end of sample tubing which connects to the sample collection container) must be purged from the system before the sample collection container is attached to the system and a sample is collected
- m. In purging/collecting soil gas, the maximum flow rate of vapor through the system shall be 200 ml/min.
- n. All soil gas samples must be analyzed by a NELAP certified laboratory and the samples analyzed in accordance with the requirements of that certification .
- o. A report developed in general accordance with Condition 8 above must be submitted to Illinois EPA for review and approval. It must contain detailed information about the installation, development and sampling of all sampling points. It must also contain detailed information about the analyses of all samples.

12. No information was provided in the workplan describing how the CPT/ROST data in Attachment A is interpreted, and no information was provided to indicate that the CPT/ROST equipment was properly calibrated before being used. Of special concern is: (1) whether the CPT data correlates to and reflects the geology of the area, based upon observations made at nearby borings; and (2) a correlation between ROST response and the estimated amount of hydrocarbon in the soil.
13. Cone penetrometer testing efforts must be carried out in accordance with ASTM Method D-3441. In addition, the proposed ROST investigation must be carried out in accordance with procedures approved by the manufacturer of the ROST equipment. The results of the CPT and ROST investigations must be submitted to Illinois EPA in a report. This report must contain detailed information describing the investigation efforts, the results of the investigation, the interpretation of the investigation results and appropriate quality control/quality assurance information.
14. All available information related to petroleum pipelines near the western boundary of the refinery must be reviewed. A report documenting the results of this review must be submitted to Illinois EPA for review and approval, including identification of: (1) the information reviewed; (2) the location of characteristics of any pipelines in the area; and (3) any reported releases from these pipelines.
15. The reports required by Conditions 8, 11, 12 and 14 above must be submitted to Illinois EPA for review and approval by October 15, 2009. These reports must compile and present all data collected to date, provide an evaluation of all collected data and recommend what next steps must be taken to properly address/remediate the detected contamination in the two areas of concern.
16. The contamination present in the southern portion of the Village of Hartford and the contamination present in the vicinity of Monitoring Well P-60 along the western property boundary of the subject refinery must be properly remediated in accordance with the Illinois Environmental Protection Act and the associated regulations. Plans to carry out this required remediation must be submitted to Illinois EPA for review and approval once the contamination has been adequately contaminated. Failure to properly remediate this contamination may result in Illinois EPA initiating enforcement against Shell Oil Products U.S. and WRB Refining.
17. All work required by this letter must be directed and supervised by, as appropriate, a licensed professional engineer or a licensed professional geologist. These professionals must certify the reports submitted in accordance with the requirements of this letter.

Mr. Kevin Dyer and Mr. David Dunn
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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 Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions regarding the groundwater aspects of this letter, please contact Amy Boley at 217/558-4716; questions regarding other aspects of this letter should be directed to James K. Moore, P.E. at 217/524-3295.

Sincerely,



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

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JKM AMB-EM
Attachment: Well Survey Procedures for RCRA Facilities

cc: URS Corporation
Public Works Director, Village of Roxana